5 TECHNICAL DRAWING

UNIT 1 · TRADITIONAL DRAWING

1 *Act out a dialogue between* Student A, *who needs information about technical drawing, and* Student B, *who gives details.*

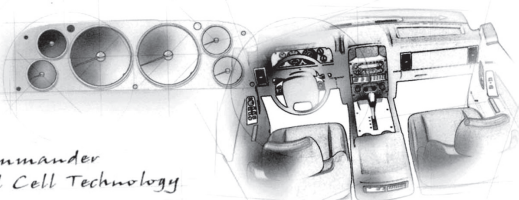| Student A	Student B
Ask what technical drawing is.	Answer.
Ask what a drawing table is.	Give explanation.
Ask about the use of a T-square.	Answer.
Ask what other tools the drafter uses.	Give details.
Ask if the drafting technique requires special skills.	Answer.
Ask when using a pen is better than using a pencil.	Answer.

Jeep Commander Fuel Cell Technology

2 · *Match each system of representation with the corresponding drawing.*
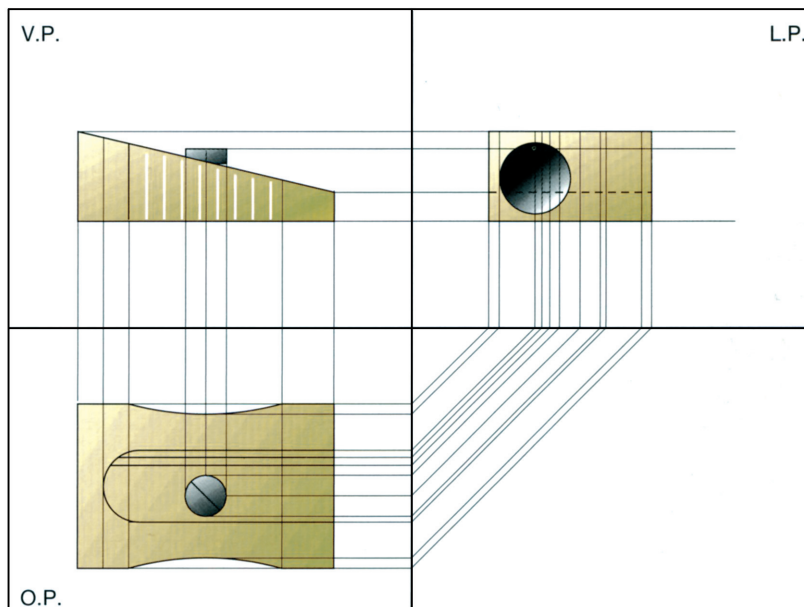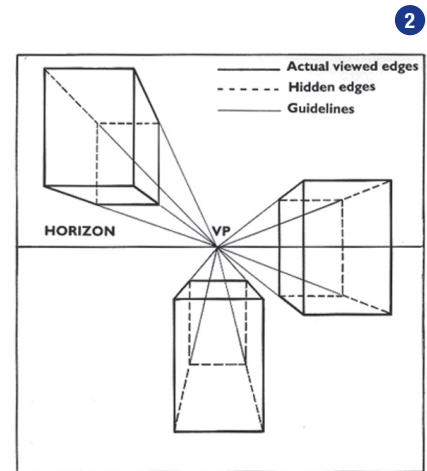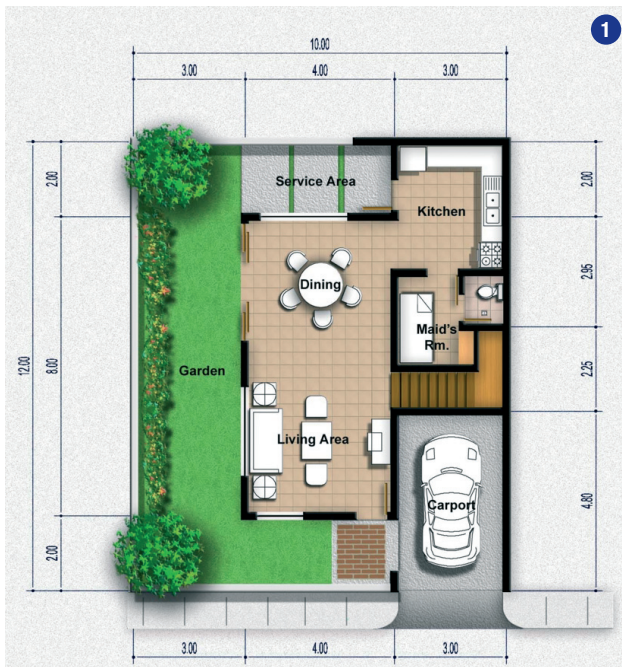
UNIT 2 · COMPUTERS

■ COMPUTER TYPES AND SIZES

Computers can be generally classified by size and power as follows:

• **Supercomputer**. An extremely fast computer that can perform hundreds of millions of instructions per second.

• **Mainframe**. A powerful multi-user computer capable of supporting many hundreds or thousands of users simultaneously.

• **Minicomputer**. A multi-user computer capable of supporting up to hundreds of users simultaneously.

• **Workstation**. A powerful, single-user computer. A workstation is like a personal computer, but it has a more powerful microprocessor and, in general, a higher-quality monitor.

• **Personal computer**. A small, single-user computer based on a microprocessor.

Mainframe

Supercomputer. This is a broad term for indicating one of the fastest computers currently available. Supercomputers are very expensive and are employed for specialized applications that require immense amounts of mathematical calculations. Other uses of supercomputers are scientific simulations, graphics, fluid dynamic calculations, nuclear energy research, electronic design, and analysis of geological data.

Mainframe. This term originally referred to the cabinet containing the central processor unit or "main frame" a huge machine which filled a room. Then, in the early 1970s, the traditional big iron machines were described as "mainframe computers" and eventually just as mainframes.

Minicomputer. This is a midsize computer. In general, a minicomputer is a multiprocessing system capable of supporting up to 200 users simultaneously.

Workstation. A type of computer used for engineering applications (CAD/CAM), desktop publishing, software development, and other types of applications that require a moderate amount of computing power and relatively high quality graphics capabilities. In networking, workstation refers to any computer connected to a local-area network. It could be a workstation or a personal computer.

Workstation

Personal computer (PC). A small, relatively inexpensive computer, designed for an individual user. All PCsare based on the microprocessor technology that enables manufacturers to put an entire CPU on one chip. However, it is common to link them together to form a network. In terms of power, there is great variety. So with sophisticated top quality types, the distinction between personal computers and workstations has faded.
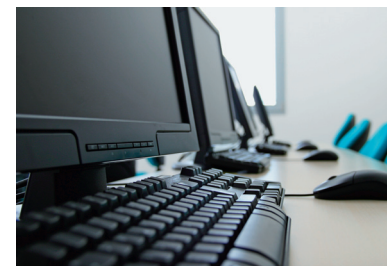
Personal computers

GLOSSARY

to fade: svanire

mainframe: mainframe (grande e potente computer con una memoria molto capace che può essere usato da molti nello stesso momento)

1 *Match each term with its synonym.*

a. broad	**1.** disappeared
b. cabinet	**2.** helping/connecting
c. eventually	**3.** allows
d. supporting	**4.** general
e. moderate	**5.** neither big nor small
f. enables	**6.** whole
g. entire	**7.** room
h. faded	**8.** in the end

■ PERSONAL COMPUTER TYPES

Personal computers can be generally classified by size and case. The case is the metal frame that serves as the structural support for the electronic components. Every computer system requires at least one case to house the circuit boards and wiring. It also contains slots for expansion boards. There are two basic kinds of case designs: desktop models and tower models. Then come the portable computers – computers small enough to carry. Portable computers include notebook and subnotebook computers, hand-held computers, palmtops, and PDAs.

Tower model. The term refers to a computer in which the power supply, motherboard, and mass storage devices are stacked on top of each other. In desktop models these components are housed in a more compact box. The main advantage of tower models is that they make installation of additional storage devices easier.

Desktop model. This is a computer designed to fit comfortably on top of a desk, typically with the monitor sitting on top of the computer. Desktop model computers are broad and low, whereas tower model computers are narrow and tall. Because of their shape, desktop model computers are generally limited to three internal mass storage devices. Desktop models designed to be very small are sometimes referred to as slimline models.

