EASY-TO-MASTER

INTRODUCTION TO ICT

VIDEO TUTORIALS INSIDE

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INTRODUCTION TO ICT

With Video Tutorials

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Foreword

The use of technology in various fields has skyrocketed within the last decade. As access to computer-based technology in schools and classrooms increases, greater emphasis has been placed on preparing teachers/students to use technology for instructional purposes. Hence the study of Information and Communication Technology (ICT) cannot be over-emphasized.

This book has been written at a time when the Government of Ghana is serious about transforming the country into an information-rich knowledge-based society through the development, deployment and exploitation of ICTs. This book has also been written in line with the vision and mission of the University of Education, Winneba, which is to become internationally reputable for training competent teachers in all levels of education and to carry out research. This book therefore is based on the syllabus of the compulsory introduction to ICT course in the University of Education, Winneba. It can be used to assist lecturers in their teaching and students in their learning. The book also contains a series of key activities and the procedures that can be used to achieve these.

Acknowledgement

We are grateful to the Almighty God for His divine grace and protection in all our endeavours. We thank Him for making it possible to accomplish this feat despite our hectic schedules. Our enormous gratitude also goes to Dr. Issifu Yidana (Ac. HoD, Department of ICT Education, UEW) for his continuous encouragement and motivation to carry out research and publications. We acknowledge the authors of the various reference books used. Finally we thank all our friends and well-wishers who aided us in several ways to get this book published. We are grateful.

Dedication

This book is dedicated to all our families and loved ones who supported us in diverse ways throughout publication.

CHAPTER 1
INTRODUCTION TO COMPUTERS

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Introduction

Are you new to computers? Do you wonder what they do and why you would want to use one? Welcome; this chapter gives an overview of computers: what they are, the different computer types, what you can do with them and how they have brought about the information age.

Learning Objectives

After completing is chapter, you will be able to

- Explain the Information Society
- Discuss the digital revolution
- Discuss the impact of the Information Society
- Define Data, Information and Technology
- Explain Information and Communication Technology with examples
- Identify the various types of computers
- Discuss briefly the history of computers

The Information Age

The **Information Age** which is also commonly referred to as the **Computer Age** or **Digital Age,** is an idea that the current age will be characterized by the ability of individuals to **transfer information** and to have **instant access to information** that would have been difficult or impossible to find previously. The idea is linked to the concept of a **digital age** or **digital revolution**, and carries the ramifications of a shift from traditional industry that the industrial revolution brought through industrialization; to an economy based on the manipulation of information. The information Age has brought about the **information society** - a society in which a majority of workers are involved in the transmittal of information. The information society formed by capitalizing on the computer miniaturization

advances, with a transition spanning from the advent of the personal computer in the late 1970s to the Internet's reaching a critical mass in the early 1990s, and

Economic Era	Primary Resource	Transforming Agent	Tools Needed	Skills Needed to Function
Agrarian	Land	Natural Energy	Plough, Hoe, Farm Equipment	Ploughing, tilling Sowing, Harvesting
Industrial	Capital	Processed Energy (Oil, Coal, Hydro)	Machines	Technical Engineering Management
Information	Mind	Knowledge	Computer	Computer Literacy Information Literacy Visual Literacy

the adoption of such technology by the public in the two decades after 1990.

Bringing about a fast evolution of technology in our daily life, as well as of educational life style, the Information society has allowed rapid global communications and networking to shape modern society.

There have been different economic eras in history. In each economic era (see table 1), Cook (1996) identified a primary resource upon which each economy thrives, the transforming agent which fuels and sustains the economic activity, the tools participants need to work with in that particular economy and finally, skills the workforce need to have in order to be productive in the system. In the Agrarian economy the primary resource needed was land. To use the land effectively for crop cultivation, it required natural energy (man power) to cultivate the land with tools such as plough, hoe and other farming equipment. The skill required in this endeavour was farming skills which included ploughing, tilling and sowing. From the Agrarian era the world economy advanced to the Industrial era. Industrialization of the economy was capital intensive. Huge sums of money were required to set up industries and sustain them. Processing energy such as oil and coal were used to power industries. Working in an industrial economy required management skills, technical and engineering know how.

In the information era both the primary resource and the transforming agent are intangibles namely, the "human mind" and "knowledge". The quest for knowledge together with the transmission of knowledge stimulates the information age. The tool needed to store, process and transmit information, with speed, is the computer and associated communication technologies. Consequently, participants in information-rich and computer-driven economy need certain requisite skills to survive in such a system. These skills, Cook (1996) identified as Computer/Technology Literacy, Information Literacy and Visual Literacy.

The Digital Revolution

The following are significant innovations that led to the digital revolution and the Information Age:

1. In 1875, for example, the invention of the telephone breached distance through sound.
2. Between 1910 and 1920, the first AM radio stations began to broadcast sound.
3. By the 1940s television was broadcasting both sound and visuals
4. In 1943, the world's first electronic computer was created.
5. Microprocessor invented in the 1970s and computers became accessible to the public.
6. In the 1990s, the Internet migrated from universities and research institutions to corporate headquarters and homes.
7. Earlier technologies relied on analog transmission (incorporated a combination of light and sound waves to transmit messages.
8. Alexander Graham Bell's invention of the telephone in 1875 used analog transmission
9. In the late 1940s, an alternative to analog transmission of voice, the pulse-code modulation (an encoded signal of pulses) marked the start of digitization in telecommunications
10. 1961 that the first digital carrier system was installed in U.S
11. Digitization meant the widespread replacement of telephone operators with digital switches.
12. In 1971 the first fiber optic cables suitable for communications were made - leading to efforts to send communications signals via light waves. (Light wave transmission systems are inherently digital)

13. By about 1989, "ones and zeros" had become the language of telephone networks in the US
14. Today, voice is translated into data packets, sent over networks to remote locations, sometimes thousands of kilometres away, and, upon receipt, translated back to voice.

The Impact of the Information Age

The Impact on Job Market

In the Information Age workers are forced to compete in a global job market. Workers are expected to acquire 21st Century skills which include: computer literacy, inventive thinking, higher-order thinking, and effective communication. In addition, the Internet makes it possible for workers in developing countries to provide in-person services and compete directly with their counterparts in other nations.

The Impact on Education

Schools are social sub-units of the society at large and therefore changes that occur in society usually affect school reforms. Consequently, changes in the society places demands on schools to be responsive to the changed social needs. The advent of the Information Age puts pressure on schools to redefine outcomes of the educational endeavour. The goals of education have thus, shifted from demonstrating competencies in reading, writing and arithmetic to ensuring students acquire skills to learn, unlearn and relearn - skills that promote lifelong learning in today's technology-based economy. The present trend of proliferation of information and communications technology in the global economy is demanding an education outcome which equips graduates with necessary technology skills to function productively in the new global economic system.

What is Data?

Data consists of raw facts, which the computer can manipulate and process into information that is useful to people. Computerized data is digital, meaning that it has been reduced to digits, or numbers. The computer stores and reads all data as

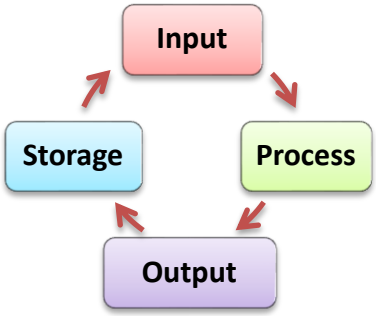

Figure 1.1: Information processing cycle

binary. Although computers use data in digital form, they convert data into forms that people can understand, such as text, numerals, sounds, and images.

Data entered into a computer is called **input**. The processed results are called **output**. Thus, a computer processes input to create output. A computer can hold data for future use in an area called **storage**. This cycle of input, process, output, and storage (Figure 1.1) is called the **Information Processing Cycle**.

What is Information?

Information is data that has been processed in such a way that it is meaningful to the person who receives it. Information is therefore defined as a collection of organized data or simply data with meaning. The process of turning data into information is called processing. Information is data that is organized, has meaning, and is useful. For example, the computer can process several data items to provide a student grade report. Other examples of information include newsletters, receipts, pictures, invoices, or checks.

What is Technology?

Technology can be defined as the application of scientific principles in producing machines or tools to better the life of mankind. In other words, the way in which scientific discoveries about the principles of flight allowed the technological development of the aeroplane is one example of technology. Another example is the use of the Internet to extend the reach or access to quality education.

What are ICTs?

ICT stands for Information and Communication Technology. ICT is the combination of computer-based technologies and telecommunication technology for the purpose of gathering data or information, processing data, sharing and disseminating information from one place to another. Examples of ICTs include, Mobile phones, Television, Radio, Computers and the Internet.

What is a Computer?

A computer is an electronic device which accepts data, processes the data, stores and produces the result as information under the direction of a stored program of instructions (software) with speed and accuracy.

- Accept Data (Input): Data can be put into the computer by someone or a program. Such data might be a collection of facts and figures and a set of instructions to the computer telling it what to do.
- Process Data: (Processing): The computer might do an addition or compare and sort the data into information.
- Store Information: (Storage): Computers have a component called memory that holds the information.
- Produce the Processed Information (Output): Computers gives out the result of the final data or information that has been processed either in soft or hard copy.

Classifications of Computers

Computers are available in different shapes, sizes and weights, and they perform a variety of jobs from one another. Here we are going to introduce different classifications of computers. We will discuss what are in the classifications and what jobs they perform.

Computers can be classified according to the following:

- Classification by Purpose
- Classification by Capacity and Size
- Classification by Nature / Type

Classification by Purpose

Under this category, computers are classified into two main types

- General Purpose Computers

  By definition a general-purpose-computer is designed to solve a wide range of problems depending on the software used. For example the personal computer can be used for business, education, entertainment and so on.

- Special / Specific Purpose Computers

The Special – Purpose computers are designed to perform a specific task. Examples include digital calculators, Automatic Teller Machines, Mobile phones and digital watches and so on.

Classification by Capacity and Size

Under the classification of computers by capacity and size, computers are grouped according to their physical size, speed, storage capacity, cost, and the number of users who can assess the computer at a given time. Computers are classified into:

- **Super computers**
- **Mainframe computers**
- **Mini computers**
- **Workstations**
- **Micro-computers**

The characteristics of each have been elaborated below.

Supercomputers

Typically priced from $1 million to more than $350 million, supercomputers are high-capacity machines with hundreds to thousands of processors that can perform more than several trillion calculations per second. These are the most expensive and fastest computers available. "Supers," as they are called, have been used for tasks requiring the processing of enormous volumes of data, such as doing the weather forecasting, designing aircraft, modeling molecules, and breaking encryption codes. More recently they have been employed for business purposes for instance sifting demographic marketing information — and for creating graphic animations. The fastest computer in the world as at August 2014, costing hundreds of millions and with roughly the computing power of 375,000 of today's most powerful desktops (with quad-core processors), is the Tianhe-2 Supercomputer which was built by the National University of Defense Technology (NUDT) and is currently housed at National

Figure 1.2: Tianhe-2 Supercomputer housed at National Supercomputer Centre in Guangzhou.

Supercomputer Centre in Guangzhou, China (Figure 1.2). This position was earned by the Tianhe-2's ability to crunch 33.86 quadrillion calculations per second (33.86 petaflops). It comes with 1.4 petabytes of RAM and uses Kylin Linux also developed by NUDT. To better understand this; it can perform in less than a second; calculations which would take the super computers of 1993 six days to solve or better still it can calculate in one hour, what otherwise would take 6.7 billion people using hand calculators 640 years to calculate. It is primarily used for simulation, analysis, and government security applications. This machine has the power of approximately 4 million laptops. The peak power consumption for the processors, memory, and interconnect is 17.6 megawatts, with the water cooling system bringing that up to 24MW.

Supercomputers are designed to occupy special air – conditioned rooms and are used for research, worldwide weather forecasting, oil explorations, aircraft designs, nuclear testing and others. Manufacturers of Supercomputers include IBM, Control Data Corporation, UNISYS among others.

Mainframe computers

The only type of computer available until the late 1960s, mainframes are water or air-cooled computers that cost $5,000 - $5 million and vary in size from small, to medium, to large, depending on their use. Small mainframes ($5,000 - $200,000) are often called midsize computers; they used to be called mini computers, although today the term is seldom used. Often users access a mainframe by means of a terminal, which has a display screen and a keyboard and can input and output data but cannot by itself process data. Mainframes process billions of instructions per second. They can store great amounts of information and are normally used by banks, airlines, large businesses, government agencies and universities. For instance, in the developed countries, universities use mainframe computers to schedule their students and record grades. Mainframe computers can do a lot of different jobs at one time. Because many terminals can be connected to mainframe computers, many people can use the computer at the same time. (A terminal is a monitor and a keyboard, sometimes with a pointing device such as a mouse linked to the mainframe). Mainframe has a historical reputation for being "expensive".

Figure 1.3: Mainframe computer

Figure 1.4: A PDP-11, model 40, an early member of DECs 16-bit minicomputer family, on display at the Vienna Technical Museum

Mini-computer

Mini-computers are mid-sized multi-processing computers. They can perform several actions at the same time and can support from 4 to 200 users simultaneously. In recent years the distinction between mini-computers and small mainframes has become blurred. Often the distinction depends upon how the manufacturer wants to market its machines. Organisations may use a mini-computer for such tasks as managing the information in a small financial system or maintaining a small database of information about registrations or applications.

Workstations

Introduced in the early 1980s, workstations are expensive, powerful single user computers usually used for complex scientific, mathematical, and engineering calculations and for computer-aided design and computer-aided manufacturing. In terms of computing power, workstations lie between personal computers and mini-computers. Workstations commonly support applications that require relatively high-quality graphics capabilities and a lot of memory, such as desktop publishing, software development and engineering applications. Workstations are used for such tasks as designing airplane fuselages, developing prescription drugs, and creating movie special effects. Workstations have caught the eye of the public mainly for their graphics capabilities, which are used to breathe three-dimensional (3D) life into movies. The capabilities of low end workstations overlap those of high-end desktop microcomputers. Workstations are often larger in size than Personal Computers. The leading manufacturers of minicomputers are Digital Equipment Corporation, IBM, and Hewlett – Packard (HP).

Figure 1.5: Workstation (right) use in 3d computer graphics (left)

Microcomputers

Microcomputers, also called personal computers (PCs), which cost GH¢ 500 to over GH¢5,000, can fit next to a desk or on a desktop or can be carried around. They either are stand-alone machines or are connected to a computer network, such as a local area network. A local area network (LAN) connects, usually by special cable, a group of desktop PCs and other devices, such as printers, in an office or a building. Microcomputers are of several types: desktop PCs, tower PCs, notebooks (laptops), netbooks, mobile internet devices (MIDs), and personal digital assistants - handheld computers or palmtops.

Desktop PCs are microcomputers whose case or main housing sits on a desk, with keyboard in front and monitor (screen) often on top. Tower PCs are microcomputers whose case sits as a "tower," often on the floor beside a desk, thus freeing up desk surface space. Some desktop computers, such as Apple's iMac, no longer have box housing; most of the computer components are built into the back of the flat-panel display screen.

Figure 1.6: Desktop (left) and Tower (right) PCs

Notebooks

Notebook computers, also called laptop computers, are lightweight portable computers with built-in monitor, keyboard, hard-disk drive, DVD/Blu-Ray drive, battery, and AC adapter that can be plugged into an electrical outlet; they weigh mostly between 1.5 to 3 kilograms.

Figure 1.7: Laptop Computers

Netbooks

A fairly recent category, netbooks are low-cost, lightweight computers with tiny dimensions and functions designed for basic tasks, such as web searching, email, and word processing. They weigh mostly between 0.7 to 1.5 kilograms, cost generally between GH¢500 and GH¢800, have little processing power, and have screens between 8.9 and 12 inches wide diagonally. Netbooks fill a technological category between notebooks and handheld devices.

Mobile Internet Devices (MIDs)

Smaller than notebook computers but larger and more powerful than PDAs, mobile internet devices (MIDs) are for consumers and business professionals. Fully internet integrated, they are highly compatible with desktop microcomputers and laptops. The initial models focused on data communication, not voice communication.

Figure 1.8: mobile internet devices

Personal Digital Assistants

Personal digital assistants (PDAs), also called handheld computers or palmtops, combine personal organization tools - schedule planners, address books, to-do lists with the ability in some cases to send email and faxes. Some PDAs have touch-sensitive screens. Some also connect to desktop computers for sending or receiving information. (For now, we are using the word digital to mean "computer based.") The range of handheld wireless devices, such as multipurpose cell phones, has surged in recent years.

Figure 1.9: Personal Digital Assistants

Classification by Nature /Type

Under classification by nature / type, computers are grouped into how data is presented. Data is presented in three main ways namely analog, digital, and hybrid.

Digital Computers use digital signals which are discrete and expressed as electrical pulses. Digital computers also operate on representation of real numbers /other characters coded numerically and handle alphabetic and numeric data with precision and speed. A digital computer is not a single machine: rather, it is a system composed of five distinct elements : (1) processing unit; (2) input devices; (3) memory storage devices; (4) output devices; and (5) a communications network, called a bus, which links all the elements of the system and connects the system to the external world.

Figure 1.10: Digital Watch

Modern digital computers can be divided into several categories on the basis of cost and performance. Examples of digital computers include: Supercomputers, Mainframe Computers, Minicomputers, Workstations, Microcomputers and digital watch.

Analog Computers operate on data in the form of continuous variable physical quantities such as temperature and pressure. These kinds of computers also represent their signals in a continuous electrical signal in the form of waves. Examples of analog computers include the liquid in glass thermometer, engine watch, ammeter, voltmeter.

Figure 1.11: Engine Watch

Hybrid Computers combine the capabilities of both digital and analog computers. Thus hybrid computers have the ability to either represent data in a numerical format using the binary mode or by representing data as a physical quantity. An example of the hybrid computer is the money counting machine. This machine has the ability to count the amount of money put in it and produce a digital result of the money counted. It can also detect counterfeit money. Another example of a hybrid computer is the Automatic Teller Machine (ATM). The ATM performs numerical functions such as the verification of bank accounts and balance coupled with the function of relying on manipulating physical variables in order to deliver money the to the user (Figure 1.12).

Figure 1.12 ATM Machine

The Basic Operations of a Computer

Regardless of type and size, all computers use the same four basic operations: (1) input, (2) processing, (3) storage, and (4) output. To this we add (5) communications.

Input Operation: Input is whatever is put in ("input") to a computer system. Input can be nearly any kind of data - letters, numbers, symbols, shapes, colours, temperatures, sounds, pressure, light beams, or whatever raw material needs processing. When you type some words or numbers on a keyboard, those words are considered input data.

Processing Operation: Processing is the manipulation a computer does to transform data into information. When a computer adds 2 and 2 to get 4; that is the act of processing. The processing is done by the central processing unit - frequently just called the CPU - a device consisting of electronic circuitry that executes instructions to process data.

Storage Operation: Storage is of two types - temporary storage and permanent storage, or primary storage and secondary storage. Primary storage is the internal computer circuitry that temporarily holds data waiting to be processed. Secondary storage refers to the devices and media that store data or information permanently. A hard disk or CD/DVD is an example of this kind of storage. (Storage also holds the software - the computer programs.)

Output Operation: Output is whatever is produced from ("put out of") the computer system - the results of processing, usually information. Examples of output are numbers or pictures displayed on a screen, words printed out on paper by a printer, or music piped over some loud speakers.

Communications Operation: These days, most (though not all) computers have communications ability, which offers an extension capability - in other words, it extends the power of the computer. With wired or wireless communications connections, data may be input from far away, processed in a remote area, stored in several different locations, and output in yet other places. However, you don't need communications ability to write letters, do calculations, or perform many other computer tasks.

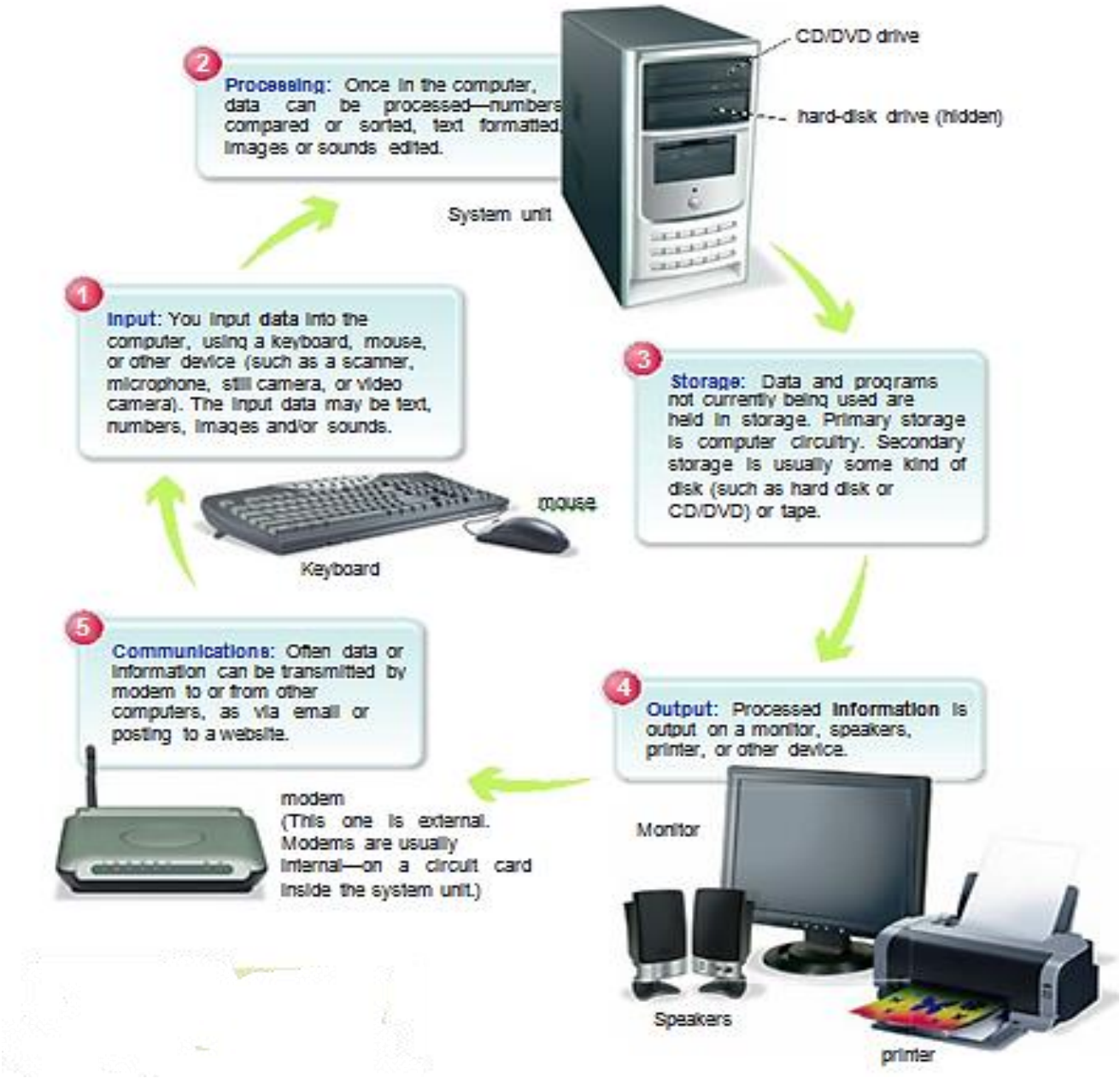

Figure 1.13: Basic Operations of the computer

Why are Computers Powerful?

Although computers cannot do anything without instructions from someone, what makes the so powerful is the fact that they can do things better than humans. The characteristics of a computer that makes it the "wonder" machine are;

Speed: - Computers can work very fast. It uses only few seconds for calculations that we take hours to complete. You will be surprised to know that computers

can perform millions (1,000,000) of instructions and even more per second. Therefore, we determine the speed of computer in terms of microseconds (10^{-6} part of a second) or nanosecond (10 to the power $^{-9}$ part of a second). From this you can imagine how fast your computer performs work.

Accuracy: The degree of accuracy of computer is very high and every calculation is performed with the same accuracy. The accuracy level is determined on the basis of design of computer. The inaccuracies in computer results are due to human error and inaccurate data.

Diligence: A computer is free from tiredness, lack of concentration, fatigue, etc. It can work for hours without creating any error. If millions of calculations are to be performed, a computer will perform every calculation with the same accuracy. Due to this capability, it overpowers human being in routine type of work.

Versatility: It means the capacity to perform completely different types of work. You may use your computer to prepare payroll slips. Next moment you may use it for inventory management or to prepare electric bills. You can also use your computer for graphic design and entertainment.

Storage: Computer has the power of storing any amount of information or data. Any information can be stored and recalled as long as you require it, for any number of years. It depends entirely upon how much data you want to store in a computer and when you want to lose or retrieve these data. Data is stored in secondary storage devices such as compact disks (CD) and digital versatile disks (DVD) as well as pen drives, which can be kept outside your computer and can be carried to other computers.

Communication: Computers can be used to transmit data and information from one location to the other through the use of communications channel such as standard telephone lines. Computers help us to communicate with others in and outside the country via the Internet. We can use the Internet to send and receive emails, chat what with friend, make voice and video calls.

What are the Components of a Computer?

Computers are made up of two parts: the hardware and the software.

Hardware: The physical equipment required to create, use, manipulate and store electronic data. Hardware consists of all the machinery and components in a computer system. The hardware includes, among other devices, the keyboard, the screen, the printer, and the "box" – system unit which contains other hardware components. Hardware is useless without software.

Software: Software, or programs, consists of all the electronic instructions that tell the computer how to perform a task. These instructions come from a software developer in a form (such as a CD, or compact disk) that will be accepted by the computer. Examples are Microsoft Windows and Microsoft Office 2010.

Brief History of Computers

The First Generation (1943-1958): This generation is often described as starting with the delivery of the first commercial computer to a business client. This happened in 1951 with the delivery of the Universal Automatic Computer (UNIVAC) and Electronic Numerical Integrator And Calculator (ENIAC) to the US Bureau of Census. This generation lasted until about the end of the 1950's (although some stayed in operation much longer than that). The main defining feature of the first generation of computers was that vacuum tubes were used as internal computer components. Vacuum tubes are generally about 5-10 centimeters in length and the large numbers of them required in computers resulted in huge and extremely expensive machines that often broke down (as tubes failed).

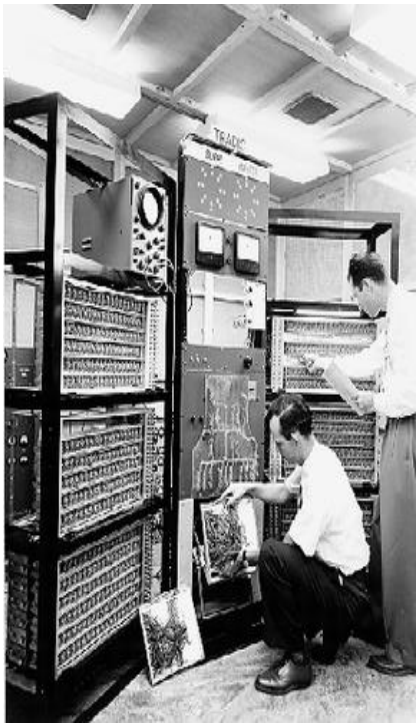

Figure 1.14: First Generation Computer the ENIAC

Features of First Generation

1. Use of vacuum tubes
2. Big and Clumsy
3. High Electricity Consumption
4. Programming in Mechanical Language

5. Larger air conditioners were needed
6. Lots of component failure occurred

The Second Generation (1959-1964): In the mid-1950's Bell Labs developed the transistor. Transistors were capable of performing many of the same tasks as vacuum tubes but were only a fraction of the size. The first transistor-based computer was produced in 1959. Transistors were not only smaller, enabling computer size to be reduced, but they were faster, more reliable and consumed less electricity.

The other main improvement of this period was the development of computer languages. Assembler languages or symbolic languages allowed programmers to specify instructions in words (although very cryptic words) which were then translated into a form that the machines could understand (typically series of 0's and 1's: Binary code). Higher level languages also came into being during this period. Whereas assembler languages had a one-to-one correspondence between their symbols and actual machine functions, higher level language commands often represent complex sequences of machine codes. Two higher-level languages developed during this period (FORTRAN and COBOL) are still in use today though in a much more developed form.

Figure 1.15: Second Generation Computer

Features of Second Generation

1. Transistors were used
2. Core Memory was developed
3. Faster than First Generation computers
4. First Operating System was developed
5. Programming was in Machine Language and Assembly Language
6. Magnetic tapes & disks were used
7. Computers became smaller in size than the First Generation computers
8. Computers produced less heat and consumed less electricity

The Third Generation (1965-1970): In 1965 the first Integrated Circuit (IC) was developed in which a complete circuit of hundreds of components were placed on a single silicon chip 2 or 3 mm square. Computers using these IC's soon replaced transistor based machines. Again, one of the major advantages was size, with computers becoming more powerful and at the same time much

smaller and cheaper. Computers thus became accessible to a much larger audience. An added advantage of smaller size is that electrical signals have much shorter distances to travel and so the speed of computers increased.

Another feature of this period is that computer software became much more powerful and flexible and for the first time more than one program could share the computer's resources at the same time (multi-tasking). The majority of programming languages used today are often referred to as 3GL's (3rd generation languages) even though some of them originated during the 2nd generation.

Figure 1.16: Third Generation Computer

Third Generation Features

1. Integrated circuits developed
2. Power consumption was low
3. Small Scale Integration (SSI) and Medium Scale Integration (MSI) Technology was used
4. High level languages were used

The Fourth Generation (1971-present): The boundary between the third and fourth generations is not very clear-cut at all. Most of the developments since the mid 1960's can be seen as part of a continuum of gradual miniaturization. In 1970 Large-Scale Integration (LSI) was achieved where the equivalent of thousands of integrated circuits were crammed onto a single silicon chip. This development brought about increased computer performance (especially reliability and speed) while reducing computer size and cost. Around this time the first complete general-purpose microprocessor became available on a single chip. In 1975 Very Large Scale Integration (VLSI) took the process one step further. Complete computer central processors could now be built onto one chip. The microcomputer was born. Such chips are far more powerful than ENIAC and are only about 1cm square while ENIAC filled a large building.

Figure 1.17: Fourth Generation Computer

During this period Fourth Generation Languages (4GL's) have come into existence. Such languages are a step further removed from the computer hardware in that they use language much like natural language; an example is Structured Query Language (SQL). Many database languages can

be described as 4GL's. They are generally much easier to learn than are 3GL's.

Fourth Generation Computers

1. LSI and VLSI Technology used
2. Development of Portable Computers
3. Redundant Array of Independent Disks (RAID) Technology of data storage
4. Used in virtual reality, multimedia, simulation
5. Computers started in use for Data Communication
6. Different types of memories with very high accessing speed and storage capacity

The Fifth Generation (the future): The "fifth generation" of computers was defined by the Japanese government in 1980 when they unveiled an optimistic ten-year plan to produce the next generation of computers. This was an interesting plan for two reasons.

Firstly, it is not at all really clear what the fourth generation is, or even whether the third generation had finished yet. Secondly, it was an attempt to define a generation of computers before they had come into existence. The main requirements of the 5G machines were that they incorporate the features of Artificial Intelligence, Expert Systems, and Natural Language. The goal was to produce machines that are capable of performing tasks in similar ways to humans, are capable of learning, and are capable of interacting with humans in natural language and preferably using both speech input (speech recognition) and speech output (speech synthesis). Such goals are obviously of interest to linguists and speech scientists as natural language and speech processing are key components of the definition. As you may have guessed, this goal has not yet been fully realized, although significant progress has been made towards various aspects of these goals.

Figure 1.18: Motoman Humanoid Robot Cooking with Manual

Fifth Generation Computers

1. Will use parallel processing
2. Will use superconductors
3. Will use speech recognition
4. Will be used in intelligent robots
5. Will be used in artificial intelligence

Chapter 1 -Self-Test Questions

Multiple choices

Identify the letter of the option the best answer the questions below

1. A society in which a majority of workers are involved in the transmittal of processed data is known as
    a. Global society
    b. Digital Society
    c. Information society
    d. Technology Society
2. The transforming agent in the industrial economy is
    a. Capital
    b. Knowledge
    c. Natural energy
    d. Processing Energy
3. Survival in the information age requires
    a. Technical literacy
    b. Digital literacy
    c. Visual literacy
    d. Engineering literacy
4. The computer is a primary tool in the
    a. Industrial economy
    b. Global economy
    c. Information economy
    d. Agrarian economy
5. The first telephone was invented in the year
    a. 1675
    b. 1775
    c. 1875
    d. 1975
6. Which of the following is a correct order for the information processing cycle?
    a. Store → Process →Input → Output
    b. Process → Store →Output → Input
    c. Input → Process →Store → Output
    d. Input → Process →Output → Store
7. Information is simply referred to as
    a. Data that has been entered into the computer

b. Data that has been stored in the computer
c. Data that has been processed by the computer
d. Data that has been output from the computer

8. The use of scientific principles to produce tools to better the life of mankind is known as ___?
a. Technology
b. Information
c. Computerization
d. Globalization

9. Which of the following is **not** an ICT tool?
a. Automobile
b. Telephone
c. Computer
d. Television

10. When the computer performs addition or compare and sort data into information it is known as ____?
a. Calculating
b. Computing
c. Processing
d. Analysing

11. A computer designed to solve wide range of problems based on the software installed on it is known as?
a. Analog computer
b. General purpose computer
c. Hybrid computer
d. Special computer

12. A powerful single user computer used for complex scientific, mathematical and engineering calculations is called _____ ?
a. Super computer
b. Mainframe computer
c. Mini computer
d. Workstation

13. A laptop computer is an example of a _____ ?
a. Super computer
b. Mainframe computer
c. Mini computer
d. Micro computer

14. PDA stands for ____?

a. Professional Data Assistant
b. Personal Data Assistant
c. Professional Digital Assistant
d. Personal Digital Assistant

15. All the following are reasons why the computer is called the "Wonder" machine **except** ___?
a. Speed
b. Adaptability
c. Storage
d. Communication

16. Which of the following is **not** a feature of the first generation computers?
a. Use of transistors
b. High electricity consumption
c. Use of machine language
d. Use of Vacuum tubes

17. Integrated Circuit (IC) was first used in ___?
a. First generation computers
b. Second generation computers
c. Third generation computers
d. Fourth generation computers

18. Artificial Intelligence (AI) is a feature of ___?
a. Second generation computers
b. Third generation computers
c. Fourth generation computers
d. Fifth generation computers

19. Assembly Languages were first used in ___?
a. First generation computers
b. Second generation computers
c. Third generation computers
d. Fourth generation computers

20. FORTRAN and COBOL are examples of ___?
a. Machine Language
b. Assembly Language
c. Higher Order Language
d. Computer Language

True/False Questions

21. Mainframe computers process faster than microcomputers. True/False

22. Main memory is a software component. True/False

23. Processing is the manipulation by which a computer transforms data into information. True/False

24. Computers are becoming larger, slower, and more expensive. True/False

25. A microcomputer is used to view very small objects. True/False

26. A hard disk is an example of software. True/False

27. Computers continue to get smaller and smaller in size. True/False

28. Supercomputers are particularly inexpensive. True/False

29. Land was the primary resource in the Agrarian economy. True/False

30. ENIAC is a second generation computer. True/False

CHAPTER 2
COMPUTER HARDWARE

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Introduction

In chapter one we learnt that all the elements that go together to make up a PC fall into one of two categories, hardware or software. This chapter is about hardware, the components upon which software runs. Everything you can see and touch in your PC is hardware.

Learning Objectives

After completing this chapter you will be able to

- Define computer hardware
- Identify input, output, storage and communication devices
- Identify the components of the system unit
- Explain the procedures involved in computer processing

The Computer Hardware

Computer hardware refers to the physical parts of a computer and its related devices. Internal hardware devices include motherboards, hard drives, and memory. External hardware devices include monitors, keyboards, mice, printers, and scanners.

The internal hardware parts of a computer are often referred to as ***components***, while external hardware devices are usually called ***peripherals***. Together, they all fall under the category of computer hardware. The computer hardware can be categorised into

1. **Input devices**
2. **Output devices**
3. **System unit**
4. **Storage devices**
5. **Communication devices**

Input Devices

In computing, an input device is any peripheral (piece of computer hardware equipment) used to input data into the computer. The following are examples of input devices.

Keyboards

A keyboard is a device that converts letters, numbers, and other characters into electrical signals that can be read by the computer's processor. The keyboard may look like a typewriter keyboard to which some special keys have been added (such as Function keys and Ctrl, Alt, and Del keys) intended for computer- specific tasks.

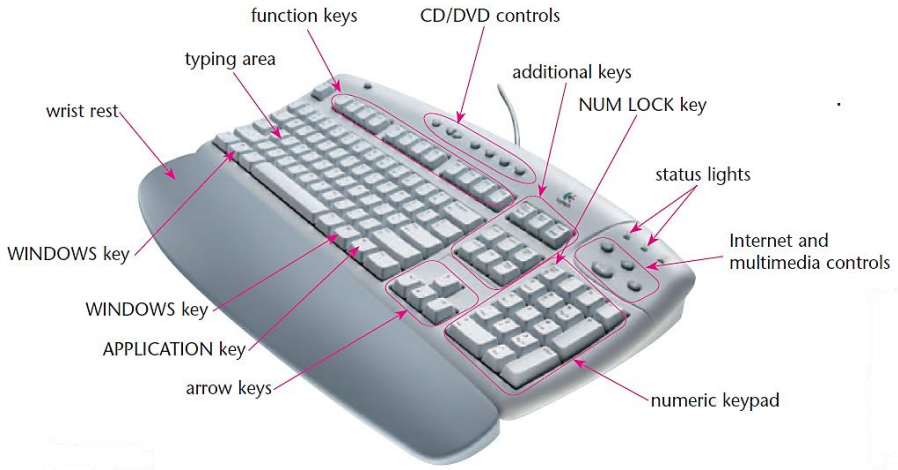


Figure 2.1: Parts of the keyboard

Newer keyboards include extra keys for special activities such as instant web access, CD/DVD controls, and Windows shortcut keys. Wired keyboards connect through a cable to the computer via a serial port or a USB port. Wireless keyboards use either infrared-light (IR) technology or radio frequency (RF) technology to transmit signals to a receiver device plugged into the computer, usually via a USB port.

Figure 2.2: Keyboard with special access keys

Figure 2.3: Virtual Keyboard

The newly introduced Virtual Keyboard (Figure 2.3) can be used with PDAs and smartphones, allowing users a practical and flexible way to do email and word processing without having to take along a laptop computer.

Specialty keyboards

Specialty keyboards range from Touch-Tone telephone keypads for mobile devices.

Figure 2.4: Screen Touch Keypad (left) and Mobile phone key pad (right)

Pointing Devices

Pointing devices control the position of the cursor or pointer on the screen and allow the user to select options displayed on the screen. Pointing devices include the mouse and its variants, the touch screen, and various forms of pen input and the recent innovations in handwriting input.

The Mouse

The principal pointing tool used with microcomputers is the mouse, a device that is rolled about on a mouse pad and directs a pointer on the computer's display screen. The mouse's name is derived from the device's shape, which is a bit like a mouse, with the cord to the computer being the tail.

Mechanical versus Optical mouse:

Mechanical mouse uses mouse pad - a rectangular rubber/foam pad - provides traction for the mouse wheel. Newer mice have optical properties, that is, they use light emitting diodes (LED) to detect movement and special chips to encode data for the computer. Optical mice have no moving parts, have a smoother response, and don't

Figure 2.5: Mechanical mouse (left) and Optical mouse (right)

require a mouse pad.

Cordless or Wireless Mice

Cordless or wireless mice transmit data via infrared radiation or radio (including Bluetooth). The receiver is connected to the computer through a serial or USB port, or can be built in (as is sometimes the case with Bluetooth). Modern non-Bluetooth wireless mice use USB receivers. Some of these can be stored inside the mouse for safe transport while not in use, while other, newer mice use newer "nano" receivers, designed to be small enough to remain plugged into a laptop during transport, while still being large enough to easily remove

Figure 2.6: Wireless mouse with Bluetooth dongle

Trackball

The trackball is a movable ball, mounted on top of a stationary device that can be rotated using your fingers or palm. In fact, the trackball looks like the mouse turned upside down. Instead of moving the mouse around on the desktop, you move the trackball with the tips of your fingers. A trackball is not as accurate as a mouse, and it requires more frequent cleaning, but it's a good alternative when desktop space is limited. Trackballs come in wired and wireless versions, and newer optical trackballs use laser technology.


Figure 2.7: Trackball

Touchpad

A touchpad is a small, flat surface over which you slide your finger, using the same movements as you would with a mouse. The cursor follows the movement of your finger. You "click" by tapping your finger on the pad's surface or by pressing buttons positioned close by the pad. Touchpads are most often found on laptop computers, but freestanding touchpads are available for use with PCs.


Figure 2.8: Laptop Touchpad

Touch Screen

A touch screen is a video display screen that has been sensitized to receive input from the touch of a finger. The specially coated screen layers are covered with a plastic layer. Depending on the type of touch screen, the pressure of the user's finger creates a connection of electrical current between the layers, and decreases touchpad the electrical charge at the touched point, or otherwise disturbs the electrical field.

Figure 2.9: Touch Screen

The change in electrical current creates a signal that is sent to the computer. You can input requests for information by pressing on displayed buttons.

Joystick and Wheel

Users running game software, such as driving or flight simulation software may prefer to use a joystick, wheel, or other device as their pointing and control device. A joystick is a vertical lever mounted on a base. You move the lever in different directions to control the actions of a vehicle or a player. The lever usually includes buttons, called triggers that you can press to activate certain events. Some joysticks also have additional buttons that you can set to perform other actions.

Figure 2.10: Game controllers

A wheel is a steering-wheel type input device. You turn the wheel to simulate driving a car or other vehicle. Most wheels also include foot pedals for acceleration and braking action. A joystick and wheel typically attach via a cable to the USB port.

Pen-Based Computer Systems

Pen-based computer systems allow users to enter handwriting and marks onto a computer screen by means of a pen-like stylus rather than by typing on a keyboard. A stylus is a pen-like device that is used to write text or draw lines on a touch-sensitive surface as input to a computer. Pen computers use handwriting recognition software that translates handwritten characters made by the stylus into data that is usable by the computer. Handwriting recognition refers to the ability of a computer to receive intelligible written input. The system requires special software that interprets the movements of the stylus across the writing surface and translates the resulting cursive writing into digital information.

Figure 2.11: Pen-based computer system

Digitizer

A digitizer uses an electronic pen or a mouse-like copying device called a puck that can convert drawings and photos to digital data. One form of digitizer is the digitizing tablet, used in engineering and architecture applications, in which a specific location on an electronic plastic board corresponds to a location on the screen.


Figure 2.12: Digital tablet

Scanning and Reading Devices

Scanners

Scanners, or optical scanners, use light-sensing (optical) equipment to translate images of text, drawings, photos, and the like into digital form. The images can then be processed by a computer, displayed on a monitor, stored on a storage device, or transmitted to another computer.


Figure 2.13: Scanner

Bar-code readers

Bar-code readers are photoelectric (optical) scanners that translate the symbols in the bar code into digital code. They are usually used in Point of Sale (POS) systems. In this system, the price of a particular item is set within the store's computer. Once the bar code has been scanned, the corresponding price appears on the sales clerk's point-of-sale terminal and on your receipt. Records of sales from


Figure 2.14: Barcode reader

the bar-code readers are input to the store's computer and used for accounting, restocking store inventory, and identifying products that don't sell well.

Audio and Video Input Devices

Microphones

Microphones are audio input devices that take varying air pressure waves created by voice or other sound sources and convert them into varying electric signals. Many new microcomputers and notebooks come with built-in microphones; stand-alone microphones can be connected via USB or some other connection.

Figure 2.14: Microphone

Speech-Recognition

A speech-recognition system, using a microphone as an input device, converts a person's speech into digital signals by comparing the electrical patterns produced by the speaker's voice with a set of pre-recorded patterns stored in the computer. Most of today's speech-recognition packages have a database of about 200,000 words from which they try to match the words you say. These programs let you accomplish two tasks: turn spoken dictation into typed text and issue oral commands (such as "Print file" or "Change font") to control your computer.

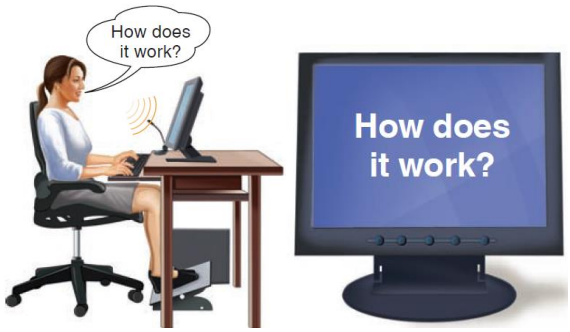


Figure 2.15: Speech recognition software

Digital Camera

A digital camera uses a light-sensitive processor chip to capture photographic images in digital form and store them on flash memory cards. The bits of digital information can then be copied right into a computer's hard disk for manipulation, emailing, posting on websites, and printing out. Many digital cameras can be connected to a computer by a USB or FireWire Connection, so your computer's operating system must support these connections to recognize the camera's driver. Most cameras store picture data on flash memory cards and memory sticks, from which later you can transmit photo data to your computer through a USB cable.

Figure 2.16: Digital Camera

Camera Phones

Digital-camera technology has, of course, migrated to cell phones. Modern colour screen mobile phones can be used to take pictures and downloaded to the computer.


Figure 2.17: Mobile phone Camera

Camcorder

A camcorder is a portable electronic device for recording video images and audio onto a storage device. The camcorder contains both camera and recorder in one unit, hence its portmanteau name (camera recorder). This compares to previous technology where they would be separate.


Figure 2.18: Camcorder

Webcam

A webcam, or web camera, is the loosely used term for any camera that generates images that can be accessed by and displayed on the World Wide Web through a server. A webcam is essentially just a camera that is connected to a computer, either directly or wirelessly, and gathers a series of images for remote display elsewhere. Webcam technology is widely used by


Figure 2.19: laptop webcam (left) standalone webcam (right)

all sorts of people for all sorts of different reasons. For example you can use your webcam to make a video call online via Skype.

Output Devices

An output device is any piece of computer hardware equipment used to communicate the results of data processing carried out by an information processing system (such as a computer) which converts the electronically generated information into human-readable form.

Output is data that has been processed into a useful form called information. That is, a computer processes input into output. Computers generate several types of output, depending on the hardware and software being used and the requirements of the user. Four common types of output are text, graphics, audio, and video (Figure 2.20).

Text consists of characters that are used to create words, sentences, and paragraphs. A character is a letter, number, punctuation mark, or any other symbol that requires one byte of computer storage space.

Graphics are digital representations of non-text information, such as images, drawings, charts, pictures, and photographs. Displaying a series of still graphics creates an animation; i.e. a graphic that has the illusion of motion.

Audio is any music, speech, or other sound that is stored and produced by the computer. Recall that sound waves, such as the human voice or music, are analog. To store such sounds, a computer converts them from a continuous analog signal into a digital format.

Video consists of photographic images that are played back at speeds that provide the appearance of full motion in real time. Software and Websites often include videos to enhance understanding.

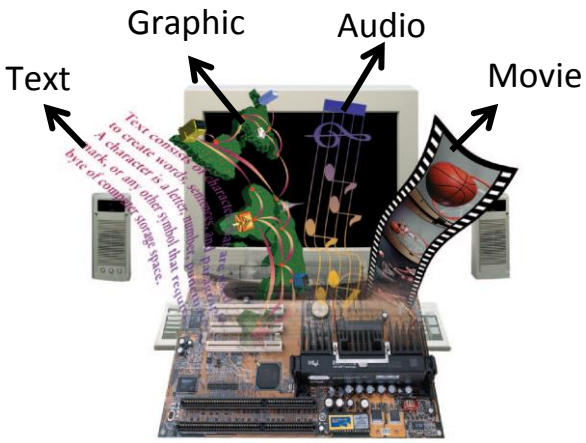


Figure 2.20: Common computer Output

Display Screens/ Monitors

Display screens - also variously called monitor or simply screen - are output devices that

show programming instructions and data as they are being input and information after it is processed. The monitor is the component that displays the visual output from your computer as generated by the video card. It is not responsible not for any real computing but rather for showing the results of computing.

CRT (Cathode-Ray Tube) Monitors

Figure 2.21: CTR Monitor

A CRT is a vacuum tube used as a display screen in a computer or video display terminal. The same kind of technology is found not only in older desktop computers but also in older television sets and flight-information monitors in airports.

The CRT screen, which is the front of the tube, is coated with tiny dots of phosphor material that glow when electrically charged (figure 2.23). The CRT moves an electron beam back and forth across the back of the screen, causing the dots to glow, which produces an image on the screen. CRT monitors are still found in many homes and schools, although most new computers now come with flat panel displays. Each dot, called a pixel (short for picture element), is a single point in an electronic image (Figure 2.22). Monitors consist of hundreds, thousands, or millions of pixels arranged in rows and columns that can be used to create pictures. The pixels are so close together that they appear connected.

Figure 2.23: CTR screen coated with tiny phosphor dots

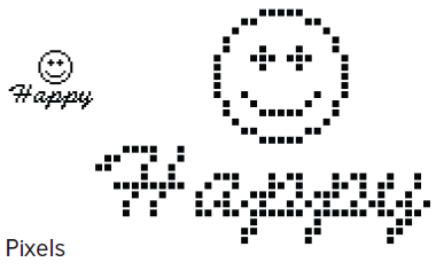


Figure 2.22: Pixels

Flat Panel Monitors

Compared to CRTs, flat-panel displays monitor (Figure 2.24) are much thinner, weigh less, and consume less power, which is why they are used in portable computers. Flat-panel displays are made up of two plates of glass separated by a layer of a substance in which light is manipulated. One flat-panel technology is liquid crystal

Figure 2.24: LCD Monitor

display (LCD), in which molecules of liquid crystal line up in a way that alters their optical properties, creating images on the screen by transmitting or blocking out light.

LCD Projector

Figure 2.25: LCD Projector

An LCD projector (Figure 2.25) is a type of video projector for displaying video, images or computer data on a screen or other flat surface. It is a modern equivalent of the slide projector or overhead projector.

Softcopy is data that is shown on a display screen or is in audio or voice form; it exists only electronically. This kind of output is not tangible; it cannot be touched. It's like music: You can see musical scores and touch CDs and tapes, but the music itself is intangible. Similarly, you can touch floppy disks on which programs are stored, but the software itself is intangible. Soft is also used to describe things that are easily changed or impermanent. In contrast, hard is used to describe things that are relatively permanent.

Hardcopy is printed output. The principal examples are printouts, whether text or graphics from printers. Film, including microfilm and microfiche, is also considered hardcopy output.

Traditional Hardcopy Output: Printers

A printer is an output device that prints characters, symbols, and perhaps graphics on paper or another hardcopy medium. As with scanners, the resolution, or quality of sharpness of the printed image is indicated by dots per inch (dpi), a measure of the number of rows and columns of dots that are printed in a square inch. For microcomputer printers, the resolution is in the range of 600 × 600 - 5,760 × 1,440, with 1,200 × 1,200 being most common.

Printers can be separated into two categories, according to whether or not the image produced is formed by physical contact of the print mechanism with the paper.

Impact printers do have contact with paper; nonimpact printers do not. We will also consider plotters and multifunction printers.

Impact Printers

This is an old printing technology and is most functional in specialized environments where low-cost printing is essential. An impact printer forms

characters or images by striking a mechanism such as a print hammer or wheel against an inked ribbon, leaving an image on paper. The most common form of impact printer is the dot-matrix printer (Figure 2.26). A dot-matrix printer contains a print head of small pins that strike an inked ribbon against paper, to form characters or images. Print heads are available with 9, 18, or 24 pins; the 24-pin head offers the best quality.

Figure 2.26: Dot matrix printer

Non-Impact Printers

Nonimpact printers are faster and quieter than impact printers because no print head strikes paper. Nonimpact printers form characters and images without direct physical contact between the printing mechanism and paper. Two types of nonimpact printers often used with microcomputers are laser printers and inkjet printers.

Figure 2.27: Laser printer

Laser Printers - Like a dot-matrix printer, a laser printer (Figure 2.27) creates images with dots. However, as in a photocopying machine, these images are produced on a drum, treated with a magnetically charged ink-like toner (powder), and then transferred from drum to paper.

The Laser Mechanism

The laser printer uses electrostatic charges to (1) create an image on the drum, (2) adhere toner to the image, (3) transfer the toned image to the paper, and (4) fuse the toner to the paper (Figure 2.28). The laser creates the image by "painting" a negative of the page to be printed on the charged drum. Where light falls, the charge is dissipated, leaving a positive image to be printed.

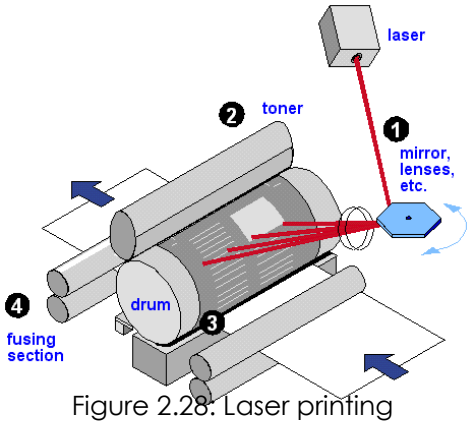


Figure 2.28: Laser printing Mechanism

Inkjet Printers

Inkjet printers (Figure 2.29) spray onto paper, electrically charged droplets of ink from four nozzles through holes in a matrix at high speed. Like laser and dot-matrix printers, inkjet printers form images with little dots. Inkjet printers commonly have a DPI of 4,800 ×1,200 (but can be as

high as 9,600 × 2,400); they spray ink onto the page a line at a time, in both high-quality black-and-white text and high-quality colour graphics. (To achieve impressive colour images, you should use high-quality, high-gloss paper, which prevents inkjet-sprayed dots from feathering, or spreading.) Inkjet cartridges come in various combinations: a single cartridge for black and all colour inks, two separate black and colour cartridges, or separate cartridges for black and each colour.

Figure 2.29: Inkjet printer

Some cartridges also include the print head, which is acceptable to wear out before the rest of the machine. The advantages of inkjet printers are that they can print in colour, are quiet, and are generally less expensive than colour laser printers. The disadvantages are that they print with a bit less quality than laser printers do and are usually slower. Another disadvantage is that inkjet cartridges need to be replaced more often than laser-toner cartridges do and so may cost more in the long run.

Multi-Function Printers combine several capabilities, such as printing, scanning, copying, and faxing (Figure 2.30).

Figure 2.30: Multifunction printer

Plotters

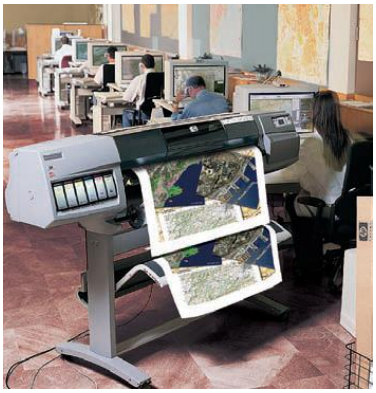


Figure 2.31: Plotter

A plotter (Figure 2.31) is a specialized output device designed to produce large, high-quality graphics in a variety of colours. Plotter lines are not made up of dots; they are actually drawn. The plotter was the first computer output device that could not only print graphics but also accommodate full-size engineering, three-dimensional, and architectural drawings, as well as maps. Using different coloured pens, it was also able to print in colour long before inkjet printers became an alternative.

Photo Printers

Figure 2.32: Photo printer

Photo printers (are specialized machines for printing continuous-tone photo prints (typically 3 × 5 or 4 × 6 inches), using special dye-receptive paper and ribbons with special transparent colour dyes (Figure 2.32). Paper and ribbon pass together over the print head, which contains thousands of heating elements producing varying amounts of heat. The hotter the element, the more dye is released, and as the temperature is varied, shades of each colour can be overlaid on top of one another. The dyes are transparent and blend (sublimate) into continuous-tone colour

Specialty Printers

Specialty printers exist for such purposes as printing certain types of labels, tickets, and text in Braille (Figure 2.33).

Figure 2.33: Braille embosser

Sound Output

Figure 2.34: Computer speakers

Sound-output devices produce digitized sounds, ranging from beeps and chirps to music. To use sound output, you need appropriate software and a sound card.

System Unit

Figure 2.35: System unit components

The system unit houses the motherboard (including the processor chip and memory chips), the power supply, storage devices and other devices. The part of the system unit that is the empty box with just the power supply is called the case or system cabinet (Figure 2.35).

Motherboard

The motherboard also called the system board is the main circuit board in the computer (Figure 2.36). This is the big green circuit board to which everything else - such as the keyboard, mouse, and printer attaches through connections (called ports) in the back of the computer. The processor chip and memory chips are also installed on the motherboard. The motherboard has expansion slots - for expanding the PC's capabilities - which give you places to plug in additional circuit boards, such as those for video, sound, and communications (modem)

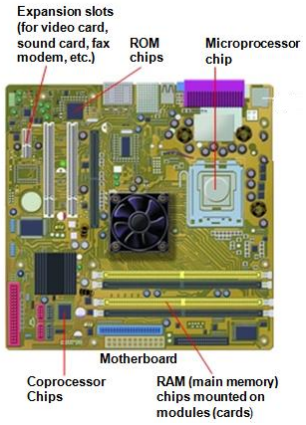


Figure 2.36: Motherboard

Power Supply Unit

The electricity available from a standard wall outlet is alternating current (AC), but a microcomputer runs on direct current (DC). The power supply unit is a device that converts AC to DC to run the computer (Figure 2.37). The on/off switch in your computer turns on or shuts off the electricity to the power supply. Because electricity can generate a lot of heat, a fan inside the computer keeps the power supply and other components from becoming too hot.

Figure 2.37: Power supply unit

Electrical power drawn from a standard AC outlet can be quite uneven. For example, a sudden surge, or "spike," in AC voltage can burn out the low-voltage DC circuitry in your computer ("burn the motherboard"). Instead of plugging your computer directly into a wall electrical outlet, it's a good idea to plug it into a power protection device. The three principal types are surge protectors, voltage regulators, and UPS units:

Uninterruptible Power Supply (UPS):- UPS is a battery-operated device that provides a computer with electricity if there is a power failure. The UPS will keep a computer going for 5-30 minutes or more (Figure 2.38). It goes into operation as soon as the power to your computer fails.

Figure 2.38: UPS

Central Processing Unit (CPU)

A processor is also called the CPU, and it works hand in hand with other circuits known as main memory to carry out processing (Figure 2.39). The CPU (central processing unit) is the "brain" of the computer; it follows the instructions of the software (program) to manipulate data into information. The CPU consists of two parts - (1) the control unit and (2) the arithmetic/logic unit (ALU), both of which contain registers.

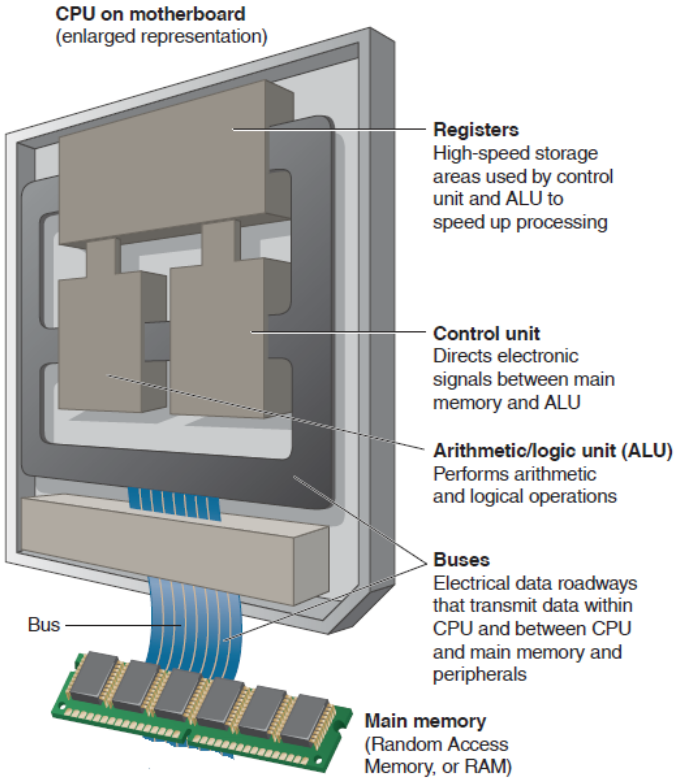


Figure 2.39: Components of the CPU

The Control Unit

The control unit is for directing electronic signals: The control unit deciphers each instruction stored in the CPU and then carries out the instruction. It directs the movement of electronic signals between main memory and the arithmetic/logic unit. It also directs these electronic signals between main memory and the input and output devices. For every instruction, the control unit carries out four basic operations, known as the machine cycle. In the machine cycle, the CPU (1) fetches an instruction, (2) decodes the instruction, (3) executes the instruction, and (4) stores the result (Figure 2.40).

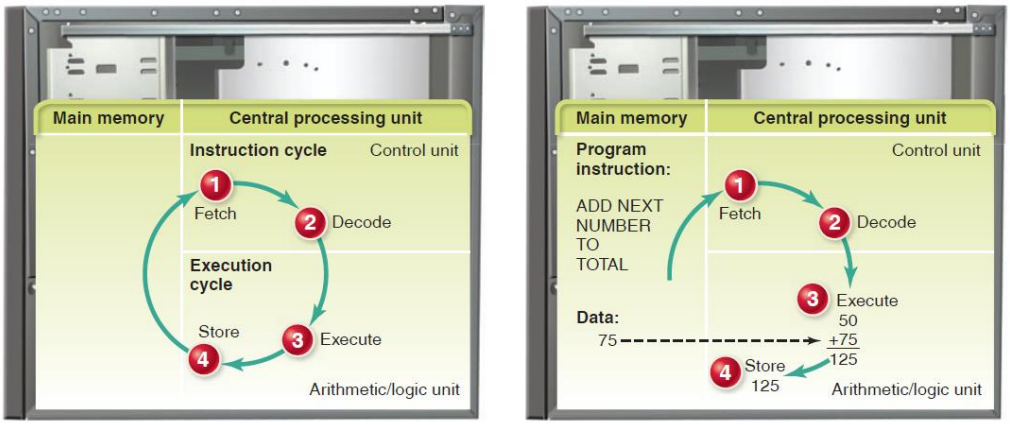


Figure 2.40: The four basic operation of the Control unit

The Arithmetic/Logic Unit

The arithmetic/logic unit (ALU) performs arithmetic operations and logical operations and controls the speed of those operations. As you might guess, arithmetic operations are the fundamental math operations: addition, subtraction, multiplication, and division.

Logical operations are comparisons. That is, the ALU compares two sets of data to see whether one is equal to (=), greater than (>), greater than or equal to (>=), less than (<), less than or equal to (<=) or not equal to (≠) the other.

Registers

The control unit and the ALU also use registers, special CPU areas that enhance the computer's performance. Registers are high-speed storage areas that temporarily store data during processing. They may store a program instruction while it is being decoded, store data while it is being processed by the ALU, or store the results of a calculation.

All data must be represented in a register before it can be processed. For example, if two numbers are to be multiplied, both numbers must be in registers, and the result is also placed in a register. (The register can contain the address of a memory location where data is stored rather than the actual data itself.)

The number of registers that a CPU has and the size of each (number of bits) help determine the power and speed of a CPU. For example, a 32-bit CPU is one in which each register is 32 bits wide. Therefore, each CPU instruction can manipulate 32 bits of data. (There are several types of registers, including instruction register, address register, storage register, and accumulator.)

Buses - Data Roadways

Buses, or bus lines, are electrical data roadways through which bits are transmitted within the CPU and between the CPU and other components of the motherboard. A bus resembles a multi-lane highway: The more lanes it has, the faster the bits can be transferred. The old-fashioned 8-bit-word bus of early microprocessors had only eight pathways. Data is transmitted four times faster in a computer with a 32-bit bus, which has 32 pathways, than in a computer with an 8-bit bus. Intel's Pentium chip is a 64-bit processor, as are Intel's dual-core and quad-core processors. Supercomputers usually have 128-bit processors or more.

Processing Speeds

Often a PC advert will say something like "Intel Core i3 processor 3.40 GHz," "Intel Dual Core processor 2.0 GHz," or "AMD Athlon 64 X2 processor 2.30 GHz." GHz stands for "gigahertz." These figures indicate how fast the microprocessor can process data and execute program instructions. Every microprocessor contains a system clock, which controls how fast all the operations within a computer take place. The system clock uses fixed vibrations from a quartz crystal to deliver a steady stream of digital pulses or "ticks" to the CPU. These ticks are called cycles. Faster clock speeds will result in faster processing of data and execution of program instructions, as long as the computer's internal circuits can handle the increased speed. The processing speed of a microcomputer is measured in megahertz& gigahertz. Megahertz (MHz) is a measure of frequency equivalent to 1 million cycles (ticks of the system clock) per second and gigahertz (GHz)—a billion cycles per second. Intel's Core i3 operates at a minimum of 3.40 gigahertz, or 3.40 billion cycles per second upwards.

The Memory: RAM and ROM

Memory chips (Figure 2.41), represent primary storage that hold data before processing and information after processing, before it is sent along to an output or secondary storage device.

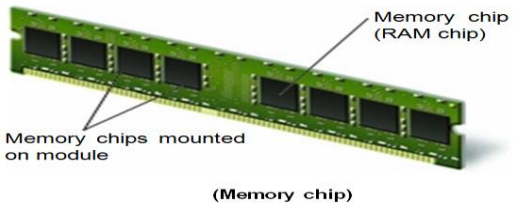


Figure 2.41: The four basic operation of the Control unit

RAM (Random Access Memory) chips temporarily hold (1) software instructions and (2) data before and after it is processed by the CPU. Think of RAM as the primary workspace inside your computer. When you open a file, a copy of the file transfers from the hard disk to RAM, and this copy in RAM is the one that changes as you work with the file. When you activate the Save command, the changed copy is transferred from RAM back to permanent storage on the hard drive.

Because its contents are temporary, RAM is said to be volatile - the contents are lost when the power goes off or is turned off. This is why you should frequently every 5-10 minutes, transfer (save) your work to a secondary storage medium such as your hard disk, in case the electricity goes off while you're working.

Types of RAM: Several types of RAM chips are used in personal computers—DRAM, SDRAM, SRAM, and DDR-SDRAM:

DRAM: The first type (pronounced "dee-ram"), DRAM (dynamic RAM), must be constantly refreshed by the CPU or it will lose its contents.

SDRAM: The second type of RAM is SDRAM (synchronous dynamic RAM), which is synchronized by the system clock and is much faster than DRAM. Often in computer adverts the speed of SDRAM is expressed in megahertz.

SRAM: The third type, static RAM, or SRAM (pronounced "ess-ram"), is faster than DRAM and retains its contents without having to be refreshed by the CPU.

DDR-SDRAM: The fourth type, DDR-SDRAM (double-data rate synchronous dynamic RAM), is the current standard of RAM chips in PCs used at home; the speed is measured in megahertz. Faster versions have been introduced; i.e. DDR2 SDRAM, DDR3 SDRAM and DDR5 SDRAM, which are found on gaming machines and multimedia machines, where speed is needed.

ROM (Read-Only Memory) cannot be written on or erased by the computer user without special equipment. ROM chips contain fixed start-up instructions. That is, ROM chips are loaded, at the factory, with programs containing special instructions for basic computer operations, such as those that start the computer or put characters on the screen. These chips are non-volatile; their contents are not lost when power to the computer is turned off. In computer terminology, read means to transfer data from an input source into the computer's memory or CPU. The opposite is write - to transfer data from the computer's CPU or memory to an output device. Thus, with a ROM chip, read-only means that the CPU can retrieve programs from the ROM chip but cannot modify or add to those programs. A variation is PROM (programmable read-only memory), which is a ROM chip that allows you, the user, to load read-only programs and data. However, this can be done only once.

Ports & Cables

A port is a connecting socket or jack on the outside of the system unit into which different kinds of cables are plugged. A port allows you to plug in a cable to connect a peripheral device, such as a monitor, printer, or modem, so that it can communicate with the computer system.

Dedicated Ports - For Keyboard, Mouse, Monitor, Audio, & Modem

Dedicated ports are ports for special purposes, such as the round ports (PS/2) for connecting the keyboard and the mouse (if they're not USB), the monitor port, the audio ports (green for speakers or headphones, pink for microphone, yellow for home stereo connection), the modem port to connect your computer to a phone line, and a network port (RJ-45) for a high-speed Internet connection. There is also one connector that is not a port at all—the power plug socket, into which you insert the power cord that brings electricity from a wall plug (figure 2.42)

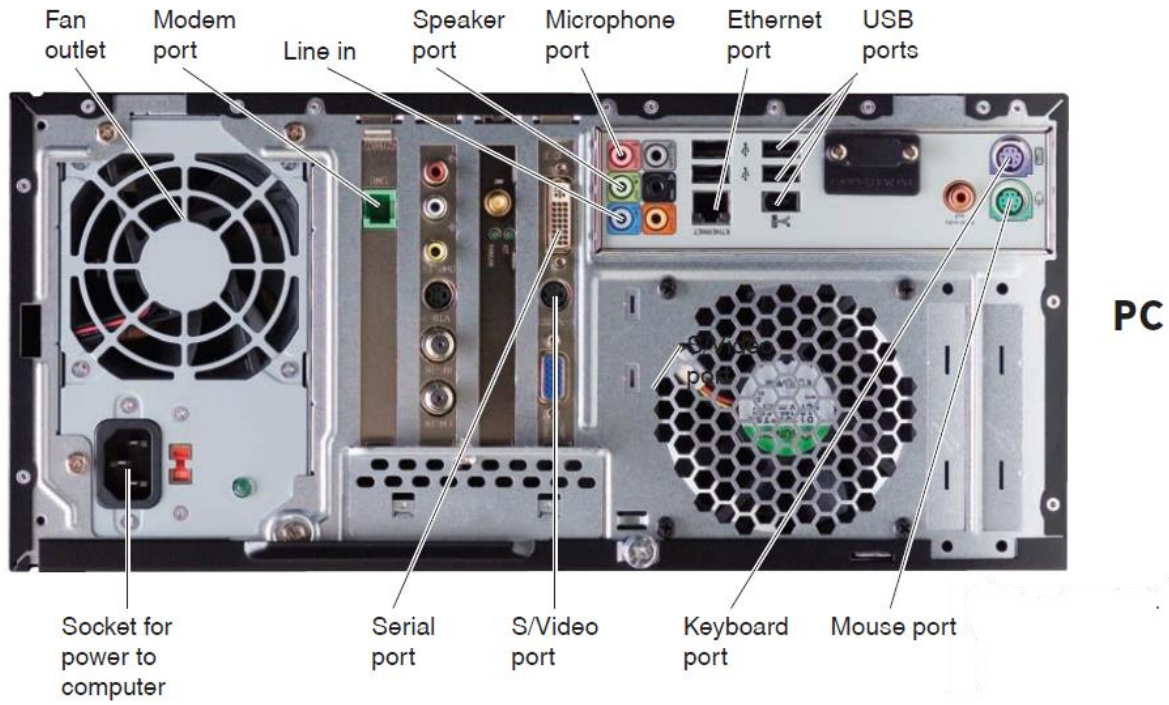


Figure 2.42: The various ports on the PC

Serial and Parallel Ports

Most ports other than the dedicated ones just described are generally multipurpose. We consider serial and parallel ports:

Serial ports - for transmitting slow data over long distances: A line connected to a serial port will send bits one at a time, one after another, like cars on a one-lane highway. Because individual bits must follow each other, a serial port is usually used to connect devices that do not require fast transmission of data, such as keyboard, mouse, monitors, and dial-up modems. It is also useful for sending data over a long distance.

Parallel ports - for transmitting fast data over short distances: A line connected to a parallel port allows 8 bits (1 byte) to be transmitted simultaneously, like cars on an eight-lane highway. Parallel lines move information faster than serial lines do, but they can transmit information efficiently only up to 15 feet. Thus, parallel ports are used principally for connecting printers or external disk or magnetic-tape backup storage devices.

Universal Serial Bus (USB) Ports

One USB (universal serial bus) port (Figure 2.43) can theoretically connect up to 127 peripheral devices in a daisy chain. USB ports are multi-purpose, useful for all kinds of peripherals, and are included on all new computers. Development of USB standards started with version 1.1 with transmission speed of up to 12Mbps then to 2.0 with transmission speed of up to 35 Mbps and now 3.0 with transmission speed of up to 400Mbps.

Figure 2.43: USB ports

The Goals of USB:

The designers of the USB standard had several goals in mind. They wanted it to:

Figure 2.44: USB cable

1. Lower the cost of producing cheap peripherals such as game controllers and mice.
2. Be able to connect lots of devices and have sufficient speed so that it can replace all the different ports on computers with a single standard.
3. Be "hot swappable" or "hot pluggable," meaning that it could allow USB devices to be connected or disconnected even while the PC is running.
4. Permit plug and play—to allow peripheral devices and expansion cards to be automatically configured while they are being installed—to avoid the hassle of installing drivers and creating special files for new hardware.

Specialized Ports - Fire wire, Bluetooth, & Infrared

FireWire ports—for camcorders, DVD players, and TVs: FireWire was created by Apple Computers and later standardized. It actually preceded USB and had similar goals. The difference is that FireWire is intended for devices working with lots of data - not just mice and keyboards but digital video recorders, DVD players, gaming consoles, and digital audio equipment (Figure 2.45). Like USB, FireWire is a serial bus. However, whereas initial USB was limited to 12 megabits per second, FireWire currently handles up to 400 megabits per second. USB can handle 127 devices per bus, while FireWire handles 63. Both USB and FireWire allow you to plug and unplug devices at any time.

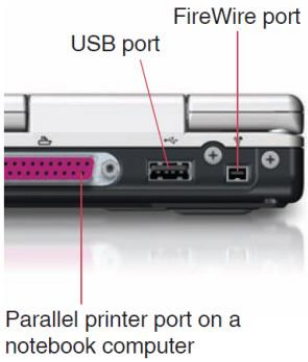


Figure 2.45: Specialized ports

Bluetooth Port - Bluetooth technology consists of short-range radio waves that transmit up to 30 feet (10 metres). It is used to connect cell phones to computers as well as connect computers to printers, keyboards, headsets, and other appliances.

Figure 2.46: Bluetooth logo

Infrared Port - When you use a handheld remote unit to change channels on a TV set, you're using invisible radio waves of the type known as infrared waves. An infrared port allows a computer to make a cable-less connection with infrared capable devices, such as some printers (Figure 2.47). This type of connection requires an unobstructed line of sight between transmitting and receiving ports, and they can be only a few feet apart.

Figure 2.47: Infrared port

Expansion Slots

Today many new microcomputer systems functionality can be expanded. Expansion is a way of increasing a computer's capabilities by adding hardware to perform tasks that are not part of the basic system.

Expansion slots are sockets on the motherboard into which you can plug expansion cards (Figure 2.48). Expansion cards - also known as expansion boards, adapter cards, interface cards, plug-in boards, controller cards, add-ins,

or add-ons - are circuit boards that provide more memory or that control peripheral devices.

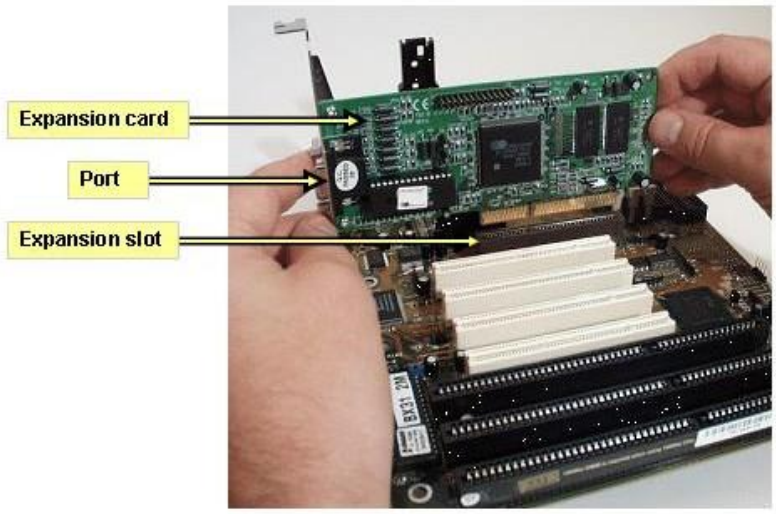


Figure 2.48: Expansion slots

Storage Devices

A computer storage device is any type of hardware that stores data. Storage device are categorised into two namely: Primary storage and Secondary storage devices.

Primary storage (or main memory or internal memory (RAM)), often referred to simply as memory, is the only one directly accessible to the CPU. The CPU continuously reads instructions stored there and executes them as required.

Secondary storage (also known as external memory or auxiliary storage), differs from primary storage in that it is not directly accessible by the CPU. The computer usually uses its input/output channels to access secondary storage and transfers the desired data using intermediate area in primary storage. Secondary storage does not lose the data when the device is powered down - it is non-volatile.

The most common type of secondary storage device, which nearly all computers have, is a hard drive. The computer's primary hard drive stores the operating system, applications, files and folders for users of the computer.

Let us consider more traditional forms of secondary storage hardware, devices that permanently hold data and information as well as programs. We look at these types of secondary storage devices:

- Floppy disks
- Hard disks
- Optical discs
- Magnetic tape
- Flash memory
- Flash disk

Floppy Disks

Although floppy disks are almost obsolete, some microcomputer systems still offer the inclusion of an internal floppy disk drive, and external floppy disk drives are still available. Floppies are still used for emergency boots in aging systems that may lack support for CD-ROMs and USB devices. A floppy disk, often called a diskette or simply a disk, is a removable flat piece of Mylar plastic packaged in a 3.5 inch plastic case. Data and programs are stored on the disk's coating by means of magnetized spots, following standard on/off patterns of data representation. The plastic case protects the Mylar disk from being touched by human hands. Floppy disks each store about 1.44 megabytes, the equivalent of 400 typewritten pages.

Figure 2.49: Floppy disks

Hard Disks

Floppy disks use flexible plastic, but hard disks are rigid. Hard disks are thin but rigid metal, glass, or ceramic platters covered with a substance that allows data to be held in the form of magnetized spots. Most hard-disk drives have at least two platters; the greater the number of platters, the larger the capacity of the drive. The platters in the drive are separated by spaces and are clamped to a rotating spindle that turns all the platters in unison. Hard disks are tightly sealed within an enclosed hard-disk-drive unit to prevent any foreign matter from getting inside. Data may be recorded on both sides of the disk platters.

Figure 2.50: Parts of the Hard disk

Hard Disk Head Crash

A head crash happens when the surface of the read/write head or particles on its surface come into contact with the surface of the hard-disk platter, causing the loss of some or all of the data on the disk. A head crash can also happen when you bump a computer too hard or drop something heavy on the system unit. An incident of this sort could, of course, be a disaster if the data has not been backed up. There are firms that specialize in trying to retrieve data from crashed hard disks (for a hefty price), though this cannot always be done.

Optical Discs: CDs & DVDs

Everyone who has ever played an audio CD is familiar with optical discs. An optical disc is a removable disk, usually 4.75 inches in diameter and less than one-twentieth of an inch thick, on which data is written and read through the use of laser beams. An audio CD holds up to 74 minutes (2 billion bits' worth) of high-quality stereo sound. Some optical discs are used strictly for digital data storage, but many are used to distribute multimedia programs that combine text, visuals, and sound.

How Optical-Disc Storage Works

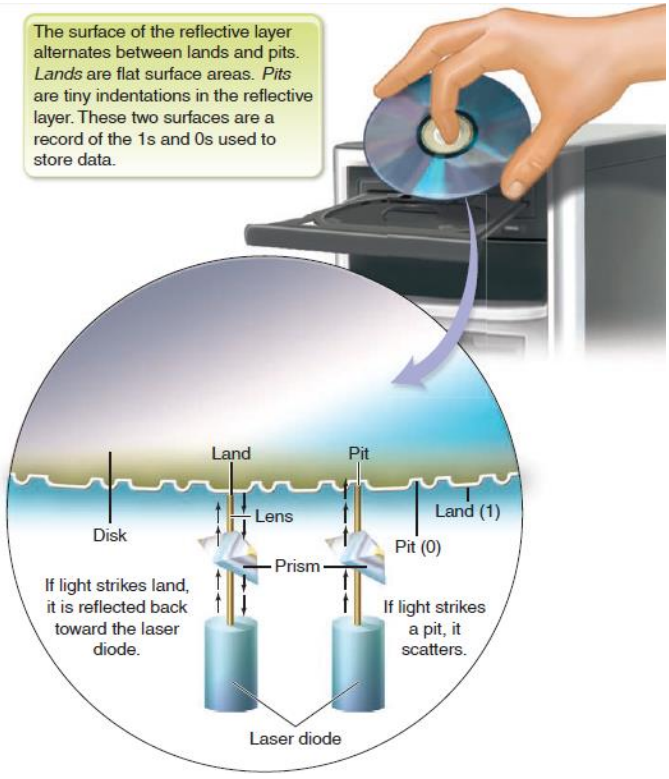


Figure 2.51: Optical disc Mechanism

With an optical disc, there is no mechanical arm, as with floppy disks and hard disks. Instead, a high-power laser beam is used to write data by burning tiny pits or indentations into the surface of a hard plastic disk. To read the data, a low-power laser light scans the disk surface: Pitted areas are not reflected and are interpreted as 0 bits; smooth areas are reflected and are interpreted as 1 bit. Because the pits are so tiny, a great deal more data can be represented than is possible in the same amount of space on a diskette and many hard disks. An optical disc can hold about 6 gigabytes of data, the equivalent of about 1.3 million typewritten pages.

Nearly every PC marketed today

contains a CD/DVD drive, which can also read audio CDs. These, along with their recordable and rewritable variations, are the two principal types of optical-disk technology used with computers

CD-ROM - For Reading Only

The first kind of optical disc for microcomputers was the CD-ROM. CD-ROM (compact disk read-only memory) is an optical-disk format that is used to hold pre-recorded text, graphics, and sound. Like music CDs, a CD-ROM is a read-only disk. Read-only means the disk's content is recorded at the time of manufacture and cannot be written on or erased by the user. As the user, you have access only to the data imprinted by the disk's manufacturer. A CD-ROM disk can hold up to 650 megabytes of data, equal to over 300,000 pages of text.

A CD-ROM drive's speed is important because, with slower drives, images and sounds may appear choppy. In computer adverts, drive speeds are indicated by the symbol "x," as in "56x," which is a high speed. x denotes the original data-transfer rate of 150 kilobytes per second. The data-transfer rate is the time the drive takes to transmit data to another device. A 56x drive runs at 56 times 150, or 8,400 kilobytes (8.4 megabytes) per second.

CD-R - For Recording Only Once

CD-R (compact disc-recordable) disks can be written to only once but can be read many times. This allows users to make their own CD's. Once recorded, the information cannot be erased. CD-R is often used by companies for archiving - that is, to store vast amounts of information. If you're still using a film camera, for example, once you've shot a roll of colour film, you can take it for processing to a photo shop, which can produce a disk containing your images. You can view the disc on any personal computer with a CD-ROM drive and the right software.

CD-RW—For Rewriting Many Times

A CD-RW (compact disc-rewritable) disc, also known as an erasable optical disc, allows users to record and erase data, so the disc can be used over and over again. CD-RW drives are becoming more common on microcomputers. CD-RW discs are useful for archiving and backing up large amounts of data or work in multimedia production or desktop publishing. CD-RW discs cannot be read by CD-ROM drives. CD-RW discs commonly have a capacity of 650-700 megabytes.

DVD-ROM—The Versatile Video Disc

A DVD-ROM (digital versatile disc or digital video disc, with read-only memory) is a CD-style disc with extremely high capacity, able to store 9.4 or more gigabytes. Like a CD or CD-ROM, the surface of a DVD contains microscopic pits, which represent the 0s and 1s of digital code that can be read by a laser. The pits on the DVD, however, are much smaller and grouped more closely together than those on a CD, allowing for more information to be represented. Also, the laser beam used focuses on pits roughly half the size of those on current audio CDs. In addition, the DVD format allows for two layers of data-defining pits, not just one. Finally, engineers have succeeded in squeezing more data into fewer pits, principally through data compression. Most new computer systems now come with a DVD drive as standard equipment. A great advantage is that these drives can also take standard

CD-ROM discs, so now you can watch DVD movies and play CD-ROMs using just one drive. DVDs are replacing CDs for archival storage, mass distribution of software, and entertainment.

DVD-R—Recordable DVDs: DVD-R (DVD-recordable) discs allow one time recording by the user. That is, they cannot be reused—written on more than once.

DVD-RW, DVD-RAM, - Reusable DVDs: Two types of reusable discs are DVD-RW (DVD-rewritable) and DVD-RAM (DVD-random access memory), all of which can be recorded on and erased (except for video) many times. DVD-R discs have a capacity of 4.7 (single-sided) to 9.4 (double-sided) gigabytes.

BLU-RAY: The Next-Generation Optical Disc

Blu-ray, also known as Blu-ray Disc (BD), is the name of a next-generation optical-disc format jointly developed by the Blu-ray Disc Association (BDA), a group of consumer electronics and PC companies (including Dell, Hitachi, HP, JVC, LG, Mitsubishi, Panasonic, Pioneer, Philips, Samsung, Sharp, Sony, TDK, and Thomson). The Blu-ray optical format was developed to enable recording, rewriting, and playback of high-definition (HD) video, as well as storing of large amounts

Figure 2.52: Blu-ray Disc (left) and Drive (right)

of data. A single-layer Blu-ray Disc can hold 25 gigabytes, which can be used to record over 2 hours of HDTV (or more than 13 hours of standard-definition TV). There are also dual-layer versions of the discs that can hold 50 gigabytes.

While current optical-disc technologies such as DVD, DVD-R, DVD-RW, and DVD-RAM use a red laser to read and write data, the new format uses a blue-violet laser instead, hence the name Blu-ray.

Magnetic Tape

Figure 2.53: Magnetic Tape

Similar to the tape used on an audio tape recorder (but of higher density), magnetic tape is thin plastic tape coated with a substance that can be magnetized. Data is represented by magnetized spots (representing 1s) or non-magnetized spots (representing 0s). Today, "mag tape" is used mainly for backup and archiving—that is, for maintaining historical records—where there is no need for quick access.

Flash Memory Cards

Flash memory cards, or flash RAM cards, are removable storage media that are inserted into a flash memory port in a digital camera, handheld PC, smartphone, or other mobile device.

Figure 2.54: Memory Card

Flash Memory Disk

A flash memory disk, also called a Pen drive, USB flash disk, keychain drive, or key drive, consists of a finger-size module of flash memory that plugs into the USB ports of nearly any PC or Macintosh. It has storage capacities up to 64 gigabytes, making the device extremely useful if you're travelling from home to office, say, and don't want to carry a laptop. When you plug the device into your USB port, it shows up as an external disk on the computer screen.


Figure 2.55: Flash Memory Disk

Communications Devices

Computers communicate by transmitting data and information using a communications channel such as standard telephone lines. Communication

channel is the medium through which data and information is transferred. This includes **network cables** and **fibre optic** cables.

Modem

Modem is short for "**mod**ulate/ **dem**odulate." A sending modem modulates digital signals into analog signals for transmission over phone lines. A receiving modem demodulates the analog signals back into digital signals. The modem provides a means for computers to communicate with one another using the standard copper-wire telephone network, an analog system that was built to transmit the human voice but not computer signals (Figure 2.57).

Figure 2.56: Modem

Digital describes any system based on discontinuous data or events; in the case of computers, it refers to communications signals or information represented in a two-state (binary) way using electronic or electromagnetic signals. Each 0 and 1 signal represents a bit.

Analog describes continuously varying in strength and/or quality—fluctuating, evolving, or continually changing. Sound, light, temperature, and pressure

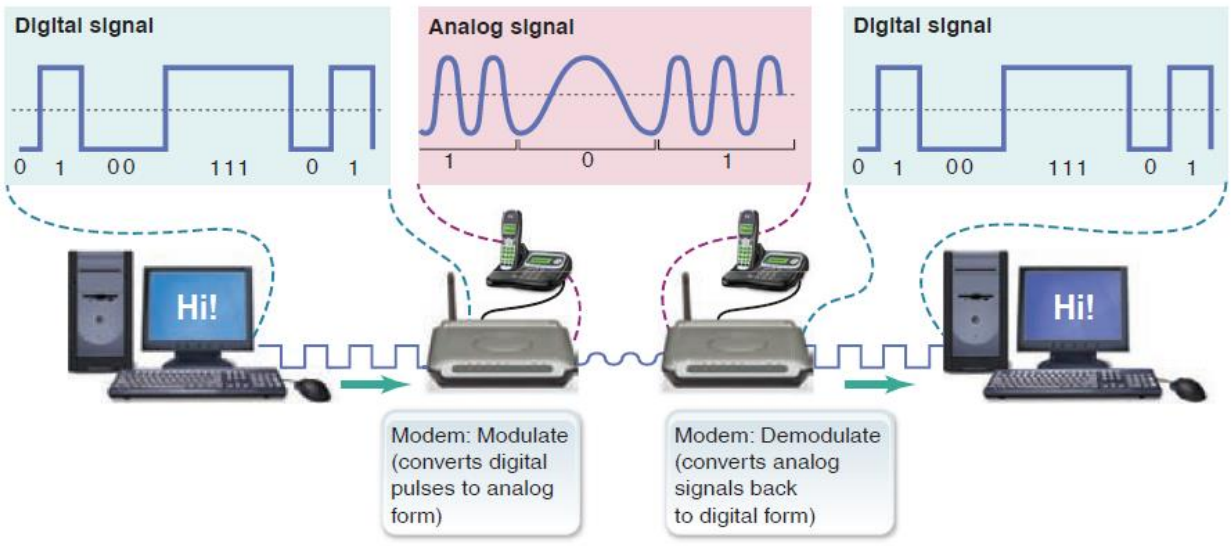


Figure 2.57: How the modem works

values, for instance, can be anywhere on a continuum or range.

Networks

A network, or communications network, is a system of interconnected computers, telephones, or other communications devices that can communicate with one another and share applications and data. The computers can be linked to each other and to other devices such as printers. This can be done either by wires or fibres-forming a wired network- or wirelessly, using radio signals.

The Benefits of Networks

People and organizations use networks for the following reasons, the most important of which is the sharing of resources.

Sharing of Peripheral Devices

Peripheral devices such as laser printers, disk drives, and scanners can be expensive. Consequently, to justify their purchase, management wants to maximize their use. Usually the best way to do this is to connect the peripheral to a network serving several computer users.

Sharing of Programs and Data

In most organizations, people use the same software and need access to the same information. It is less expensive for a company to buy one word processing program that serves many employees than to buy a separate word processing programs for each employee. Moreover, if all employees have access to the same data on a shared storage device, the organization can save money and avoid data redundancy problems. If each employee has a separate machine, some employees may update customer addresses while others remain ignorant of the changes. Updating information on a shared server is much easier than updating every user's individual system. Finally, network-linked employees can easily work together online on shared projects.

Better Communications

One of the greatest features of networks is electronic mail. With email, everyone on a network can easily keep others posted about important information.

Security of Information

Before networks became common place, an individual employee might have been the only one with a particular piece of information, which was stored in his or her desktop computer. If the employee was dismissed—or if a fire or flood demolished the office—the company would lose that information. Today such

data would be backed up or duplicated on a networked storage device shared by others.

Access TO Databases

Networks enable users to tap into numerous databases, whether private company databases or public databases available online through the Internet.

Types of Networks: LANs, WANs, MANs

Local Area Network

A local area network (LAN), or local net, connects computers and devices in a limited geographic area, such as one office, one building, or a group of buildings close together. LANs are the basis for most office networks. The LANs of different offices on a university campus may also be linked together into a so-called campus-area network.

Wide Area Network

A wide area network (WAN) is a communications network that covers a wide geographic area, such as a country or the world. Most long-distance and regional telephone companies are WANs. A WAN may use a combination of satellites, fibre-optic cable, microwave, and copper-wire connections and link a variety of computers, from mainframes to terminals.

Metropolitan Area Network

A metropolitan area network (MAN) is a communications network covering a city or a suburb. The purpose of a MAN is often to bypass local telephone companies when accessing long distance services. Many cell phone systems are MANs.

Structure of Networks: Client/Server & Peer to Peer

Client/Server Networks

A client/server network consists of clients, which are microcomputers that request data, and servers, which are computers used to supply data. The server is a powerful microcomputer that manages shared devices, such as laser printers. It runs server software for applications such as email and web browsing. Different servers may be used to manage different tasks. A file server is a computer that acts like a disk drive, storing the programs and data files shared by users on a LAN (Figure 2.58). A database server is a computer in a LAN that stores data but doesn't store programs. A print server controls one or more printers and stores the print-image output from all the microcomputers on the

system. Web servers contain web pages that can be viewed using a browser. Mail servers manage email.

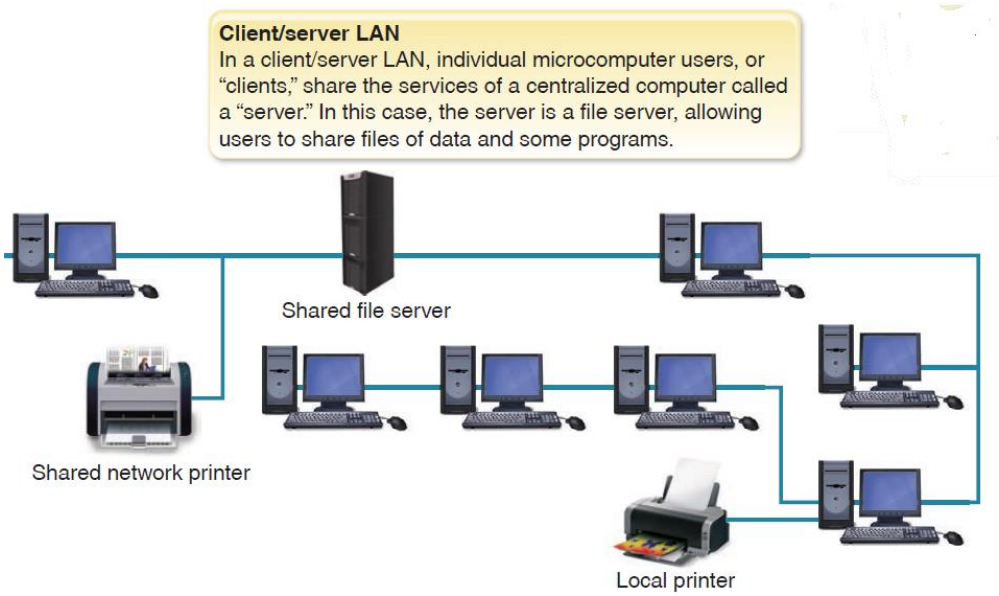


Figure 2.58: Client/server network

Peer-to-Peer Networks

The word peer denotes one who is equal in standing with another (as in the phrases "peer pressure").In a peer-to-peer (P2P) network, all microcomputers on the network communicate directly with one another without relying on a server. Every computer can share files and peripherals with all other computers on the network, given that all are granted access privileges. Peer-to-peer networks are less expensive than client/server networks and work effectively for up to 25 computers. Beyond that, they slow down under heavy use. They are appropriate for small networks, such as home networks.

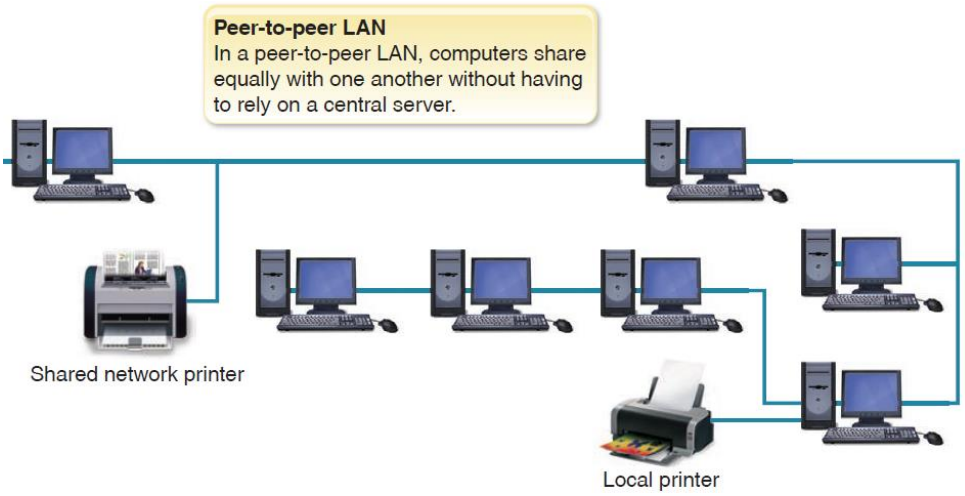


Figure 2.59: Peer-to-Peer network

Network Interface Cards (NIC)

A network interface card (NIC) allows the transmission of data over a cable network, which connects various computers and other devices such as printers.

Figure 2.60: Network Interface Card

Short-Range Wireless for Local Area Networks: Wi-Fi

Wi-Fi —short for "**wi**reless **fi**delity"— is a short-range wireless digital standard aimed at helping portable computers and handheld wireless devices to communicate at high speeds and share Internet connections at distances of 100–228 feet. You can find Wi-Fi connections, which operate at 2.4–5 gigahertz, inside offices, airports, and internet cafés and some enthusiasts have set up transmitters on rooftops, distributing wireless connections throughout their neighbourhoods.

Figure 2.61: Wireless LAN

Chapter 2 -Self-Test Questions

Multiple Choice

Identify the letter of the choice that best completes the statement or answers the question.

1. A _____ is equal to exactly 1,024 bytes, but often is rounded down to 1,000 bytes by computer users.
    a. dekabyte (abbreviated DB or D)
    c. kilobyte (abbreviated KB or K)
    b. gigabyte (abbreviated GB)
    d. megabyte (abbreviated MB)
2. A _____ is equal to approximately one million bytes.
    a. dekabyte (abbreviated DB or D)
    c. kilobyte (abbreviated KB or K)
    b. centibyte (abbreviated CB)
    d. megabyte (abbreviated MB)

3. _____ is an example of volatile memory.
    a. RAM
    c. ROM
    b. CMOS
    d. all of the above
4. A _____ port is used to connect multiple devices such as digital video cameras, colour printers, and DVD drives to a single connector.
    a. DVD
    b. USB
    c. VCR
    d. CPU
5. Input is any item entered into memory and includes _____.
    a. data
    c. commands
    b. programs
    d. all of the above
6. A _____ is the most widely used pointing device because it takes full advantage of a graphical user interface.
    a. mouse

c. graphics tablet
b. keyboard
d. joystick

7. To press and release a mouse button twice without moving the mouse is called _____.
a. clicking
b. double-clicking
c. right-click
d. right-dragging

8. A _____ is a small, flat, rectangular pointing device that is sensitive to pressure and motion.
a. mouse
b. touchpad
c. trackball
d. pointing stick

9. Like a television set, the core of a monitor is a large glass tube called a(n) _____.
a. cathode ray tube (CRT)
b. monochrome monitor (MM)
c. LCD display
d. all of the above

10. _____ are often used in kiosks located in stores, hotels, airports, and museums.
a. Touchpads
c. Graphics tablets
b. Touch screens
d. Optical scanners

11. A _____ is similar to a copy machine except that it creates a file of the document instead of a paper copy.
a. scanner
c. graphics tablet
b. touchpad
d. bitmap

12. A(n) _____ device commonly is used to scan test, survey, or questionnaire answer sheets, matching their patterns of light against a master document.
a. Optical Character Recognition (OCR)
b. Optical Mark Recognition (OMR)

c. Magnetic Ink Character Recognition (MICR)
d. Image Processing System Recognition (IPSR)

13. Bar codes are used on _____.
a. items purchased in retail stores
c. tests
b. questionnaires
d. all of the above

14. _____ is the capability of a computer to distinguish spoken words.
a. Speech recognition
c. Optical mark recognition
b. A keyguard
d. A hand-mounted pointer

15. _____ is ideal for students with limited hand mobility.
a. Optical character recognition
c. Optical mark recognition
b. A keyguard
d. A joystick

16. Output is data that has been processed into a useful form called _____.
a. information
c. maximum output
b. regular output
d. useful output

17. A common type of output is _____.
a. text
c. video
b. audio
d. all of the above

18. All of the following are commonly used output devices except _____.
a. display devices and printers
b. data projectors and speakers
c. pointing devices and keyboards
d. facsimile machines and headsets

19. Information displayed on a monitor is called _____ because the information exists electronically and is displayed for a temporary period of time.
a. monochrome
b. soft copy
c. monochrome display
d. gas plasma

20. The size of a monitor is measured _____.

a. vertically, from top to bottom
b. diagonally, from corner to corner
c. horizontally, from side to side
d. regionally, multiplying length by width

True/False

Indicate whether the sentence or statement is true or false. *True/False*

21 The control unit coordinates most of the operations in a computer. True/False

22. Executing is the process of translating the instructions into commands the computer understands. True/False

23. The arithmetic/logic unit performs the execution part of the machine cycle. True/False

24. A higher system clock speed means the CPU can process fewer instructions per second than the same CPU with a lower clock speed. True/False

25. A computer uses memory to store data and information. True/False

26. Memory stores one basic item, the operating system and other system software that control the computer equipment. True/False

27. To access data or instructions in memory, the computer references the addresses that contain the bytes of data. True/False

28. A megabyte, abbreviated MB, is equal to approximately one thousand bytes. True/False

29. A megabyte, abbreviated MB, is equal to approximately one million bytes. True/False

30. The memory chips in the system unit are called random access memory (RAM). True/False

CHAPTER 3
COMPUTER SOFTWARE

Daniel Danso Essel
Ephrem Kwaa-Aidoo (Ph.D).

Introduction

In chapter 2, where learnt about the computer hardware, however without the computer software, it is impossible to use the hardware. In this chapter we are going to learn more about computer software and their types.

Learning Objectives

After completing this chapter you will be able to

- Define computer software
- Explain uses of system software
- Identify and explain the various system software
- Explain application software
- Identify and explain the various types of application software

What is Computer Software?

Software, or programs, consists of all the electronic instructions that tell the computer how to perform a task. These instructions come from a software developer in a form (such as a CD or DVD, USB drive, or an Internet download) that will be accepted by the computer.

Types of Software

There are two types of software: Application software and System software. **Application software** is software that has been developed to solve a particular problem for users—to perform useful work on specific tasks or to provide entertainment. **System software** enables the application software to interact with the computer and helps the computer manage its internal and external

resources. We interact mainly with the application software, which interacts with the system software, which controls the hardware.

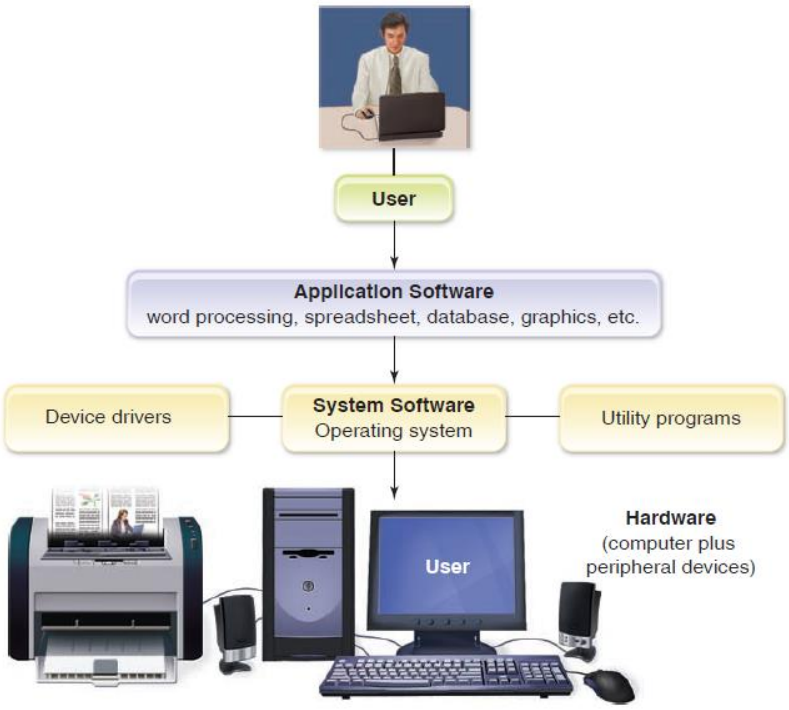


Figure 3.1: Interaction between the User, Application software and System Software

System Software

There are three basic types of system software that you need to know about.

1. **Operating systems:** An operating system is the principal component of system software in any computing system.
2. **Device drivers:** Device drivers help the computer control peripheral devices.
3. **Utility Programs:** Utility programs are generally used to support, enhance, or expand existing programs in a computer system.

1. Operating Systems

The operating system (OS), also called the software platform, consists of the low-level, master system of programs that manage the basic operations of the computer. These programs provide resource management services of many

kinds. In particular, they handle the control and use of hardware resources, including disk space, memory, CPU time allocation, and peripheral devices. Every general-purpose computer must have an operating system to run other programs. The operating system allows you to concentrate on your own tasks or applications rather than on the complexities of managing the computer. Each application program is written to run on top of a particular operating system.

Cellphones have their own operating systems, such as Apple's iPhone OS, which works with iPhones, or Android operating system for mobile devices. In general, an operating system written for one kind of hardware will not be able to run on another kind of machine. In other words, different operating systems are mutually incompatible. For example, Apple Macintosh with Macintosh system software does not support PC programs which are based on the Microsoft windows platform.

Common Operating Systems

DOS operating system

DOS (Disk Operating System) was the original operating system produced by Microsoft and had a hard-to-use command-driven user interface.

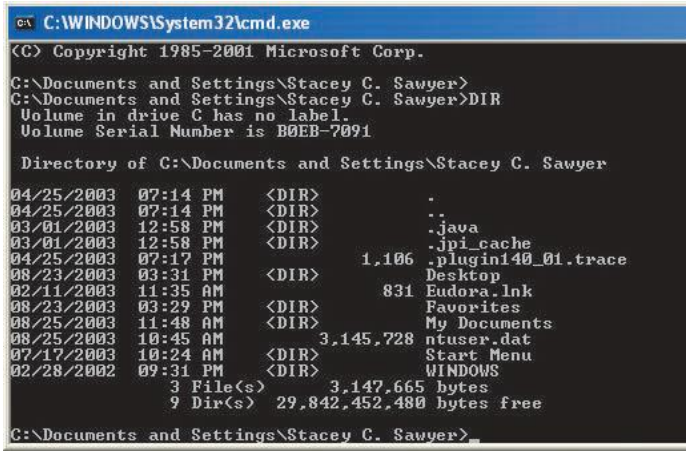


Figure 3.2: Disk Operating System interface

Macintosh Operating System

The Macintosh operating system (Mac OS), which runs only on Apple Macintosh computers, set the standard for icon-oriented, easy-to-use graphical user interfaces. Example of this operating system include Mac OS, version 9.1 is used on older Apple Macintosh computers and Mac OS X

Figure 3.2: Macintosh Operating System Desktop

Microsoft Windows

Microsoft Windows is the most common operating system for desktop and portable PCs. Examples of windows operating system includes: Windows 95, 98, ME, XP, Vista, Windows 7 and 8.

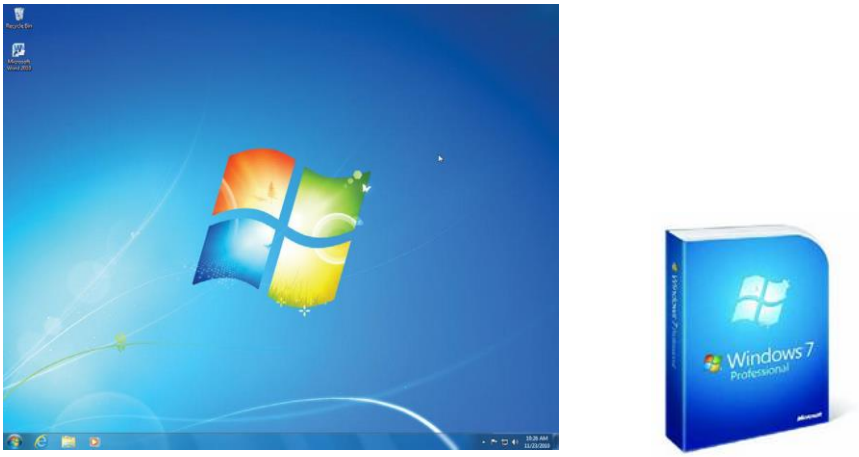


Figure 3.3: Windows Operating System Desktop

UNIX and LINUX Operating Systems

UNIX is a multitasking operating system developed for main frame computers in the early 1970s by scientists at Bell Laboratories. Today, versions of UNIX are available for computers of all sizes.

Figure 3.4: Unix Operating System interface

Linux is a popular, multitasking UNIX-based operating system that is one of the faster growing operating systems in use today. Unlike Windows and Mac OS, both of which are proprietary systems, Linux is open source software, which means its code is available free for public use.

Figure 3.5: Linux Operating System Desktop

The Role of the User Interface

All software, including the operating system, is designed to communicate with the user in a certain way, through a user interface. A user interface controls how you enter data or instructions (input) and how information is presented on the screen (output).One of the more common user interfaces is a graphical user interface. (GUI)

Graphical User Interface (GUI)

A **graphical user interface**, or **GUI** (pronounced gooey), combines text, graphics, and other visual cues to make software easier to use. The **GUI** was

absent in the Disk Operating System (DOS) which made is less user friendly (difficult to use). In 1984, Apple introduced a new operating system based on a graphical user interface. Recognizing the value of this easy-to-use interface, many software companies followed suit by developing software that incorporates a graphical user interface. The GUI allows user to use pointing devices such as the mouse to select icons (little symbols) and commands from menus (lists of activities).The GUI is on the PC and on the Apple Macintosh. Three features of a GUI are the desktop, icons, and menus.

The **desktop** is the system's main interface screen, displays pictures (icons) that provide quick access to programs and information. **Icons** are small pictorial figures that represent programs, data files, or procedures. For example, a recycle bin can represents a place to dispose of a file you no longer want. One of the most important icons is the **folder**. A **folder** holds the files in which you store your documents and other data. A **file** is (1) a named collection of data (data file), or (2) a program (program file) that exists in a computer's secondary storage, such as a hard disk or CD/DVD.

Figure 3.6: The Windows Desktop

The Functions of the Operating System

Booting

Booting is the process of loading an operating system into a computer's main memory. When you power up a computer by turning on the power "on" switch, this is called a cold boot. If your computer is already on and you restart it, this is called a warm boot or a warm start. Booting allows the **BIOS** (for "basic input/output system") programs to be copied to main memory and help the computer interpret keyboard characters or transmit characters to the display screen or to a disk.

CPU Management

The central component of the operating system is the supervisor. The **supervisor**, or **kernel**, manages the CPU (the central processing unit or processor). It remains in memory (main memory or primary storage) while the computer is running and directs other "non-resident" programs (programs that are not in memory) to perform tasks that support application programs.

File Management

Files containing programs and data are located in many places on your hard disk and other secondary storage devices. The operating system records the storage location of all files. If you move, rename, or delete a file, the operating system manages such changes and helps you locate and gain access to it.

Task Management

A computer is required to perform many different tasks at once (multitasking). In word processing, for example, it accepts input data, stores the data on a disk, and prints out a document—seemingly simultaneously. Most desktop and laptop operating systems are single-user systems that can handle more than one program at the same time—word processing, spreadsheet, database searcher. Each program is displayed in a separate window on the screen. Other operating systems (multi-user systems) can accommodate the needs of several different users at the same time

Security Management

Operating systems allow users to control access to their computers— especially important matter when several people share a computer or the same computer network. Users gain access in the same manner as accessing their email—via a username (user ID) and a password. A **password** is a special word, code, or symbol required to access a computer system.

If you are using a computer at work, you may give yourself a password. When you first boot up a new personal computer, the OS will prompt you to choose a user name and a password. Then, every time after that, when you boot up your computer, you will be prompted to type in your user name and password. Some Operating Systems even allows you to protect individual files with separate access passwords.

2. Device Drivers

Device drivers are specialized software programs—usually components of system software—that allow input and output devices to communicate with the rest of the computer system. Drivers are needed so that the computer's operating system can recognize and run peripheral hardware. For example you will need to install drivers for your computer to recognize and run a printer.

3. Utility Programs

Utility programs also known as service programs are system software components that perform tasks related to the control and allocation of computer resources. Why it's important: Utility programs enhance existing functions or provide services not supplied by other system software programs. Most computers come with built-in utilities as part of the system software; they usually include backup, data recovery, virus protection, data compression, and file defragmentation, along with check (scan) disk and disk clean up.

Application Software

Application software consists of programs designed to perform specific tasks for users. Application software, also called application programs, can be used for the following purposes:

- As a productivity/business tool
- Assisting with graphics and multimedia projects
- Supporting school and professional activities
- Helping with home and personal activities
- Facilitating communications popular types of application software by their general use.

These five categories are not all-inclusive nor are they mutually exclusive; for example, e-mail can support productivity, a software suite can include Web page authoring tools, and tax preparation software can be used by a business.

Categories of Application Software				
Productivity/Business	**Graphic Design/Multimedia**	**School/Educational**	**Home/Personal**	**Communication**
Word processing	Desktop Publishing	School/student Management	Personal finance	E-Mail
Spreadsheet	Paint/Image editing	Grade Books	Tax preparation	Web Browser
Presentation Graphics	Multimedia Authoring	Educational/Reference	Legal	Chat Rooms
Database	Web Page Authoring	Special Needs	Entertainment	Instant Massaging
Personal Information Management		Note Taking		Blogs
Software Suite				Wikis

In the course of a day, week, or month, you are likely to find yourself using software from many of these categories, whether you are at school, home, or work. Even though you may not use all of the applications, you should at least be familiar with their capabilities. A wide variety of application software, such as **word processing**, is available as packaged software that can be purchased from software vendors in retail stores or on. An **application suite** consists of multiple applications bundled together. They usually have related functions, features and user interfaces, and may be able to interact with each other. Examples of software suit include, Microsoft Office, OpenOffice.org and iWork, which bundle together a word processor, a spreadsheet, etc.; but suites exist for other purposes, e.g. graphics or music.

Figure 3.7: Word processing software

Productivity/Business Software

Productivity software —such as word processing programs, spreadsheets, and database managers—whose purpose is to make users more productive at particular tasks. Some productivity software comes in the form of an office suite, which bundles several applications together into a single large package.

Microsoft Office, for example, includes (among other things) Word, Excel, and Access—word processing, spreadsheet, and database programs, respectively.

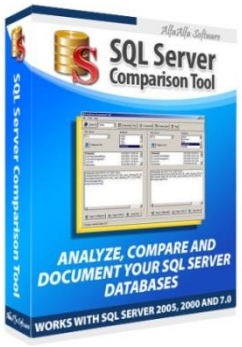


Figure 3.8: Database Management Software

Graphic Design/Multimedia Software

Graphics Design Software: They allow users to draw or paint images. Some graphic design software are used for photo editing. Examples of graphic design software include Coral Draw, Adobe Illustrator, and Photoshop.

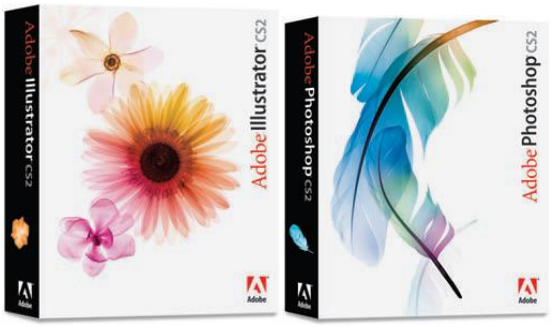


Figure 3.9: Graphics design software

Figure 3.10: Painting using Photoshop application

Three dimension (3D) computer graphics software refers to programs used to create 3D computer-generated imagery. 3D modelers allow users to create and alter models via their 3D mesh. Users can add, subtract, stretch and otherwise change the mesh to their desire. Models can be viewed from a variety of angles, usually simultaneously. Models can be rotated and the view can be zoomed in and out. 3D graphics software is used in **Computer Aided Design (CAD)** for Automobile engineering, Animation and Architecture. Examples of 3D graphics software include Auto CAD, 3D Max, Rhinoceros and Maya.

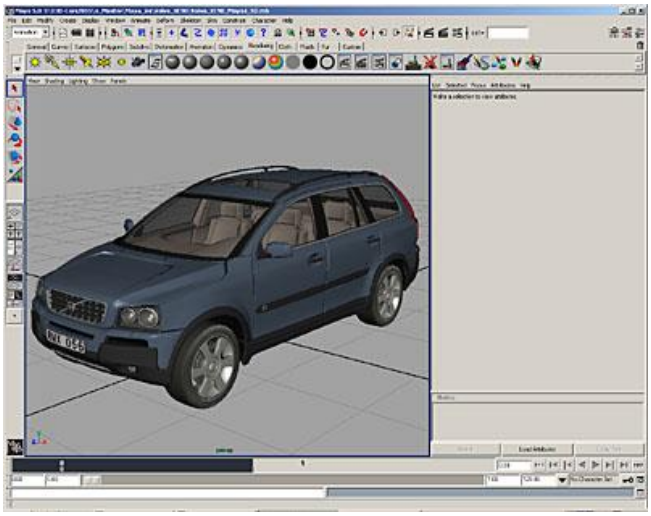


Figure 3.11: CAD software use to model cars in Automobile

Multimedia Software: They allow users to create, edit and play audio and video files. They are capable of playing media files. Audio converters, audio players, burners, video encoders and decoders are some forms of multimedia software. Examples of this type of software include windows movie makes, Adobe Primer Real Player and Media Player.

Figure 3.12: Video editing using multimedia software

School/Educational Software

School/Educational software is computer software whose primary purpose is teaching, self-learning and school management. They have the capabilities of running tests and tracking students' progress. They are also used for collaborative learning and for assisting in the teaching and learning process. Dictionaries like Britannica and Encarta, mathematical software like Derive, MatLab and others like Google Earth and NASA World Wind are some of the well-known names in this category.

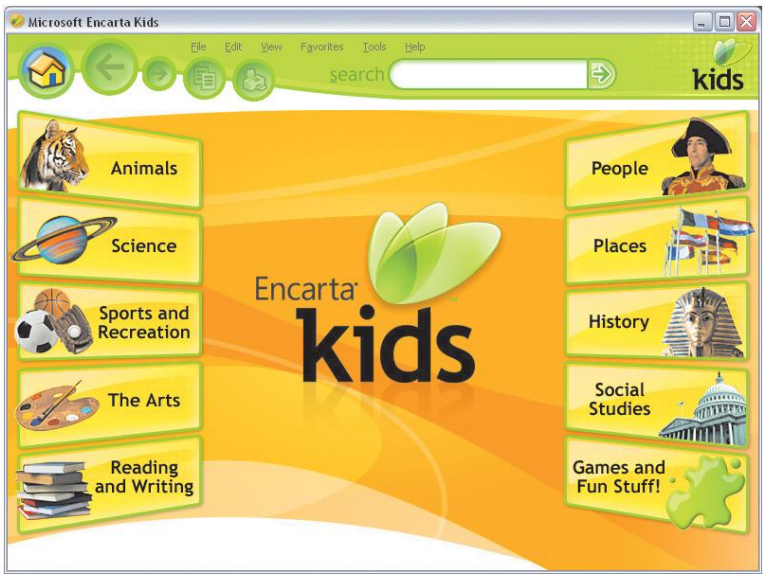


Figure 3.13: Encarta Educational Software

Home/Personal Software

Home/Personal software is software design to assist in personal finance such as budget preparation, Tax preparation and legal documents such as will. Entertainment software like computer games, video and music players also fall under this category.

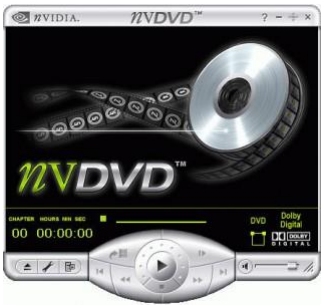


Figure 3.14: Video player software

Communication Software

Communication software is software that makes it possible to send and receive data over telephone lines through modems. Examples of these software include E-Mail managers, Web Browsers, Chat Rooms and Instant Messaging

Figure 3.15: Yahoo messenger for text, voice and video chat

Chapter 3- Self-Test Questions

Multiple Choice

Identify the letter of the choice that best completes the statement or answers the question.

1. One type of system software, the operating system _____.
   a. contains instructions that coordinate a computer's activities
   b. is only important when a computer processes information
   c. is not loaded into memory when a computer is first turned on
   d. is loaded into memory from a floppy disk each time a computer is turned on

2. A(n) _____ is a graphical element (usually rectangular or circular in shape) that can be clicked to cause a specific action to take place.
   a. button
   b. icon
   c. menu
   d. window

3. A(n) _____ is a rectangular area of the screen that is used to display a program, data, and/or information.
   a. menu
   b. window
   c. icon
   d. command

4. To place whatever is stored on the Clipboard into a document, you _____ it into the document.
   a. copy
   b. glue
   c. paste
   d. insert

5. _____ involves changing the appearance of a word processing document.
   a. Creating
   b. Formatting
   c. Editing
   d. Printing

6. The results of presentation graphics software programs normally are viewed as _____.
   a. macros
   b. slides
   c. audience handouts
   d. notes pages

7. A clip art/image gallery can be stored on a _____.
   a. hard disk
   b. DVD-ROM
   c. CD-ROM
   d. all of the above

8. Popular software suites include _____.
   a. Microsoft Office
   b. AppleWorks
   c. Microsoft Works
   d. ClarisWorks

9. Popular software suites used in schools usually include all of the following applications except _____.

a. word processing b. calendar
c. spreadsheet d. database

10. Paint software allows users to draw pictures, shapes, and other graphics using various tools such as a(n) _____.

a. pen and brush b. paint bucket
c. eye dropper d. all the above

11. Adobe Primer is an example of an easy-to-use _____ software program.

a. photo-editing b. multimedia authoring
c. image editing d. graphics creator

12. School and student management software allows administrators and teachers to _____.

a. track student attendance information
c. manage school district operations
b. track student academic records
d. all of the above

13. Tutorials are _____.

a. answers to questions that people frequently ask about an application
b. the electronic equivalent of a user manual, usually integrated into an application software package
c. step-by-step instructions using real examples to show how to use an application
d. automated assistants that help complete a task by asking questions and performing actions based on the answers

14. All of the following are true except _____.

a. Macintosh computers and PCs format disks differently
b. it is easy to work with the same files on Macintosh computers and PCs
c. PCs normally cannot open a file saved on a Macintosh disk
d. Macintosh computers normally can open a file saved on a PC disk

15. Database software allows users to _____.

a. add, change, and delete data
b. sort and retrieve data from the database
c. create forms and reports using the data in the database
d. all of the above

16. Software designed for the learning environment, like learning a foreign language or learning math are called _____ software.

a. educational
c. reference
b. home design/landscaping
d. personal computer entertainment

17. Entertainment software includes all of the following except _____.

a. game programs
c. flying simulation programs
b. hobby software
d. multimedia authoring programs

18. All of the following are true except _____.

a. Macintosh computers and PCs format disks differently
b. it is easy to work with the same files on Macintosh computers and PCs
c. PCs normally cannot open a file saved on a Macintosh disk
d. Macintosh computers normally can open a file saved on a PC disk

19. Integrated software is _____.

a. less expensive than a less powerful software suite
b. more expensive than a less powerful software suite
c. less expensive than a more powerful software suite
d. more expensive than a more powerful software suite

20. Using _____ software, an individual can create newsletters, brochures, and advertisements; postcards and greeting cards; letterhead and business cards; and banners, calendars, and logos.

a. Computer Aided Design
b. Uniform Resource Locator
c. Graphic User Interface
d. Desktop Publishing Software

True/False

Indicate whether the sentence or statement is true or false.

21. Apple Macintosh computers use an operating system and graphical user interface called Mac OS. True/False

22. During the process of developing a document, it is common to switch back and forth between the word processing activities of creating, editing, formatting, and saving. True/False

23. Word processing software consists primarily of graphics. True/False

24. Word processing software includes templates or assistants that are automated tools that help users create memorandums, meeting agendas, fax cover sheets, and letters. True/False

25. Like word processing and spreadsheets, database software includes wizards that allow teachers and students to create databases such as address books and directories of parents and students. True/False

26. Presentation graphics software creates documents called presentations. True/False

27. With a personal information manager address book, names, addresses, and telephone numbers of customers, co-workers, family members, and friends can be entered and maintained. True/False

28. Integrated software is software that combines applications such as word processing, spreadsheet, and database into a single, easy-to-use package. True/False

29. Reference software, such as multimedia encyclopedias and dictionaries normally are not used in education. True/False

30. Online Help is the electronic equivalent of a user manual. True/False

CHAPTER 4
WORD PROCESSING

Wilson Osafo Apeanti
Godfrey Dawson-Amoah

Introduction

In the previous chapter we learnt about software in general. In this chapter we will study about word processing with Microsoft Office Word. We will learn about the various components in this environment and what they do. We will also learn the procedure involved to accomplish key activities and challenges outlined.

Learning Objectives

After completing this chapter you will be able to

- Create Ms. Word documents
- Edit Ms. Word documents
- Format Ms. Word documents
- Create tables and hyperlinks
- Use find and replace to edit document
- Create professional documents using Ms. Word 2007

What is Word Processing Software?

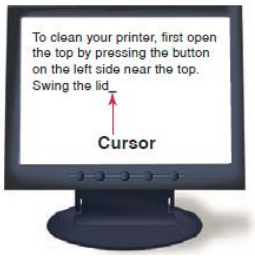
Word processing software allows you to use computers to create, edit, format, print, and store text material, among other things. Word processing is the most common software application. The best-known word processing program is **Microsoft Word**, but there are others, such as **Corel WordPerfect**, **OpenOffice Writer**, **Apple Pages**, **Google Apps** (a free download from www.google.com/apps), and **Zoho Writer** (a free download from www.zoho.com). There is even a full-fledged word processor, known as **Quick Office** that can be used on the **Apple iPhone** and other smart phones.

Word processing software allows users to work through a document and delete, insert, and replace text, the principal edit/correction activities. It also offers such additional features as creating, formatting, printing, and saving.

Creating Documents

Creating a document means entering text using the keyboard or the dictation function associated with speech-recognition software. Word processing software has three features that affect this process—the cursor, scrolling, and word-wrap.

Cursor: The cursor is the movable symbol on the display screen that shows you where you may next enter data or commands. The symbol is often a blinking rectangle or an **I-beam**. You can move the cursor on the screen using the keyboard's directional arrow keys or a mouse. The point where the cursor is located is called the insertion point.



Scrolling: Scrolling means moving quickly upward, downward, or sideways through the text or other screen display. A standard computer screen displays only 20–22 lines of standard-size text. Of course, most documents are longer than that. Using the directional arrow keys, or the mouse and a scrollbar located at the side of the screen, you can move ("scroll") through the display screen and into the text above and below it.


Scrolling

Word Wrap: Word wrap automatically continues text to the next line when you reach the right margin. That is, the text "wraps around" to the next line. You don't have to hit a "carriage-return" key or Enter key, as was necessary with a typewriter.

Editing Documents

Editing is the act of making alterations in the content of your document. Some features of editing are insert and delete, undelete, find and replace, cut/copy and paste, spelling checker, grammar checker, and thesaurus. Some of these commands are in the Edit pull-down menu and icons on the toolbar.

Insert & Delete: Inserting is the act of adding to the document. Simply place the cursor wherever you want to add text and start typing; the existing characters

will be pushed along. **Deleting** is the act of removing text, usually using the Delete key or the Backspace key.

The **Undo command** allows you to change your mind and restore text that you have deleted. Some word processing programs offer as many as 100 layers of "undo," so that users who delete several paragraphs of text, but then change their minds, can restore the material.

Find & Replace: The Find, or Search, command allows you to find any word, phrase, or number that exists in your document. The Replace command allows you to automatically replace it with something else.

Cut/Copy & Paste: With word processing, moving text takes only a few keystrokes. You select (highlight with the mouse) the portion of text you want to copy or move. Then you use the Copy or Cut command to move it to the clipboard, a special holding area in the computer's memory. From there, you use Paste to transfer the material to any point (indicated with the cursor) in the existing document or in a new document. The clipboard retains its material, so repeated pastes of the same item will work without your having to recopy each time.

Spelling Checker: Most word processors have a spelling checker, which tests for incorrectly spelled words. As you type, the spelling checker indicates (perhaps with a wavy line) words that aren't in its dictionary and thus may be misspelled. Special add-on dictionaries are available for medical, engineering, and legal terms.

In addition, programs such as Microsoft Word have an Auto Correct function that automatically fixes such common mistakes as transposed letters replacing **"teh"** with **"the,"** for instance.

Grammar Checker: A grammar checker highlights poor grammar, wordiness, incomplete sentences, and awkward phrases. The grammar checker won't fix things automatically, but it will flag (perhaps with a different-colour wavy line) possible incorrect word usage and sentence structure.

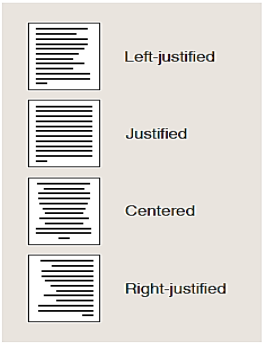
Thesaurus: If you find yourself stuck for the right word while you're writing, you can call up an on-screen thesaurus, which will present you with the appropriate word or alternative words.

Formatting Documents

Formatting means determining the appearance of a document.

Font: You can decide what font —typeface and type size—you wish to use. For instance, you can specify whether it should be **Arial, Courier,** or **Freestyle Script**. You can indicate whether the text should be, say, 10 points or 12 points in size and the headings should be 14 points or 16 points.

Spacing & Columns: You can choose whether you want the lines to be single-spaced or double-spaced (or something else). You can specify whether you want text to be one column (like this page), two columns (like many magazines and books), or several columns (like newspapers).



Margins & Justification: You can indicate the dimensions of the margins—left, right, top, and bottom—around the text. You can specify the text justification—how the letters and words are spaced in each line. To justify means to align text evenly between left and right margins, as in most newspaper columns and this text. To left-justify means to align text evenly on the left. (Left-justified text has a "ragged-right" margin, as do many business letters.)Cantering centres each text line in the available white space between the left and right margins.

Some Word Features

Some Word Processing Features are as follows;

AutoCorrect: As you type words, the AutoCorrect feature corrects common spelling errors. AutoCorrect also corrects capitalization mistakes.

AutoFormat: As you type, the AutoFormat feature automatically applies formatting to the text. For example, it automatically numbers a list or converts a Web address to a hyperlink.

Collaboration: Collaboration includes discussions and online meetings. Discussions allow multiple users to enter comments in a document and read and reply to each other's comments. Through an online meeting, users share documents with others in real time and view changes as they are being made.

Columns: Most word processing software can arrange text in two or more columns to look like a newspaper or magazine. The text from the bottom of one column automatically flows to the top of the next column.

Grammar Checker: The grammar checker proofreads documents for grammar, writing style, sentence structure errors, and reading statistics.

Ink Input: Ink input supports input from a digital pen. Word processing software that supports ink input incorporates a user's handwritten text and drawings in a word processing document. Ink input is popular on Tablet PCs.

Macros: A macro is a sequence of keystrokes and instructions that a user records and saves. When you want to execute the same series of instructions, execute the macro instead.

Mail Merge: Mail merge creates form letters, mailing labels, and envelopes.

Reading Layout: For those users who prefer reading on the screen, reading layout increases the readability and legibility of anon-screen document by hiding unnecessary toolbars, increasing the size of displayed characters, and providing navigation tools.

Research: Some word processing software allows you to search through various forms of online and Internet reference information — based on selected text in a document. Research services available include a thesaurus, English and bilingual dictionaries, encyclopaedias, and Web sites that provide information such as stock quotes, news articles, and company profiles.

Smart Tags: Smart Tags automatically appear on the screen when you perform a certain action. For example, typing an address causes a Smart Tag to appear. Clicking this Smart Tag provides options to display a map of the address or driving directions to or from the address.

Tables: Tables organize information into rows and columns. In addition to evenly spaced rows and columns, some word processing programs allow you to draw tables of any size or shape.

Templates: A template is a document that contains the formatting necessary for a specific document type. Templates usually exist for memos, fax cover sheets, and letters. In addition to templates provided with the software, users have access to many online templates through the software manufacturer's Web site.

Thesaurus: With a thesaurus, a user looks up a synonym (word with the same meaning) for a word in a document.

Tracking Changes: If multiple users work with a document, the word processing software highlights or colour-codes changes made by various users.

Voice Recognition: With some word processing programs, users can speak into the computer's microphone and watch the spoken words appear on the screen as they speak. With these programs, users edit and format the document by speaking or spelling an instruction.

Web Page: Most word processing software allows users to create, edit, format, and convert documents to be displayed on the World Wide Web.

Getting Started With Ms. Word

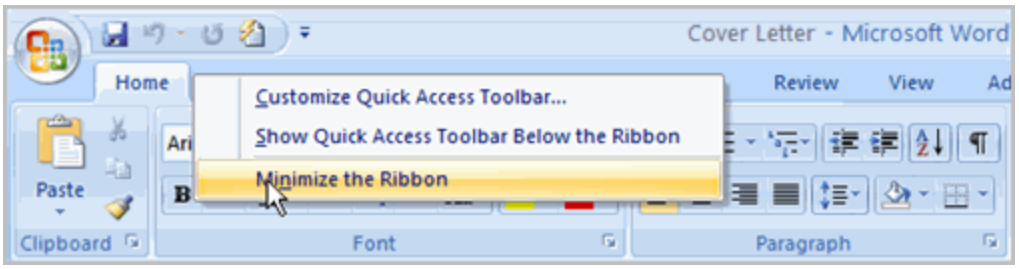
In this tutorial, whenever we indicate that you need to click the mouse, it will mean to click the left mouse button – unless we indicate that you should click the RIGHT mouse button. So, always "click left" unless we tell you otherwise.

Setup Your Ms. Word Environment

Before you begin creating documents in Ms. Word, you may want to **set up your Ms. Word environment** and become familiar with a few **key tasks** such as how to minimize and maximize the Ribbon, configure the Quick Access toolbar, display the ruler, and use the Word Count and Zoom tools

To Minimize and Maximize the Ribbon:

- Right-click anywhere on the menu bar.
- Select **Minimize the Ribbon** in the menu that appears. This will **toggle** the Ribbon **on** and **off**.

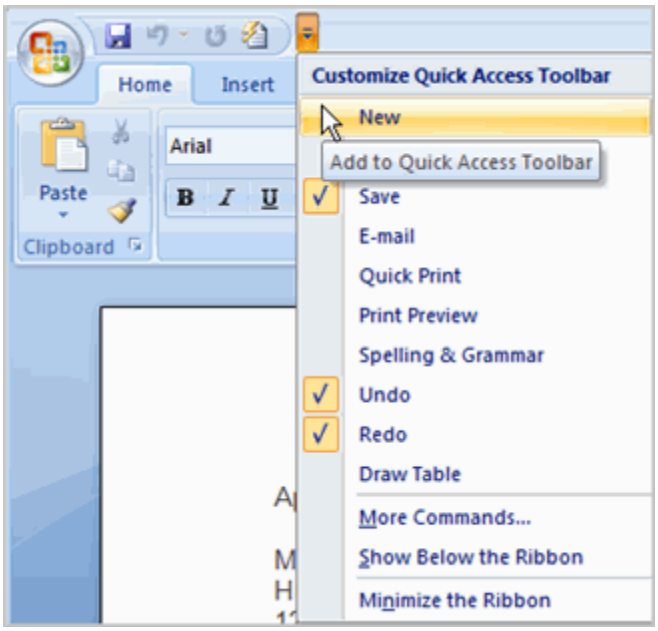


The **check mark** beside *Minimize the Ribbon* indicates the feature is active.

The new, **tabbed Ribbon system** replaces traditional menus in Ms. Word 2007. It is designed to be responsive to your current task and easy to use; however, you can choose to **minimize the Ribbon** if you would prefer to use different menus or keyboard shortcuts.

To Add Commands to the Quick Access Toolbar:

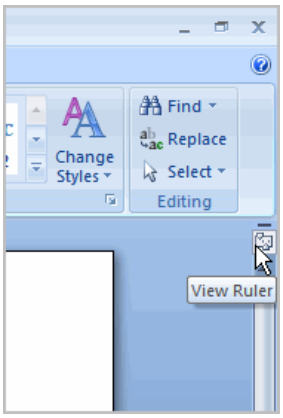
- Click the **arrow** to the right of the Quick Access toolbar.
- Select the **command** you wish to add from the drop-down list. It will appear in the Quick Access toolbar.



The Save, Undo, and Redo commands appear by default in the Quick Access toolbar. You may wish to add other commands to make using specific Ms. Word features more convenient for you.

To Display or Hide the Ruler:

- Click the **View Ruler** icon over the scroll bar.



The **View Ruler** icon works as a toggle button to turn the ruler on and off.

Challenge!

- Open **Ms. Word 2007** on your computer. A **new blank document** will appear on the screen.
- Make sure your **Ribbon** is maximized.
- Display the **Ruler**.
- Add any commands you wish to the **Quick Access** toolbar.
- Close **Ms. Word** without saving the document.

Text Basics

It is important to know how to perform **basic tasks with text** when working in a word processing application. In this lesson you will learn the basics of working with text including how to insert, delete, select, copy, paste, drag and drop text.

Working with Text

To Insert Text:

- Move your mouse to the location you wish text to appear in the document.
- Left-click the mouse. The **insertion point** appears.
- Type the text you wish to appear.

To Delete Text:

- Place your cursor next to the text you wish to delete.

- Press the **Backspace** key on your keyboard to delete text to the left of the cursor.
- Press the **Delete** key on your keyboard to delete text to the right of the cursor.

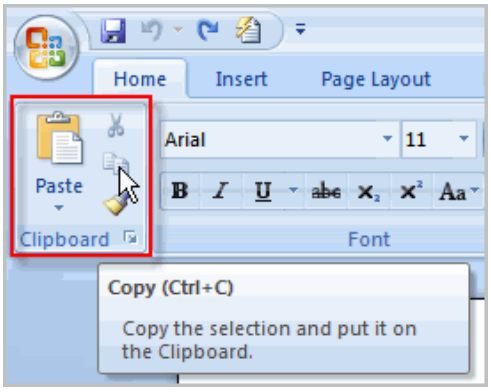
To Select Text:

- Place the **insertion point** next to the text you wish to select.
- Left-click your mouse and while holding it down, drag your mouse over the text to select it.
- Release the mouse button. You have selected the text. A **highlighted box** will appear over the selected text.

When you select text or images in Ms. Word, a **hover toolbar** with formatting options appears. This makes formatting commands easily accessible, which may save you time.

To Copy and Paste Text:

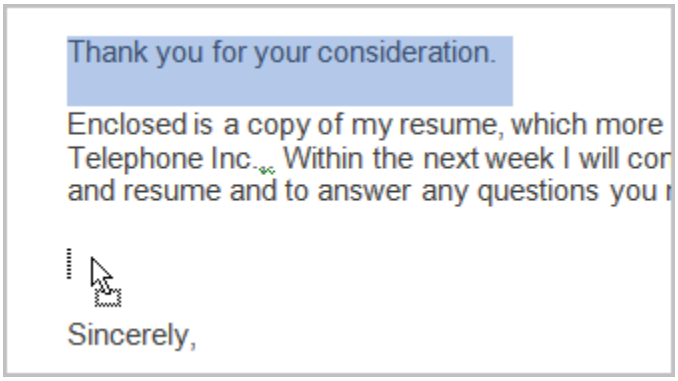
- Select the text you wish to copy.
- Click the **Copy** command on the Home tab.
- Place your insertion point where you wish the text to appear.
- Click the **Paste** command on the Home tab. The text will appear.



To Drag and Drop Text:

- Select the text you wish to copy.

- Left-click your mouse and **drag the text** to the location you wish it to appear. The cursor will have a text box under it to indicate that you are moving text.



- Release the mouse button and the text will appear.

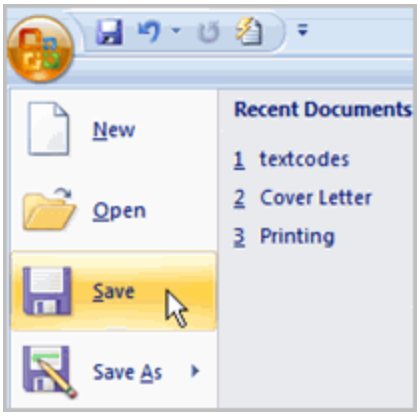
If text **does not appear** in the exact location you wish, you can click the **Enter** key on your keyboard to move the text to a new line.

Challenge!

Use the Cover Letter or any other Ms. Word document you choose to complete this challenge.

- Open an **existing Ms. Word document.**
- Select a sentence.
- **Copy and paste** the sentence from one location in the document to another.
- Select another sentence.
- **Drag and drop** it to another location in the document.
- Select the entire document.
- Change the font style, size, and colour.

Saving Documents



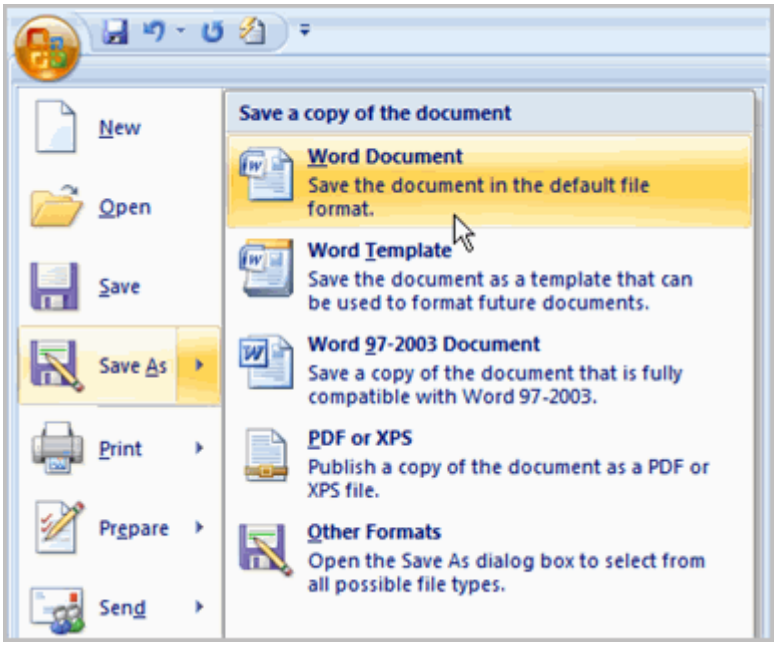
It is important to know how to save the documents you are working with. There are many ways you **share and receive documents**, which will affect how you need to save the file

Are you downloading the document? Saving it for the first time? Saving it as another name? Sharing it with someone that does not have Ms. Word 2007? All of these things will affect how you **save your Ms. Word documents**. Here, you will learn how to use the save and save as commands, how to save as Ms. Word 97-2003 compatible document, and how to save as a PDF.

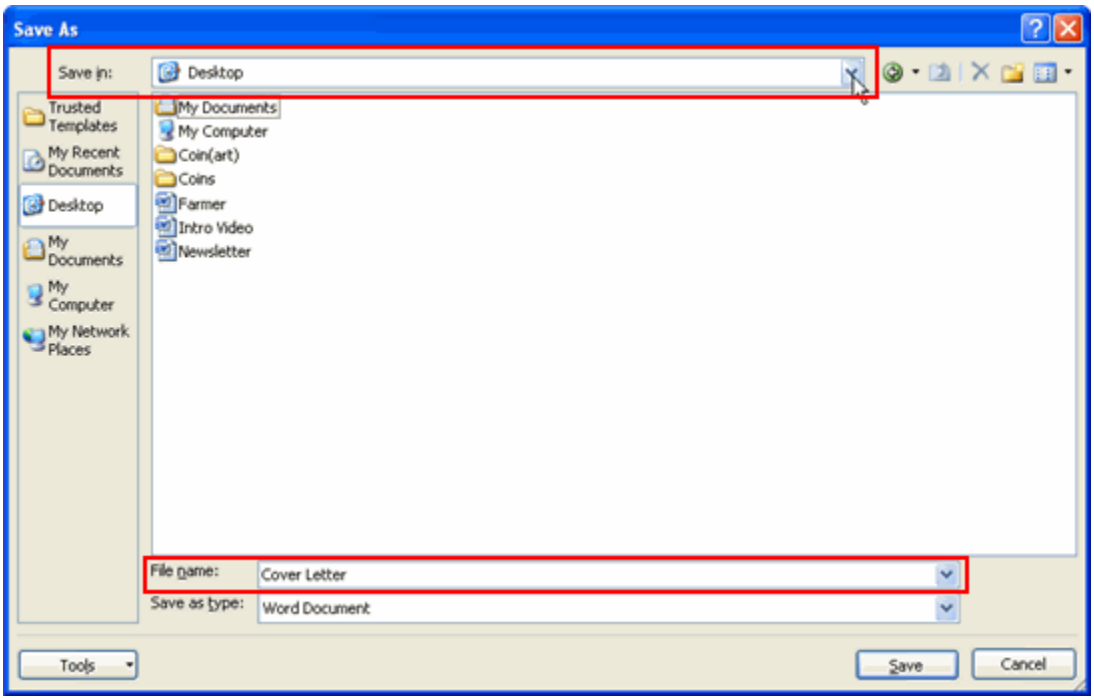
How to Save Documents

To Use the Save As Command:

- Click the **Microsoft Office Button**.
- Select **Save As → Word Document**. The **Save As** dialog box appears.



- Select the **location** you wish to save the document using the drop-down menu.
- Enter a **name** for the document.



- Click the **Save** button.

To Use the Save Command:

- Click the **Microsoft Office Button**.
- Select **Save** from the menu.

Using the Save command saves the document in its current location using the same file name. If you are saving for the first time and select **Save**, the **Save As** dialog box will appear.

To Use the Save As Word 97 - 2003 Document:

- Click the Microsoft Office Button.
- Select Save As → Word 97-2003 Document.

- Select the location you wish to save the document using the drop-down menu.
- Enter a name for the document.
- Click the Save button.

To Download the PDF Extension:

- Click the Microsoft Office Button.
- Select Save As → Find add-ins for other file formats. This will open your web browser to the Microsoft site.
- Follow the instructions on the Microsoft site for downloading the extension.

To Save As a PDF:

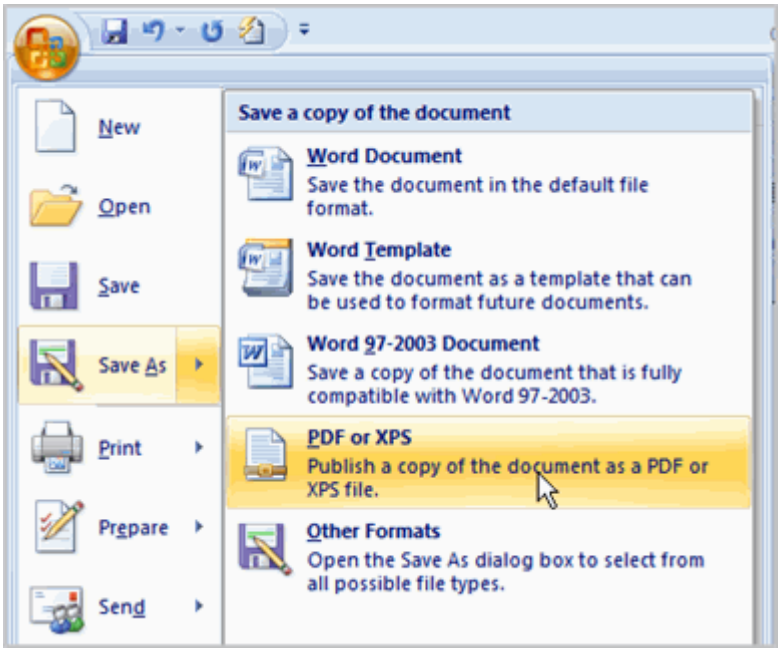
- Click the Microsoft Office Button.
- Select Save As → PDF. The Save As dialog box will appear.

Challenge!

Use the Cover Letter or any other Ms. Word document you choose to complete this challenge.

- Open an existing Ms. Word document.
- Save the document with the file name **trial**.

- Save the **same document** as a PDF file.
- Close the document.
- Open **another** existing Ms. Word document.
- Save the document so that it is **compatible** with Ms. Word 2003.
- Close the document.



- Select the location you wish to save the document using the drop-down menu.
- Enter a name for the document.
- Click the Publish button.

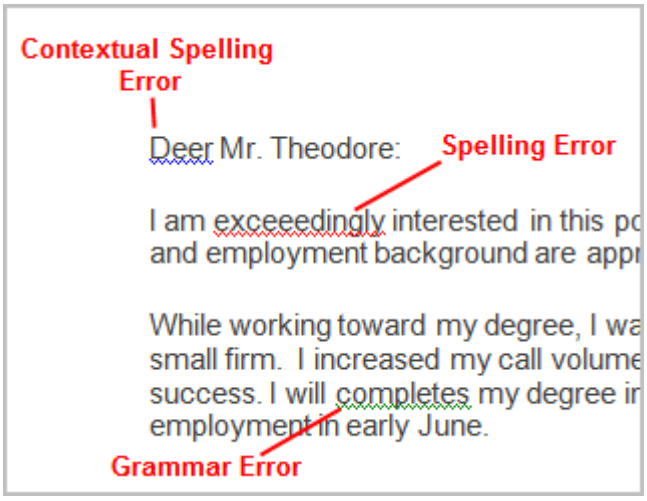
Proofing Features

Worried about making mistakes when you type? Don't be. Ms. Word provides you with several **proofing features** that will help you produce professional, error-free documents. In this lesson you will learn about the various proofing features, including the Spelling and Grammar tool.

Using the Proofing Features

Various Line Colours:
By default, Ms. Word automatically checks your document for **spelling and grammar** errors. These errors are indicated by **coloured wavy lines**.

- The **blue line** indicates a contextual spelling error.
    - A **contextual spelling** error is when an incorrect spelling of a word is chosen. For example, if I write, "Deer Mr. Theodore," at the beginning of a letter, **deer** is a contextual spelling error because I should have used **dear**. **Deer** is spelled correctly, but it is used incorrectly in this letter.
- The **red line** indicates a misspelled word.
- The **green line** indicates a grammar error.



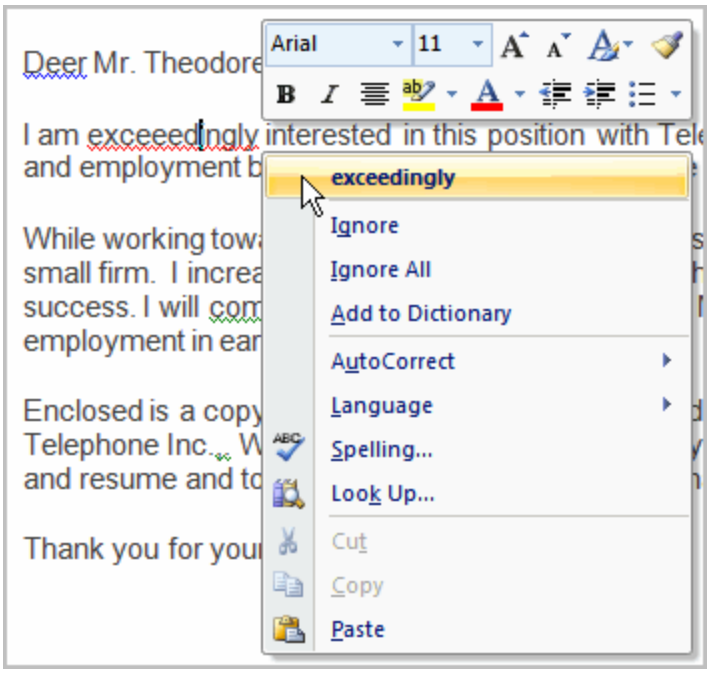
To Use the Spelling Check Feature:

- Right-click the **underlined** word. A menu will appear.
- Select the **correct spelling** of the word from the **listed suggestions**.
- Left-click your mouse on the word. It will appear in the document.

Challenge!

Use the Cover Letter or any other Ms. Word document you choose to complete this challenge.

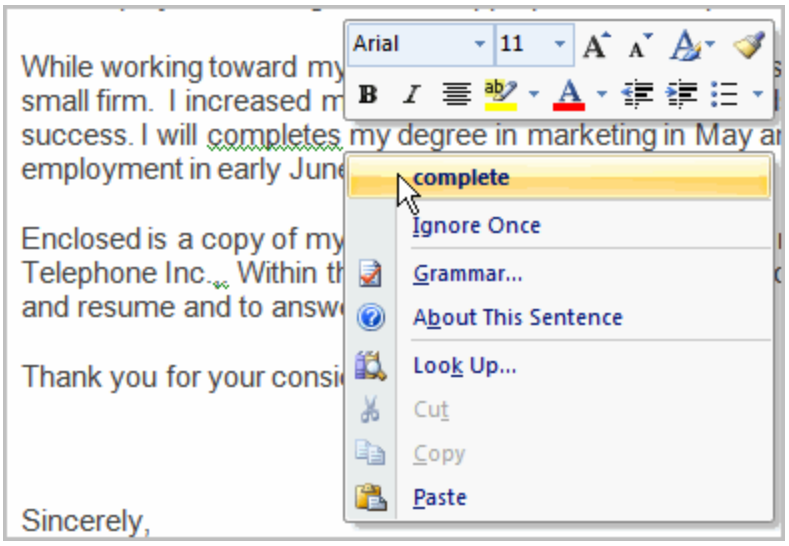
- Open an **existing** Ms. Word document.
- Type the following sentences at the beginning of the document:
    - I really enjoy learning on computers and about new skills.
    - I like to take tutorials were I can learn independently.
- Correct the **spelling errors** in the sentences.
- Correct the **grammar mistake** that appears in one of the sentences.
- Use the **Spelling and Grammar command** to check the remainder of the document.



You can choose to **Ignore** an underlined word, add it to the **dictionary**, or goto **Spelling** dialog box.

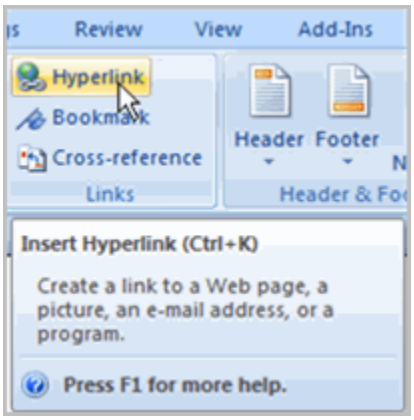
To Use the Grammar Check Feature:

- Right-click the **underlined** word. A menu will appear.
- Select the **correct word** from the **listed suggestions**.
- Left-click your mouse on the word. It will appear in the document.



You can also choose to **Ignore** an underlined word, go to **Grammar** dialog box, or find out **more information** about the word and its usage.

You can also wait and run the spelling and grammar check **after completing the document**. Click the **Spelling & Grammar command** on the Review tab.



Working with Hyperlinks

A **hyperlink** is a piece of **text** or an **image** in an electronic document that can connect readers to another portion of the document or a different document or file usually web page. In addition, a hyperlink can be used to connect to and open an email client window.

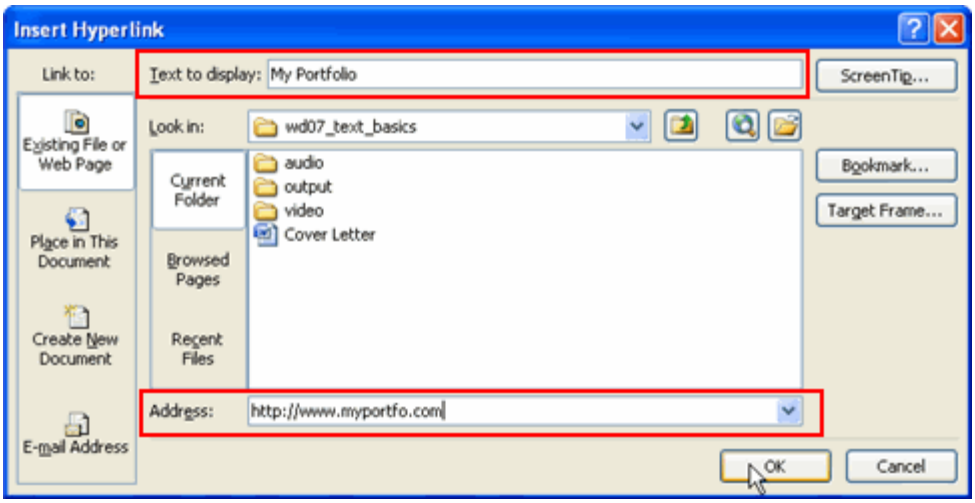
Ever noticed the **active links** on web pages that allow you to **jump from one page to another?** These are **hyperlinks**. You can use these in electronic versions of your Ms. Word documents just like you do in web pages. In this lesson you will learn the **basics of working** with hyperlinks, including how to insert and remove them in your Ms. Word document.

Hyperlinks

To Insert a Hyperlink:

- Select the **text or image** you would like to make a **hyperlink**.

- Select the **Insert** tab.
- Click **Hyperlink** in the Links group. The Insert Hyperlink dialog box appears. If you selected text, the words will appear in the **Text to display:** field at the top.
- Type the address you would like to link to in the **Address:** field.



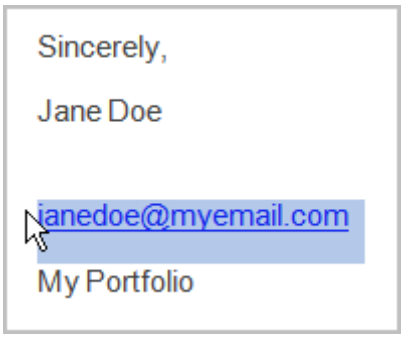
- Click **OK**. The text or image you selected will now be a hyperlink.

You can also insert a hyperlink that links to **another portion of the same document**.

Ms. Word recognizes many email and web addresses as you type and will format them as hyperlinks automatically after you press the **Enter** key or **spacebar**.

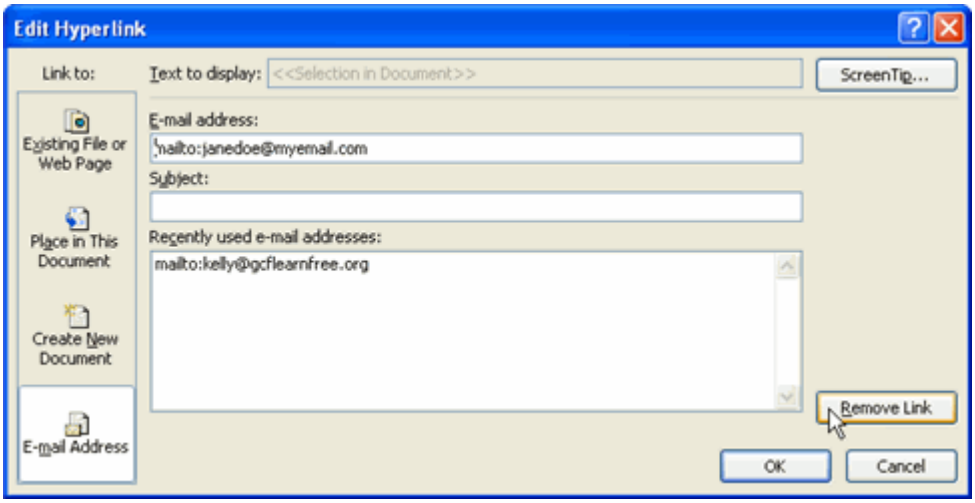
To Remove a Hyperlink:

- Select the **hyperlink** you would like to deactivate.



- Select the **Insert** tab.

- Click **Hyperlink** in the Links group. The Edit Hyperlink dialog box appears.



- Click **Remove Link**.

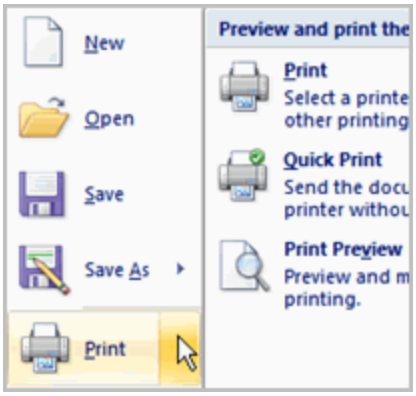
Challenge!

Use the Cover Letter or any other Ms. Word document you choose to complete this challenge.

- Open an **existing** Ms. Word document.
- Type the following sentence:
    - For great computer training, visit UEW today!
- Select **UEW**.
- Insert a hyperlink that connects to **www.uew.edu.gh**
- Remove the hyperlink.

Printing Documents

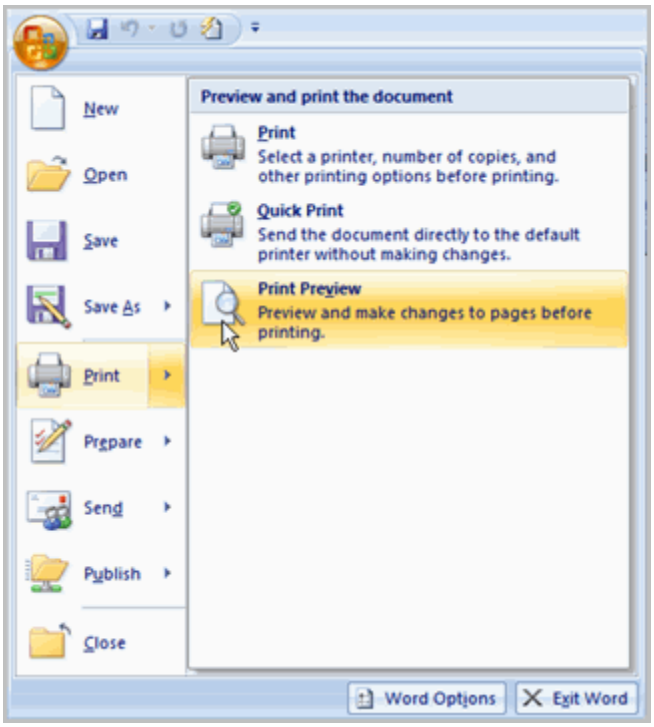
Once you complete your document, you may want to **print** it for various reasons. This lesson covers the three basic features of printing in Ms. Word including **Print Preview**, **Quick Print**, and **traditional Print**.



Printing

To Preview the Document Before Printing:

- Click the Microsoft Office Button.
- Select **Print → Print Preview**. The document opens in Print Preview format.



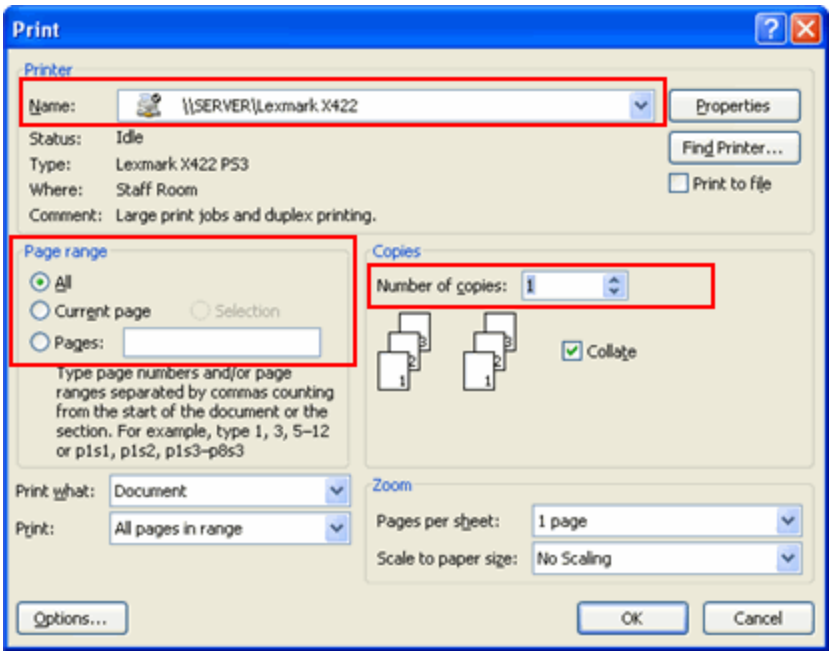
- Click **Print** to print the document or **Close Print Preview** to exit the preview format and make changes to the document.

In **Print Preview format**, you can do many tasks including:

- Modify the margins
- Change page orientation
- Change the page size
- Zoom in and out to view various parts of the document
- View multiple pages
- Access Word Options to change many Word settings
- And more

To Print:

- Click the Microsoft Office Button.
- Select **Print → Print**. The Print dialog box appears.
- Select the pages you would like to print -- either **all pages** or a **range** of pages.
- Select the **number of copies**.
- Check the **Collate** box if you are printing multiple copies of a multi-page document.
- Select a printer from the drop-down list.



- Click OK.

To Print via Quick Print:

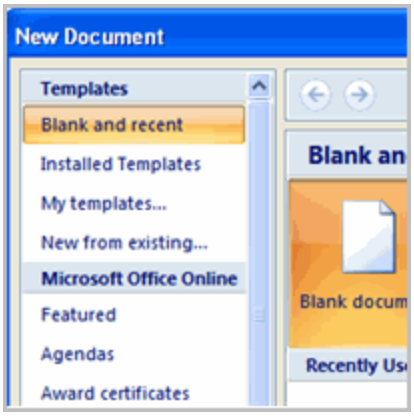
- Click the Microsoft Office Button.
- Select **Print → Quick Print**.
- The document automatically prints to the default printer.

Challenge!

Use the Cover Letter or any other Ms. Word document you choose to complete this challenge.

- Open an existing document.
- View the document in **Print Preview.**
- Close the Print Preview format **without** printing.
- Print two copies of the document.

Creating a New Document



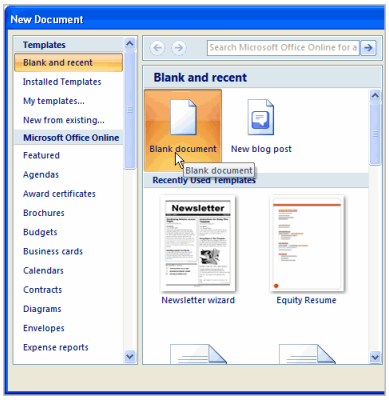
In addition to working with existing documents, you will want to be able to **create new documents**. Each time you open Ms. Word, a new, blank document appears; however, you will also need to know how to create new documents while an existing document is open.

In this lesson you will learn how to create new documents including templates and **blank documents** via the Microsoft Office Button.

New Documents

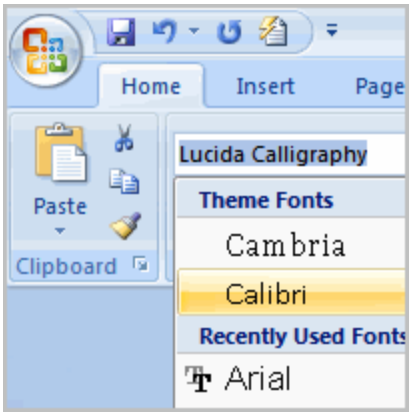
To Create a New, Blank Document:

- Click the **Microsoft Office Button**.
- Select **New**. The New Document dialog box appears.
- Select **Blank document** under the **Blank and recent** section. It will be highlighted by default.



- Click **Create**. A new, blank document appears in the Ms. Word window.

You can access templates that are installed on your computer or on Office Online. Click the Microsoft Office Button and select **New.** You can create blank documents and access templates from the dialog box that appears.



Challenge!

- Open Ms. Word. A **blank document** appears in the window.
- Type the sentence, "GCFLearnFree.org is a great, free resource."
- Click the **Microsoft Office Button** and create a new, blank document.
- Close both Ms. Word documents **without saving**.

Formatting Text

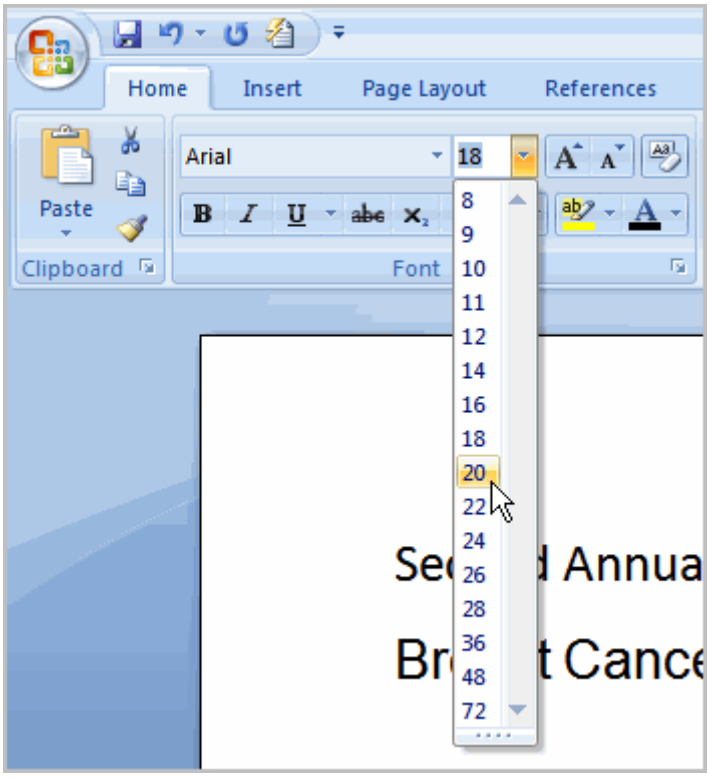
- To create and design effective documents, you need to know how to **format text**. In addition to making your document more appealing, **formatted text** can draw the reader's attention to specific parts of the document and help communicate your message.

  In this lesson you will learn to format the font size, style, and colour; and use the Bold, Italic, Underline, and Change Case commands.

Format Text

To Format Font Size:

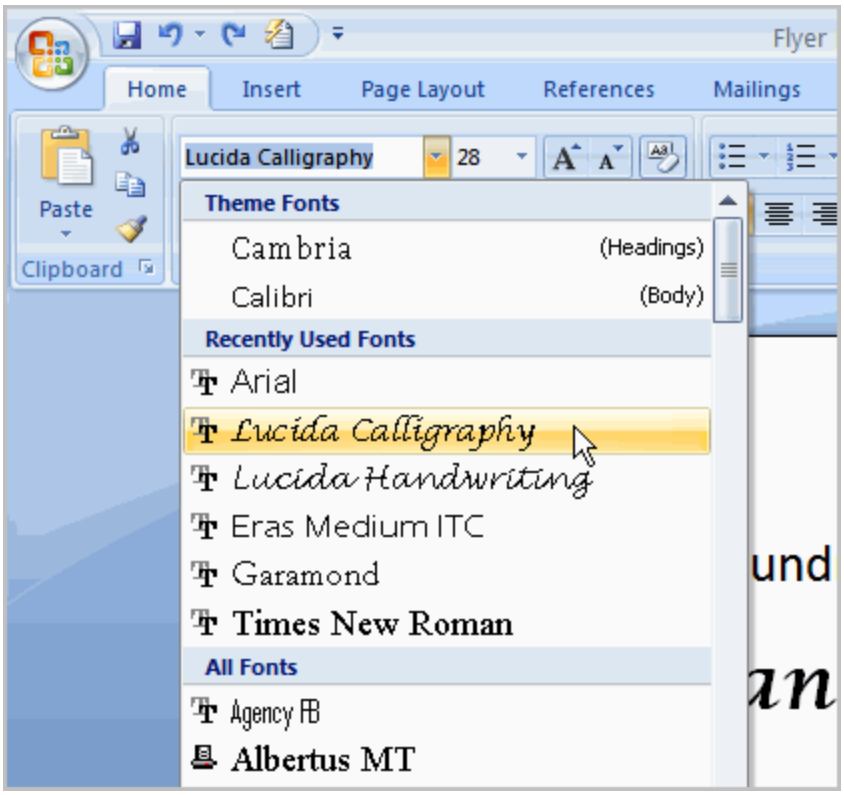
- Select the text you wish to modify.
- Left-click the **drop-down arrow** next to the **font size box** on the Home tab. The font size drop-down menu appears.
- Move your cursor over the various font sizes. A **live preview** of the font size will appear in the document.



- Left-click the font size you wish to use. The font size will change in the document.

To Format Font Style:

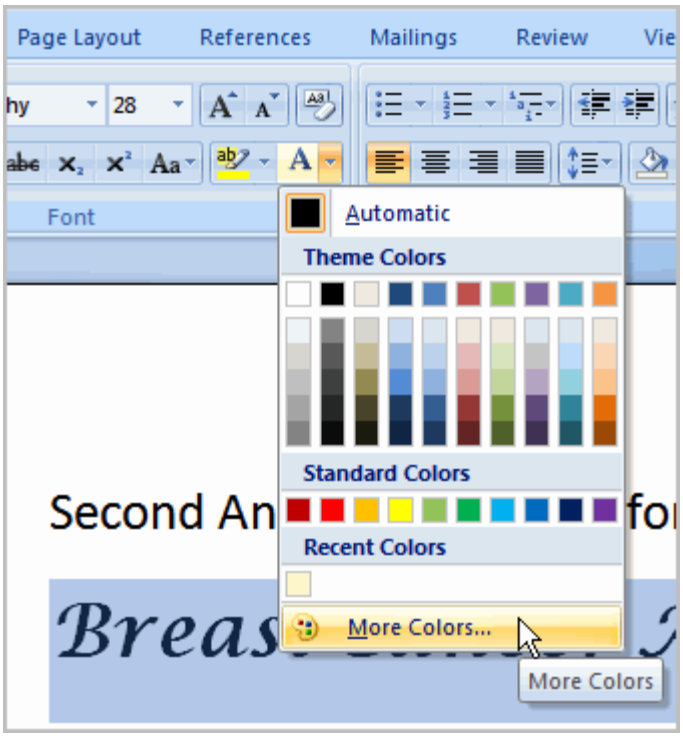
- Select the text you wish to modify.
- Left-click the **drop-down arrow** next to the **font style box** on the Home tab. The font style drop-down menu appears.
- Move your cursor over the various font styles. A **live preview** of the font will appear in the document.



- Left-click the font style you wish to use. The font style will change in the document.

To Format Font Colour:

- Select the text you wish to modify.
- Left-click the drop-down arrow next to the **font colour box** on the Home tab. The font colour menu appears.
- Move your cursor over the various font colours. A live preview of the colour will appear in the document.

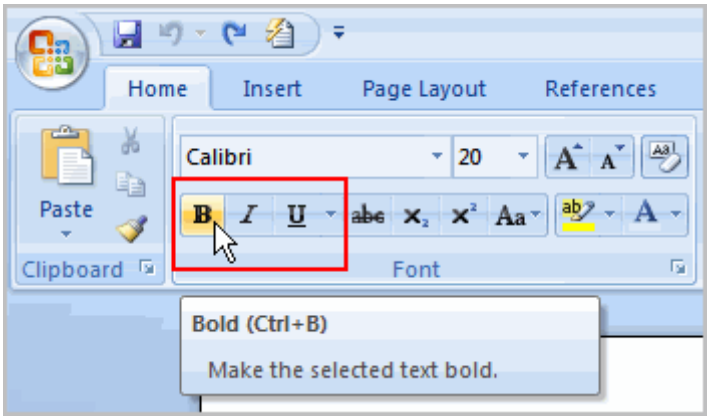


- Left-click the font colour you wish to use. The font colour will change in the document.

Your colour choices aren't limited to the drop-down menu that appears. Select **More Colours** at the bottom of the list to access the Colours dialog box. Choose the colour that you want and click OK.

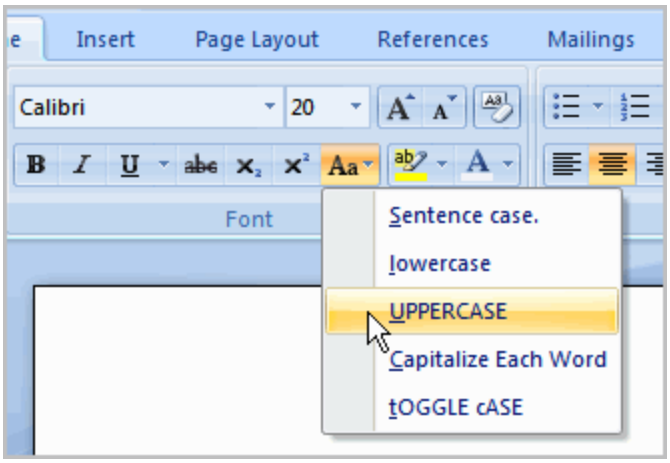
To Use the Bold, Italic, and Underline Commands:

- Select the text you wish to modify.
- Click the Bold, Italic, or Underline command in the **Font group** on the Home tab.



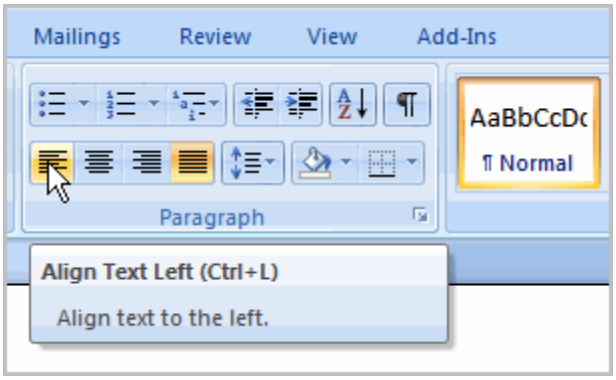
To Change the Text Case:

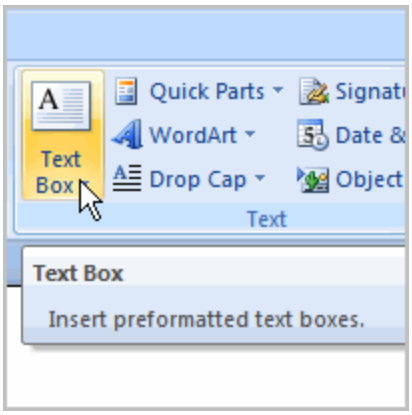
- Select the text you wish to modify.
- Click the **Change Case** command in the **Font** group on the Home tab.
- Select one of the case options from the list.



To Change Text Alignment:

- Select the text you wish to modify.
- Select one of the four **alignment options** from the Paragraph group on the Home tab.
    - **Align Text Left:** Aligns all the selected text to the left margin.
    - **Center:** Aligns text an equal distance from the left and right margins.
    - **Align Text Right:** Aligns all the selected text to the right margin.
    - **Justify:** Justified text is equal on both sides and lines up equally to the right and left margins. Traditionally many books, newsletters, and newspapers use full-justification.





Challenge!

- Create a new, blank Ms. Word document.
- Insert text into the document.
- Change the **font size** of some text.
- Change the **font style** of some text.
- Change the **font colour** of some text.
- Try various cases using the Change Case command.
- Try the 4 alignment commands.
- Save the document if you wish.

Working with Text boxes

- You may want to **insert a text box** into your document to draw attention to specific text or so that you have the ability to **easily move text** around within a document.

  In this lesson you will learn how to insert a text box and how to format it in various ways including resizing and moving it, and changing the text box shape, colour, and outline.

Text Boxes

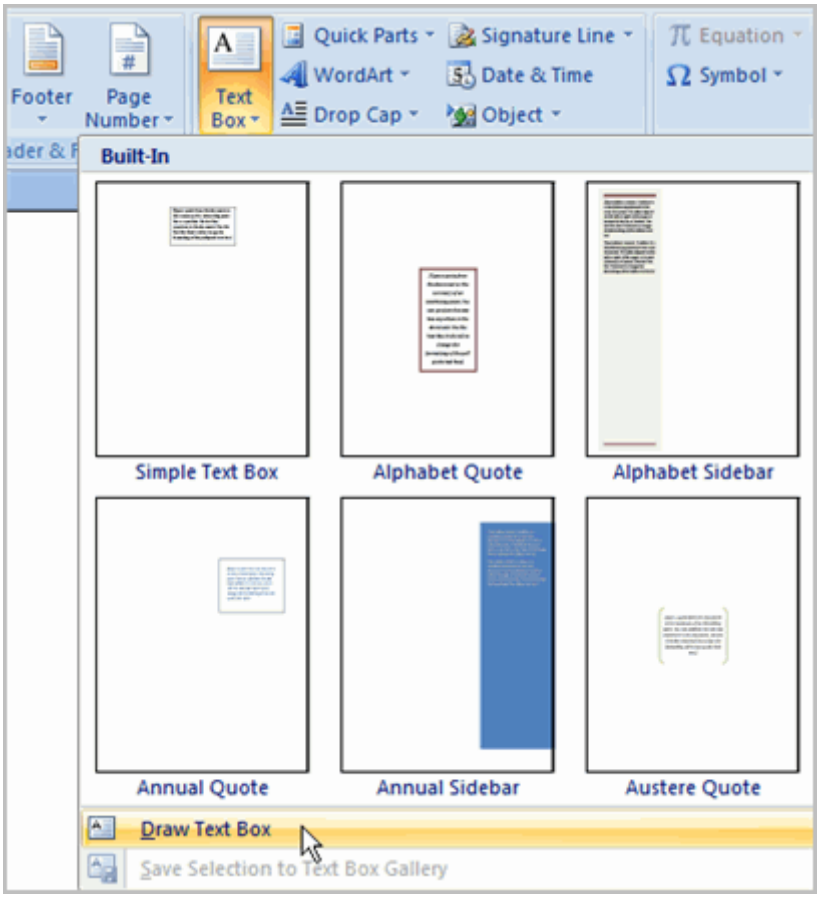
To Insert a Text box:

- Select the **Insert** tab on the Ribbon.
- Click the **Text Box** command in the **Text** group.

- Select a **Built-in text box** or **Draw Text Box** from the menu.
- If you select **Built-in text box**, left-click the text box you wish to use and it will appear in the document.

  OR

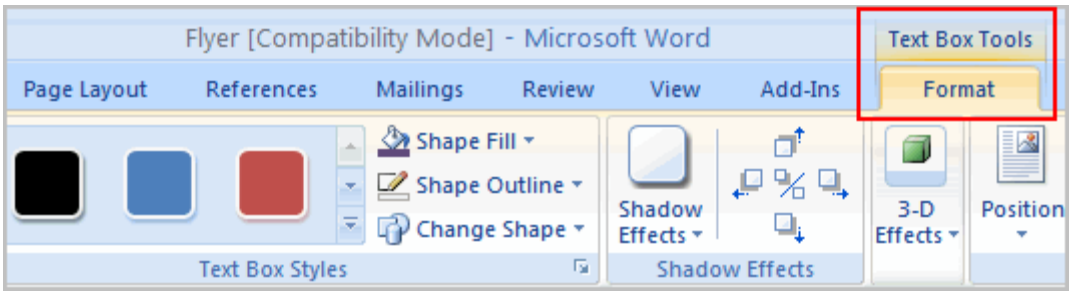
- If you select **Draw Text Box**, a crosshair cursor will appear. Left-click your mouse and while holding it down, drag your mouse until the text box is the desired size.



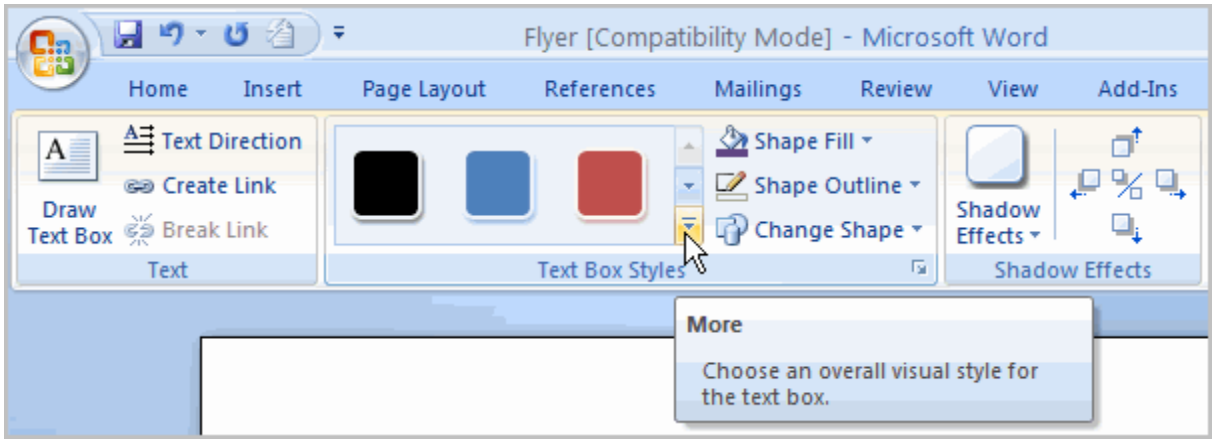
- Release the mouse button.

To Change Text Box Style:

- Select the text box. A new **Format tab** appears with Text Box Tools.



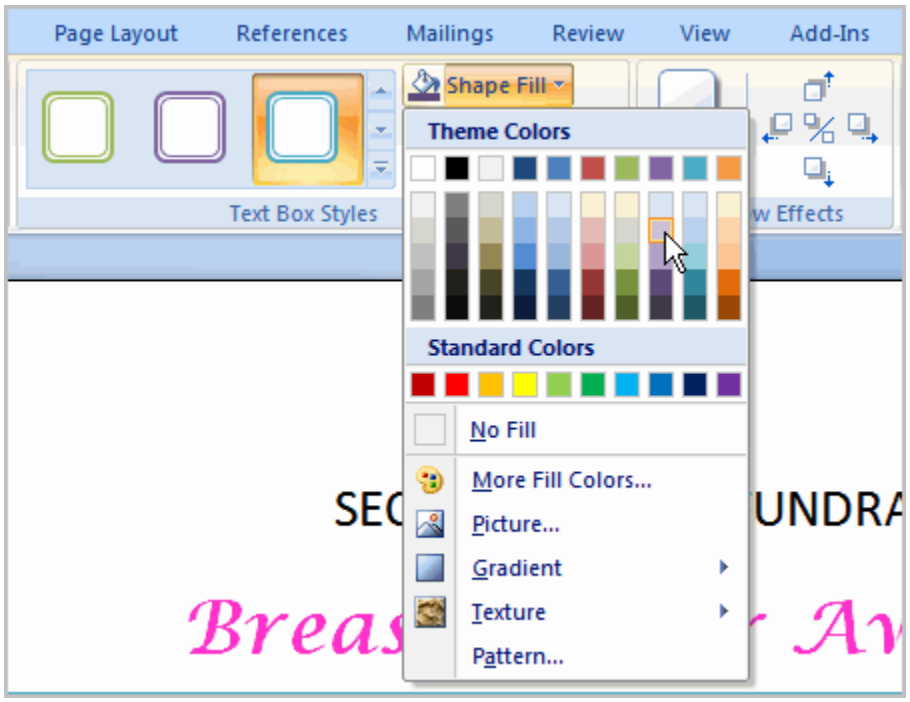
- Select the Format tab.
- Click the **More drop-down arrow** in the Text Box Style group to display more style options.



- Move your cursor over the styles and Live Preview will preview the style in your document.
- Left-click a style to select it.

To Change Shape Fill:

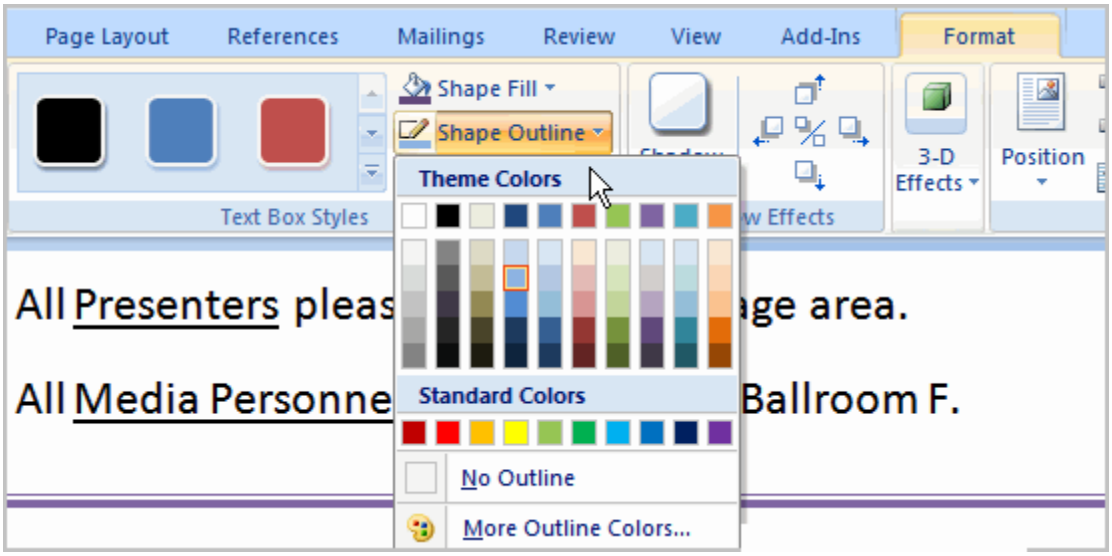
- Select the text box. A new **Format tab** appears with Text Box Tools.