Computer tower case

Notebook computer. This is an extremely lightweight personal computer, small enough to fit easily in a briefcase. Apart from size, the principal difference between a notebook computer and a personal computer is the display screen. Notebook computers use a variety of techniques, known as flat-panel technologies, to produce a lightweight and non-bulky display screen. In terms of computing power, modern notebook computers are nearly equivalent to personal computers. They have the same CPUs, memory capacity, and disk drives. However, all this power in a small package is expensive. Notebook computers cost about twice as much as equivalent regular-sized computers. Notebook computers come with battery packs that enable you to run them without plugging them in. However, the batteries need to be recharged every few hours.
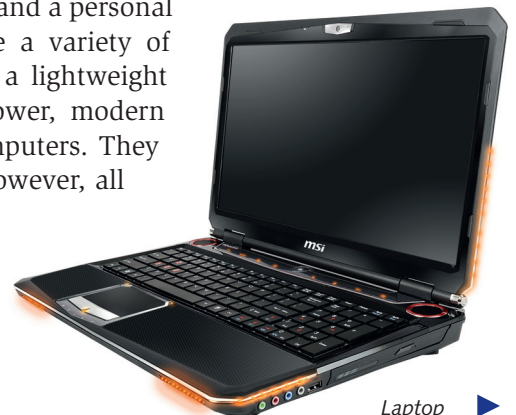
Laptop ▶

Laptop computer. This is a small, portable computer – small enough that it can sit on your lap. Nowadays, laptop computers are more frequently called notebook computers.

Subnotebook computer. This portable computer is slightly lighter and smaller than a notebook computer. Typically, subnotebook computers have a smaller keyboard and screen, but are otherwise equivalent to notebook computers.

Hand-held computer. A portable computer that is small enough to be held in one's hand. Although extremely convenient to carry, handheld computers have not replaced notebook computers because of their small keyboards and screens. The most popular hand-held computers are those specifically designed to provide PIM (Personal Information Manager) functions, such as a calendar and address book. Some manufacturers are trying to solve the small keyboard problem by replacing the keyboard with an electronic pen. Hand-held computers are also called PDAs, palmtops and pocket computers.

Palmtop. A small computer that literally fits in your palm. Compared to full-size computers, palmtops are limited, but they are practical for certain functions such as phone books and calendars. Palmtops that use a pen rather than a keyboard for input are often called hand-held computers or PDAs.

PDA. Short for Personal Digital Assistant, this is a handheld device that combines computing, telephone/fax and networking features. A typical PDA can function as a cellular phone, fax sender, and personal organizer. Unlike portable computers, most PDAs are pen-based, using a stylus rather than a keyboard for input. This means that they also incorporate handwriting recognition features. Some PDAs can also react to voice input by using voice recognition technologies. PDAs are also called palmtops, hand-held computers and pocket computers.

GLOSSARY

address book: rubrica	**to house**: ospitare, alloggiare	**motherboard**: scheda madre
bulky: ingombrante	**lap**: ginocchia (lett. parte superiore delle gambe, quando si è seduti)	**otherwise**: altrimenti
case: contenitore, custodia		**wiring**: cablaggio, cavi
to fit: stare dentro	**lightweight**: leggero	**to stack**: impilare

Palmtop

✎ **2** *Complete the following charts with information from the previous texts.*

a.

Computer Types	Features
Supercomputer	
Mainframe	
Minicomputer	
Workstation	
Personal computer	

b.

Personal computer Types	Features

✎ **3** *Now join the contents of the charts into a short summary about the different types of computers and their characteristics; then make an oral report to the teacher.*

▶

■ PERSONAL COMPUTER TYPES

Input devices allow us to enter raw data into a computer. The computer processes the data and then produces output that we can understand using an output device. Input devices can be **manual** or **automatic**. The processing is mainly handled by the Central Processing Unit (CPU) also referred to as processor.
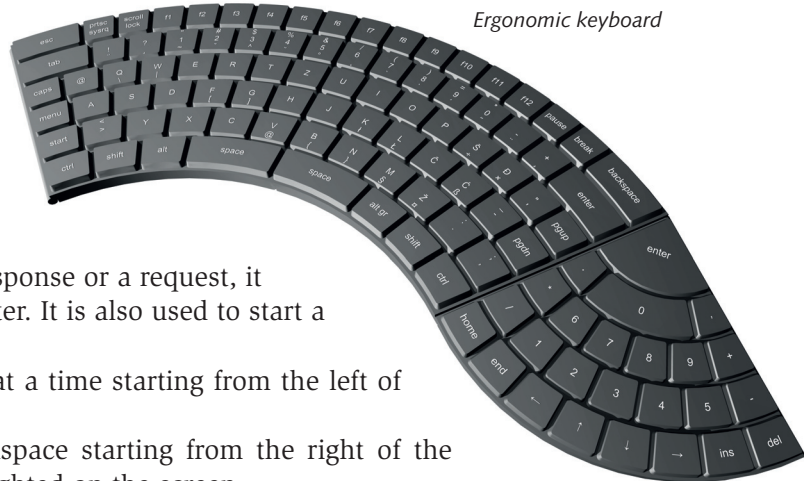
■ MANUAL INPUT DEVICES

The most common **manual** input devices are the keyboard and mouse.

Ergonomic keyboard

• **Keyboard**
Much of a computer keyboard looks like a typewriter keyboard. But there are extra keys on it, just for your computer.

– **enter** - When you finish typing in a response or a request, it will be sent to the CPU by pressing enter. It is also used to start a new paragraph.
– **backspace** - It deletes characters one at a time starting from the left of the cursor.
– **delete** - It does the same as the backspace starting from the right of the cursor and also erases whatever highlighted on the screen.
– **alt and ctrl-alt** - They are "helpers" or modifier keys. They only work by pressing them at the same time as other keys. What they do changes with every computer program.
– **cursor keys** - These arrow keys move the cursor (arrow or flashing bar) around the monitor screen for typing or drawing.
– **function keys** - These are placed across the top of the keyboard and their function changes depending on the program that you are using. For Windows-based programs, F1 is always the Help key.
– **numerical keypad** - It looks like a small calculator. By pressing the NumLock you can actually use it as a small calculator in certain programs.

• **Mouse**
It is an input device like the keyboard, but it is more dynamic. It has a roller ball attached to several internal sensors allowing you to travel around the screen on the monitor. When you reach your destination, you can click, highlight or drag and drop the item. It has two buttons, left and right. Clicking twice the left button you mainly select items. When the right button is clicked a special menu is displayed with various options you can select. Laptop computers have an integrated mouse.

Wireless mouse

Other manual input devices include:

• **Concept keyboard**
Each button on a concept keyboard relates to a particular item or function. Buttons can be labelled with a text or a picture. Fast food restaurants often use concept keyboards because very little training is needed to operate them and they are efficient – a single button can order an entire meal.

►

• Trackball

Used as an alternative to a mouse. To operate it, the user rotates the ball which moves the pointer on screen. They are particularly easy to use for those people with limited movement in their hands and are often used in Computer Aided Design (CAD).

• Joystick

Joysticks used to be popular with gamers but have slowly been replaced by other types of game controller. In building, joysticks are used to control machinery such as cranes.

• Digital camera

A digital camera takes pictures and can usually record video, too. The pictures it takes and the videos it records are stored in files. These files can be copied to a computer and later edited.

• Microphone

Microphones are used to input sound. In computing they can be used with voice recognition software and a word processing application to enter text. Webcams commonly have built-in microphones, too.

• Touch screen

A touch sensitive visual display unit (VDU), or touchscreen, has a grid of light beams or fine wires criss-crossing the screen which are used to detect touch. Many mobile phones use touch screens and do away with the keypad entirely. They are often used on cash machines and in shopping centres. Touch screens are robust, easy to operate and easy to reprogram.

• Video digitiser

A video digitiser takes an image from a video camera or television and digitises it so it can be read by, and stored on, a computer. Video sequences captured using a video digitiser are often used in multimedia presentations.

• Scanner

Scanners are used to digitise images. They are similar to a photocopier but make a digital copy instead of a physical one. They can also be used with optical character recognition (OCR) software to scan in text which is then editable.

• Graphics tablet

A graphics tablet consists of a flat pad (the tablet) on which the user draws with a special pen. As the user draws on the pad, the image is created on the screen. Using a graphics tablet, a designer can produce very accurate on-screen drawings, as if they were drawing on paper.

▪ AUTOMATIC INPUT DEVICES

The most common **automatic** input devices are the following:

• Sensors

Sensors collect data continuously and are typically linked to a control program that specifies acceptable levels, e.g. the minimum and maximum temperature in a room. The control program decides what to do next based on the data it is fed by the sensors.

• Barcode reader

Barcodes are represented by black vertical bars and are read by a barcode reader. Barcodes are printed on nearly every product you buy each of which has a unique code.