- Click the **Shape Fill** command to display a drop-down list.
- Select a colour from the list, choose No Fill, or choose one of the other options.

To Change the Shape Outline:

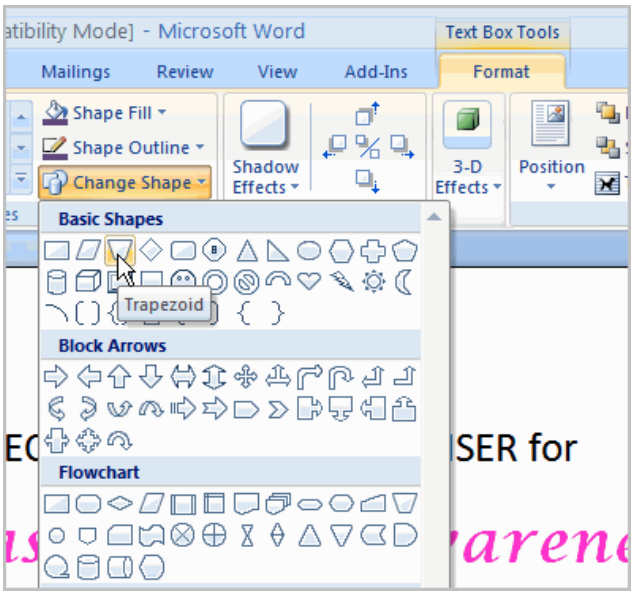
- Select the text box. A new **Format tab** appears with Text Box Tools.
- Click the **Shape Outline** command to display a drop-down list.



- Select a colour from the list, choose No Outline, or choose one of the other options.

To Change the Text Box Shape:

- Select the text box. A new **Format tab** appears with Text Box Tools.
- Click the **Change Shape** command to display a drop-down list.



- Select a shape from the list.

To Move a Text Box:

- Left-click the text box. Your cursor becomes a **cross with arrows** on each end.
- While holding the mouse button, **drag** the text box to the desired location on the page.
- Release the mouse button.

To Resize a Text Box:

- Select the text box.
- Left-click one of the **blue sizing handles**.
- While holding down the mouse button, **drag the sizing handle** until the text box is the desired size.

If you drag the **blue sizing handles** on any of the 4 corners, the text box will resize in the **same proportions**. The sizing handles on the top or bottom of the text box will allow you to resize **vertically**, while the handles on the left and right sides will resize the text box **horizontally**.

Challenge!

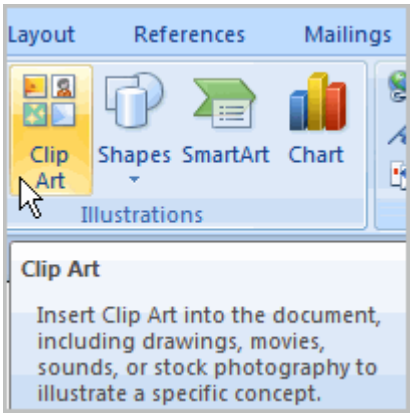
Use the Flyer or any other Ms. Word document you choose to complete this challenge.

- Open an existing document.
- Insert a text box.
- Change the **outline** of the text box to a different colour.
- Change the **fill colour** of the text box.
- **Move** the text box to the desired location.
- Enter any text you wish into the text box.

Inserting Clip Art

- You may want to insert various types of **illustrations** into your documents to make them more visually appealing. Illustrations include ClipArt, Pictures, SmartArt, Charts, and more.

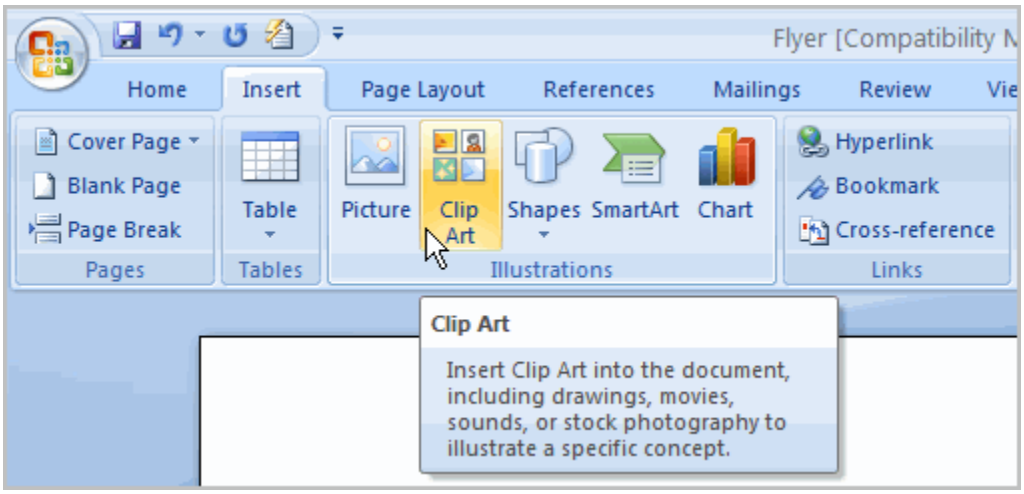
  In this lesson you will learn how to search for and locate clip art, and insert it into your documents.



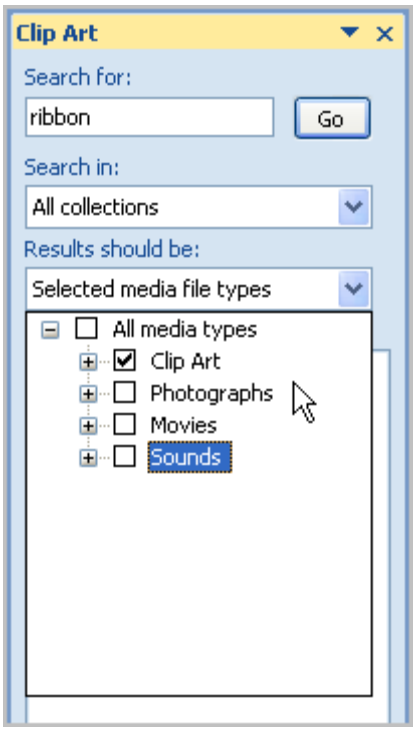
Working with ClipArt

To Locate Clip Art:

- Select the **Insert** tab.
- Click the **Clip Art** command in the **Illustrations** group.



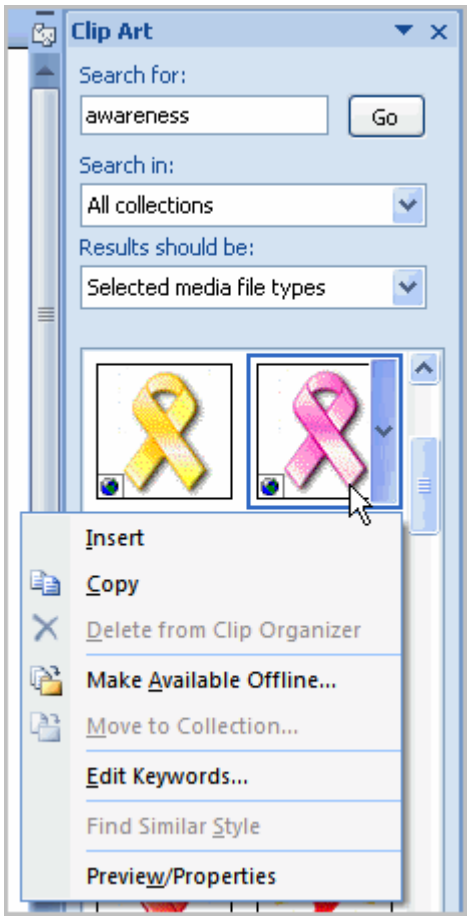
- The Clip Art options appear in the **task pane** on the right.
- Enter keyword in the **Search for:** field that is related to the image you wish to insert.
- Click the drop-down arrow next to the **Search in:** field.
- Select **Everywhere** to ensure that Ms. Word searches your computer and its online resources for an image that meets your criteria.
- Click the drop-down arrow in the **Results should be:** field.
- Deselect any types of images you do not wish to see.



- Click **Go**.

To Insert Clip Art:

- Review the results from a clip art search.
- Place your **insertion point** in the document where you wish to insert the clip art.
- Left-click an image in the task pane. It will appear in the document. OR
- Left-click the **arrow next to an image** in the task pane.
- Select Insert, Copy, or any of the other options on the list.

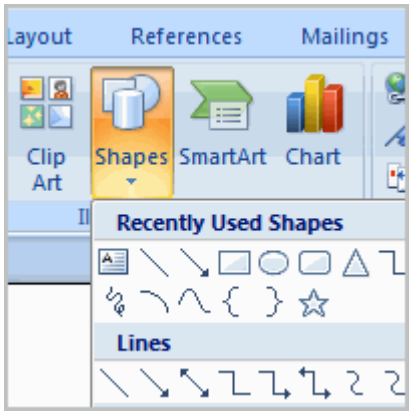


Challenge!

Use the Flyer or any other Ms. Word document you choose to complete this challenge.

- Open an existing Ms. Word document.
- Insert a clip art image from Office Online.

Working with Shapes



- You can add a **variety of shapes** to your document including arrows, callouts, squares, stars, flowchart symbols and more. Want to off-set your name and address from the rest of your resume? Use a line. Need to show the progress of a document through your office? Use a flow chart. While you may not need shapes in every document you create, they can add **visual appeal and clarity** to many documents.

In this lesson you will learn how to insert a shape and format it by changing its fill colour, outline colour, shape style, and shadow effects. Additionally, you will learn to apply 3-D effects to shapes that have this option.

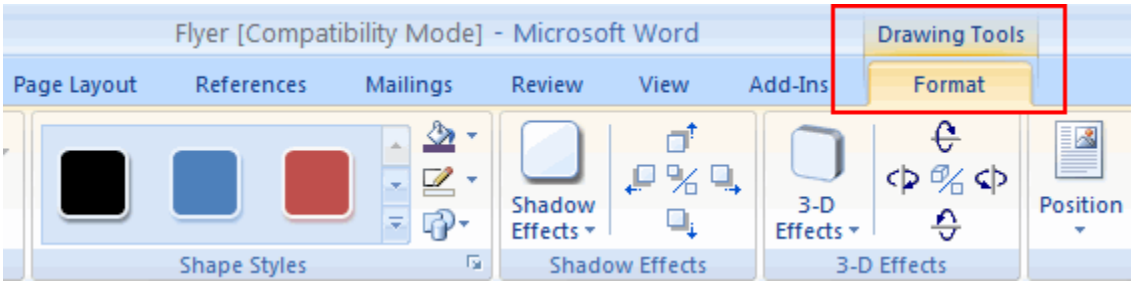
Using Shapes

To Insert a Shape:

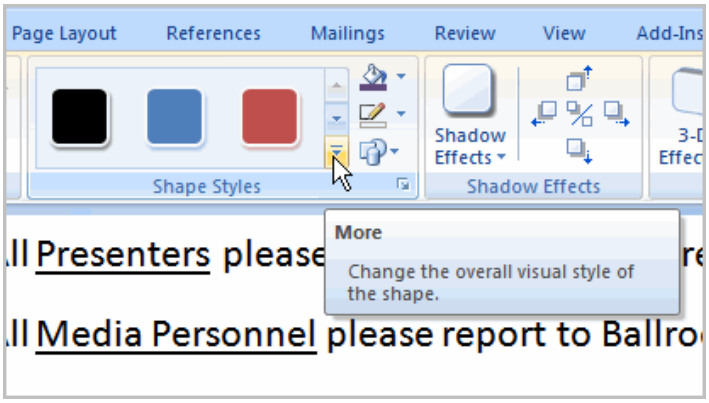
- Select the **Insert** tab.
- Click the **Shape** command.
- Left-click a shape from the menu. Your cursor is now a cross shape.
- Left-click your mouse and while holding it down, drag your mouse until the shape is the desired size.
- Release the mouse button.

To Change Shape Style:

- Select the shape. A new **Format tab** appears with Drawing Tools.



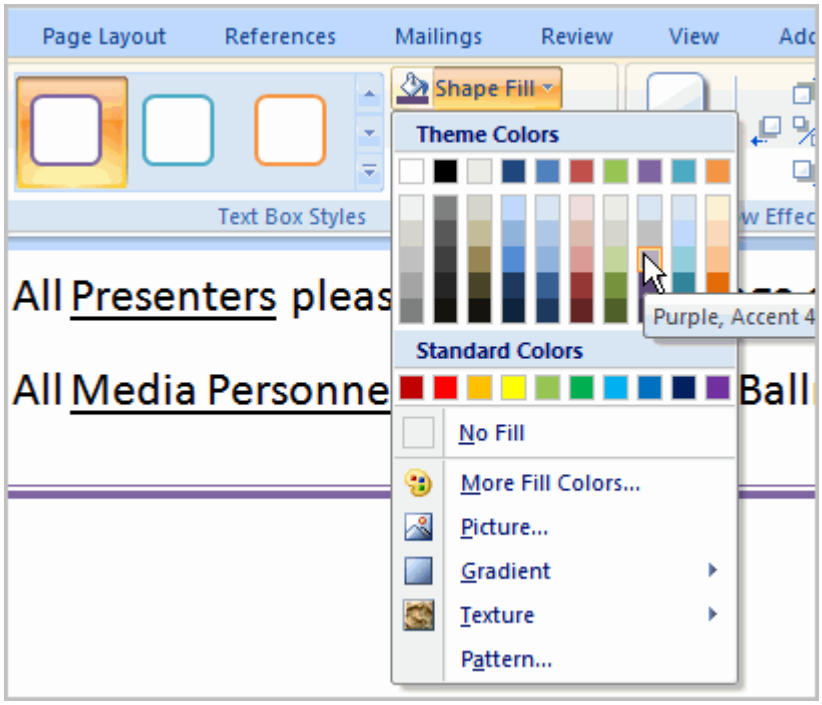
- Click the **More drop-down arrow** in the Shapes Style group to display more style options.



- Move your cursor over the styles and Live Preview will preview the style in your document.
- Left-click a style to select it.

To Change the Shape Fill Colour:

- Select the shape, a new **Format tab** appears with Drawing Tools.
- Click the **Shape Fill** command to display a drop-down list.



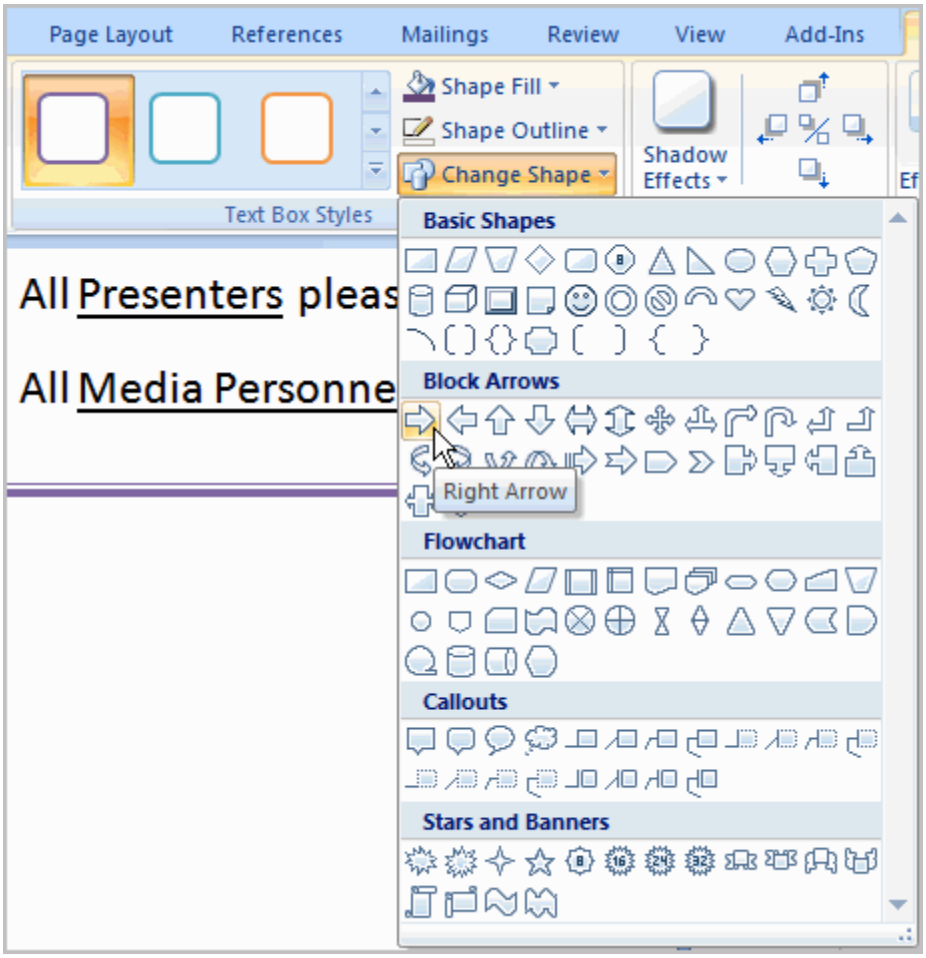
- Select a colour from the list, choose No Fill, or choose one of the other options.

To Change the Shape Outline:

- Select the shape. A new **Format tab** appears with Drawing Tools.
- Click the **Shape Outline** command to display a drop-down list.
- Select a colour from the list, choose No Outline, or choose one of the other options.

To Change to a Different Shape:

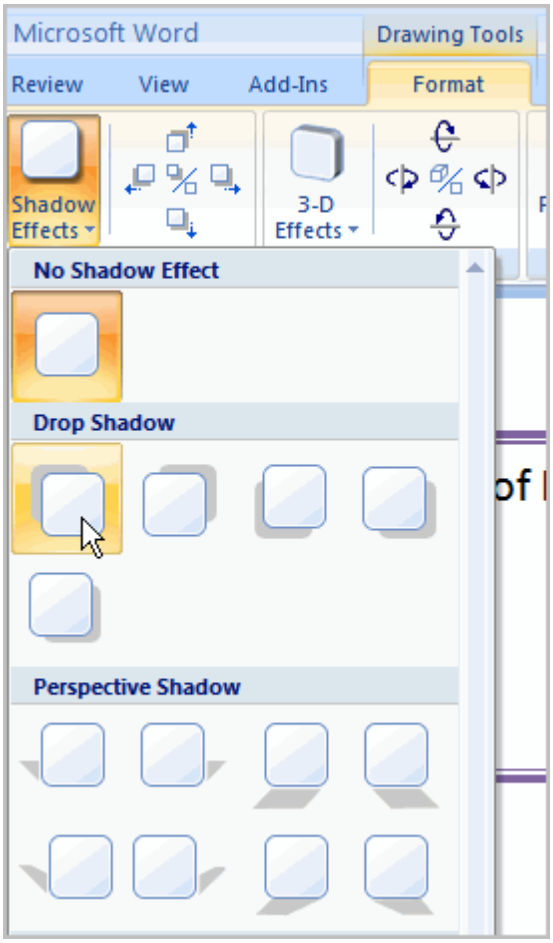
- Select the shape. A new **Format tab** appears with Drawing Tools.
- Click the **Change Shape** command to display a drop-down list.



- Select a shape from the list.

To Change Shadow Effects:

- Select the **Format** tab.
- Left-click the **Shadow Effects** command.
- Move your mouse over the menu options. Live Preview displays how it will appear in your document.

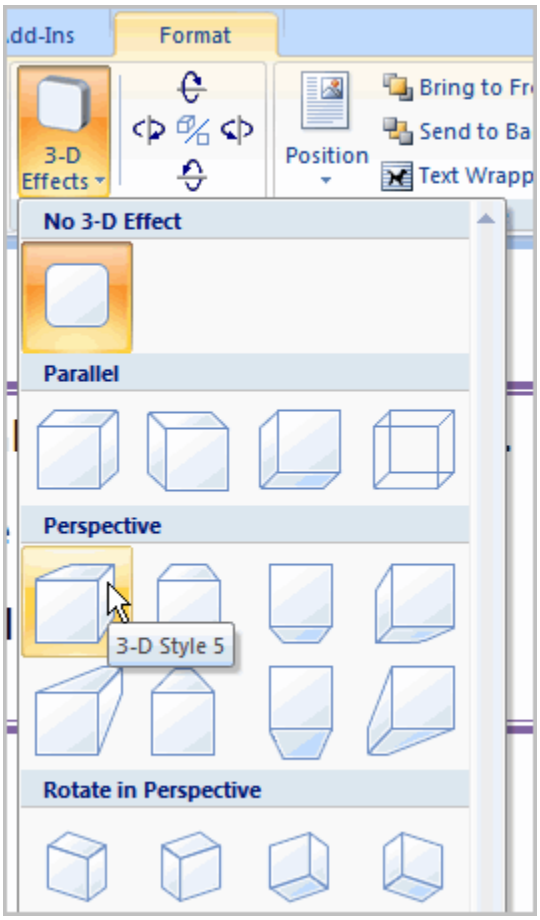


- Click an option to select the shadow effect.

Select **Shadow Colour** from the menu and choose a colour from the palette to change the colour of the shadow on your shape.

To Change 3D Effects:

- Select the **Format** tab.
- Left-click the **3-D Effects** command.
- Move your mouse over the menu options. Live Preview displays how it will appear in your document.



- Click an option to select the 3-D effect.

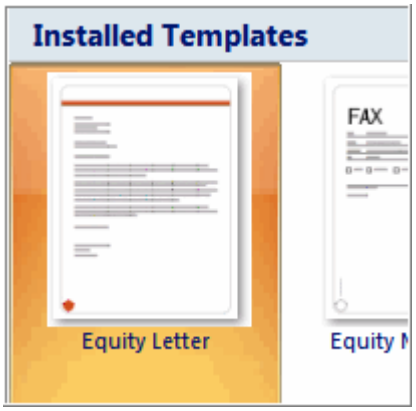
You cannot add a 3D effect to **all shapes**.

After you have chosen a **3D effect**, you can also change some other elements of your shape including the **colour, depth, direction, lighting, and surface** of the 3D effect on your shape. This can change the way the shape looks dramatically. You can access these options by clicking the 3D Effects command.

Challenge!

Use the Flyer or any other Ms. Word document you choose to complete this challenge.

- Open an existing Ms. Word document.
- Insert a **shape**.
- Change the shape to a **different shape**.



- Change the **fill colour**.
- Change the line colour.
- Try various shadow effects.
- Try various 3D effects.

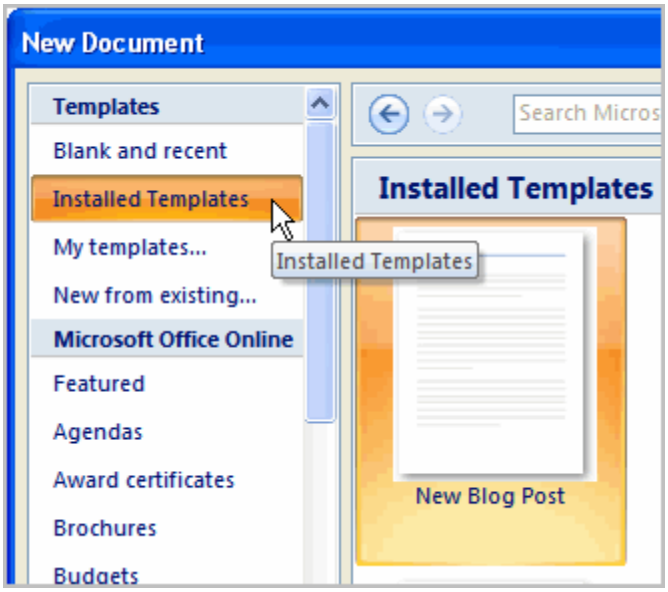
Using a Template

- A **template** is a pre-designed document that you can use to create new documents with the **same formatting**. With a template, many of the big document design decisions such as margin size, font style and size, and spacing are predetermined.
- In this lesson, you will learn how to create a new document with a template and insert text, as well as basic information about how templates work in Ms. Word 2007.

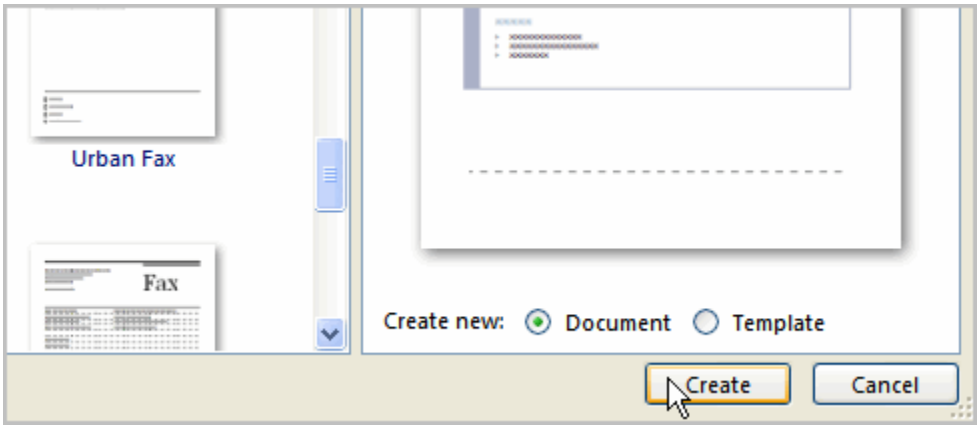
Create a New Document with a Template

To Insert a Template:

- Click the **Microsoft Office Button**.
- Select **New**. The New Document dialog box appears.
- Select **Installed Templates** to choose a template on your computer.



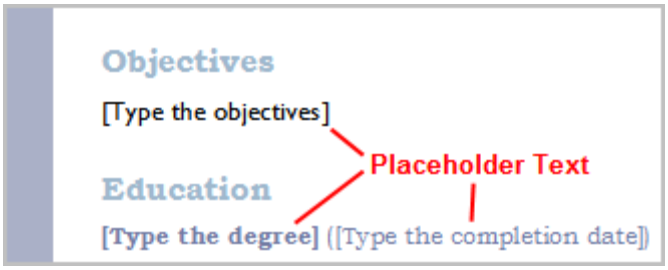
- Review the available templates.
- Left-click a template to select it.
- Click **Create** and the template opens in a new window.



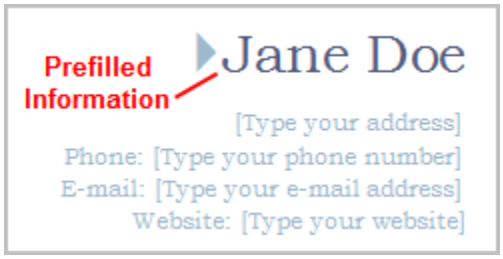
You can select any of the categories in the **Microsoft Office Online** section of the New Document Dialog box. This will display templates that are available online free of charge. Your computer must have Internet access to download these templates.

Information about Using Templates

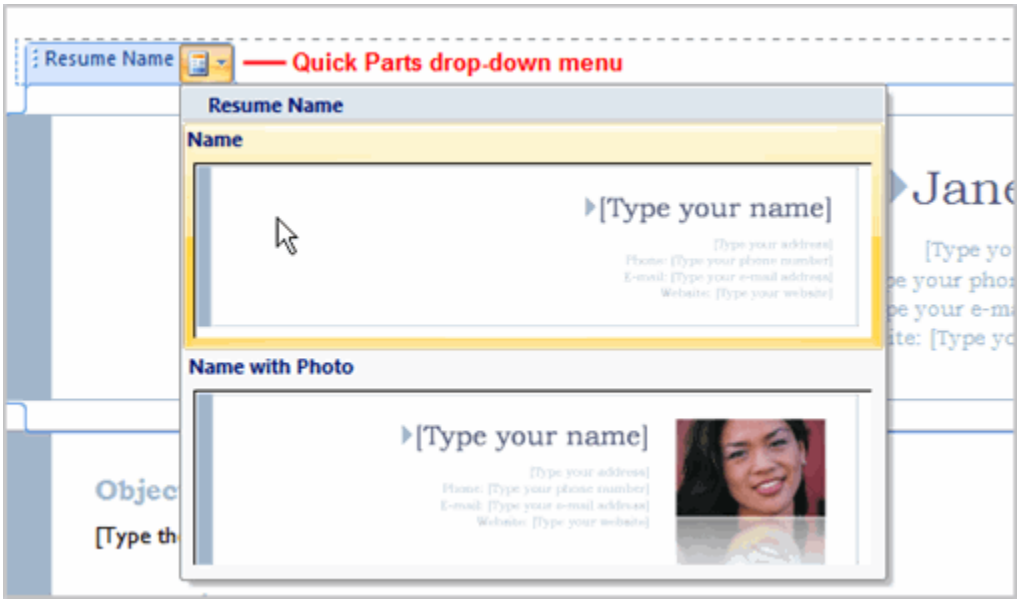
Templates include **placeholder text** that is surrounded by **brackets**. Often, this placeholder text includes information regarding the content for a specific area.



Additionally, some information is **prefilled** in the template. You can modify your Word Options and change the prefilled information that appears.

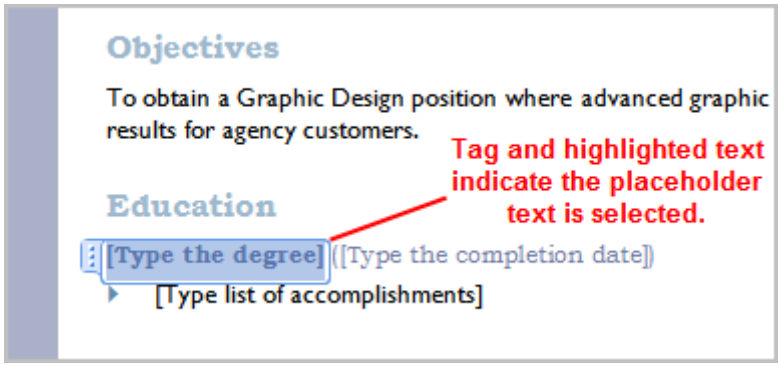


Ms. Word templates may include separate **Quick Parts** sections that give you various options for the template.



To Insert Text into a Template:

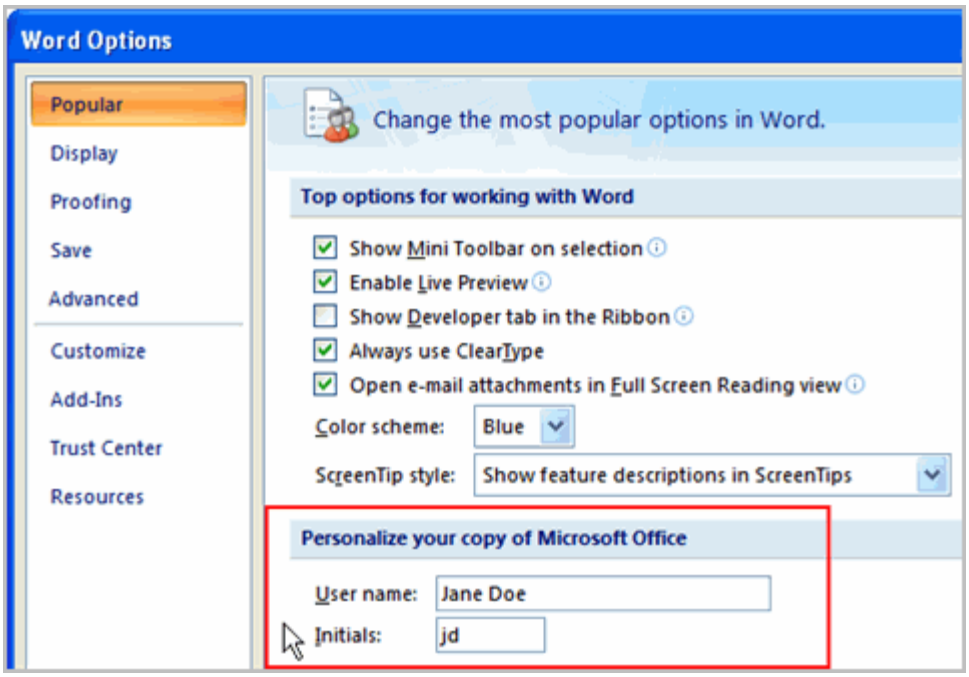
- Click **near** the text you want to replace. The text will appear **highlighted** and a template **tag** will appear.



- Enter text. The placeholder text will disappear.

To Change Prefilled Information:

- Select the **Microsoft Office Button**.
- Click the **Ms. Word Options** button at the bottom of the menu. The Word Options dialog box appears.
- Enter the **user name and/or initials** in the Popular section.



- Click OK.

Challenge!

- Create a **new document** using a **template**.

Note: Choose the Origins Resume template to follow along with the video.

- Enter text into the template.
- Modify the **user name** and **initials** for your version of Ms. Word if you are using a home computer.

  Note: If you are using a public computer such as one at a library, you do not need to change these settings.

- Save the document.

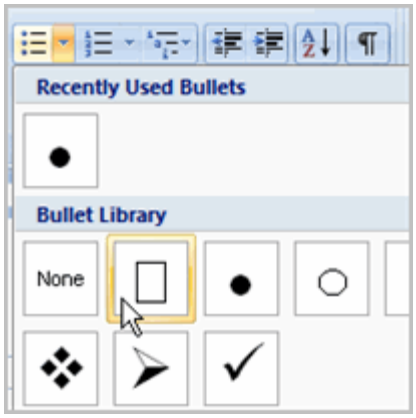
Working with Lists

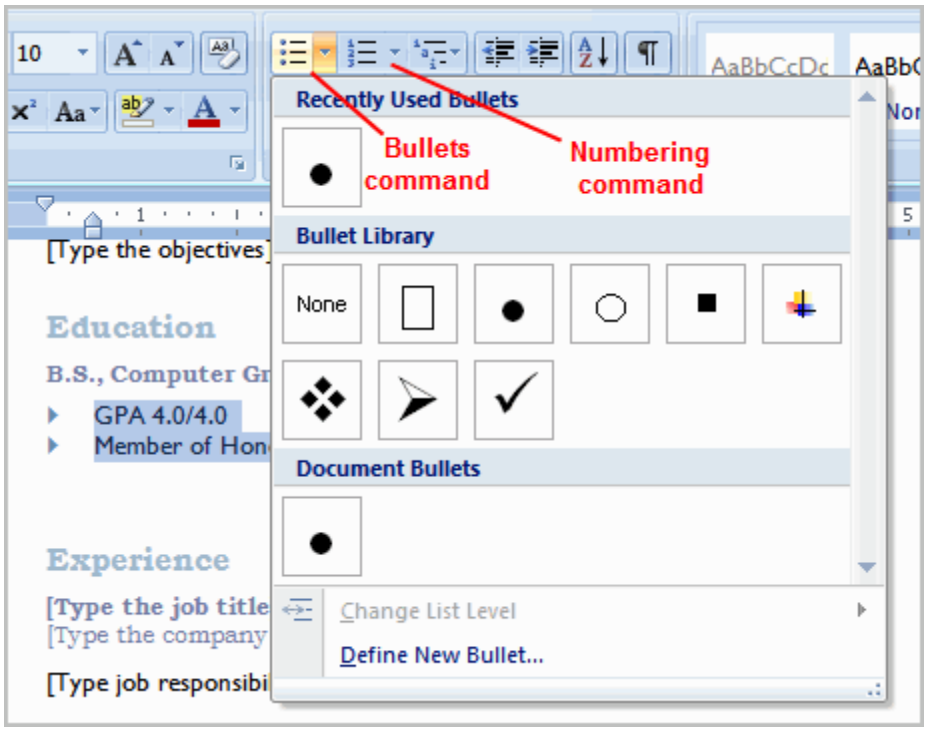
- Bulleted and numbered lists can be used in your documents to **arrange and format text** to draw emphasis. In this lesson, you will learn how to modify existing bullets, insert new bulleted and numbered lists, and select symbols as bullets.

Bulleted and Numbered Lists

To Insert a New List:

- Select the text that you want to format as a list.
- Click the **Bullets** or **Numbering** commands on the Home tab.





- Left-click the bullet or numbering style you would like to use. It will appear in the document.
- Position your cursor at the end of a list item and press the **Enter** key to add an item to the list.

To remove numbers or bullets from a list, select the list and click the **Bullets** or **Numbering** commands.

To Select an Alternate Bullet or Numbering Style:

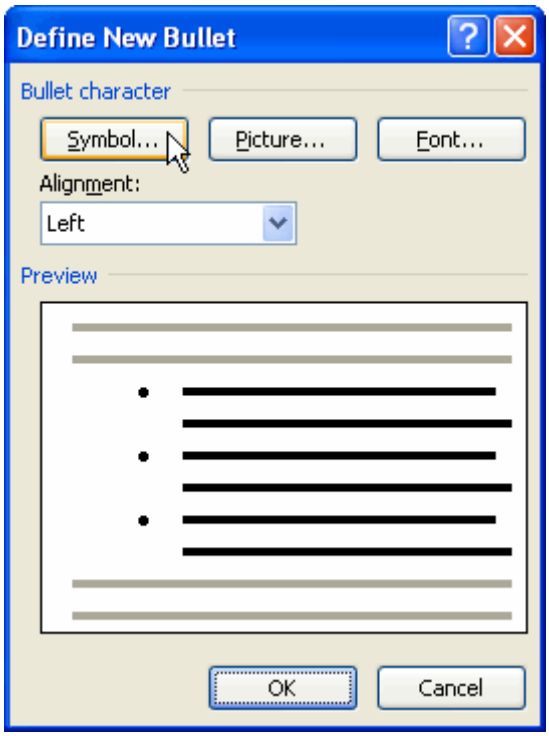
- Select all of the text in an existing list.
- Click the **Bullets** or **Numbering** commands on the Home tab.
- Left-click to select an alternate bullet or numbering style.

Bulleted Lists

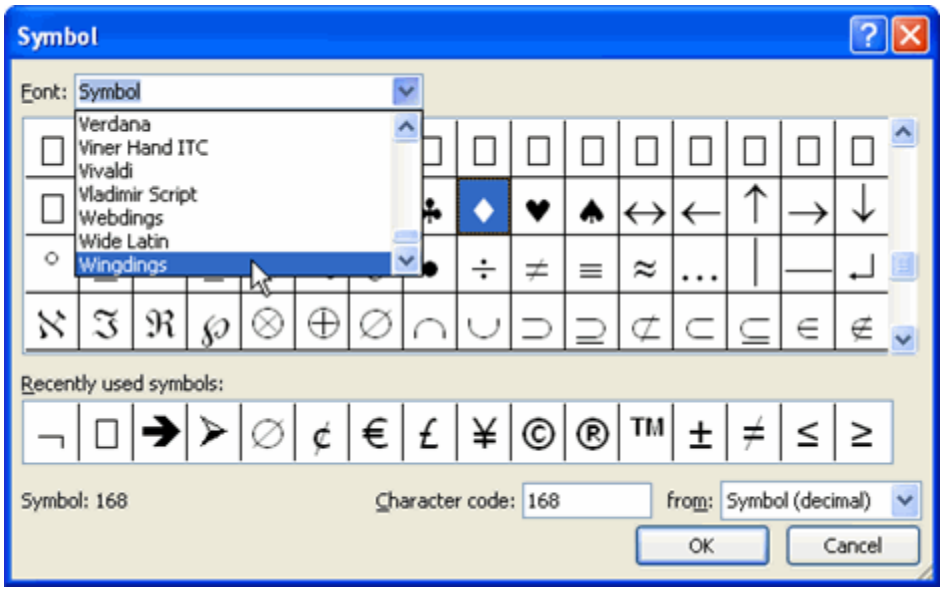
To Use a Symbol as a Bullet:

- Select an existing list.
- Click the **Bullets** command.

- Select **Define New Bullet** from the list. The Define New Bullet dialog box appears.
- Click the **Symbol** button. The Symbol dialog box appears.



- Click the **Font:** drop-down box and select a font category.



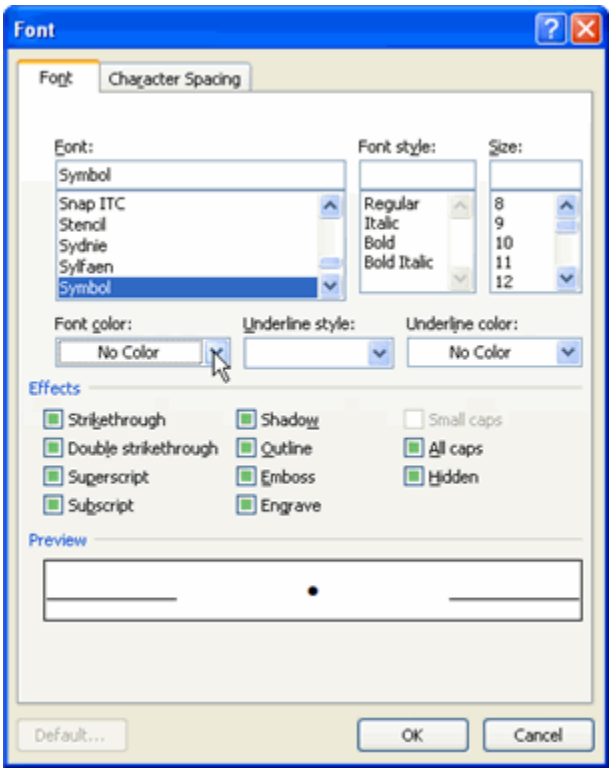
- Left-click a symbol to select it.

- Click OK. The symbol will now appear in the Preview section of the Define New Bullet dialog box.
- Click OK to apply the symbol to the list in the document.

You can use a picture as a bullet. Click the **Picture** button in the Define New Bullet dialog box, and then locate the image file on your computer.

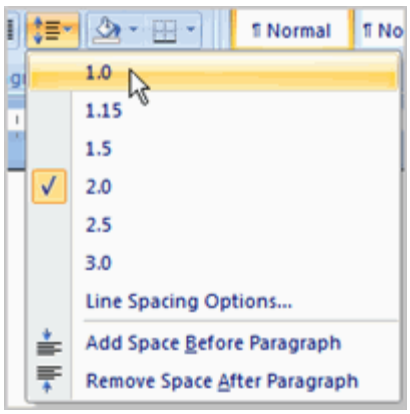
To Change the Bullet Colour:

- Select an existing list.
- Click the **Bullets** command.
- Select **Define New Bullet** from the list. The Define New Bullet dialog box appears.
- Click the **Font** button. The Font dialog box appears.



- Click the **Font colour:** drop-down box.
- Left-click a colour to select it.

- Click OK. The bullet colour will now appear in the Preview section of the Define New Bullet dialog box.
- Click OK to apply the bullet colour to the list in the document.



You can also change the bullet font and formatting in the Font dialog box.

Challenge!

Use the Resume or any Ms. Word template you choose to complete this challenge.

- Change the bullet of an existing list to a different bullet.
- Insert a **new numbered list** into the document.
- Modify the **colour** of a bullet.

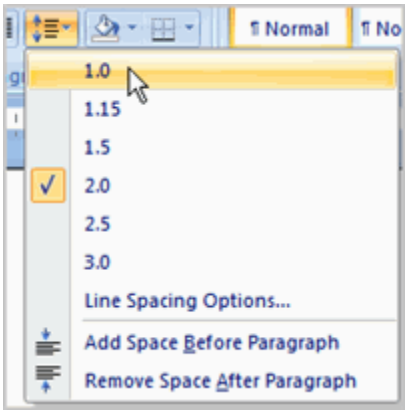
Line and Paragraph Spacing

- An important part of creating effective documents lies in the document design. As part of designing the document and making formatting decisions, you will need to know how to **modify the spacing**. In this lesson, you will learn how to modify the line and paragraph spacing in various ways.

Modifying Spacing

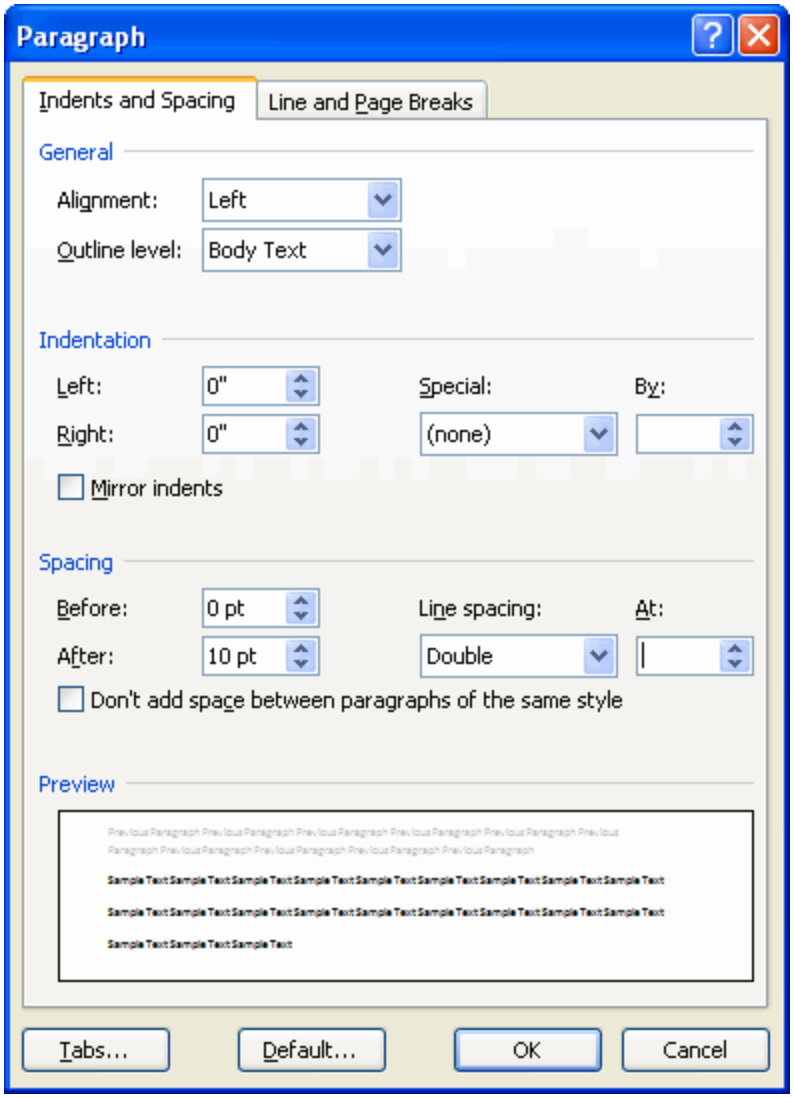
To Format Line Spacing:

- **Select** the text you want to format.
- Click the **Line spacing** command in the Paragraph group on the Home tab.
- Select a spacing option.



OR

- Select **Line Spacing Options**. The Paragraph dialog box appears.

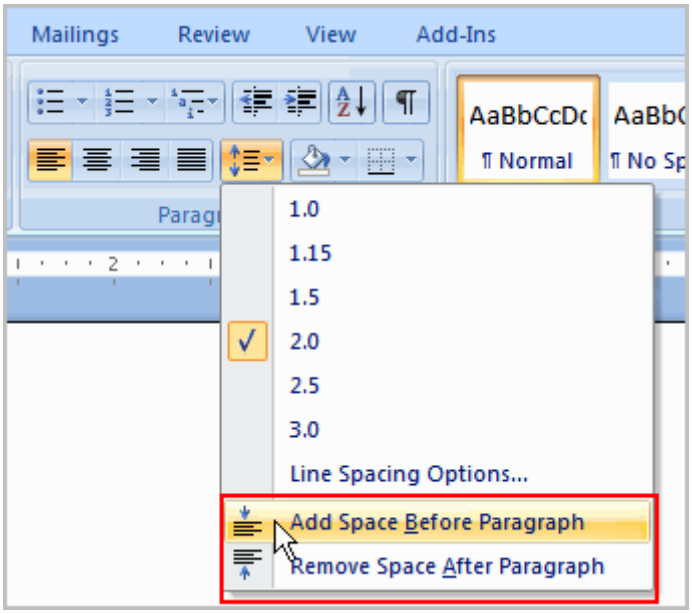


- Use the **Line spacing** drop-down menu to select a spacing option.
- Modify the **before and after** points to adjust line spacing, as needed.
- Click **OK**.

Just as you can format 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.

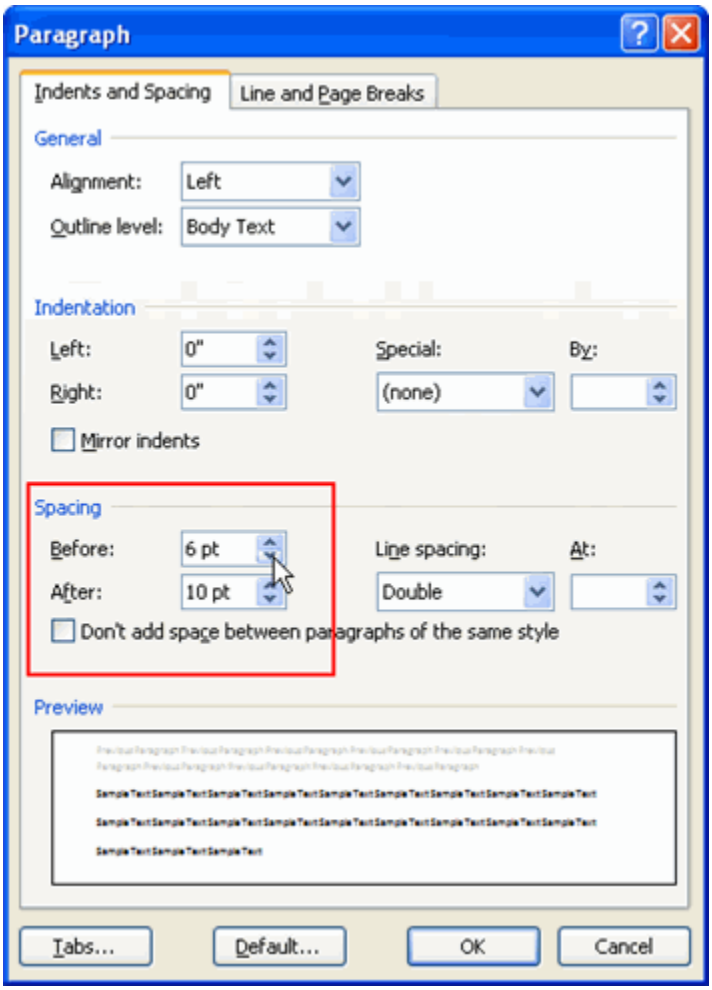
To Format Paragraph Spacing

- Click the **Line spacing** command on the Home tab.
- Select **Add Space Before Paragraph** or **Remove Space After Paragraph** from the menu.



OR

- Select **Line Spacing Options**. The Paragraph dialog box appears.
- Change the **Before** and **After** points in the Paragraph section.



- Click **OK**.

Line spacing is measured in **lines or points**, which is referred to as **leading**. When you reduce the leading, you automatically bring the lines of text closer together. Increasing the leading will space the lines out, allowing for improved readability.

Challenge!

Use the Resume or any Ms. Word template you choose to complete this challenge.

- Change the **line spacing** of a list.
- Change the line spacing of a paragraph of text.
- Change the **paragraph spacing** between body text and a heading.

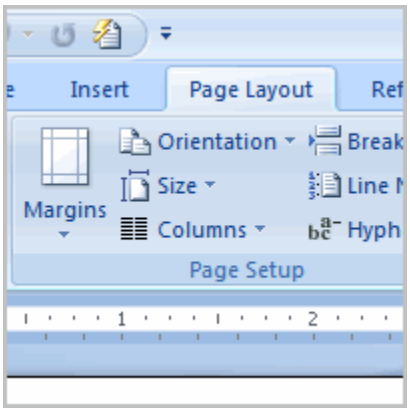
Modifying Page Layout

You may find that the **default page layout settings** in Ms. Word are not sufficient for the document you wish to create, in which case you will want to modify those settings. In addition, you may want to change the **page formatting** depending on the document you are creating.

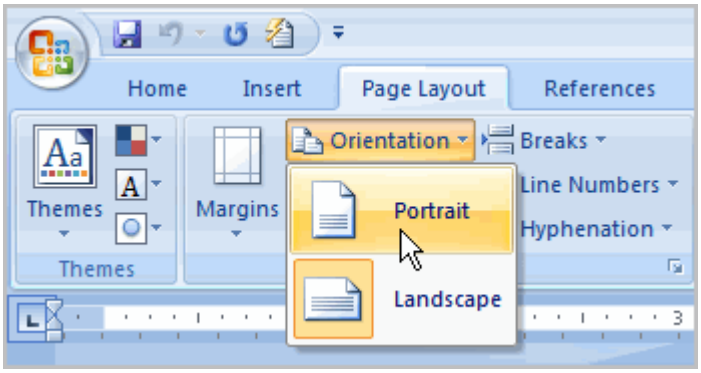
In this lesson, you will learn how to change the page orientation, paper size, and page margins, and insert a break.

Page Layout and Formatting

To Change Page Orientation:



- Select the **Page Layout** tab.
- Click the **Orientation** command in the Page Setup group.

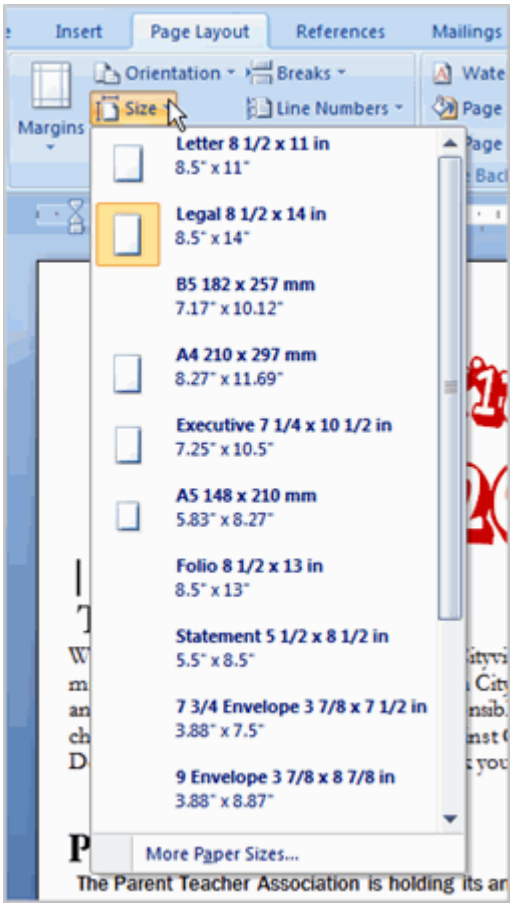


- Left-click either **Portrait** or **Landscape** to change the page orientation.

Landscape format means that everything on the page is oriented **horizontally** and **portrait** format is oriented **vertically**.

. **To Change the Paper Size:**

- Select the Page Layout tab.
- Left-click the **Size** command and a drop-down menu will appear. The current paper size is highlighted.



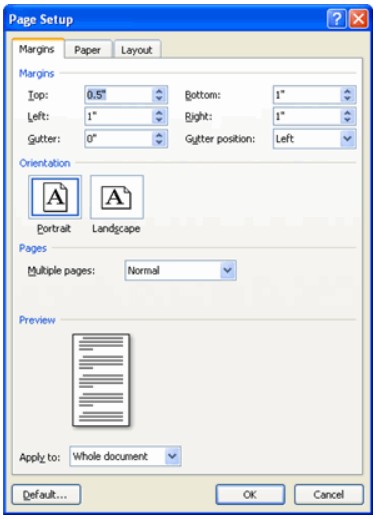
- Left-click a **size option** to select it. The page size of the document changes.

To Format Page Margins:

- Select the **Page Layout** tab.
- Click the **Margins** command. A menu of options appears. **Normal** is selected by default.
- Left-click the predefined margin size you want.

OR

- Select **Custom Margins** from the menu. The Page Setup dialog box appears.

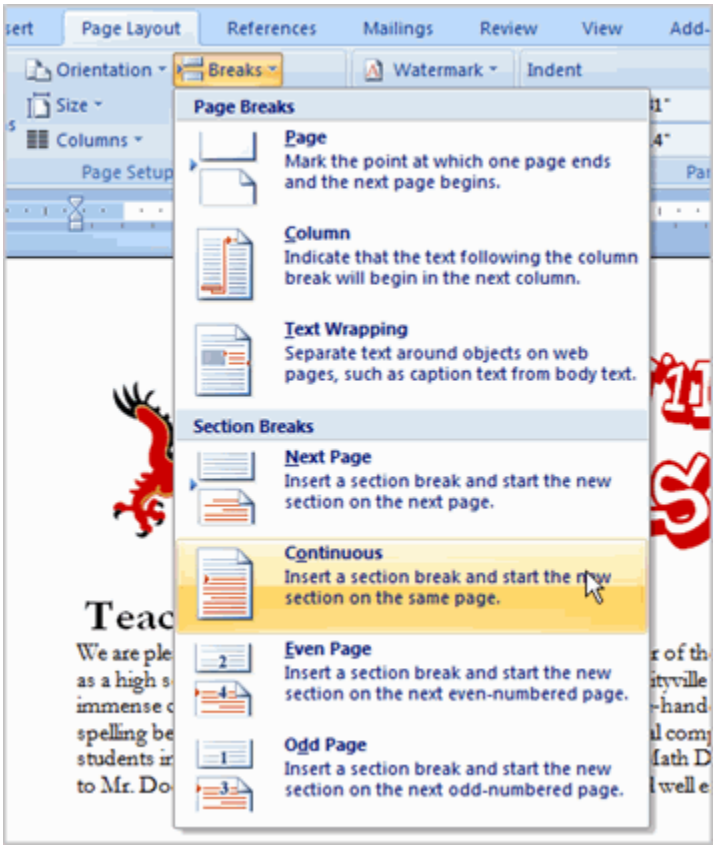


- Enter the desired margin size in the appropriate fields.

You can always access the **Page Setup** dialog box by clicking the small arrow in the bottom-right corner of the Page Setup group. The dialog box should look familiar to people who have used previous versions of Ms. Word.

To Insert a Break:

- Place your **insertion point** where you want the **break** to appear.
- Select the **Page Layout** tab.
- Click the **Breaks** command. A menu appears.



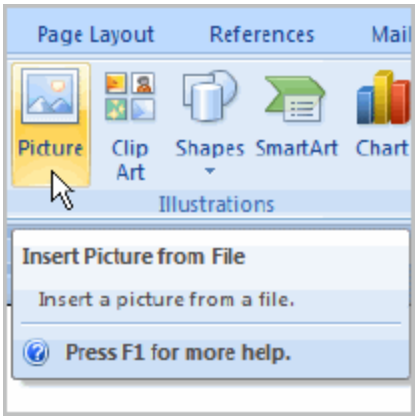
- Left-click a **break option** to select it. The break will appear in the document.

Why would you need to use a break? Each **type of break** serves a different purpose and will affect the document in different ways. **Page breaks** move text

to a new page before reaching the end of a page, while **section breaks** create a barrier between parts of the document for formatting purposes. **Column breaks** split text in columns at a specific point. Practice using the various break styles to see how they affect the document.

Challenge!

Use the Newsletter or any Ms. Word document you choose to complete this challenge.



- Change the **page orientation**.
- Change the paper size.
- Modify **at least** one margin.
- Insert a section break.

Working with Pictures

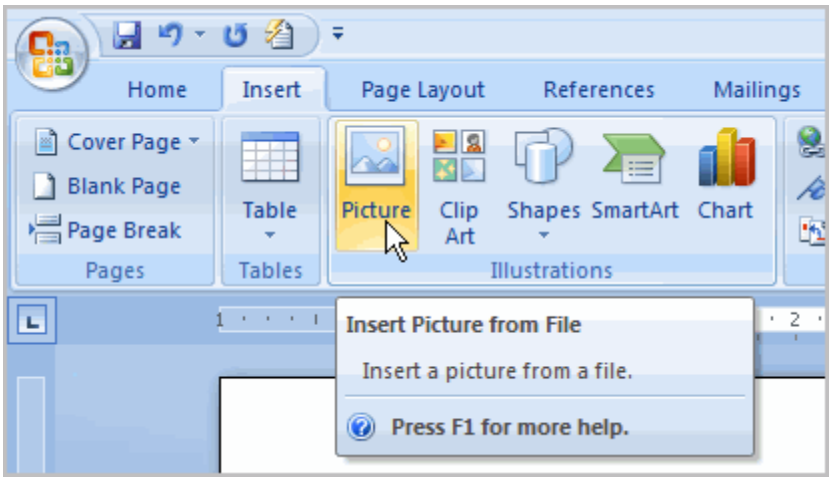
- Pictures can be added to Ms. Word documents and then formatted in various ways. The **picture tools** in Ms. Word 2007 make it easy to incorporate images into your documents and **modify those images** in innovative ways.

  In this lesson, you will learn how to insert a picture from your computer, change the picture style and shape, add a border, crop and compress pictures, and more.

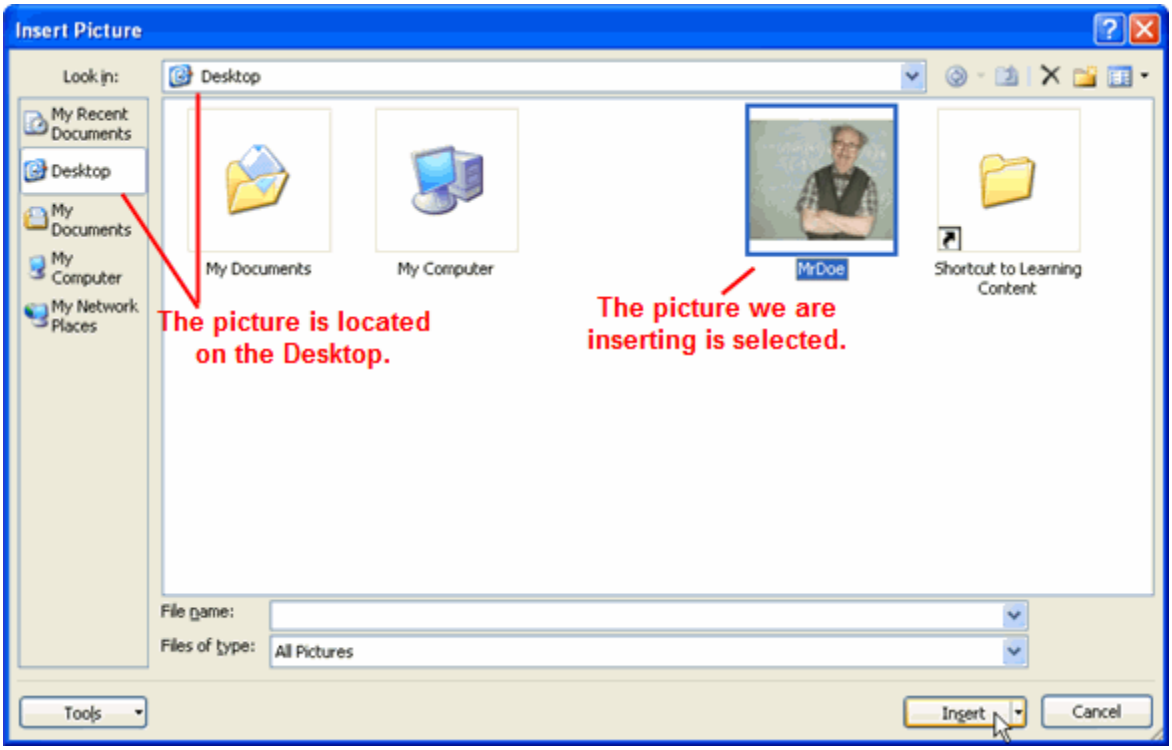
Inserting and Modifying Pictures

To Insert a Picture:

- Place your **insertion point** where you want the image to appear.
- Select the **Insert** tab.
- Click the **Picture** command in the **Illustrations** group. The Insert Picture dialog box appears.



- Select the image file on your computer.



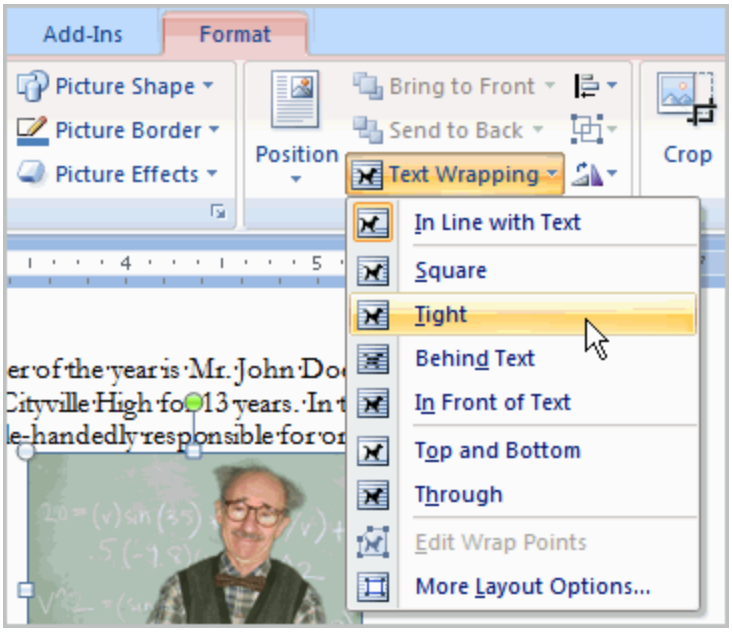
- Click **Insert** and it will appear in your document.

Left-click a **corner sizing handle**, and while holding down the mouse button, resize the image. The image retains its proportions.

To Wrap Text Around an Image:

- Select the image.

- Select the **Picture Tools Format** tab.
- Click the **Text Wrapping** command in the Arrange group.

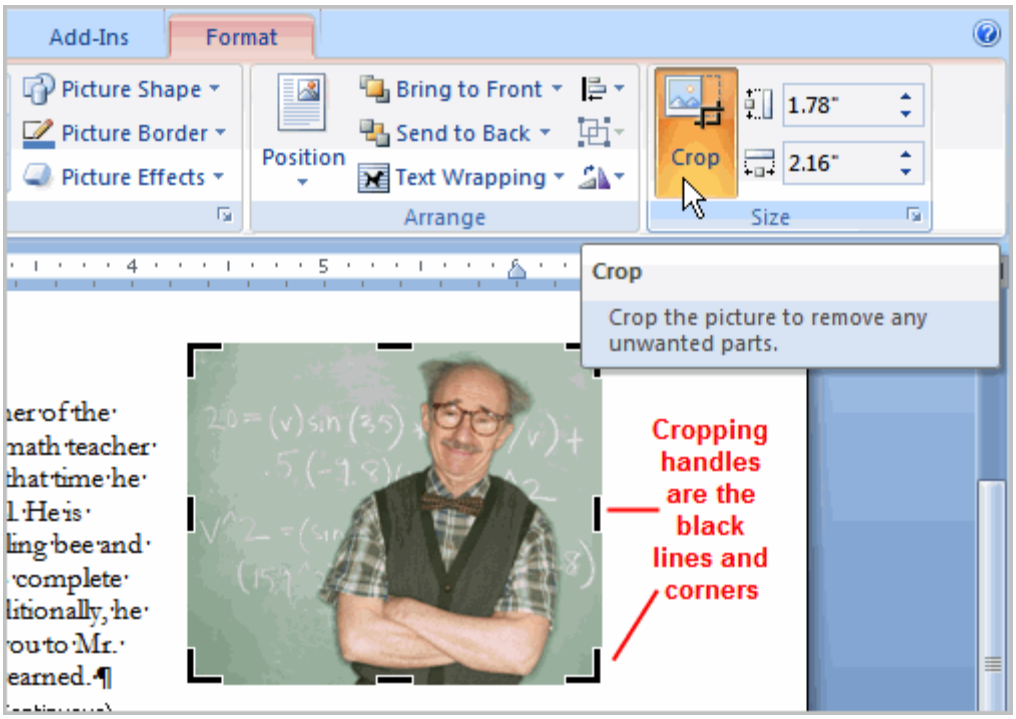


- Left-click a menu option to select it. In this example, we selected **Tight**.
- Move the image around to see how the text wraps for each setting.

If you can't get your text to wrap the way you wish, click the **Text Wrapping** command and select **More Layout Options** from the menu. You can make more precise changes in the Advanced Layout dialog box that appears.

To Crop an Image:

- Select the image.
- Select the **Format** tab.
- Click the **Crop** command. The black cropping handles appear.

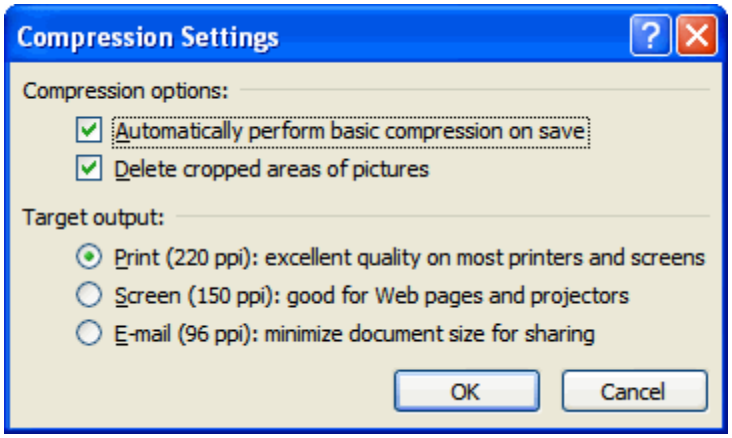


- Left-click and move a **handle** to crop an image.
- Click the **Crop** command to deselect the crop tool.

Corner handles will crop the image proportionally.

To Compress a Picture:

- Select the picture.
- Select the **Format** tab.
- Click the **Compress Pictures** command in the Adjust group. A dialog box appears.
- Click the **Options** button to access the **Compression Setting** dialog box.



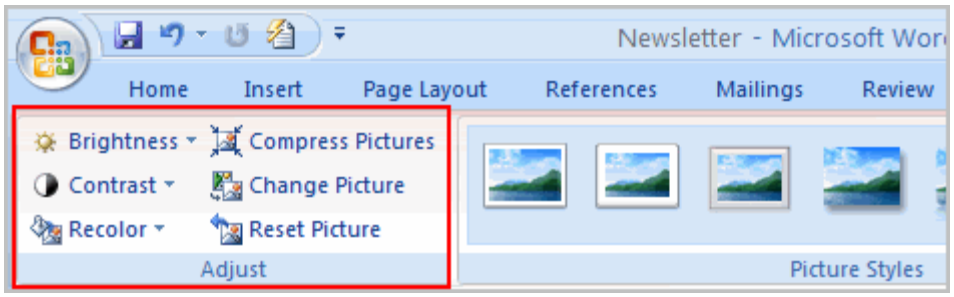
- Choose the target output.
- Change any of the default picture settings you wish.
- Click **OK** in the Compression Settings dialog box.
- Click **OK** in the Compress Pictures dialog box.

You need to monitor the **file size** of your images and documents that include images, especially if you send them via email. Cropping and resizing an image doesn't decrease the image file size, but compression does.

Other Picture Tools

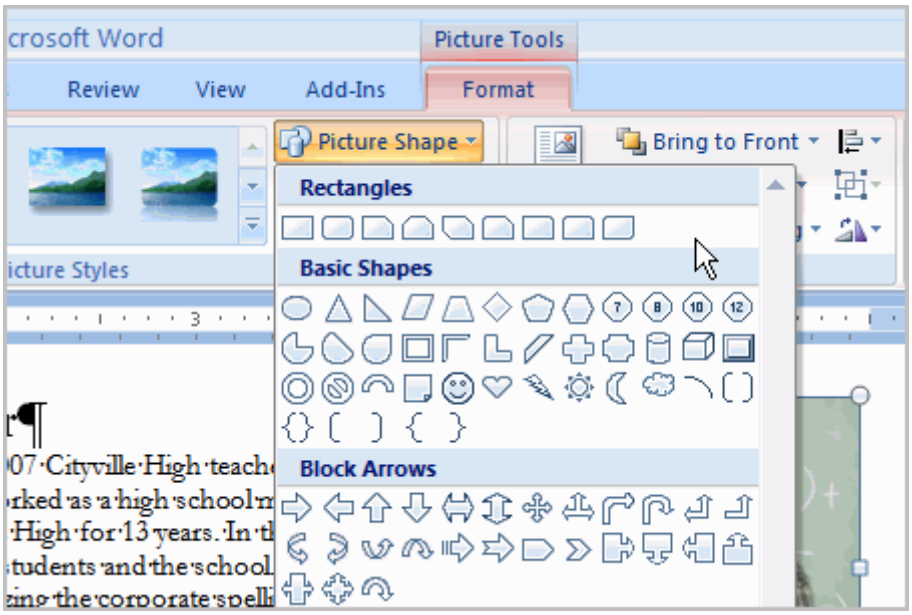
There are many other things you can do to modify a picture. From the Format tab, some of the other useful commands include:

- **Change Picture command**: Select a new picture from your computer.
- **Reset Picture command**: Revert to original image.
- **Brightness command**: Adjust the brightness of the image.
- **Colour command**: Adjust the contrast of the image from light to dark.
- **Recolour command**: Modify the colour in a variety of ways including Black and white, sepia, pink, purple, and more.



To Change the Shape of a Picture:

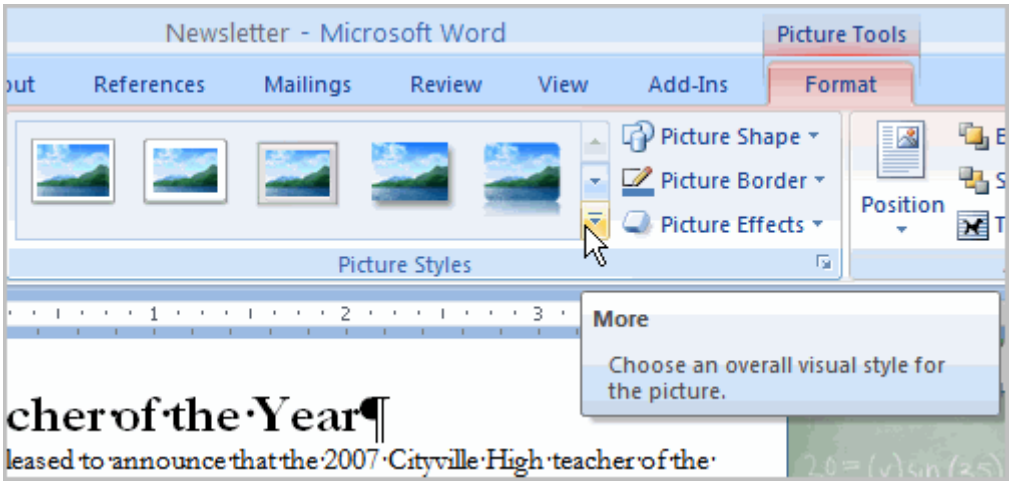
- Select the picture.
- Select the **Format** tab.
- Click the **Picture Shape** icon. A menu appears.



- Left-click a shape to select it.

To Apply a Picture Style:

- Select the picture.
- Select the **Format** tab.
- Click the **More** drop-down arrow to display all the picture styles.
- Hover over a picture style to display a Live Preview of the style in the document.



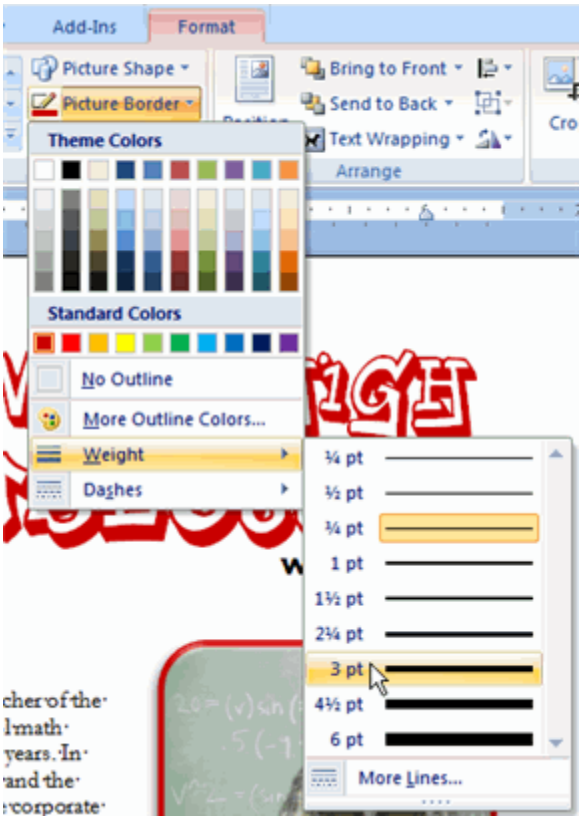
- Left-click a style to select it.

To Add a Border to a Picture Manually:

- Select the picture.
- Select the **Format** tab.
- Left-click the **Picture Border** command and select a colour.

OR

- Select **Weight** from the menu and choose a line weight.



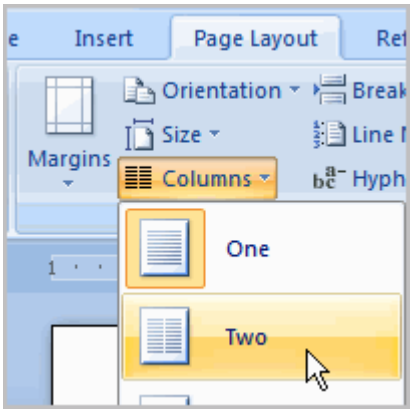
Challenge!

Use the Newsletter or any Ms. Word document you choose to complete this challenge.

- Insert a picture into a document.
- Crop the image proportionally.
- Apply a **picture style** to the image.
- Compress the picture.

Columns and Ordering

- Two useful formatting features in Ms. Word are the **columns** and **ordering** commands. **Columns** are used in many types of documents, but are most commonly used in newspapers, magazines, academic journals, and newsletters. **Ordering** is the process of layering two or more shapes so that they



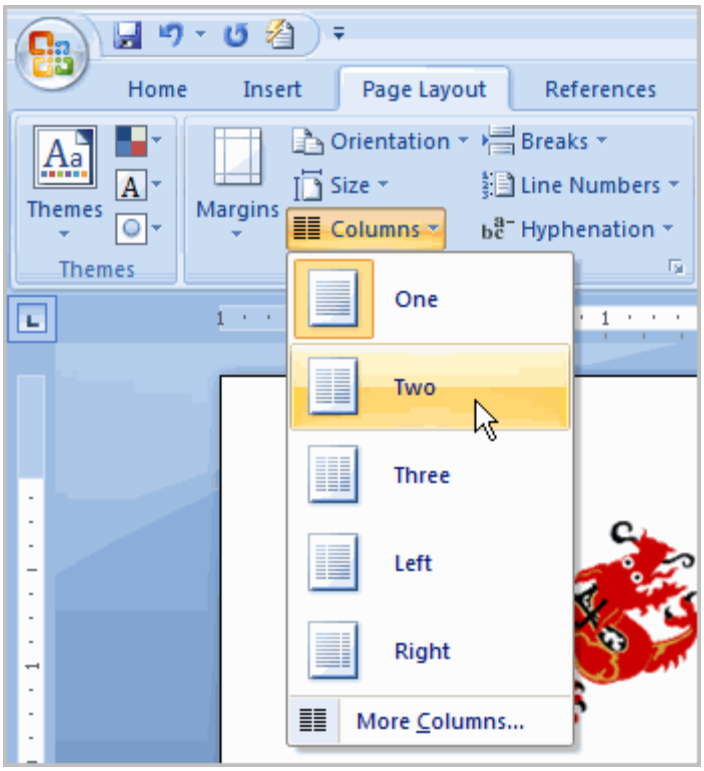
appear in a certain way. For example, if you have two shapes that overlap and want one shape to appear on top, you will have to **order** the shapes.

In this lesson you will learn how to insert columns into a document and order an image and a shape.

Inserting Columns and Ordering Objects

To Add Columns to a Document:

- Select the text you want to format.
- Select the **Page Layout** tab.
- Left-click the **Columns** command.



- Select the number of columns you would like to insert.

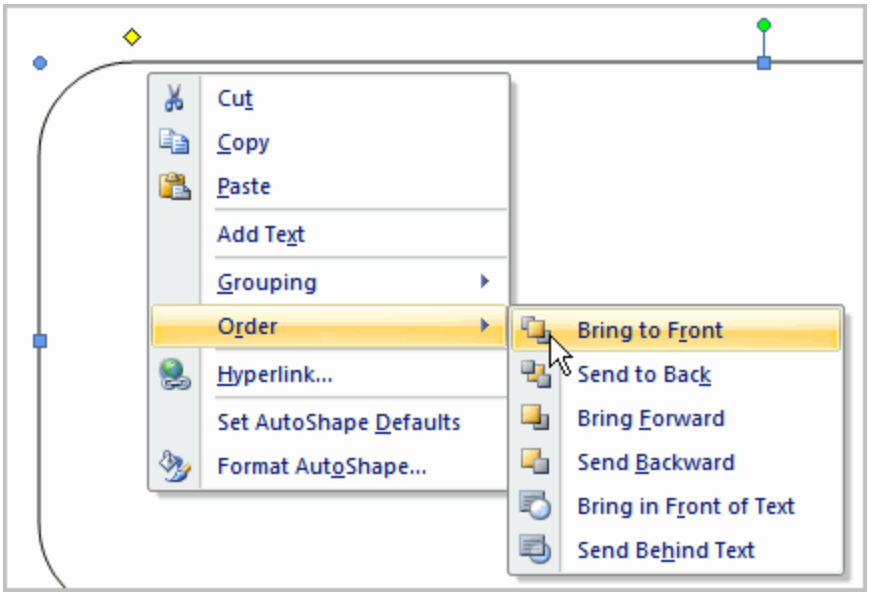
Click the **Show/Hide** command on the Home tab to display the **paragraph marks** and **breaks**.

The **Format Painter** command allows you to easily format text to appear like other text in your document. Select the text that is formatted the way you want,

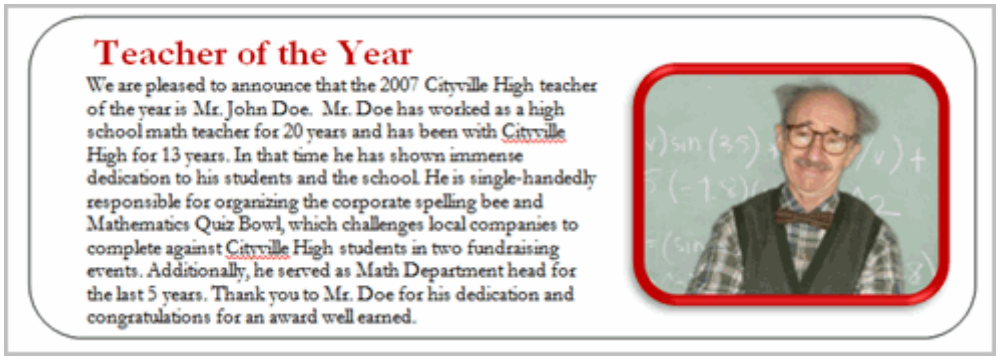
click the **Format Painter** command on the Home tab, and then select the text you want to change. The new text now appears modified.

To Change the Order of Objects:

- Right-click the object you wish to move. In this example, click the shape.
- In the menu that appears, select **Order**.



- Select a menu option that will arrange the item in the desired way. In this example, select Send Behind Text.
- The text and image are now displayed layered on top of the shape.



Use the Newsletter or any Ms. Word document you choose to complete this challenge.

- Select **text** you want to format into columns.
- Format the selected text into **two columns**.
- Insert a picture and a shape.
- Practice ordering using the picture and shape.

Working with Headers and Footers

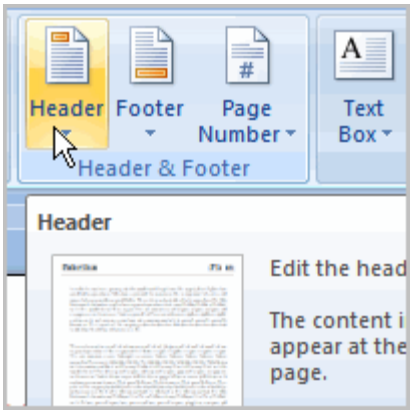
- You can make your document look **professional and polished** by utilizing the header and footer sections. The **header** is a section of the document that appears in the **top margin**, while the **footer** is a section of the document that appears in the **bottom margin**. Headers and footers generally contain information such as page number, date, document name, etc.

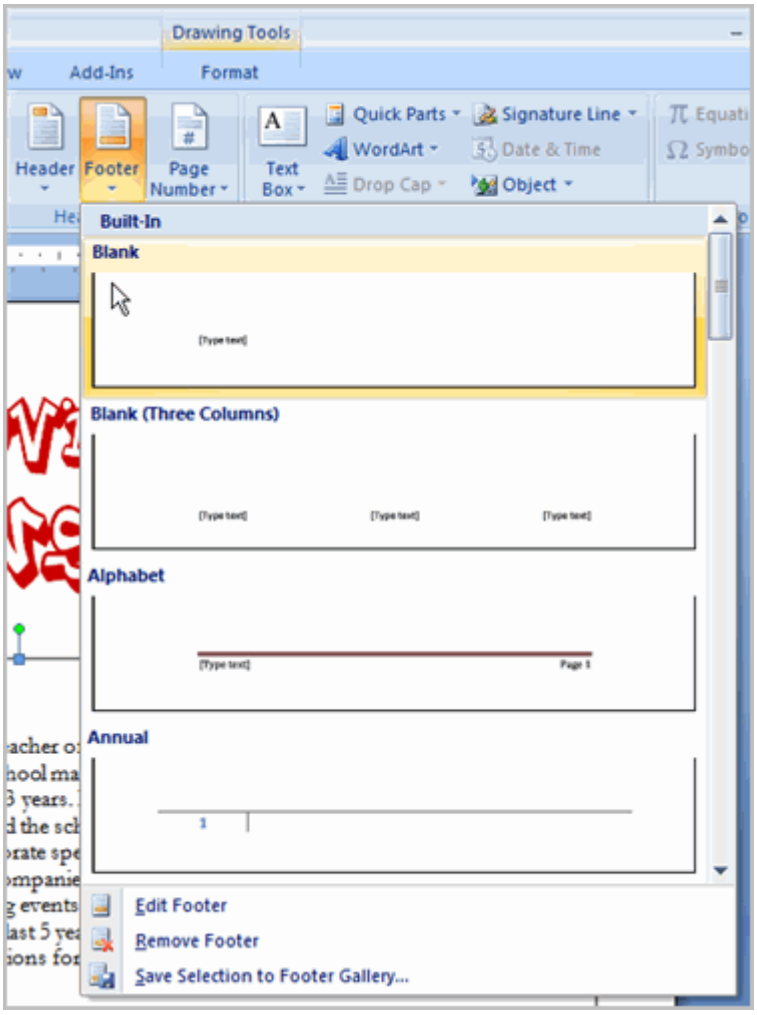
  Now you will learn how to insert built-in and blank headers and footers.

Headers and Footers

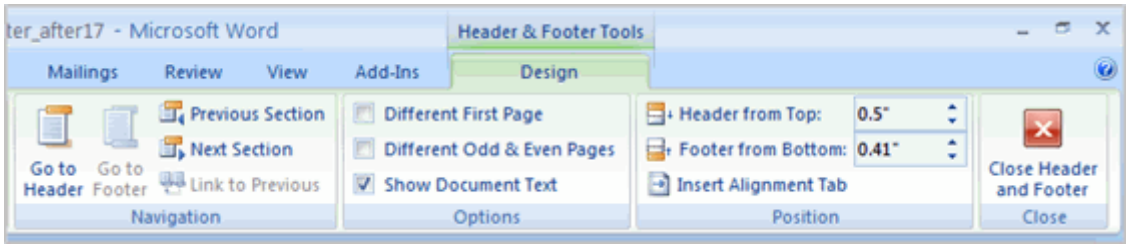
To Insert a Header or Footer:

- Select the **Insert** tab.
- Click either the **Header** or **Footer** command. A menu appears with a list of **built-in options** you can use.
- Left-click one of the built-in options and it will appear in the document. OR
- Left-click **Blank** to select it.

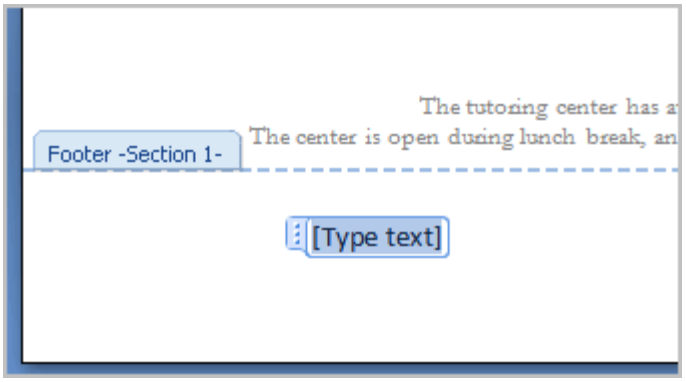




The **Design** tab with **Header** and **Footer** tools is active.

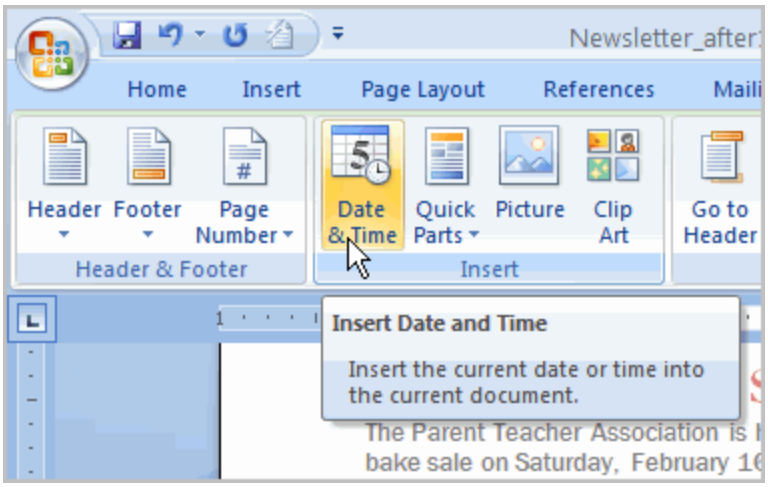


- Type information into the header or footer.

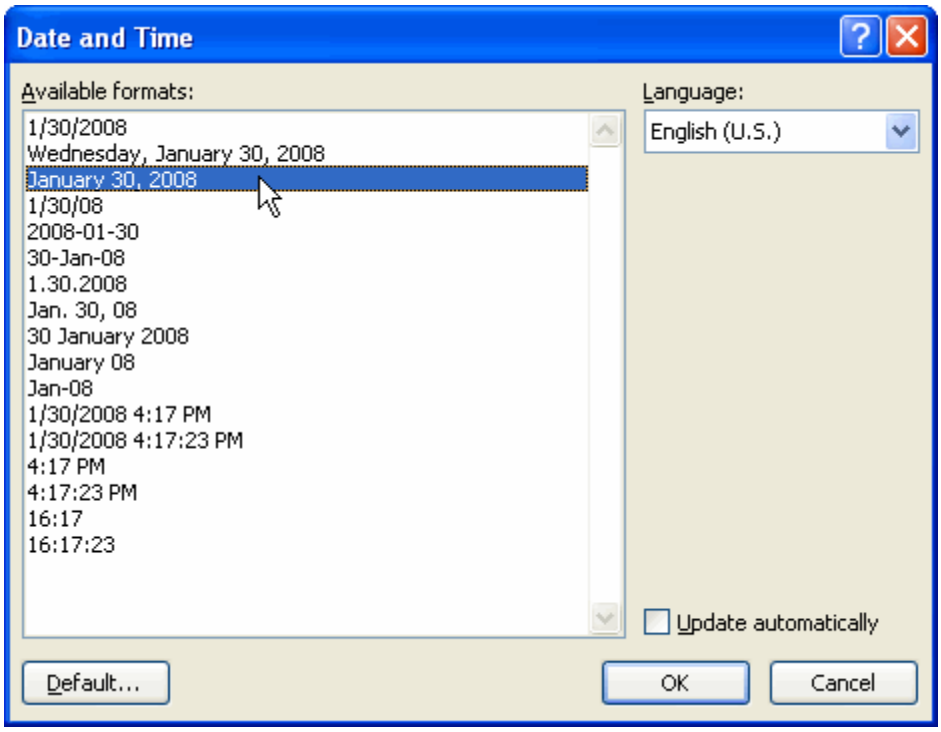


To Insert the Date or Time into a Header or Footer:

- With the header or footer section active, click the **Date & Time** command.



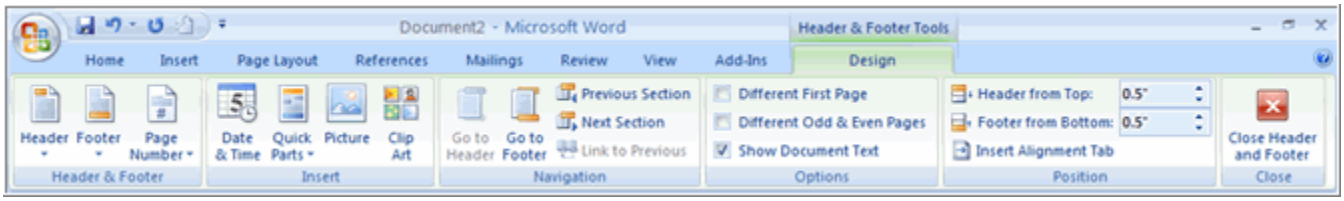
- Select a **date format** in the dialog box that appears.



- Click OK. The date/time now appears in the document.

Other Header and Footer Options

There are many other **header and footer options** that you can use to design these sections of your document. From the Header and Footer Tools Design tab, you can see all your design options.

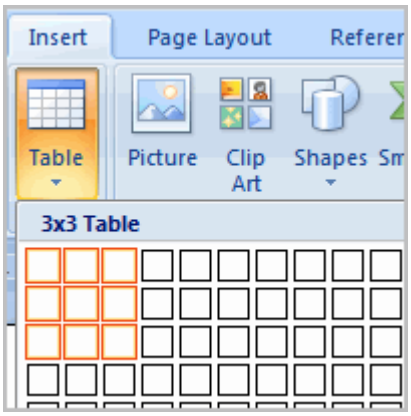


Use the Newsletter or any Ms. Word document you choose to complete this challenge.

- Add your name in the **header** of a document.
- Right-align the text in the header.
- Select a **built-in footer** with page number.

- A **table** is a grid of cells arranged in **rows** and **columns**. Tables can be customized and are useful for various tasks such as presenting text information and numerical data.

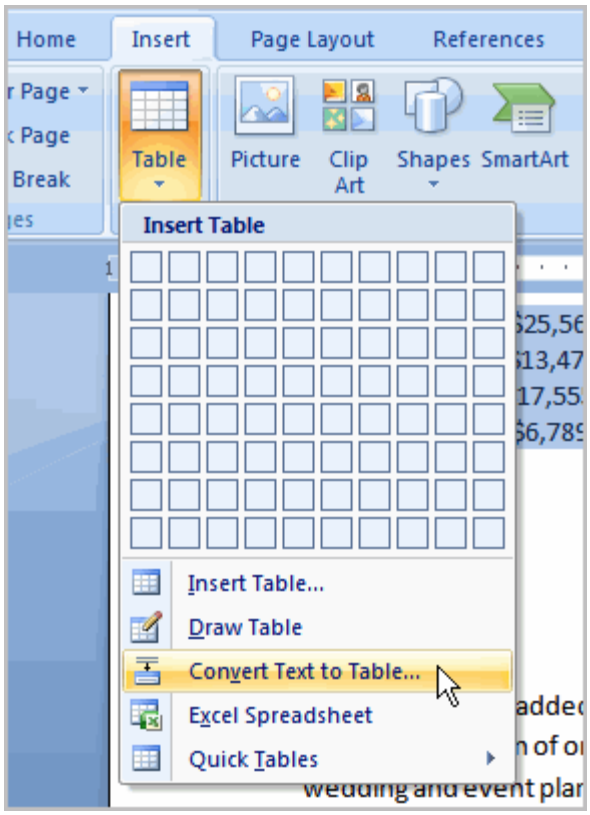
  In this lesson, you will learn how to convert text to a table, apply table styles, format tables, and create blank tables.



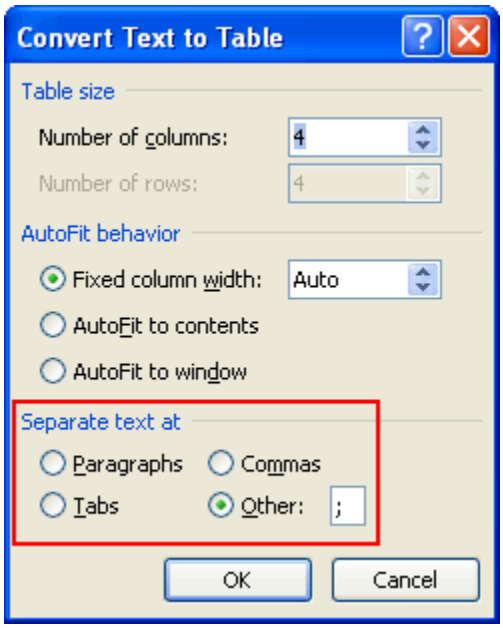
Inserting and Modifying Tables

To Convert Existing Text to a Table:

- Select the text you wish to convert.
- Select the **Insert** tab.
- Click the **Table** command.
- Select **Convert Text to Table** from the menu. A dialog box appears.



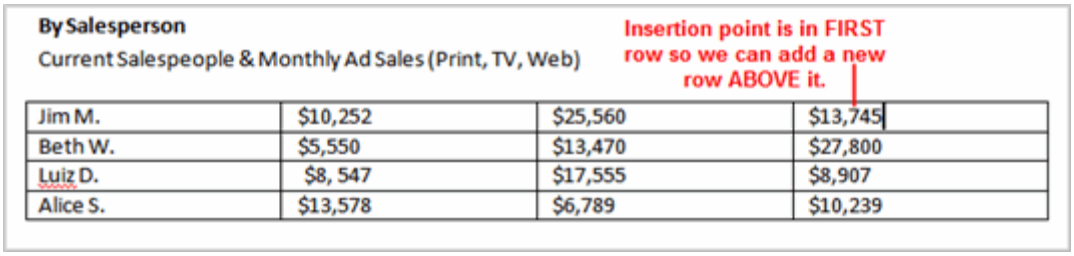
- Choose one of the options in the **Separate text at:** section. This is how Ms. Word knows what text to put in each column.



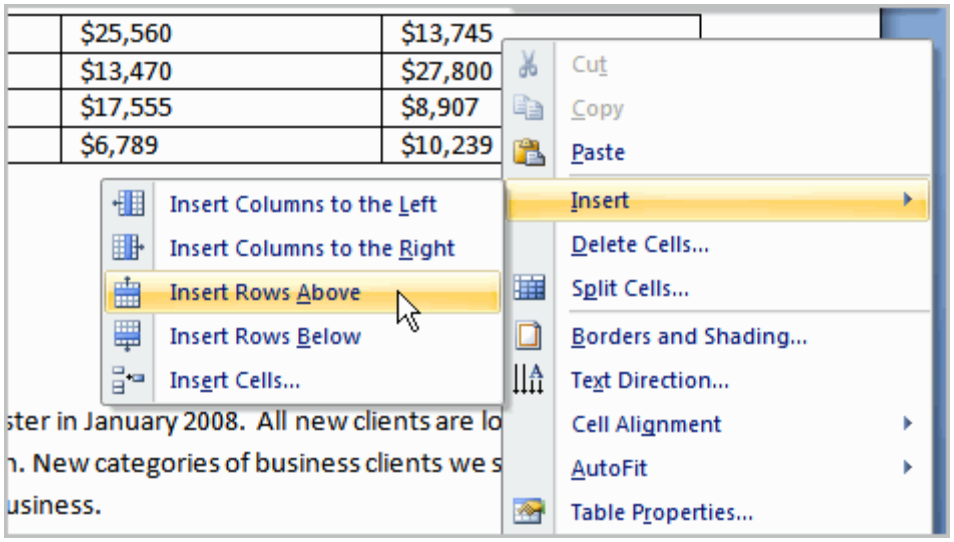
- Click OK. The text appears in a table.

To Add a Row Above an Existing Row:

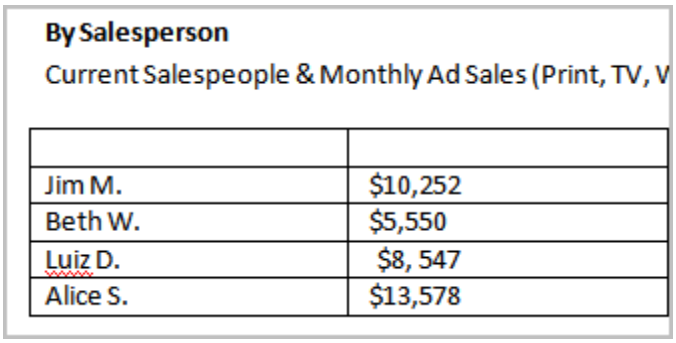
- Place the insertion point in a row below the location you wish to add a row.



- Right-click the mouse. A menu appears.
- Select Insert → Insert Rows Above.



A new row appears **above** the insertion point.



You can also add rows below the insertion point. Follow the same steps, but select Insert Rows Below from the menu.

To Add a Column:

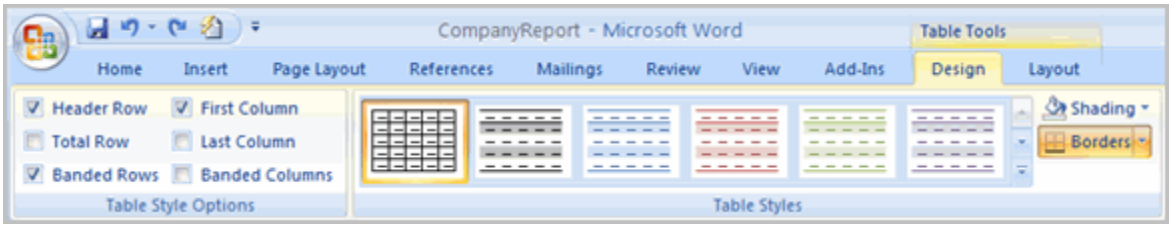
- Place the **insertion point** in a **column adjacent** to the location you wish the new column to appear.
- Right-click the mouse. A menu appears.
- Select **Insert → Insert Columns to the Left** or **Insert Columns to the Right**. A new column appears.

To Delete a Row or Column:

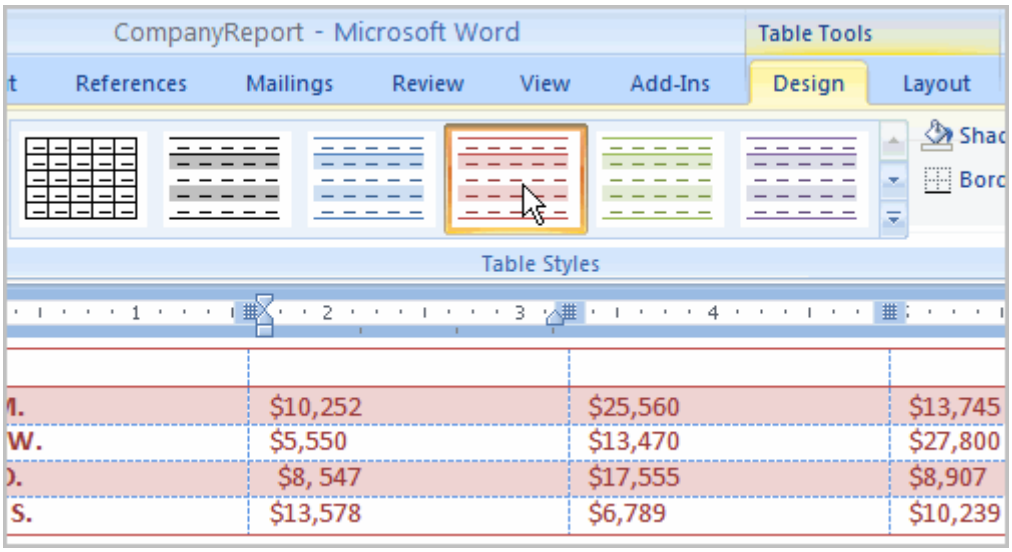
- Select the row or column.
- Right-click your mouse and a menu appears.
- Select **Delete Columns** or **Delete Rows**.

To Apply a Table Style:

- Select the table. A **Table Tools Design** tab now appears on the Ribbon.
- Select the **Design** tab to access all the **Table Styles** and **Options**.



- Click through the various styles in the **Table Styles** section.
- Left-click a style to select it. The table style will appear in the document.



You can modify which table styles are displayed. In the **Table Styles Options** you can select and deselect various table options. For example, you can select Banded Rows and only tables with banded rows will appear in the Tables Styles section.

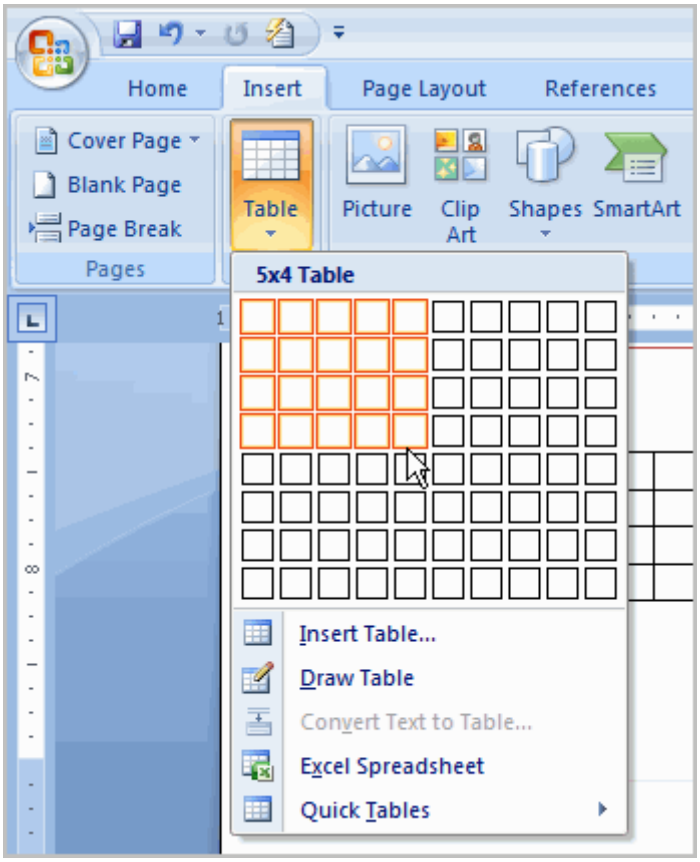
Want to have a little more creative freedom when it comes to formatting your tables? You can manually change the table border or shading, change line weight, or erase part of the table.

To Insert a Blank Table:

- Place your insertion point in the document where you want the table to appear.
- Select the **Insert** tab.
- Click the **Table** command.
- Drag your mouse over the diagram squares to select the number of columns and rows in the table.

Use the Report or any Ms. Word document you choose to complete this challenge.

- Convert text into a table.
- Apply a table style.
- Delete a row from the table.
- Insert a blank table with five rows and four columns.

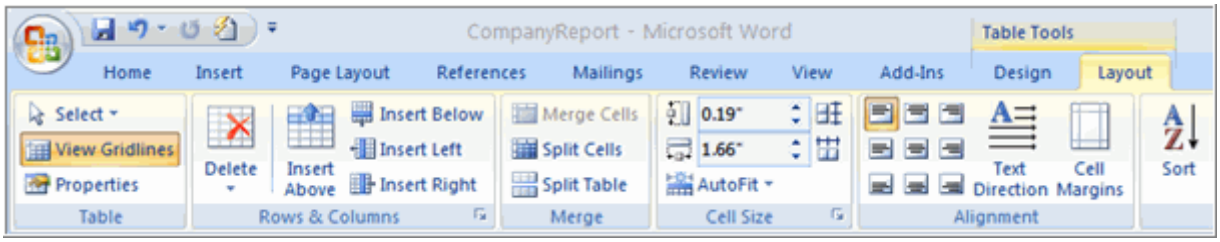


- Left-click your mouse and the table appears in the document.
- Enter text into the table.

Modify a Table Using the Layout Tab

When you select a table in Ms. Word 2007, **Design** and **Layout** tabs appear under **Table Tools** on the Ribbon. Using commands on the Layout tab you can make a variety of modifications to the table such as:

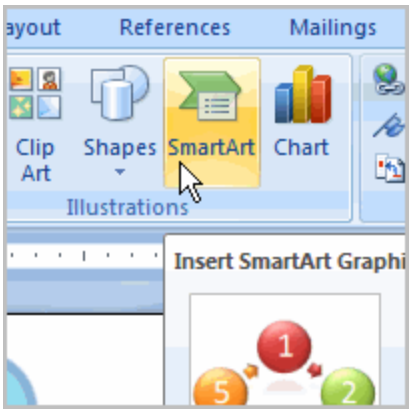
- Adding and deleting columns,
- Adding and deleting rows,
- Changing the cell size,
- Aligning cell text,
- Changing text direction,
- Merging and splitting cells,
- And More.



Using SmartArt Graphics

- SmartArt allows you to **visually communicate information** rather simply using text. Illustrations can really make an impact in your document and SmartArt makes using graphics especially easy.

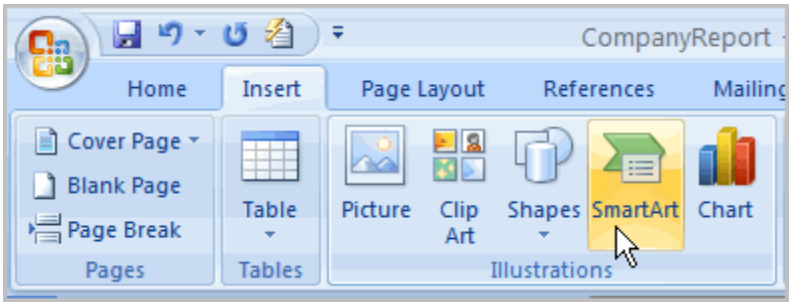
In this lesson, you will learn how to insert a SmartArt graphic, change the colour and effects of the illustration, and modify it in numerous ways.



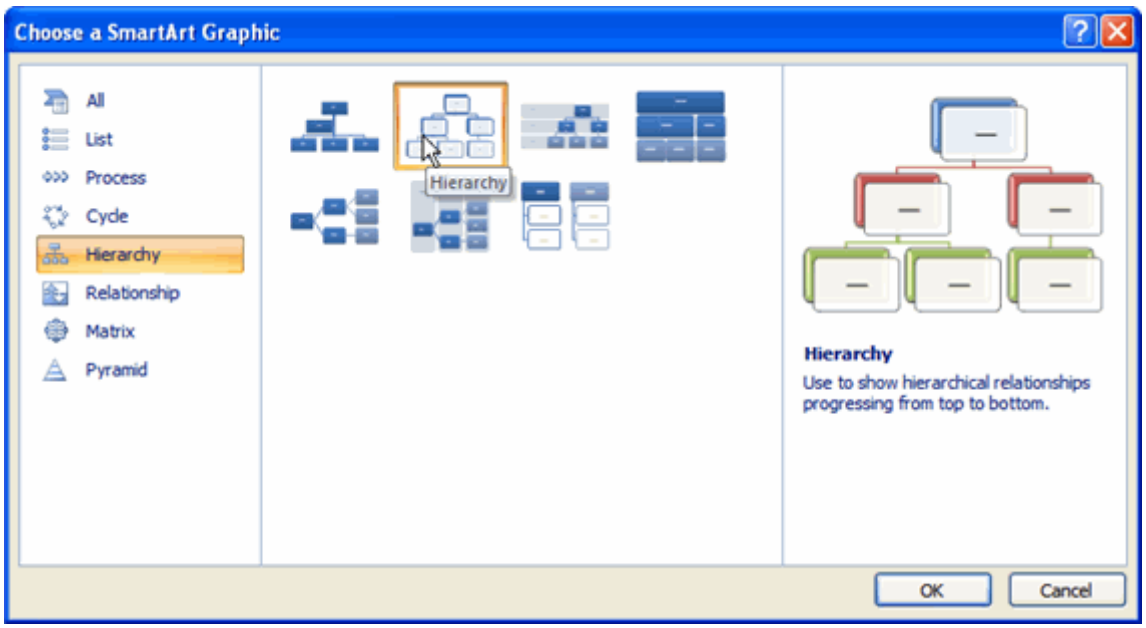
SmartArt Graphics

To Insert a SmartArt Illustration:

- Place the insertion point in the document where you want the graphic to appear.
- Select the **Insert** tab.
- Select the **SmartArt** command in the Illustrations group. A dialog box appears.



- Select a **category** on the left of the dialog box and review the SmartArt graphics that appear in the **center**.
- Left-click a graphic to select it.



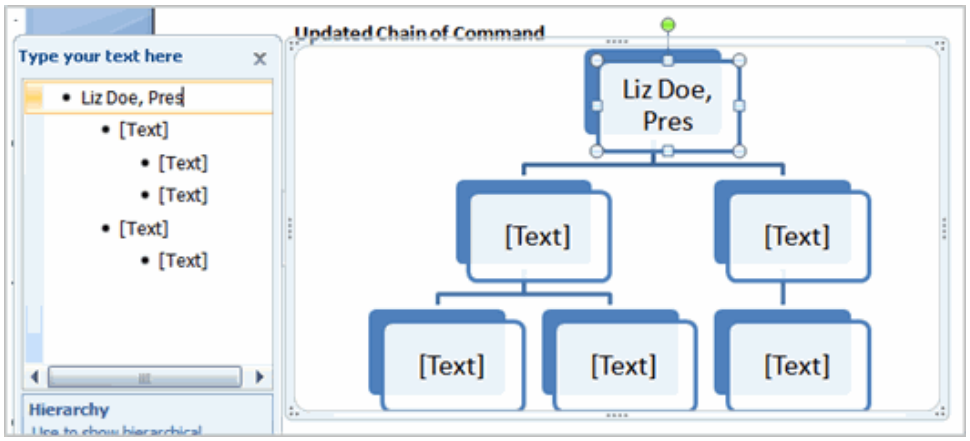
- Click OK.

To see more details about a graphic, left-click any image and a larger version of the graphic and **additional text details** will appear on the **right side** of the dialog box.

To Add Text to a SmartArt Graphic:

- Select the graphic. The **first text box** is selected. If the task pane on the left of the graphic is visible, the **insertion point** appears in it. If the task pane is not visible, click the arrow to open the task pane.

- Enter text into the task pane fields. The information will appear in the graphic.



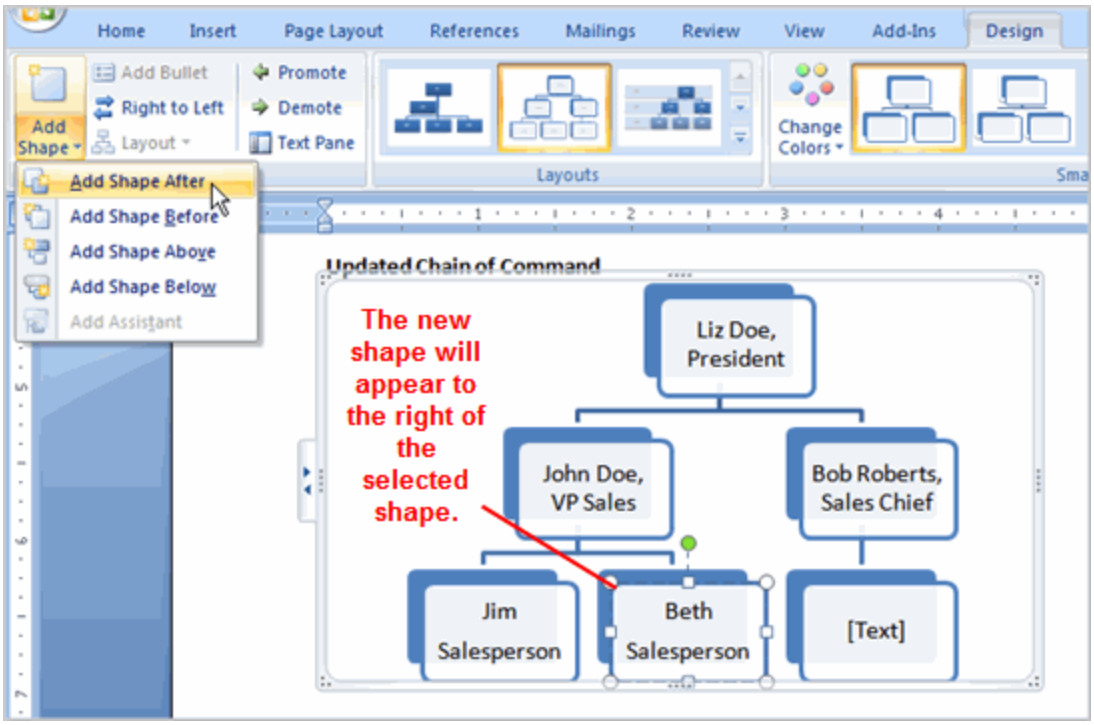
OR

- Click **X** to close the task pane.
- Enter text into the **first text box** in the graphic.
- Continue to enter text in the text box graphics.

Notice the text you enter **automatically** resizes to fit inside the box.

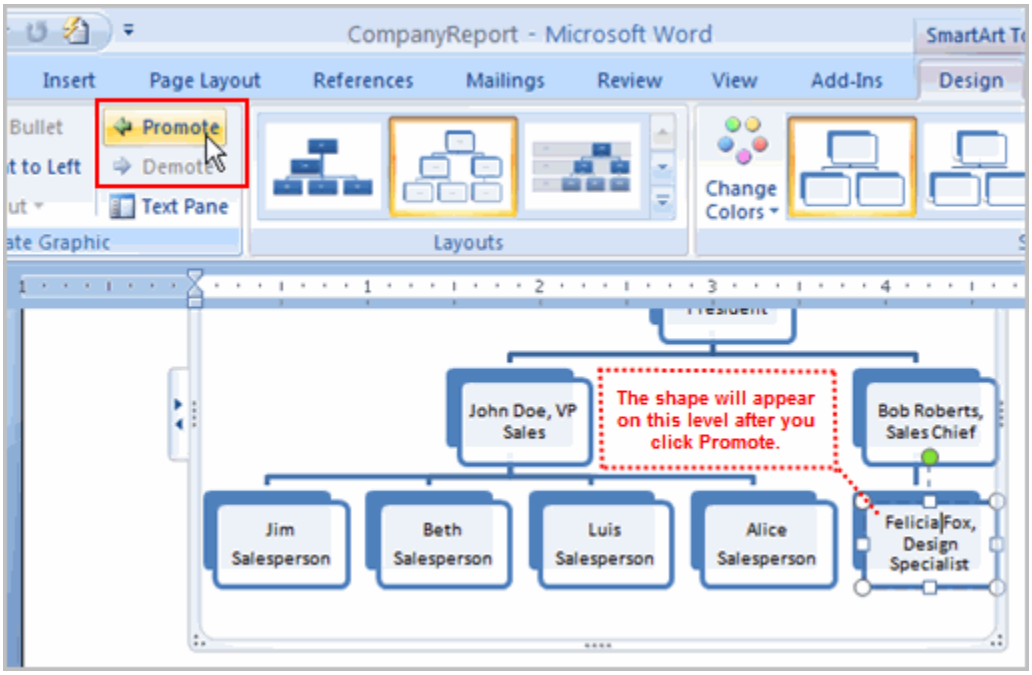
To Add a Shape to a Graphic:

- Select the graphic. The **SmartArt Tools Design and Format tabs** appear on the Ribbon.
- Select the **Design** tab.
- Click the **Add Shape** command in the Graphics group.
- Decide where you want the **new shape** to appear and select one of the shapes nearby the desired location.
- Select **Add Shape Before** or **Add Shape After**. If we wanted to add a superior or a subordinate, we could select the **Above** or **Below** options.



To Move Shapes Using the Promote or Demote Commands:

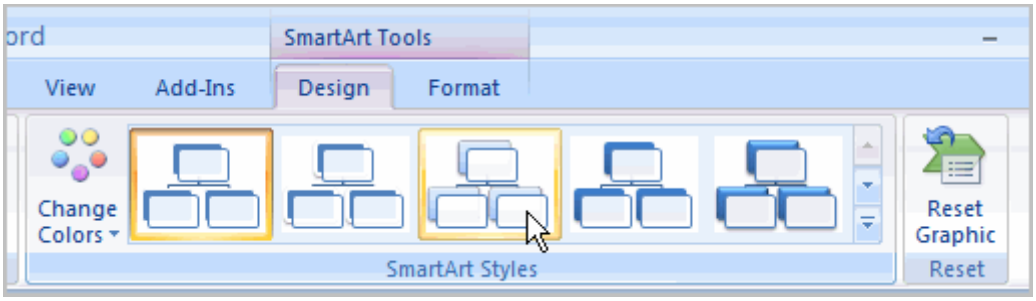
- Select the graphic. The SmartArt Tools Design and Format tabs appear on the Ribbon.
- Select the **Design** tab.
- Select the **shape** you would like to move.
- Click the **Promote** or **Demote** commands in the Create Graphic group.



The **Promote** and **Demote** commands allow you to move shapes and really customize the graphic, rather than having to use the predefined default illustration.

To Change the Graphic Style:

- Select the graphic. The SmartArt Tools Design and Format tabs appear on the Ribbon.
- Select the Design tab.
- **Left-click a style** to select it.



Click the **More** arrow to see all the style options. Hover over each to display a Live Preview of the style in your document.

To Change the Colour Scheme:

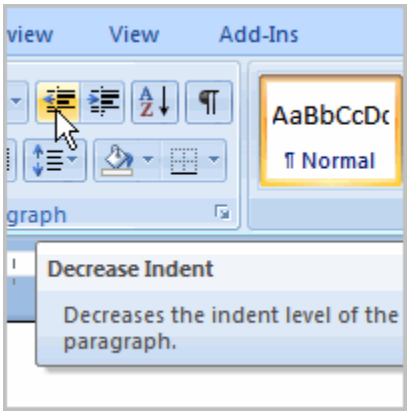
- Select the graphic. The SmartArt Tools Design and Format tabs appear on the Ribbon.
- Select the Design tab.
- Click the **Change Colour** command. A menu of colour schemes appear.
- Left-click an option to select it.

Explore the options in the **Layout** group if you would like to switch to another graphic, but keep the existing text. Also, you can select the **Format** tab to access additional formatting options including fill, text, and line colour.

Some of the options will differ from graphic to graphic. Look carefully at the SmartArt Tools tabs and explore the active commands.

Challenge!

Use the Report or any Ms. Word document you choose to complete this challenge.



- Insert a SmartArt illustration into a document.
- Enter text into the graphic.
- Modify the style.
- Modify the graphic, as needed.

Using Indents and Tabs

- A great way to **draw attention** to specific text is to **indent** it. There are several ways in Ms. Word that you can indent text; however, it's important to use these tools appropriately and **indent correctly** each time. This can save time and make the editing process go smoothly.

  In this lesson, you will learn how to use the **tab selector** and the **horizontal ruler** to set tabs and indents, and how to use the Increase and Decrease **Indent commands**.

Indents and Tabs

Click the **Show/Hide** command on the Home tab. This will allow you to see the nonprinting characters such as the spacebar, paragraph, and Tab key markings.

To Indent Using the Tab Key:

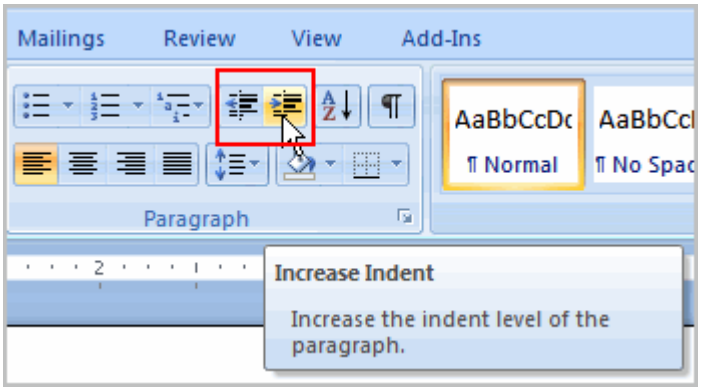
The most common way to indent is to use the **Tab** key. This method is best for indenting one line of text, rather than multiple lines.

- Place the insertion point to the **left** of text you wish to indent.
- Press the **Tab** key. This indents the line 1/2 inch by default.

To Use the Indent Commands:

Using the Tab key to **indent multiple lines** can make formatting difficult if you add or remove text later. Indenting multiple lines is best done using the **Indent commands**.

- Select the text you wish to indent.
- Click the **Increase Indent** command to **increase** the indent. The default is 1/2 an inch. You can press the command multiple times.

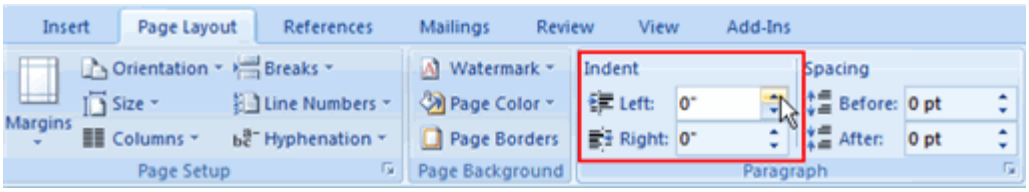


- Click the **Decrease Indent** command to **decrease** the indent.

To Modify the Default Indent Settings:

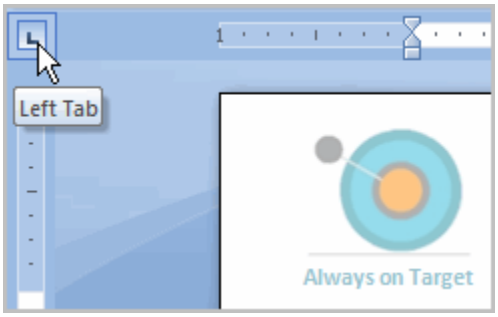
- Select the **Page Layout** tab.
- Select the text you would like to modify.

- Use the **arrows** or enter text in the fields to modify the **Left** and **Right Indents**.



The Tab Selector

The **tab selector** is above the **vertical ruler** on the left. Hover over the tab selector to see the name of the type of tab that is active.

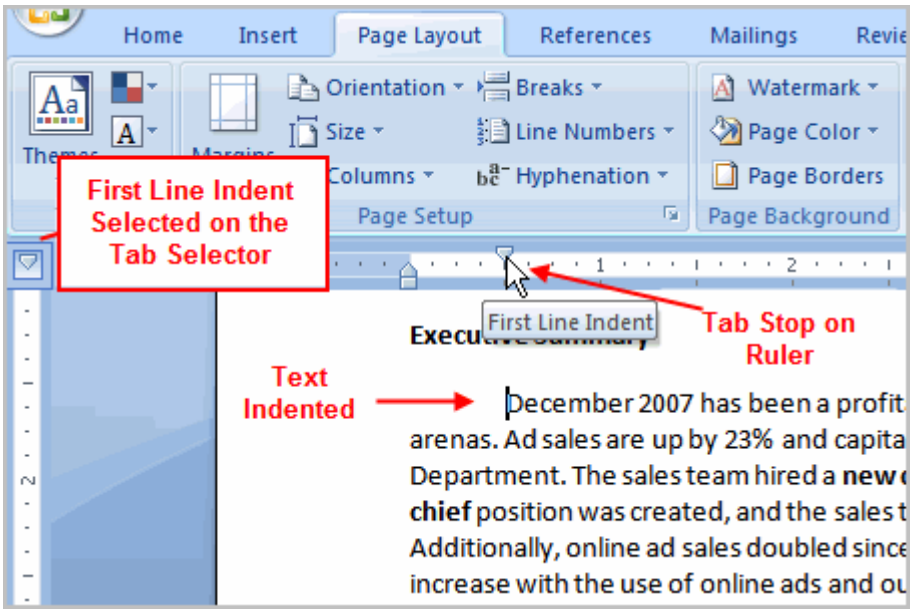


The tab options are:

- **First Line Indent**: Inserts the indent marker on the ruler and indents the first line of text in a paragraph.
- **Hanging Indent**: Inserts the hanging indent marker and indents all lines other than the first line.
- **Left Tab**: Moves text to the right as you type.
- **Center Tab**: Centers text according to the tab.
- **Right Tab**: Moves text to the left as you type.
- **Decimal Tab**: Aligns decimal numbers using the decimal point.
- **Bar Tab**: Draws a vertical line on the document.

To Set a Tab Stop to Indent the First Line of Text:

- Click the **tab selector** until the **First Line Indent** icon is visible.
- Left-click at any point on the **horizontal ruler**. The First Line Indent icon will appear.



- Press the **Enter** key to start a new paragraph and your insertion point will automatically indent to that point. I

To move a tab stop once you have inserted it, left-click and drag the tab stop back and forth on the ruler.

You can set the **Hanging Indent** the same way; however this tab stop changes all the **other lines** in a paragraph.

To Set the Left, Center, Right, and Decimal Tab Stops:

- Click the **tab selector** until the tab stop you wish to use appears.
- Left-click the **location on the horizontal ruler** where you want your text to appear.

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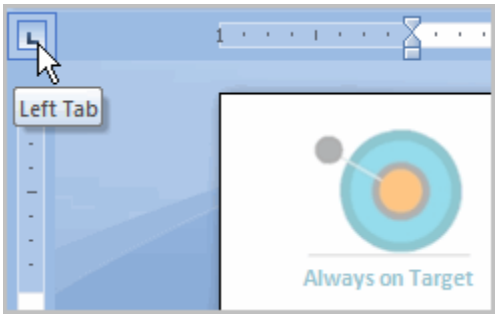

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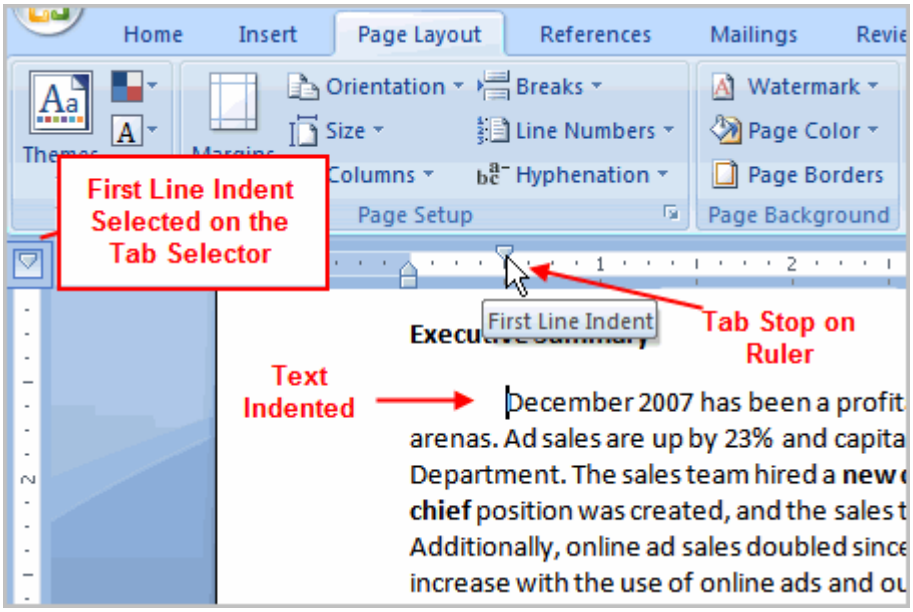

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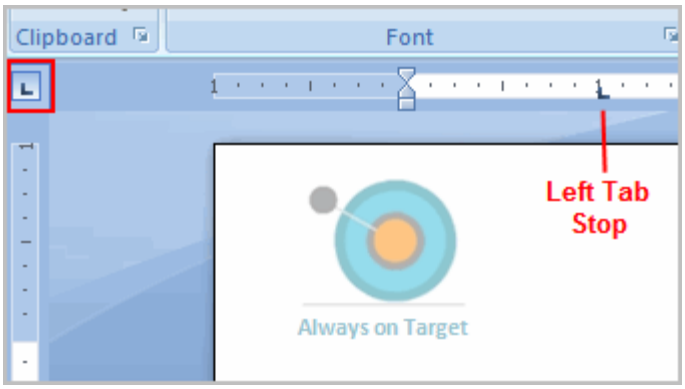
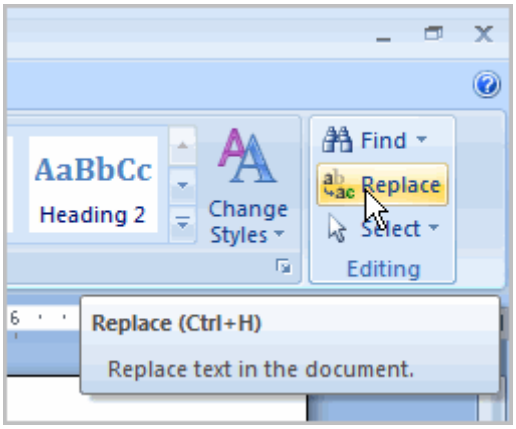
- Click the **tab selector** until the tab stop you wish to use appears.
- Left-click the **location on the horizontal ruler** where you want your text to appear.



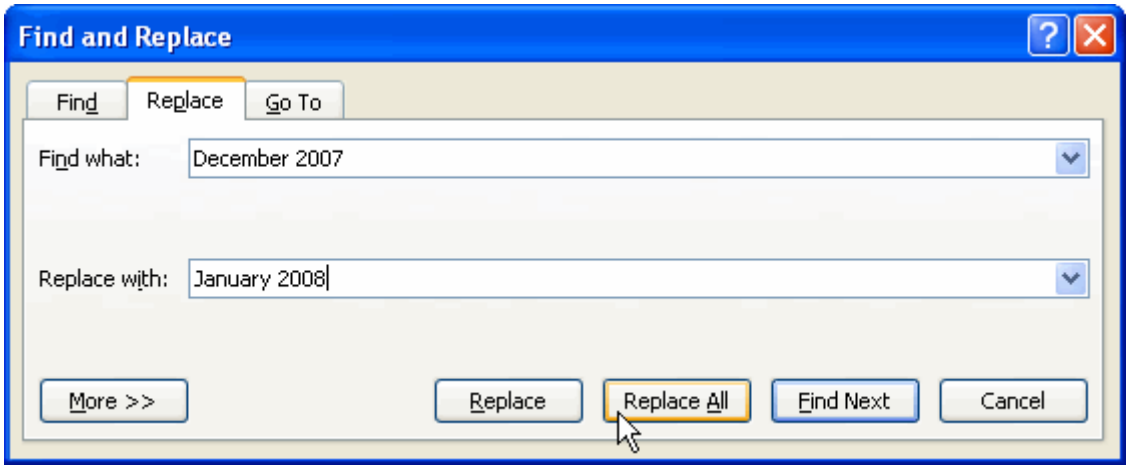
- Press the **Tab** key to reach the tab stop.

Using Find and Replace to Replace Existing Text:

- Click the **Replace** command on the Home tab. The Find and Replace dialog box appears.

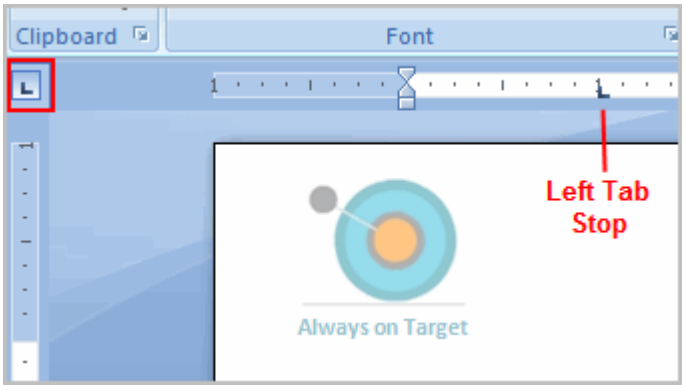


- Enter text in the **Find** field that you wish to locate in your document.
- Enter text in the **Replace** field that will replace the text in the Find box.



- Click OK. The change is made in the document.

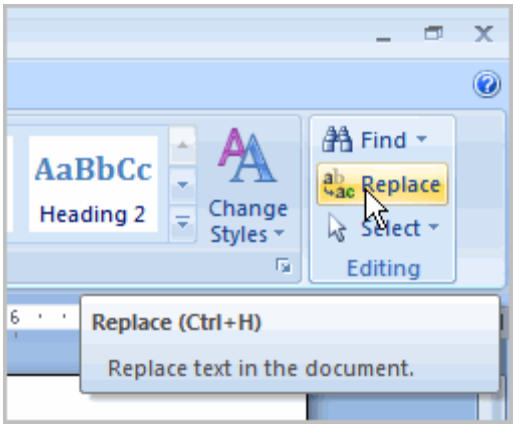
You can also use the **Find command** to locate **specific information** in a document. For example, if you are working with a twenty page report, it would be time consuming to search the document for a specific topic. You can use the Find command to locate **all instances** of the word or phrase in the document. This is a great way to **save time** when working with long documents.



- Press the **Tab** key to reach the tab stop.

To Use Find and Replace to Replace Existing Text:

- Click the **Replace** command on the Home tab. The Find and Replace dialog box appears.



- Enter text in the **Find** field that you wish to locate in your document.
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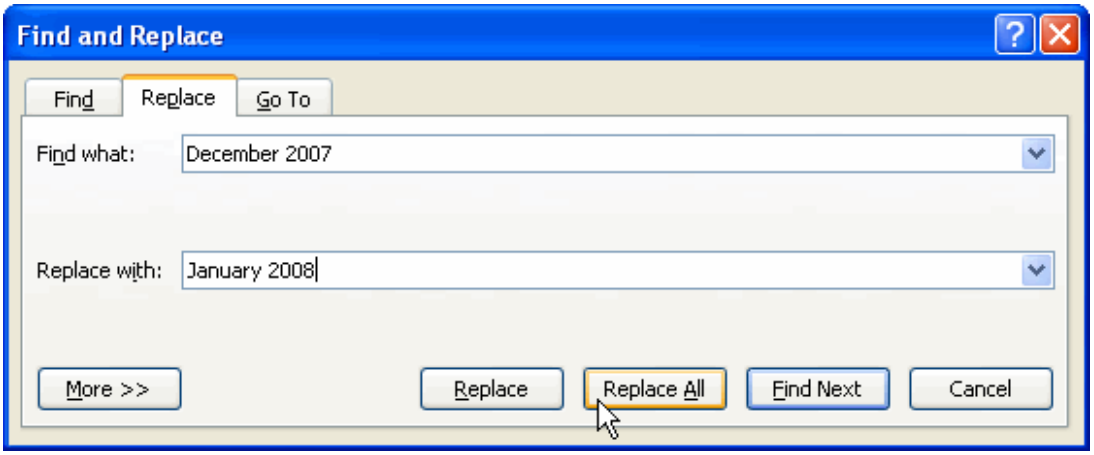

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Challenge!

Use the Report or any Ms. Word document you choose to complete this challenge.

- Practice using the **Tab** key to indent the first line of a paragraph.
- Select some text and use the **Increase** and **Decrease** Indent commands to see how they change the text.
- Explore the tab selector and all the tab stops. Practice using each one.

Applying Styles and Themes

- Styles and themes are powerful tools in Ms. Word that can help you create professional looking documents easily. A **style** is a predefined combination of font style, colour, and size of text that can be **applied to selected text**. A **theme** is a set of formatting choices that can be applied to an **entire document** and includes theme colours, fonts, and effects.

  In this lesson you will learn how to apply, modify and create a style, use style sets, apply a document theme, and create a custom theme.

Styles and Themes

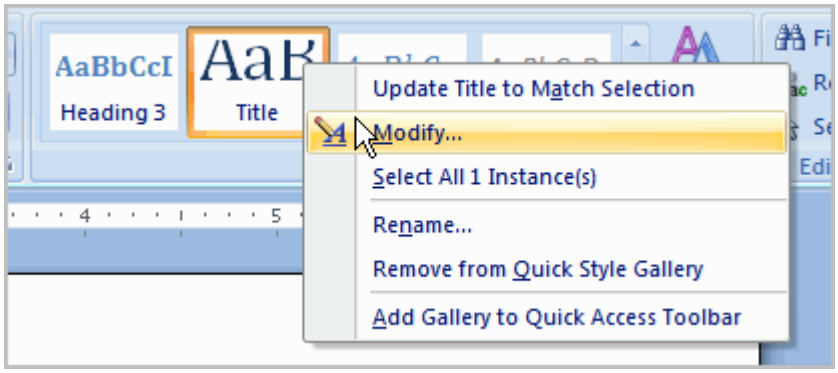
To Select a Style:

- Select the **text** to format. In this example, the title is selected.
- In the **Style group** on the Home tab, hover over each style to see a live preview in the document. Click the **More** drop-down arrow to see additional styles.

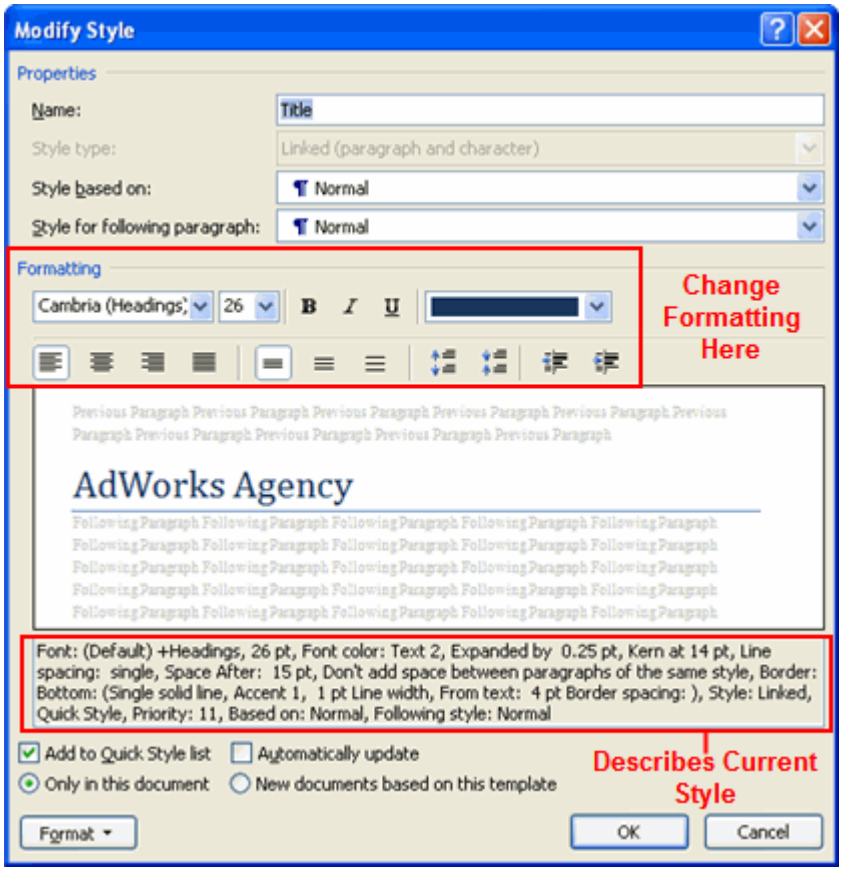
- Left-click a style to select it. Now the **selected text appears formatted** in the style.

To Modify a Style:

- Select the **text in the style** you want to change. In this example, we are changing AdWorks Agency, which has the Title style applied.
- Locate the style in the **Styles group**.
- Right-click the style and a menu appears.
- Left-click **Modify** and the Modify Style dialog box appears.



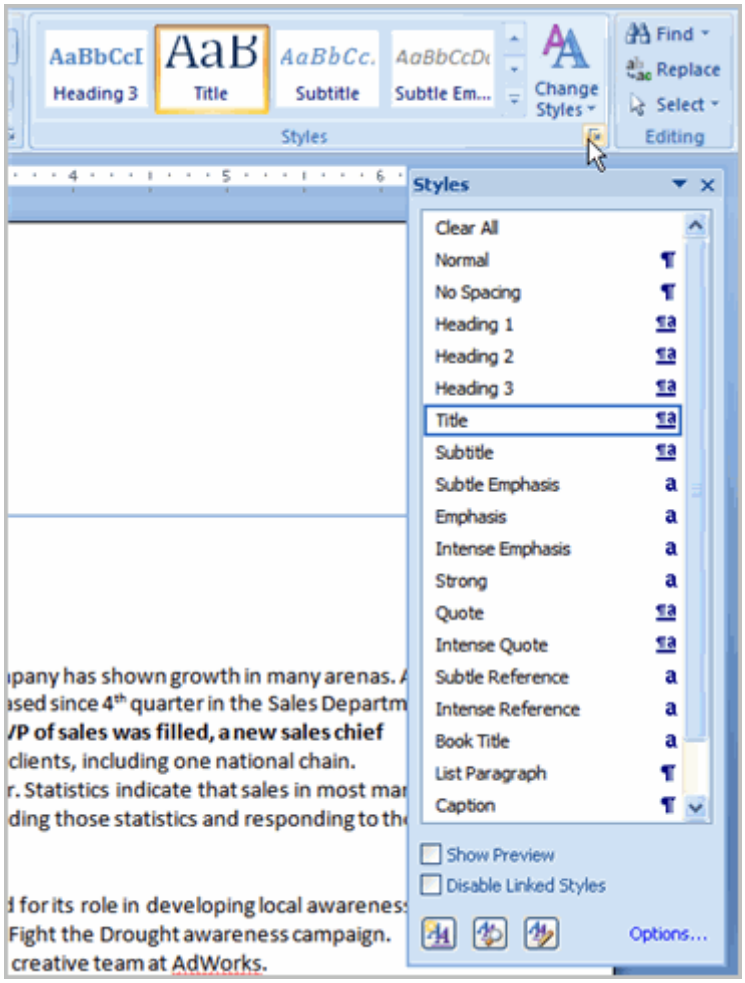
- Change any of the formatting.



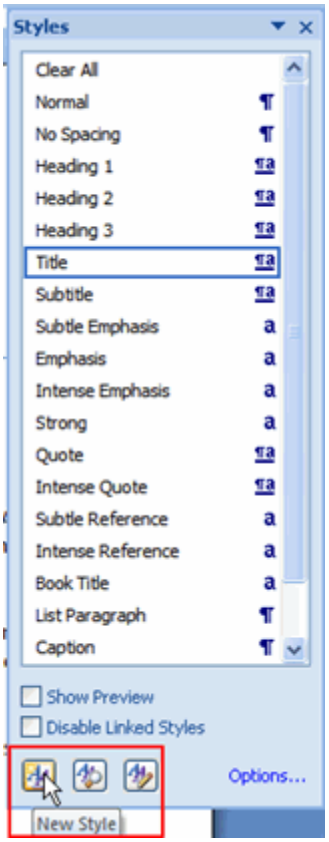
- Click **OK** to apply the modifications to the style.

To Create a New Style:

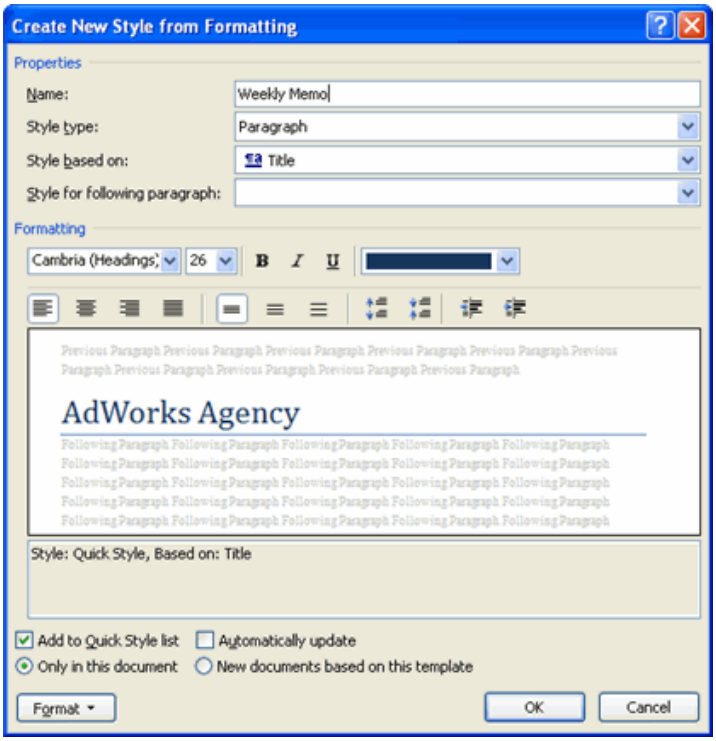
- Click the **arrow** in the bottom right corner of the Styles group. This opens the Styles task pane.



- Click the **New Style** button at the bottom and a dialog box appears.



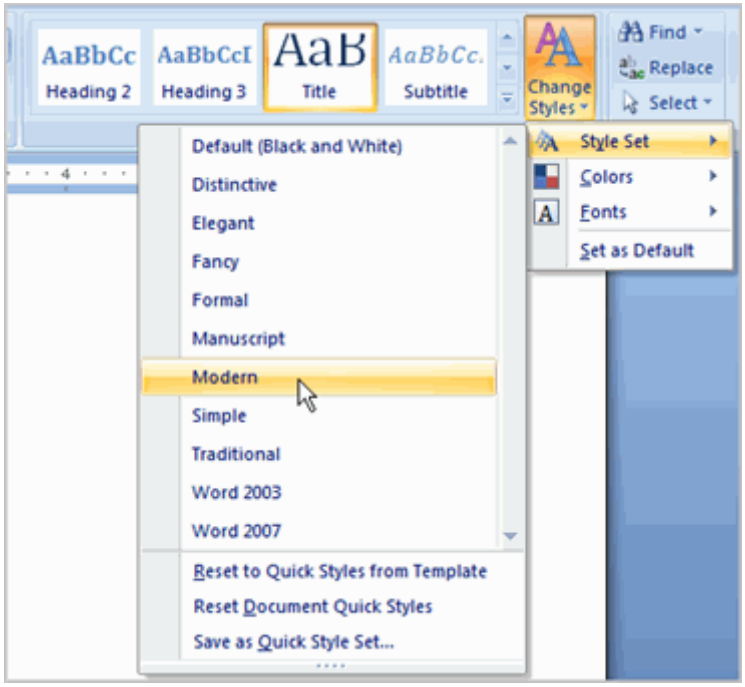
- Enter a name for the style and make all the formatting decisions.



- Select the **button** beside **New Document based on this template**, so the style will be available to use in all your documents.
- Click **OK**. The new style will appear in the list.

To Apply a Style Set:

- Click the **Change Styles** command on the Ribbon.
- Select **Style Set** from the menu that appears.



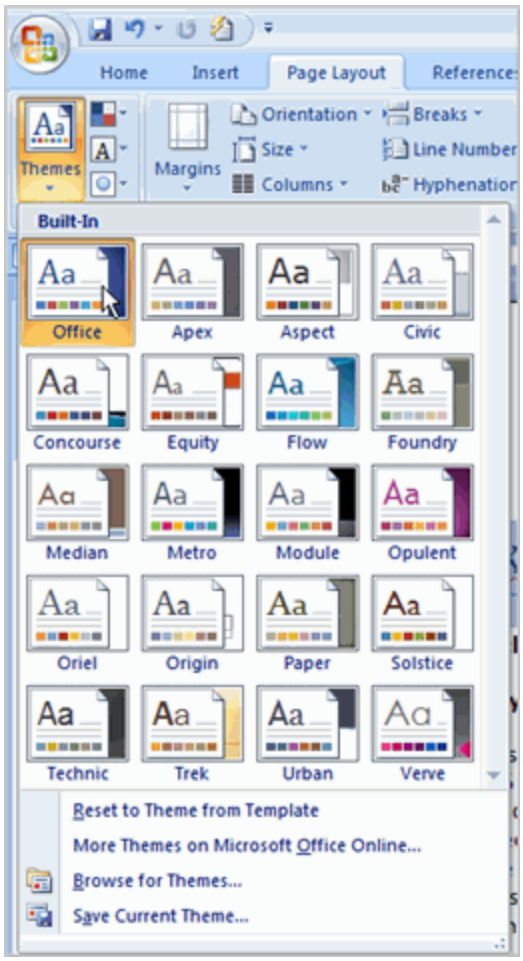
- Left-click a style set to select it. The change is reflected in the entire document.

Style sets include a combination of title, heading, and paragraph styles. Style sets allow you to **format all the elements of your document** at once, rather than formatting your title and headings separately.

For quick changes, you can modify the colours and fonts of a style set from the Change Styles command; however, the **themes** feature is more comprehensive and easy-to-use.

To Apply a Theme:

- Select the **Page Layout** tab.
- Click the **Themes** command.

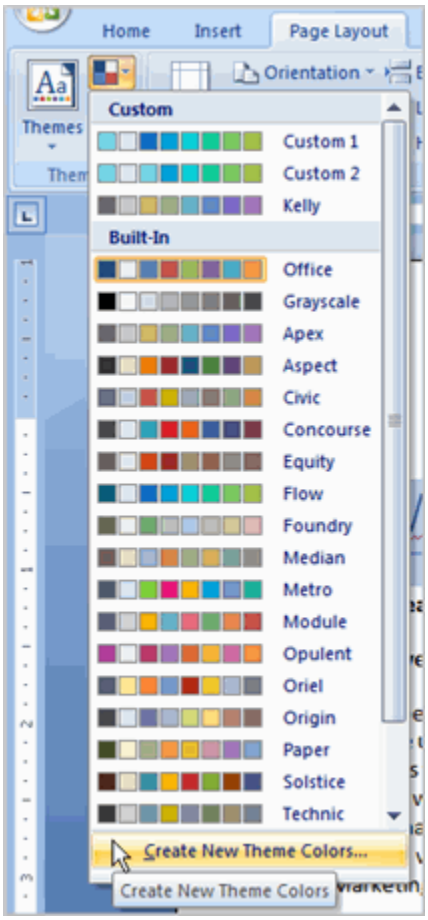


- Hover the pointer over a theme to see it displayed in the document.
- **Left-click** a theme to select it.

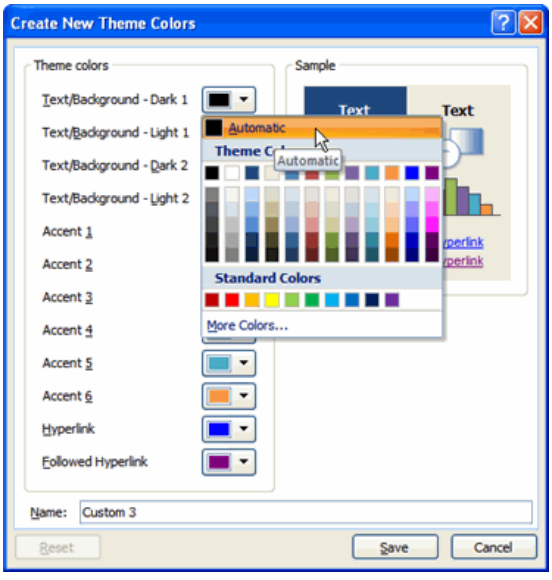
A **document theme** is a set of formatting choices that include font styles, sizes, and colours for different parts of the document and a set of theme effects such as lines and fill effects.

To Create a Custom Theme:

- Open the document you'd like to format.
- Select the **Page Layout** tab.
- Click the **Colours** command.
- Select **Create New Theme Colours**. A dialog box appears.

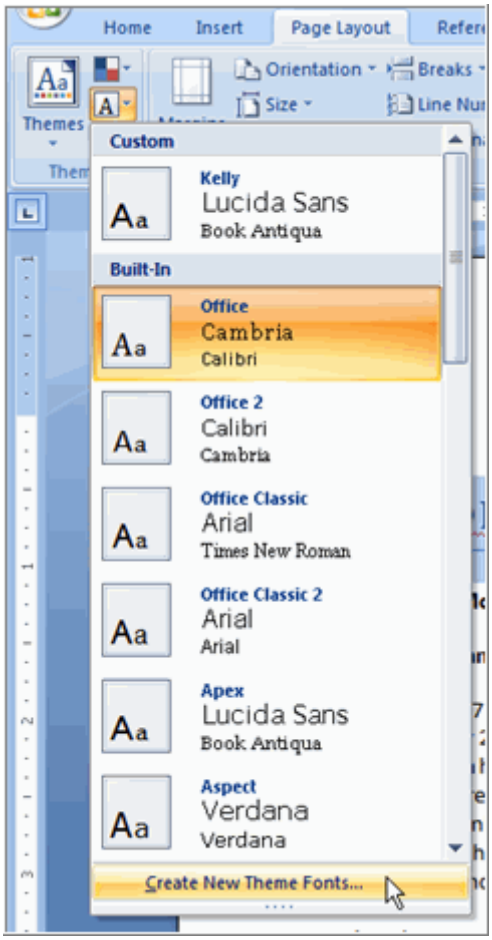


- Use the **drop-down menus** to change the colours for each part of the document.

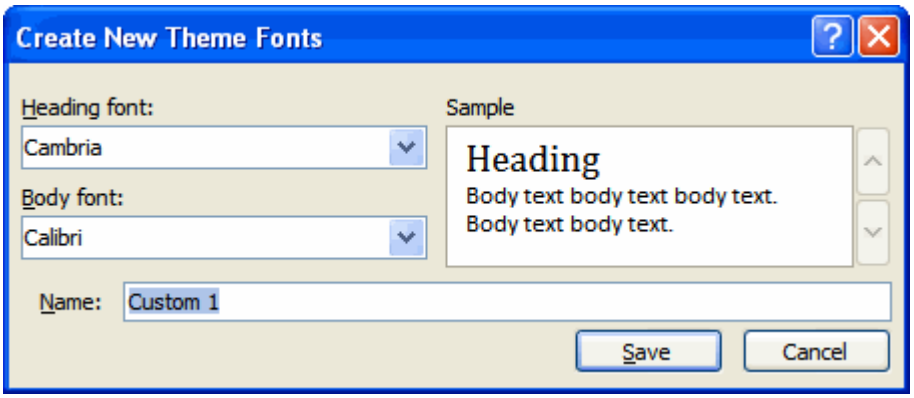


- Enter a **name for the** theme colour.

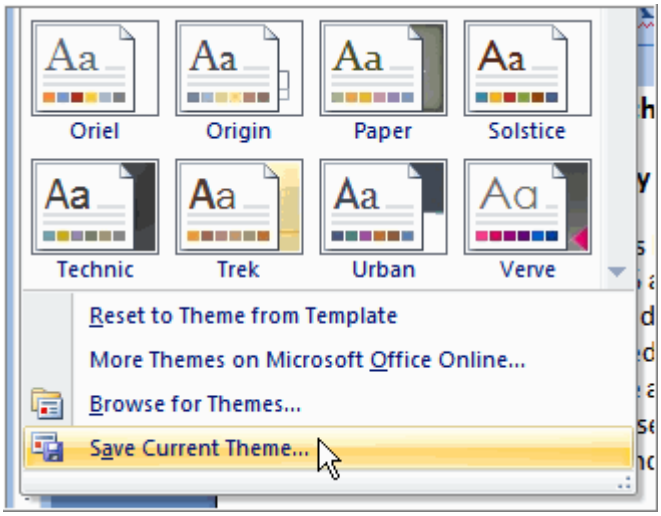
- Click **Save**.
- Click the **Fonts** command.
- Select **Create New Theme Fonts**. A dialog box appears.



- Use the drop-down menus to **change the fonts** in the dialog box.
- Enter a name for theme font.



- Click **Save**.
- Click the **Effects** command and select an option from the drop-down menu.
- Click the **Themes** command.
- Select **Save Current Theme**. A dialog box appears.



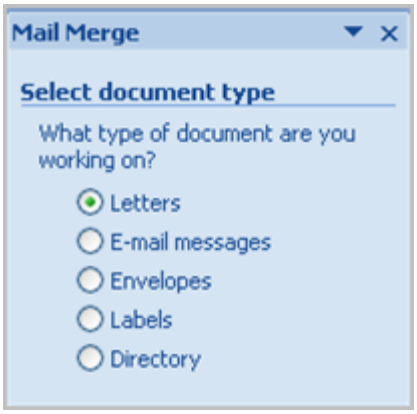
- Enter a **theme name** and click **Save**. Now the theme is available to use with other documents.

You cannot apply a Theme to a document without **applying styles first**. Themes look for and replace the formats of each of the styles.

Challenge!

Use the Report or any Ms. Word document you choose to complete this challenge.

- Apply a style to one section of your document.
- Apply a **style set** to your entire document.
- Modify an existing style.
- Apply a **theme**.



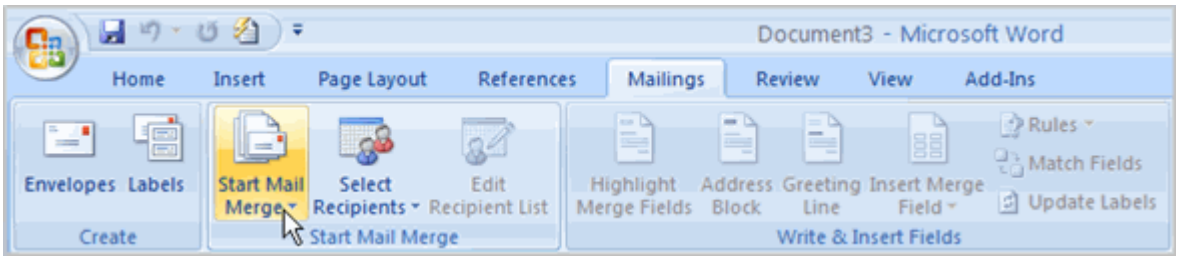
Using Mail Merge

Mail merge is a useful tool that will allow you to easily produce multiple letters, labels, envelopes and more using information stored in a list, database, or spreadsheet. In this lesson, you will learn how to use the **mail merge wizard** to create a **data source** and a form **letter**, and explore other wizard features. Additionally, you will learn how to use the Ribbon commands to access the mail merge tools outside of the wizard.

Mail Merge

To Use Mail Merge:

- Select the **Mailings** on the Ribbon.
- Select the **Start Mail Merge** command.



- Select **Step by Step Mail Merge Wizard**.

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.

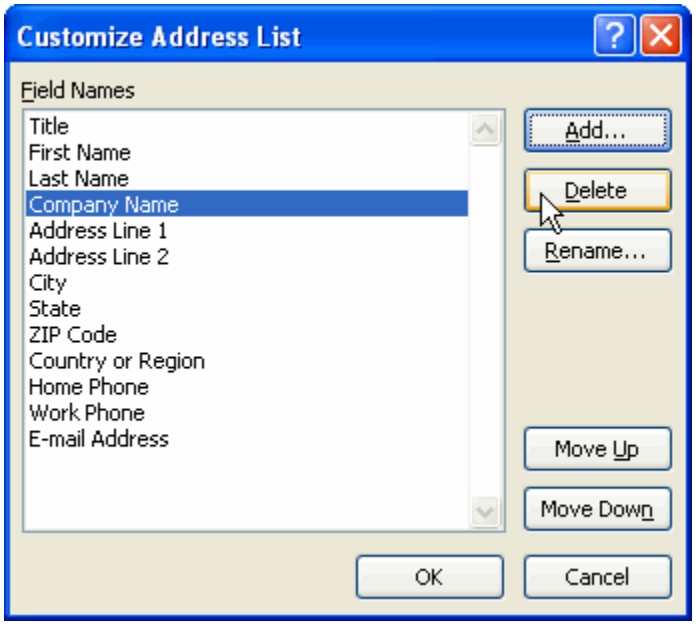
Steps 1-3

- 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 Customize the New Address List:

  - Click **Customize** in the dialog box. The Customize Address List dialog box appears.



  - Select any field you do not need and click **Delete**.
  - Click **Yes** to confirm that you wish to delete the field.
  - Continue to delete any unnecessary fields.
  - Click **Add**. The Add Field dialog box appears.
  - Enter the new field name.
  - Click OK.
  - Continue to add 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.

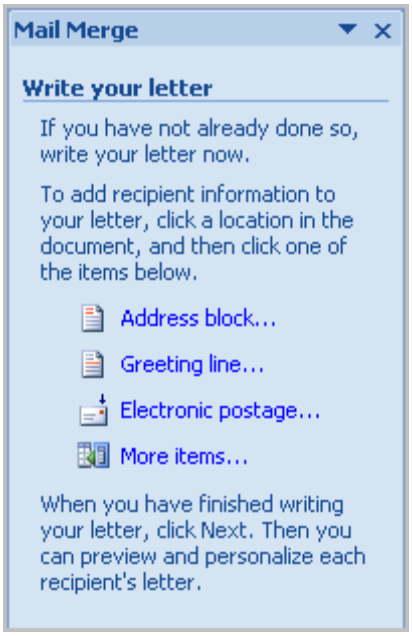
- Click **Close** when you have entered all your data records.
- Enter the file name you wish to save the data list as.
- Choose the location you wish to save the file.
- Click **Save**. The Mail Merge Recipients dialog box appears and displays all the data records in the list.
- Confirm the data list is correct and click **OK**.
- Click **Next: Write your letter** to move to Step 4.

Steps 4-6

- Write a letter in the current Ms. Word document, or use an open, existing document.

To Insert Recipient Data from the List:

- Place the insertion point in the document where you wish the information to appear.
- Select Address block, Greeting line, or Electronic postage from the task pane. A dialog box with options will appear based on your selection.



OR

- Select More Items. The Insert Merge Field dialog box will appear.
- 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!

Use the Report or any Ms. Word document you choose to complete this challenge.

- Open a new, blank Ms. Word document.
- Open the **Mail Merge** task pane.
- Create a **data list** and practice adding and removing fields.
- Explore the different Mail Merge features until you are familiar with them.

Practical Activities

Activity 1: About Me

Instruction

- Using Ms. Word, create a new word processing file (Office button→New)

- Center at the top: Your name and your e-mail address

- Type three paragraphs, which are left aligned (not centered)

.

1. In the first paragraph, introduce yourself to me. Where are you from? What do you like to do? What do you care about?
2. In the second paragraph, tell me about your teaching/work/school experience. Where have you taught/studied? For how long? Or tell me what has inspired you to teach/study. If you are not a teacher, relate your responses to your job or education.
3. In the third paragraph, tell me about your computer experience. How long have you been using computers? What do you hope to achieve by taking this course and/or this program?

- Save what you have written thus far (File→Save As) using your last name and add the number of the assignment to the name. DO NOT USE SPACES.

- Click at the beginning of the first paragraph. Insert your photo (Insert → Picture).

- Click to select the photo and adjust the size by shift-dragging from the corners.

- Wrap the text around the photo (Format tab→Text Wrapping→Square). Now you can select and drag the photo wherever you want. To edit the photo, double click it.

- Crop the photo (Format tab→Crop).

- Choose a line style to frame the photo (Format tab→Picture Border).

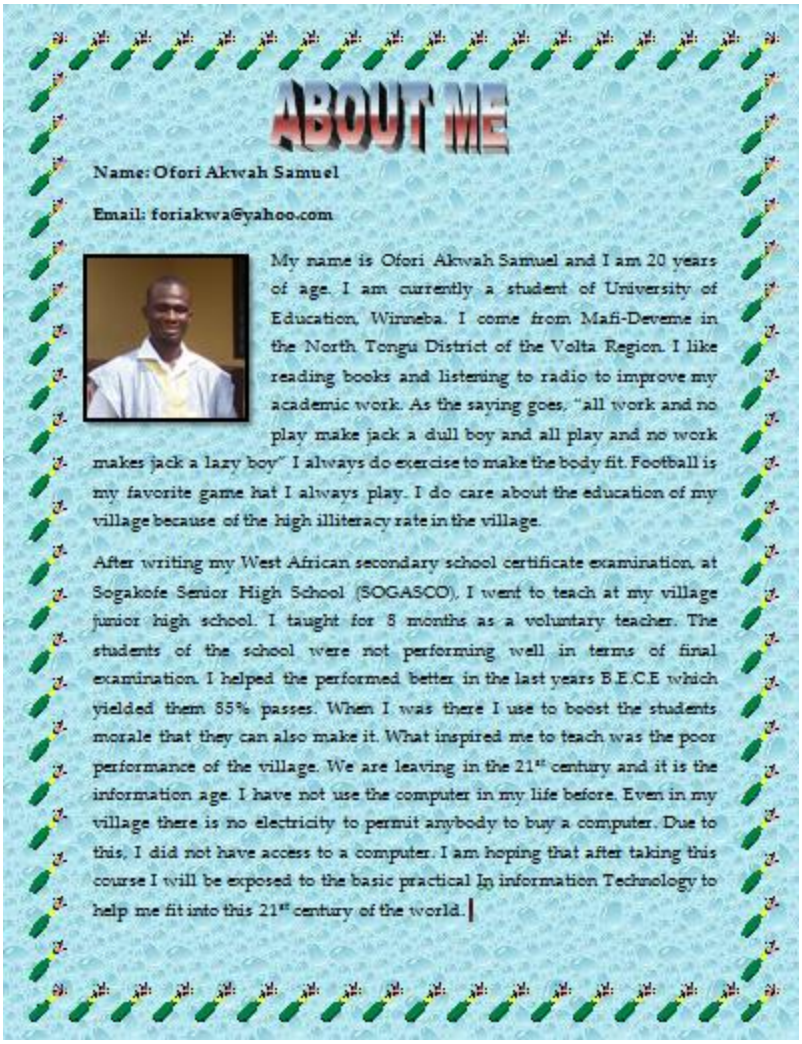
- Click at the beginning of the document. Insert the words "About Me" using Word Art (Insert tab→ Word Art). To edit the Word Art, double click it. Position the Word Art so that it is centered and does not overlap with the top margin.

- Spell check and proofread; correct any errors (Review tab→Spelling and Grammar). Ask a friend to proofread it and give you feedback. Make revisions and save again.

- Is the layout and spacing of your document attractive? Does it conform to the guidelines discussed in class ("The Computer is Not a Typewriter")?

- Add a border (Page layout tab→Page Borders). Try Page Border→Art.

Sample



Activity 2: Your Weekly Schedule:
Instruction
Using Ms. Word, create a copy of your daily teaching schedule (or student class schedule) for five days. Use tables to create boxes for your information. Use a landscape page layout (i.e., sideways). Center a title at the top of the

document. Use shading or colour for table cells to highlight certain activities. Put your name and the date in a footer, right aligned. Your time table should include at least two cells which have relevant clipart, Layout and colours that are visually attractive.

Sample

ASAMANKESE SENIOR HIGH SCHOOL

GENERAL ARTS FOUR TIME TABLE

DAYS/TIME	7:30-8:30	8:30-9:30	9:30-10:30	10:30-11:30	11:30-12:30	12:30-1:30	1:30-2:30	2:30-3:30
MONDAY	CORE MATHS		FIRST BREAK	SOCIAL STUDIES	INTEGRATED SCIENCE	SECOND BREAK	GEOGRAPHY	ENGLISH LANG.
TUESDAY	GOVERNMENT			ENGLISH LANG.	ELECTIVE MATHS		INT. SCIENCE	ECONOMICS
WEDNESDAY	ECONOMICS			ELECTIVE MATHS	GEOGRAPHY		SOCIAL STUDIES	GOVERNT.
THURSDAY	PHYSICAL EDUCATION			ENGLISH LANG.	INTEGRATED SCIENCE		GOVERNT.	ECONOMICS
FRIDAY	GEOGRAPHY			MATHS	CORE MATHS		ENGLISH LANG.	INTEGRATED SCIENCE

Activity 3: Creating a certificate

Use Microsoft Ms. Word to create a provisional certificate.

Instruction

- Launch Microsoft Word
- Select Page Layout Menu→ Orientation→Landscape
- Reduce the page zoom with the Zoom Slider
- Select Page Layout Menu→ Page Borders
- In the Borders and Shading Dialog box, select Page Borders tab
- Change the setting from None→Box
- Scroll through the Art section and select an appropriate design
- Adjust the width and select an appropriate colour. The colour used in the example above is blue
- Check the design in the Preview Section to make sure it looks ok.
- Click on the OK button

- Type "Certificate of Honour"
- Highlight the text, Select "Harrington" font, font size "48", and apply Bold and Centre. Press Enter
- Type "This certificate is awarded to"
- Highlight the text, Select "Lucida Handwriting" font, font size "24", and apply Bold and Centre. Press Enter
- Type "Your Name Here"
- Highlight the text, Select "Old English Text" font, font size "60" or as appropriate depending on the length of your name, apply Bold and Centre. Press Enter
- Type "For Outstanding Academic Performance in the 2012/13 Academic Year"
- Highlight the text, Select "Lucida Handwriting" font, font size "24", and apply Bold and Centre. Press Enter
- Leave a few blank lines
- Type "Head of Department" press Tab key 9 times and type "Vice-Chancellor"
- Highlight the text, Select "Harrington" font, font size "18", and apply Bold. Press Enter
- Press and hold the dot key (.) until it fills the space below "Head of Department" and "Vice-Chancellor" as shown in the example above.

Sample

Activity 4: News letter

SYNOPSIS

You are the editor of the Ghanaian Standard magazine. As a means of educating the public about the history of Ghana, you are required to publish an article titled "Back to our roots". Using Ms. Word, design a one-page magazine using a three column newsletter. Follow the instructions below to design the magazine.

Instruction

- Change your paper orientation to landscape (you learnt this in assignment 2)
- Your paper margin at the Top should be 2.5 cm and Left should be 0.75cm
    - Click on the page layout tab
    - In the page setup command click on margins
    - From the drop down menu click on custom margins
    - Type in the top margin space 2.5
    - Type in the left margin space 0.75
    - Click OK
- Insert 3 columns
    - Click on the page layout tab
    - In the page setup command click on columns
    - From the drop down menu click three column
- In the top margin you created in item 2, use word art to insert the name of the magazine, "Ghanaian Standard",
- In the top margin insert a picture with computer related image from clip art
- In the top margin insert a banner with inscription, ICT 21st Century Tool
    - Click on the insert tab
    - In the illustration command, click on shapes

- In the drop down menu go to Stars and Banners
- Click on Down Ribbon, a cross sign will appear
- Left click and hold down the button, drag to your left to create a banner

- Insert the inscription, ICT 21st Century Tool. There are two methods

Method One

- Click on the banner
- Click on the Format Tab
- In the insert shape command, click on Add Text
- Type ICT 21st Century Tool in the banner
- Format (font type, size, style & colour) the text to your choice (you did formatting in all assignments)
- Click on the banner and choose any colour of your choice in the Text Box Style

Method two

- Double click on the banner
- In the insert shape command, click on Add Text
- Type ICT 21st Century Tool, format the text to your taste (font type, size, style & colour)
- Click on the banner and choose any colour of your choice in the Text Box Style

- In column one write about Ghana ICT4D policy, the heading is Ghana's ICT
- In column two
- In column three create a table of 4 x 3 columns and rolls

Sample

GHANAIAN STANDARD

DATE: 14TH APRIL, 2011.

BACK TO OUR ROOTS

GHana before Independence on March 6, 1957 was called Gold Coast. The earliest Europeans to arrive here were the Portuguese in the 15th Century. On their arrival, they found so much gold between the River Ankobra and the Volta and subsequently named it "da Mina", meaning The Mine. In 1482, the first castle was built in the Gold Coast by the Portuguese at Elmina. This was built to enhance their trading activities especially gold and slavery.

By 1598, the Dutch were in the Gold Coast to also trade. They built forts along the coastal areas notable among them being the Komenda fort. In 1637, they captured the Elmina castle from the Portuguese and that of Axim (Fort St. Anthony) in 1642

Many other European traders came to the Gold Coast to trade. These included the British, Danes and Swedes. These European traders built several forts along our coastlines. In 1872, the Dutch lost interest in the coast and ceded their forts free to the British. That ended a period of Dutch occupation lasting 274 years. By 1874, the British were the only Europeans in the Gold Coast and thus made it a crown colony. This in effect gave them total control.

The British government established their headquarters at Cape Coast Castle. This had been their headquarters since 1662 and is one of the greatest historical sites in the country. It has numerous dungeons which were used to keep slaves before being transported to the Diaspora

There had been many wars fought between the people of the Gold Coast and the British over governance. In 1874, an army under Sir Garnet Wolseley crossed the Pra River into the Asante territory. The Ghanaians referred to this War as the "Sagrenti War" because they could not pronounce Sir Garnet's name correctly. The British force, this time proved too strong for the Asante who, after a long and brave fighting, agreed to sign a peace treaty at Fomena. At about the same time the British defeated the Anlo people in the Volta area. On the 12th of September, 1874, the whole of Southern Ghana including Anloland became a British colony. The Capital was removed from Cape Coast to Accra two years later.

After the Second World War (1939-1945), things began to change in the then Gold Coast. The discrimination against educated Ghanaians in the civil service was on the increase and high positions were reserved for white men while Ghanaians became hewers of wood and drawers of water. The European and Asian firms were also seriously exploiting the Africans. The Ex-servicemen (Ghanaian soldiers who fought in the World War), helped in another way to expose the weakness of the British. They realized that they performed better than the whites on the battlefield. These Ex-servicemen again saw the struggle for independence in India and Burma where most of them went to fight. They were therefore inspired to struggle against the same British in Ghana after their return from the war.

The first political party was formed in August 1947 by Paa Grant, Dr. J.B Danquah and others. It was named the United Gold Coast Convention (U.G.C.C). Its slogan was "Self government within the shortest possible time". The U.G.C.C therefore invited Dr. Kwame Nkrumah home from his studies to become the full-time General Secretary of the Party.

CHAPTER 5
Spreadsheet

Daniel Danso Essel
Kofi Bentum Wilson

Introduction

In the previous chapter we learnt about Microsoft Word. In this chapter we will study about spreadsheets with Microsoft Excel. We will learn about the various components in this environment and what they do. We will also learn the procedure involved to accomplish key activities and challenges outlined. We will learn how to perform calculations and type formulas as well.

Learning Objectives

After completing this course you will be able to

- Identify the features of Microsoft excel spreadsheet
- Move around a worksheet
- Enter excel formulas and format data
- Perform mathematics calculation using excel
- Format numbers in a spreadsheet
- Use the automatic fill tool
- Create charts using spreadsheet
- Create a profession looking grade sheet using Excel

What is a Spreadsheet?

Spreadsheet allows users to create tables and financial schedules by entering data and formulas into rows and columns arranged as a grid on a display screen. Spreadsheets are used for maintaining student grade books, tracking investments, creating and tracking budgets, calculating loan payments, estimating project costs, and creating other types of financial reports.

Features of Spreadsheets

A spreadsheets' arrangement of columns, rows, and labels is called a worksheet.

Column headings: In the worksheet's frame area (work area), lettered column headings appear across the top ("A" is the name of the first column, "B" the second, and so on).

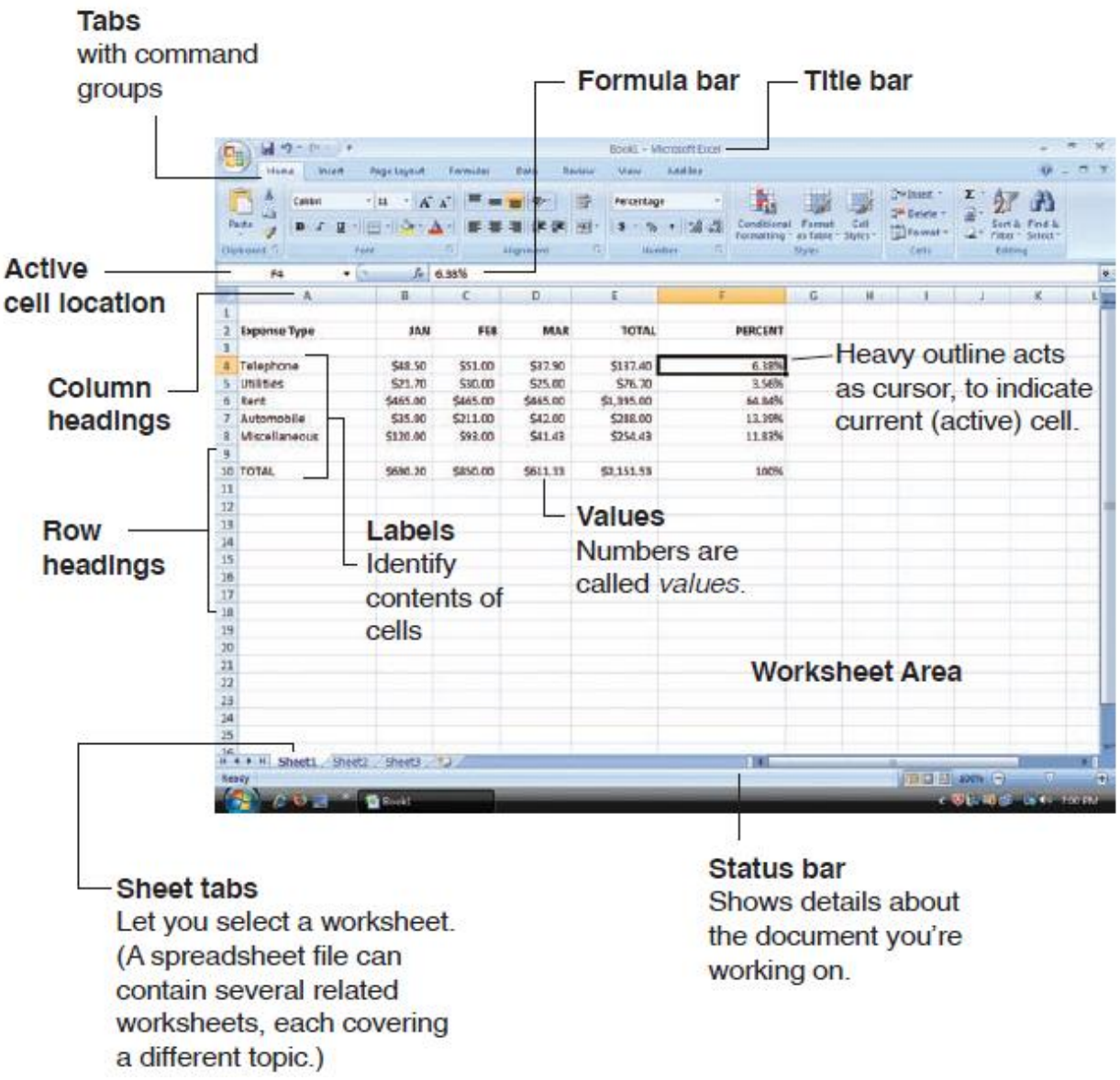
Row headings: Numbered row headings appear down the left side ("1" is the name of the first row, "2" the second, and so forth).

Labels: Labels are any descriptive text that identifies categories, such as APRIL, RENT, or GROSS SALES

Ranges: A range is a group of adjacent cells —for example, A1 to A5.

Values: A number or data entered into a cell is called a value. The values are the actual numbers used in the spreadsheet—figures, percentages, grade points, temperatures, or whatever. Headings, labels, and formulas also go into cells.

Cell pointer: A cell pointer, or spreadsheet cursor, indicates where data is to be entered. The cell pointer can be moved around like a cursor in a word processing program.



Formulas, Functions, Recalculation, & What-If Analysis

Why has the spreadsheet become so popular? The reasons lie in the features known as formulas, functions, recalculation, and what-if analysis.

Formulas: Formulas are instructions for calculations; they define how one cell relates to other cells. For example, a formula might be =SUM (A5:A15) or @SUM (A5:A15), meaning "Sum (that is, add) all the numbers in the cells with cell addresses A5 through A15."

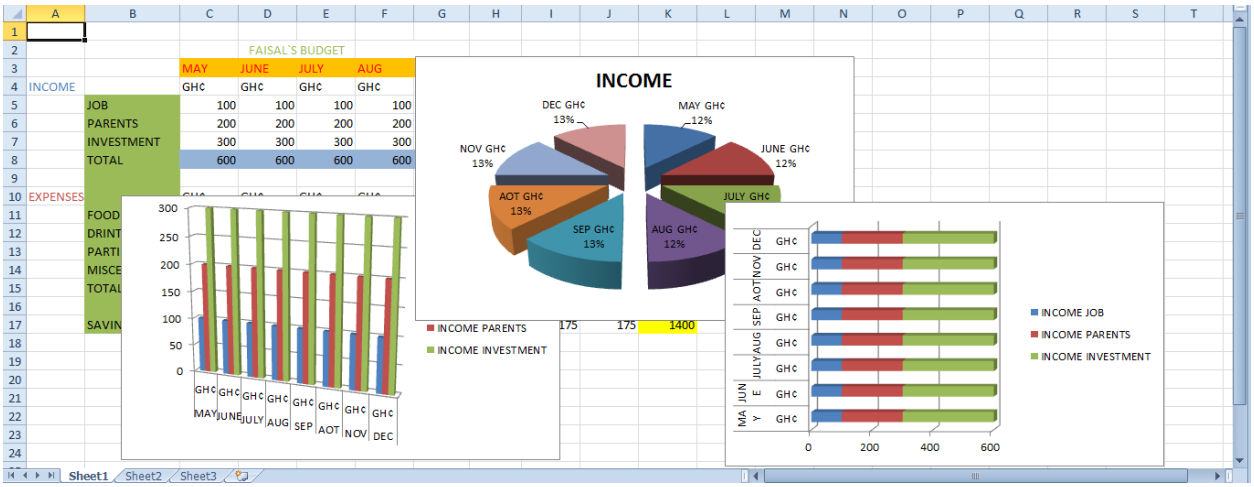
Functions: Functions are built-in formulas that perform common calculations. For instance, a function might average a range of numbers or round off a number to two decimal places.

Recalculation: After the values have been entered into the worksheet, the formulas and functions can be used to calculate outcomes. However, what was revolutionary about the electronic spreadsheet was its ability to easily do recalculation. Recalculation is the process of re-computing values, either as an on-going process as data is entered or afterward, with the press of a key.

What-if analysis: The recalculation feature has opened up whole new possibilities for decision making. In particular, what-if analysis allows the user to see how changing one or more numbers changes the outcome of the calculation. That is, you can create a worksheet, putting in formulas and numbers, and then ask, "What would happen if we change that detail?" - and immediately see the effect on the data.

Analytical Graphics: Creating Charts

You can use spreadsheet packages to create analytical graphics, or charts. Analytical graphics, or business graphics, are graphical forms that make numeric data easier to analyse than it is when organized as rows and columns of numbers. Whether viewed on a monitor or printed out, analytical graphics help make sales figures, economic trends, and the like easier to comprehend and visualize.

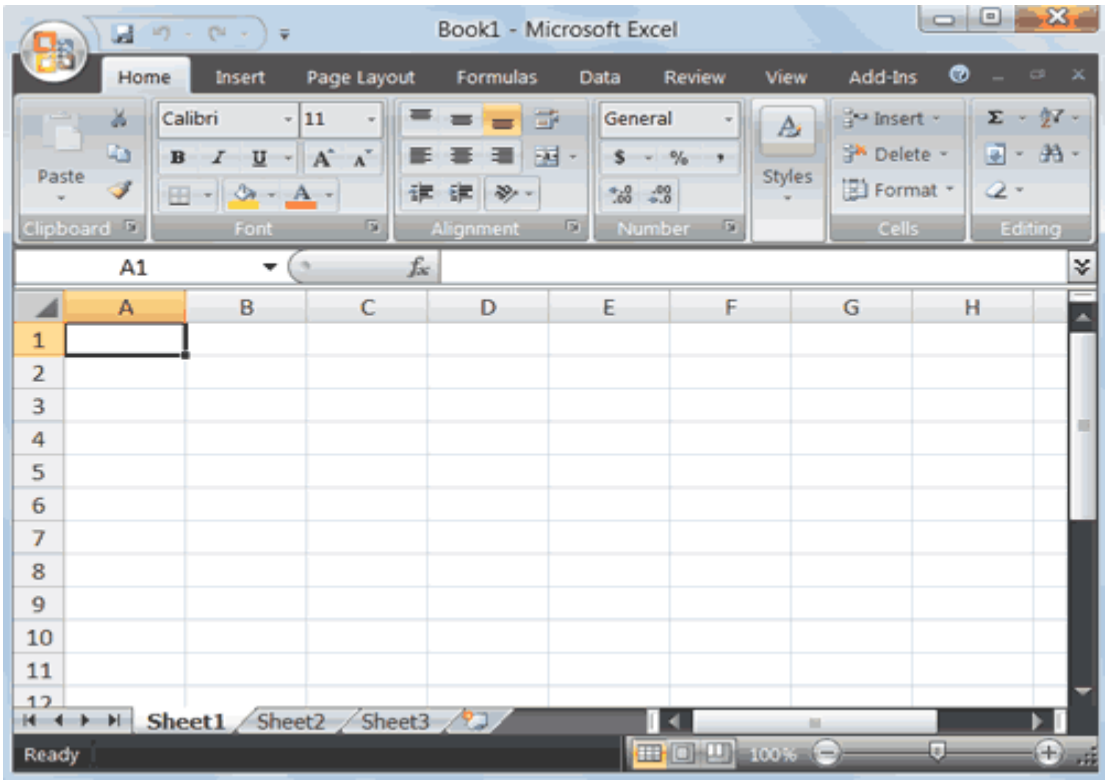


Getting Started with Spreadsheet: Microsoft Excel 2007

In this tutorial, whenever we indicate that you need to click the mouse, it will mean to click the left mouse button – unless we indicate that you should click the RIGHT mouse button. So, always "click left" unless we tell you otherwise.