• Magnetic strip (or stripe) reader

Magnetic stripes are built into many plastic cards, such as debit, credit and personal identity cards. The magnetic strip on the back of the card can hold the personal details of the card owner and, with the necessary PIN, will allow access to secure information, e.g. bank account details. Data stored on the strip is scanned and input into a computer system by a magnetic stripe reader.

• Magnetic Ink Character Reader (MICR)

Magnetic ink characters appear at the bottom of cheques. Banks use MICR to read the numbers from the bottom of cheques to obtain data such as account numbers and bank sort codes.

• Optical Mark Reader (OMR)

An OMR reads marks made by pencil on a printed form into the computer. OMR systems are made to read pre-printed forms and check boxes such as National Lottery number selection sheets and multiple choice exam papers (such as P.E.T. and F.C.E.).

Other input devices are:

• Disk drives

– **hard disk drive** - It is the device that reads and writes data on the hard disk. The hard disk drive and the hard disk are referred to as the "hard drive" and are packaged as a single unit, mounted permanently inside the computer. The hard disk holds the operating system for the computer (e.g. Windows 98/2000/XP…), the programs (e.g. Microsoft Word), and all the documents. It can store a great number of times the amount of information stored on a floppy disk.

– **floppy disk drive** - It is a common tool on computers, though most recent laptops do not feature it, and it allows you to insert and remove a floppy disk.

– **cd-rom drive** - The CD-ROM drive is an optical drive that reads information from a compact disc, like a music CD or a software CD.

GLOSSARY

built-in: incorporato	**to drop**: eliminare	**to highlight**: evidenziare
crane: gru	**to edit**: redarre	**to label**: contrassegnare
criss-crossing: che si intrecciano	**to feed (fed-fed)**: alimentare	**pointer**: puntatore
to do away with: fare a meno di	**to secure**: proteggere	**raw**: grezzo
to drag: trascinare	**grid**: griglia	**cheque**: assegno

4   *Answer the following questions.*

a.   What is the function of input devices?

b.   How can we understand the results of the computer processing?

c.   How are output devices categorised?

d.   Which part of the computer is responsible for the processing?

e.   Where is a concept keyboard mainly used?

f.   What is often used instead of a mouse?

g.   What is used in building to control cranes?

h.   What do you need to edit photos taken with a digital camera?

i.   Where are touch screens currently employed?

j.   What is the difference between a scanner and a photocopier?

k.   What input device can accurately reproduce drawing as on paper?

l.   What sort of data is contained in a magnetic strip?

m.   How are P.E.T. and F.C.E. exam sheets read?

■ HARDWARE: OUTPUT DEVICES

Common output formats are printed paper, saved files, sound, video and on-screen documents. These let the computer communicate with the user. Examples of devices that take advantages of these formats are:

Monitor

The most common output device is the monitor or VDU (Video Display Unit). Modern monitors, where the case is not more than a few centimetres deep, are usually Liquid Crystal Displays (LCD) or Thin Film Transistors (TFT) monitors. Older monitors, where the case is likely to be around 30 cm deep, are Cathode Ray Tube (CRT) monitors. LCD monitors are vastly slimmer than CRT monitor.

Printers

Laser printers are quite expensive to buy and run but produce a high quality output and are quiet and fast. **Ink-jet printers** offer black and white or colour printing with reduced levels of quality and speed. Colour ink-jet printers are cheaper to buy than colour laser printers. **Dot matrix printers** are not so common today. They are comparatively noisy and low quality but are cheap to run and are used when carbon copies or duplicates need to be made, such as for wage slips. Also, they are useful in dirty environments such as a garage because they are much sturdier than the other two types of printer.

Plotters

A plotter can be used to produce high quality, accurate, A3 size or bigger drawings. They are usually used for Computer Aided Design (CAD) and Computer Aided Manufacture (CAM) applications, such as printing out plans for houses or car parts.

▶

Many other types of output device exist, including:
• speakers • switched outputs • projectors • lights • buzzers • mechanical devices (e.g. a robot arm)• motors.

buzzer: cicalino, segnalatore acustico	**format**: formato **to run**: gestire, utilizzare	**sturdy**: resistente **wage slip**: foglio paga, cedolino

5 *Tick the correct option.*

1. What is the most suitable input device for inputting a short report?
☐ mouse   ☐ scanner   ☐ keyboard

2. What is the most suitable input device for highlighting or selecting an object on the screen?
☐ joystick   ☐ mouse   ☐ keyboard

3. Which of these would you use to digitise a paper photograph?
☐ scanner   ☐ joystick   ☐ touchscreen

4. What is Magnetic Ink Character Recognition often on?
☐ till receipts   ☐ cheques   ☐ barcodes

5. Which of these is another name for the CPU?
☐ processor ☐ plotter   ☐ scanner

6. Which of these printers would you use to print a wage slip using carbonised paper?
☐ ink-jet printer   ☐ laser printer   ☐ dot matrix printer

7. Which of these printers would an architect be most likely to use to print large plans?
☐ ink-jet printer   ☐ laser printer   ☐ plotter

8. Which of these printers would be the most suitable printer for printing a large number of high quality black and white printouts?
☐ laser printer   ☐ dot matrix printer   ☐ plotter

■ SOFTWARE

Software is a collection of instructions that can be 'run' on a computer. These instructions tell the computer what to do. Software is not a physical thing (but it can of course be stored on a physical medium such as a CD-ROM), it is just a collection of codes.
Examples of software include operating system such as Windows XP or Mac OS X, applications such as Microsoft Word, and the instructions that control a robot.

►

To make an analogy with your body: your software is all of your thoughts, these are the instructions that tell your physical body what to do.

Computer hardware is the physical components that make up the computer system. Hardware is useless without software to run on it.

Software is **instructions** that tell computer hardware what to do. Software is useless unless there is hardware to run it on.

For a computer system to be useful, it has to have both hardware and software.

+

GLOSSARY

collection: insieme

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6   *Decide if the following statements are true (T) or false (F).*

|		T	F
a.	Software is instructions for the user.	☐	☐
b.	Codes make up software.	☐	☐
c.	Software can be compared to the muscles of your body.	☐	☐
d.	You need software to use hardware.	☐	☐
e.	A computer system is basically its software.	☐	☐

■ THE INFORMATION PROCESSING CYCLE

Let us examine the way the central processing unit, in association with the memory, executes a computer program.

Before an instruction can be executed, program instructions and data must be placed into the memory from an input device or a secondary storage device. Once the necessary data and instructions are in the memory, the central processing unit performs the following four steps for each instruction:

1. The control unit gets the instruction from the memory.
2. The control unit decodes the instruction and directs that the necessary data be moved from the memory to the arithmetic/logic unit. These first two steps together are called **instruction time**, or I-time.
3. The arithmetic/logic unit executes the arithmetic or logical instruction, that is, it performs the actual operation on the data.
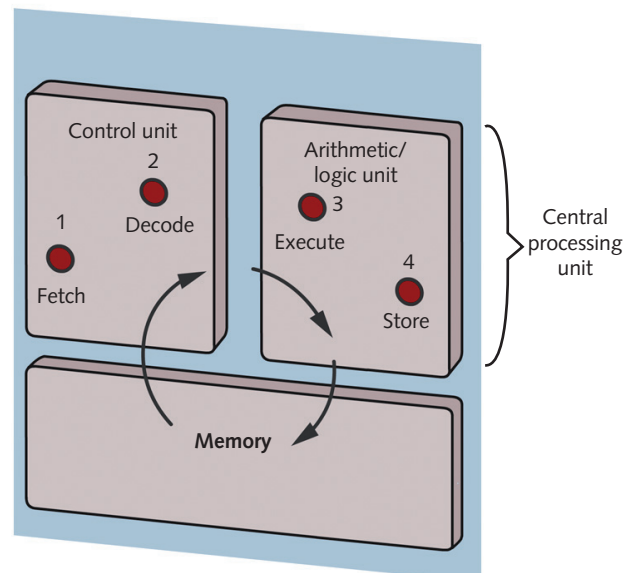
4. The arithmetic/logic unit stores the result of this operation in the memory or in a register. Steps 3 and 4 together are called **execution time**, or E-time.

The control unit eventually directs the memory to release the result to an output device or a secondary storage device. The combination of I-time and E-time is called the **information processing cycle** or **machine cycle**.
Each central processing unit has an internal clock that produces pulses at a fixed rate to synchronize all computer operations.