The Microsoft Excel Window

Microsoft Excel is an electronic spreadsheet. You can use it to organize your data into rows and columns. You can also use it to perform mathematical calculations quickly. This section will introduce you to the Excel window. You use the window to interact with Excel. To begin this lesson, start Microsoft Excel 2007. The Microsoft Excel window appears and your screen looks similar to the one shown here.



Note: Your screen will probably not look exactly like the screen shown. In Excel 2007, how a window displays depends on the size of your window, the size of your monitor, and the resolution to which your monitor is set. Resolution determines how much information your computer monitor can display. If you use a low resolution, less information fits on your screen, but the size of your text

and images are larger. If you use a high resolution, more information fits on your screen, but the size of the text and images are smaller. Also, settings in Excel 2007 allow you to change the colour and style of your windows.

The Microsoft Office Button

In the upper-left corner of the Excel 2007 window is the Microsoft Office button. When you click the button, a menu appears. You can use the menu to create a new file, open an existing file, save a file, and perform many other tasks.

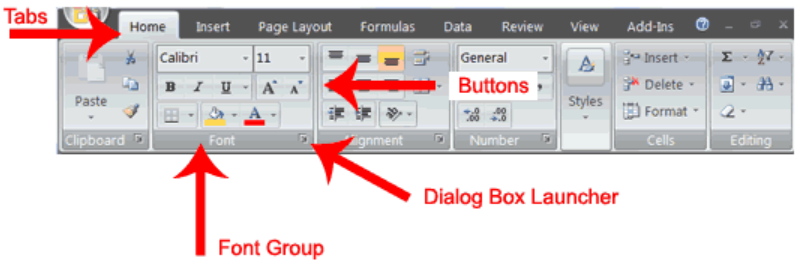
The Quick Access Toolbar

Next to the Microsoft Office button is the Quick Access toolbar. The Quick Access toolbar gives you with access to commands you frequently use. By default, **Save**, **Undo**, and **Redo** appear on the Quick Access toolbar. You can use Save to save your file, Undo to roll back an action you have taken, and Redo to reapply an action you have rolled back.

The Title Bar

Next to the Quick Access toolbar is the **Title bar**. On the Title bar, Microsoft Excel displays the name of the workbook you are currently using. At the top of the Excel window, you should see "Microsoft Excel - Book1" or a similar name.

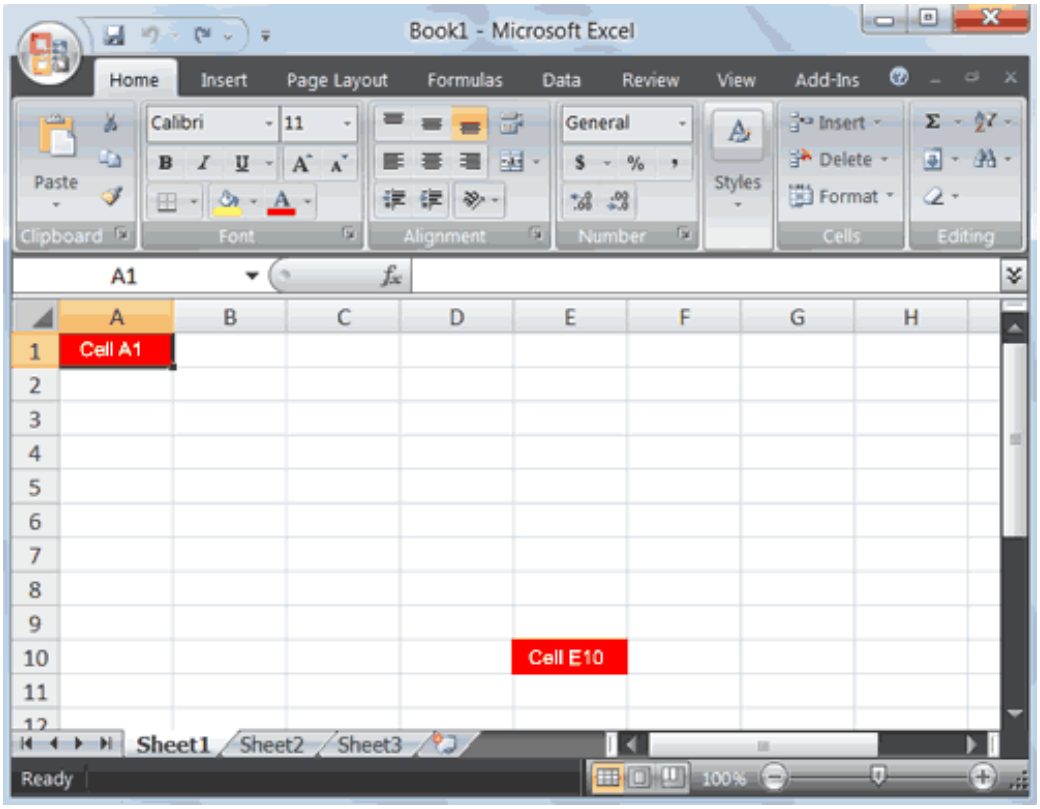
The Ribbon



You use commands to tell Microsoft Excel what to do. In Microsoft Excel 2007, you use the Ribbon to issue commands. The Ribbon is located near the top of the Excel window, below the Quick Access toolbar. At the top of the Ribbon are several tabs; clicking a tab displays several related command groups. Within

each group are related command buttons. You click buttons to issue commands or to access menus and dialog boxes. You may also find a dialog box launcher in the bottom-right corner of a group. When you click the dialog box launcher, a dialog box makes additional commands available.

Worksheets



Microsoft Excel consists of worksheets. Each worksheet contains columns and rows. The columns are lettered A to Z and then continuing with AA, AB, AC and so on; the rows are numbered 1 to 1,048,576. The number of columns and rows you can have in a worksheet is limited by your computer memory and your system resources.

The combination of a column coordinate and a row coordinate make up a cell address. For example, the cell located in the upper-left corner of the worksheet is cell A1, meaning column A, and row 1. Cell E10 is located under column E on row 10. You enter your data into the cells on the worksheet.

The Formula Bar

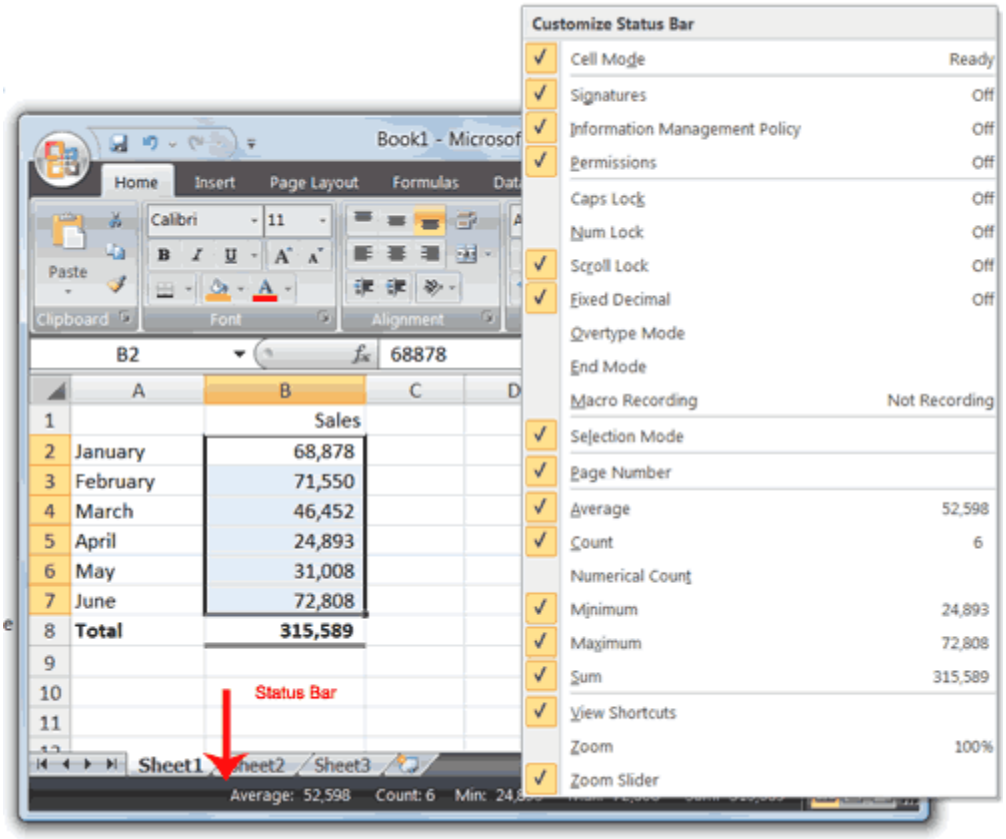
Formula Bar

If the Formula bar is turned on, the cell address of the cell you are in displays in the Name box which is located on the left side of the Formula bar. Cell entries display on the right side of the Formula bar. If you do not see the Formula bar in your window, perform the following steps:

1. Choose the View tab.
2. Click Formula Bar in the Show/Hide group. The Formula bar appears.

Note: The current cell address displays on the left side of the Formula bar.

The Status Bar



The Status bar appears at the very bottom of the Excel window and provides such information as the sum, average, minimum, and maximum value of selected numbers. You can change what displays on the Status bar by **right-clicking on the Status bar** and selecting the options you want from the Customize Status Bar menu. You click a menu item to select it. You click it again to deselect it. A check mark next to an item means the item is selected.

Moving Around a Worksheet

By using the arrow keys, you can move around your worksheet. You can use the down arrow key to move downward one cell at a time. You can use the up arrow key to move upward one cell at a time. You can use the Tab key to move across the page to the right, one cell at a time. You can hold down the Shift key and then press the Tab key to move to the left, one cell at a time. You can use the right and left arrow keys to move right or left one cell at a time. The Page Up and Page Down keys move up and down one page at a time. If you hold down the Ctrl key and then press the Home key, you move to the beginning of the worksheet.

Move Around the Worksheet

The Down Arrow Key

- Press the down arrow key several times. Note that the cursor moves downward one cell at a time.

The Up Arrow Key

- Press the up arrow key several times. Note that the cursor moves upward one cell at a time.

The Tab Key

1. Move to cell A1.
2. Press the Tab key several times. Note that the cursor moves to the right one cell at a time.

The Shift + Tab Keys

- Hold down the Shift key and then press Tab. Note that the cursor moves to the left one cell at a time.

The Right and Left Arrow Keys

1. Press the right arrow key several times. Note that the cursor moves to the right.
2. Press the left arrow key several times. Note that the cursor moves to the left.

Page Up and Page Down

1. Press the Page Down key. Note that the cursor moves down one page.
2. Press the Page Up key. Note that the cursor moves up one page.

The Ctrl-Home Key

1. Move the cursor to column J.
2. Stay in column J and move the cursor to row 20.
3. Hold down the Ctrl key while you press the Home key. Excel moves to cell A1.

Go To Cells Quickly

The following are shortcuts for moving quickly from one cell in a worksheet to a cell in a different part of the worksheet.

Go to -- F5

The F5 function key is the "Go To" key. If you press the F5 key, you are prompted for the cell to which you wish to go. Enter the cell address, and the cursor jumps to that cell.

1. Press F5. The GoTo dialog box opens.
2. Type **J3** in the Reference field.
3. Press Enter. Excel moves to cell J3.

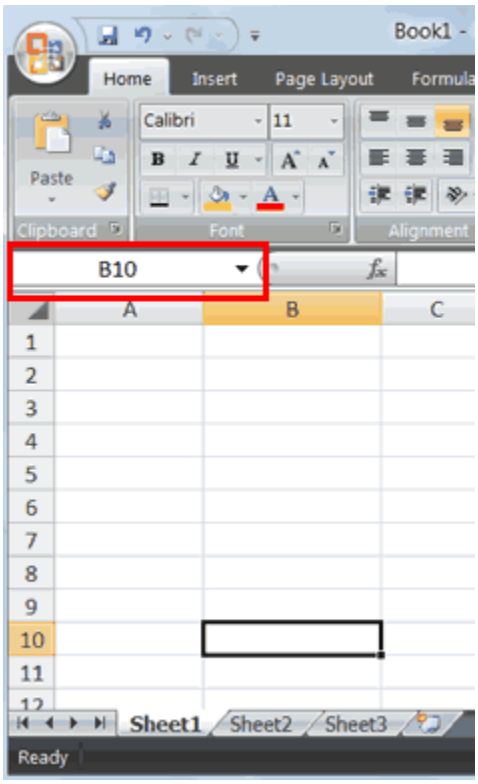
Go to -- Ctrl+G

You can also use Ctrl+G to go to a specific cell.

1. Hold down the Ctrl key while you press "g" (Ctrl+G). The GoTo dialog box opens.
2. Type **C4** in the Reference field.
3. Press Enter. Excel moves to cell C4.

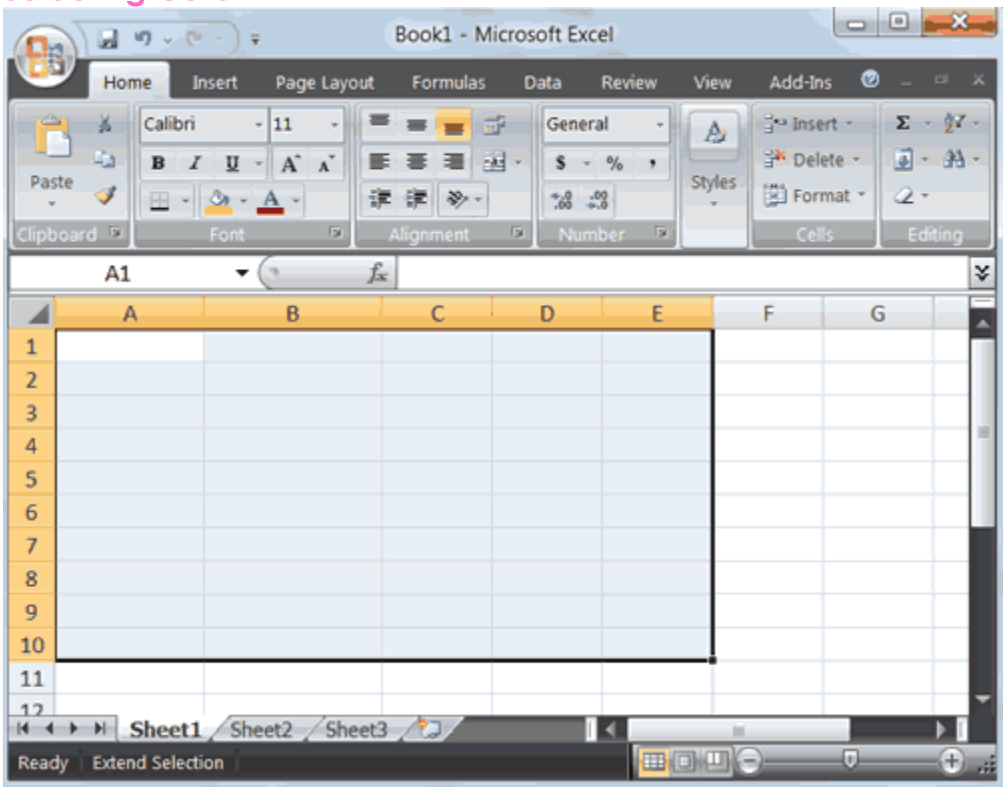
The Name Box

You can also use the Name box to go to a specific cell. Just type the cell you want to go to in the Name box and then press Enter.



1. Type **B10** in the Name box.
2. Press Enter. Excel moves to cell B10.

Selecting Cells



If you wish to perform a function on a group of cells, you must first select those cells by highlighting them. The exercises that follow teach you how to select.

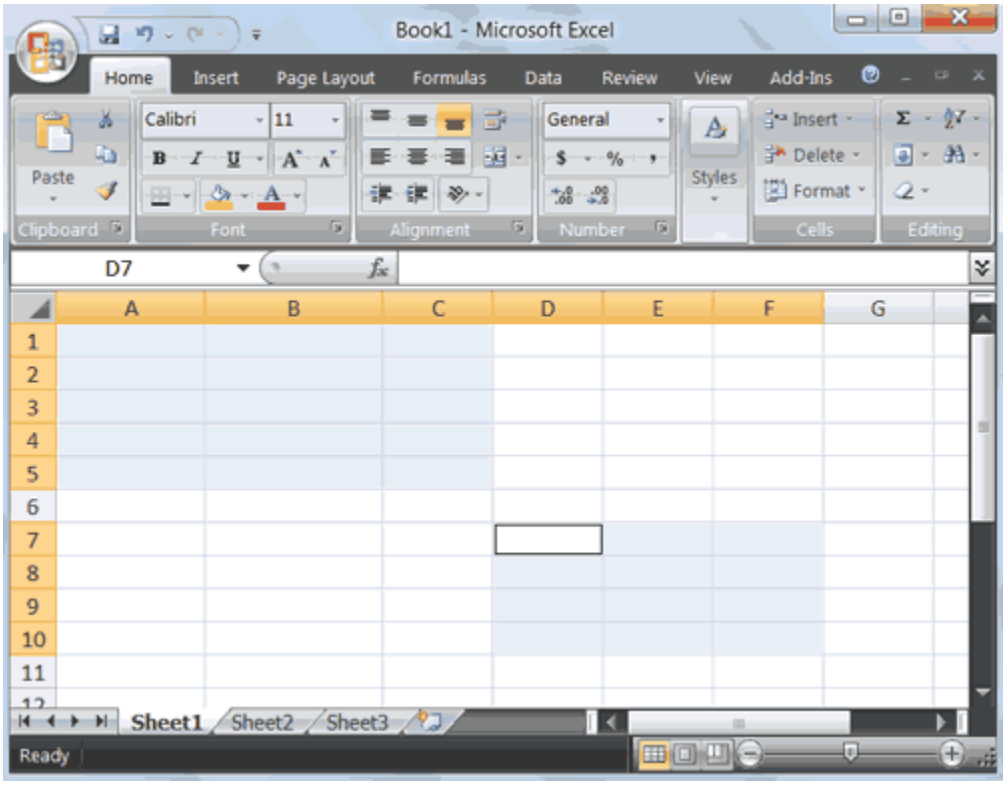
Select Cells

To select cells A1 to E1:

1. Go to cell A1.
2. Press the F8 key. This anchors the cursor.
3. Note that "Extend Selection" appears on the Status bar in the lower-left corner of the window. You are in the Extend mode.
4. Click in cell E7. Excel highlights cells A1 to E7.
5. Press Esc and click anywhere on the worksheet to clear the highlighting.

Alternative Method: Select Cells by Dragging

You can also select an area by holding down the left mouse button and dragging the mouse over the area. In addition, you can select noncontiguous areas of the worksheet by doing the following:

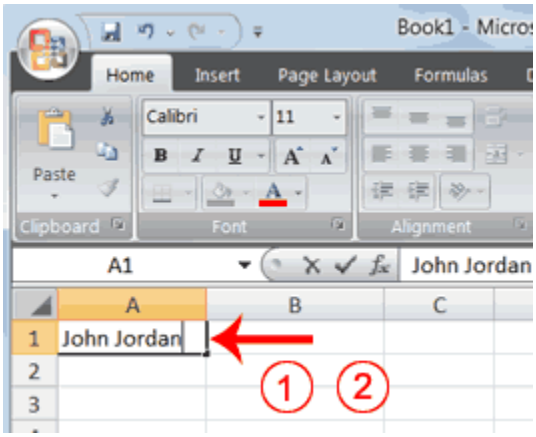


1. Go to cell A1.
2. Hold down the Ctrl key. You won't release it until step 9. Holding down the Ctrl key enables you to select noncontiguous areas of the worksheet.
3. Press the left mouse button.
4. While holding down the left mouse button, use the mouse to move from cell A1 to C5.
5. Continue to hold down the Ctrl key, but release the left mouse button.
6. Using the mouse, place the cursor in cell D7.
7. Press the left mouse button.
8. While holding down the left mouse button, move to cell F10. Release the left mouse button.
9. Release the Ctrl key. Cells A1 to C5 and cells D7 to F10 are selected.
10. Press Esc and click anywhere on the worksheet to remove the highlighting.

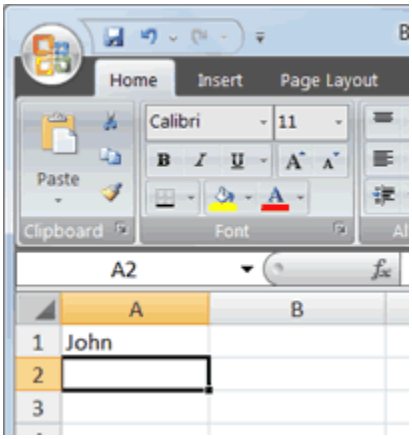
Entering Data

In this section, you will learn how to enter data into your worksheet. First, place the cursor in the cell in which you want to start entering data. Type some data, and then press Enter. If you need to delete, press the Backspace key to delete one character at a time.

Enter Data



1. Place the cursor in cell A1.
2. Type **John Jordan**. Do not press Enter at this time.



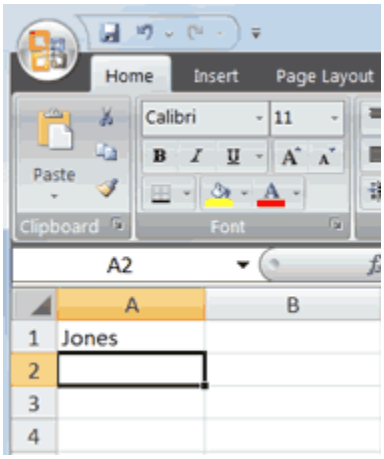
Deleting Data

The Backspace key erases one character at a time.

1. Press the Backspace key until Jordan is erased.
2. Press Enter. The name "John" appears in cell A1.

Editing a Cell

After you enter data into a cell, you can edit the data by pressing F2 while you are in the cell you wish to edit.



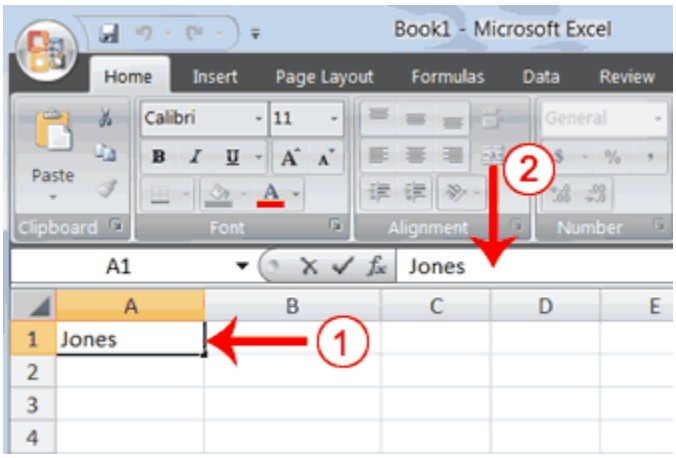
Edit a Cell

Change "John" to "Jones."

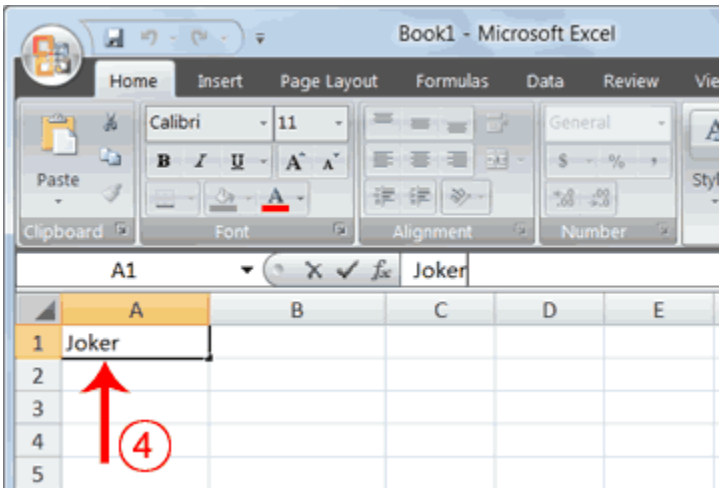
1. Move to cell A1.
2. Press F2.
3. Use the Backspace key to delete letter "n" and letter "h."
4. Type **nes**.
5. Press Enter.

Alternate Method: Editing a Cell by Using the Formula Bar

You can also edit the cell by using the Formula bar. You change "Jones" to "Joker" in the following exercise.



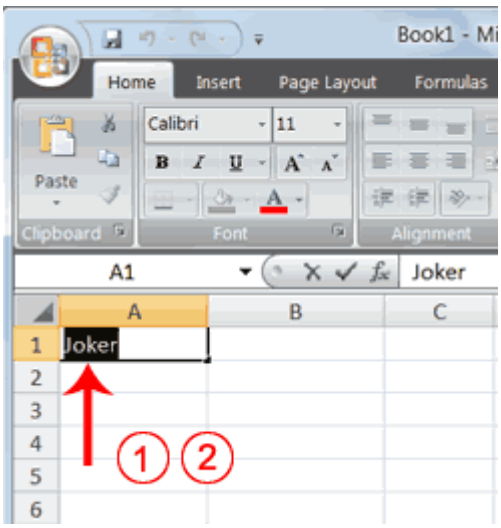
1. Move the cursor to cell A1.
2. Click in the formula area of the Formula bar.



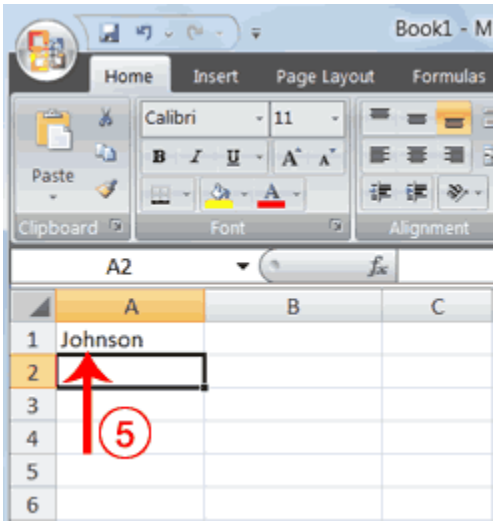
3. Use the backspace key to erase the "s," "e," and "n."
4. Type **ker**.
5. Press Enter.

Alternate Method: Edit a Cell by Double-Clicking in the Cell

You can change "Joker" to "Johnson" as follows:



1. Move to cell A1.
2. Double-click in cell A1.
3. Press the End key. Your cursor is now at the end of your text.



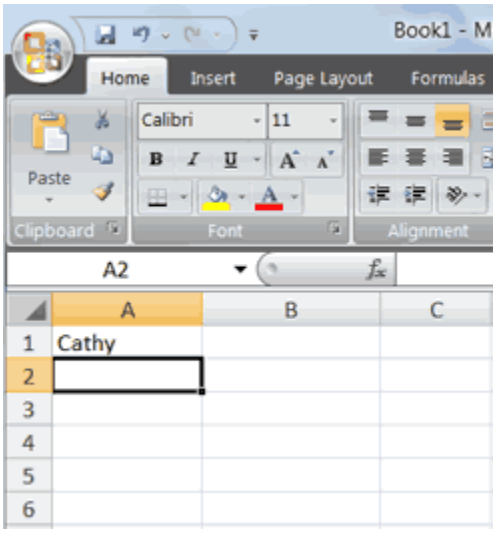
3. Use the Backspace key to erase "r," "e," and "k."
4. Type **hnson**.
5. Press Enter.

Change a Cell Entry

Typing in a cell replaces the old cell entry with the new information you type.

1. Move the cursor to cell A1.

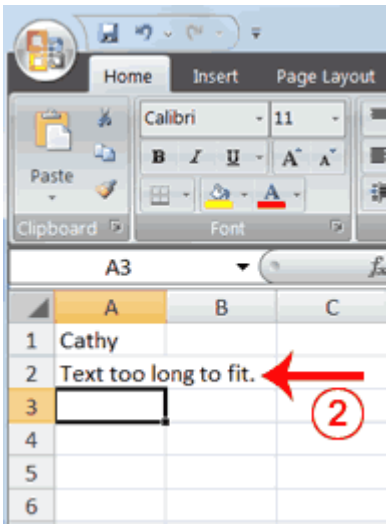
2. Type **Cathy**.
3. Press Enter. The name "Cathy" replaces "Johnson."



Wrapping Text

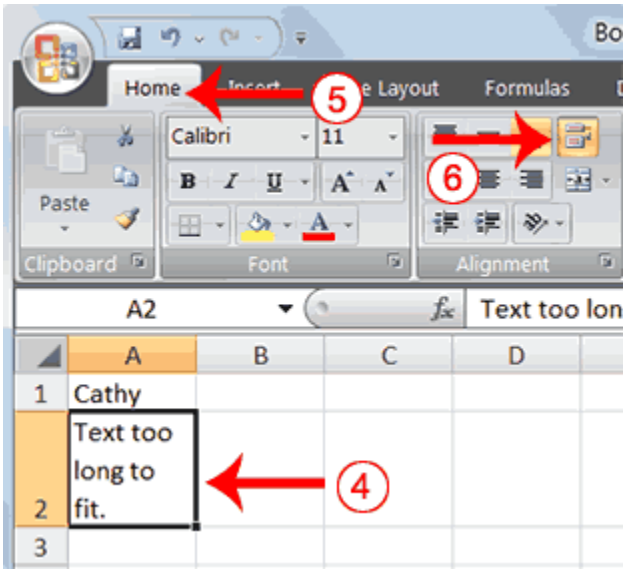
When you type text that is too long to fit in the cell, the text overlaps the next cell. If you do not want it to overlap the next cell, you can wrap the text.

Wrap Text



1. Move to cell A2.
2. Type **Text too long to fit**.

3. Press Enter.



4. Return to cell A2.
5. Choose the Home tab.
6. Click the Wrap Text button . Excel wraps the text in the cell.

Deleting a Cell Entry

To delete an entry in a cell or a group of cells, you place the cursor in the cell or select the group of cells and press Delete.

Delete a Cell Entry

1. Select cells A1 to A2.
2. Press the Delete key.

Save a File

This is the end of this Lesson. To save your file:

1. Click the Office button. A menu appears.
2. Click Save. The Save As dialog box appears.
3. Go to the directory in which you want to save your file.
4. Type **Lesson1** in the File Name field.
5. Click Save. Excel saves your file.

Closing Excel

Close Microsoft Excel.

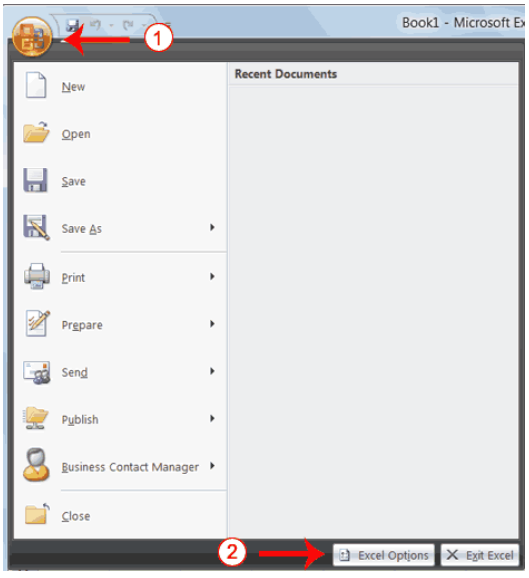
1. Click the Office button. A menu appears.
2. Click Close. Excel closes.

Entering Excel Formulas and Formatting Data

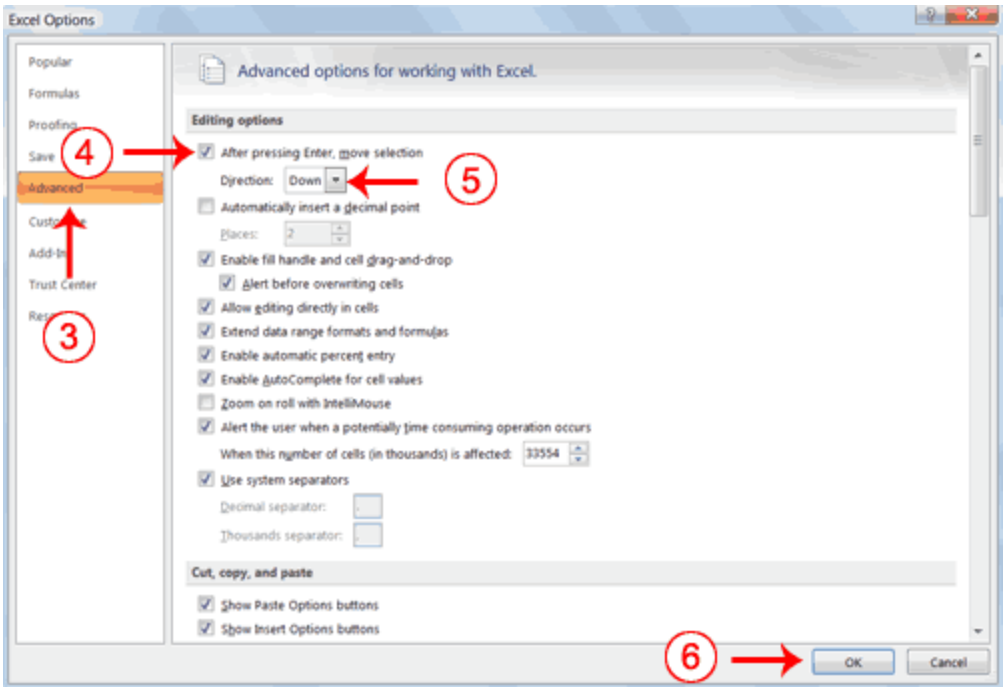
The previous lesson familiarized you with the Excel 2007 window, taught you how to move around the window, and how to enter data. A major strength of Excel is that you can perform mathematical calculations and format your data. In this lesson, you learn how to perform basic mathematical calculations and how to format text and numerical data. To start this lesson, open Excel.

Set the Enter Key Direction

In Microsoft Excel, you can specify the direction the cursor moves when you press the Enter key. In the exercises that follow, the cursor must move down one cell when you press Enter. You can use the Direction box in the Excel Options pane to set the cursor to move up, down, left, right, or not at all. Perform the steps that follow to set the cursor to move down when you press the Enter key.



1. Click the Microsoft Office button. A menu appears.
2. Click Excel Options in the lower-right corner. The Excel Options pane appears.



3. Click Advanced.
4. If the check box next to After Pressing Enter Move Selection is not checked, click the box to check it.
5. If Down does not appear in the Direction box, click the down arrow next to the Direction box and then click Down.
6. Click OK. Excel sets the Enter direction to down.

Perform Mathematical Calculations

In Microsoft Excel, you can enter numbers and mathematical formulas into cells. Whether you enter a number or a formula, you can reference the cell when you perform mathematical calculations such as addition, subtraction, multiplication, or division. When entering a mathematical formula, precede the formula with an equal sign. Use the following to indicate the type of calculation you wish to perform:

+ Addition

- Subtraction

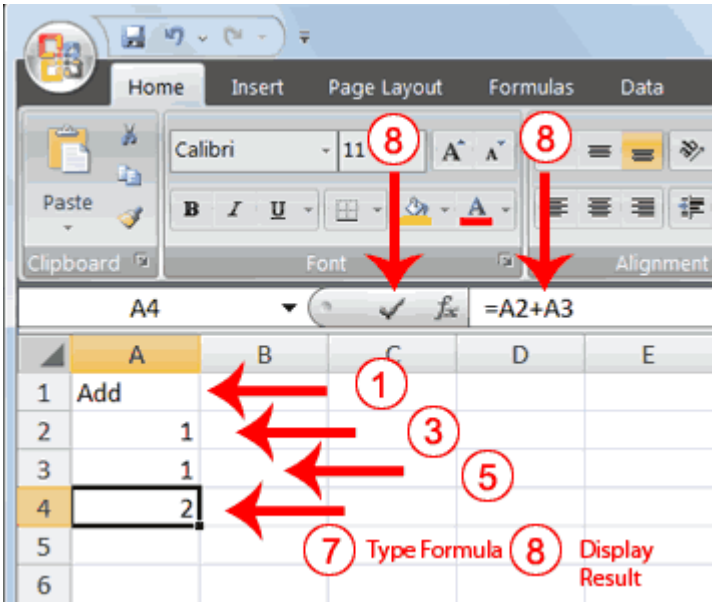
* Multiplication

/ Division

^ Exponential

In the following exercises, you practice some of the methods you can use to move around a worksheet and you learn how to perform mathematical calculations. Refer to the previous lesson to learn more about moving around a worksheet.

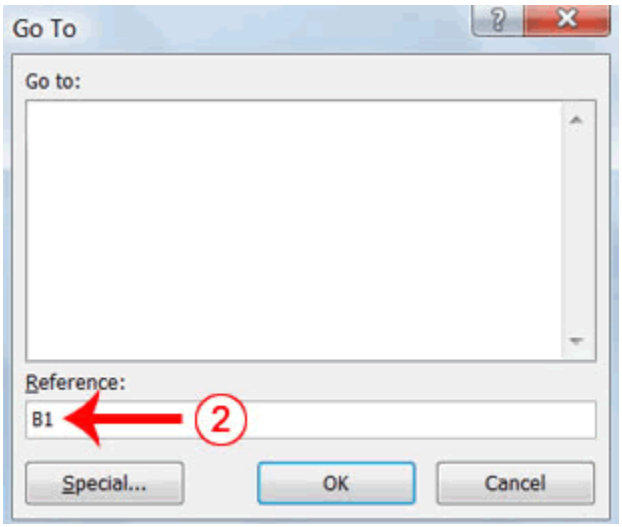
Addition



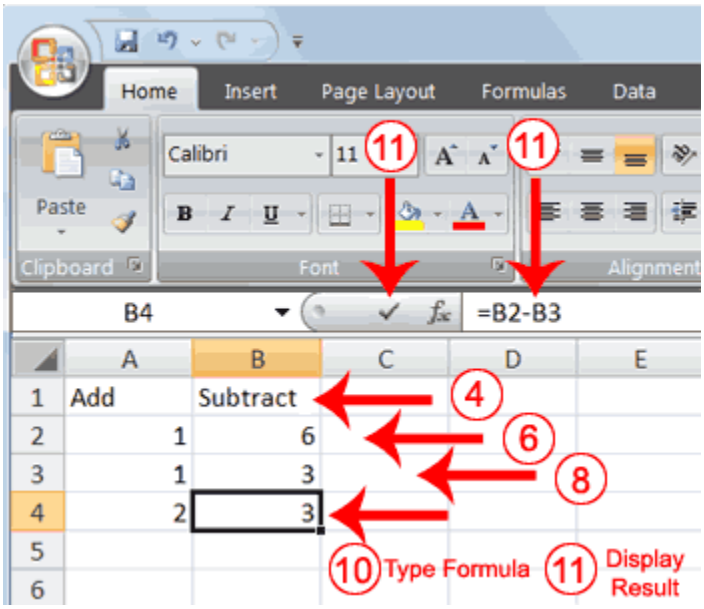
1. Type **Add** in cell A1.
2. Press Enter. Excel moves down one cell.
3. Type **1** in cell A2.
4. Press Enter. Excel moves down one cell.
5. Type **1** in cell A3.
6. Press Enter. Excel moves down one cell.
7. Type **=A2+A3** in cell A4.
8. Click the check mark on the Formula bar. Excel adds cell A1 to cell A2 and displays the result in cell A4. The formula displays on the Formula bar.

Note: Clicking the check mark on the Formula bar is similar to pressing Enter. Excel records your entry but does not move to the next cell.

Subtraction



1. Press F5. The Go To dialog box appears.
2. Type **B1** in the Reference field.
3. Press Enter. Excel moves to cell B1.



4. Type **Subtract**.
5. Press Enter. Excel moves down one cell.

6. Type **6** in cell B2.
7. Press Enter. Excel moves down one cell.
8. Type **3** in cell B3.
9. Press Enter. Excel moves down one cell.
10. Type **=B2-B3** in cell B4.
11. Click the check mark on the Formula bar. Excel subtracts cell B3 from cell B2 and the result displays in cell B4. The formula displays on the Formula bar.

Multiplication

1. Hold down the Ctrl key while you press "g" (Ctrl+G). The GoTo dialog box appears.
2. Type **C1** in the Reference field.
3. Press Enter. Excel moves to cell C1
4. Type **Multiply**.
5. Press Enter. Excel moves down one cell.
6. Type **2** in cell C2.
7. Press Enter. Excel moves down one cell.
8. Type **3** in cell C3.
9. Press Enter. Excel moves down one cell.
10. Type **=C2*C3** in cell C4.
11. Click the check mark on the Formula bar. Excel multiplies C1 by cell C2 and displays the result in cell C3. The formula displays on the Formula bar.

Division

1. Press F5.
2. Type **D1** in the Reference field.
3. Press Enter. Excel moves to cell D1.

4. Type **Divide**.
5. Press Enter. Excel moves down one cell.
6. Type **6** in cell D2.
7. Press Enter. Excel moves down one cell.
8. Type **3** in cell D3.
9. Press Enter. Excel moves down one cell.
10. Type **=D2/D3** in cell D4.
11. Click the check mark on the Formula bar. Excel divides cell D2 by cell D3 and displays the result in cell D4. The formula displays on the Formula bar.

When creating formulas, you can reference cells and include numbers. All of the following formulas are valid:

=A2/B2

=A1+12-B3

=A2*B2+12

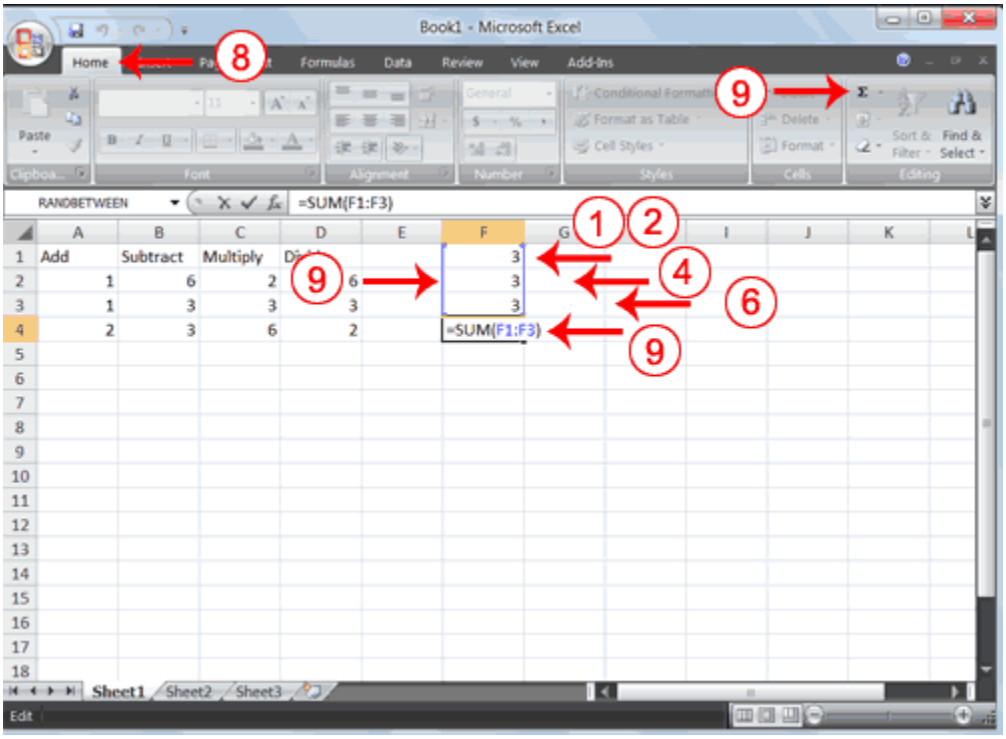
=24+53

AutoSum

You can use the AutoSum button Σ on the Home tab to automatically add a column or row of numbers. When you press the AutoSum button Σ, Excel selects the numbers it thinks you want to add. If you then click the check mark on the Formula bar or press the Enter key, Excel adds the numbers. If Excel's guess as to which numbers you want to add is wrong, you can select the cells you want.

AutoSum

The following illustrates AutoSum:



1. Go to cell F1.
2. Type **3.**
3. Press Enter. Excel moves down one cell.
4. Type **3**.
5. Press Enter. Excel moves down one cell.
6. Type **3**.
7. Press Enter. Excel moves down one cell to cell F4.
8. Choose the Home tab.
9. Click the AutoSum button Σ in the Editing group. Excel selects cells F1 through F3 and enters a formula in cell F4.

E	F	G
	3	
	3	
	3	
	9	

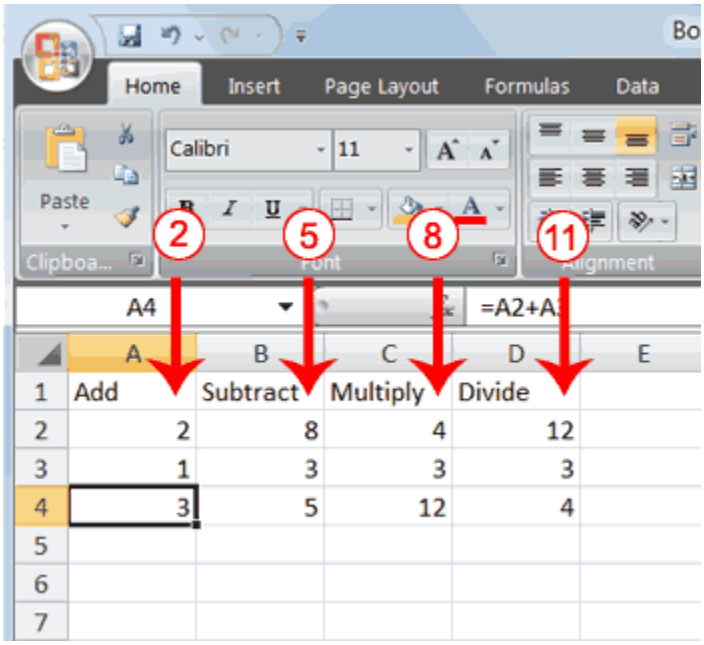
10. Press Enter. Excel adds cells F1 through F3 and displays the result in cell F4.

Perform Automatic Calculations

By default, Microsoft Excel recalculates the worksheet as you change cell entries. This makes it easy for you to correct mistakes and analyze a variety of scenarios.

Automatic Calculation

Make the changes described below and note how Microsoft Excel automatically recalculates.



1. Move to cell A2.
2. Type **2**.

3. Press the right arrow key. Excel changes the result in cell A4. Excel adds cell A2 to cell A3 and the new result appears in cell A4.
4. Move to cell B2.
5. Type **8**.
6. Press the right arrow key. Excel subtracts cell B3 from cell B3 and the new result appears in cell B4.
7. Move to cell C2.
8. Type **4**.
9. Press the right arrow key. Excel multiplies cell C2 by cell C3 and the new result appears in cell C4.
10. Move to cell D2.
11. Type **12**.
12. Press the Enter key. Excel divides cell D2 by cell D3 and the new result appears in cell D4.

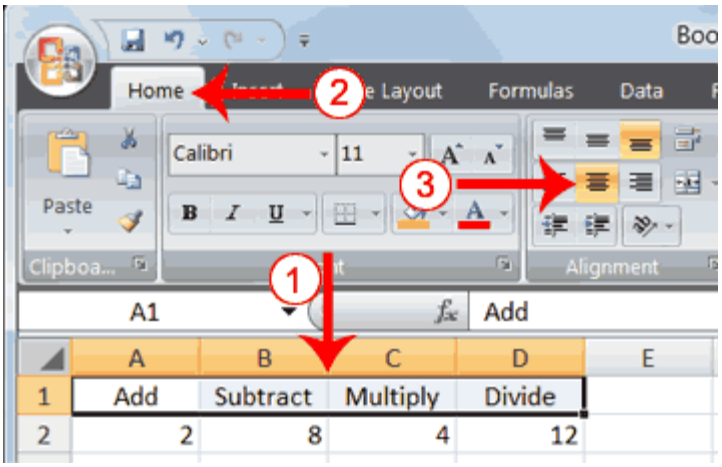
Align Cell Entries

When you type text into a cell, by default your entry aligns with the left side of the cell. When you type numbers into a cell, by default your entry aligns with the right side of the cell. You can change the cell alignment. You can center, left-align, or right-align any cell entry. Look at cells A1 to D1. Note that they are aligned with the left side of the cell.

	A	B	C	D
1	Add	Subtract	Multiply	Divide
2	2	8	4	12

Center

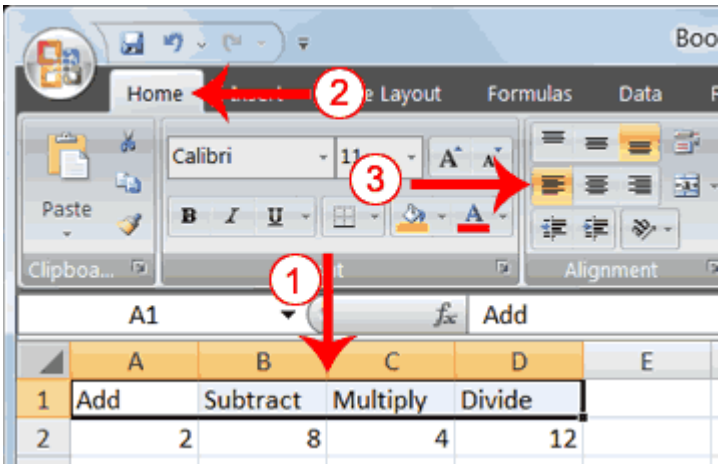
To center cells A1 to D1:



1. Select cells A1 to D1.
2. Choose the Home tab.
3. Click the Center button in the Alignment group. Excel centers each cell's content.

Left-Align

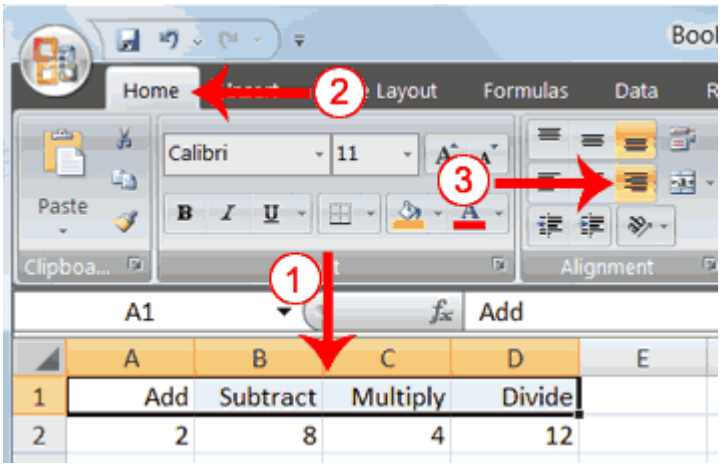
To left-align cells A1 to D1:



1. Select cells A1 to D1.
2. Choose the Home tab.
3. Click the Align Text Left button in the Alignment group. Excel left-aligns each cell's content.

Right-Align

To right-align cells A1 to D1:



1. Select cells A1 to D1. Click in cell A1.
2. Choose the Home tab.
3. Click the Align Text Right button. Excel right-aligns the cell's content.
4. Click anywhere on your worksheet to clear the highlighting.

Note: You can also change the alignment of cells with numbers in them by using the alignment buttons.

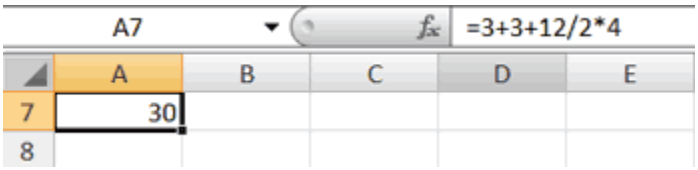
Perform Advanced Mathematical Calculations

When you perform mathematical calculations in Excel, be careful of precedence. Calculations are performed from left to right, with multiplication and division performed before addition and subtraction.

Advanced Calculations

1. Move to cell A7.
2. Type **=3+3+12/2*4**.
3. Press Enter.

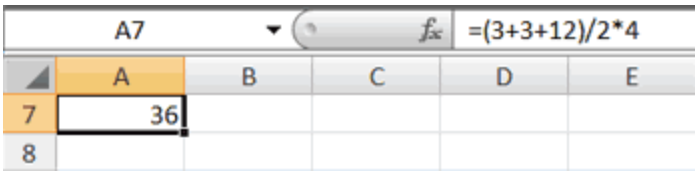
Note: Microsoft Excel divides 12 by 2, multiplies the answer by 4, adds 3, and then adds another 3. The answer, 30, displays in cell A7.



To change the order of calculation, use parentheses. Microsoft Excel calculates the information in parentheses first.

1. Double-click in cell A7.
2. Edit the cell to read **= (3+3+12)/2*4**.
3. Press Enter.

Note: Microsoft Excel adds 3 plus 3 plus 12, divides the answer by 2, and then multiplies the result by 4. The answer, 36, displays in cell A7.



Copy, Cut, Paste, and Cell Addressing

In Ms. Excel, you can copy data from one area of a worksheet and place the data you copied anywhere in the same or another worksheet. In other words, after you type information into a worksheet, if you want to place the same information somewhere else, you do not have to retype the information. You simple copy it and then paste it in the new location.

You can use Excel's Cut feature to remove information from a worksheet. Then you can use the Paste feature to place the information you cut anywhere in the same or another worksheet. In other words, you can move information from one place in a worksheet to another place in the same or different worksheet by using the Cut and Paste features.

Microsoft Excel records cell addresses in formulas in three different ways, called ***absolute***, ***relative***, and ***mixed***. The way a formula is recorded is important when you copy it. With ***relative*** cell addressing, when you copy a formula from one area of the worksheet to another, Excel records the position of the cell relative to the cell that originally contained the formula. With ***absolute*** cell

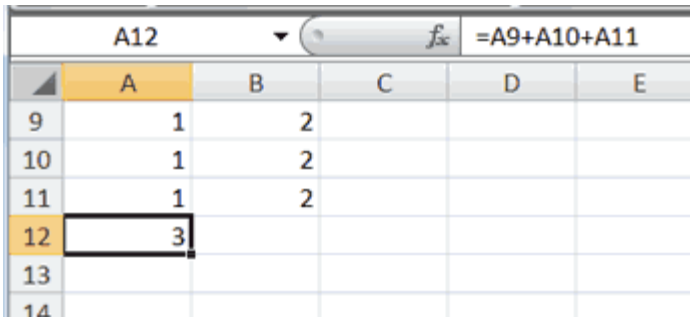
addressing, when you copy a formula from one area of the worksheet to another, Excel references the same cells, no matter where you copy the formula. You can use mixed cell addressing to keep the row constant while the column changes, or vice versa. The following exercises demonstrate this.

Copy, Cut, Paste, and Cell Addressing

1. Move to cell A9.
2. Type **1**. Press Enter. Excel moves down one cell.
3. Type **1**. Press Enter. Excel moves down one cell.
4. Type **1**. Press Enter. Excel moves down one cell.
5. Move to cell B9.
6. Type **2**. Press Enter. Excel moves down one cell.
7. Type **2**. Press Enter. Excel moves down one cell.
8. Type **2**. Press Enter. Excel moves down one cell.

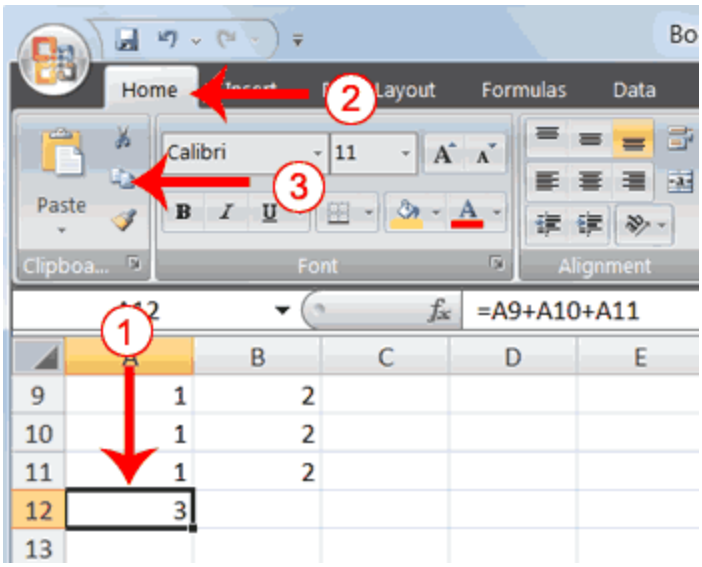
In addition to typing a formula as you did in previously, you can also enter formulas by using Point mode. When you are in Point mode, you can enter a formula either by clicking on a cell or by using the arrow keys.

1. Move to cell A12.
2. Type **=**.
3. Use the up arrow key to move to cell A9.
4. Type **+**.
5. Use the up arrow key to move to cell A10.
6. Type **+**.
7. Use the up arrow key to move to cell A11.
8. Click the check mark on the Formula bar. Look at the Formula bar. Note that the formula you entered is displayed there.

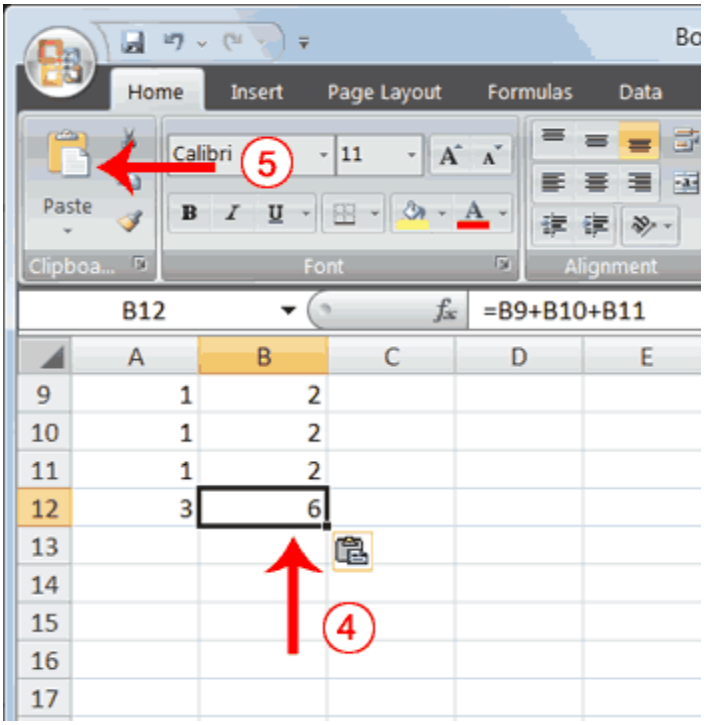


Copy with the Ribbon

To copy the formula you just entered, follow these steps:



1. You should be in cell A12.
2. Choose the Home tab.
3. Click the Copy button in the Clipboard group. Excel copies the formula in cell A12.



4. Press the right arrow key once to move to cell B12.

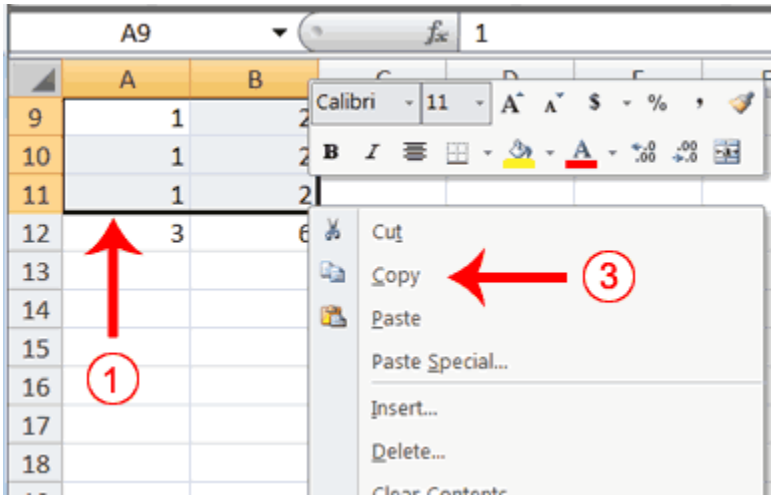
5. Click the Paste button in the Clipboard group. Excel pastes the formula in cell A12 into cell B12.

6. Press the Esc key to exit the Copy mode.

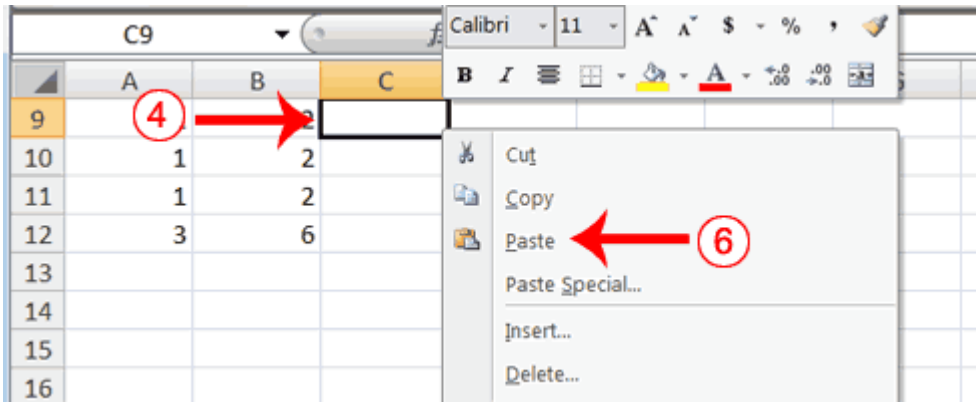
Compare the formula in cell A12 with the formula in cell B12 (while in the respective cell, look at the Formula bar). The formulas are the same except that the formula in cell A12 sums the entries in column A and the formula in cell B12 sums the entries in column B. The formula was copied in a *relative* fashion.

Before proceeding with the next part of the exercise, you must copy the information in cells A7 to B9 to cells C7 to D9. This time you will copy by using the Mini toolbar.

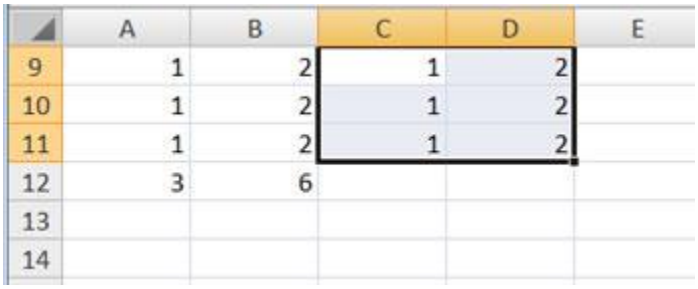
Copy with the Mini Toolbar



1. Select cells A9 to B11. Move to cell A9. Press the Shift key. While holding down the Shift key, press the down arrow key twice. Press the right arrow key once. Excel highlights A9 to B11.
2. Right-click. A context menu and a Mini toolbar appear.
3. Click Copy, which is located on the context menu. Excel copies the information in cells A9 to B11.



4. Move to cell C9.
5. Right-click. A context menu appears.
6. Click Paste. Excel copies the contents of cells A9 to B11 to cells C9 to C11.



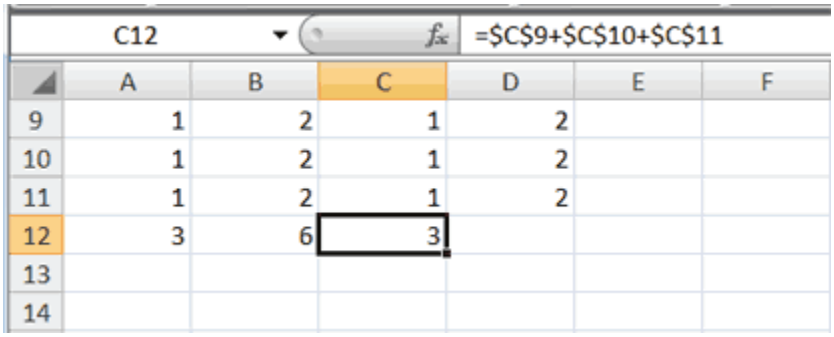
	A	B	C	D	E
9	1	2	1	2	
10	1	2	1	2	
11	1	2	1	2	
12	3	6			
13					
14					

7. Press Esc to exit Copy mode.

Absolute Cell Addressing

You make a cell address an absolute cell address by placing a dollar sign in front of the row and column identifiers. You can do this automatically by using the combination of "SHIFT + 4" keys. To illustrate:

1. Move to cell C12.
2. Type **=**.
3. Click cell C9.
4. Press "SHIFT + 4". Dollar signs appear before the C and the 9.
5. Type **+**.
6. Click cell C10.
7. Press "SHIFT + 4". Dollar signs appear before the C and the 10.
8. Type **+**.
9. Click cell C11.
10. Press "SHIFT + 4". Dollar signs appear before the C and the 11.
11. Click the check mark on the formula bar. Excel records the formula in cell C12.



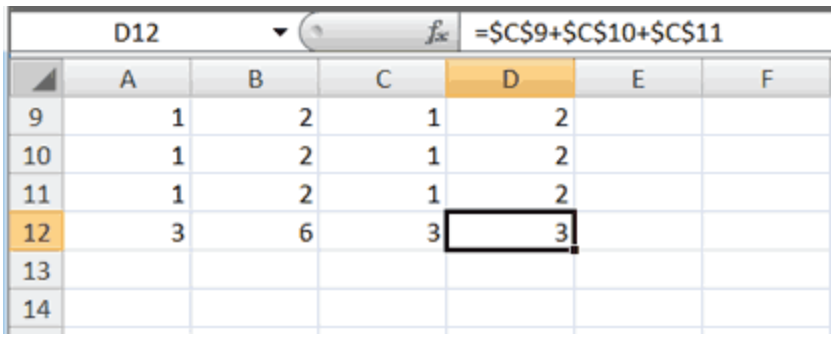
Copy and Paste with Keyboard Shortcuts

Keyboard shortcuts are key combinations that enable you to perform tasks by using the keyboard. Generally, you press and hold down a key while pressing a letter. For example, Ctrl+C means you should press and hold down the Ctrl key while pressing "C." This tutorial notates key combinations as follows:

Press Ctrl+C.

Now copy the formula from C12 to D12. This time, copy by using keyboard shortcuts.

1. Move to cell C12.
2. Hold down the Ctrl key while you press "C" (Ctrl+C). Excel copies the contents of cell C12.
3. Press the right arrow once. Excel moves to D12.
4. Hold down the Ctrl key while you press "V" (Ctrl+V). Excel pastes the contents of cell C12 into cell D12.
5. Press Esc to exit the Copy mode.



Compare the formula in cell C12 with the formula in cell D12 (while in the respective cell, look at the Formula bar). The formulas are exactly the same. Excel copied the formula from cell C12 to cell D12. Excel copied the formula in an ***absolute*** fashion. Both formulas sum column C.

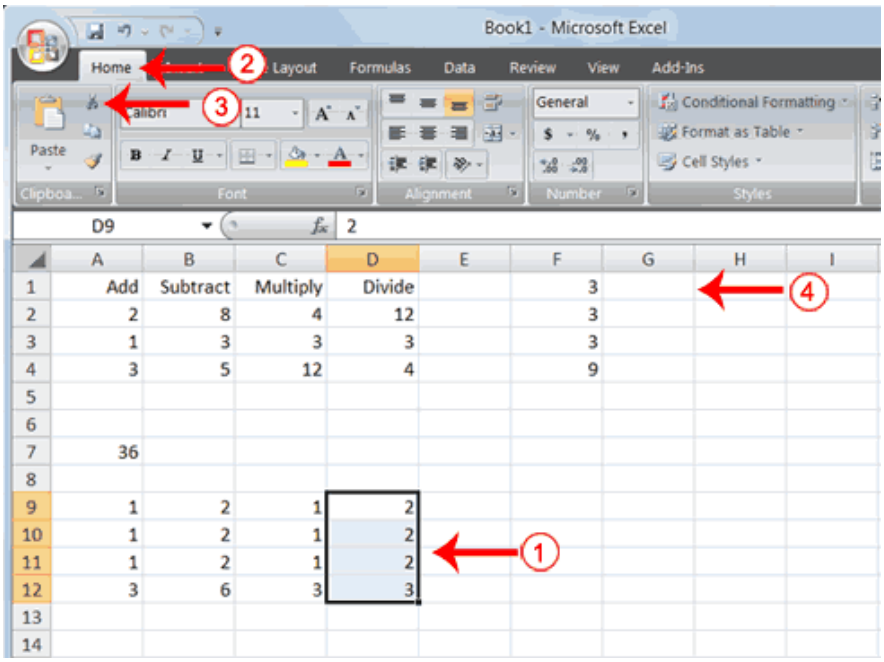
Mixed Cell Addressing

You use mixed cell addressing to reference a cell when you want to copy part of it absolute and part relative. For example, the row can be absolute and the column relative. You can use the F4 key to create a mixed cell reference.

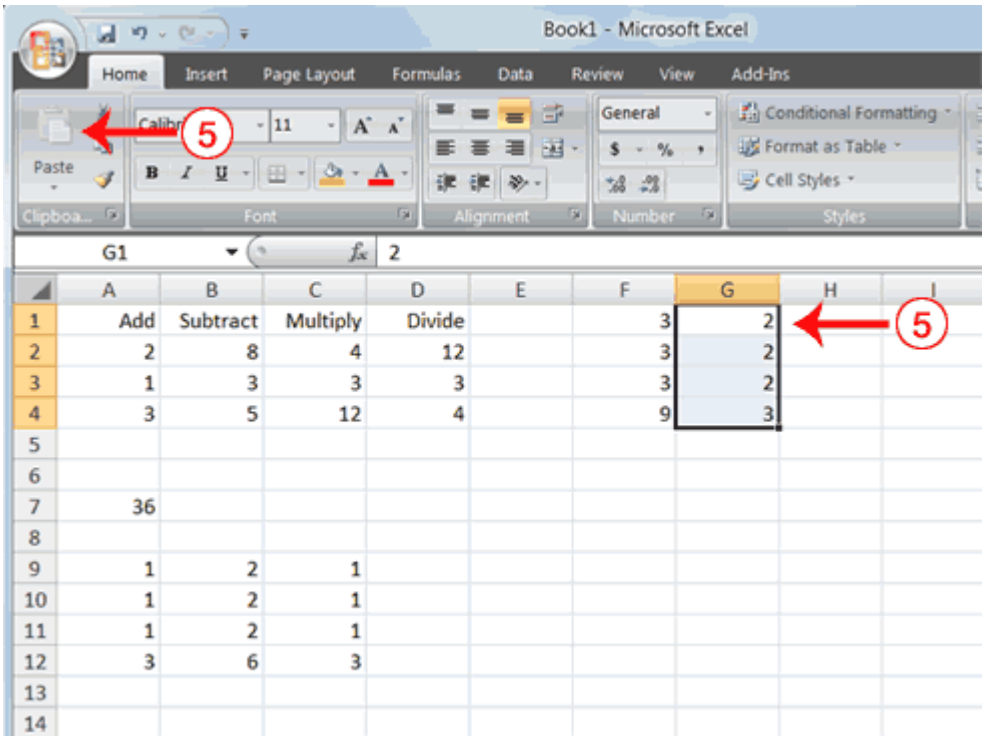
1. Move to cell E1.
2. Type **=**.
3. Press the up arrow key once.
4. Press F4.
5. Press F4 again. Note that the column is relative and the row is absolute.
6. Press F4 again. Note that the column is absolute and the row is relative.
7. Press Esc.

Cut and Paste

You can move data from one area of a worksheet to another.



1. Select cells D9 to D12
2. Choose the Home tab.
3. Click the Cut button.
4. Move to cell G1.



5. Click the Paste button. Excel moves the contents of cells D9 to D12 to cells G1 to G4.

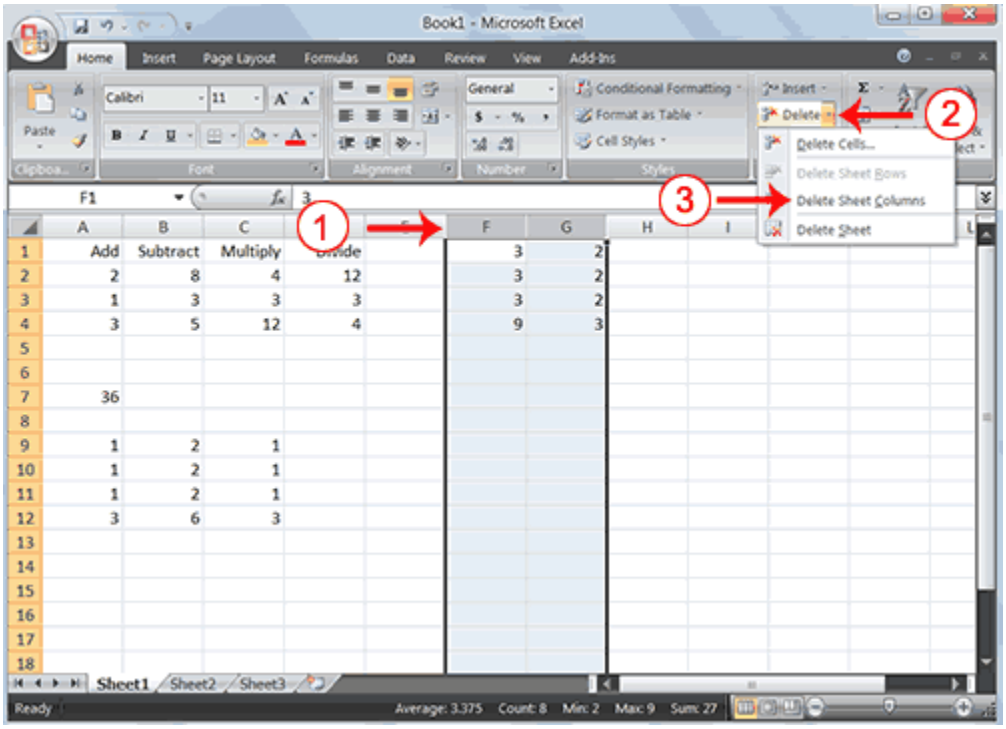
The keyboard shortcut for Cut is Ctrl+X. The steps for cutting and pasting with a keyboard shortcut are:

1. Select the cells you want to cut and paste.
2. Press Ctrl+X.
3. Move to the upper-left corner of the block of cells into which you want to paste.
4. Press Ctrl+V. Excel cuts and pastes the cells you selected.

You can insert and delete columns and rows. When you delete a column, you delete everything in the column from the top of the worksheet to the bottom of the worksheet. When you delete a row, you delete the entire row from left to right. Inserting a column or row inserts a completely new column or row.

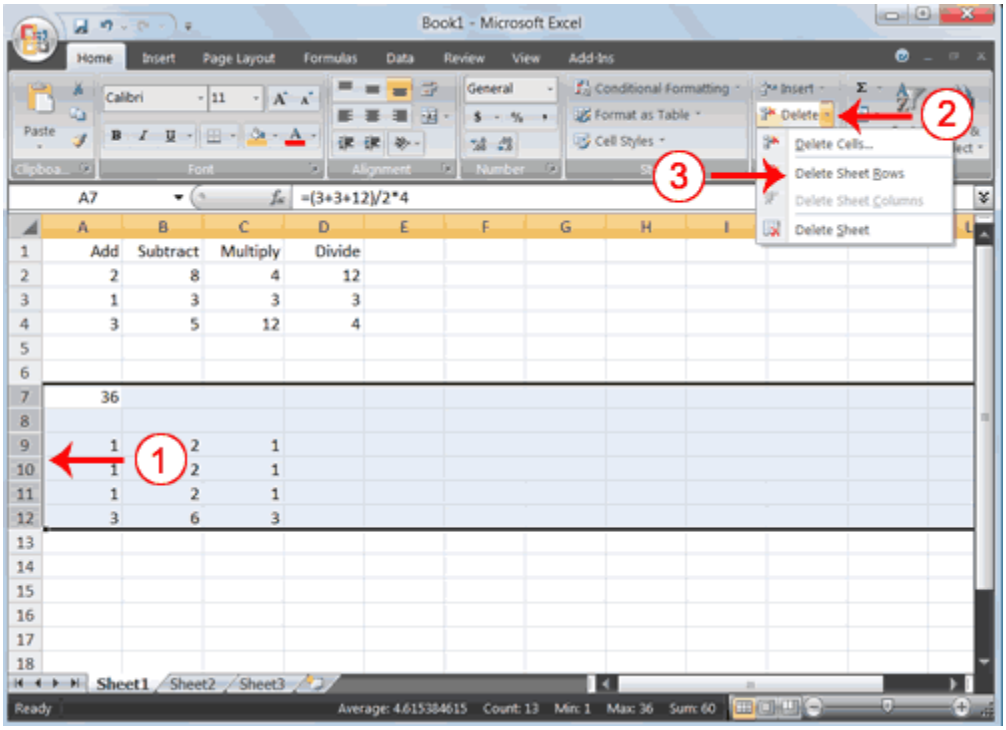
Insert and Delete Columns and Rows

To delete columns F and G:



1. Click the column F indicator and drag to column G.
2. Click the down arrow next to Delete in the Cells group. A menu appears.
3. Click Delete Sheet Columns. Excel deletes the columns you selected.
4. Click anywhere on the worksheet to remove your selection.

To delete rows 7 through 12:



1. Click the row 7 indicator and drag to row 12.
2. Click the down arrow next to Delete in the Cells group. A menu appears.
3. Click Delete Sheet Rows. Excel deletes the rows you selected.
4. Click anywhere on the worksheet to remove your selection.

To insert a column:

1. Click on A to select column A.
2. Click the down arrow next to Insert in the Cells group. A menu appears.
3. Click Insert Sheet Columns. Excel inserts a new column.
4. Click anywhere on the worksheet to remove your selection.

To insert rows:

1. Click on 1 and then drag down to 2 to select rows 1 and 2.
2. Click the down arrow next to Insert in the Cells group. A menu appears.
3. Click Insert Sheet Rows. Excel inserts two new rows.

4. Click anywhere on the worksheet to remove your selection.

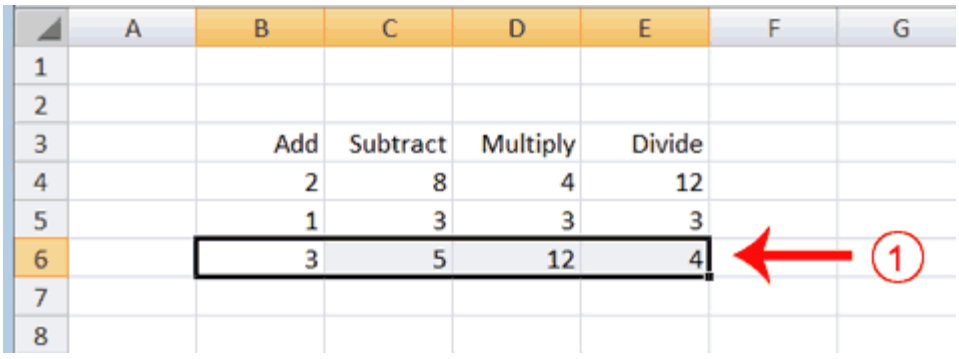
Your worksheet should look like the one shown here.

	A	B	C	D	E	F	G
1							
2							
3		Add	Subtract	Multiply	Divide		
4		2	8	4	12		
5		1	3	3	3		
6		3	5	12	4		
7							
8							

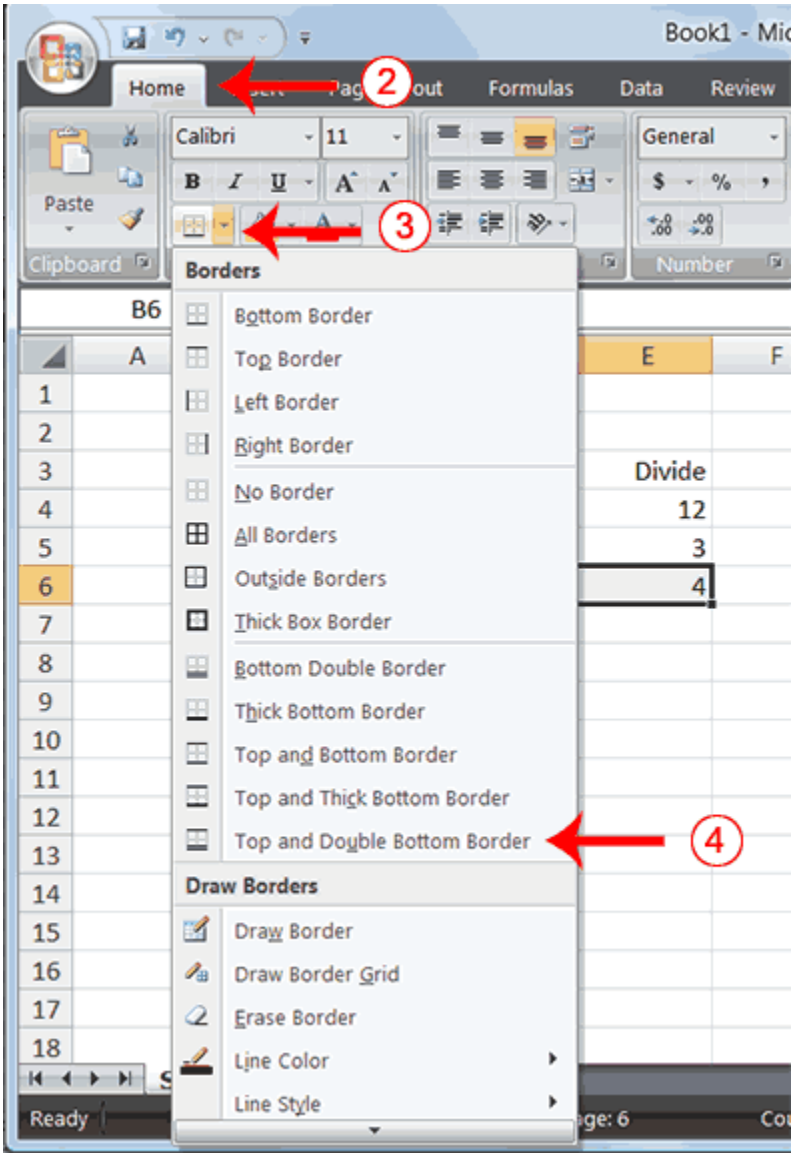
Create Borders

You can use borders to make entries in your Excel worksheet stand out. You can choose from several types of borders. When you press the down arrow next to the Border button  , a menu appears. By making the proper selection from the menu, you can place a border on the top, bottom, left, or right side of the selected cells; on all sides; or around the outside border. You can have a thick outside border or a border with a single-line top and a double-line bottom. Accountants usually place a single underline above a final number and a double underline below. The following illustrates:

Create Borders



1. Select cells B6 to E6.



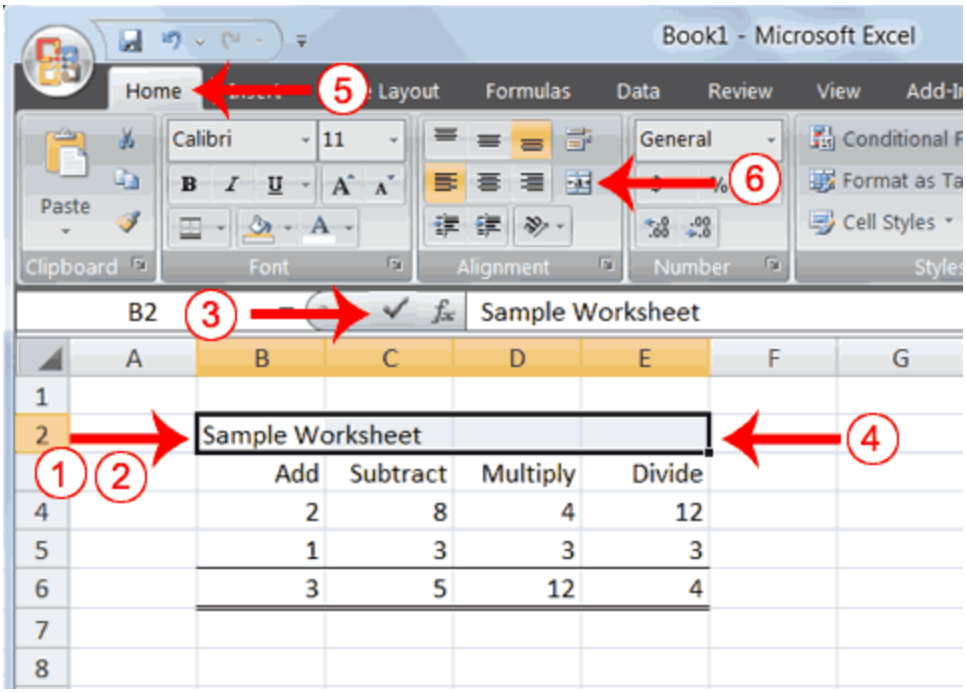
2. Choose the Home tab.
3. Click the down arrow next to the Borders button  . A menu appears.
4. Click Top and Double Bottom Border. Excel adds the border you chose to the selected cells.

	A	B	C	D	E	F	G
1							
2							
3		Add	Subtract	Multiply	Divide		
4		2	8	4	12		
5		1	3	3	3		
6		3	5	12	4		
7							
8							

Merge and Center

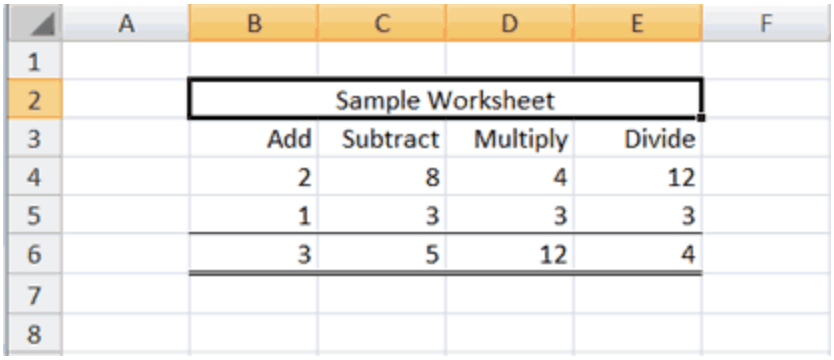
Sometimes, particularly when you give a title to a section of your worksheet, you will want to center a piece of text over several columns or rows. The following example shows you how.

Merge and Center



1. Go to cell B2.
2. Type **Sample Worksheet**.
3. Click the check mark on the Formula bar.
4. Select cells B2 to E2.

5. Choose the Home tab.
6. Click the Merge and Center button in the Alignment group. Excel merges cells B2, C2, D2, and E2 and then centers the content.



	A	B	C	D	E	F
1						
2		Sample Worksheet				
3		Add	Subtract	Multiply	Divide	
4		2	8	4	12	
5		1	3	3	3	
6		3	5	12	4	
7						
8						

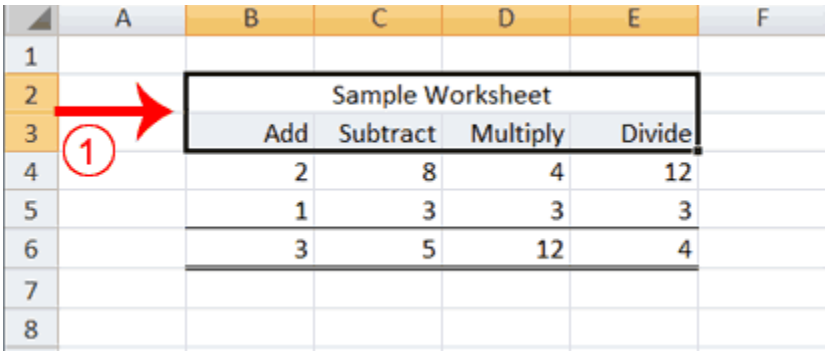
Note: To unmerge cells:

1. Select the cell you want to unmerge.
2. Choose the Home tab.
3. Click the down arrow next to the Merge and Center button. A menu appears.
4. Click Unmerge Cells. Excel unmerges the cells.

Adding Background Colour

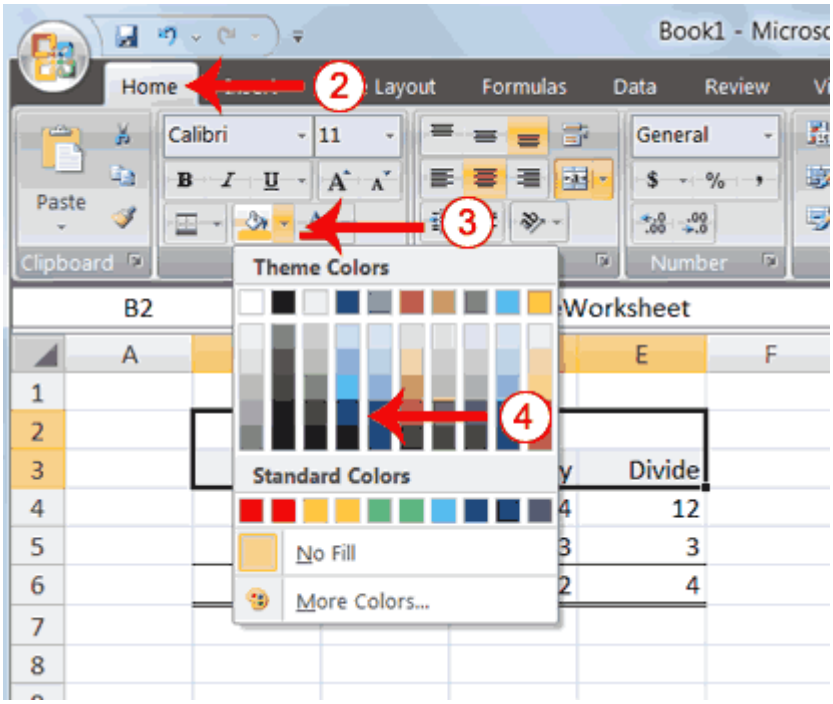
To make a section of your worksheet stand out, you can add background colour to a cell or group of cells.

Add Background Colour



	A	B	C	D	E	F
1						
2		Sample Worksheet				
3		Add	Subtract	Multiply	Divide	
4		2	8	4	12	
5		1	3	3	3	
6		3	5	12	4	
7						
8						

1. Select cells B2 to E3.



2. Choose the Home tab.
3. Click the down arrow next to the Fill Colour button .
4. Click the colour dark blue. Excel places a dark blue background in the cells you selected.

	A	B	C	D	E	F
1						
2		Sample Worksheet				
3		Add	Subtract	Multiply	Divide	
4		2	8	4	12	
5		1	3	3	3	
6		3	5	12	4	
7						
8						

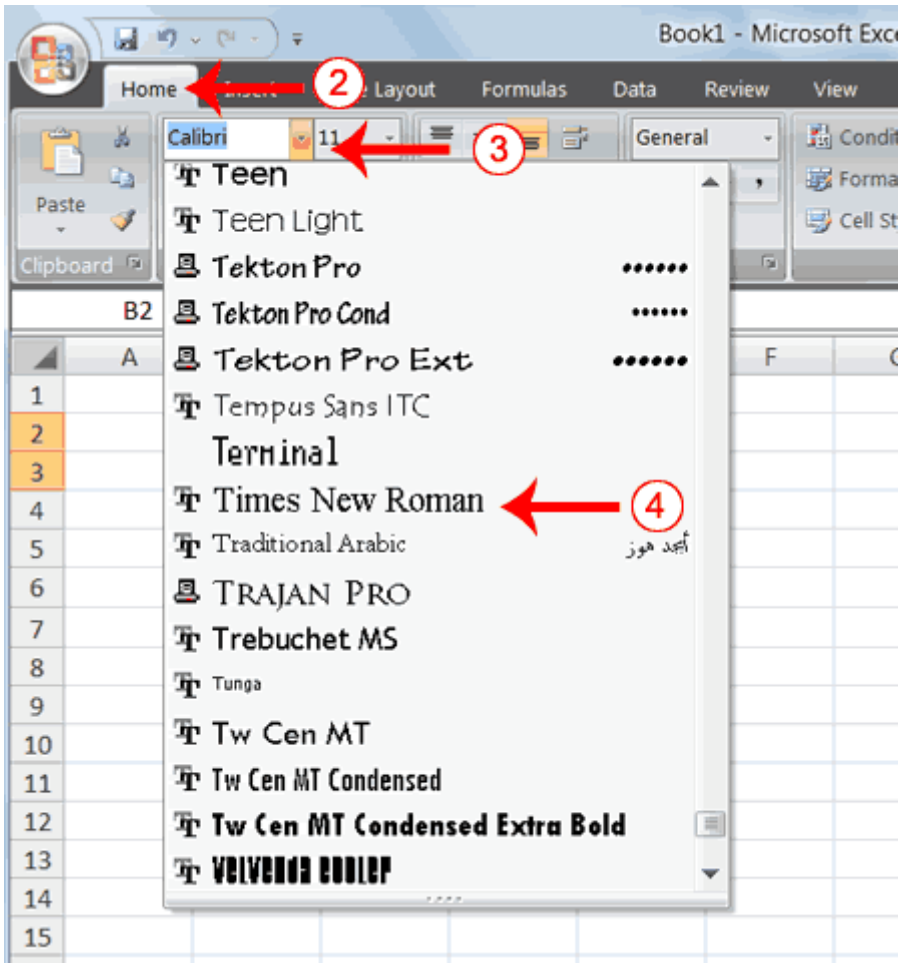
Change the Font, Font Size, and Font Colour

A font is a set of characters represented in a single typeface. Each character within a font is created by using the same basic style. Excel provides many different fonts from which you can choose. The size of a font is measured in points. There are 72 points to an inch. The number of points assigned to a font is based on the distance from the top to the bottom of its longest character. You

can change the Font, Font Size, and Font Colour of the data you enter into Excel.

Change the Font

1. Select cells B2 to E3.

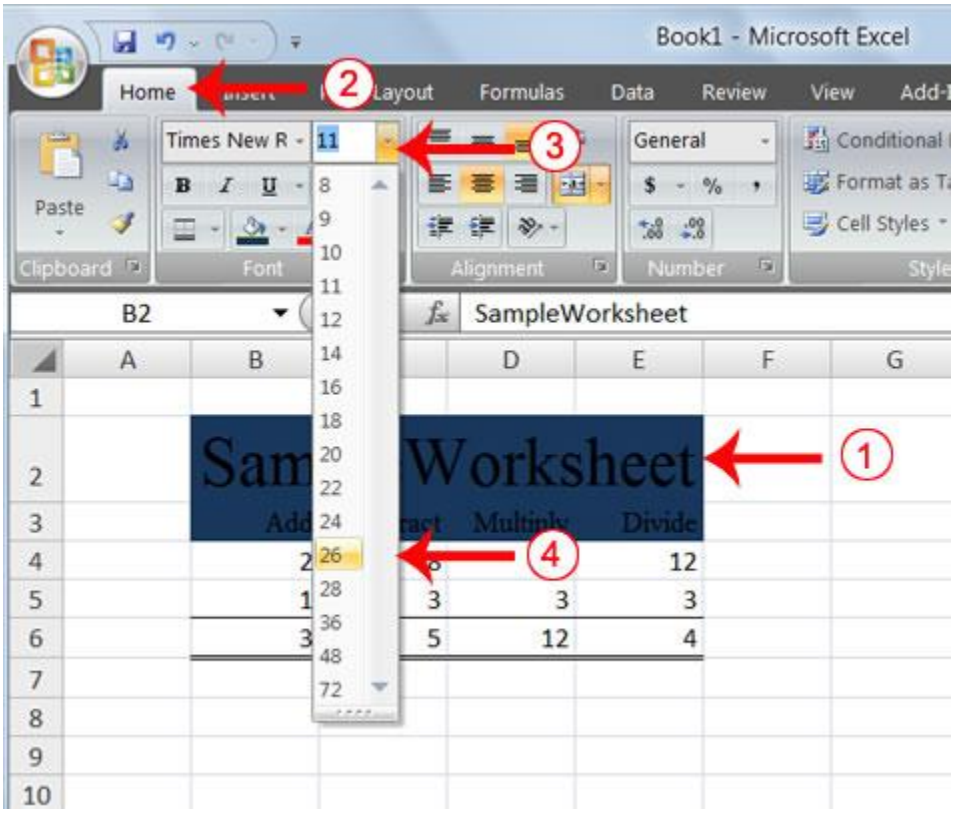


2. Choose the Home tab.

3. Click the down arrow next to the Font box. A list of fonts appears. As you scroll down the list of fonts, Excel provides a preview of the font in the cell you selected.

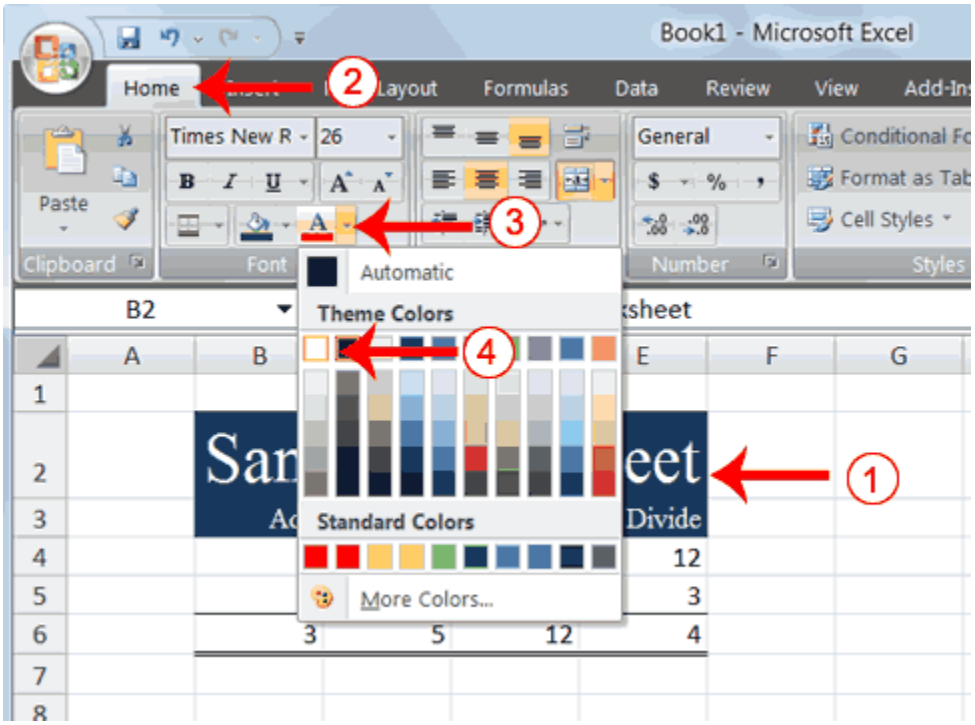
4. Find and click Times New Roman in the Font box. **Note:** If Times New Roman is your default font, click another font. Excel changes the font in the selected cells.

Change the Font Size



1. Select cell B2.
2. Choose the Home tab.
3. Click the down arrow next to the Font Size box. A list of font sizes appears. As you scroll up or down the list of font sizes, Excel provides a preview of the font size in the cell you selected.
4. Click 26. Excel changes the font size in cell B2 to 26.

Change the Font Colour



1. Select cells B2 to E3.
2. Choose the Home tab.
3. Click the down arrow next to the Font Colour button  .
4. Click on the colour white. Your font colour changes to white.

Your worksheet should look like the one shown here.

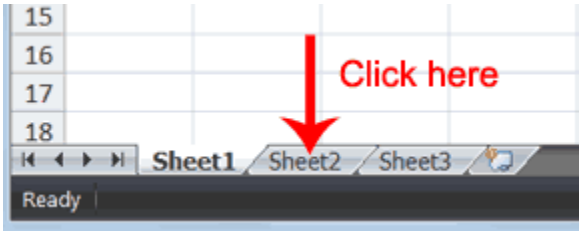
	A	B	C	D	E	F
1						
2		Sample Worksheet				
3		Add	Subtract	Multiply	Divide	
4		2	8	4	12	
5		1	3	3	3	
6		3	5	12	4	
7						
8						

Move to a New Worksheet

In Microsoft Excel, each workbook is made up of several worksheets. Each worksheet has a tab. By default, a workbook has three sheets and they are named sequentially, starting with Sheet1. The name of the worksheet appears on the tab. Before moving to the next topic, move to a new worksheet. The exercise that follows shows you how.

Moving to a New Worksheet

- Click Sheet2 in the lower-left corner of the screen. Excel moves to Sheet2.

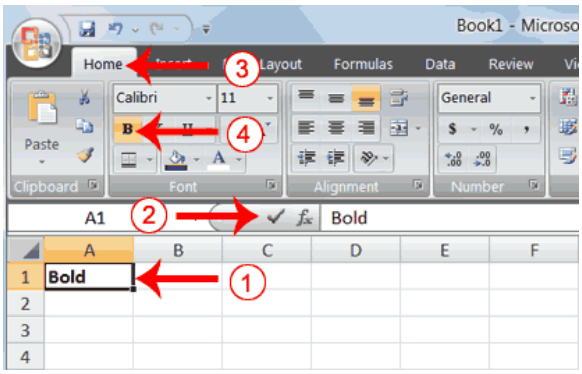


Bold, Italicize, and Underline

When creating an Excel worksheet, you may want to emphasize the contents of cells by bolding, italicizing, and/or underlining. You can easily bold, italicize, or underline text with Microsoft Excel. You can also combine these features—in other words; you can bold, italicize, and underline a single piece of text.

In the exercises that follow, you will learn different methods you can use to bold, italicize, and underline.

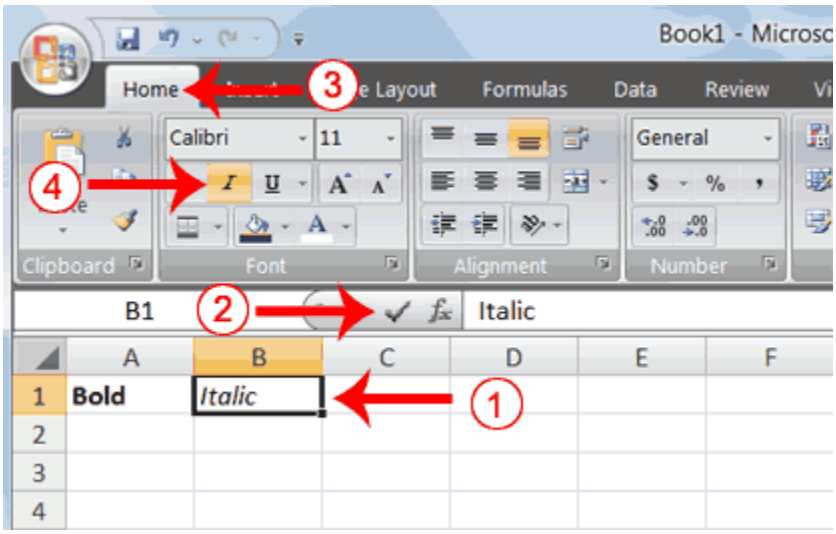
Bold with the Ribbon



1. Type **Bold** in cell A1.

2. Click the check mark located on the Formula bar.
3. Choose the Home tab.
4. Click the Bold button B. Excel bolds the contents of the cell.
5. Click the Bold button B again if you wish to remove the bold.

Italicize with the Ribbon

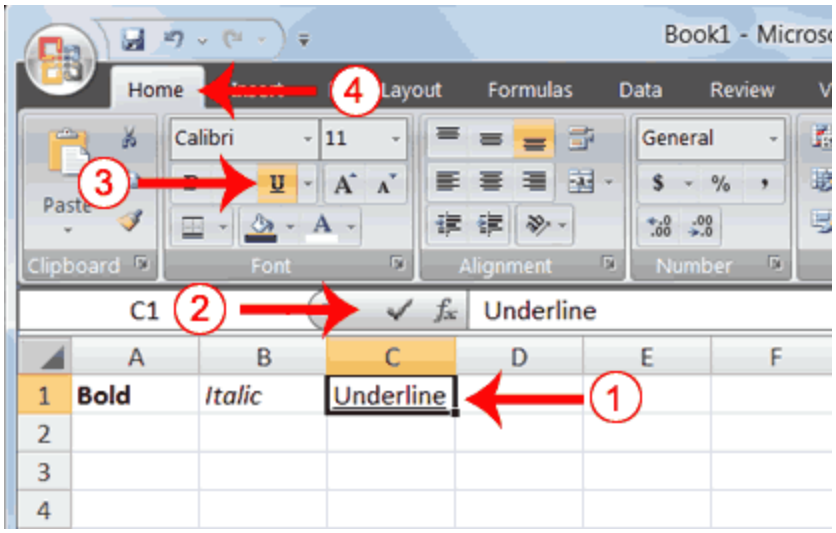


1. Type **Italic** in cell B1.
2. Click the check mark located on the Formula bar.
3. Choose the Home tab.
4. Click the Italic button I. Excel italicizes the contents of the cell.
5. Click the Italic button I again if you wish to remove the italic.

Underline with the Ribbon

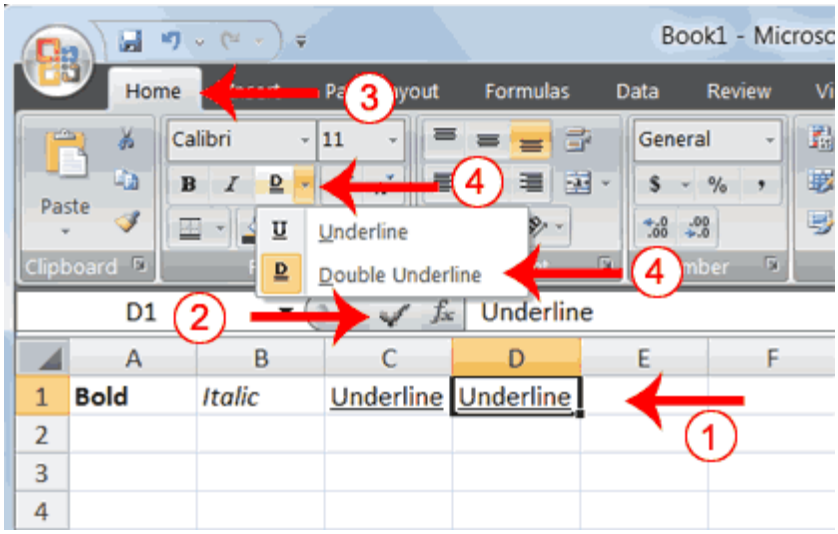
Microsoft Excel provides two types of underlines. The exercises that follow illustrate them.

Single Underline:



1. Type **Underline** in cell C1.
2. Click the check mark located on the Formula bar.
3. Choose the Home tab.
4. Click the Underline button U. Excel underlines the contents of the cell.
5. Click the Underline button U again if you wish to remove the underline.

Double Underline



1. Type **Underline** in cell D1.
2. Click the check mark located on the Formula bar.

3. Choose the Home tab.
4. Click the down arrow next to the Underline button and then click Double Underline. Excel double-underlines the contents of the cell. Note that the Underline button changes to the button shown here, a D with a double underline under it. Then next time you click the Underline button, you will get a double underline. If you want a single underline, click the down arrow next to the Double Underline button and then choose Underline.
5. Click the double underline button again if you wish to remove the double underline.

Bold, Underline, and Italicize

1. Type **All three** in cell E1.
2. Click the check mark located on the Formula bar.
3. Choose the Home tab.
4. Click the Bold button. Excel bolds the cell contents.
5. Click the Italic button. Excel italicizes the cell contents.
6. Click the Underline button. Excel underlines the cell contents.

Alternate Method: Bold with Shortcut Keys

1. Type **Bold** in cell A2.
2. Click the check mark located on the Formula bar.
3. Hold down the Ctrl key while pressing "B" (Ctrl+B). Excel bolds the contents of the cell.
4. Press Ctrl+B again if you wish to remove the bolding.

Alternate Method: Italicize with Shortcut Keys

1. Type **Italic** in cell B2. **Note:** Because you previously entered the word Italic in column B, Excel may enter the word in the cell automatically after you type the letter I. Excel does this to speed up your data entry.

2. Click the check mark located on the Formula bar.
3. Hold down the Ctrl key while pressing "I" (Ctrl+I). Excel italicizes the contents of the cell.
4. Press Ctrl+I again if you wish to remove the italic formatting.

Alternate Method: Underline with Shortcut Keys

1. Type **Underline** in cell C2.
2. Click the check mark located on the Formula bar.
3. Hold down the Ctrl key while pressing "U" (Ctrl+U). Excel applies a single underline to the cell contents.
4. Press Ctrl+U again if you wish to remove the underline.

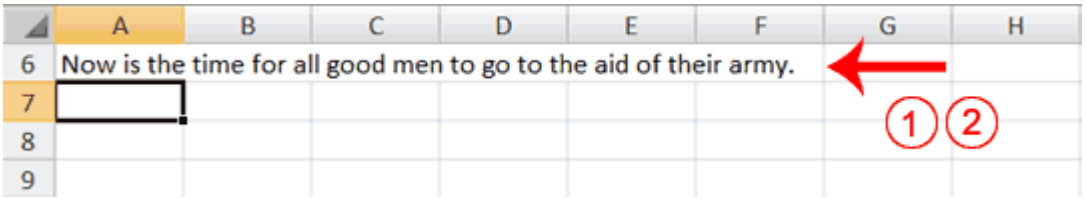
Bold, Italicize, and Underline with Shortcut Keys

1. Type **All three** in cell D2.
2. Click the check mark located on the Formula bar.
3. Hold down the Ctrl key while pressing "B" (Ctrl+B). Excel bolds the cell contents.
4. Hold down the Ctrl key while pressing "I" (Ctrl+I). Excel italicizes the cell contents.
5. Hold down the Ctrl key while pressing "U" (Ctrl+U). Excel applies a single underline to the cell contents.

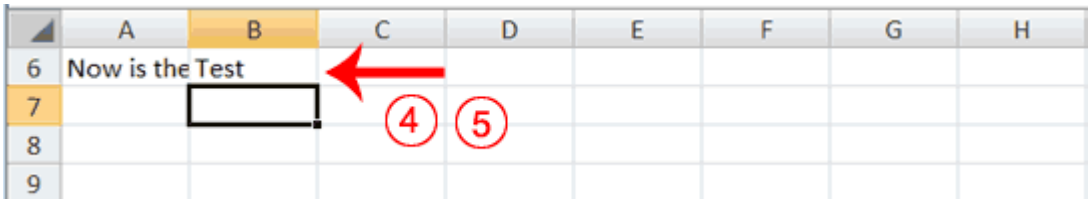
Work with Long Text

Whenever you type text that is too long to fit into a cell, Microsoft Excel attempts to display all the text. It left-aligns the text regardless of the alignment you have assigned to it, and it borrows space from the blank cells to the right. However, a long text entry will never write over cells that already contain entries—instead, the cells that contain entries cut off the long text. The following exercise illustrates this.

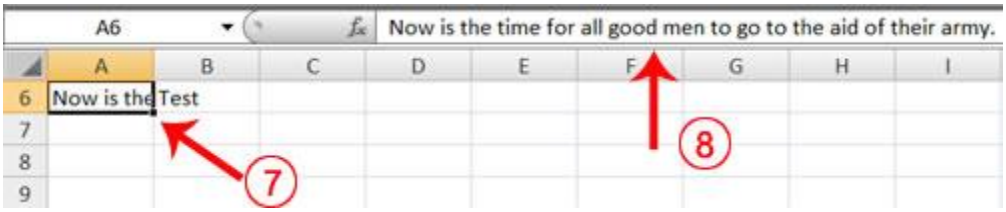
Work with Long Text



1. Move to cell A6.
2. Type **Now is the time for all good men to go to the aid of their army**.
3. Press Enter. Everything that does not fit into cell A6 spills over into the adjacent cell.



4. Move to cell B6.
5. Type **Test**.
6. Press Enter. Excel cuts off the entry in cell A6.

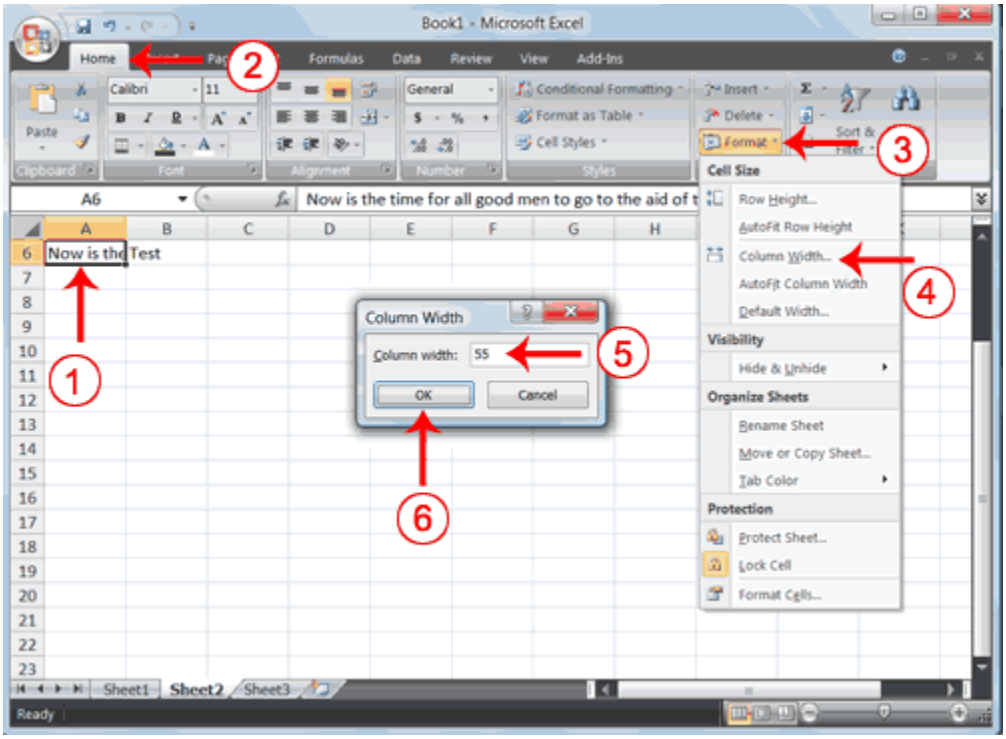


7. Move to cell A6.
8. Look at the Formula bar. The text is still in the cell.

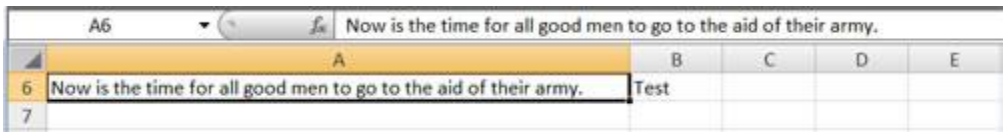
Changing a Column's Width

You can increase column widths. Increasing the column width enables you to see the long text.

Change Column Width

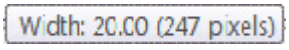


1. Make sure you are in any cell under column A.
2. Choose the Home tab.
3. Click the down arrow next to Format in the Cells group.
4. Click Column Width. The Column Width dialog box appears.
5. Type **55** in the Column Width field.
6. Click OK. Column A is set to a width of 55. You should now be able to see all of the text.



Changing a Column Width by Dragging

You can also change the column width with the cursor.

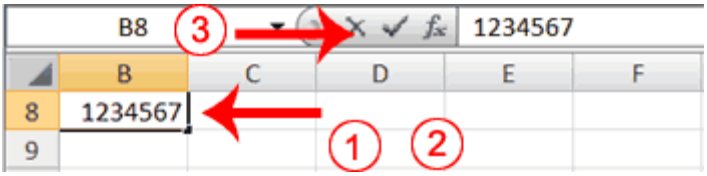
1. Place the mouse pointer on the line between the B and C column headings. The mouse pointer should look like the one displayed here  , with two arrows.
2. Move your mouse to the right while holding down the left mouse button. The width indicator 

appears on the screen.
3. Release the left mouse button when the width indicator shows approximately 20. Excel increases the column width to 20.

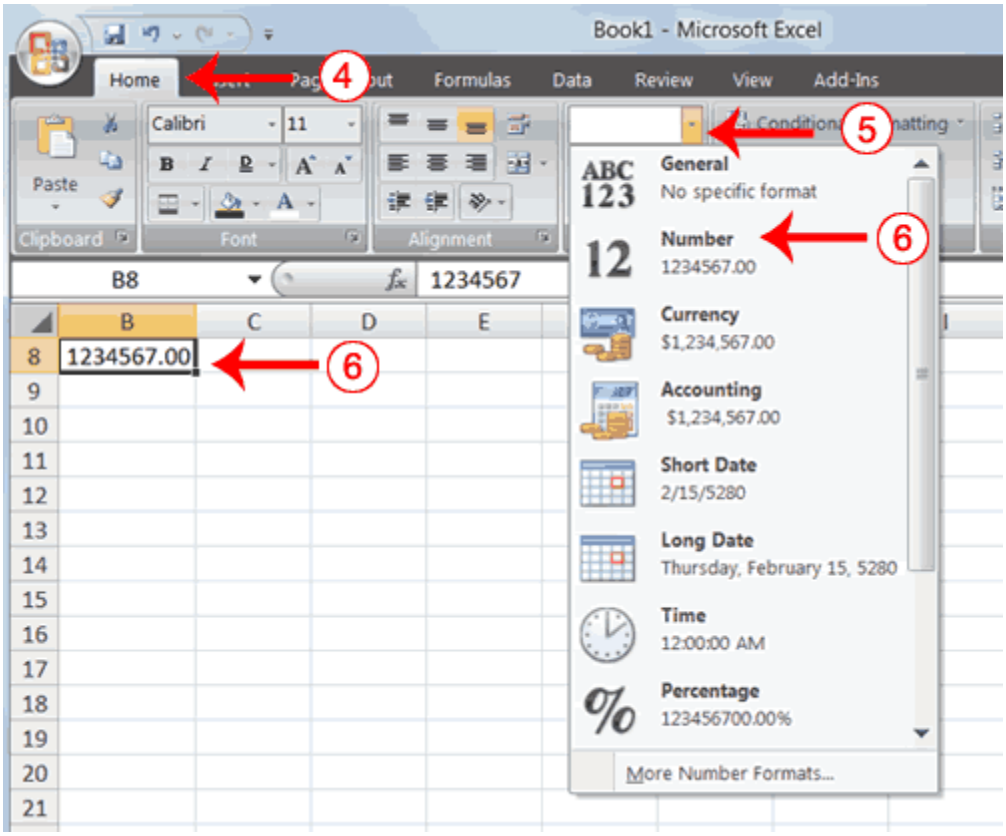
Formatting Numbers

You can format the numbers you enter into Microsoft Excel. For example, you can add commas to separate thousands, specify the number of decimal places, place a dollar sign in front of a number, or display a number as a percent.

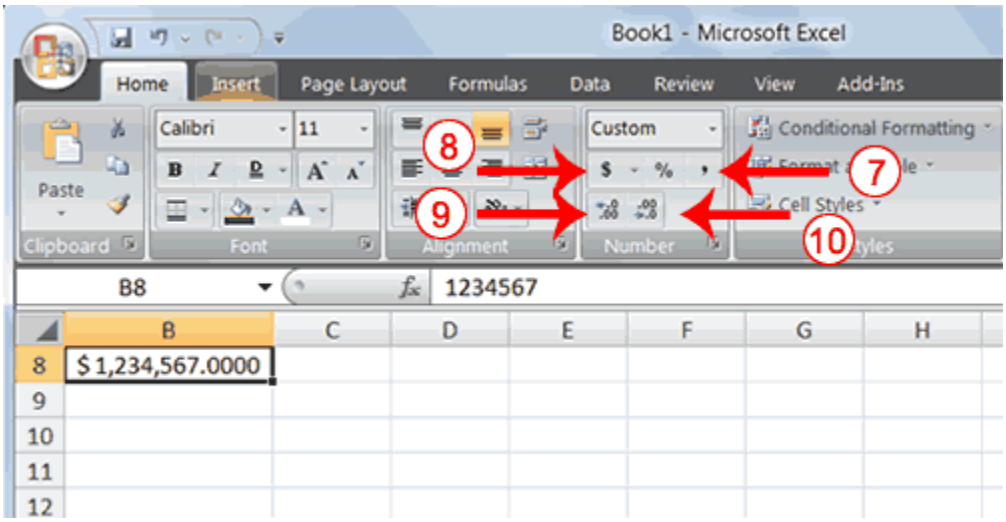
Format Numbers



1. Move to cell B8.
2. Type **1234567**.
3. Click the check mark on the Formula bar.



4. Choose the Home tab.
5. Click the down arrow next to the Number Format box. A menu appears.
6. Click Number. Excel adds two decimal places to the number you typed.



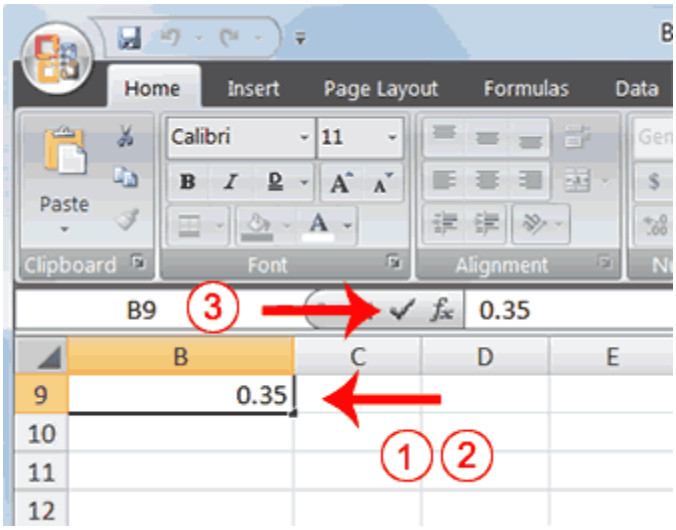
7. Click the Comma Style button , . Excel separates thousands with a comma.

8. Click the Accounting Number Format button $. Excel adds a dollar sign to your number.

9. Click twice on the Increase Decimal button to change the number format to four decimal places.

10. Click the Decrease Decimal button if you wish to decrease the number of decimal places.

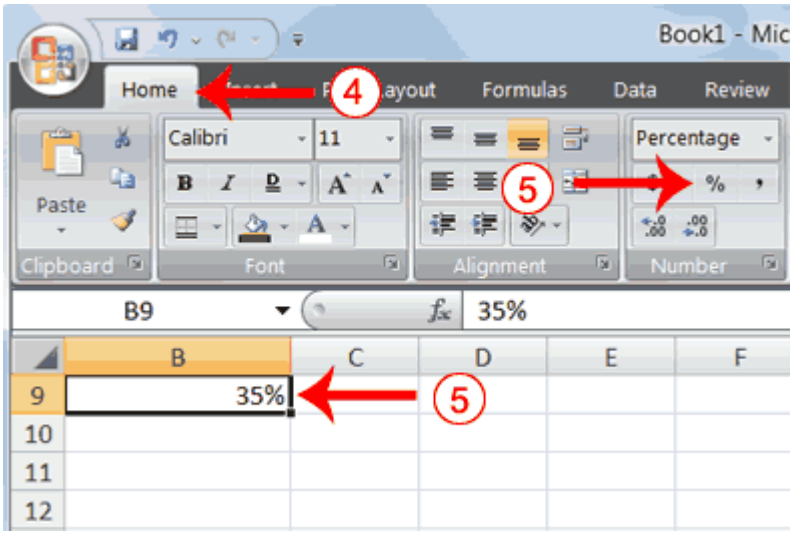
Changing a Decimal to Percentage



1. Move to cell B9.

2. Type **.35** (note the decimal point).

3. Click the check mark on the formula bar.



4. Choose the Home tab.

5. Click the Percent Style button % . Excel turns the decimal to a percent.

This is the end of this lesson. You can save and close your file. See the previous lesson to learn how to save and close a file.

Creating Excel Functions, Filling Cells, and Printing

By using functions, you can quickly and easily make many useful calculations, such as finding an average, the highest number, the lowest number, and a count of the number of items in a list. Microsoft Excel has many functions that you can use.

Using Reference Operators

To use functions, you need to understand reference operators. Reference operators refer to a cell or a group of cells. There are two types of reference operators: *range* and *union*.

A range reference refers to all the cells between and including the reference. A range reference consists of two cell addresses separated by a colon. The reference A1:A3 includes cells A1, A2, and A3. The reference A1:C3 includes cells A1, A2, A3, B1, B2, B3, C1, C2, and C3.

A union reference includes two or more references. A union reference consists of two or more numbers, range references, or cell addresses separated by a

comma. The reference A7, B8:B10, C9, 10 refers to cells A7, B8 to B10, C9 and the number 10.

Understanding Functions

Functions are prewritten formulas. Functions differ from regular formulas in that you supply the value but not the operators, such as +, -, *, or /. For example, you can use the SUM function to add. When using a function, remember the following:

Use an equal sign to begin a formula.

Specify the function name.

Enclose arguments within parentheses. Arguments are values on which you want to perform the calculation. For example, arguments specify the numbers or cells you want to add.

Use a comma to separate arguments.

Here is an example of a function:

=SUM (2, 13, A1, B2:C7)

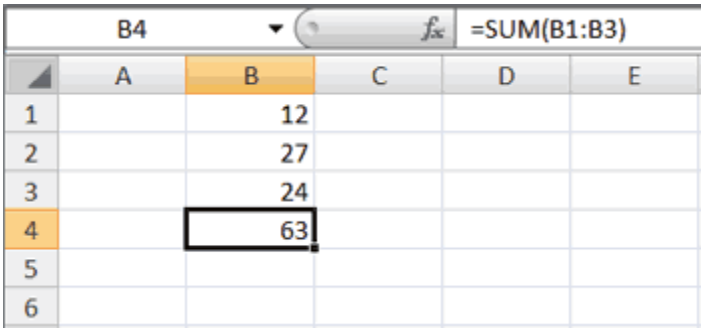
In this function:

- The equal sign begins the function.
- SUM is the name of the function.
- 2, 13, A1, and B2:C7 are the arguments.
- Parentheses enclose the arguments.
- Commas separate the arguments.

After you type the first letter of a function name, the AutoComplete list appears. You can double-click on an item in the AutoComplete list to complete your entry quickly. Excel will complete the function name and enter the first parenthesis.

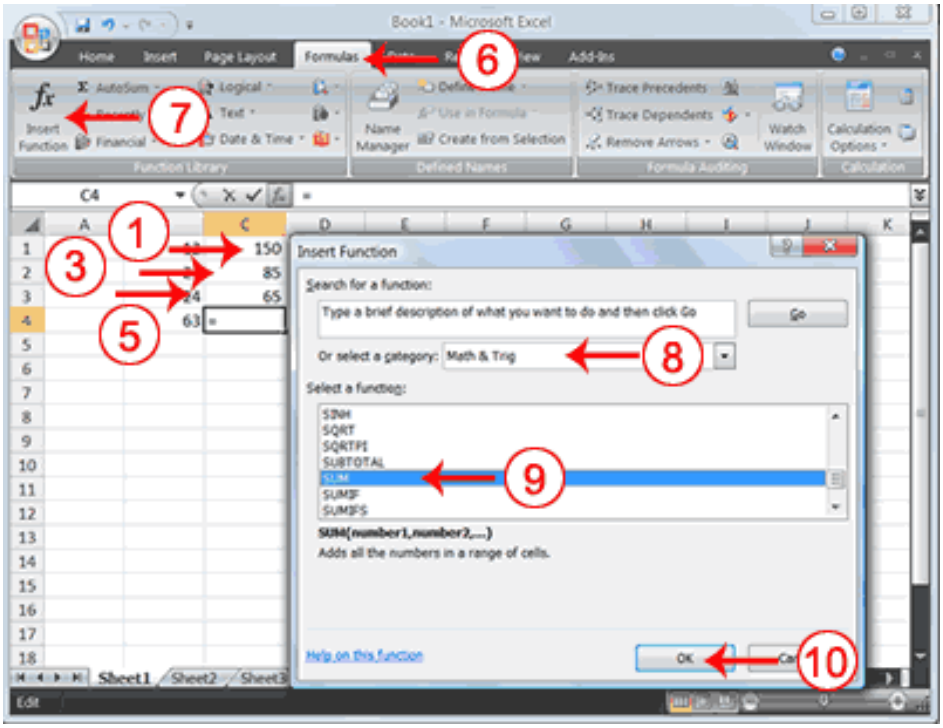
Functions

The SUM function adds argument values.

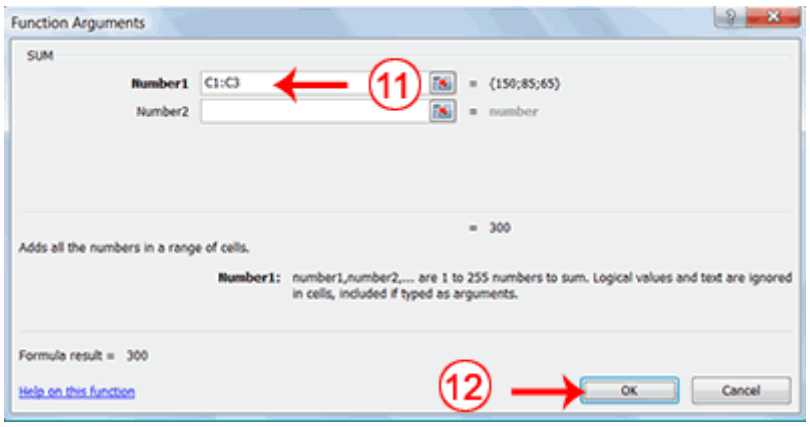


1. Open Microsoft Excel.
2. Type **12** in cell B1.
3. Press Enter.
4. Type **27** in cell B2.
5. Press Enter.
6. Type **24** in cell B3.
7. Press Enter.
8. Type **=SUM (B1:B3)** in cell A4.
9. Press Enter. The sum of cells B1 to B3, which is 63, appears.

Alternate Method: Enter a Function with the Ribbon



1. Type **150** in cell C1.
2. Press Enter.
3. Type **85** in cell C2.
4. Press Enter.
5. Type **65** in cell C3.
6. Choose the Formulas tab.
7. Click the Insert Function button. The Insert Function dialog box appears.
8. Choose Math & Trig in the options or Select a Category box.
9. Click Sum in the Select a Function box.
10. Click OK. The Function Arguments dialog box appears.



12. Type **C1:C3** in the Number1 field, if it does not automatically appear.
13. Click OK. The sum of cells C1 to C3, which is 300, appears.

Format worksheet

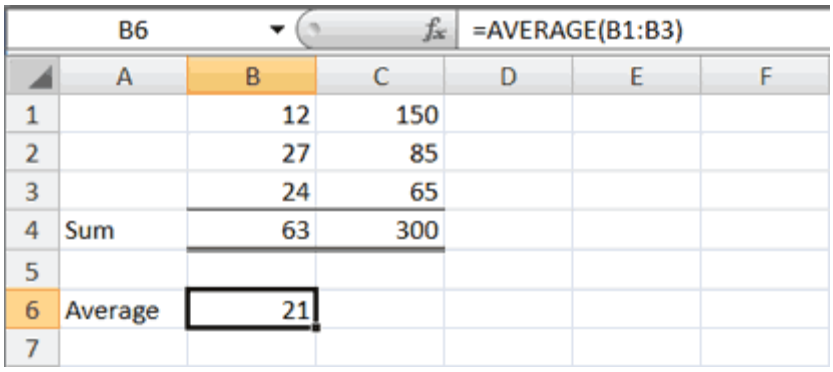
	A	B	C	D
1		12	150	
2		27	85	
3		24	65	
4	Sum	63	300	
5				
6				

1. Move to cell A4.
2. Type the word **Sum**.
3. Select cells B4 to C4.
4. Choose the Home tab.
5. Click the down arrow next to the Borders button  .
6. Click Top and Double Bottom Border.

As you learned in Lesson 2, you can also calculate a sum by using the AutoSum button  .

Calculate an Average

You can use the AVERAGE function to calculate the average of a series of numbers.

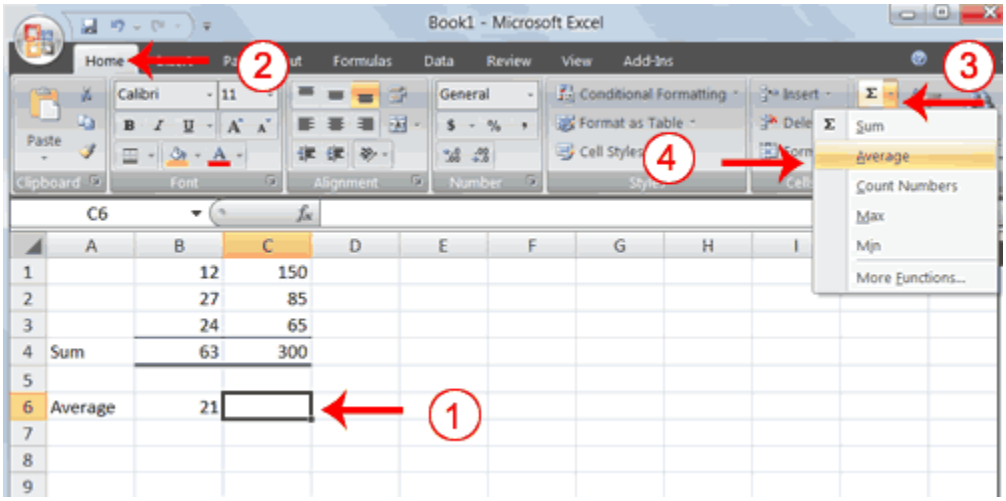


	A	B	C	D	E	F
1		12	150			
2		27	85			
3		24	65			
4	Sum	63	300			
5						
6	Average	21				
7						

1. Move to cell A6.
2. Type **Average**. Press the right arrow key to move to cell B6.
3. Type **=AVERAGE (B1:B3)**.
4. Press Enter. The average of cells B1 to B3, which is 21, appears.

Calculate an Average with the AutoSum Button

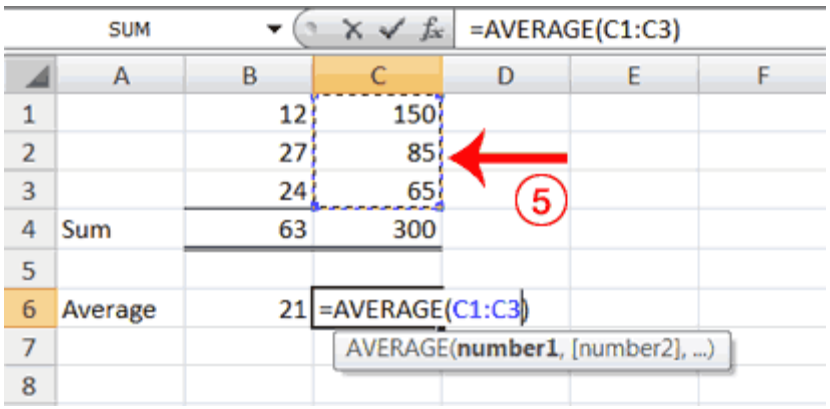
In Microsoft Excel, you can use the AutoSum button Σ to calculate an average.



	A	B	C	D	E	F	G	H	I
1		12	150						
2		27	85						
3		24	65						
4	Sum	63	300						
5									
6	Average	21							
7									
8									
9									

1. Move to cell C6.
2. Choose the Home tab.

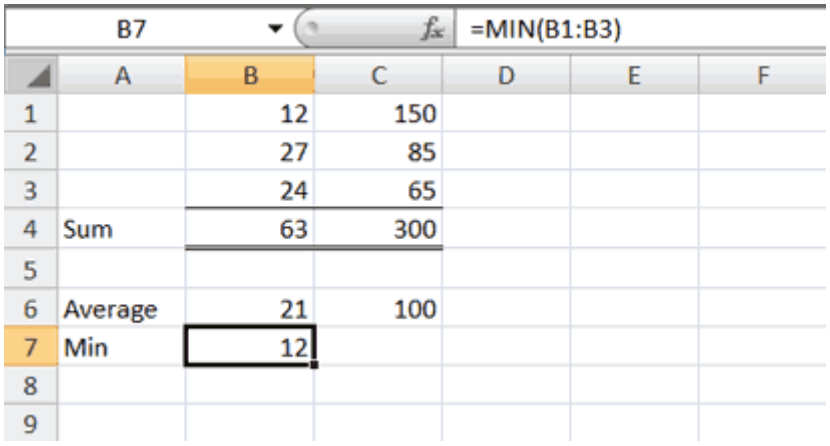
3. Click the down arrow next to the AutoSum button Σ.
4. Click Average.



5. Select cells C1 to C3.
6. Press Enter. The average of cells C1 to C3, which is 100, appears.

Find the Lowest Number

You can use the MIN function to find the lowest number in a series of numbers.

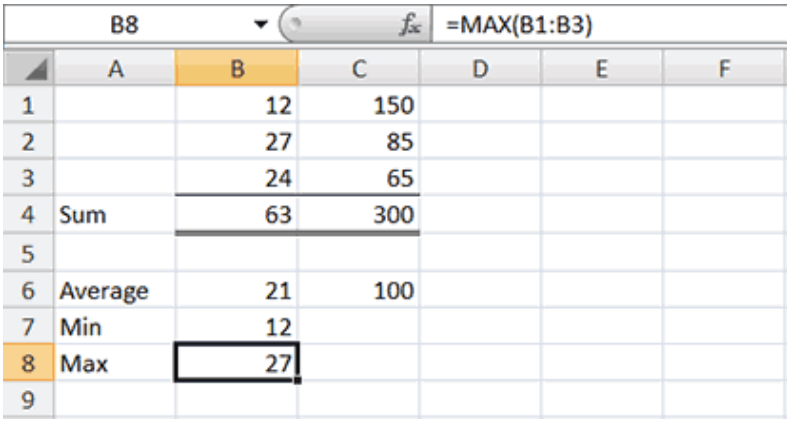


1. Move to cell A7.
2. Type **Min**.
3. Press the right arrow key to move to cell B7.
4. Type **= MIN (B1:B3)**.
5. Press Enter. The lowest number in the series, which is 12, appears.

Note: You can also use the drop-down button next to the AutoSum button  to calculate minimums, maximums, and counts.

Find the Highest Number

You can use the MAX function to find the highest number in a series of numbers.

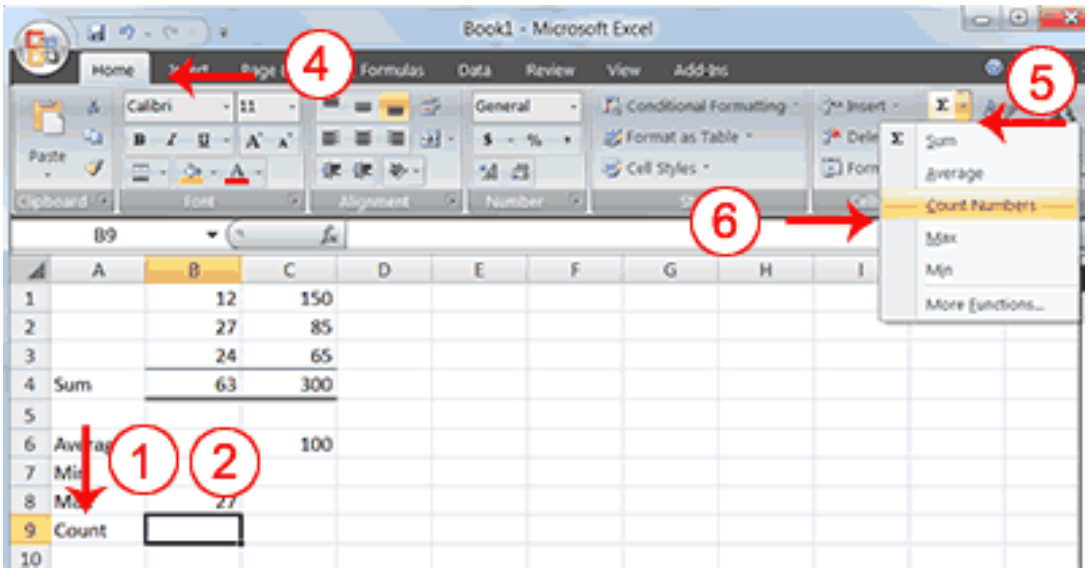


	A	B	C	D	E	F
1		12	150			
2		27	85			
3		24	65			
4	Sum	63	300			
5						
6	Average	21	100			
7	Min	12				
8	Max	27				
9						

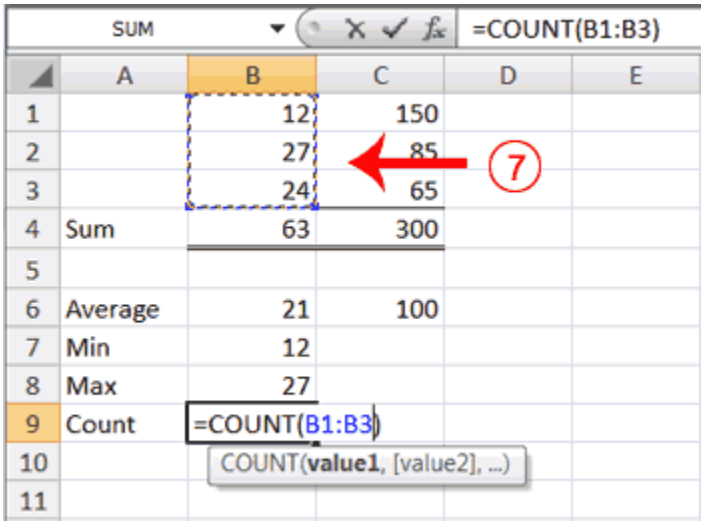
1. Move to cell A8.
2. Type **Max**.
3. Press the right arrow key to move to cell B8.
4. Type **= MAX (B1:B3)**.
5. Press Enter. The highest number in the series, which is 27, appears.

Counting the Numbers in a Series of Numbers

You can use the count function to count the number of numbers in a series.

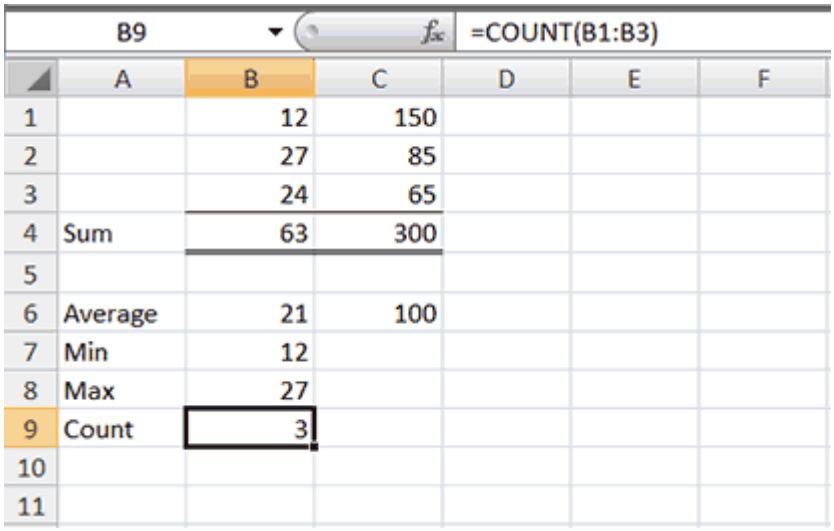


1. Move to cell A9.
2. Type **Count**.
3. Press the right arrow key to move to cell B9.
4. Choose the Home tab.
5. Click the down arrow next to the AutoSum button Σ.
6. Click Count Numbers. Excel places the count function in cell C9 and takes a guess at which cells you want to count. The guess is incorrect, so you must select the proper cells.



7. Select B1 to B3.

8. Press Enter. The number of items in the series, which is 3, appears.

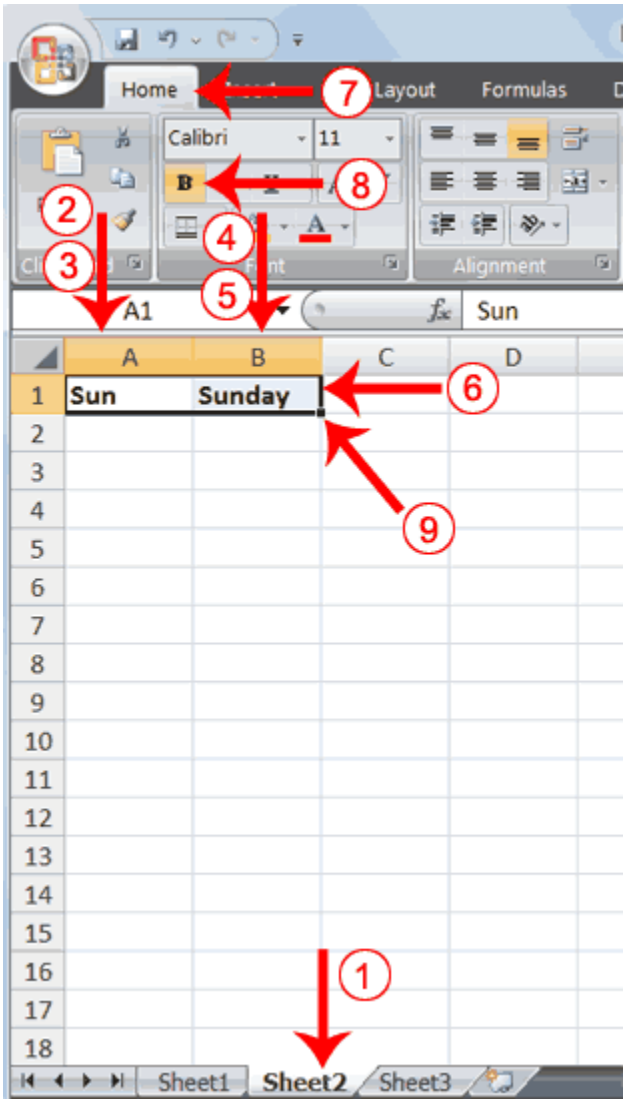


Fill Cells Automatically

You can use Microsoft Excel to fill cells automatically with a series. For example, you can have Excel automatically fill your worksheet with days of the week, months of the year, years, or other types of series.

Fill Cells Automatically

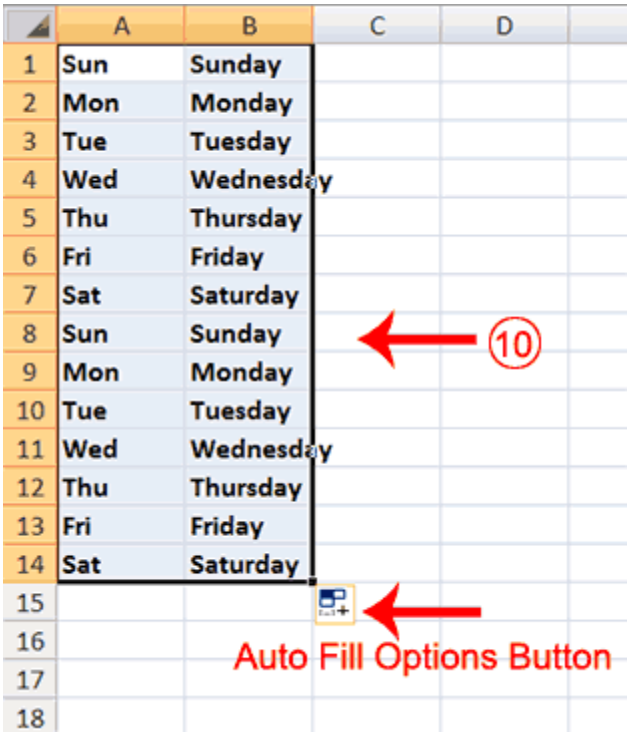
The following demonstrates filling the days of the week:

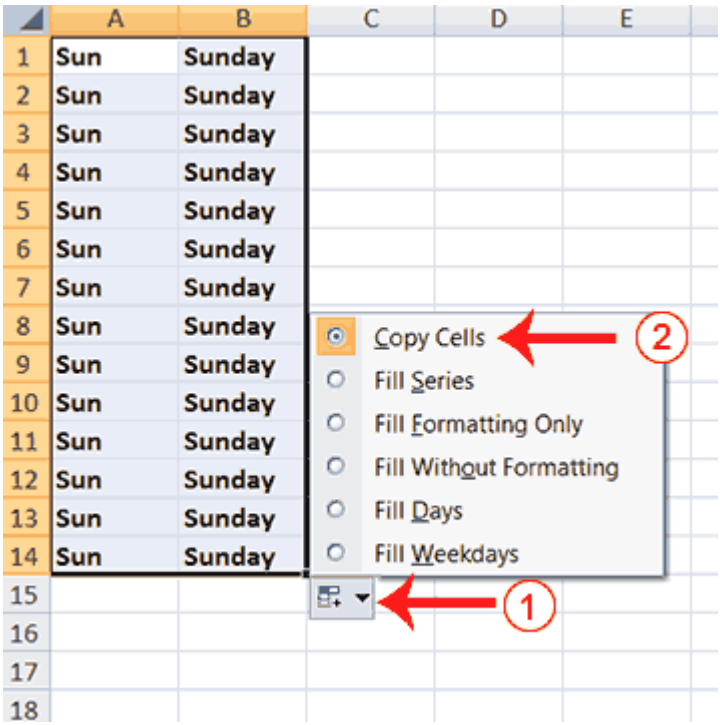


1. Click the Sheet2 tab. Excel moves to Sheet2.
2. Move to cell A1.
3. Type **Sun**.
4. Move to cell B1.
5. Type **Sunday**.
6. Select cells A1 to B1.
7. Choose the Home tab.
8. Click the Bold button **B**. Excel bolds cells A1 to B1.

9. Find the small black square in the lower-right corner of the selected area. The small black square is called the fill handle.

10. Grab the fill handle and drag with your mouse to fill cells A1 to B14. Note how the days of the week fill the cells in a series. Also, note that the Auto Fill Options button appears.



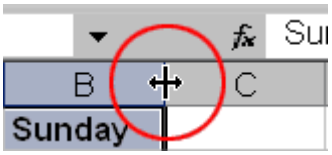


1. Click the Auto Fill Options button. The Auto Fill Options menu appears.
2. Choose the Copy Cells radio button. The entry in cells A1 and B1 are copied to all the highlighted cells.
3. Click the Auto Fill Options button again.
4. Choose the Fill Series radio button. The cells fill as a series from Sunday to Saturday again.
5. Click the Auto Fill Options button again.
6. Choose the Fill Without Formatting radio button. The cells fill as a series from Sunday to Saturday, but the entries are not bolded.
7. Click the Auto Fill Options button again.
8. Choose the Fill Weekdays radio button. The cells fill as a series from Monday to Friday.

Adjusting Column Width

Some of the entries in column B are too long to fit in the column. You can quickly adjust the column width to fit the longest entry.

1. Move your mouse pointer over the line that separates column B and C. The Width Indicator appears.



2. Double-click. The Column adjusts to fit the longest entry.

After you complete the remainder of the exercise, your worksheet will look like the one shown here.

	A	B	C	D	E	F
1	Sun	Sunday	1:00:00 AM	1	Lesson 1	
2	Mon	Monday	2:00:00 AM	2	Lesson 2	
3	Tue	Tuesday	3:00:00 AM	3	Lesson 3	
4	Wed	Wednesday	4:00:00 AM	4	Lesson 4	
5	Thu	Thursday	5:00:00 AM	5	Lesson 5	
6	Fri	Friday	6:00:00 AM	6	Lesson 6	
7	Mon	Monday	7:00:00 AM	7	Lesson 7	
8	Tue	Tuesday	8:00:00 AM	8	Lesson 8	
9	Wed	Wednesday	9:00:00 AM	9	Lesson 9	
10	Thu	Thursday	10:00:00 AM	10	Lesson 10	
11	Fri	Friday	11:00:00 AM	11	Lesson 11	
12	Mon	Monday	12:00:00 PM	12	Lesson 12	
13	Tue	Tuesday	1:00:00 PM	13	Lesson 13	
14	Wed	Wednesday	2:00:00 PM	14	Lesson 14	
15						

Fill Times

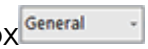
The following demonstrates filling time:

1. Type **1:00** into cell C1.

2. Grab the fill handle and drag with your mouse to highlight cells C1 to C14. Note that each cell fills, using military time.

3. Press Esc and then click anywhere on the worksheet to remove the highlighting.

To change the format of the time:

1. Select cells C1 to C14.
2. Choose the Home tab.
3. Click the down arrow next to the number format box 

. A menu appears.
4. Click Time. Excel changes the format of the time.

Fill Numbers

You can also fill numbers.

Type a **1** in cell D1.

1. Grab the fill handle and drag with your mouse to highlight cells D1 to D14. The number 1 fills each cell.
2. Click the Auto Fill Options button.
3. Choose the Fill Series radio button. The cells fill as a series, starting with 1, 2, 3.

Here is another interesting fill feature.

1. Go to cell E1.
2. Type **Lesson 1**.
3. Grab the fill handle and drag with your mouse to highlight cells E1 to E14. The cells fill in as a series: Lesson 1, Lesson 2, Lesson 3, and so on.

Create Headers and Footers

You can use the Header & Footer button on the Insert tab to create headers and footers. A header is text that appears at the top of every page of your printed worksheet. A footer is text that appears at the bottom of every page of your printed worksheet. When you click the Header & Footer button, the Design context tab appears and Excel changes to Page Layout view. A context tab is a

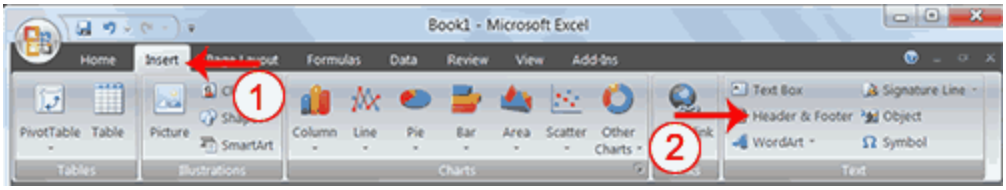
tab that only appears when you need it. Page Layout view structures your worksheet so that you can easily change the format of your document. You usually work in Normal view.

You can type in your header or footer or you can use predefined headers and footers. To find predefined headers and footers, click the Header or Footer button or use the Header & Footer Elements group's buttons. When you choose a header or footer by clicking the Header or Footer button, Excel centers your choice. The table shown here describes each of the Header & Footer Elements group button options.

Header & Footer Elements	
Button	**Purpose**
Page Number	Inserts the page number.
Number of Pages	Inserts the number of pages in the document.
Current Time	Inserts the current time.
File Path	Inserts the path to the document.
File Name	Inserts the file name.
Sheet Name	Inserts the name of the worksheet.
Picture	Enables you to insert a picture.

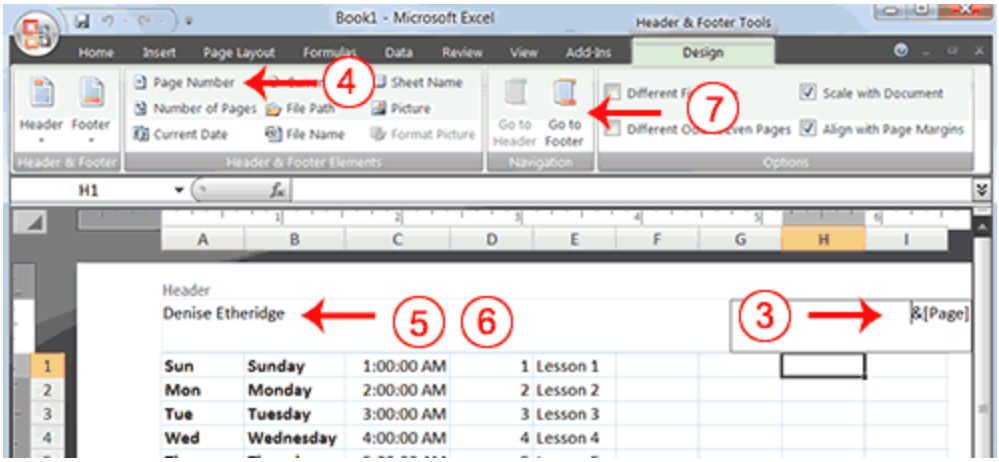
Both the header and footer areas are divided into three sections: left, right, and center. When you choose a Header or Footer from the Header & Footer Elements group, where you place your information determines whether it appears on the left, right, or center of the printed page. You use the Go To Header and Go To Footer buttons on the Design tab to move between the header and footer areas of your worksheet.

Insert Headers and Footers



1. Choose the Insert tab.

2. Click the Header & Footer button in the Text group. Your worksheet changes to Page Layout view and the Design context tab appears. Note that your cursor is located in the center section of the header area.



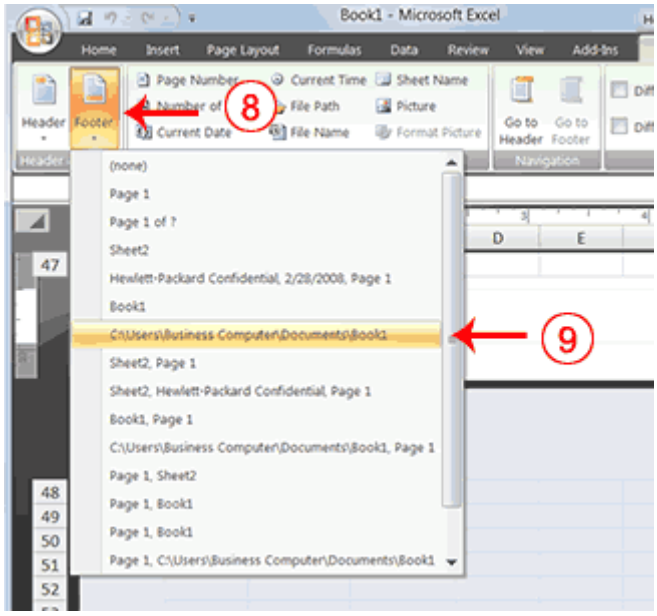
3. Click the right side of the header area.

4. Click Page Number in the Header & Footer Elements group. When you print your document, Excel will place the page number in the upper-right corner.

5. Click the left side of the Header area.

6. Type your name. When you print your document, Excel will place your name in the upper-left corner.

7. Click the GoTo Footer button. Excel moves to the footer area.



8. Click the Footer button. A menu appears.

9. Click the path to your document. Excel will place the path to your document at the bottom of every printed page.

Return to Normal View

To return to Normal view:

1. Choose the View tab.

2. Click the Normal button in the Workbook Views group.

Set Print Options

There are many print options. You set print options on the Page Layout tab. Among other things, you can set your margins, set your page orientation, and select your paper size.

Margins define the amount of white space that appears on the top, bottom, left, and right edges of your document. The Margin option on the Page Layout tab provides several standard margin sizes from which you can choose.

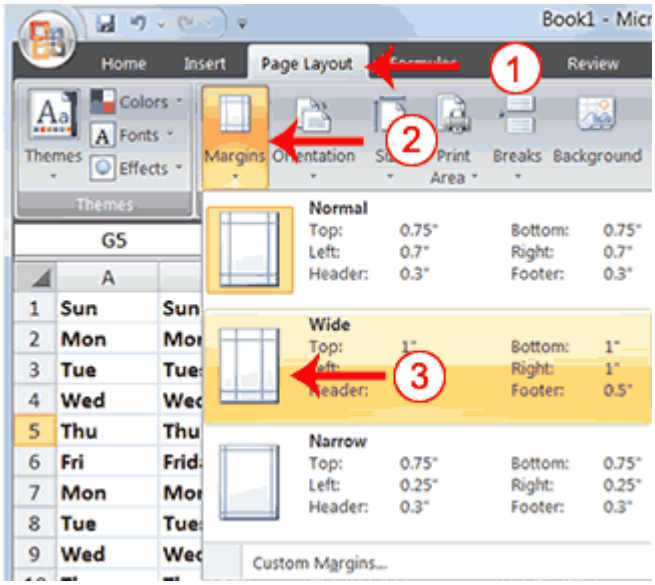
There are two page orientations: portrait and landscape. Paper, such as paper sized 8 1/2 by 11, is longer on one edge than it is on the other. If you print in Portrait, the shortest edge of the paper becomes the top of the page. Portrait is the default option. If you print in Landscape, the longest edge of the paper becomes the top of the page.

Portrait

Landscape

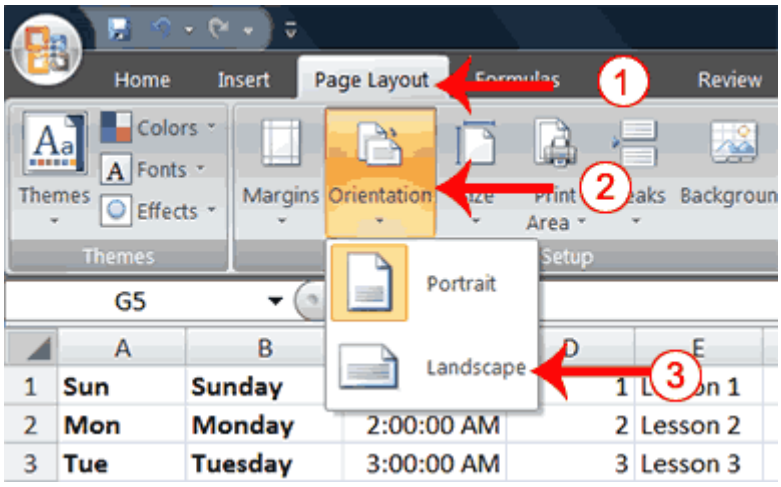
Paper comes in a variety of sizes. Most business correspondence uses 8 1/2 by 11 paper, which is the default page size in Excel. If you are not using 8 1/2 by 11 paper, you can use the Size option on the Page Layout tab to change the Size setting.

Set the Page Layout



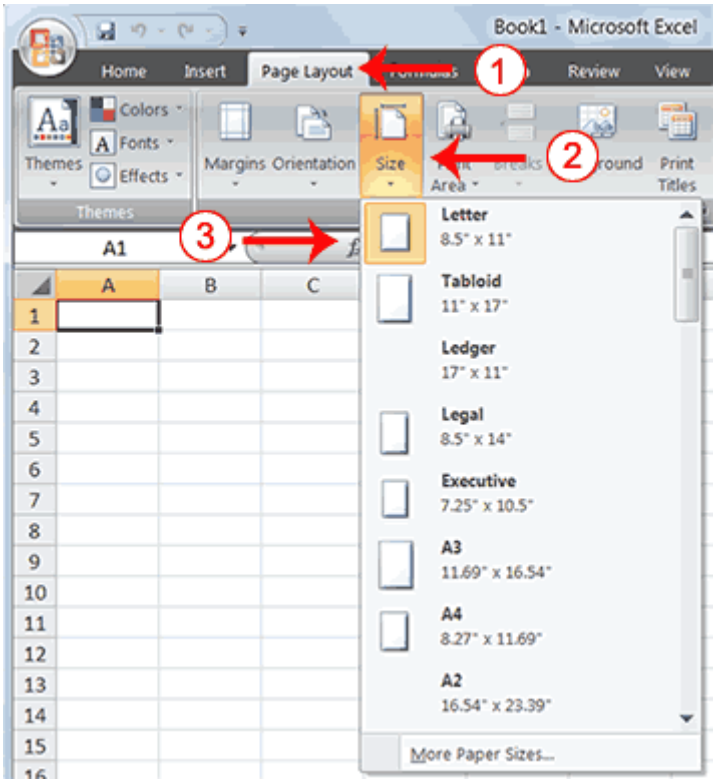
1. Choose the Page Layout tab.
2. Click Margins in the Page Setup group. A menu appears.
3. Click Wide. Ms. Word sets your margins to the Wide settings.

Setting the Page Orientation



1. Choose the Page Layout tab.
2. Click Orientation in the Page Setup group. A menu appears.
3. Click Landscape. Excel sets your page orientation to landscape.

Set the Paper Size



1. Choose the Page Layout tab.
2. Click Size in the Page Setup group. A menu appears.
3. Click the paper size you are using. Excel sets your page size.

Printing

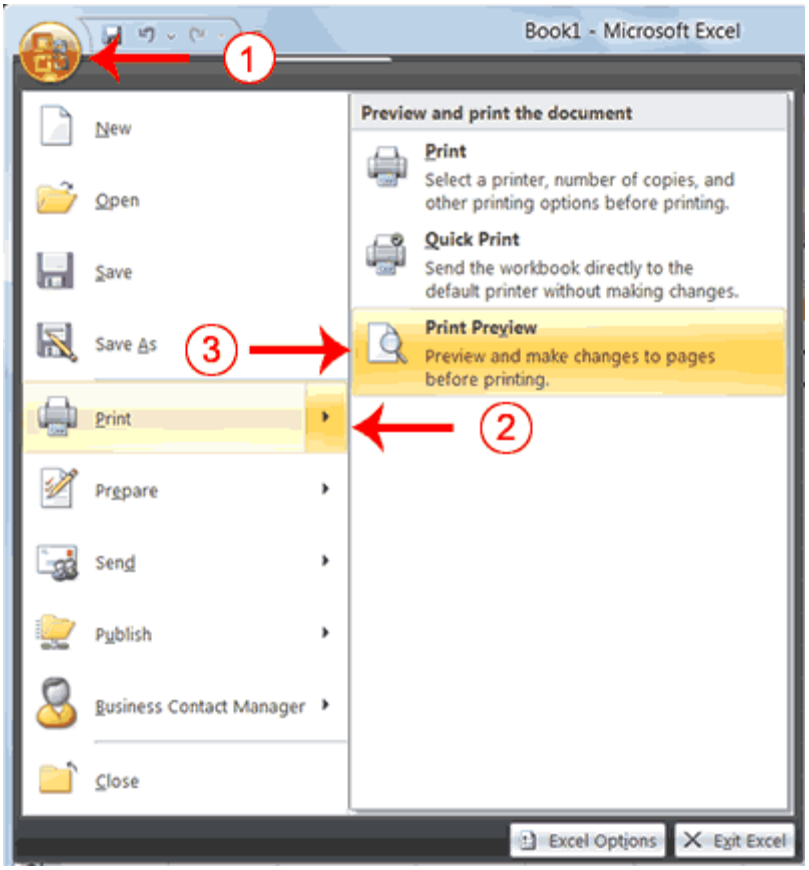
The simplest way to print is to click the Office button, highlight Print on the menu that appears, and then click Quick Print in the Preview and Print the Document pane. Dotted lines appear on your screen and your document prints. The dotted lines indicate the right, left, top, and bottom edges of your printed pages.

You can also use the Print Preview option to print. When using Print Preview, you can see onscreen how your printed document will look when you print it. If you click the Page Setup button while in Print Preview mode, you can set page settings such as centering your data on the page.

If your document is several pages long, you can use the Next Page and Previous Page buttons to move forward and backward through your document. If you check the Show Margins check box, you will see margin lines on your document. You can click and drag the margin markers to increase or decrease the size of your margins. To return to Excel, click the Close Print Preview button.

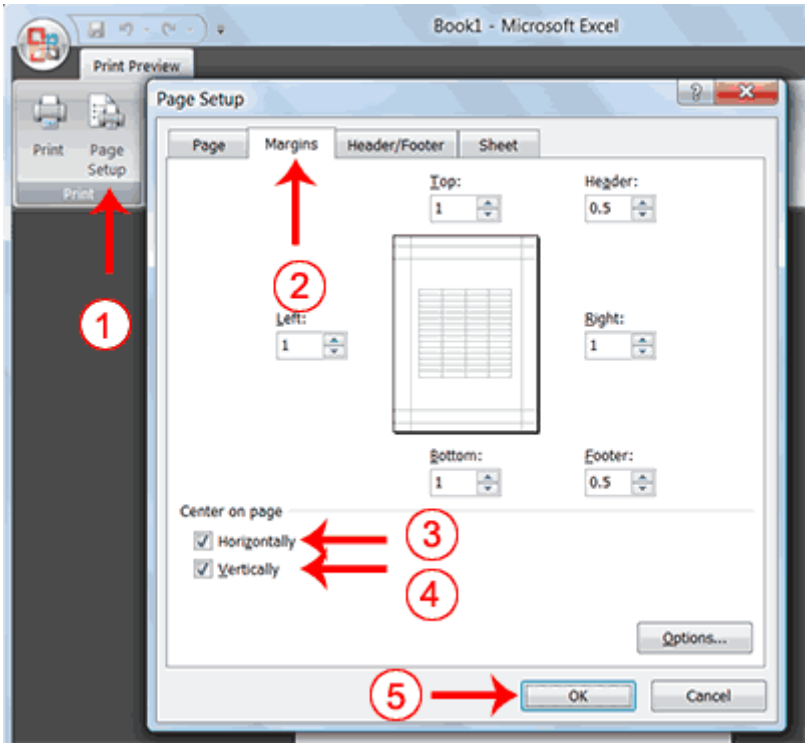
You click the Print button when you are ready to print. The Print dialog box appears. You can choose to print the entire worksheet or specific pages. If you want to print specific pages, enter the page numbers in the From and To fields. You can enter the number of copies you want to print in the Number of Copies field.

Open Print Preview



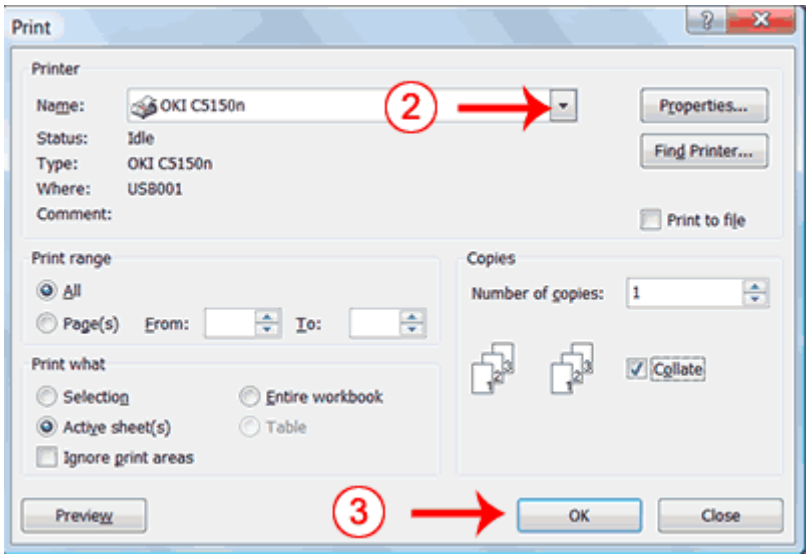
1. Click the Office button. A menu appears.
2. Highlight Print. The Preview and Print The Document pane appears.
3. Click Print Preview. The Print Preview window appears, with your document in the center.

Centre Your Document



1. Click the Page Setup button in the Print group. The Page Setup dialog box appears.
2. Choose the Margins tab.
3. Click the Horizontally check box. Excel centers your data horizontally.
4. Click the Vertically check box. Excel centers your data vertically.
5. Click OK. The Page Setup dialog box closes.

Print



1. Click the Print button. The Print dialog box appears.
2. Click the down arrow next to the name field and select the printer to which you want to print.
3. Click OK. Excel sends your worksheet to the printer.

This is the end of this lesson. You can save and close your file.

Creating Charts

In Microsoft Excel, you can represent numbers in a chart. On the Insert tab, you can choose from a variety of chart types, including column, line, pie, bar, area, and scatter. The basic procedure for creating a chart is the same no matter what type of chart you choose. As you change your data, your chart will automatically update.

You select a chart type by choosing an option from the Insert tab's Chart group. After you choose a chart type, such as column, line, or bar, you choose a chart sub-type. For example, after you choose Column Chart, you can choose to have your chart represented as a two-dimensional chart, a three-dimensional chart, a cylinder chart, a cone chart, or a pyramid chart. There are further sub-types within each of these categories. As you roll your mouse pointer over each option, Excel supplies a brief description of each chart sub-type.

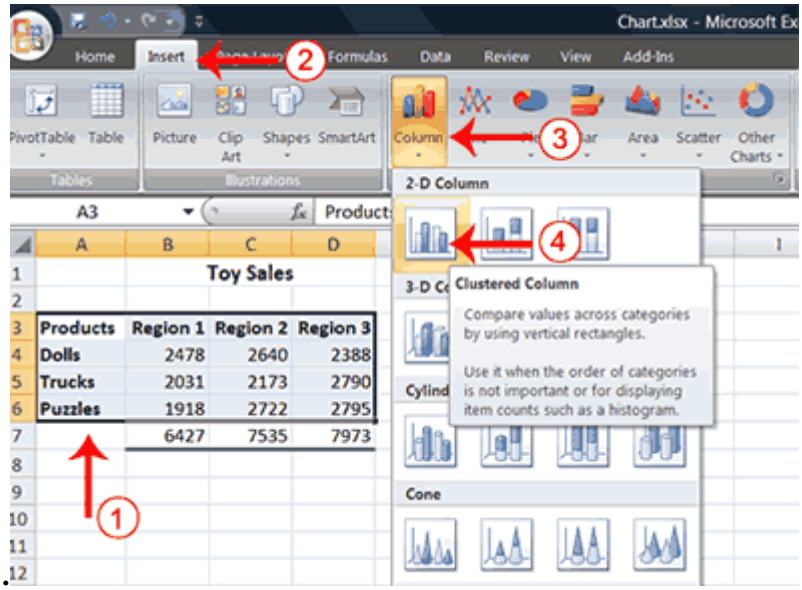
Create a Chart

To create the column chart shown above, start by creating the worksheet below exactly as shown.

	A	B	C	D	E
1			Toy Sales		
2					
3	**Products**	**Region 1**	**Region 2**	**Region 3**	
4	**Dolls**	2478	2640	2388	
5	**Trucks**	2031	2173	2790	
6	**Puzzles**	1918	2722	2795	
7	**Total**	6427	7535	7973	
8					

After you have created the worksheet, you are ready to create your chart.

Create a Column Chart



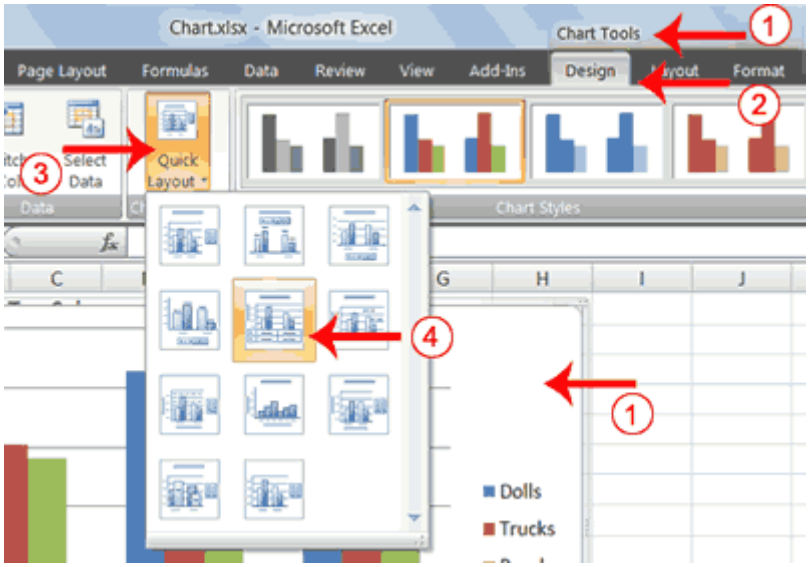
1. Select cells A3 to D6. You must select all the cells containing the data you want in your chart. You should also include the data labels.
2. Choose the Insert tab.
3. Click the Column button in the Charts group. A list of column chart sub-types types appears.
4. Click the Clustered Column chart sub-type. Excel creates a Clustered Column chart and the Chart Tools context tabs appear.

Apply a Chart Layout

Context tabs are tabs that only appear when you need them. Called Chart Tools, there are three chart context tabs: Design, Layout, and Format. The tabs become available when you create a new chart or when you click on a chart. You can use these tabs to customize your chart.

You can determine what your chart displays by choosing a layout. For example, the layout you choose determines whether your chart displays a title, where the title displays, whether your chart has a legend, where the legend displays, whether the chart has axis labels and so on. Excel provides several layouts from which you can choose.

Apply a Chart Layout

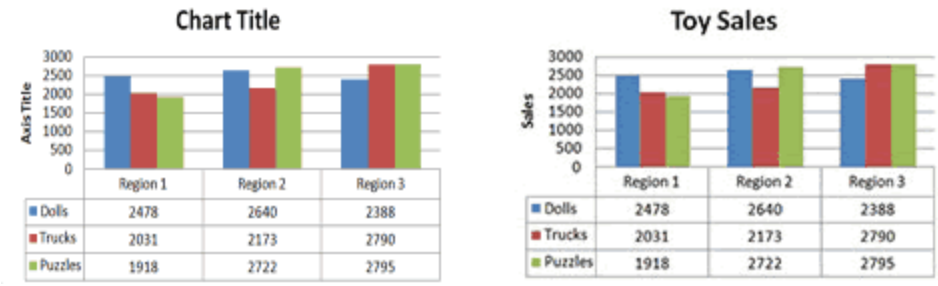


1. Click your chart. The Chart Tools become available.
2. Choose the Design tab.
3. Click the Quick Layout button in the Chart Layout group. A list of chart layouts appears.
4. Click Layout 5. Excel applies the layout to your chart.

Add Labels

When you apply a layout, Excel may create areas where you can insert labels. You use labels to give your chart a title or to label your axes. When you applied layout 5, Excel created label areas for a title and for the vertical axis.

Add labels



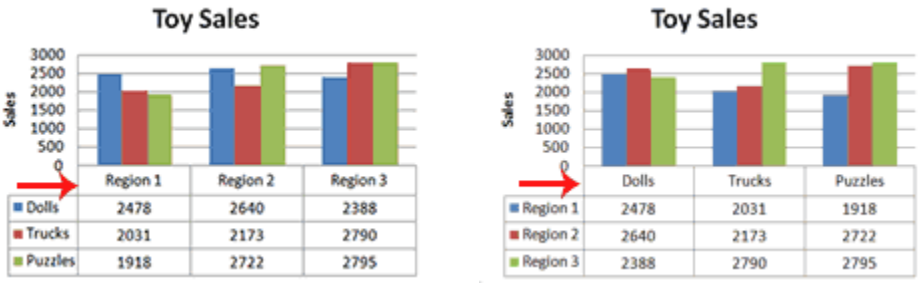
Before After

1. Select Chart Title. Click on Chart Title and then place your cursor before the C in Chart and hold down the Shift key while you use the right arrow key to highlight the words Chart Title.
2. Type **Toy Sales**. Excel adds your title.
3. Select Axis Title. Click on Axis Title. Place your cursor before the A in Axis. Hold down the Shift key while you use the right arrow key to highlight the words Axis Title.
4. Type **Sales.** Excel labels the axis.
5. Click anywhere on the chart to end your entry.

Switch Data

If you want to change what displays in your chart, you can switch from row data to column data and vice versa.

Switch Data



Before After

1. Click your chart. The Chart Tools become available.

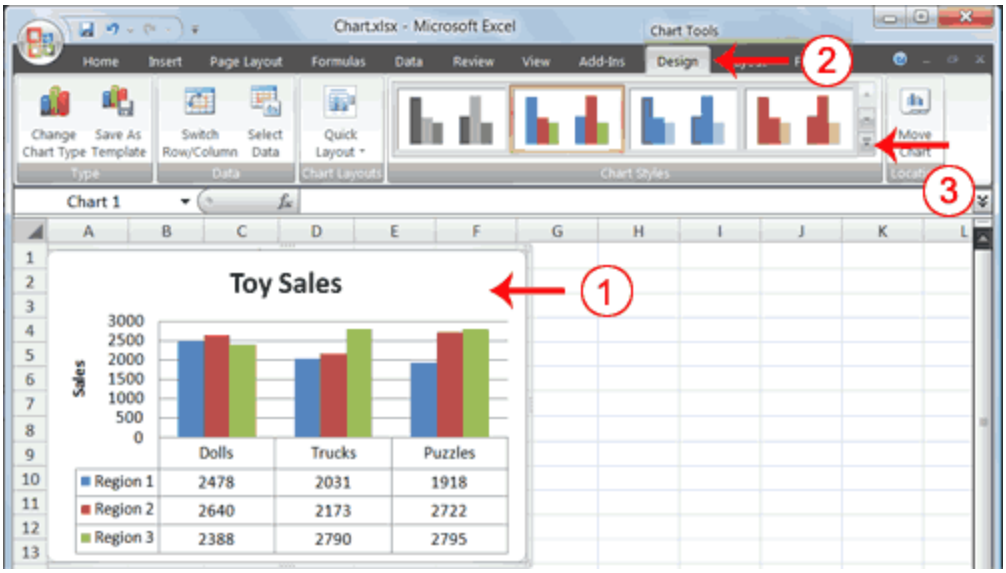
2. Choose the Design tab.

3. Click the Switch Row/Column button in the Data group. Excel changes the data in your chart.

Change the Style of a Chart

A style is a set of formatting options. You can use a style to change the colour and format of your chart. Excel 2007 has several predefined styles that you can use. They are numbered from left to right, starting with 1, which is located in the upper-left corner.

Change the Style of a Chart



1. Click your chart. The Chart Tools become available.

2. Choose the Design tab.

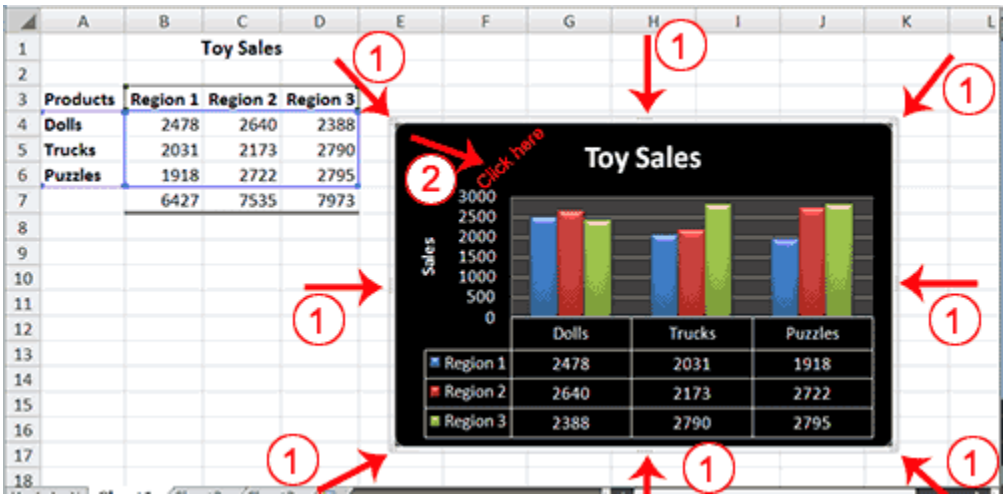
3. Click the More button in the Chart Styles group. The chart styles appear.

4. Click Style 42. Excel applies the style to your chart.

Change the Size and Position of a Chart

When you click a chart, handles appear on the right and left sides, the top and bottom, and the corners of the chart. You can drag the handles on the top and bottom of the chart to increase or decrease the height of the chart. You can drag the handles on the left and right sides to increase or decrease the width of the chart. You can drag the handles on the corners to increase or decrease the size of the chart proportionally. You can change the position of a chart by clicking on an unused area of the chart and dragging.

Change the Size and Position of a Chart



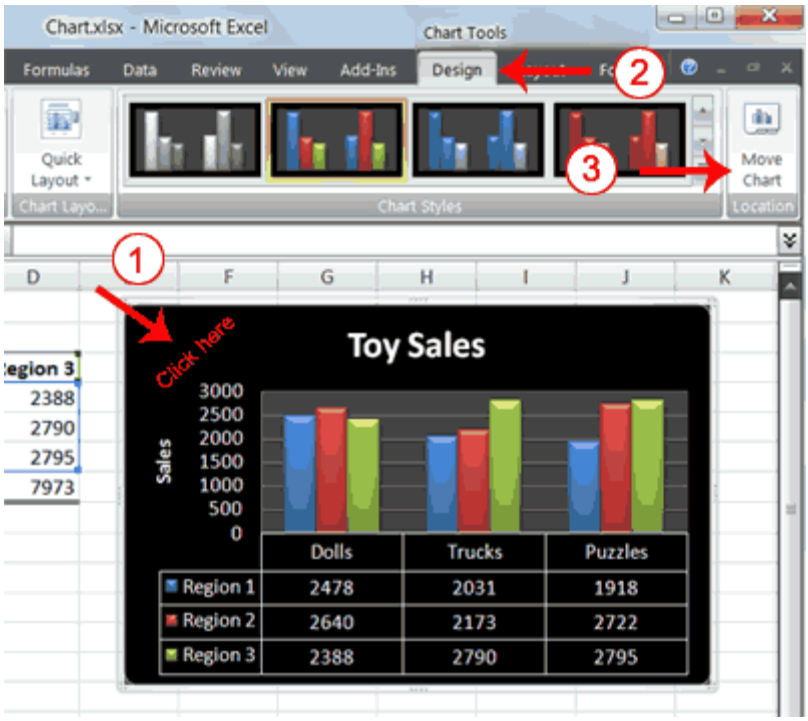
1. Use the handles to adjust the size of your chart.

2. Click an unused portion of the chart and drag to position the chart beside the data.

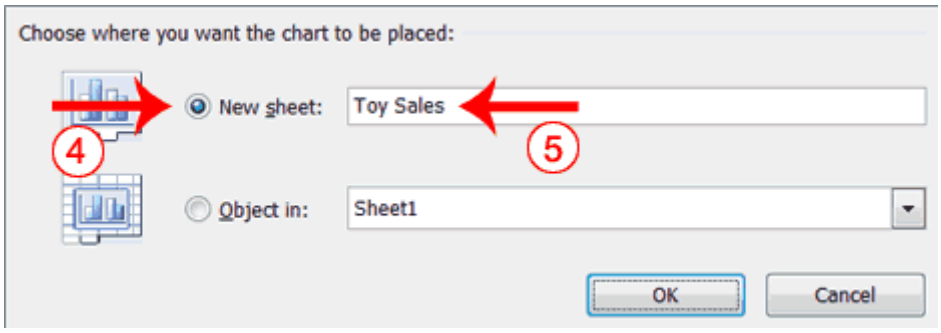
Move a Chart to a Chart Sheet

By default, when you create a chart, Excel embeds the chart in the active worksheet. However, you can move a chart to another worksheet or to a chart sheet. A chart sheet is a sheet dedicated to a particular chart. By default Excel names each chart sheet sequentially, starting with Chart1. You can change the name.

Move a Chart to a Chart Sheet



1. Click your chart. The Chart Tools become available.
2. Choose the Design tab.
3. Click the Move Chart button in the Location group. The Move Chart dialog box appears.

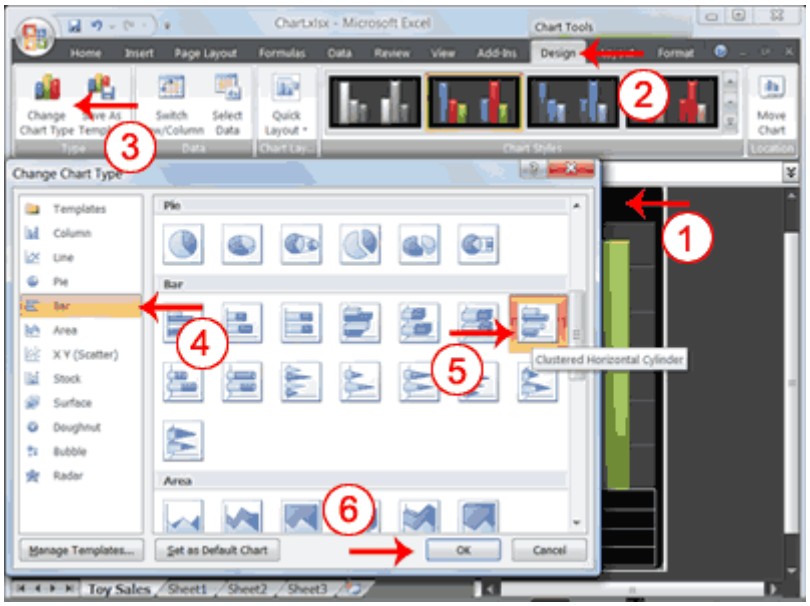


4. Click the New Sheet radio button.
5. Type Toy Sales to name the chart sheet. Excel creates a chart sheet named Toy Sales and places your chart on it.

Change the Chart Type

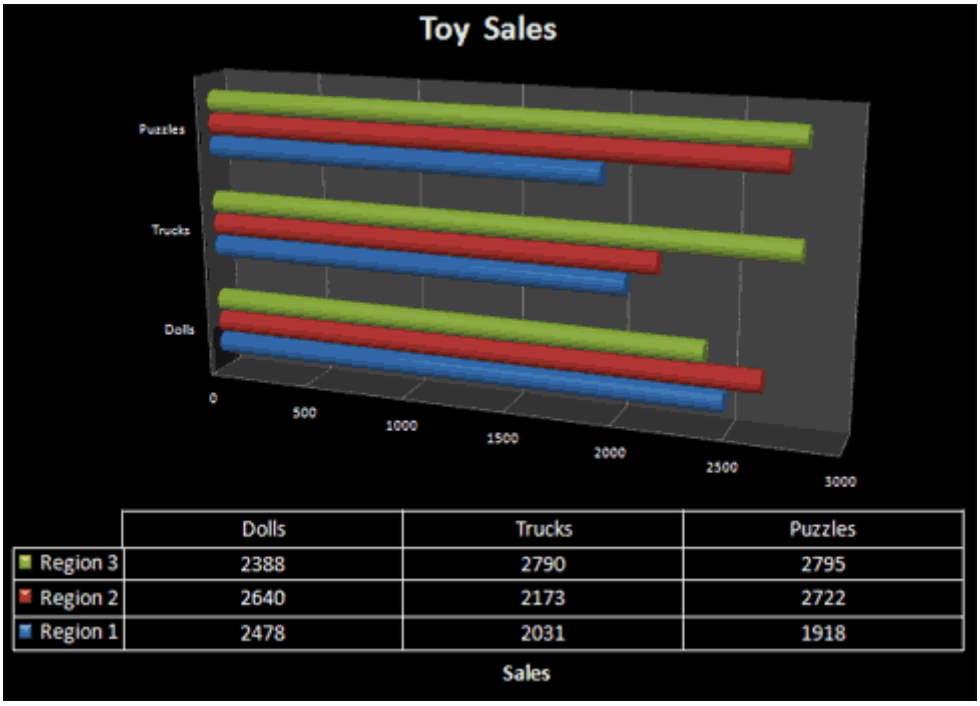
Any change you can make to a chart that is embedded in a worksheet, you can also make to a chart sheet. For example, you can change the chart type from a column chart to a bar chart.