GLOSSARY

actual: effettivo	**eventually**: infine, alla fine	**rate**: (qui) velocità, ritmo

7 *In the text above there are three "false friends". Match them, together with four others, with their correct meanings below.*

a. actual ☐
b. eventually ☐
c. rate ☐
d. convenient ☐
e. factory ☐
f. arrange ☐
g. discrete ☐

1. To organize or make plans for something
2. The speed at which something happens over a period of time
3. Clearly separate
4. Real or exact
5. Useful to you because it saves you time
6. A building in which goods are produced in large quantities
7. After a lot of things have happened

■ BACKING STORAGE

The main internal backing store is the computer's hard disk. A hard disk stores:
• software applications or programs
• the majority of your data files
Hard disks spin at very high speeds (around 7,200 RPM – revolutions per minute) within a sealed unit inside the computer. Hard disks store large amounts of data – 200GB to 1TB is common in desktop computers.
The external storage devices include:

CDs (**C**ompact **D**isc)
These are optical discs and store up to 700MB of data. CDs can be used for multimedia applications and can store pictures, sounds and video clips. There are several formats on the market, such as:
• CD-ROM (Compact Disc – Read-Only Memory), the data is written to them before they are sold.
• CD-R (Compact Disc – Recordable), the user can write data to the CD once or fill it over time using multi-sessions (writing to the same disc on separate occasions).   ▶

- CD-RW (Compact Disc – Re-Writable), the CD can be written and re-written to. Unlike multi-session discs, existing data can be overwritten.

DVDs (**D**igital **V**ersatile **D**isc)
DVDs are the same physical size as CDs but hold much more data – a single-sided disc can hold up to 4.7 GB. DVDs are commonly used for storing video so they are often measured in minutes, e.g. 4.7 GB = 120 minutes. They also come out in several formats: DVD-ROM, DVD-R and DVD-RW.
To read data from and write it to CDs and DVDs you will need **CD/DVD drives** that are able to:
- read all CD and DVD formats
- write to CD-R, CD-RW, DVD-R and DVD-RW.
Data is written to and read from the discs using a laser.

Magnetic tapes
Principally used to back up important files from the hard disk and for long-term storage and archiving of data. Businesses typically use magnetic tapes to back up important data. They are small, robust and portable, and provide low-cost storage per GB. The disadvantage is that they are very slow to write to and read from because serial access means all the data on the tape must be read before the required data can be accessed.

External hard disks
An external hard disk can store very large amounts of data, e.g. 1 TB or more, and can be plugged into a computer via a USB or FireWire port to provide extra storage. They are essentially the same as the hard disk in your computer but due to the casing are usable externally. The advantage is their high capacity, so they can be used to back up data or move large amounts of data between machines. They are often quite large and therefore inconvenient to carry around and they have moving parts so they are more likely to break, especially if dropped.

Memory sticks or pen drives
A memory stick is a 'pen top' sized USB device inserted into the USB port – it is then seen by the computer as a removable drive. Memory sticks typically come in sizes from 1GB to 32GB upwards depending on the price paid. They can hold large quantities of data, are extremely portable, so the user can take them wherever they go, and are durable because they have no moving parts, but in general they are more likely to be lost, stolen or damaged.
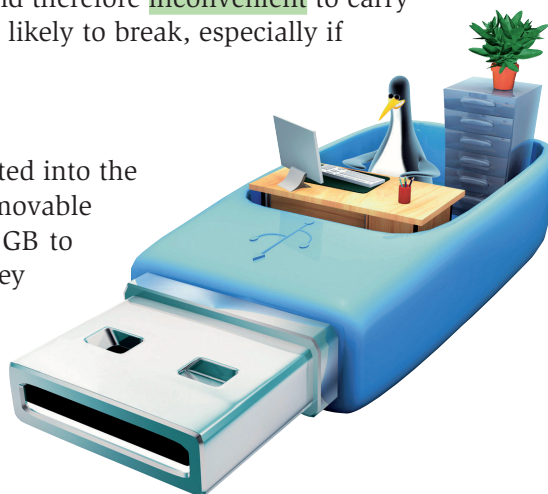
GLOSSARY

to drop: lasciar, far cadere	**pen top**: cappuccio di una penna	**to spin**: girare
due to: a causa di	**to plug**: inserire	**within**: all'interno
inconvenient: scomodo	**sealed**: sigillato	

8 *Tick the correct option.*

a. Which of the following retains its data even after the computer is switched off?
☐ ROM
☐ RAM
☐ REM

b. What does RAM stand for?
☐ Random Accessible Memory
☐ Random Access Memory
☐ Random Allowable Memory

c. What is a computer's main internal backing store?
☐ CD-ROM
☐ ROM
☐ Hard disk

d. How best is the size of a hard disk measured?
☐ Kilobytes
☐ Megabytes
☐ Gigabytes

e. What type of media is a CD-RW?
☐ Optical
☐ Magnetic
☐ Solid state

f. Which of these storage media would be the most suitable to back up a school's file server overnight?
☐ CD
☐ Magnetic tape
☐ Pen drive

g. What would be the most suitable device to transfer a file from home to school?
☐ Magnetic tape
☐ Hard drive
☐ USB memory stick

h. Which of the following shows the correct order of storage size, starting with the smallest?
☐ CD-ROM, DVD, pen drive
☐ CD-ROM, pen drive, DVD
☐ DVD, CD-ROM, pen drive

■ THE PC MODES OF OPERATION

Computers can operate in many different ways requiring different and complex operating systems

• **Real-time processing**

When the computer has to react within a guaranteed time to an input, a real-time operating system is used. For example, the engine management system within a car uses a real-time operating system in order to react to feedback from sensors placed throughout the engine. Computers operating in real time are often dedicated to the control of systems such as industrial processes, aircraft and space flights. A real-time operating system (RTOS) guarantees a certain capability within a specified time constraint.

• **Multi-programming**

Multi-programming is a method of operating such that several programs appear to be running at once. Since there is only one processor, there can be no true simultaneous execution of different programs. Instead, the operating system executes part of one program, then part of another, and so on, but the processor is so fast that it seems that many jobs are being processed at the same time.

• **Batch processing**

A batch processing system is where programs or data are collected together in a batch and processed in one go. Typically, the processing of payrolls, electricity bills, invoices and daily transactions are dealt with this way. Jobs are stored in a queue until the computer is ready to deal with them. Batch processing jobs are often done overnight.

▶

• **Interactive processing**

An interactive processing system is where the tasks on the computer system require a continuous exchange of information between the user and the computer system. It can be seen as the opposite of batch processing.

• **Multi-tasking**

A multitasking process allows a user to perform more than one computer task at a time. The operating system is able to keep track of where you are in these tasks and go from one to the other without losing information. When you open your Web browser and then open Word at the same time, you are making the operating system do multitasking.

• **Multi-access or multi-user**

Modern personal computers can allow multi-user access. A multi-access (or multi-user) system is one where several users can use the same system together via a LAN (Local Area Network). The CPU deals with users in turn. Clearly, the more users, the slower the response time. Generally, however, the processor is so fast that the response time is at most a fraction of a second and the users feel they are being dealt with immediately.

GLOSSARY

batch: gruppo unico	**one go**: colpo solo	**throughout**: in ogni parte di
constraint: vincolo	**overnight**: dalla sera al mattino	**track**: traccia
invoice: fattura	**payroll**: libro paga	

9 *Complete the following sentences.*

1. A real-time operating system is used when ....
2. Multi-programming is a method of operating such that ....
3. A batch processing system is where ....
4. An interactive processing system is where ....
5. Multitasking allows a user ....
6. A multi-access system is one where ....

10 *Decide if the following sentences are true or false.*

	T	F
1. The engine management system within a car uses a real-time operating system.	☐	☐
2. With batch processing, different programs are executed simultaneously.	☐	☐
3. In real time processing, the processor is so fast that it seems that many jobs are being processed at the same time.	☐	☐
4. The processing of payrolls, electricity bills, invoices and daily transactions are dealt with in multi-programming.	☐	☐
5. Batch processing jobs are often done early in the morning.	☐	☐
6. In multi-tasking, the operating system is able to keep track of where you are in the different tasks.	☐	☐
7. When you open your web browser and then open Word at the same time, you are making the operating system work in batch method.	☐	☐
8. With multi-programming, the CPU deals with users in turn.	☐	☐

11 *Read the text below and label each paragraph with a title from the list.*

Par. 1 ☐   **a.** Definition of a LAN   Par. 4 ☐   **d.** What a network is
Par. 2 ☐   **b.** LANs and WANs   Par. 5 ☐   **e.** Connecting networks
Par. 3 ☐   **c.** Components of a network   Par. 6 ☐   **f.** Why a network

Par. 1 – A **network** is a set of computers which are linked together on a permanent basis. This can mean two computers cabled together on the same desk or in the same office, or thousands of computers across the world.

Par. 2 – A network enables users to **share hardware** like scanners and printers, **access to data** stored on other people's computers and even **run programs** that are installed not on their own computers but elsewhere in the network.