Change the Chart Type



1. Click your chart. The Chart Tools become available.
2. Choose the Design tab.
3. Click Change Chart Type in the Type group. The Chart Type dialog box appears.

4. Click Bar.
5. Click Clustered Horizontal Cylinder.
6. Click OK. Excel changes your chart type.



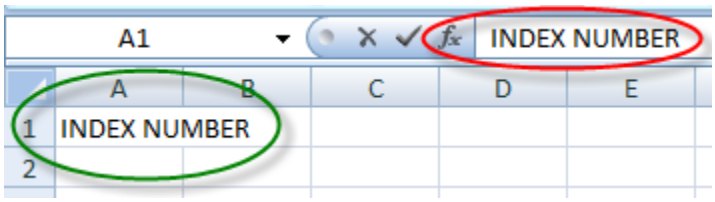
You have reached the end of this lesson. You can save and close your file.

Creating a Grade Sheet using Excel

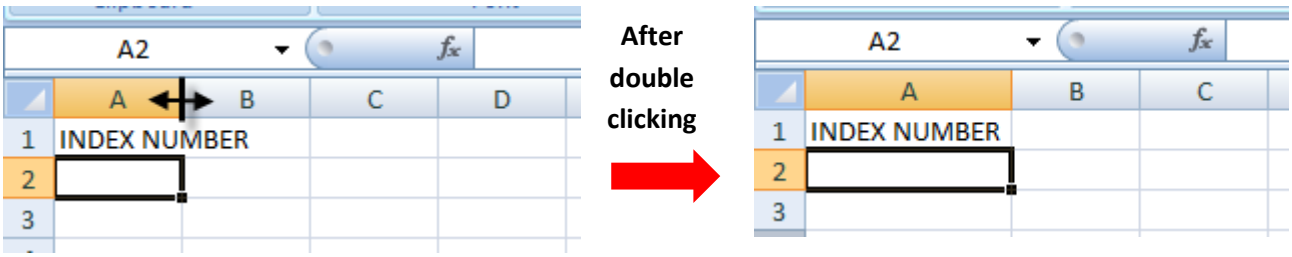
Entering Data

Now that you have the "feel" of how to move around the Excel spreadsheet, **go to** the **cells** as **indicated below** and **type-in** the following.

Type **INDEX NUMBER** in cell **A1** and press the **Enter key**. Note that what we typed in cell A1 also appeared in the formula bar.

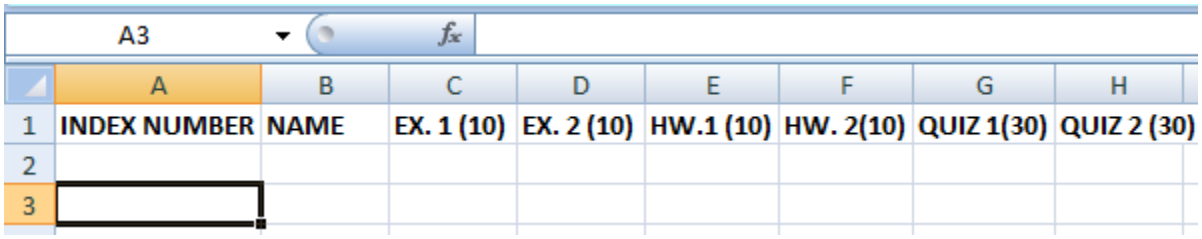


The **INDEXNUMBER** that you typed exceeds cell **A1** and enter cell **B1**. To correct this double click on the border line between column **A** and **B**



Type the following text in the cells indicated

Text	Cell
EX. 1 (10)	C1
EX. 2 (10)	D1
HW. 1 (10)	E1
HW. 2 (10)	F1
QUIZ 1(30)	G1
QUIZ 2 (30)	H1



Note that the entries in **Row 1** are the labels for the assessment sheet which identifies the content below them. This includes Exercises scored out of 10 marks (EX. 1(10), Ex. 2 (10)), Homework scored out of 10 marks (HW. 1(10), HW. 2 (10)) and two quizzes scored out of 30 marks.

Type the following data in the assessment sheet as in the figure below.

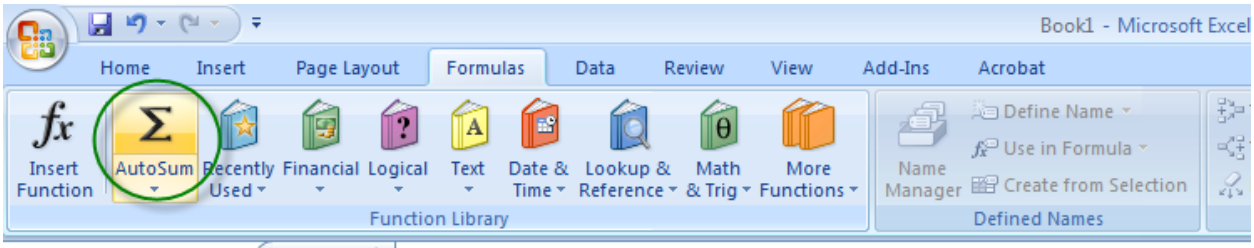
	A	B	C	D	E	F	G	H	I
1	INDEX NUMBER	NAME	EX. 1 (10)	EX. 2 (10)	HW.1 (10)	HW. 2(10)	QUIZ 1(30)	QUIZ 2 (30)	
2	103011001	Kwaku Mike	7	6	10	6	21	25	
3	103011002	Jone Asare	5	5	5	8	18	26	
4	103011003	Oscar Jim	4	10	6	7	25	12	
5	103011004	Afia Joyce	6	6	7	5	23	14	
6	103011005	Hana Sayiram	8	8	8	6	22	13	
7	103011006	Abovi Kan	4	10	4	8	27	17	
8	103011007	Ali Mohamed	5	5	6	10	14	18	
9	103011008	Boakye Samuel	3	7	5	9	16	19	
10	103011009	Asantewaa Jane	3	8	7	7	10	30	
11	103011010	Julia Bosompem	4	6	5	6	14	26	
12	103011011	Buadu Micheal	7	4	9	5	28	40	
13	103011012	Nii Cynthia	8	5	7	4	23	15	
14	103011013	Kantanka Samuel	6	8	6	7	28	30	
15	103011014	Ativi Benard	5	9	5	8	16	21	

Adding using the AUTOSUM

We need to find the total Continuous assessment score of each student. Type **CA (100)** at cell **I1**

	A	B	C	D	E	F	G	H	I
1	INDEX NUMBER	NAME	EX. 1 (10)	EX. 2 (10)	HW.1 (10)	HW. 2(10)	QUIZ 1(30)	QUIZ 2 (30)	CA (100)
2	103011001	Kwaku Mike	7	6	10	6	21	25	
3	103011002	Jone Asare	5	5	5	8	18	26	

We will use the **Auto Sum** function. Select cell **I2**, click the **Formulas** tab and click on the **Auto Sum** Σ. The formula **=SUM(C2:H2)**while be displayed any in cell **I2.**Note that =SUM(C2:H2) means that we are adding the values of all the cells within the range from **C2** to **H2**which are cells**C2,D2,E2,F2 G2,and H2.**



	A	B	C	D	E	F	G	H	I
1	INDEX NUMBER	NAME	EX. 1 (10)	EX. 2 (10)	HW.1 (10)	HW. 2(10)	QUIZ 1(30)	QUIZ 2 (30)	CA (100)
2	103011001	Kwaku Mike	7	6	10	6	21	25	=SUM(C2:H2)
3	103011002	Jone Asare	5	5	5	8	18	26	
4	103011003	Oscar Jim	4	10	6	7	25	12	
5	103011004	Afia Joyce	6	6	7	5	23	14	
6	103011005	Hana Sayiram	8	8	8	6	22	13	

Press the **Enter key** to get the Contentious assessment score for the student **Kwaku Mike**

	A	B	C	D	E	F	G	H	I
1	INDEX NUMBER	NAME	EX. 1 (10)	EX. 2 (10)	HW.1 (10)	HW. 2(10)	QUIZ 1(30)	QUIZ 2 (30)	CA (100)
2	103011001	Kwaku Mike	7	6	10	6	21	25	75
3	103011002	Jone Asare	5	5	5	8	18	26	

Applying Automatic Fill

To get the continuous assessment score for the other student, we will use the **Automatic Fill** tool in excel. Select cell **I2**, move the curse to the edge of the highlighted cell. The cursor will change to a plus black plus sign **+**.

	A	B	C	D	E	F	G	H	I
1	INDEX NUMBER	NAME	EX. 1 (10)	EX. 2 (10)	HW.1 (10)	HW. 2(10)	QUIZ 1(30)	QUIZ 2 (30)	CA (100)
2	103011001	Kwaku Mike	7	6	10	6	21	25	75
3	103011002	Jone Asare	5	5	5	8	18	26	

Click and drag the cell to the last cell with data (i.e. **I2** to **I15**).

	A	B	C	D	E	F	G	H	I	J
1	INDEX NUMBER	NAME	EX. 1 (10)	EX. 2 (10)	HW.1 (10)	HW. 2(10)	QUIZ 1(30)	QUIZ 2 (30)	CA (100)	
2	103011001	Kwaku Mike	7	6	10	6	21	25	75	
3	103011002	Jone Asare	5	5	5	8	18	26		
4	103011003	Oscar Jim	4	10	6	7	25	12		
5	103011004	Afia Joyce	6	6	7	5	23	14		
6	103011005	Hana Sayiram	8	8	8	6	22	13		
7	103011006	Abovi Kan	4	10	4	8	27	17		
8	103011007	Ali Mohamed	5	5	6	10	14	18		
9	103011008	Boakye Samuel	3	7	5	9	16	19		
10	103011009	Asantewaa Jane	3	8	7	7	10	30		
11	103011010	Julia Bosompem	4	6	5	6	14	26		
12	103011011	Buadu Micheal	7	4	9	5	28	40		
13	103011012	Nii Cynthia	8	5	7	4	23	15		
14	103011013	Kantanka Samuel	6	8	6	7	28	30		
15	103011014	Ativi Benard	5	9	5	8	16	21		
16										

After you have dragged, Excel will automatically calculate the continuous assessment scores of all the students.

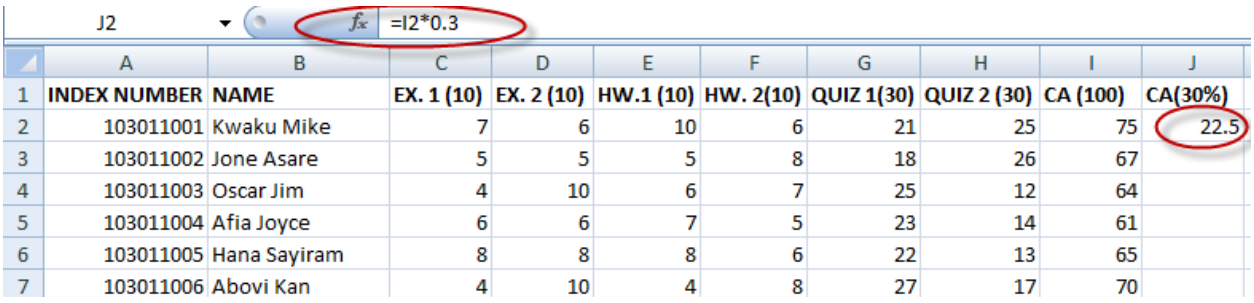
	A	B	C	D	E	F	G	H	I
1	INDEX NUMBER	NAME	EX. 1 (10)	EX. 2 (10)	HW.1 (10)	HW. 2(10)	QUIZ 1(30)	QUIZ 2 (30)	CA (100)
2	103011001	Kwaku Mike	7	6	10	6	21	25	75
3	103011002	Jone Asare	5	5	5	8	18	26	67
4	103011003	Oscar Jim	4	10	6	7	25	12	64
5	103011004	Afia Joyce	6	6	7	5	23	14	61
6	103011005	Hana Sayiram	8	8	8	6	22	13	65
7	103011006	Abovi Kan	4	10	4	8	27	17	70
8	103011007	Ali Mohamed	5	5	6	10	14	18	58
9	103011008	Boakye Samuel	3	7	5	9	16	19	59
10	103011009	Asantewaa Jane	3	8	7	7	10	30	65
11	103011010	Julia Bosompem	4	6	5	6	14	26	61
12	103011011	Buadu Micheal	7	4	9	5	28	40	93
13	103011012	Nii Cynthia	8	5	7	4	23	15	62
14	103011013	Kantanka Samuel	6	8	6	7	28	30	85
15	103011014	Ativi Benard	5	9	5	8	16	21	64
16									

Multiplying (*) in Excel

Type **CA (30%)** in cell **J1**

	A	B	C	D	E	F	G	H	I	J
1	INDEX NUMBER	NAME	EX. 1 (10)	EX. 2 (10)	HW.1 (10)	HW. 2(10)	QUIZ 1(30)	QUIZ 2 (30)	CA (100)	CA(30%)
2	103011001	Kwaku Mike	7	6	10	6	21	25	75	
3	103011002	Jone Asare	5	5	5	8	18	26	67	

We will convert the total continuous assessment score of each student to **30% (0.3).**Type **=I2*0.3**in cell **J2**and press **Enter.** This means that we are multiplying **(*)** the value in cell **I2** by **0.3**



	A	B	C	D	E	F	G	H	I	J
1	INDEX NUMBER	NAME	EX. 1 (10)	EX. 2 (10)	HW.1 (10)	HW. 2(10)	QUIZ 1(30)	QUIZ 2 (30)	CA (100)	CA(30%)
2	103011001	Kwaku Mike	7	6	10	6	21	25	75	22.5
3	103011002	Jone Asare	5	5	5	8	18	26	67	
4	103011003	Oscar Jim	4	10	6	7	25	12	64	
5	103011004	Afia Joyce	6	6	7	5	23	14	61	
6	103011005	Hana Sayiram	8	8	8	6	22	13	65	
7	103011006	Abovi Kan	4	10	4	8	27	17	70	

Note that the formula will be displayed in the **formula** bar by the resulting value will be displayed in cell **J2**

Use the **Auto fill** to find the 30% of the other students.

J2 =I2*0.3

	A	B	C	D	E	F	G	H	I	J
1	INDEX NUMBER	NAME	EX. 1 (10)	EX. 2 (10)	HW.1 (10)	HW. 2(10)	QUIZ 1(30)	QUIZ 2 (30)	CA (100)	CA(30%)
2	103011001	Kwaku Mike	7	6	10	6	21	25	75	22.5
3	103011002	Jone Asare	5	5	5	8	18	26	67	20.1
4	103011003	Oscar Jim	4	10	6	7	25	12	64	19.2
5	103011004	Afia Joyce	6	6	7	5	23	14	61	18.3
6	103011005	Hana Sayiram	8	8	8	6	22	13	65	19.5
7	103011006	Abovi Kan	4	10	4	8	27	17	70	21
8	103011007	Ali Mohamed	5	5	6	10	14	18	58	17.4
9	103011008	Boakye Samuel	3	7	5	9	16	19	59	17.7
10	103011009	Asantewaa Jane	3	8	7	7	10	30	65	19.5
11	103011010	Julia Bosompem	4	6	5	6	14	26	61	18.3
12	103011011	Buadu Micheal	7	4	9	5	28	40	93	27.9
13	103011012	Nii Cynthia	8	5	7	4	23	15	62	18.6
14	103011013	Kantanka Samuel	6	8	6	7	28	30	85	25.5
15	103011014	Ativi Benard	5	9	5	8	16	21	64	19.2

Type in **Exam (100)** cell **K1** which is the examination scores of students and type the values for each student as below

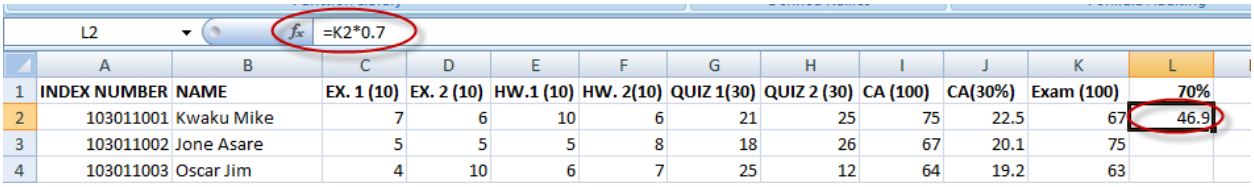
K16

	A	B	C	D	E	F	G	H	I	J	K
1	INDEX NUMBER	NAME	EX. 1 (10)	EX. 2 (10)	HW.1 (10)	HW. 2(10)	QUIZ 1(30)	QUIZ 2 (30)	CA (100)	CA(30%)	Exam (100)
2	103011001	Kwaku Mike	7	6	10	6	21	25	75	22.5	67
3	103011002	Jone Asare	5	5	5	8	18	26	67	20.1	75
4	103011003	Oscar Jim	4	10	6	7	25	12	64	19.2	63
5	103011004	Afia Joyce	6	6	7	5	23	14	61	18.3	45
6	103011005	Hana Sayiram	8	8	8	6	22	13	65	19.5	80
7	103011006	Abovi Kan	4	10	4	8	27	17	70	21	83
8	103011007	Ali Mohamed	5	5	6	10	14	18	58	17.4	54
9	103011008	Boakye Samuel	3	7	5	9	16	19	59	17.7	68
10	103011009	Asantewaa Jane	3	8	7	7	10	30	65	19.5	71
11	103011010	Julia Bosompem	4	6	5	6	14	26	61	18.3	61
12	103011011	Buadu Micheal	7	4	9	5	28	40	93	27.9	68
13	103011012	Nii Cynthia	8	5	7	4	23	15	62	18.6	79
14	103011013	Kantanka Samuel	6	8	6	7	28	30	85	25.5	90
15	103011014	Ativi Benard	5	9	5	8	16	21	64	19.2	48
16											

We will have to convert the examination scores of the student to 60%. Type **70%** in cell **L1**

	A	B	C	D	E	F	G	H	I	J	K	L
1	INDEX NUMBER	NAME	EX. 1 (10)	EX. 2 (10)	HW.1 (10)	HW. 2(10)	QUIZ 1(30)	QUIZ 2 (30)	CA (100)	CA(30%)	Exam (100)	70%
2	103011001	Kwaku Mike	7	6	10	6	21	25	75	22.5	67	
3	103011002	Jone Asare	5	5	5	8	18	26	67	20.1	75	

We will convert the examination score of the students to 60%. Type in cell **L2**, **=K2*0.7** and press **Enter.** This means that we are multiplying the value in cell **K2** by **0.7.**



L2 | =K2*0.7

	A	B	C	D	E	F	G	H	I	J	K	L
1	INDEX NUMBER	NAME	EX. 1 (10)	EX. 2 (10)	HW.1 (10)	HW. 2(10)	QUIZ 1(30)	QUIZ 2 (30)	CA (100)	CA(30%)	Exam (100)	70%
2	103011001	Kwaku Mike	7	6	10	6	21	25	75	22.5	67	46.9
3	103011002	Jone Asare	5	5	5	8	18	26	67	20.1	75	
4	103011003	Oscar Jim	4	10	6	7	25	12	64	19.2	63	

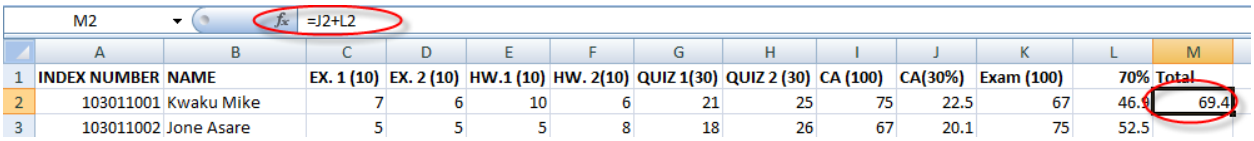
Note that the formula will be displayed in the **formula** bar and the resulting value will display in cell **L2.**

Use the **Auto fill** to find the **70%** values for the other students.

	A	B	C	D	E	F	G	H	I	J	K	L
1	INDEX NUMBER	NAME	EX. 1 (10)	EX. 2 (10)	HW.1 (10)	HW. 2(10)	QUIZ 1(30)	QUIZ 2 (30)	CA (100)	CA(30%)	Exam (100)	70%
2	103011001	Kwaku Mike	7	6	10	6	21	25	75	22.5	67	46.9
3	103011002	Jone Asare	5	5	5	8	18	26	67	20.1	75	52.5
4	103011003	Oscar Jim	4	10	6	7	25	12	64	19.2	63	44.1
5	103011004	Afia Joyce	6	6	7	5	23	14	61	18.3	45	31.5
6	103011005	Hana Sayiram	8	8	8	6	22	13	65	19.5	80	56
7	103011006	Abovi Kan	4	10	4	8	27	17	70	21	83	58.1
8	103011007	Ali Mohamed	5	5	6	10	14	18	58	17.4	54	37.8
9	103011008	Boakye Samuel	3	7	5	9	16	19	59	17.7	68	47.6
10	103011009	Asantewaa Jane	3	8	7	7	10	30	65	19.5	71	49.7
11	103011010	Julia Bosompem	4	6	5	6	14	26	61	18.3	61	42.7
12	103011011	Buadu Micheal	7	4	9	5	28	40	93	27.9	68	47.6
13	103011012	Nii Cynthia	8	5	7	4	23	15	62	18.6	79	55.3
14	103011013	Kantanka Samuel	6	8	6	7	28	30	85	25.5	90	63
15	103011014	Ativi Benard	5	9	5	8	16	21	64	19.2	48	33.6
16												

Adding using the Plus (+) sign in Excel

We have to calculate the term **total** by adding the 30% continuous assessment mark to the 70% examination score. Type **Total** in cell **M1.** In cell **M2** type **=J2+L2**and press **Enter**. This means that we are adding the values in cell **J2** and **L2**



M2 | =J2+L2

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	INDEX NUMBER	NAME	EX. 1 (10)	EX. 2 (10)	HW.1 (10)	HW. 2(10)	QUIZ 1(30)	QUIZ 2 (30)	CA (100)	CA(30%)	Exam (100)	70%	Total
2	103011001	Kwaku Mike	7	6	10	6	21	25	75	22.5	67	46.9	69.4
3	103011002	Jone Asare	5	5	5	8	18	26	67	20.1	75	52.5	

Now to get the tem totals for each student, we will use the **Auto fill** tool.

M2 =J2+L2

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	INDEX NUMBER	NAME	EX. 1 (10)	EX. 2 (10)	HW.1 (10)	HW. 2(10)	QUIZ 1(30)	QUIZ 2 (30)	CA (100)	CA(30%)	Exam (100)	70%	Total
2	103011001	Kwaku Mike	7	6	10	6	21	25	75	22.5	67	46.9	69.4
3	103011002	Jone Asare	5	5	5	8	18	26	67	20.1	75	52.5	72.6
4	103011003	Oscar Jim	4	10	6	7	25	12	64	19.2	63	44.1	63.3
5	103011004	Afia Joyce	6	6	7	5	23	14	61	18.3	45	31.5	49.8
6	103011005	Hana Sayiram	8	8	8	6	22	13	65	19.5	80	56	75.5
7	103011006	Abovi Kan	4	10	4	8	27	17	70	21	83	58.1	79.1
8	103011007	Ali Mohamed	5	5	6	10	14	18	58	17.4	54	37.8	55.2
9	103011008	Boakye Samuel	3	7	5	9	16	19	59	17.7	68	47.6	65.3
10	103011009	Asantewaa Jane	3	8	7	7	10	30	65	19.5	71	49.7	69.2
11	103011010	Julia Bosompem	4	6	5	6	14	26	61	18.3	61	42.7	61
12	103011011	Buadu Micheal	7	4	9	5	28	40	93	27.9	68	47.6	75.5
13	103011012	Nii Cynthia	8	5	7	4	23	15	62	18.6	79	55.3	73.9
14	103011013	Kantanka Samuel	6	8	6	7	28	30	85	25.5	90	63	88.5
15	103011014	Ativi Benard	5	9	5	8	16	21	64	19.2	48	33.6	52.8
16													

Grading Using the IF function

Now that we have the total score of each student, let us learn how to grade the student using a function in excel called the **IF** function. The **IF** function allows you to set a criteria or condition for a particular grade. In grading students we usually follow some criteria. For example, if a student scores **80%** or more, we usual score the student grade **A.** We will use the **IF** function to communicate the grading criteria below to excel or order to grade the students term total scores.

Mark	Grade	IF function
80 or more	A	IF(M2>=80,"A"
70 to 79	B	IF(M2>=70,"B"
60 to 69	C	IF(M2>=60,"C"
50 to 59	D	IF(M2>=50,"D"
40 t0 49	E	IF(M2>=40,"E"
39 and below	F	,"F"

IF (M2>=80,"A" means that if the value in cell **M2** is **greater than or equal to80** (i.e. 80 or more), then the grade is **A.** The grade **A** is placed in double quotation. That is **"A"** to differentiate it from the alphabet A**.** Note that **M2** refers to the cell where the **total** term scores are. We only set the **IF** function for value up to grade **E.** If a student doesn't get from grade **A** to grade **E** then the student has **F**. This will be done by written grade, "**F"** at the end of the entire **IF** statements

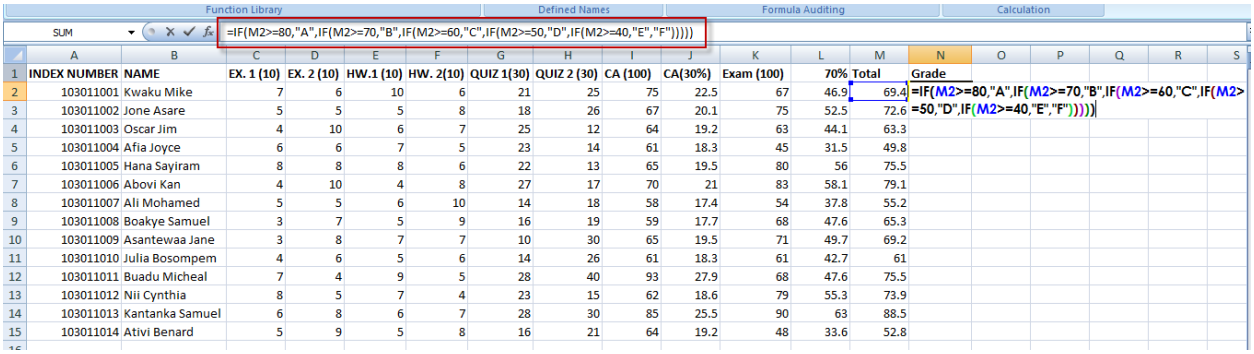
Combining all the grading criteria together, the **IF** function is given by:

=IF (M2>=80,"A",IF(M2>=70,"B",IF(M2>=60,"C",IF(M2>=50,"D",IF(M2>=40,"E","F")))))

When typing the **IF** function, make sure that you **do not space them**. The number of brackets at the end of the statement is equal to the number of **IF's** (i.e. in the above

statement we have five (5) **IF's** so we need five (5), brackets at the end of the statement)

Let us type **Grade** in cell **N1.** We then type the **IF** statement in **N2.**Note that the cell **N2**has a small width to contain this long statement, therefore we will highlight **N2** and type the **IF** statement in the **formula bar**.



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1	INDEX NUMBER	NAME	EX. 1 (10)	EX. 2 (10)	HW.1 (10)	HW. 2(10)	QUIZ 1(30)	QUIZ 2 (30)	CA (100)	CA(30%)	Exam (100)	70%	Total	Grade					
2	103011001	Kwaku Mike	7	6	10	6	21	25	75	22.5	67	46.9	69.4	=IF(M2>=80,"A",IF(M2>=70,"B",IF(M2>=60,"C",IF(M2>					
3	103011002	Jone Asare	5	5	5	8	18	26	67	20.1	75	52.5	72.6	=50,"D",IF(M2>=40,"E","F")))))					
4	103011003	Oscar Jim	4	10	6	7	25	12	64	19.2	63	44.1	63.3						
5	103011004	Afia Joyce	6	6	7	5	23	14	61	18.3	45	31.5	49.8						
6	103011005	Hana Sayiram	8	8	8	6	22	13	65	19.5	80	56	75.5						
7	103011006	Abovi Kan	4	10	4	8	27	17	70	21	83	58.1	79.1						
8	103011007	Ali Mohamed	5	5	6	10	14	18	58	17.4	54	37.8	55.2						
9	103011008	Boakye Samuel	3	7	5	9	16	19	59	17.7	68	47.6	65.3						
10	103011009	Asantewaa Jane	3	8	7	7	10	30	65	19.5	71	49.7	69.2						
11	103011010	Julia Bosompem	4	6	5	6	14	26	61	18.3	61	42.7	61						
12	103011011	Buadu Micheal	7	4	9	5	28	40	93	27.9	68	47.6	75.5						
13	103011012	Nii Cynthia	8	5	7	4	23	15	62	18.6	79	55.3	73.9						
14	103011013	Kantanka Samuel	6	8	6	7	28	30	85	25.5	90	63	88.5						
15	103011014	Ativi Benard	5	9	5	8	16	21	64	19.2	48	33.6	52.8						

When you finish entering the **IF** function, press the **Enter** key to grade the student.

A	B	C	D	E	F	G	H	I	J	K	L	M	N
INDEX NUMBER	NAME	EX. 1 (10)	EX. 2 (10)	HW.1 (10)	HW. 2(10)	QUIZ 1(30)	QUIZ 2 (30)	CA (100)	CA(30%)	Exam (100)	70%	Total	Grade
103011001	Kwaku Mike	7	6	10	6	21	25	75	22.5	67	46.9	69.4	C
103011002	Jone Asare	5	5	5	8	18	26	67	20.1	75	52.5	72.6	

Use the **Auto fill** to grade the other students.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	INDEX NUMBER	NAME	EX. 1 (10)	EX. 2 (10)	HW.1 (10)	HW. 2(10)	QUIZ 1(30)	QUIZ 2 (30)	CA (100)	CA(30%)	Exam (100)	70%	Total	Grade
2	103011001	Kwaku Mike	7	6	10	6	21	25	75	22.5	67	46.9	69.4	C
3	103011002	Jone Asare	5	5	5	8	18	26	67	20.1	75	52.5	72.6	B
4	103011003	Oscar Jim	4	10	6	7	25	12	64	19.2	63	44.1	63.3	C
5	103011004	Afia Joyce	6	6	7	5	23	14	61	18.3	45	31.5	49.8	E
6	103011005	Hana Sayiram	8	8	8	6	22	13	65	19.5	80	56	75.5	B
7	103011006	Abovi Kan	4	10	4	8	27	17	70	21	83	58.1	79.1	B
8	103011007	Ali Mohamed	5	5	6	10	14	18	58	17.4	54	37.8	55.2	D
9	103011008	Boakye Samuel	3	7	5	9	16	19	59	17.7	68	47.6	65.3	C
10	103011009	Asantewaa Jane	3	8	7	7	10	30	65	19.5	71	49.7	69.2	C
11	103011010	Julia Bosompem	4	6	5	6	14	26	61	18.3	61	42.7	61	C
12	103011011	Buadu Micheal	7	4	9	5	28	40	93	27.9	68	47.6	75.5	B
13	103011012	Nii Cynthia	8	5	7	4	23	15	62	18.6	79	55.3	73.9	B
14	103011013	Kantanka Samuel	6	8	6	7	28	30	85	25.5	90	63	88.5	A
15	103011014	Ativi Benard	5	9	5	8	16	21	64	19.2	48	33.6	52.8	D
16														

Adding Remarks using the IF function

Now that we know the grade of each student, we are going learn how to give remarks to students. We will use the criteria below.

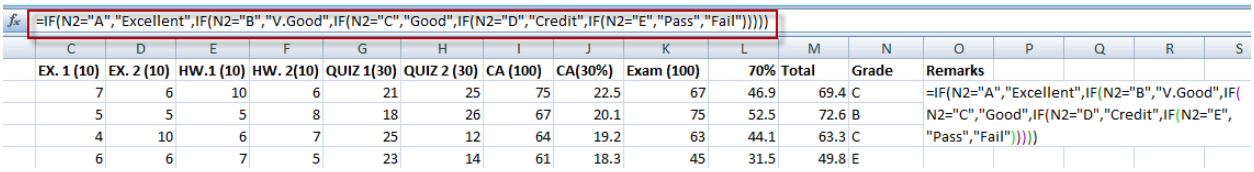
Grade	Remarks	IF function
A	**Excellent**	**IF(N2="A","Excellent"**
B	**V. Good**	**IF(N2="B","V.Good"**
C	**Good**	**IF(N2 ="C","Good"**
D	**Credit**	**IF(N2="D","Credit"**
E	**Pass**	**IF(N2="E","Pass"**
F	**Fail**	**,"Fail"**

The statement **IF (N2="A", "Excellent"** means that, if the cell **N2** (the cell containing the grades) contains grade **A**, then the remarks is **Excellent.** This is true for the other if statements. Combining all the **IF** statements for each remark, we have,

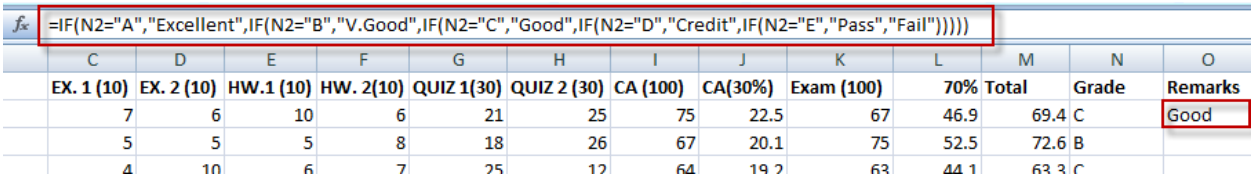
=IF(N2="A", "Excellent", IF(N2="B","V. Good", IF(N2 ="C", "Good", IF(N2="D", "Credit", IF(N2="E", "Pass", "Fail")))))

Note that when typing we **do not space them** and the number of brackets is the same as the number of **IF's**

Let us give remarks to the students. Type **Remarks** in cell **O1.** Select cell **O2** and type the **IF** statement above in the **function bar**



When you finish entering the **IF** function, press the **Enter** key to give remarks to the student.



We now apply the **AutoFill** to the get the remarks for the other students.

J	K	L	M	N	O
CA(30%)	Exam (100)	70%	Total	Grade	Remarks
22.5	67	46.9	69.4	C	Good
20.1	75	52.5	72.6	B	V.Good
19.2	63	44.1	63.3	C	Good
18.3	45	31.5	49.8	E	Pass
19.5	80	56	75.5	B	V.Good
21	83	58.1	79.1	B	V.Good
17.4	54	37.8	55.2	D	Credit
17.7	68	47.6	65.3	C	Good
19.5	71	49.7	69.2	C	Good
18.3	61	42.7	61	C	Good
27.9	68	47.6	75.5	B	V.Good
18.6	79	55.3	73.9	B	V.Good
25.5	90	63	88.5	A	Excellent
19.2	48	33.6	52.8	D	Credit

Positioning the students using the RANK Function

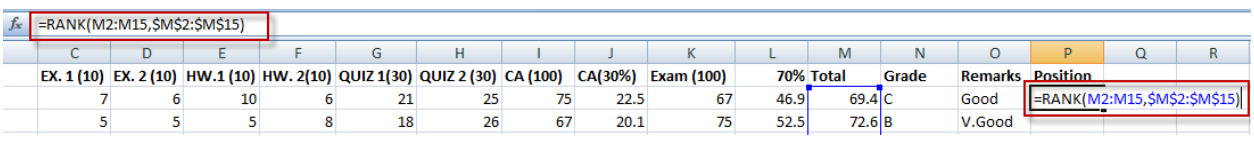
Now that we have been able to give remarks on the students' grades, we will use the **RANK** function to positions the student. When given position to students, we usually do it by using their **total term scores.** Therefore the **RANK** function will be used in reference to the cell that contains their total term scores (**M2**).

The **RANK** function is as follows

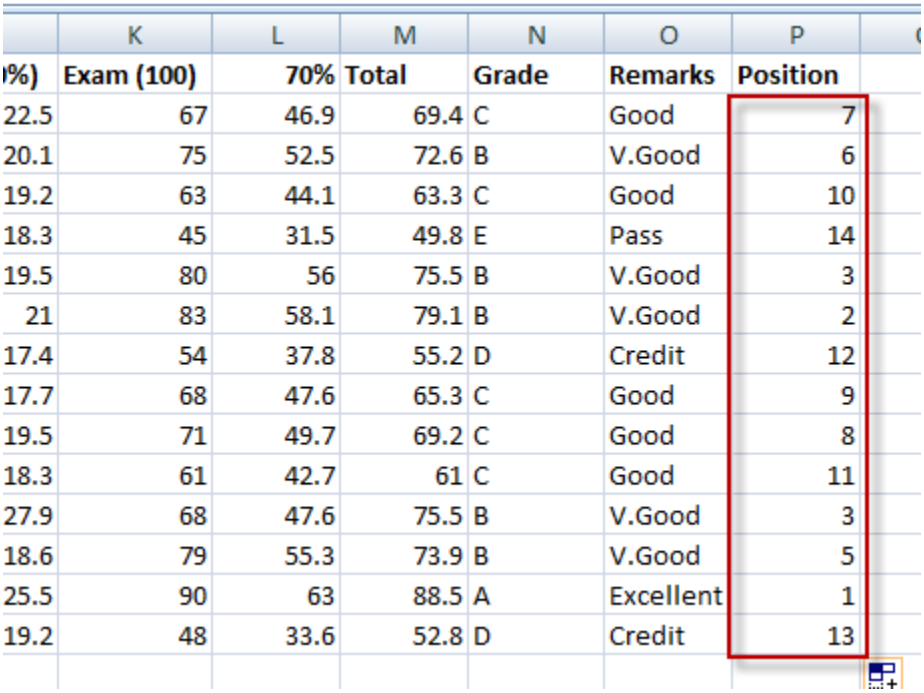
=RANK (M2, $M$2:$M$15)

From the **RANK** function, **M2** means that we are ranking the value in cell **M2.** Note that the **total** scores of the students begin at **M2** and ends at **M15.** Therefore the range of cells to rank is **M2:M15**. The range should be absolute so that no matter where we write the formula, it will apply the same range. Therefore **$M$2:$M$15** means that we are holding the range as absolute (**M2:M15**). In other words we are ranking only figures in column **M** and rows **2** to **15.**

Let us give positions to the students. Type **Position** in cell **P1**. Type the **RANK** function above in cell **P2.** Note that you can type the RANK function in the **formula bar**



When you finish press Enter and use the Auto fill tool the find the position of the other student.



	K	L	M	N	O	P
)%)	Exam (100)	70%	Total	Grade	Remarks	Position
22.5	67	46.9	69.4	C	Good	7
20.1	75	52.5	72.6	B	V.Good	6
19.2	63	44.1	63.3	C	Good	10
18.3	45	31.5	49.8	E	Pass	14
19.5	80	56	75.5	B	V.Good	3
21	83	58.1	79.1	B	V.Good	2
17.4	54	37.8	55.2	D	Credit	12
17.7	68	47.6	65.3	C	Good	9
19.5	71	49.7	69.2	C	Good	8
18.3	61	42.7	61	C	Good	11
27.9	68	47.6	75.5	B	V.Good	3
18.6	79	55.3	73.9	B	V.Good	5
25.5	90	63	88.5	A	Excellent	1
19.2	48	33.6	52.8	D	Credit	13

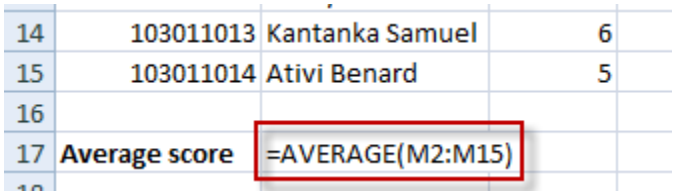
From the Positions, **1** mean that the student was **first** in class, **2** means **second** and so on.

Finding the Average score of the students using the AVERAGE function

Let us compute the average score the students. Type **Average score** in cell **A17.**

We will compute the average score in cell **B17**. Type the average function as in cell **B17** below:

=AVERAGE (M2:M15)



14	103011013	Kantanka Samuel	6
15	103011014	Ativi Benard	5
16			
17	Average score	=AVERAGE(M2:M15)	

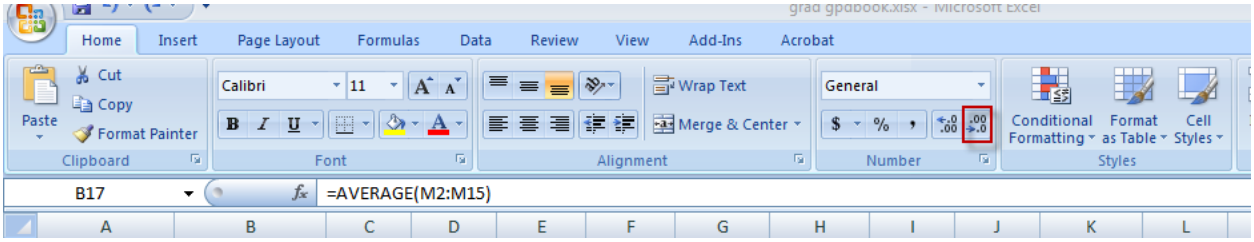
Note the M2:M15 is the range of cell that contains the total score of the students. That it we are find the average of the scores in cell **M2** to **M15**

Press the **Enter** key to compute the average score of the students.

4	103011013	Kantanka Samuel	6
5	103011014	Ativi Benard	5
6			
7	Average score	67.93571429	
8			

Reducing Decimal Points

The Average score **67.93571429** is in 8 decimal place. To reduce this we use the **decrease decimal** icon on the Home tab in the number group. To opposite is the **increase decimal** icon.



Select cell **B17** containing the average score and click on the **decrease decimal** icon until you have one decimal place.

15	103011014	Ativi Benard	
16			
17	Average score	67.9	

Finding the Maximum score using the MAX function

We want the find the highest score in the class using the **MAX** function. Type **Maximum score** in cell **A18.** To find the maximum score, type in cell**B18:**

=MAX (M2:M15)

15	103011014	Ativi Benard	
16			
17	Average score	67.9	
18	Maximum score	=MAX(M2:M15)	
19			

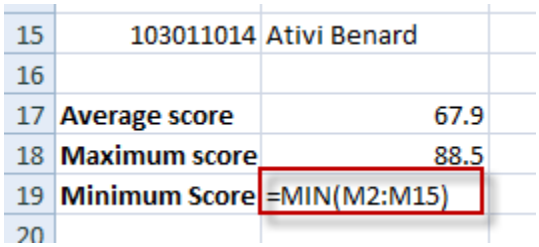
When you finish typing the **MAX f**unction press the **Enter** key

15	103011014	Ativi Benard	
16			
17	Average score	67.9	
18	Maximum score	88.5	

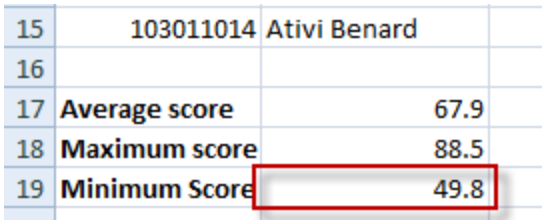
Finding the Minimum score using the MIN function

We want the find the lowest score in the class using the **MIN** function. Type **Minimum score** in cell **A19.** To find the maximum score, type in cell **B19:**

=MIN (M2:M15)



When you finish typing the **MIN** function press the **Enter** key



Counting the students Grades using the COUNTIF function

We can summaries the grades of the students by counting the number of student who had grade **A**, **B**, **C** and so on. To count the number of student who scored a particular grade, we use the **COUNTIF** function below.

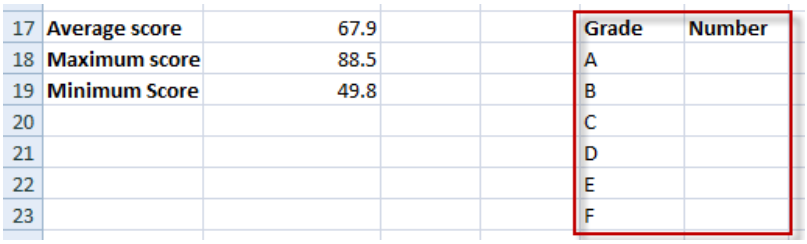
Grade	Number
A	**=COUNTIF(N2:N15,"A")**
B	**=COUNTIF(N2:N15,"B")**
C	**=COUNTIF(N2:N15,"C")**
D	**=COUNTIF(N2:N15,"D")**
E	**=COUNTIF(N2:N15,"E")**
F	**=COUNTIF(N2:N15,"F")**

The statement **COUNTIF (N2:N15,"A")** means that, we will count the number of grade **A's** in the cells containing the grade which is cell **N2** to cell **N15.**

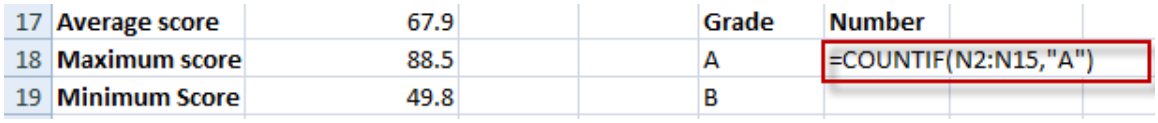
Type the following data in the cells indicated

Date	Cell
Grade	**E17**
Number	**F17**
A	**E18**

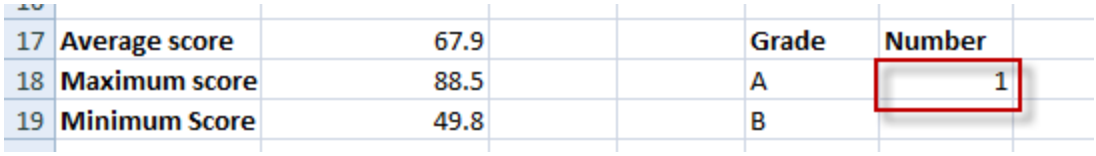
B	E19
C	E20
D	E21
E	E22
F	E23



To count the number of **A's** type the function **=COUNTIF (N2:N15,"A")** in cell **F18.**



Press **Enter** to get the number of students who got **A**



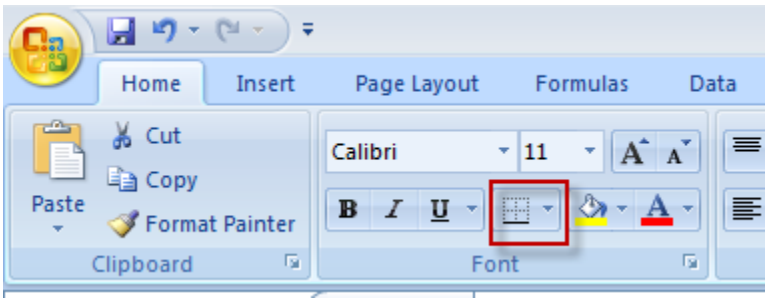
Repeat the procedure for all the grades to get the number of students who had the various grades using the table below

Grade	Number
B	=COUNTIF(N2:N15,"B")
C	=COUNTIF(N2:N15,"C")
D	=COUNTIF(N2:N15,"D")
E	=COUNTIF(N2:N15,"E")
F	=COUNTIF(N2:N15,"F")

17	**Average score**	67.9		**Grade**	**Number**
18	**Maximum score**	88.5		A	1
19	**Minimum Score**	49.8		B	5
20				C	5
21				D	2
22				E	1
23				F	0

Showing Borders

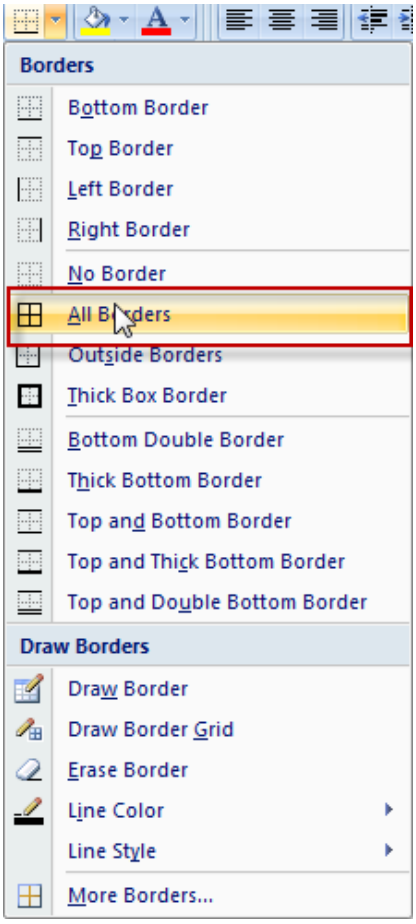
To show the borders on the grade and number table, we will use the **border tool** in the font group on the **Home tab**.



To show the borders highlight the grade and number table by clicking and dragging on them.

17	**Average score**	67.9		**Grade**	**Number**
18	**Maximum score**	88.5		A	1
19	**Minimum Score**	49.8		B	5
20				C	5
21				D	2
22				E	1
23				F	0
24					

Click on the **borders** and select **All borders**

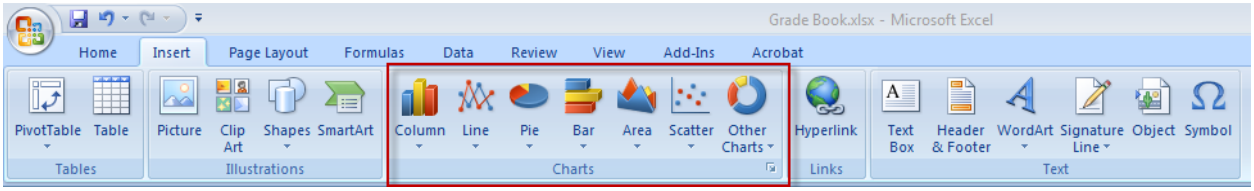


The borders will be displayed as below.

17	**Average score**	67.9		**Grade**	**Number**
18	**Maximum score**	88.5		A	1
19	**Minimum Score**	49.8		B	5
20				C	5
21				D	2
22				E	1
23				F	0

Creating Charts

We can create different types of charts using excel we can access the chats by using the **chart group** in the **insert tab**.

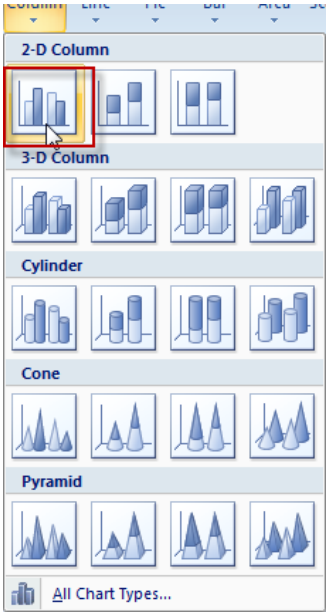


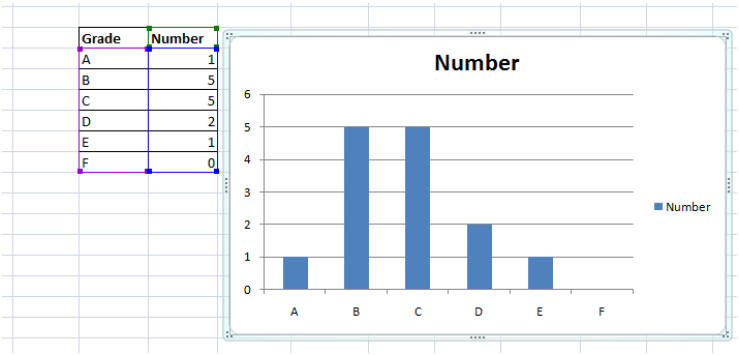
We want to plot a **column bar chart** for the students' grade summary. To plot the column bar, highlight the student grade summary.

16					
17	**Average score**	67.9		**Grade**	**Number**
18	**Maximum score**	88.5		A	1
19	**Minimum Score**	49.8		B	5
20				C	5
21				D	2
22				E	1
23				F	0

Click on the **insert** tab then click on the **Column** in the chart group then select the first in the **2-D column** group.

The chart will appear as below.



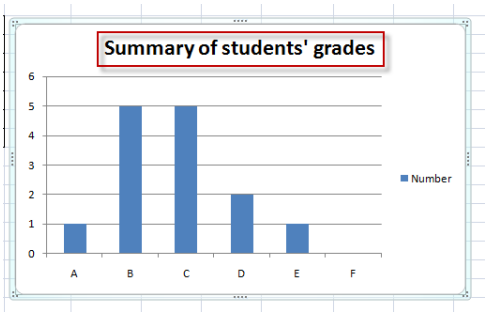


Edition Charts

We can edit the chart that we have drawn by adding chart title, labels and changing the chart colour.

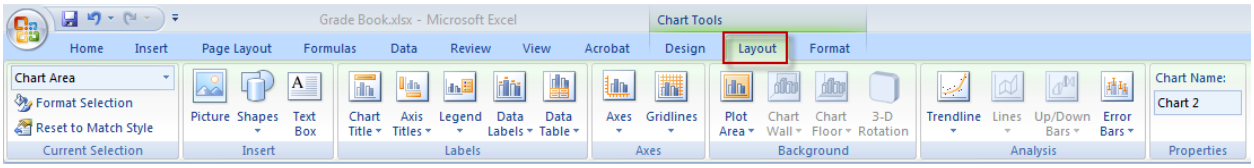
Changing Chart Titles

Click on the chart title, delete the **Number** written in there by using the **Backspace** key or **Delete** key and type **Summary of Students' grades**.

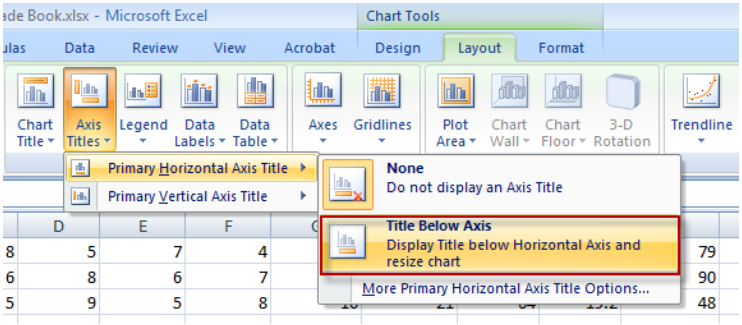


Adding Titles to the Axis

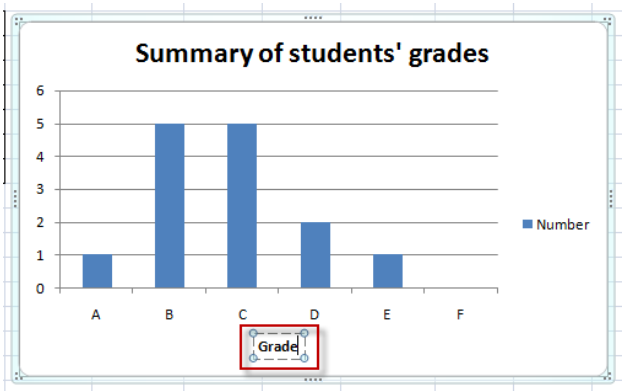
Select the **chart** and click on the **layout tab**. Note that if you do not select the chart, the layout tab will not display.



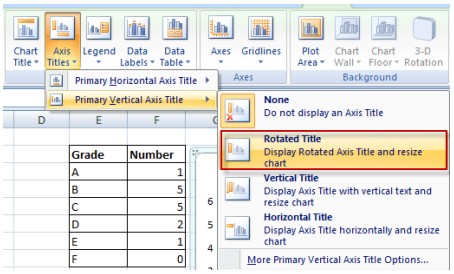
Click on the **Axis titles**, select **Primary Horizontal Axis title**, and then click on **Title Below Axis**



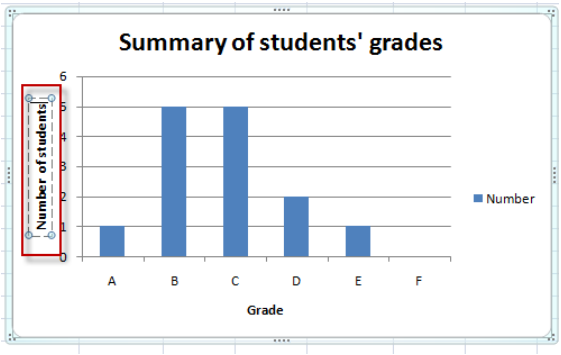
A text box will be displayed below the chart. Click on it and type **Grade**



We want to label the vertical axis of the graph. Click on the chart, select the layout tab, and click on the **Axis titles,** select **Primary Vertical Axis title**, and then click on **Rotated Title**

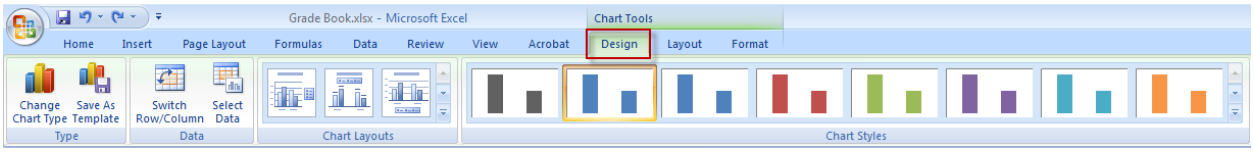


A text box will be displayed along the vertical axis of the chart. Click on it and type **Number of students.**

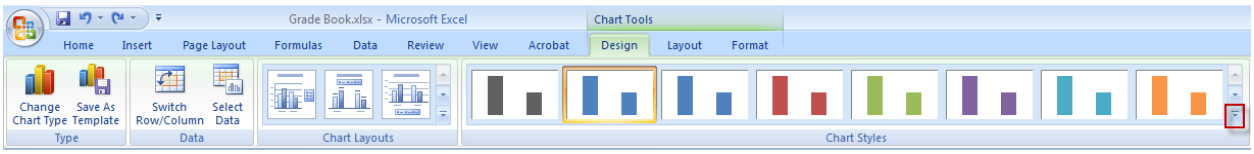


Changing the Design of Charts

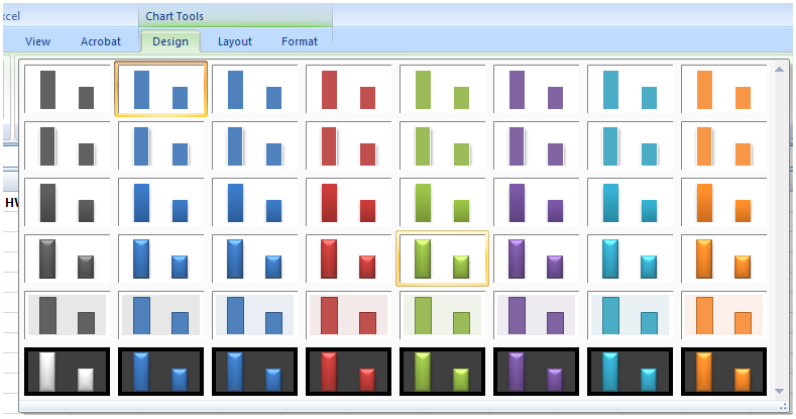
Select the chart, click on the **Design** tab. Note that if you do not select the chart, the **Design** tab will not display



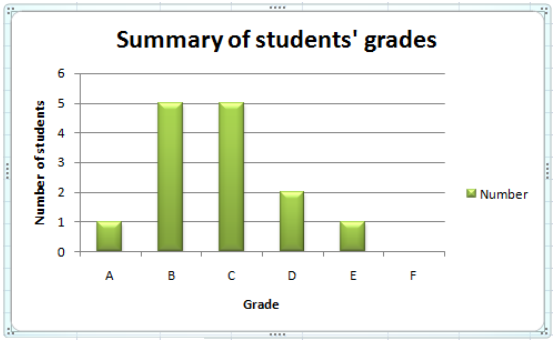
Click the arrow on the **Chart Styles** group



This will display all the chart styles.



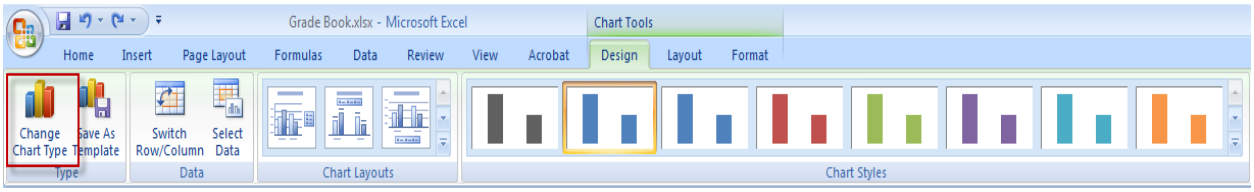
Select any of them to apply.



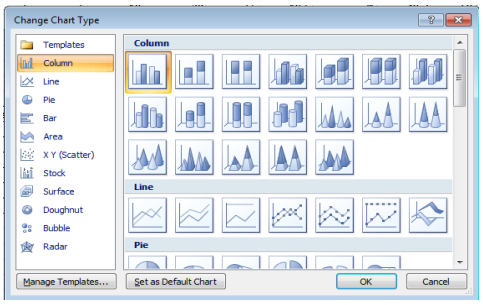
Changing Chart Type

We can change the type of chart that we have drawn.

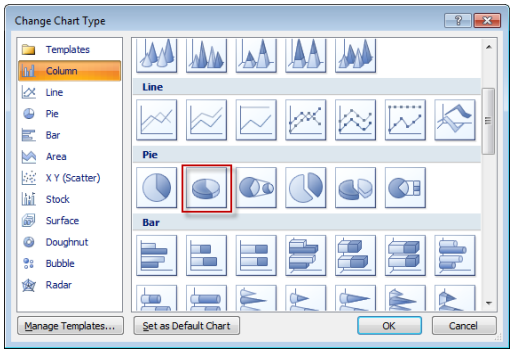
Select the chart, click on the **Design** tab and select **Change Chart Type**



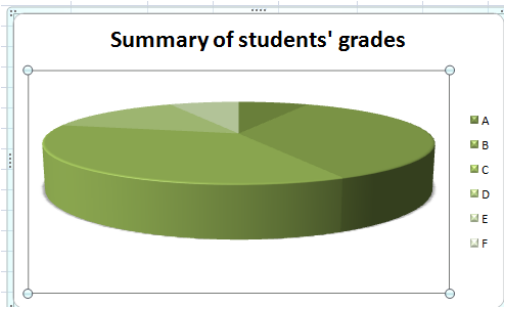
The **dialog box** below will display showing the various chart types and styles.



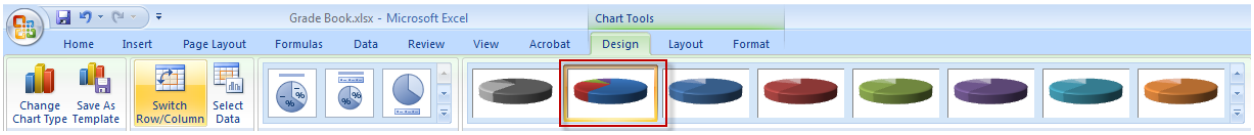
We can select any of the charts and it will apply. For example select scroll down the page and select from the pie group.



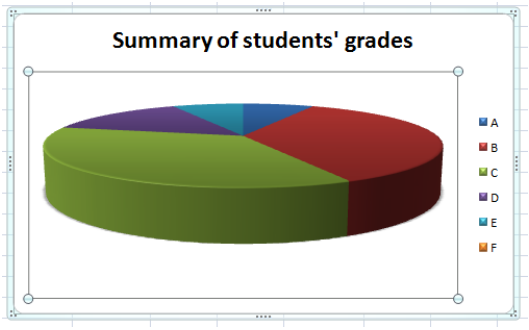
The will change the chart into the pie chart below



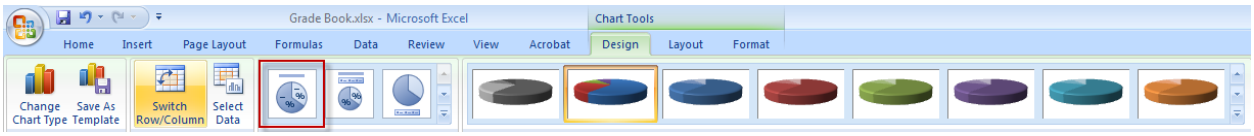
We can now change the design of the pie chart by selecting any style from the design group.



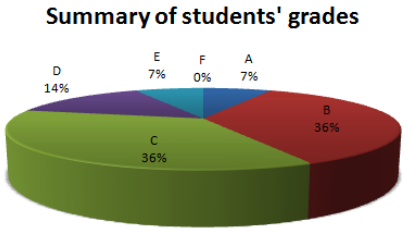
This will change the pie chart into



We can find the percentages if the grades by clicking on the first layout in the **chart layout** group on the **Design** tab.

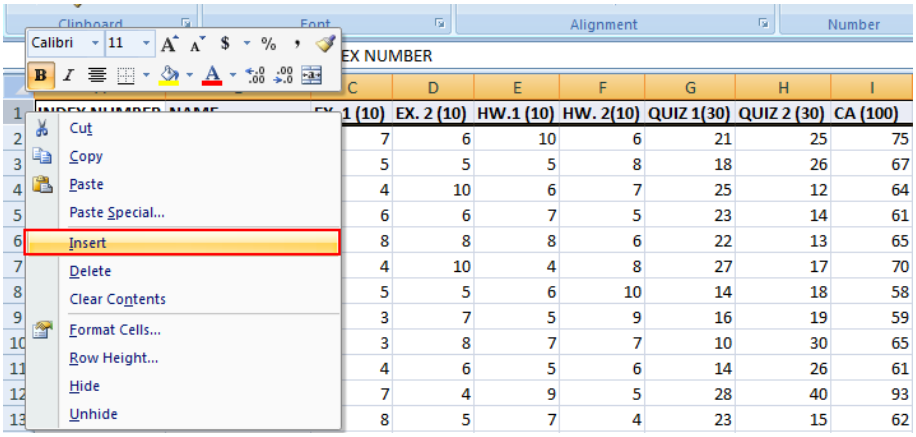


The pie chart will change into

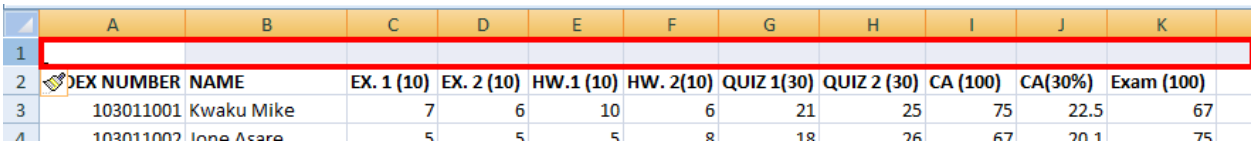


Inserting New Rows

To insert a new **Row** above the labels, **Right click** on **Row1** and select **Insert**



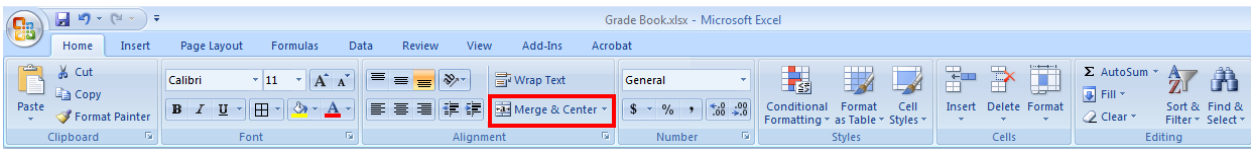
A new **Row** will display above the labels



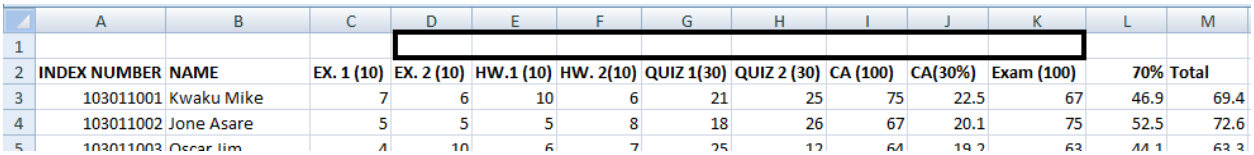
	A	B	C	D	E	F	G	H	I	J	K
1											
2	DEX NUMBER	NAME	EX. 1 (10)	EX. 2 (10)	HW.1 (10)	HW. 2(10)	QUIZ 1(30)	QUIZ 2 (30)	CA (100)	CA(30%)	Exam (100)
3	103011001	Kwaku Mike	7	6	10	6	21	25	75	22.5	67
4	103011002	Jone Asare	5	5	5	8	18	26	67	20.1	75

Merging cells

We can merge two or more cells as one cell. We do this by using the **merge &center** button on the home tab.

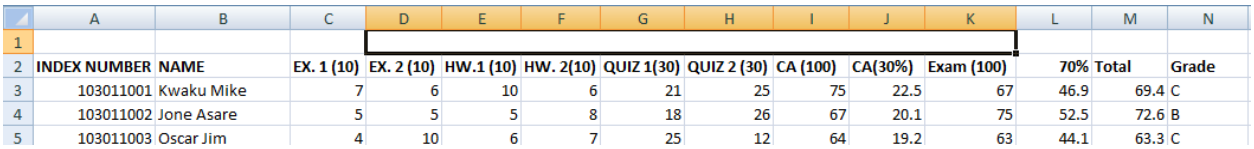


To merge cells **D1** to **K1**, select the cells.



	A	B	C	D	E	F	G	H	I	J	K	L	M
1													
2	INDEX NUMBER	NAME	EX. 1 (10)	EX. 2 (10)	HW.1 (10)	HW. 2(10)	QUIZ 1(30)	QUIZ 2 (30)	CA (100)	CA(30%)	Exam (100)	70%	Total
3	103011001	Kwaku Mike	7	6	10	6	21	25	75	22.5	67	46.9	69.4
4	103011002	Jone Asare	5	5	5	8	18	26	67	20.1	75	52.5	72.6
5	103011003	Oscar Jim	4	10	6	7	25	12	64	19.2	63	44.1	63.3

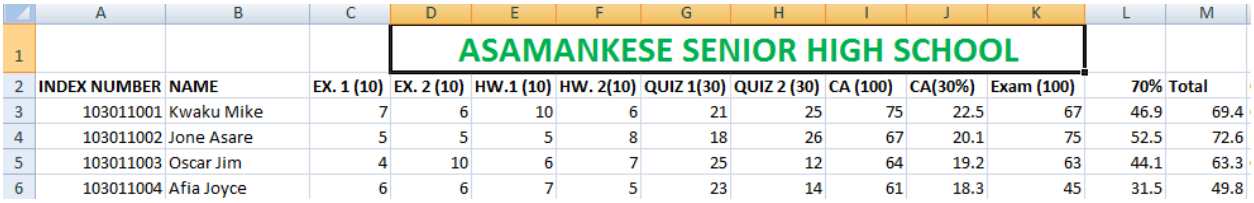
Click on the **merge & center** to merge them.



	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1														
2	INDEX NUMBER	NAME	EX. 1 (10)	EX. 2 (10)	HW.1 (10)	HW. 2(10)	QUIZ 1(30)	QUIZ 2 (30)	CA (100)	CA(30%)	Exam (100)	70%	Total	Grade
3	103011001	Kwaku Mike	7	6	10	6	21	25	75	22.5	67	46.9	69.4	C
4	103011002	Jone Asare	5	5	5	8	18	26	67	20.1	75	52.5	72.6	B
5	103011003	Oscar Jim	4	10	6	7	25	12	64	19.2	63	44.1	63.3	C

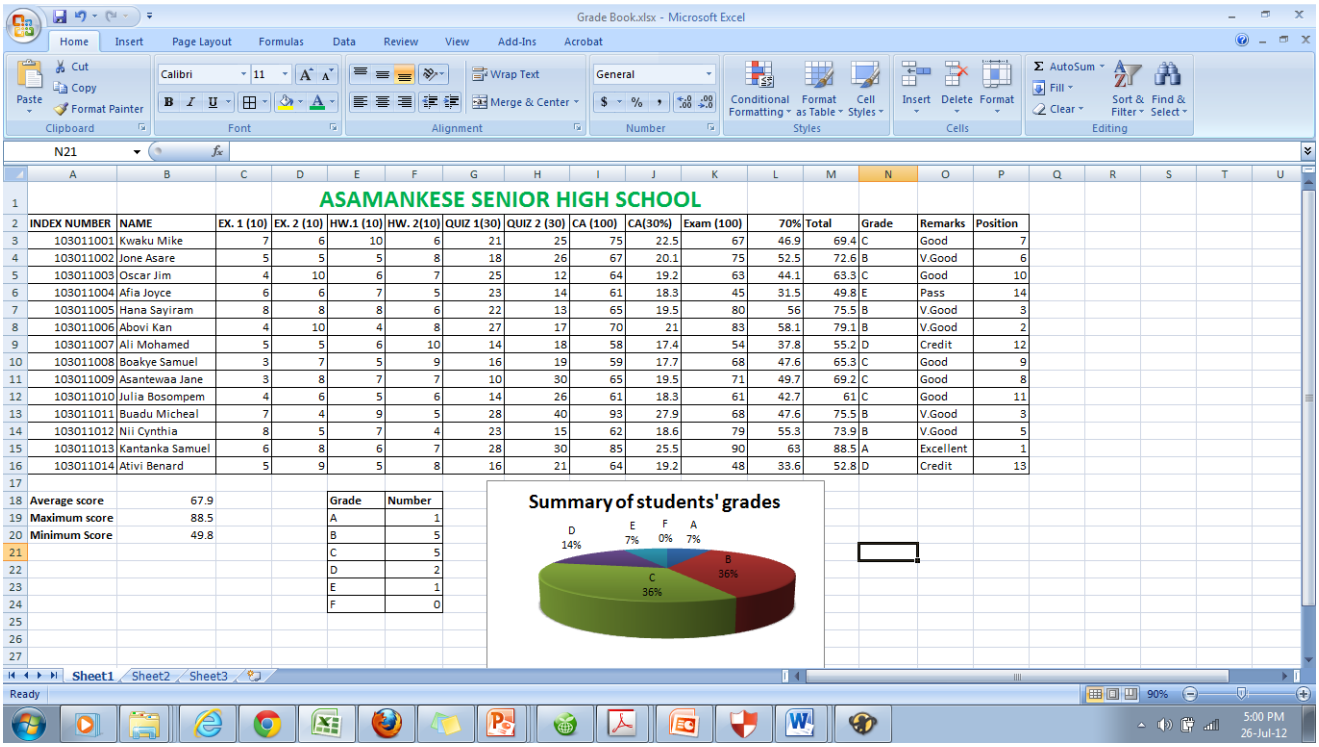
Note that after merge all the border lines are remove and all the cells are combined as one cell.

Type in the merged cells **ASAMANKESE SENIOR HIGH SCHOOL.** Use a green font colour and change the font size to 22.



	A	B	C	D	E	F	G	H	I	J	K	L	M
1				ASAMANKESE SENIOR HIGH SCHOOL									
2	INDEX NUMBER	NAME	EX. 1 (10)	EX. 2 (10)	HW.1 (10)	HW. 2(10)	QUIZ 1(30)	QUIZ 2 (30)	CA (100)	CA(30%)	Exam (100)	70%	Total
3	103011001	Kwaku Mike	7	6	10	6	21	25	75	22.5	67	46.9	69.4
4	103011002	Jone Asare	5	5	5	8	18	26	67	20.1	75	52.5	72.6
5	103011003	Oscar Jim	4	10	6	7	25	12	64	19.2	63	44.1	63.3
6	103011004	Afia Joyce	6	6	7	5	23	14	61	18.3	45	31.5	49.8

Congratulations! You have successfully designed a grade book in Ms. Excel. The complete Grade book will look like the figure below.


Grade Book.xlsx - Microsoft Excel
Home
Insert
Page Layout
Formulas
Data
Review
View
Add-Ins
Acrobat
N21
ASAMANKESE SENIOR HIGH SCHOOL
INDEX NUMBER | NAME | EX. 1 (10) | EX. 2 (10) | HW.1 (10) | HW. 2(10) | QUIZ 1(30) | QUIZ 2 (30) | CA (100) | CA(30%) | Exam (100) | 70% | Total | Grade | Remarks | Position
103011001 | Kwaku Mike | 7 | 6 | 10 | 6 | 21 | 25 | 75 | 22.5 | 67 | 46.9 | 69.4 | C | Good | 7
103011002 | Jone Asare | 5 | 5 | 5 | 8 | 18 | 26 | 67 | 20.1 | 75 | 52.5 | 72.6 | B | V.Good | 6
103011003 | Oscar Jim | 4 | 10 | 6 | 7 | 25 | 12 | 64 | 19.2 | 63 | 44.1 | 63.3 | C | Good | 10
103011004 | Afia Joyce | 6 | 6 | 7 | 5 | 23 | 14 | 61 | 18.3 | 45 | 31.5 | 49.8 | E | Pass | 14
103011005 | Hana Sayiram | 8 | 8 | 8 | 6 | 22 | 13 | 65 | 19.5 | 80 | 56 | 75.5 | B | V.Good | 3
103011006 | Abovi Kan | 4 | 10 | 4 | 8 | 27 | 17 | 70 | 21 | 83 | 58.1 | 79.1 | B | V.Good | 2
103011007 | Ali Mohamed | 5 | 5 | 6 | 10 | 14 | 18 | 58 | 17.4 | 54 | 37.8 | 55.2 | D | Credit | 12
103011008 | Boakye Samuel | 3 | 7 | 5 | 9 | 16 | 19 | 59 | 17.7 | 68 | 47.6 | 65.3 | C | Good | 9
103011009 | Asantewaa Jane | 3 | 8 | 7 | 7 | 10 | 30 | 65 | 19.5 | 71 | 49.7 | 69.2 | C | Good | 8
103011010 | Julia Bosompem | 4 | 6 | 5 | 6 | 14 | 26 | 61 | 18.3 | 61 | 42.7 | 61 | C | Good | 11
103011011 | Buadu Micheal | 7 | 4 | 9 | 5 | 28 | 40 | 93 | 27.9 | 68 | 47.6 | 75.5 | B | V.Good | 3
103011012 | Nii Cynthia | 8 | 5 | 7 | 4 | 23 | 15 | 62 | 18.6 | 79 | 55.3 | 73.9 | B | V.Good | 5
103011013 | Kantanka Samuel | 6 | 8 | 6 | 7 | 28 | 30 | 85 | 25.5 | 90 | 63 | 88.5 | A | Excellent | 1
103011014 | Ativi Benard | 5 | 9 | 5 | 8 | 16 | 21 | 64 | 19.2 | 48 | 33.6 | 52.8 | D | Credit | 13
Average score 67.9
Maximum score 88.5
Minimum Score 49.8
Grade | Number
A | 1
B | 5
C | 5
D | 2
E | 1
F | 0
Summary of students' grades
D 14%
E 7%
F 0%
A 7%
B 36%
C 36%
Sheet1
Sheet2
Sheet3
Ready
90%
5:00 PM
26-Jul-12

Practical Activity

Activity 1: Excel Grade Book

In this activity you will create an Excel spreadsheet to calculate students' grades. There will be 3 quiz grades and an exam grade. The exam counts 30% of the final grade and the quizzes 70%. The spreadsheet will calculate the weighted final grade as a percentage, calculate the equivalent letter grade, and rank the students.

1. Start→Programs→Microsoft Excel. You should see a new blank worksheet.

2. In row 1 enter the headings as shown below. In rows 2 – 6 enter data for five students. You can use any names and any grades as long as no grade exceeds 100.

	A	B	C	D	E	F	G	H	I
1	ID No.	Name	Quiz1	Quiz2	Quiz3	Quiz avg	Exam	Final grade	Letter Grade
2	1010	Mary	70	89	75		77		
3	1011	Juan	88	77	85		64		
4	1012	David	69	82	80		82		
5	1013	Sarah	100	70	70		39		
6	1014	Felicity	95	90	65		71		

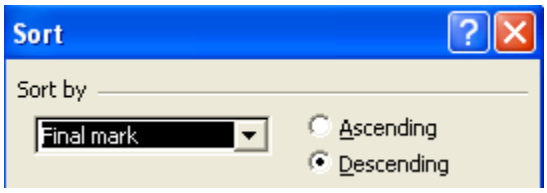
3. To calculate the average of the three quizzes:
   a. Move to cell F2. From the Insert menu, choose Function. Choose Average function. Click OK.
   b. Verify that the range of cells to be averaged is correct (C2:E2) and click OK.

4. To replicate the Average function for the other students:
   a. Drag to auto fill cells F2 through F6.

5. Now enter a formula for the final grade, which is weighted 70% quizzes and 30% exam.
   a. Move to cell H2 and click in the formula bar. Type: =0.7*F2+0.3*G2 and Enter.
   b. Drag to auto fill cells H2 through H6.
   c. Format the cells to one decimal place (Home tab→Number group→Decrease decimal)
   d. Look at the resulting grades to verify that they make sense. If not, you probably did something wrong.

6. Save what you've done so far (Office button →Save As).

7. Suppose you want to rank the students.



   a. Place the cursor on the far left side so that it becomes an arrow and drag it down to highlight all the rows.
   b. From the Data tab, choose Sort.
   c. Choose Sort by Final grade, descending, with header row. Click OK.

8. Now put the student names in alphabetical order.
   a. Place the cursor on the far left side and drag it down to highlight all the rows.
   b. From the Data menu, choose Sort.
   c. Choose Sort by Name, ascending, with header row. Click OK.

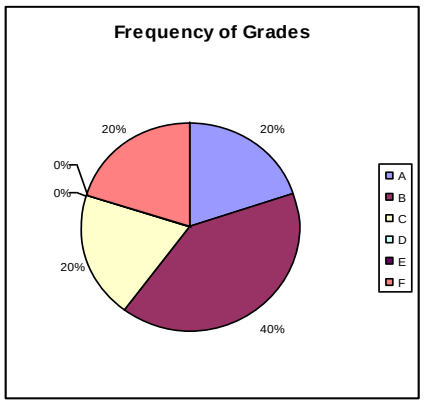
9. To calculate the letter grade, use a formula involving **If…Then…Else** statements.
   a. Move to cell I2.
   b. Click in the formula bar and type: =IF(H2>=90, "A", IF(H2>=80, "B", IF(H2>=70, "C", IF(H2>=60, "D", IF(H2<60, "F"))))) and press Enter.
   c. Drag to auto fill cells I2 through I6

10. Let's add another column to rank the students based on their final grade.
   a. In cell J1, type Rank.
   b. Move to cell J2. Click in the formula bar and type: =RANK (H2,H2:H6). This calculates the rank of H2 (the first student's final grade) in the range H2:H6 (all students). Press Enter.
   c. Drag to auto fill cells J2 through J6 and choose Edit → Fill → Down.
   d. Do the resulting ranks make sense? No, something is wrong! What? Examine the formula for J3. The range in the formula should have stayed as an *absolute* range J2:J6 but it changed *relative* to the row. That's what normally happens when you use Fill.
   e. Let's fix the problem. Excel uses the $ symbol to indicate an ***absolute*** reference to a cell or a range of cells. Change the formula in cell J2 to: =RANK(H2,$H$2:$H$6). Then drag to highlight cells J2 through J6 and choose Edit→Fill→Down.

11. Save your work again (Office button →Save).

12. *Problem solving challenge:*

Go to a blank area of the worksheet and create a frequency table that calculates how many students received each letter grade. Hint: use the COUNTIF function to count how many times "A" occurs in the range I2:I6; for example, =COUNTIF(I2:I6, "A"). Similarly, for "B", etc. If you Fill→Down, remember to make the range absolute rather than relative.



Add a column to show the percentage to one decimal place (Home tab→Number→Percentage and set Decimals to 1).

Grade	Freq	Percent
A	1	20.0%
B	2	40.0%
C	1	20.0%
D	0	0.0%
F	1	20.0%
Total	5	100.0%

Then make a pie chart of the results. The chart should have a title and a legend. (Obviously, your data will be different from mine.)

Check yourself: If you change one student grade, both the frequency table and the pie chart will update automatically. Try it! That's the power of spreadsheets.

Activity 2: Nutritional Value Calculation

Synopsis

One day you decide to eat at Papaye Restaurant for all three meals: breakfast, lunch, and dinner. Design a spreadsheet in Excel to calculate the nutritional value of your choices.

Columns

- The columns will give the meal (breakfast, lunch, or dinner), the name of the food, calories, and two nutritional values of your choice.
- In addition, insert a column (after meal and before the name of the food) where you enter the number of servings (because maybe you'll want 2 cheeseburgers for lunch or 3 creams for coffee or ½ packet of salad dressing).

Rows

- The rows will list a total of 10-12 food items you've chosen for breakfast, lunch and dinner. Don't forget the extras, like salad dressing, coffee cream, and ketchup.

- Insert a row at the bottom to show the totals for daily calories and nutritional values.

Cells

- Enter the name of each food item and the number of servings in the appropriate cells.
- Enter **formulas** to multiply the number of servings times the calories. For example, if the number of servings of coffee cream is in cell B4 and one serving is 20 calories, then enter this formula for ketchup calories: =B4*20, where * represents multiplication. Similarly enter **formulas** to multiply the number of servings times the nutritional values. Every cell in these three columns should have a formula, not a constant, because the spreadsheet should be adaptable to any number of servings.
- Enter **formulas** for the total calories and total nutritional values (Insert→Function→Sum).

Formatting

- Add colour to highlight the first row (Format→Cells→Patterns).
- Add grid lines for inside and outline (Format→Cells→Border).
- Add a custom header with your name, right aligned (View→Header and Footer).
- Add a custom footer with the web source, centered

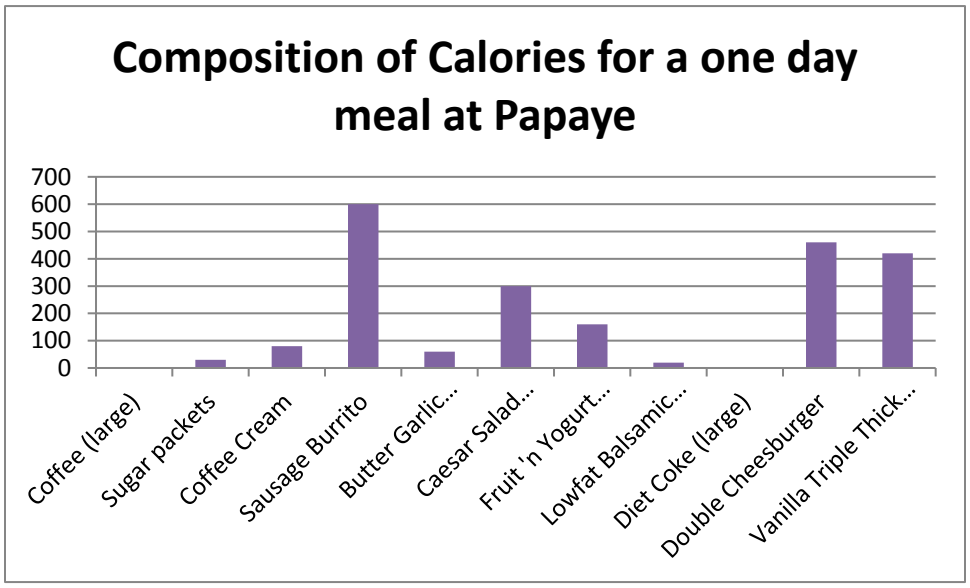
Sample:

Meal	Servings	Food	Calories	Total Fat (g)	Saturated Fat (g)
Breakfast	1	Coffee (large)	0	0	0
	2	Sugar packets	30	0	0
	4	Coffee Cream	80	8	6
	2	Sausage Burrito	600	32	12
Lunch	1	Butter Garlic Croutons	60	1	0
	1	Caesar Salad w/Crispy Chicken	300	13	4
	1	Fruit 'n Yogurt Parfait w/Granola	160	2	1
	0.5	Low-fat Balsamic Vinaigrette Dressing	20	1.5	0
	1	Diet Coke (large)	0	0	0

Dinner	1	Double Cheeseburger	460	23	11
	1	Vanilla Triple Thick Shake (12 oz.)	420	10	6
Totals			2130	90.5	40

Create a bar or column chart to compare the **calories** of your food items.

- Highlight the Food and Calories columns, including the heading row but excluding the Total row. Choose Insert→Chart.
- Your chart should have a meaningful title. The names of the food items should be clearly legible (adjust the size of the chart by dragging; adjust the size of the axis font by right-clicking on it). A legend is not needed. Labels for the x and y axes are not needed.



Activity 3: Comparison Shopping Activity

In this activity you will create an Ms. Excel spreadsheet to compare prices of four food items at three different grocery stores. You will also create a chart of the data.

1. Start→Programs→Microsoft Excel. You should see a new blank worksheet.

2. a. Use the arrow keys to move to cell B1 and type the name of the first store: Melcom.
   b. Move to cell C1 and type the second store: Shoprite. Press Enter.
   c. Move to D1 and type the third shop: Game.

3. Continue entering data as follows. Make up your own prices or use these. Use the arrow keys to move around. To stretch the width of column A, put the cursor ↔ on the line between the column names A and B, and drag.

	A	B	C	D
1		Melcom	Shoprite	Game
2	Milk (gal)	2.69	2.19	2.29
3	Eggs (doz lrg)	0.89	0.99	0.89
4	Bananas (1 lb)	0.59	0.65	0.49
5	Cheerios (10 oz)	2.89	2.99	2.29

4. Now let's find the sum of the four items at Melcom.
   a. In cell A6, type Total.
   b. Move to cell B6. From the Insert menu, choose Function. Choose SUM. Click OK.
   c. Verify that the range of cells to be summed is correct (B2:B5) and click OK.

5. Now let's replicate the SUM function for the other two stores.
   a. Move to cell B6 and choose Home tab→ Copy.
   b. Move to cell C6 and view its function in the ***fx*** box at the top: =SUM(C2:C5).
   d. Move to cell D6 and view its function in the ***fx*** box at the top: =SUM(D2:D5).
   e. Compare the totals. What conclusions can you make about the food prices at these three stores?

6. Suppose we want to know the average cost of each food item.
   a. In cell E1, type Average Cost. Stretch the column if necessary.
   b. In cell E2, choose Insert → Function → Average → OK.
   c. Verify that the range of cells to be averaged is correct (B2:D2) and click OK.

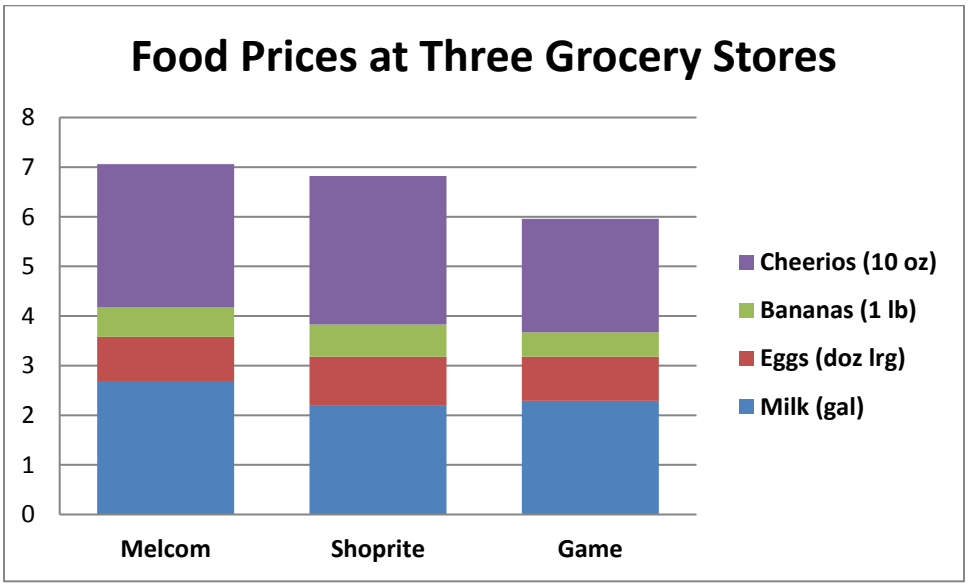
7. Now replicate the AVERAGE function for the other food items.
   a. Move to cell E2 and choose Edit → Copy.
   b. Drag to auto fill cells in the range E2:E6.
   c. Do a mental check: Do your numbers seem right? Are the functions in E2:E6 OK?

8. Let's format all the prices to the nearest cent.
   a. Drag to highlight all the cells with numbers, that is, those in the range B2:E6.
   b. Home tab→ Number group→ Number and choose Currency. Set Decimal Places to 2. If you don't want the $ sign to appear, set Symbol to none. Click OK.

9. Save your work so far: Office tab→ Save As. Name your file: Food Comparison.

10. Change some of the prices in the spreadsheet and verify that the Total and Average Cost change automatically. That's a powerful feature of Spreadsheets—when one cell changes, the cells that depend on that one change, too.

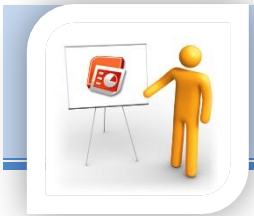
11. Let's make a chart to visually compare prices at the three stores.
   a. Drag to highlight cells in the range A1:D5. This is the portion of the data we want to graph, i.e. including the food and store names but not the totals or average cost.
   b. Choose Insert → Chart.
   c. Under chart type, choose Column. Under chart sub-type, choose Stacked Column.
   d. Click Next.
   e. Change to choose Series in Rows. Click Next.
   f. Type a title for the chart, such as: Food Prices at Three Grocery Stores.
   g. If you wish, type Cost for the Value (Y) axis. Click Next.
   h. Click Finish. Your chart should be similar to the following one.



12. Change some of the prices in the spreadsheet and note that the chart changes automatically.

13. Change the Chart Type by right-clicking in the white space on the chart itself. Try a Clustered Column. What info does the Clustered Column chart show best? What info does the Stacked Column chart show best?

14. Insert another row in the spreadsheet for another food item:
    a. Highlight row 6 and choose Insert → Row.
    b. Enter the name of the food and the prices. Do the Totals change automatically?
    c. Make a new chart that includes the additional food item.



CHAPTER 6
Presentation Graphics

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Introduction

In chapter 5, where learnt about Ms. Excel. We learnt how to format data and labels. We learnt how to type formulas and insert charts to represent data. In this chapter we will learn about using Ms. PowerPoint. We will use it create slides and apply designs and transitions to them. We will also learn how to animate slides and create slideshows.

Learning Objectives

After completing this chapter you will be able to

- Identify presentation graphics software
- Identify the features of presentation graphics software
- Create PowerPoint slides
- Apply teams to slides
- Add animation to slides
- Create a professional PowerPoint presentation

What is Presentation Graphics Software?

Presentation graphics software is intended primarily for creating slide-show presentations, overhead transparencies, reports, portfolios, and training materials. Presentation graphics software uses graphics, animation, sound, and data or information to make visual presentations. Pages in presentation software are often referred to as **slides**, and visual presentations are commonly called **slide shows**. Slideshows can consist of **images, video**, **animation**, and **sound**. You may already be accustomed to seeing presentation graphics because many University instructors now use such software to accompany their lectures. Well-known presentation graphics packages include **Microsoft PowerPoint**, **Corel Presentations**, **Harvard Graphics**, and **Presentation Graphics SDK.**

Microsoft Power Point

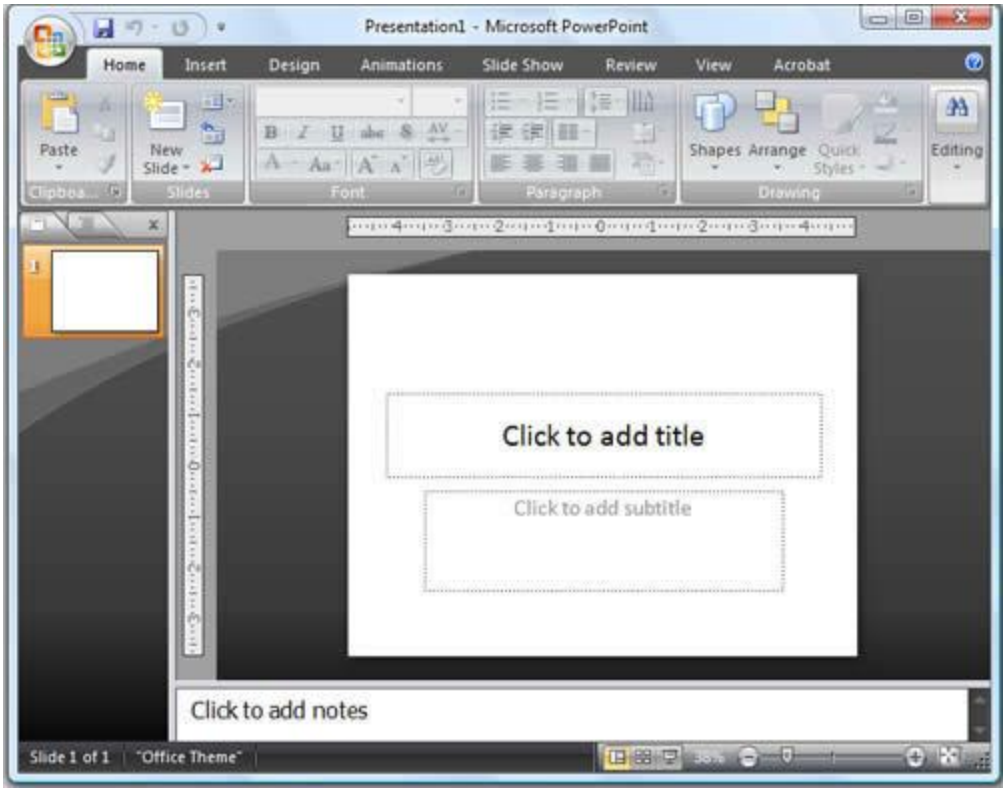
Microsoft PowerPoint which is the most popular presentation software and it provides three types of animation movements: **entrance**, **emphasis**, and **exit** of elements on a slide. These are offered called Custom Animations. **Transitions** are movements between slides. These can be animated in a variety of ways. Custom animation can be used to animate pictures to enter, exit, or move. Speech bubbles with edited text can be set on and off to create speech. Ms. PowerPoint offers **templates** to help you organize your presentation.

Getting started with Microsoft PowerPoint

The PowerPoint Window

Ms. PowerPoint is a presentation software package. With Ms. PowerPoint, you can easily create slide shows. Trainers and other presenters use slide shows to illustrate their presentations.

This section introduces you to the Ms. PowerPoint window. You use the window to interact with the software. To begin, open Ms. PowerPoint 2007. The window appears and your screen looks similar to the one shown.



Note: Your screen will probably not look exactly like the screen shown. In Ms. PowerPoint 2007, how a window displays depends on the size of the window, the size of your monitor, and the resolution to which your monitor is set. Resolution determines how much information your computer monitor can display. If you use a low resolution, less information fits on your screen, but the size of your text and images are larger. If you use a high resolution, more information fits on your screen, but the size of the text and images are smaller. Also, settings in Ms. PowerPoint 2007, Windows 7, Windows Vista, and Windows XP allow you to change the colour and style of your windows.

The Microsoft Office Button

In the upper-left corner is the Microsoft Office button. When you click the button, a menu appears. You can use the menu to create a new file, open an existing file, save a file, and perform many other tasks.

The Quick Access Toolbar

Next to the Microsoft Office button is the Quick Access toolbar. The Quick Access toolbar provides you with access to commands you frequently use. By default, Save, Undo, and Redo appear on the Quick Access toolbar. You use Save to save your file, Undo to rollback an action you have taken, and Redo to reapply an action you have rolled back.

The Title Bar

The Title bar is located at the top in the center of the Ms. PowerPoint window. The Title bar displays the name of the presentation on which you are currently working. By default, Ms. PowerPoint names presentations sequentially, starting with Presentation1. When you save your file, you can change the name of your presentation.

The Ribbon

1	**Tabs**
2	Command Group

3	Command Buttons
4	Launcher

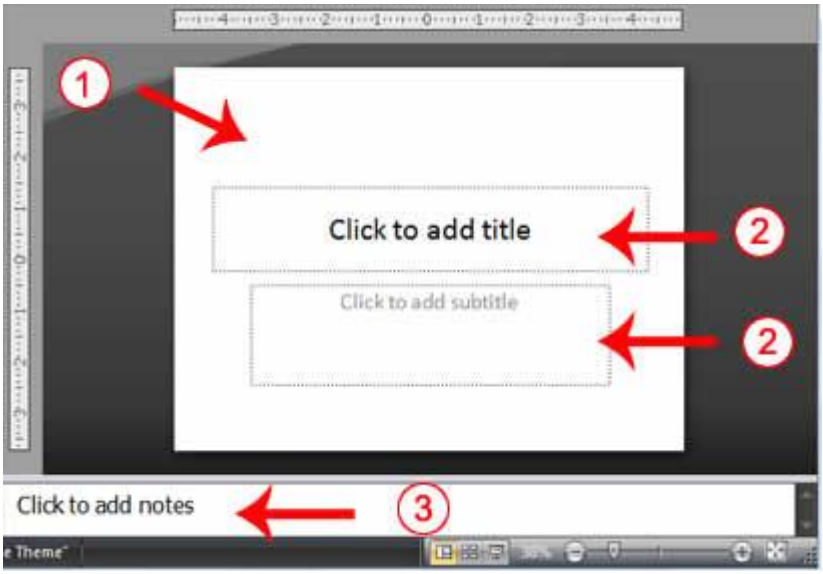
You use commands to tell Ms. PowerPoint what to do. In Ms. PowerPoint 2007, you use the Ribbon to issue commands. The Ribbon is located near the top of the Ms. PowerPoint window, below the Quick Access toolbar. At the top of the Ribbon are several tabs; clicking a tab displays several related command groups. Within each group are related command buttons. You click buttons to issue commands or to access menus and dialog boxes. You may also find a dialog box launcher in the bottom-right corner of a group. When you click the dialog box launcher, a dialog box makes additional commands available.

Rulers

Rulers are vertical and horizontal guides. You use them to determine where you want to place an object. If the rulers do not display in your Ms. PowerPoint window:

1. Click the View tab.
2. Click Ruler in the Show/Hide group. The rulers appear.

Slides, Placeholders, and Notes



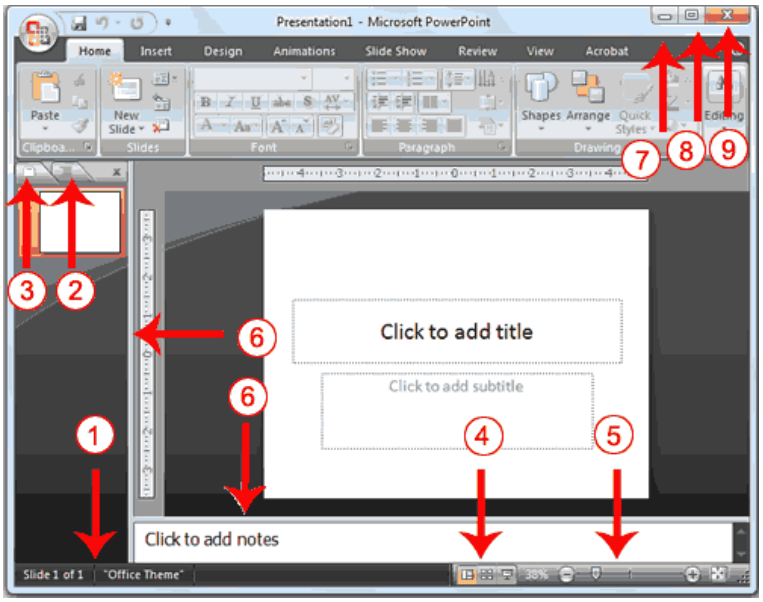
1	Slide

2	Placeholders
3	Notes

Slides appear in the center of the window. You create your presentation on slides. **Placeholders** hold the objects in your slide. You can use placeholders to hold text, clip art, charts, and more.

You can use the **notes** area to create notes to yourself. You can refer to these notes as you give your presentation.

Status Bar, Tabs, View Buttons, and More



1	Status Bar	**6**	Vertical & Horizontal Splitter Bars
2	Outline Tab	**7**	Minimize Button
3	Slides Tab	**8**	Maximize/Restore Button
4	View Buttons	**9**	Close Button
5	Zoom		

The **Status bar** generally appears at the bottom of the window. The Status bar displays the number of the slide that is currently displayed, the total number of slides, and the name of the design template in use or the name of the background.

The **Outline tab** displays the text contained in your presentation. The Slides tab displays a thumbnail of all your slides. You click the thumbnail to view the slide in the Slide pane.

The **View buttons** appear near the bottom of the screen. You use the View buttons to change between Normal view, Slider Sorter view, and the Slide Show view.

Normal View 

Normal view splits your screen into three major sections: the Outline and Slides tabs, the Slide pane, and the Notes area. The Outline and Slides tabs are on the left side of your window. They enable you to shift between two different ways of viewing your slides. The Slides tab shows thumbnails of your slides. The Outline tab shows the text on your slides. The Slide pane is located in the center of your window. The Slide pane shows a large view of the slide on which you are currently working. The Notes area appears below the Slide pane. You can type notes to yourself on the Notes area.

Slide Sorter View 

Slide Sorter view shows thumbnails of all your slides. In Slide Sorter view, you can easily add, delete, or change their order of your slides.

Slide Show 

Use the Slide Show view when you want to view your slides, as they will look in your final presentation. You can use the **F5** key to start this slide show. When in Slide Show view:

Esc	Returns you to the view you were using previously.
Left-clicking	Moves you to the next slide or animation effect. When you reach the last slide, you automatically return to your previous view.
Right-clicking	Opens a pop-up menu. You can use this menu to navigate the slides, add speaker notes, select a pointer, and mark your presentation.

Zoom  allows you to zoom in and zoom out on the window. **Zooming in** makes the window larger so you focus in on an object while **Zooming out** makes the window smaller so you can see the entire window.

You can click and drag the vertical and horizontal splitter bars to change the size of your panes.

You use the Minimize button  to remove a window from view. While a window is minimized, its title appears on the taskbar. You click the Maximize button  to cause a window to fill the screen. After you maximize a window, clicking the Restore button  returns the window to its former smaller size. You click the Close button  to exit the window and close the program.

Creating Your First PowerPoint Presentation

You create your Ms. PowerPoint presentation on slides. You use layouts to organize the content on each slide. Ms. PowerPoint has several slide layouts from which to choose. **Themes** are sets of colours, fonts, and special effects. **Backgrounds** add a coloured background to your slides. You can add themes and backgrounds to your slides. After you complete your slides, you can run your presentation.

Create a Title Slide

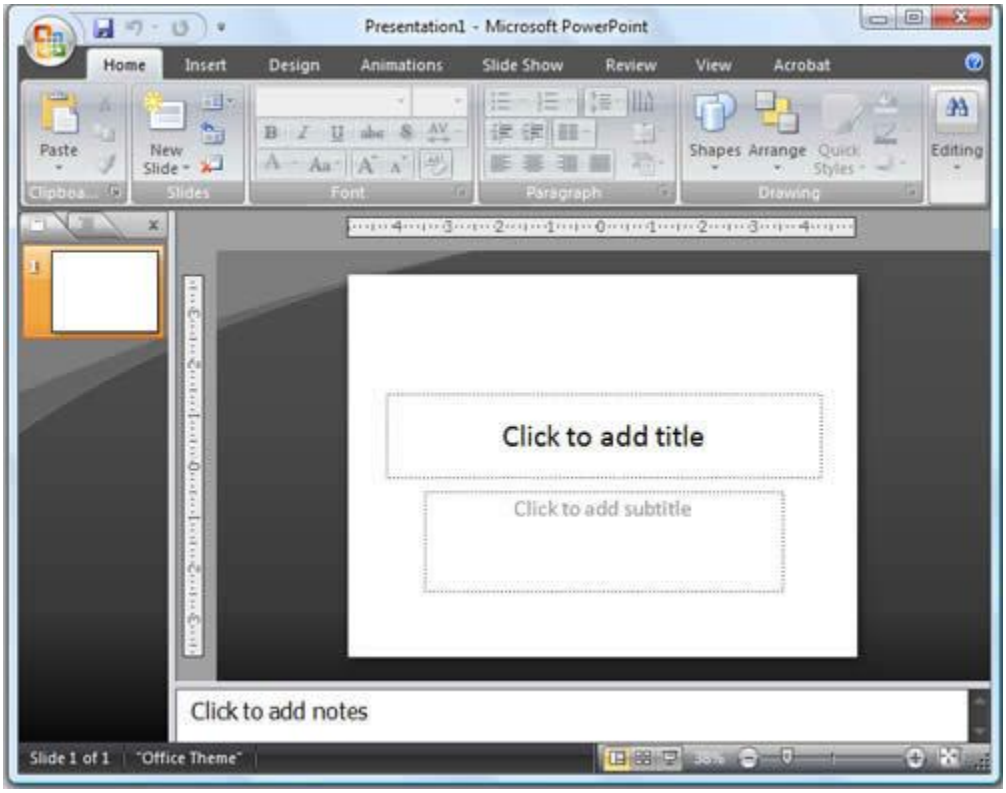
When you start Ms. PowerPoint, it displays the title slide in the Slide pane. You can type the title of your presentation and a subtitle on this slide. To enter text:

- Click and type the title of your presentation in the "Click to add title" area.
- Click and type a subtitle in the "Click to add subtitle" area.

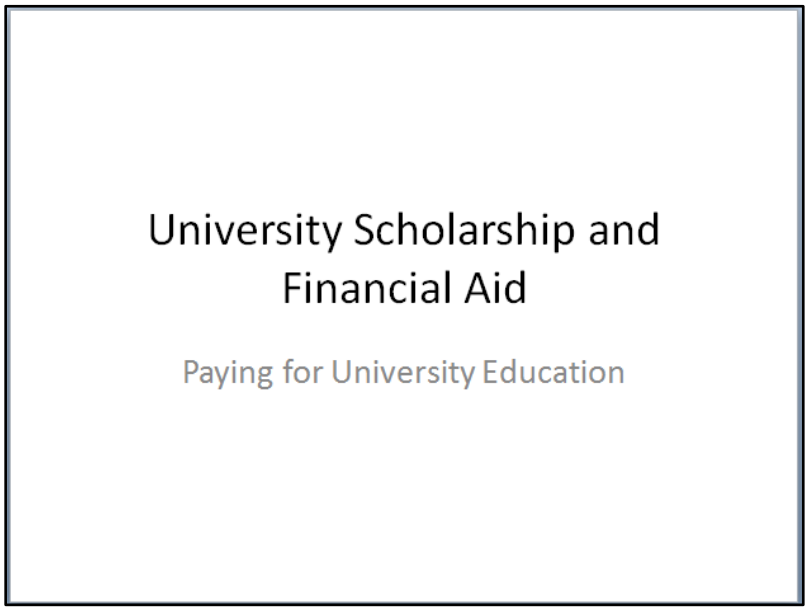
If you do not wish to use the title slide, click the Delete Slide button  in the Slides group on the Home tab.

Creating a Title Slide

1. Open Ms. PowerPoint. You are presented with a title slide.



2. Enter the information shown here. Type **University Scholarships and Financial Aid** in the Click to Add Title text box. Type **Paying for University Education** in the Click to Add Subtitle text box.

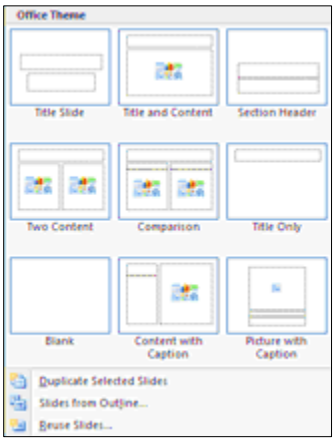


Creating New Slides

After completing your title slide, you can create additional slides. To create a new slide:

1. Choose the Home tab.
2. Click the New Slide button 

in the Slides group. The Office Theme dialog box appears and displays several layout templates.
3. Click the layout you want. The layout appears in the Slide pane of the Ms. PowerPoint window.



3. To add text, click inside the placeholder and type.
4. To add an additional slide to your presentation, do one of the following:

Right-click the slide layout. A menu appears. Click Layout and then click the layout you want.

Choose the Home tab, click the New Slide button 

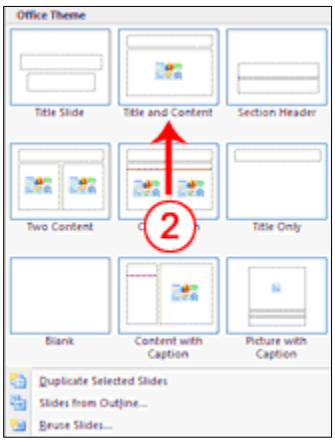
, and then choose the slide layout you want.

Create New Slides

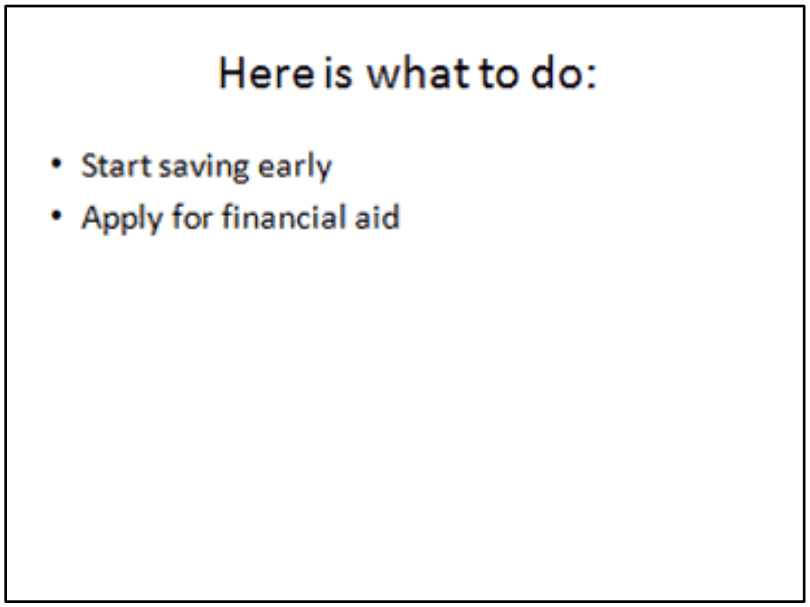
1. Choose the Home tab.
2. Click the New Slide button 

in the Slides group. The Office Theme dialog box appears.

3. Click the Title and Content Layout. The slide appears on the Slides tab.



4. Enter the information shown here. Type **Here is what to do:** (including the colon) in the Click to Add Title text box. Type the bulleted text in the Content text box.



Creating an Outline

If you need to present the information in your slide in outline form, you can easily create an outline by using the Increase List Level button to create a hierarchy.

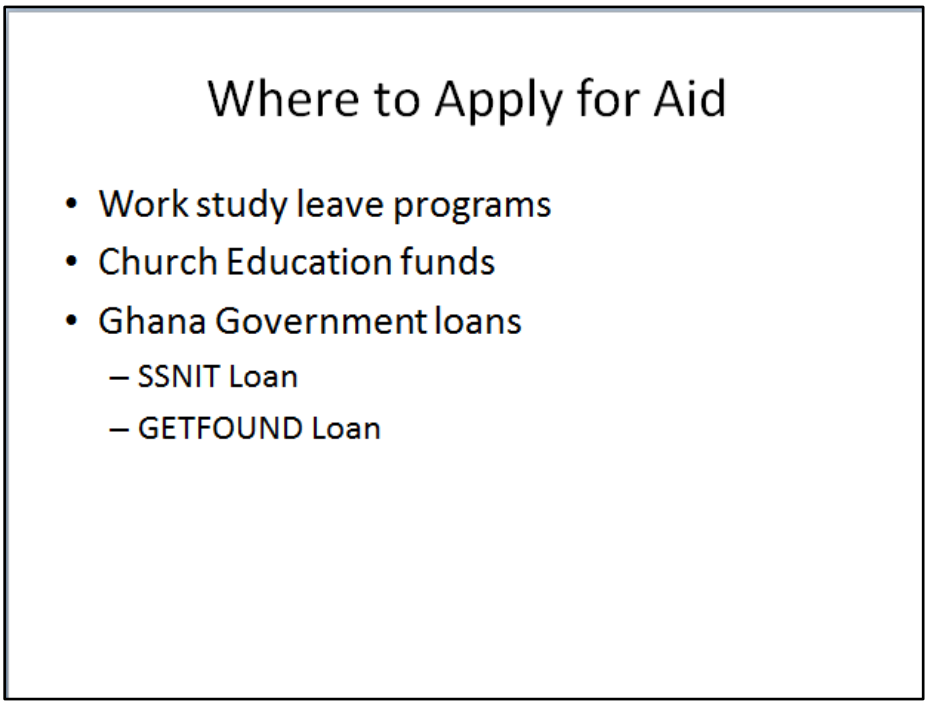
1. Choose the Home tab.

2. Click the New Slide button 

in the Slides group. The Office Theme dialog box appears.

3. Click the Title and Content layout.

4. Enter the information shown here. Click the Increase List Level button  in the Paragraph group to indent the bullets for Stafford Loans and PLUS Loans. If you ever need to decrease an indent, use the Decrease List Level button  in the Paragraph group.



Use Two-Column Text

You can also place text in two separate columns.

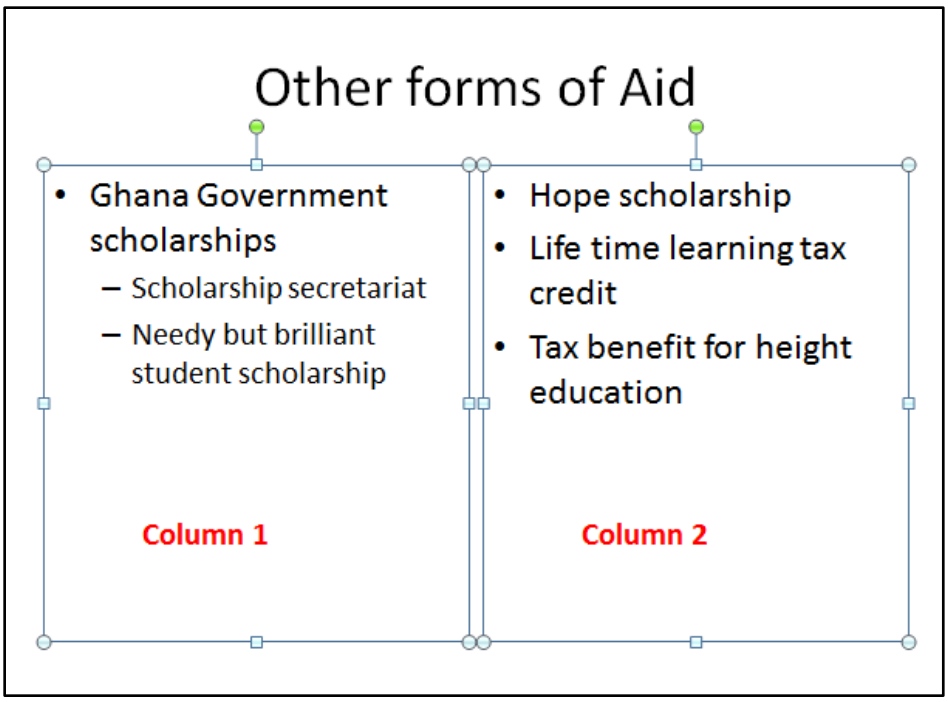
1. Choose the Home tab.

2. Click the New Slide button 

in the Slides group. The Office Theme dialog box appears.

3. Click the Two Content layout.

4. Enter the information shown here.



Make Changes to Your Slides

After creating a slide, if you want to add text:

1. Place the mouse pointer at the point at which you would like to add text.
2. Type the information you want to add.

If you would like to change text:

1. Select the text you want to change.
2. Type the new text.

You can use the Backspace key to delete text. You can also delete text by highlighting the text and pressing the Delete key.

Applying a Theme

A theme is a set of colours, fonts, and special effects. Themes provide attractive backgrounds for your Ms. PowerPoint slides.

To apply a theme to all of the slides in your presentation:

1. Choose the Design tab.

2. Click the More button in the Themes group.
3. Click the design you want.

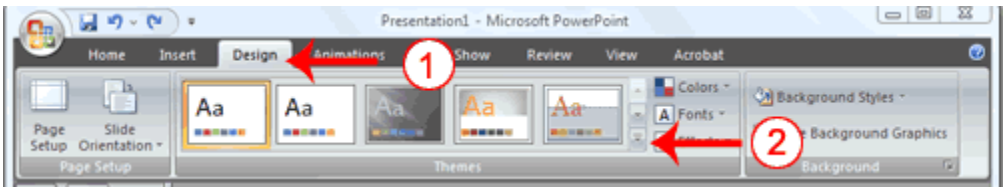
To apply a theme to selected slides:

1. Click the Slides tab, located on the left side of the window.
2. Hold down the Ctrl key and then click to select the slides to which you want to apply a theme.
3. Choose the Design tab.
4. Click the More button in the Themes group.
5. Right-click the theme you want to apply. A menu appears.
6. Click Apply to Selected Slides. Excel applies the theme to the slides you selected.

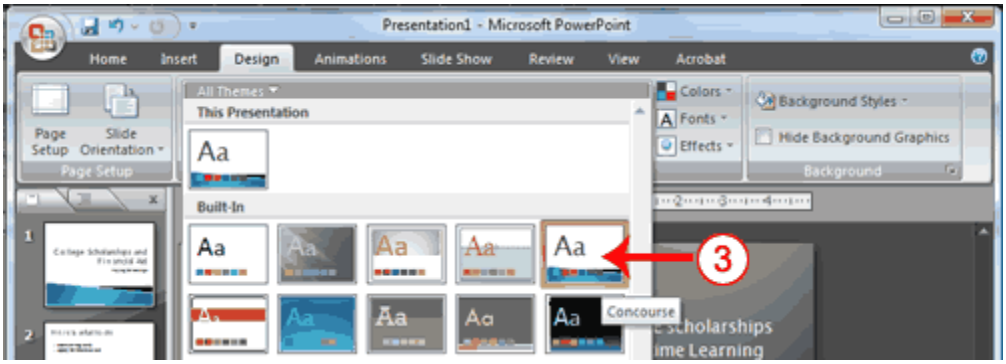
You can add a dramatic effect to your theme by applying a background.

1. Choose the Design tab.
2. Click the Background Styles button Background Styles.
3. Click the background you want.

Apply a Theme

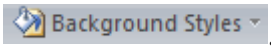


1. Choose the Design tab.
2. Click the More button in the Themes group.



3. Click the theme you want. Ms. PowerPoint applies the theme to all of the slides in your presentation.

Adding a Background

1. Choose the Design tab.
2. Click the Background Styles button  .
3. Click the background you want. Ms. PowerPoint applies the background to your slides.

Run Your Slide Show

After you create your slides, you can run your slide show:

1. Do any one of the following:
    - Press F5.
    - Choose the Slide Show tab. Click the From Beginning button  in the Start Slide Show group.

- Click the Slide Show icon in the bottom-right corner of your screen.

Your slide show appears on your screen.

Navigating the Slide Show	
Task	**Procedure**
Go to the next slide.	Do one of the following: • Press the Right Arrow key. • Press the Enter key. • Press the Page Down key. • Left-click the slide.
Go to the previous slide.	Do one of the following: • Press the Left Arrow key. • Press the Backspace key. • Press the Page Up key.
End the slide show and return to Ms. PowerPoint.	Press the Esc key.

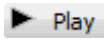
Animations, Transitions, Spell Check, Outline Tab, Slides Tab, Sorter View, and Printing

Animations control how objects move onto, off of, and around your slides. Transitions control how your presentation moves from one slide to the next. This lesson teaches you how to create animations and transitions. It also teaches how to spell-check your document, how to use the Outline and Slides tabs, how to use Sorter view, and how to print.

Add Animations

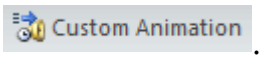
You can animate the objects on your Ms. PowerPoint slides. Ms. PowerPoint provides four types of animations: Entrance, Emphasis, Exit, and Motion Paths. An Entrance animation determines the manner in which an object appears on a slide; for example, an object can move onto a slide. An Emphasis animation does something to draw attention to an object; for example, the object can become larger. An Exit animation determines the manner in which an object leaves a slide; for example, an object can move off a slide. A Motion Paths animation determines how an object moves around a slide; for example, an object can move from left to right.

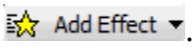
After you add an animation, you can use the Custom Animation pane to modify it by choosing an effect. Choosing an effect enables you to define what starts the animation, its properties (such the direction from which an object moves onto the slide), and control the speed of the animation. In addition, you can have an animation start when you click the mouse, start along with the previous animation, or start at a specified time after the previous animation.

If the Auto Preview box is checked on the Custom Animation pane, Ms. PowerPoint provides you with preview of your animation after you create it and each time you modify it. You can also use the Play button 

on the Custom Animation pane to preview an animation.

To choose an effect:

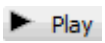
1. Select the object you want to animate.
2. Choose the Animations tab.
3. Click the Custom Animation button 

. The Custom Animation pane appears.
4. Click the Add Effect button 

. A menu appears.
5. Choose the type of effect you want. A submenu appears.
6. Click the effect you want. Ms. PowerPoint applies the effect.

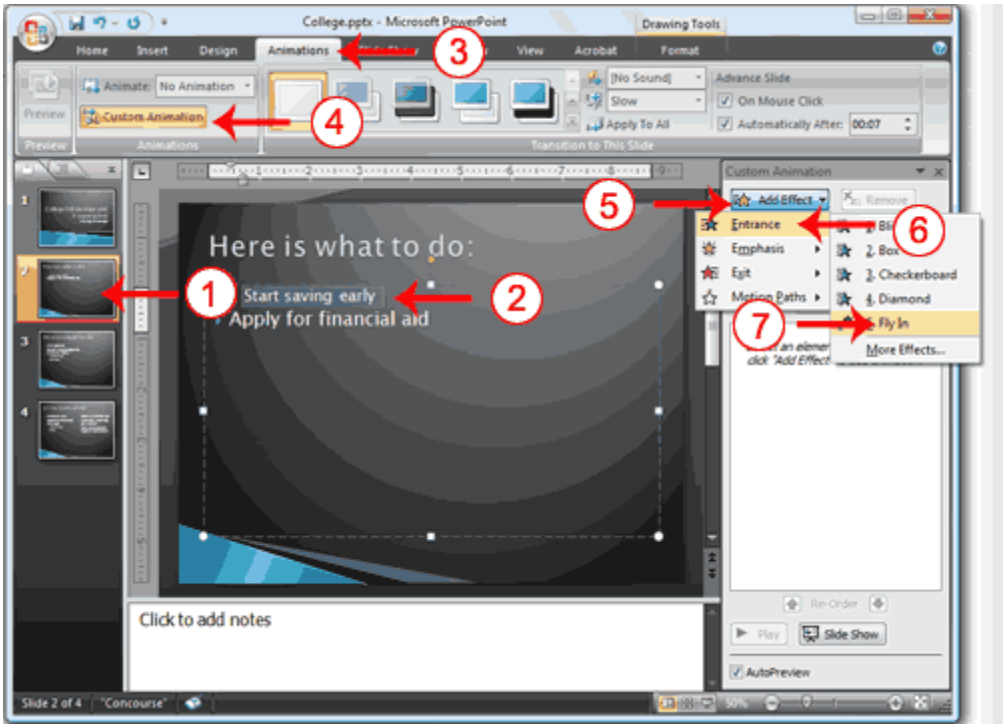
To modify an effect:

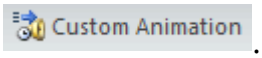
1. Click the down arrow next to the Start field on the Custom Animations pane and then select the start method you want.
2. Click the down arrow next to the Property field on the Custom Animations pane and the select the property you want. The Property field might be labeled Direction, Size, or some other property.
3. Click the down arrow next to the Speed field on the Custom Animations pane and then select the speed you want to apply to your animation.

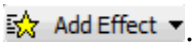
To preview the animation, click the Play button 

on the Custom Animations pane.

Add an Animation to a Slide

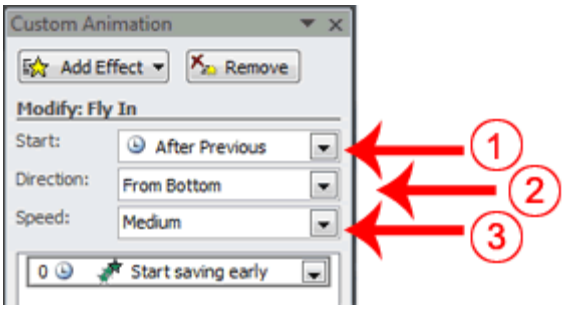


1. Click Slide 2 on the Slides tab.
2. Select "Start saving early."
3. Choose the Animations tab.
4. Click the Custom Animation button 

. The Custom Animation pane appears.
5. Click the Add Effect button 

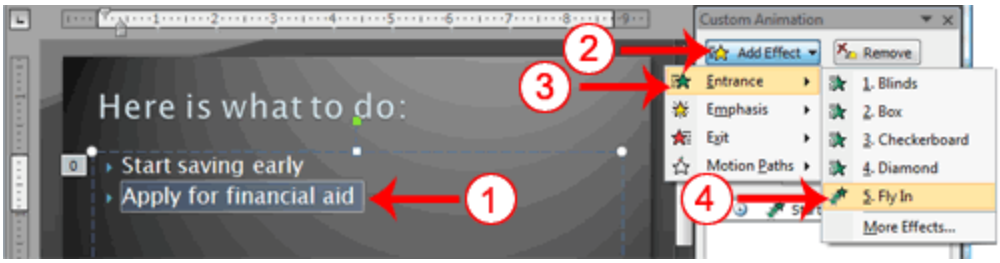
. A menu appears.
6. Choose Entrance. A submenu appears.
7. Click Fly In. Ms. PowerPoint applies the effect. If the Auto preview box is checked, Ms. PowerPoint automatically provides you with a preview of the animation.

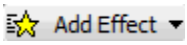
Modify the Effect



1. Click the down arrow next to the Start field and then select After Previous.
2. Click the down arrow next to the Direction field and then select From Bottom.
3. Click the down arrow next to the Speed field and then select Medium.

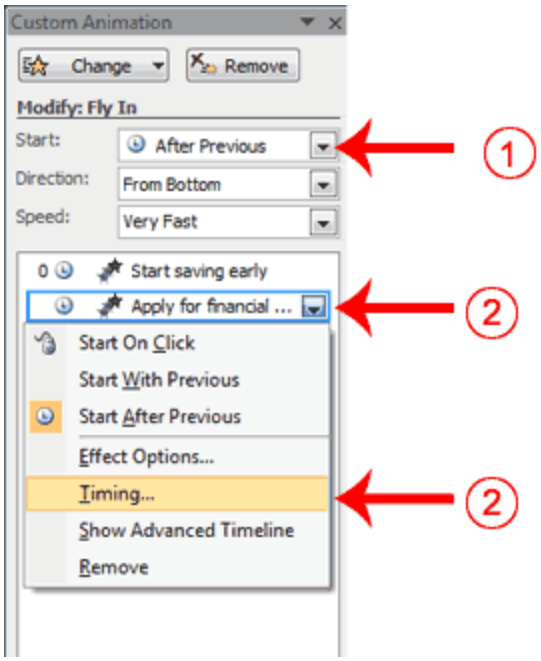
Add Another Animation



1. Select "Apply for financial aid."
2. Click the Add Effect button 

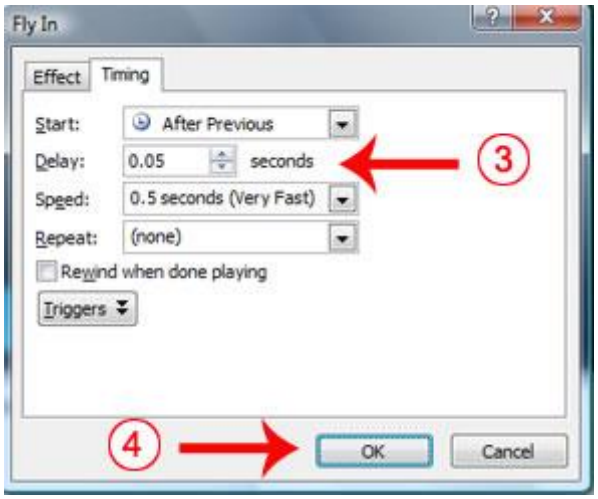
. A menu appears.
3. Choose Entrance. A submenu appears.
4. Click Fly In. Ms. PowerPoint applies the effect. If the Auto preview box is checked, Ms. PowerPoint automatically provides you with a preview of the animation.

Modify the Animation



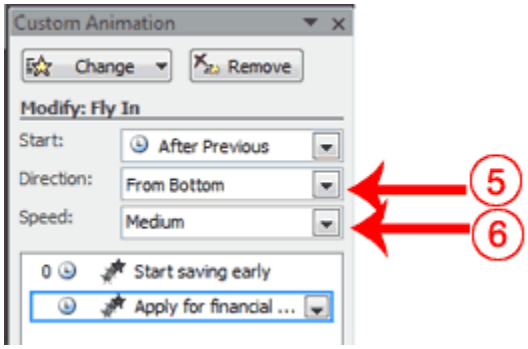
1. Click the down arrow next to the Start field and then select After Previous. The Apply for Financial Aid field appears in the center of the Custom Animation pane.

2. Click the down arrow next to the Apply for Financial Aid field and then click Timing. The Fly In dialog box appears.



3. Type **0.05** in the Delay text box.

4. Click OK.



5. Click the down arrow next to the Direction field and then select From Bottom.

6. Click the down arrow next to the Speed field and then select Medium. If the Auto preview box is checked, Ms. PowerPoint automatically provides you with a preview of the animation. You can click the Play button Play on the Custom Animation pane at any time to preview an animation.

Add Transitions

Transitions determine how your presentations move from one slide to the next. For example, a slide can move up onto the screen and replace the previous slide. Ms. PowerPoint provides several transition methods. You can add sound to a transition and you can control its speed. You can apply a transition to selected slides or to all of the slides in your presentation.

A transition can occur when the presenter clicks the mouse or after the amount of time you specify.

To apply a transition to selected slides:

1. On the Slides tab, hold down the Ctrl key and then click the slides to which you want to apply the transition.

2. Choose the Animations tab.

3. Click the More button in the Transition to this Slide group. A menu of transitions appears.

4. Click the transition you want to apply. Ms. PowerPoint applies the transition. As you roll your pointer over each transition, Ms. PowerPoint provides you with a live preview of the transition.

To apply a transition to all slides:

1. Choose the Animations tab.
2. Click the More button in the Transition to this Slide group. A menu of transitions appears.
3. Click the transition you want to apply. As you roll your pointer over each transition, Ms. PowerPoint provides you with a live preview of the transition.
4. Click the Apply to All button Apply To All in the Transition to This Slide group.

To add a sound to a transition:

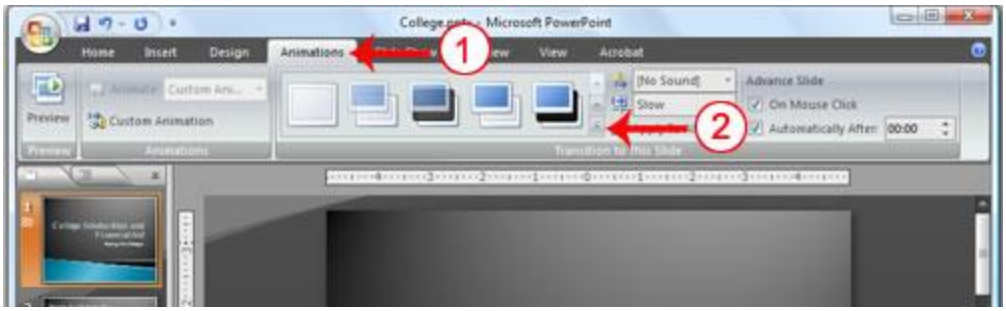
1. Choose the Animations tab.
2. Click the down arrow next to the Transition Sound field and then click the sound you want. As you roll your pointer over each sound, Ms. PowerPoint plays the sound.

To set the speed of a transition:

1. Choose the Animations tab.
2. Click the down arrow next to the Transition Speed field and then click the speed you want.

If you want the transition to occur after the presenter clicks the mouse, check the On Mouse Click check box. If you want a transition to occur after a specified period of time, check the Automatically After check box and then specify the amount of time you want to elapse before the transition occurs. The On Mouse Click check box and the Automatically After check box are both located on the Animations tab in the Transition to This Slide group.

Add Transitions



1. Choose the Animations tab.

2. Click the More button in the Transition to this Slide group. A menu of transitions appears.

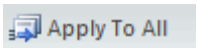
3. Click the Push Up transition. As you roll your pointer over each transition, Ms. PowerPoint provides you with a live preview of the transition.

Add Sound and Set the Speed

1. Click the down arrow next to the Transition Sound field and then click.
2. Click the down arrow next to the Transition Speed field and then click Slow.

Advance Slide

1. Check the On Mouse Click check box.
2. Click the Automatically After check box.

3. Type **00:07** in the Automatically After text box.
4. Click the Apply to All button 

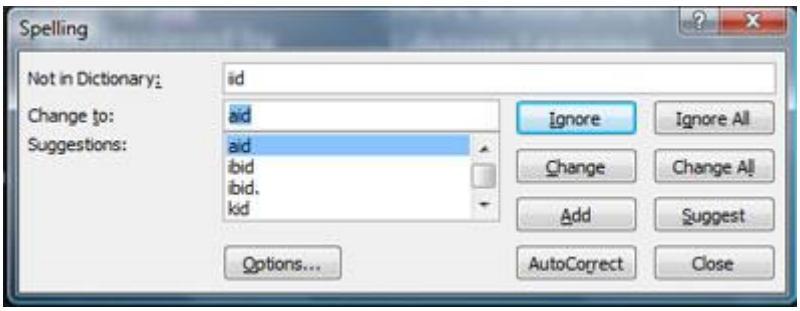
. Ms. PowerPoint applies all of your changes to all of the slides.
5. Click Slide 1 on the Slides tab.
6. Type **00:03** in the Automatically After text box. Ms. PowerPoint changes the timing for Slide 1.

Spell Check

Ms. PowerPoint checks your spelling as you type and displays errors with a red wavy line under the misspelled word. You can right-click and then select the correct spelling from the list of offerings on the menu that appears or select Spelling to open the Spelling dialog box. If you need to, you can initiate a spell check anytime you like. To start a spell check, do one of the following:

- Press F7.
- Choose the Review tab and then click the Spelling button  .

If the spell check finds a possible spelling error, the Spelling dialog box opens with the spelling error highlighted. You can respond in several ways.



Response	Procedure
Do not change spelling.	Click Ignore.
Correct spelling.	1. Click the correct spelling in the Suggestions box. 2. Click Change.
Add to dictionary.	Click Add.
Word is correct. Do not change presentation.	Click Ignore All.
Word is incorrect. Change	Click Change All.

entire presentation.	

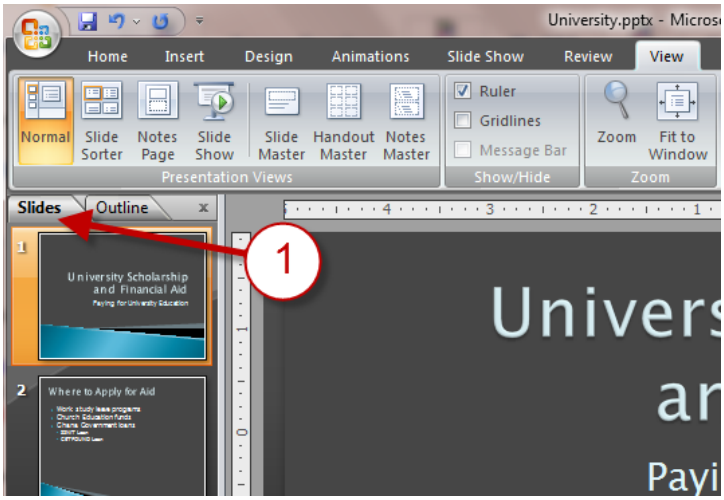
Spell Check

1. Press F7
2. Correct any spelling errors Ms. PowerPoint finds. If Ms. PowerPoint does not find any errors, the Spelling Check is Complete message box appears. Click OK.

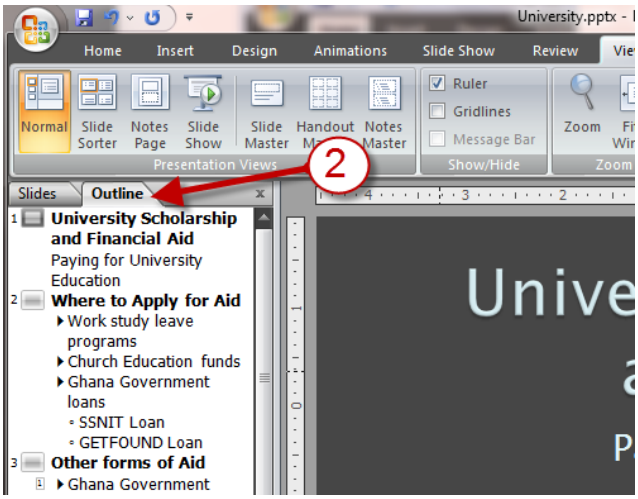
Use the Outline and Slides Tabs

By default, the Outline and Slides tabs are located on the left side of your Ms. PowerPoint window. The Outline tab displays the text contained in your presentation. The Slides tab displays a thumbnail of all your slides. You click the thumbnail to view the slide in the Slide pane.

Use the Outline and Slides Tabs



1. Choose the Slides tab to view thumbnails of your slides.



2. Choose the Outline tab to view the text of your presentation as an outline.

Use Slide Sorter View

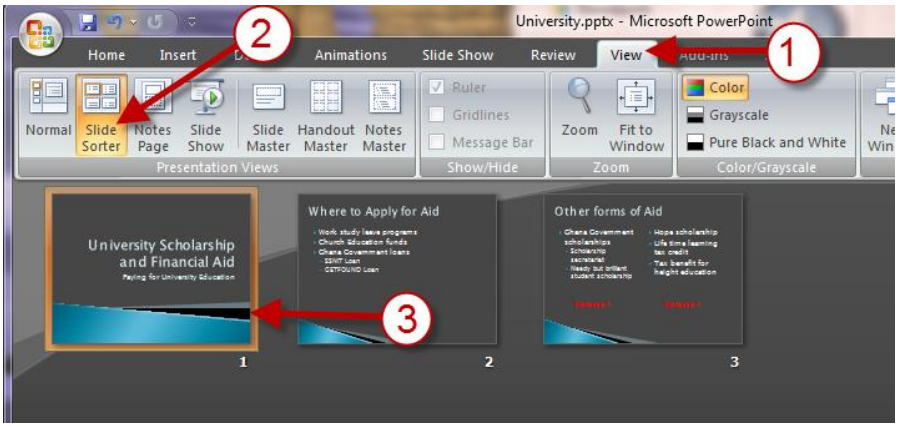
After you have created your Ms. PowerPoint slides, you can move, cut, copy, paste, duplicate, navigate, and view them in Sorter view. To view the slides in Sorter view, do one of the following:

- Choose the View tab and then click the Slide Sorter button  in the Presentation Views group.
- Click the Slide Sorter button  in the bottom-right corner of the Ms. PowerPoint window.

Slide Sorter View	
Task	**Procedure**
Move to first slide.	Use Ctrl+Home.
Move to last slide.	Use Ctrl+End.
Move to next slide.	Use the right arrow.
Move to previous slide.	Use the left arrow.
Select a slide.	Single-click the slide.
Open a slide in Normal view.	Double-click the slide.
Select slides.	Select a single slide: 1. Click the slide you want to select.
	Select multiple slides: 1. Hold down the Ctrl key. 2. Click the slides you want to select.
Delete a slide.	1. Select the slide or slides you want to delete. 2. Press the Delete key.
	1. Select the slide or slides you want to delete.

	2. Choose the Home tab and then click the Delete button .
Copy a slide.	1. Select the slide. 2. Choose the Home tab. 3. Click the Copy button in the Clipboard group.
	1. Select the slide. 2. Press Ctrl+C.
Paste a slide.	1. Select the slide after which you want the new slide or slides to appear. 2. Choose the Home tab. 3. Click the Paste button in the Clipboard group.
	1. Select the slide after which you want the new slide or slides to appear. 2. Press Ctrl+V.
Cut a slide.	1. Select the slide or slides you want to cut. 2. Choose the Home tab. 3. Click the Cut button in the Clipboard group.
	1. Select the slide or slides you want to cut. 2. Press Ctrl+X.
Move a slide.	1. Select the slide (or slides) you want to move. 2. Drag it to the new location.
Duplicate a slide.	1. Select the slide (or slides) you want to duplicate. 2. Press Ctrl+D.

Use Slide Sorter View



1. Choose the View tab.

2. Click Slide Sorter in the Presentation Views group.
3. Double-click a slide to view it in Normal view.

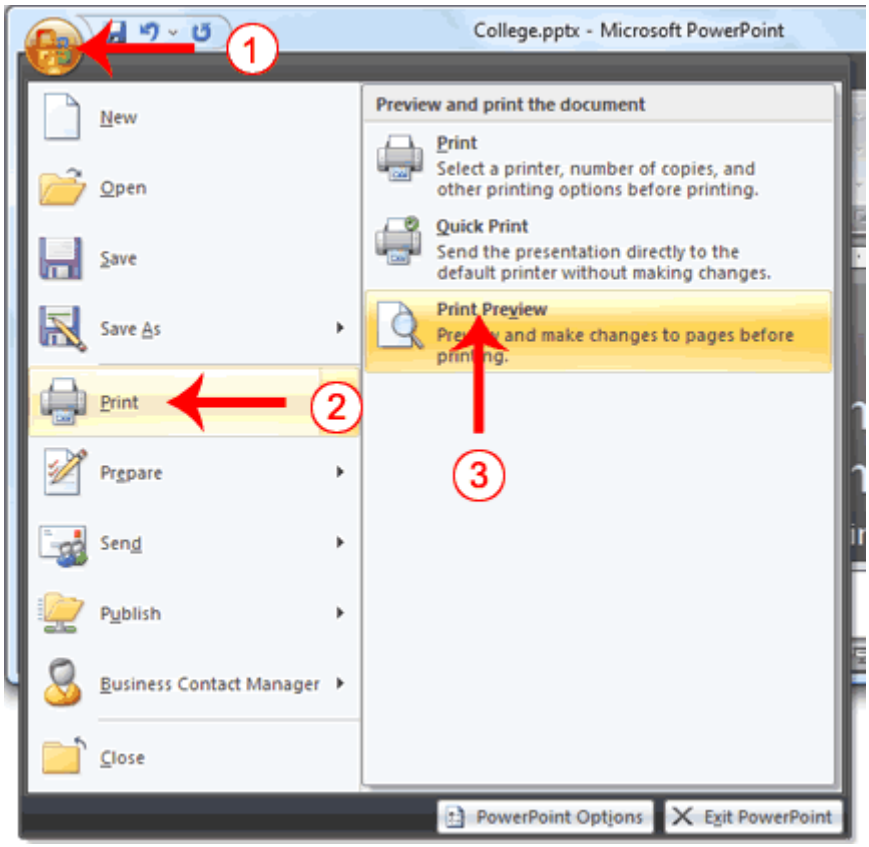
Printing

Ms. PowerPoint provides you with many printing options. You can print a large view of your slides or you can print your slides as handouts with 1, 2, 3, 4, 6, or 9 slides per page. You can also print your Notes pages or the Outline view of your slides.

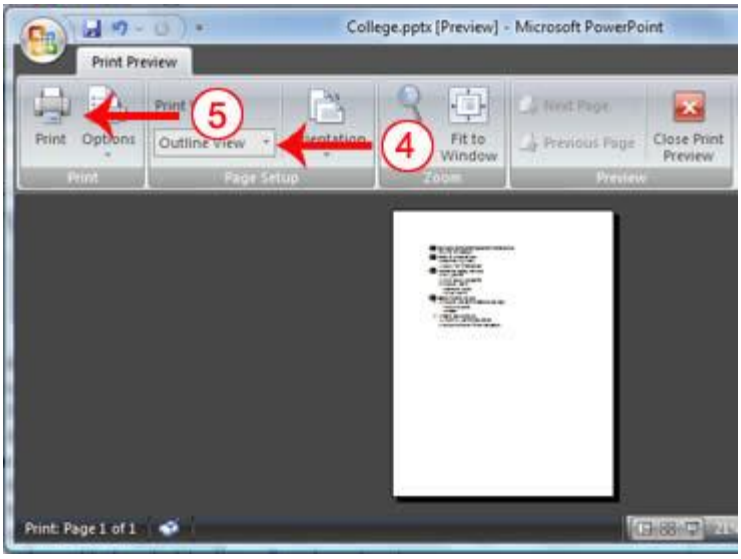
To print:

1. Click the Microsoft Office button. A menu appears.
2. Choose Print.
3. Click Print Preview.
4. Click the down arrow next to the Print What field in the Page Setup group and then select what you would like to print. A preview appears onscreen.
5. Click the Print. The Print dialog box appears.
6. Click the down arrow next to the Colour/Grayscale field to select whether you want your slides to print in colour, grayscale, or black and white. If you are using a black and white printer, choose black and white. You will use less ink or toner.
7. Click OK.

Print an Outline

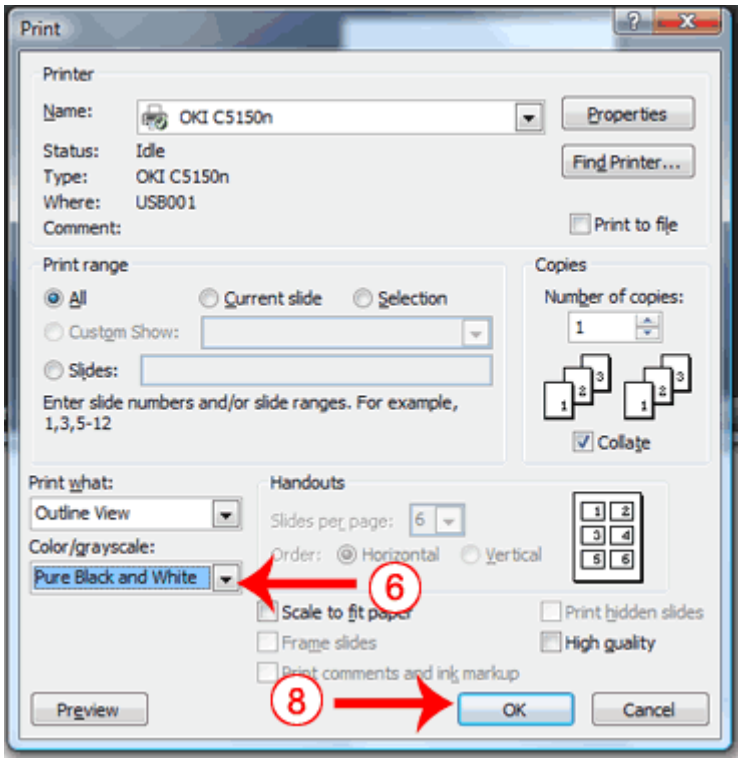


1. Click the Microsoft Office button. A menu appears.
2. Choose Print.
3. Click Print Preview. The Print Preview tab appears.



4. Click the down arrow next to the Print What field in the Page Setup group and then select Outline View.

5. Click the Print button. The Print dialog box appears.



6. Click the down arrow next to the Colour/Grayscale field to select whether you want your slides to print in colour, grayscale, or black and white. If you are using a black and white printer, choose black and white. You will use less ink or toner.

7. Set the other print settings.

8. Click OK. Your outline prints.

Print Your Slides

1. Click the Microsoft Office button. A menu appears.

2. Choose Print.

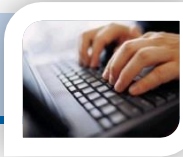
3. Click Print Preview. The Print Preview tab appears.

4. Click the down arrow next to the Print What field in the Page Setup group and then select Slides.

5. Click the Print button  . The Print dialog box appears.
6. Click the down arrow next to the Colour/Grayscale field to select whether you want your slides to print in colour, grayscale, or black and white. If you are using a black and white printer, choose black and white. You will use less ink or toner.
7. Set the other print settings.
8. Click OK. Your slides print.

Print Your Slides as a Handout

1. Click the Microsoft Office button. A menu appears.
2. Choose Print.
3. Click Print Preview. The Print Preview tab appears.
4. Click the down arrow next to the Print What field in the Page Setup group and then select Handouts (4 slides per page).
5. Click the Print button  . The Print dialog box appears.
6. Click the down arrow next to the Colour/Grayscale field to select whether you want your slides to print in colour, grayscale, or black and white. If you are using a black and white printer, choose black and white. You will use less ink or toner.
7. Set the other print settings.
8. Click OK. Your handouts print.



Practical Activity

Activity: Curriculum Concept in PowerPoint

1. Choose a concept or topic that is commonly taught Kindergarten –SHS curriculum; for example, the concept of camouflage in biology, the history of gold mining in Ashanti and Western Region, or the relationship between the number of diagonals of a polygon and the number of sides in geometry. Identify your intended audience (students at what level?) so your lesson will be appropriate to their background. (Note: if your teaching has been at the college level, you may choose a topic or concept relevant to you.). If you are not a teacher, you may choose a topic in your field of work.

2. Gather information about the best way to teach the concept from electronic or printed sources (e.g. Internet, textbooks, and educational journals) or from oral sources (e.g. other teachers). Find appropriate images (required). Add sounds or movies if available (optional). Be sure to note your sources of information, even your oral sources, for the list of references (required).

3. Design a Ms. PowerPoint presentation of 12 or more slides. In addition to the information about the topic, your slide show must include (these are part of the 12 slides):

a. a title slide stating the topic and the intended audience (grade level)

b. an "Objectives" slide listing the objective(s) of the lesson

c. an "About the Author" slide with your photo and very brief bio

d. a "References" slide listing your sources of information

4. Start with one of the design templates (Design→select Design Template) and type the information for the title slide.

5. To make a new slide, choose Home tab→New Slide and choose one of the layouts from the choices on the right.

6. Use a variety of different multimedia. The multimedia should relate to the topic and enhance understanding of the content. It may also be used to stimulate students' interest in the topic. Use at least 3 different types of multimedia, such as:

- Original drawings (Insert→shapes)
- clip art (Insert →Clip Art)
- Scanned images or images from a digital camera (Insert→Picture)
- Images from Web (save as .gif or .jpg files; then Insert→Picture)
- Symbols (Insert→ Symbol) – especially useful in foreign languages, math, science
- Sound clips (Insert→Sound)
- imported sound, e.g. from Web (Insert→Sound)
- imported movies, e.g. from Web (Insert→Movies)

7. Include at least three hyperlinks (Insert→Hyperlink):

- At least two that link to another slide in your slide show, and
- At least one that links to a URL (i.e., a Web address)

8. Animate at least one bulleted list (Animations→Custom Animation). Then each bullet in the list will appear one at a time when you click the mouse. But please don't distract your audience with too much animation and special sound effects. You want them to focus on the content. If I find it too annoying or distracting, you will lose points!

9. Check spelling and style (Review→Spelling).

CHAPTER 7
Using the Internet

Godfrey Dawson-Amoah
Kofi Bentum Wilson

Introduction

In the previous chapter we learnt about Ms. PowerPoint. In this chapter we will learn about the Internet. The Internet has become one of the greatest inventions of man. We will find out the history of the Internet and why people use it. We will learn effective ways of searching for information on the Internet. We will also learn how to move information from the Internet to other applications.

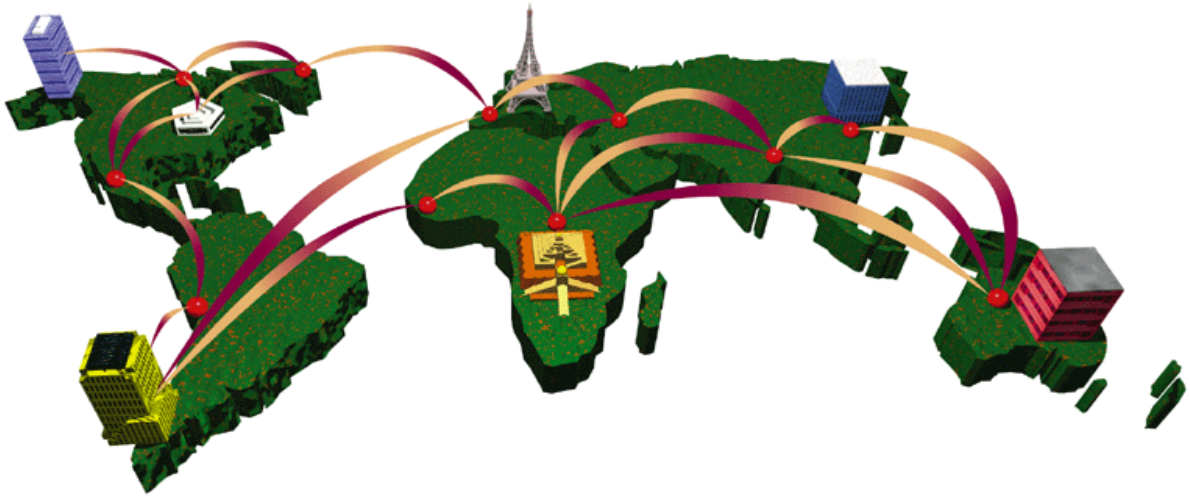
Learning Objectives

After completing this course you will be able to

- Define the Internet
- Explain the reasons why people use the Internet
- Discuss the history of the Internet
- Explain how to step up and connect the Internet
- Explain the world wide web (www) and uniform resource locator (URL)
- Explore the Internet using Microsoft Internet Explorer

What is the Internet?

The Internet, sometimes called simply "the Net," is a worldwide system of computer networks - a network of networks in which users at any one computer can, if they have permission, get information from any other computer.The world's largest network is the Internet, which is a worldwide collection of networks that link together millions of businesses, governments, educational institutions, and individuals



The Internet provides a major means for worldwide communication between both individuals and organizations, as well as a major means for locating and sharing information. For many, having access to the Internet is the primary reason for having a computer. To use the Internet, you must have connection to it using one of the many means that are now available. You then can send and receive email; access the World Wide Web; watch movies; and participate in blogs, forums, and newsgroups, among many other things.

Why do People use the Internet?

- To access a wealth of information, news, research, and educational material
- To conduct business or complete banking and investing transactions
- To access sources of entertainment and leisure, such as online games, magazines, and vacation planning guides
- To shop for goods and services
- To meet and converse with people around the world in discussion groups or chat rooms
- To access other computers and exchange files
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- To send messages to or receive messages from other connected users

Brief History of the Internet

The U.S. Department of Defence laid the foundation of the Internet roughly 30 years ago with a network called ARPANET. But the general public didn't use the Internet much until after the development of the World Wide Web in the early 1990s. In 1957, the U.S. government formed the Advanced Research Projects Agency (ARPA), a segment of the Department of Defence charged with ensuring U.S. leadership in science and technology with military applications. In 1969, ARPA established ARPANET, the forerunner of the Internet.

ARPANET was a network that connected major computers at the University of California at Los Angeles, the University of California at Santa Barbara, Stanford Research Institute, and the University of Utah. Within a couple of years, several other educational and research institutions joined the network.

In response to the threat of nuclear attack, ARPANET was designed to allow continued communication if one or more sites were destroyed. Unlike today, when millions of people have access to the Internet from home, work, or their public library, ARPANET served only computer professionals, engineers, and scientists who knew their way around its complex workings.

The World Wide Web came into being in 1991, thanks to developer Tim Berners-Lee and others at the European Laboratory for Particle Physics, also known as Conseil European pour la Recherche Nucleure (CERN). The CERN team created the protocol based on hypertext that makes it possible to connect content on the Web with hyperlinks. Berners-Lee now directs the World Wide Web Consortium (W3C), a group of industry and university representatives that oversees the standards of Web technology.

Early on, the Internet was limited to non-commercial uses because its backbone was provided largely by the National Science Foundation, the National Aeronautics and Space Administration (NASA), and the U.S. Department of Energy, and funding came from the government. But as independent networks began to spring up, users could access commercial Web sites without using the government-funded network. By the end of 1992, the first commercial online service provider, Delphi, offered full Internet access to its subscribers, and several other providers followed.

In June 1993, the Web boasted just 130 sites. By a year later, the number had risen to nearly 3,000. By April 1998, there were more than 2.2 million sites on the Web. Today, the Internet is a public, cooperative, and self-sustaining facility accessible to hundreds of millions of people worldwide.

Connecting to the Internet

You can connect to the Internet using a telephone line, a cable TV connection, a satellite link, or a land-based wireless link. Across these various types of connections there are a myriad of speeds, degrees of reliability, and costs. The most important factor is what is available to you at the location where you want to use it. In an urban area, you have a number of alternatives, from landline phone companies, cellphone companies, and cable TV companies, all with varying degrees of speed, reliability, and cost. As you move farther and farther away from the urban area, your options will decrease until you have only a telephone dial-up connection and/or a satellite link available.

Setting Up an Internet Connection

Broadband Internet services, including DSL (Digital Subscriber Line), TV cable, satellite, and high-speed wireless, provide an Internet link with a device called a **router** that connects your computer to the service. Normally, your Internet service provider (ISP) will provide the router and physically install it. With a router in place, your computer is connected to a broadband service and you are connected to the Internet at all times. You can also connect to the internet by using modems for telecommunication companies like Vodafone, MTN, Expreso, Tigo, Glo and Airtel. The easiest way to check if you are connected to the Internet is to try it out by clicking the Internet Explorer icon  normally pinned to the left of the taskbar.

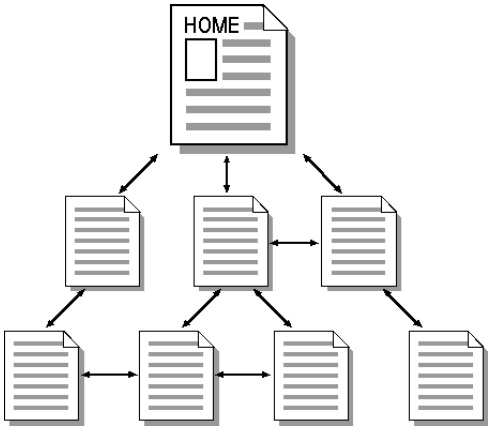
The World Wide Web (WWW)

The World Wide Web (or just the Web) is the sum of all the websites in the world—examples of which are GhanaWeb, Google, Yahoo and Facebook. The Webs outstanding feature is **hypertext**, a method of instant cross-referencing. Most Web sites, certain words or phrases appear in text of a different colour than

the rest; often this text is also underlined. When you select one of these words or phrases, you will be transferred to the site or page that is relevant to this word or phrase. Sometimes there are buttons, images, or portions of images that are "clickable." If you move the pointer over a spot on a Web site and the pointer changes into a hand, this indicates that you can click and be transferred to another site.

To view files on the Web, you need **Web browsing software**. A Web browser contains the basic software you need in order to find, retrieve, view, and send information over the Internet. The most popular browsers are Microsoft Internet Explorer  and Mozilla Firefox  .The appearance of a particular Web site may vary slightly depending on the browser you use.

You use this software to view different locations on the Web, which are known as **Web pages**. A group of Web pages is a **Web site**. The first page of a Web site is often called the **home page**. The home page allows you to get access to the other web pages on the web site.



Just as each household in the world has a unique address, each Web page in the world has a unique Internet address, sometimes called a **URL (Uniform Resource Locator)**. For example, the Internet address (URL) of the Microsoft Windows home page is **http://www.microsoft.com/windows.**

Terms to Be Familiar With:

Browser--Contains the basic software you need in order to find, retrieve, view, and send information over the Internet.

Download--To copy data from a remote computer to a local computer.

Upload - To send data from a local computer to a remote computer.

E-mail- E-mail (electronic mail) is the exchange of computer-stored messages by telecommunication. E-mail can be distributed to lists of people as well as to individuals. However, you can also send non-text files, such as graphic images and sound files, as attachments sent in binary streams.

Filter - Software that allows targeted sites to be blocked from view. Example: X-Stop, AOL@School

Home Page - The beginning "page" of any site.

HTML (HyperText Markup Language) - The coding language used to create documents for use on the World Wide Web. There are three-letter suffixes used in coding that help to identify the type location one is viewing

HTTP (HyperText Transport Protocol) - the set of rules for exchanging files (text, graphic images, sound, video, and other multimedia files) on the World Wide Web. Relative to the TCP/IP suite of protocols (which are the basis for information exchange on the Internet), HTTP is an application protocol.

FTP (File Transfer Protocol) - moves a file between 2 computers on a network

Hypertext - Generally any text that contains "links" to other text

Search Engine - A web server that collects data from other web servers and puts it into a database (much like an index), it provides links to pages that contain the object of your search.

TCP/IP -- TCP/IP (Transmission Control Protocol/Internet Protocol) is the basic communication language or protocol of the Internet. It can also be used as a communications protocol in a private network (either an intranet or an extranet). When you are set up with direct access to the Internet, your computer is provided with a copy of the TCP/IP program just as every other computer that you may send messages to or get information from also has a copy of TCP/IP.

Uniform Resource Locator (URL)

Every **server** on the Internet has an IP number, a unique number consisting of 4 parts separated by dots. The IP number is the server's address. For example

165.113.245.2
128.143.22.55

However, it is harder for people to remember numbers than to remember word combinations. So, addresses are given **"word-based"** addresses called URLs. The URL and the IP number are one and the same.

The standard way to give the address of any resource on the Internet that is part of the World Wide Web (WWW). A URL looks like this:

http://www.uew.edu.gh/academics/admissions.htm
ftp://well.sf.ca.us
The URL is divided into sections:

***Transfer/transportprotocol*://** ***server (or domain)*.generic top level domain/path/filename**

Here's an example:

http://www.uew.edu.gh/academics/admissions.htm

- **http** is the protocol
- **www.uew.edu.gh** is the server
- **academics** is the path
- **admission.htm** is the filename of the page on the site

What are Domains?

Domains divide World Wide Web sites into categories based on the nature of their owner, and they form part of a site's address, or uniform resource locator (URL). Common top-level domains are:

.com—commercial enterprises	**.mil**—military site

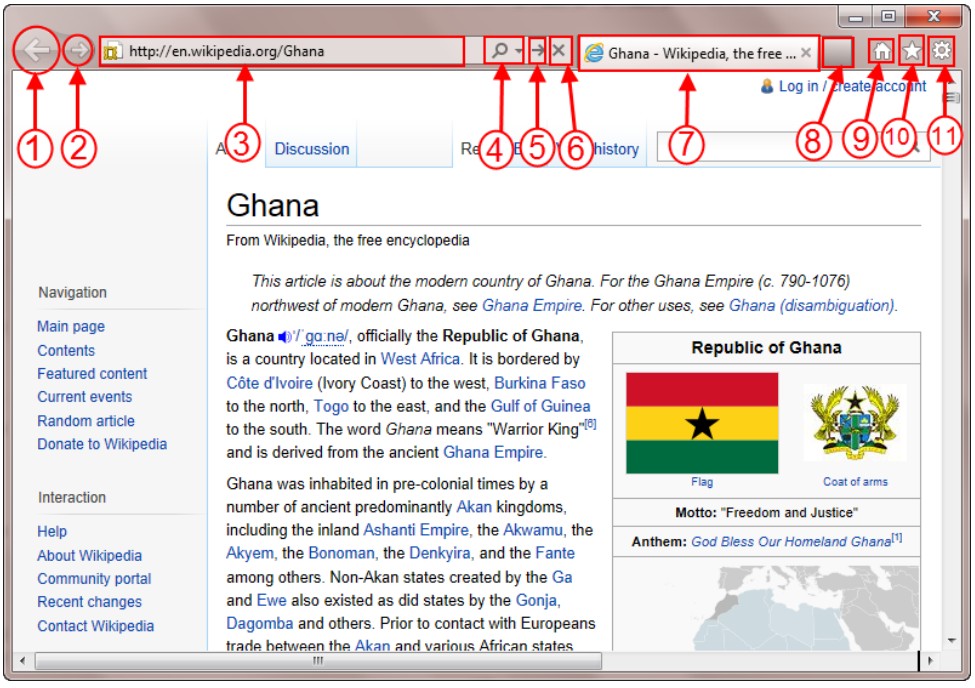
.org—organization site (non-profits, etc.)	**.int**—organizations established by international treaty
.net—network	**.biz**—commercial and personal
.edu—educational site (universities, schools, etc.)	**.info**—commercial and personal
.gov—government organizations	**.name**—personal sites

Additional three-letter, four-letter, and longer top-level domains are frequently added. Each country linked to the Web has a two-letter top-level domain, for example **.gh** is Ghana, **.Fr** is France and **.Ke** is Kenya.

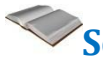
In the web site **www.uew.edu.gh, .edu** means that this web site is an educational institution and **.gh** means that it is in Ghana.

Exploring the Internet using Microsoft Internet Explorer

Click the **Internet Explorer** icon  normally pinned to the left of the taskbar.



1. **Back.**Let's you return to pages you've viewed, beginning with the most recent. Right-click the *Back* button and select from a list of recently visited sites.
2. **Forward.** Let's you move forward through pages you've viewed using the *Back* button. Right-click the *Forward* button and select from a list of recently visited sites.
3. **Address Bar:** Let's you enter the address or URL of a web site you want to visit
4. **Search.** Displays a choice of popular Internet search engines in the left pane. Your search results appear in the left pane, too. When you click a link, the page appears in the right pane, so you don't lose sight of your search results.
5. **Go To:** Let's you go to the web page of the URL
6. **Stop.** Halts the process of downloading a Web page. Click this if you want to stop downloading a page for any reason for example, if you're having rouble downloading it or if you don't want to wait for it to download. Then try downloading it again or browse elsewhere.
7. **Active Tab:** Displays current web page. In older versions of IE, you need to open deferent web pages in deferent windows, however IE7 and above give you the ability to open multiple pages as separate tabs that you can switch among by clicking their tabs.
8. **New Tab:** let's you open a new web page in the same window.
9. **Home.** Returns you to your home page. You can designate any Web page as your home page.
10. **Favourites:** Displays a list of the sites you have marked. Click any item in the list to jump to it.
11. **Tools:** Contains Menu list that lets you **save** a web page, **Print** a web page or change the setting of the IE.



Searching the Internet

You can search the Internet in two ways: by using the search capability built into a web browser e.g. Internet Explorer and by using a search engine facility built into a website.

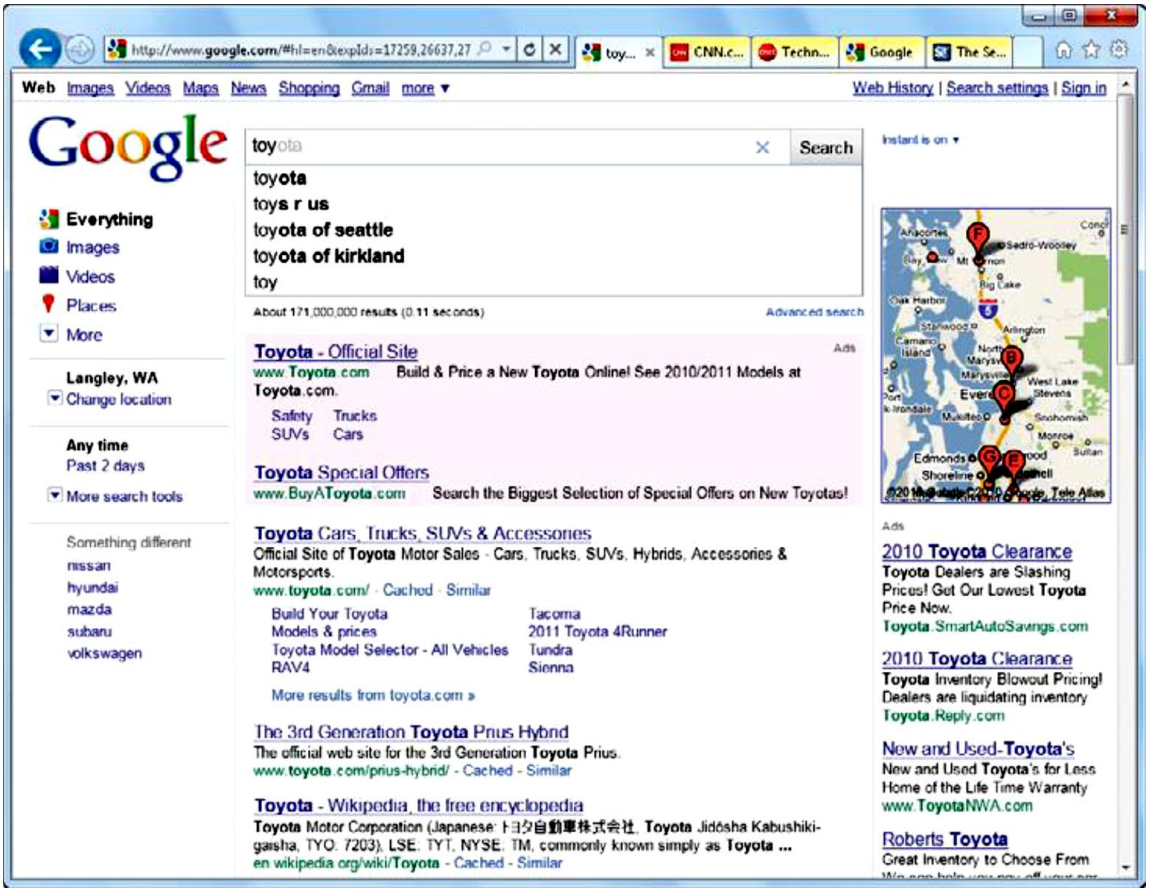
What is a search engine?

Basically, a search engine is a software program that searches for sites based on the words that you designate as search terms. Search engines look through their own databases of information in order to find what it is that you are looking for.

Search from an internet site

There are many independent Internet search sites. The most popular is **Google.**

1. In Internet Explorer, click the current address in the address bar, type **google.com**, and either click **Go To** (the blue arrow) or press **ENTER**.
2. In the text box, type what you want to search for. As you type, Google will display some guesses based upon what you have typed, with the resulting websites for those guesses shown in a full webpage, as illustrated in the Figure below.
3. Click the link of your choice to go to that site.



Save a Favorite Site

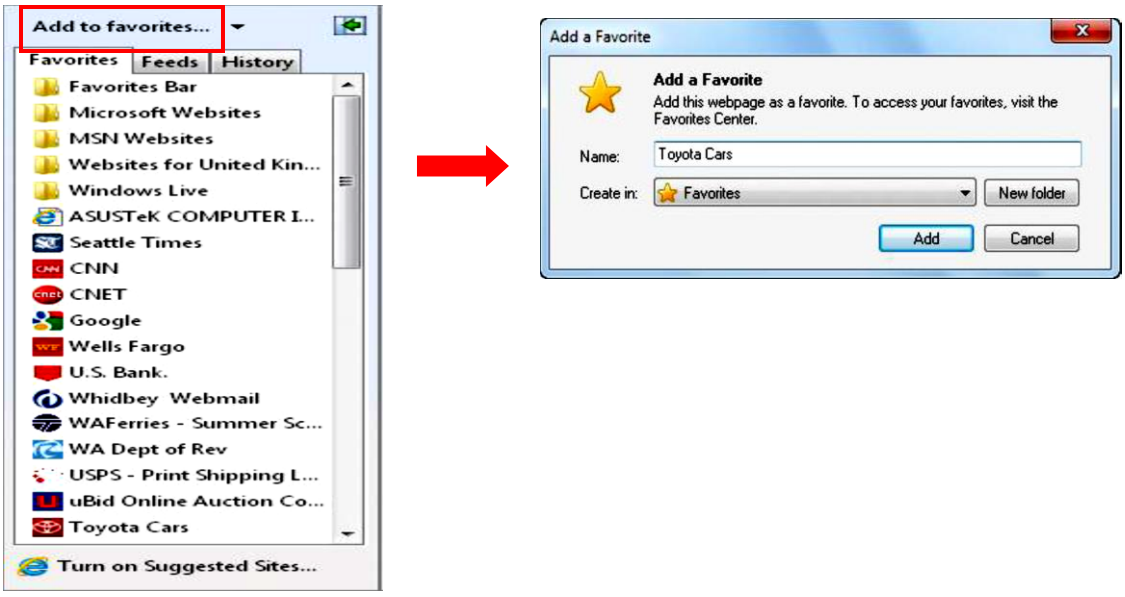
Sometimes, you visit a site that you would like to return to quickly or often. Internet Explorer has a memory bank called Favourites to which you can save sites for easy retrieval.

Add a favorite site

To add a site to Favorites:

1. In Internet Explorer, open the webpage you want to add to your Favorites list, and make sure its correct address (URL) is in the address bar.
2. In IE 8, click **Favorites** in or above the tab row. In IE 9, click the **Favorites** icon 

on the right of the tab row.
3. In either case, click **Add To Favorites**. The Add a Favorite dialog box appears. Adjust the name as needed in the text box (you may want to type a name you will readily associate with that site), and click **Add**.



Some Useful Search Engines

Academic Search Engines

- **Google Scholar (http://scholar.google.com/)**- Powered by Google, this search engine makes it easy to find papers, abstracts, citations and other scholarly literature.

- **iSEEK (http://education.iseek.com/iseek/home.page)**- Designed specifically for students and educators, iSEEK is a non-commercial search engine that delivers editor-reviewed results from universities, government sites and other noncommercial providers.
- **OJOSE (http://www.ojose.com/)** - The Online Journal Search Engine (OJOSE) is a search engine that can help you find, download or purchase scientific publications from over 60 different databases.
- **Scirus (http://www.scirus.com/)** - Scirus is another search engine focused on the sciences. It has indexed over 410 million scientific items, including journal articles, patent information, scientists' web pages and institutional repositories.
- **DMOZ (http://www.dmoz.org/)**- Although it's technically not a search engine because it doesn't index the whole Web, DMOZ, or the Open Directory Project, offers searchable access to millions of links that have been hand-picked by volunteers who are experts in their fields.

Media Search Engines (Audio, Videos and Photos)

- **Radio-Locator (http://www.radio-locator.com/)** - Radio-Locator is the largest radio station search engine. You can use it to locate over 10,000 radio station websites and over 2,500 audio streams.
- **Blinkx (http://www.blinkx.com/)**- Users can search more than 32 million hours of video on Blinkx by keyword or category.
- **Youtube (http://www.youtube.com)**- Users can search more the 52 million videos in the field of education, news and entertainment. You can also sign up and up load your personal video on to the website.
- **Pixsy (http://www.pixsy.com/)**- Pixsy is a visual search engine that pulls video and photos from sources like You Tube, Flickr, iStock and more. Clicking on a result will take you to its source page, which can make it easier to find images and video that are available for reuse.
- **Retrievr (http://labs.systemone.at/retrievr/)** - Retrievr is another visual search engine, but with a twist - it allows you to upload an image or make a sketch, and then retrieves matching images from Flickr.

- **Picsearch (http://www.picsearch.com/)**- This image search engine puts 3,000,000,000 pictures at your fingertips.

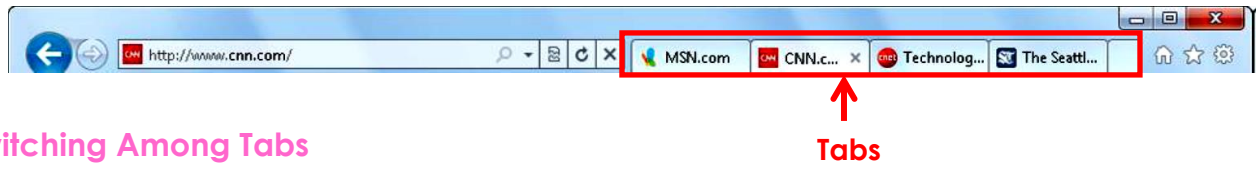
Using Tabs

Internet Explorer 8 and 9 allow you to have several webpages open at one time and easily switch between them by clicking the tab associated with the page. The tabs reside on the ***tab row***, immediately above the displayed webpage, which also has the address bar in IE 9. Only one page was open at a time in versions of Internet Explorer before IE 7. If you opened a second page, it replaced the first page. IE 7 and on, however, give you the ability to open multiple pages as separate tabs that you can switch among by clicking their tabs.

Open Pages in a New Tab

To open a page in a new tab instead of opening the page in an existing tab:

1. Open Internet Explorer with at least one webpage displayed.
2. Click New Tab on the right end of the tab row, or press CTRL+T, and open another webpage in any of the ways described earlier in this chapter.
   –Or–Hold down **CTRL** while clicking a link in an open page. (If you just click the link, you'll open a page in the same tab.) Then click the new tab to open the page.



Switching Among Tabs

To switch among open tabs:

Click the tab of the page you want to open **–Or–**Press **CTRL+TAB** to switch to the next tab to the right, or press **CTRL+SHIFT+TAB** to switch to the next tab to the left **–Or–**Press **CTRL+*n***, where ***n***is a number from 1 to 8 to switch to one of the first eight tabs, numbered from the left in the order they were opened. You can also press **CTRL+**9 to switch to the last tab that was opened, shown on the right of the tab row. (Use a number key on the top of the main keyboard, *not* on the numeric keypad on the right.)

Close Tabs

To close one or more tabs:

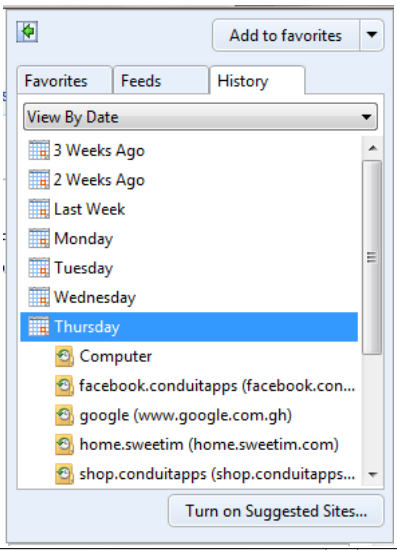
Right-click the tab for the page you want to close, and click **CloseTab** on the context menu; or click **Close Other Tabs** to close all of the pages except the one you clicked **–Or–**Press **CTRL+W** to close the current page.

Access Web History

Internet Explorer keeps a history of the websites you visit, and you can use that history to return to a site. You can set the length of time to keep sites in that history, and you can clear your history.

Use Web History

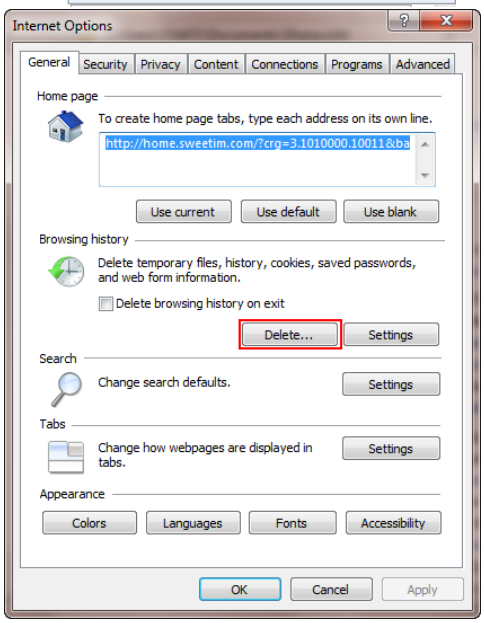
To use the Web History feature:



1. Click Favorites or its icon, and click the History tab; or press **CTRL+H** to open the History pane.
2. Click the down arrow on the History tab bar to select how you want the history sorted. Depending on what you select, you will be able to further specify the type of history you want to view. For example, if you click View By Date, you can then click the day, website, and webpage you want to open

Delete and Set History

You can set the length of time to keep your Internet history, and you can clear this history.



1. In Internet Explorer, click **Tools** or its icon at the right end of the tab row, and click **Internet Options**.
2. In the General tab, under Browsing History, click **Delete** to open the Delete Browsing History dialog box. If needed, select the check box opposite **History** to delete it. Select any other check box to delete that information, although you should keep the **Preserve Favorites Website Data** check box

selected to *keep* that information (it is a confusing dialog box). Click **Delete**.

–Or–

In the General tab of the Internet Options dialog box, under Browsing History, click **Settings**. Under History, at the bottom of the dialog box, use the **Days** spinner to set the number of days to keep your browsing history. Click **OK**.

3. Click **OK** again to close the Internet Options dialog box.

Copying Internet Information

You may occasionally find something on the Internet that you want to copy—a picture, some text, or a webpage.

Copying a Picture from the Internet

To copy a picture from a webpage to a folder on your hard disk:

1. Open Internet Explorer and locate the webpage containing the picture you want.
2. Right-click the picture and click **Save Picture As**. Locate the folder in which you want to save the picture, enter the file name you want to use, as well as the file type if it is something other than the default**.jpg**, and click **Save.**

Copying Text from the Internet to Ms. Word or E-mail

To copy text from a webpage to a Microsoft Word document or email message:

1. Open Internet Explorer and locate the webpage containing the text you want.
2. Drag across to highlight the text, right-click the selection, and click **Copy**.
3. Open a Microsoft Word document or an email message in which you want to paste the text. Right-click where you want the text, and click **Paste**
4. Save the Ms. Word document and close Internet Explorer, Microsoft Word, or your email program if you are done with them.

Copying a Web page from the Internet

To make a copy of a web page and store it on your hard disk:

1. Open Internet Explorer and locate the webpage you want to copy.
2. In IE 8, click Page on the tab row and click **Save As.** In IE 9, click the Tools icon, click File, and click **Save As.**
3. In the Save Webpage dialog box, select the folder in which to save the page, enter the file name you want to use, and click **Save**.
4. Close Internet Explorer if you are done.

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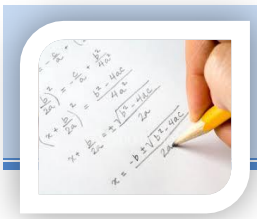

Appendix
Answers to self-test questions

Chapter 1

1	C	**11**	B	**21**	True
2	D	**12**	D	**22**	False
3	C	**13**	D	**23**	True
4	C	**14**	D	**24**	False
5	C	**15**	B	**25**	False
6	D	**16**	A	**26**	False
7	C	**17**	C	**27**	True
8	A	**18**	D	**28**	False
9	A	**19**	B	**29**	True
10	C	**20**	C	**30**	False

Chapter 2

1	C	**11**	A	**21**	True
2	D	**12**	B	**22**	False
3	A	**13**	A	**23**	True
4	B	**14**	A	**24**	False
5	D	**15**	B	**25**	True
6	A	**16**	A	**26**	False
7	B	**17**	D	**27**	True
8	D	**18**	C	**28**	False
9	A	**19**	B	**29**	True
10	B	**20**	B	**30**	True

Chapter 3

1	A	**11**	B	**21**	True
2	A	**12**	D	**22**	True
3	B	**13**	C	**23**	False
4	C	**14**	B	**24**	True
5	B	**15**	D	**25**	True
6	B	**16**	D	**26**	True
7	D	**17**	B	**27**	True
8	A	**18**	B	**28**	True
9	B	**19**	C	**29**	False
10	D	**20**	D	**30**	True

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EASY-TO-MASTER

Introduction to ICT

About The Book

Easy to Master Introduction to ICT is an essential book for any student who wants to master the basics of ICT. It is written to comprehensively cover all that you need to know in order to develop a more balanced understanding of ICT.

The book is divided into seven chapters. Chapter 1 is a general introduction to ICT, history and its applications. Chapter 2 deals with Computer Hardware and its uses. Chapter 3 covers Computer Software and the various types and their applications. Chapter 4 teaches word processing with a focus on Ms. Word. Chapter 5 is dedicated to spreadsheets especially Ms. Excel. Multimedia is introduced in Chapter 6 with a focus on Ms. PowerPoint.

Chapter 7 teaches about the Internet and its applications.

The book is written to follow a major section of the syllabus of the general introduction to ICT course run at the University of Education, Winneba.

This book is well illustrated, easy to understand, comprehensive and contains practical activities for the topics covered. It is a must have for all students who want to excel.

About the CD

The CD attached to this book contains video tutorials of the practical activities covered in the book. It is simple and easy to master. Best results will be achieved if you practice while watching the video.

About the Authors

The authors are a group of ICT lecturers with over 40 years combined teaching experience. They have expertise in various fields of ICT including software development, multimedia authoring, software engineering, information systems, and educational technology among many others. With all this experience the authors have recognized that using this systematic practical approach to teach ICT is the most suitable for students. To this end a lot relevant practical lessons have been treated. The authors are lecturers in the Department of ICT Education, in the University of Education, Winneba.

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