Par. 3 – A typical network consists of:
- **nodes**, the different computers or devices
- **a connecting medium**, which can be wired or wireless
- **routers** or **hubs**, specialised computers that sort messages
- **switches**, which allow nodes to communicate with one another.

▶

Par. 4 – Generally a network is defined according to the geographic area it span. A **LAN** is a **Local Area Network**. It is a network of computers located in the same general physical location, usually within a building and controlled by a single organisation.

Par. 5 – A **WAN** is a **Wide Area Network**. As the term implies, a wide-area network spans a large physical distance such as the Internet. A WAN is a geographically-dispersed collection of LANs not owned by any one organisation. A network device called a **router** connects LANs to a WAN.

Par. 6 – Networks can be connected to each other, too. A **gateway** connects networks of different kinds, while a **bridge** connects networks of the same type. A **router** connects several networks. A router is used to pick the right path for communications traffic. If there is a partial failure of the network, a router looks for an alternative route.
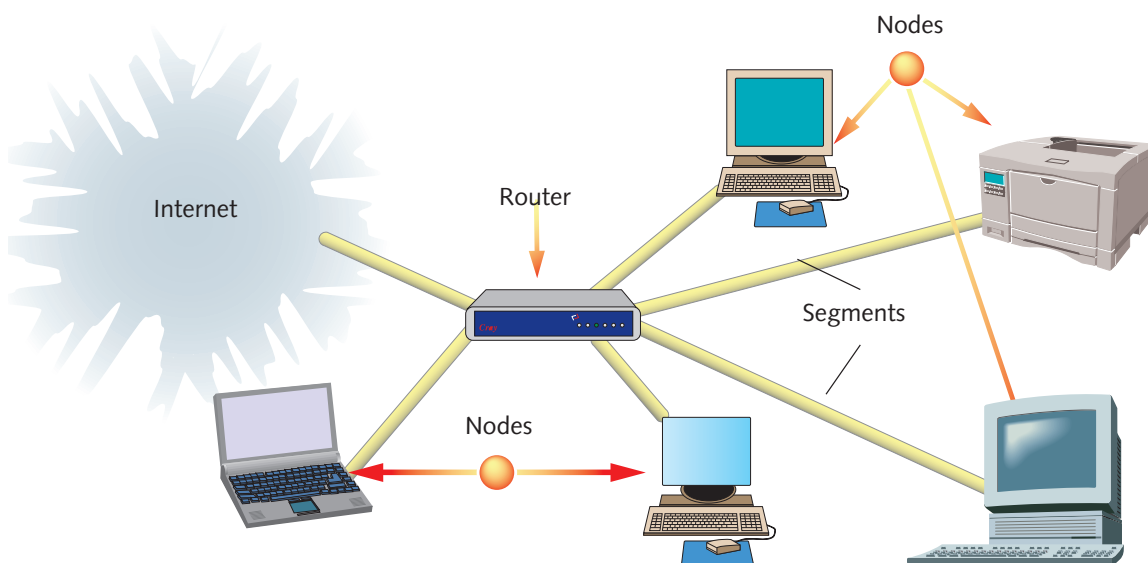
GLOSSARY

to sort: smistare.   **to span:** estendersi, coprire.

12 *Here are some of the fundamental parts of a network. Match them with their definitions.*

a.	network	☐	**1.**	Connection of networks of the same type.
b.	node	☐	**2.**	Crucial device that lets messages flow between networks.
c.	segment	☐	**3.**	Connection between networks with different architectures.
d.	router	☐	**4.**	Any portion of a network that is separated from other parts of the network by a switch, bridge or router.
e.	gateway	☐	**5.**	A group of computers connected together in a way that allows information to be exchanged between them.
f.	bridge	☐	**6.**	Anything that is connected to the network, typically a computer, but also a printer or CD-ROM tower.

13 *Pair work. In turns ask and answer the following questions.*

a. What are the advantages of using a network? ....

b. What is a network made up of? ....

c. What is a LAN? ....

d. What is a WAN? ....

e. How can networks of different kinds be connected? ....

f. Why is a router an essential device in a group of networks? ....

14 *Listen and fill in the blanks with the missing words.*

■ WIRELESS NETWORKING

Wireless networks utilise radio waves and/or (a) .... to maintain communication (b) .... between computers. Wireless networking is a more modern alternative to (c) .... networking which relies on copper and/or fibre optic (d) .... between network devices.

A wireless network (e) .... advantages and disadvantages compared to a wired network. The advantages of wireless include (f) .... and elimination of unsightly cables. The disadvantages include the potential for radio (g) .... due to weather, other wireless devices, or obstructions like (h) .... Wireless is rapidly gaining in (i) .... for both home and business networking. Wireless technology continues to (j) ...., and the cost of wireless products continues to decrease.
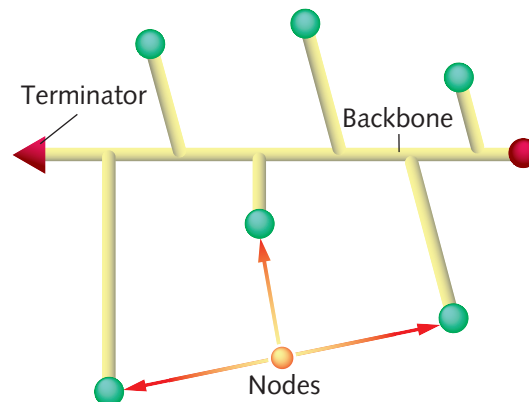
■ NETWORK TOPOLOGIES

The **topology** of connection is the way in which computers are connected together. It depends on the distance involved and the degree of stability needed for the network.

• **Bus** – Each node is connected one after the other along the same backbone. Information sent from a node travels along the backbone until it reaches its destination without passing through the server.

Advantages: a computer or device that has gone down does not affect the others.

Disadvantages: it cannot connect a large number of computers.
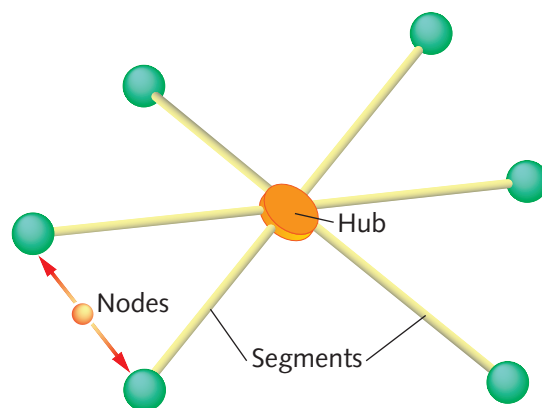

Bus network topology.

- **Star** – In a star network, each node is connected to a central device called a **hub** that joins all the different nodes together: it takes the signal from any node and passes it to all the others without filtering it. This configuration is good for businesses that have large amounts of rapidly changing data, like banks and airline reservation offices.
Advantages: it allows close control of data. Each PC sees all the up-to-date data. If a computer other than the hub fails, no other computer is affected.
Disadvantages: if the hub or its software goes down, the whole network is down.
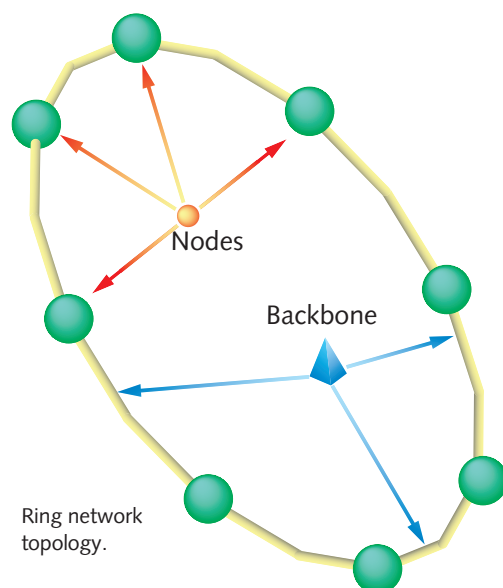
Star network topology.

- **Ring** – It connects the computers to one another in a circle. There is no central hub holding the data and communication flows in one direction around the ring. In turn, each node sends and receives information through the use of a token which is constantly passed along the network, so that this topology is referred to as a **Token Ring**.
Advantages: it requires less cabling and so is less expensive.
*Disadvantages*: if one node goes down, it takes down the whole network.

Ring network topology.

- **Star bus** – Probably the most common network topology in use today, a star bus combines elements of the star and bus topologies to create a versatile network environment.
Advantages: it supports future expandability of the network much better than a bus or a star. A computer out of order does not affect the others.
Disadvantages: if one of the hubs or its software goes down, the whole network is down.
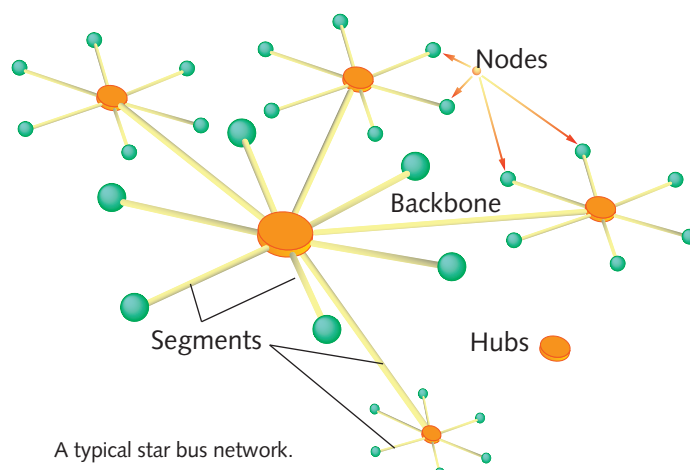
A typical star bus network.

GLOSSARY

backbone: dorsale.   **up-to-date:** aggiornato.   **token:** gettone (pacchetto dati).

15 *Decide if the following statements are true (T) or false (F) and correct the false ones.*

		T	F
a.	The choice of the topology of connection depends exclusively on the location of computers.	☐	☐
b.	In a bus network all the computers are arranged one after the other.	☐	☐
c.	In the bus topology there is a server which controls the flow of data.	☐	☐
d.	In a star network data always have to pass through the hub.	☐	☐
e.	The hub in a star network filters data before sending them to the nodes.	☐	☐
f.	In a ring connection, communication can flow in both directions along the ring.	☐	☐
g.	A star bus network is very versatile and common.	☐	☐

16 *Refer back to the text and complete the table.*

TOPOLOGY	ARRANGEMENT	MOSTLY USED	ADVANTAGES	DISADVANTAGES
BUS		– Small networks		
STAR				– If the hub or its software breaks down, the whole network is down
RING	– Computers are connected one after the other in a circle			
STAR-BUS			– Supports expandibility of the network – A computer out of order does not affect the others	

17 Pair work. *The students are divided in groups of four. Each student in a group prepares a short oral report on one of the network topologies, referring to the completed table above.*

■ WIRELESS COMMUNICATION

Wireless operations permit services, such as long range communications that are impossible or impractical to implement with the use of wires. In telecommunications, **wireless communication** may be used to transfer information over short distances (a few metres as in television remote control) or long distances (thousands or millions of kilometres for radio communications). Wireless communication is convenient as it can be available all the time and almost anywhere. It is used for radio programmes, mobile phones, GPS units and computer networks. In addition, digital signals are less affected by interference than analogue signals. ▶

Wireless communication has several advantages over wired communication:
- distances beyond the capabilities of typical cabling can be covered;
- situations where normal cabling is difficult or financially impractical can be overcome;
- no wires need to be run through buildings, over or under ground;
- wireless devices can be portable.

Wireless communication can be via:
- **radio frequency** communication (radio waves are used to transmit television and radio programmes); radio stations with similar transmission frequencies can interfere with each other's signals;
- **microwave communication**, used to transmit mobile phone calls and to connect computers, especially laptop computers;
- **infrared** (IR) short-range communication, for example from consumer IR devices such as remote controls or via Infrared Data Association (IrDA).

GLOSSARY

to affect: influenzare	**to implement**: realizzare	**to overcome**: superare

18 *Answer the following questions.*

1. What is wireless communication used for?
2. Why is it convenient?
3. Why are digital signals better than analogue signals?
4. What are the advantages of wireless communication over wired communication?
5. What are radio waves used for?
6. What happens if two radio stations work with similar frequencies?
7. What is microwave communication used for?
8. Give an example of a device which uses infrared communication.

■ WHY WI-FI?

Wi-Fi®, which stands for **Wireless Fidelity**, is a mechanism for wirelessly connecting electronic devices. A device enabled with Wi-Fi, such as a personal computer, video game console, Smartphone, or digital audio player, can connect to the Internet via a wireless network access point. In a Wi-Fi network, computers with Wi-Fi network cards connect wirelessly to a wireless router. The router is connected to the Internet by means of a modem, typically a cable or DSL modem. An access point, called a **hotspot**, has a range of about 20 metres indoors and a greater range outdoors. Multiple overlapping access points can cover large areas.
Wi-Fi® is a trademark of the Wi-Fi Alliance and the brand name for products using the IEEE 802.11 family of standards, which was developed by the Institute of Electrical and Electronics Engineers (IEEE) and released in 1997. Wi-Fi is used by over 800 million people. There are over 5 million hotspots around the world, and about 700 million new Wi-Fi devices are sold every year. ▶

Wi-Fi provides services in private homes and offices as well as in public spaces at Wi-Fi hotspots set up either free of charge or commercially. So Wi-Fi networks can either be "open", and anyone can use them, or "closed", in which case a password is needed. Organizations and businesses such as airports, hotels, and restaurants often provide free-use hotspots to attract or assist clients.

To connect to a Wi-Fi LAN, a computer has to be equipped with a **wireless network interface controller**. The combination of computer and interface controller is called a station. All stations share a single radio frequency communication channel. Transmissions on this channel are received by all stations within range. Each station is constantly tuned in the radio frequency communication channel to pick up available transmissions.

Routers that incorporate a DSL modem or a cable modem and a Wi-Fi access point – often set up in homes or other buildings – provide Internet access to all devices tuned into them, wirelessly or via cable. With a portable Wi-Fi router, people can easily create their own Wi-Fi hotspots that connect to the Internet via cellular networks.

GLOSSARY

business: azienda	**set up**: creare, avviare

---

19   *In the text find the English for these Italian words.*

1. *per mezzo di:* ....
2. *abilitare:* ....
3. *sovrapporre:* ....
4. *marca:* ....
5. *sviluppare:* ....
6. *essere dotato:* ....
7. *condividere:* ....
8. *cavo:* ....

---

20   *What is the Italian for these English words in the text?*

1. to release: ....
2. typically: ....
3. range: ....
4. free of charge: ....
5. to be tuned: ....
6. available: ....
7. to pick up: ....
8. via: ....

■ WHAT IS THE INTERNET?

The **Internet** is a global system of interconnected computer networks that use the standard Internet Protocol Suite (TCP/IP, Transmission Control Protocol/Internet Protocol) to serve billions of users worldwide. It is a **network of networks** that consists of millions of private, public, academic, business and government networks, of local to global scope, which are linked by a broad array of electronic, wireless and optical networking technologies. The Internet carries a vast range of information resources and services, such as the inter-linked hypertext documents of the World Wide Web (WWW) and the infrastructure to support electronic mail.

Most traditional communications media, including telephone, music, film, and television have been reshaped or redefined by the Internet; newspaper, book and other forms of print publishing are also adapting to website technology. The Internet has enabled or accelerated new forms of human interaction through instant messaging, Internet forums, and social networking. Online shopping has boomed both for major retail outlets and small artisans and traders. Business-to-business and financial services on the Internet affect supply chains across entire industries. The Internet allows greater flexibility in working hours and locations, especially with the spread of unmetered high-speed connections and web applications.

The Internet can now be accessed almost anywhere by numerous means, especially through mobile Internet devices. Mobile phones, data cards, handheld game consoles and cellular routers allow users to connect to the Internet wherever there is a network supporting that device's technology.

The Internet has no centralized governance in either technological implementation or policies for access and usage; each constituent network sets its own standards. Only the **Internet Protocol Address Space** and the **Domain Name System** are directed by a maintainer organization, the **Internet Corporation for Assigned Names and Numbers (ICANN)**.

GLOSSARY

array: serie	**maintainer**: curatore	**unmetered**: illimitato
to boom: espandersi	**retail outlet**: punto vendita	
handheld: palmare	**scope**: portata	

✎ **21**   *Complete the following sentences with terms from the text.*

1. The Internet is a global system of interconnected computer networks that are linked by different ....

2. The Internet carries a vast range of information .... and services, such as the .... and the electronic mail.

3. Most traditional .... including telephone, music, film, and television have been redefined by the Internet.

4. Newspapers and books are also adapting to website ....

5. The Internet has enabled or accelerated new forms of .... through instant messaging, Internet ...., and social networking.

6. Online shopping has boomed both for major .... and small artisans and traders.

7. The Internet allows greater flexibility in .... and location, especially with the spread of .... connections and web applications.

8. Mobile phones, data cards, handheld game consoles and .... allow users to connect to the Internet wherever there is a .... supporting that device's technology.

■ INTERNET ACCESS

The term 'Internet access' refers to the communication between a user and a service provider that connects to the Internet.

A **Service Provider**, or Internet Service Provider (ISP), is a company that sells computer access to the Internet. A user buys a subscription to an IPS, which gives the user an identifying **username** and **password**. The user can then utilise any of the tools the service provider's computer furnishes.

Besides offices and residences, there are public places to use the Internet, including libraries, Internet cafés and airport halls, where computers with Internet connections are available. Various terms are used, such as "Public Internet Kiosk", "Web Payphone" or "Hotspots", for users who bring their own wireless-enabled devices. These services may be free to all, to customers only, or fee-based.

Common methods of consumer Internet access include:

Dial-up

This technology dials into the network through an existing phone line, creating a semi-permanent link to the Internet. Operating on a single channel, it monopolizes the phone line and is the slowest method of accessing the Internet. Dial-up is often the only form of Internet access available in rural areas as it requires no infrastructure other than the already existing telephone network to connect to the Internet.

▶
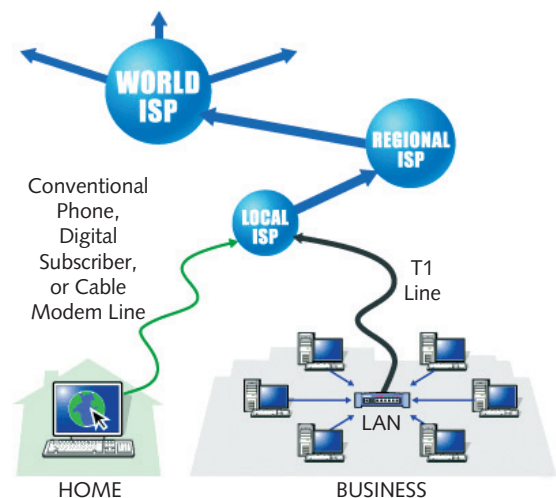
DSL (ADSL/SDSL)

DSL (Digital Subscriber Line) provides a connection to the Internet through the telephone network (dedicated line). Unlike dial-up, DSL can operate using a single phone line without preventing normal use of the telephone line for phone calls.

Broadband

This term includes a broad range of technologies, all of which provide high data rate access to the Internet. Broadband provides a continuous connection; there is no dial-up process required and it does not "hog" phone lines.

WiFi

WiFi is the standard method to connect to a high-speed local area network via wireless transmitter/receiver. WiFi is convenient for mobile Internet users and can bring service to areas where wiring would be costly. However WiFi service range is short and penetration through building walls is limited.

WiMax

WiMax (Worldwide Interoperability for Microwave Access) works similarly to WiFi in that it transmits information via airwaves, but it handles network traffic more efficiently. This technology penetrates building walls much more effectively and can be used across larger distances than WiFi.

Cable Modem

Cable Modem transmits data via airwaves on the cable television infrastructure. Although cables have low interference, comparably high speeds, and allow television use, the cost of bringing service into an area can be very high.

Satellite

Data is transmitted via satellite dishes, which send and receive data to and from satellites in orbit in space. There are many factors that affect the reception of the Internet using this technology, including wind, rain, and trees. However, it is ideal for those living in rural areas where other Internet access technologies have not been extended.

T-lines

In T-line Internet access, data is carried over fibre optic lines or copper lines. These are fast but highly regulated and generally intended for business use.

GLOSSARY

to handle: gestire	**other than**: diverso da	**unlike**: diversamente da
to hog: monopolizzare, tenere occupato	**to prevent**: evitare	**wiring**: cablaggio

22 *Connect each of the following terms or expressions to its proper definition.*

a. provider ☐	**1.** Name identifying a computer.
b. user ☐	**2.** Device necessary to connect a computer to the Net which functions as an AD or a DA converter.
c. subscription ☐	**3.** Temporary connection to the Internet over telephone lines.
d. username ☐	**4.** Company which sells computer access to the Internet.
e. password ☐	**5.** Person who uses a computer.
f. modem ☐	**6.** Permanent connection to the Internet through an ADSL system.
g. dedicated connection ☐	**7.** A sum of money paid regularly to receive a service.
h. dial-up connection ☐	**8.** A series of letters and/or numbers you have to type in order to be able to access the Internet.

23 Pair work. *Look back at the text and in turns ask and answer the following questions.*

1. What is a provider?
2. What does a provider give the user?
3. What is the difference between a dedicated and a dial-up connection?
4. What does broadband refer to?
5. What kind of system is WiFi?
6. What is the advantage of WiMax over WiFi?
7. How is data transmitted via satellite?
8. What is T-line access?

■ THE WEB

There are five main components of the Internet:
1. **The Web**
2. **Electronic mail**
3. **Usenet**, collection of interest groups for people to express and share their ideas
4. **Telnet**, for communication to another computer on a distant network
5. **FTP** (File Transfer Protocol), for the transfer of any type of file.

The terms **Internet** and **World Wide Web** are often used in everyday speech without much distinction. However, the Internet and the World Wide Web are not one and the same. Actually, the World Wide Web, developed in 1989, is just one of the different systems and protocols which make up the Internet. The hardware and software infrastructure of the Internet establishes a global data communications system between computers. In contrast, the Web, a system of interlinked hypertexts is a service accessed and communicated via the Internet. With a web browser, the user can view web pages that may contain text, images, videos or other multimedia and navigate between them via hyperlinks. Viewing a web page on the World Wide Web normally begins either by typing into a web browser the **URL** (**Uniform Resource Locator**) a specific character string that refers to an Internet resource of the page into a web browser, or by ▶

following a **hyperlink**, a reference to a document that the reader can directly see on that page or resource. The web browser then initiates a series of communication messages behind the scenes in order to fetch and display the information the user needs.
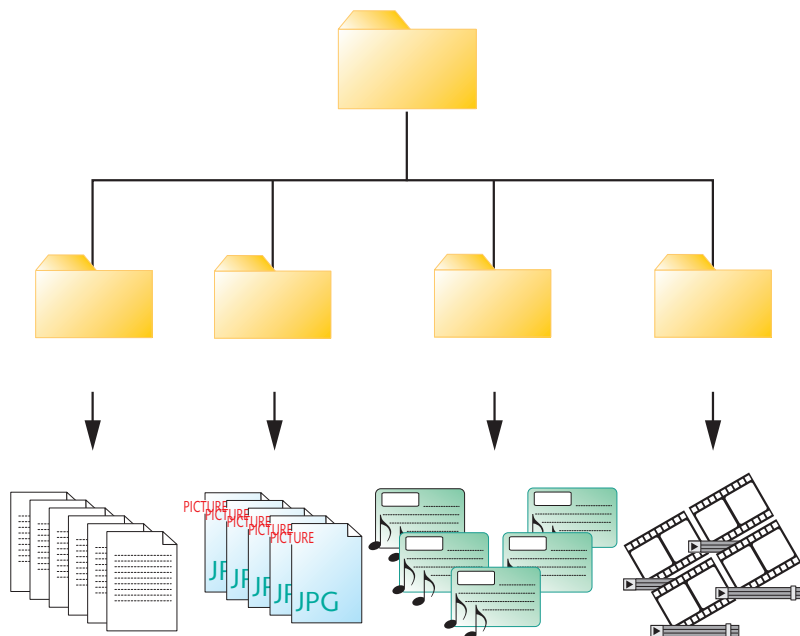
GLOSSARY

to fetch: andare a prendere   **one and the same**: la stessa cosa

24 *Listen to the text and fill in the blanks with the correct word chosen from the options given.*

a. ☐ form   ☐ version   ☐ verse
b. ☐ scientist   ☐ mathematician   ☐ physicist
c. ☐ allowed   ☐ alone   ☐ aloud
d. ☐ keyboard   ☐ keywords   ☐ keys
e. ☐ formatting   ☐ format   ☐ formative
f. ☐ test   ☐ text   ☐ tester
g. ☐ created   ☐ developed   ☐ decided
h. ☐ browse   ☐ browser   ☐ bruiser
i. ☐ appear   ☐ au pair   ☐ appeal
j. ☐ fires   ☐ fails   ☐ files

A short history of the Web

Think of the Web as the illustrated (a) .... of the Internet. It began in the late 1980's when (b) .... Dr. Berners-Lee wrote a small computer program for his own personal use. This program (c) .... pages, within his computer, to be linked together using (d) .... It soon became possible to link documents in ▶

different computers, as long as they were connected to the Internet and a (e) ....
language was used to link documents. The Web remained primarily (f) ....
based until 1992 when Marc Andreessen (g) .... a new computer program
called the NCSA Mosaic (National Centre for Supercomputing Applications at the University of
Illinois). The NCSA Mosaic was the first Web (h) .... The browser made it
easier to access the different Web sites that had started to (i) .... Soon Web
sites contained more than just text, they also had sound and video (j) ....

■ SAFETY ON THE NET

The Internet is full of wonderful places and can create many positive experiences. A vast amount
of information is available at the click of a mouse. "Cyberspace", however, is part of real life
and there is good reason to be cautious here. The same dangers that exist in real life exist on
the Internet. Adults usually exercise common sense, children need guidance and protection.
There are two schools of thought regarding the guidance and protection of our young people.
One camp believes that the Internet should be regulated much the same way television is. The
second camp views this as censorship and feels that the technology exists to protect children
without limiting the Internet for everyone.
The Internet is an exciting medium because it allows and encourages the exchange of ideas. Some
of these ideas may be of an adult nature and not intended for children. Rather than eliminating
these areas of the Internet, they can be blocked from a computer using specific software.
Safety is useful on the Internet, especially for children. Filtering software will block most
objectionable sites and can usually be disabled with a password you set. A disavantage of
filtering software is that it also blocks a lot of non-objectionable content, like information on
breast cancer, because it could find breast as an objectionable word.
Do not give personal information like street addresses and phone numbers on your personal web site
or in chats. Give your general area (example: Northern Italy) or general metropolitan area (example:
near Milan). Do not write account numbers or credit card numbers in email or on non-secure web
servers. Make sure you are on a secure server before you start typing a credit card number. Secure
servers encrypt your data so no one can get your information except the computer at the other end.
Be careful even if you have a virus scanner installed, because your scanning software does not
recognize undiscovered and new viruses. Update your virus definitions so you have the best
protection with your software.

25 *Read this text about safety on the net and decide if the statements below are true (T) or false (F). Then correct the false statements.*

		T	F
a.	Everybody thinks Internet should be limited in the same way as television programs.	☐	☐
b.	Internet is totally child-friendly.	☐	☐
c.	Real life is less dangerous than "cyberspace".	☐	☐
d.	Filtering software blocks only sites which are unsuitable for children.	☐	☐
e.	Your privacy will always be safe on the Internet.	☐	☐
f.	You should give your bank and account details only on secure websites.	☐	☐
g.	No one, except the receiver, will have your bank details, thanks to encryption.	☐	☐
h.	You can download safely from any site.	☐	☐
i.	There is no point in using a virus scanner.	☐	☐
j.	You should regularly update your virus protection.	☐	☐

UNIT 3 · COMPUTERIZED DRAWING

1 *Match each sentence with its ending.*

a. CAD enables designers ☐

b. CAD is a graphic system based ☐

c. As a result of the CAD technology, prototypes ☐

d. CAD systems used to deal with 2-dimensional shapes ☐

e. CAD designs can be ☐

f. CAD technology has reduced ☐

1. but now they involve 3-dimensional modelling and computer simulations.

2. seen from any angle and easily manipulated.

3. on the simulation of the product's behaviour under condition of stress.

4. to design, modify, test and correct a model of the object to be manufactured.

5. product-development costs and has shortened design cycles.

**6.** can be avoided thus saving both time and money.

2 *Write questions for the following answers.*

a. ....?

It means computer-aided design.

b. ....?

CAD technology mainly involves the automotive, aerospatial and naval fields, but is used in electronics as well.

c. ....?

Early CAD systems simply provided 2-dimensional drawings, while modern CAD technologies can generate 3-dimensional shapes and computer simulations of the products' behaviour.

d. ....?

Computer simulations are used for analyzing and eliminating products' potential defects due to excessive temperature, loads or materials'deflection.

e. ....?

CAD drawings are much more accurate and precise than traditional drafting methods. Their modifications and revisions are faster and less subject to errors. Data can be electronically stored and speedily transmitted over the Internet.

3 *Use the text on p. 196-197 of your text-book and the activities above as a guide to write a short text on computer-aided design.*
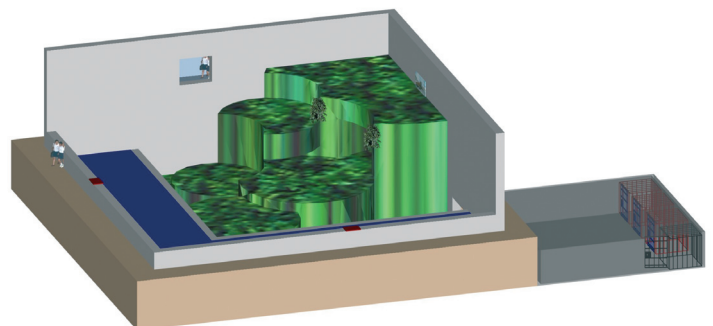
4 *Complete the following text with the words in the box. Be careful: three words are not necessary.*

allows • can • complex • conventional • equivalent • form • included • many • mass • object • programmes • refers • represent • show • space • three-dimensional • useless • would

CAD is the shortened (1) .... of Computer-Aided Design and (2) .... to both two-dimensional and (3) .... CAD formats. Using two-dimensional CAD is (4) .... to drawing the lines you (5) .... draw on a notebook to (6) .... an object, while three-dimensional CAD (7) .... designers to build a realistic representation of the (8) .... in a computer (9) .... and rotate it to (10) .... different views, hidden lines (11) ...., according to the needs. (12) .... , volume, centre of gravity and (13) .... other properties of the object (14) .... be calculated through 3D CAD (15) ....

■ GRAMMAR: PHRASAL VERBS

Here is a list of phrasal verbs *commonly used in technical English.*

- **To blow**
  up: scoppiare
- **To break**
  down: guastarsi, esaurirsi, interrompersi
  off: interrompere
  out: scoppiare
  up: rompersi
- **To bring**
  about: causare
- **To carry**
  out: eseguire
- **To cut**
  down: ridurre, abbattere
  off: mozzare, interrompere
  out: ritagliare
- **To do**
  up: avvolgere, allacciare
- **To get**
  at: raggiungere
  back: ritornare
  on / off: salire, scendere
  out: uscire
  through: finire
- **To give**
  away: disfarsi, dare via
  back: restituire
  out: distribuire
  up: smettere

- **To go**
  back to: risalire
  off: spegnersi
  on: continuare
  out: uscire, spegnersi
  through: esaminare
- **To hand**
  in: consegnare
  out: distribuire
- **To hold**
  on: aspettare
- **To keep**
  on: continuare
  up with: stare al passo con
- **To look**
  after: prendersi cura di
  around: dare uno sguardo
  at: guardare
  for: cercare
  into: indagare
  like: assomigliare
  out: fare attenzione
  through: esaminare
  up: consultare
- **To make**
  out: compilare, cavarsela, capire
  up: costituire, costruire
- **To pick**

  up: raccogliere
- **To pull**
  down: demolire
- **To put**
  forward: proporre
  off: rimandare
  on / out: accendere, spegnere
  up with: sopportare
- **To run**
  down: scaricarsi, fermarsi
  out of: finire, esaurire
  over: investire
- **To set**
  off / out: partire
- **To take**
  down: prendere nota
  for: scambiare, prendere per
  off: decollare, togliersi
- **To turn**
  down / up: abbassare, alzare il volume
  into: trasformarsi
  on / off: accendere, spegnere
  out: risultare
  over: capovolgere
  round: girare
- **To work**
  out: risolvere

5 *Fill in the blanks with the* phrasal verbs *in the box.*

> broke up • carry out • get through • hold on • keep up with • look into •
> pull down • set out • turned down • went through

a. The room was very hot so she .... the heating.

b. Yesterday she .... for Milan at midnight.

c. Dover District Council have decided to .... those old houses.

d. The headmaster says he will .... the matter as soon as possible.

e. She wants to take some work home because she hasn't managed to .... it all today.

f. The plate .... when she dropped it on the floor.

g. Our students were selected for their ability to .... instructions.

h. .... a moment, please!

i. We cannot .... the daily expenses that our life requires!

j. The teacher .... the students' papers.

Phrasal Verbs OFF

CLIL · MATHEMATICS: THE ORIGIN OF GEOMETRY
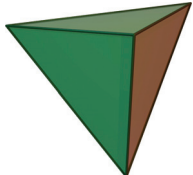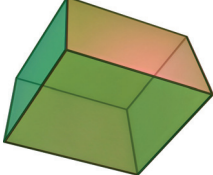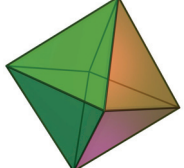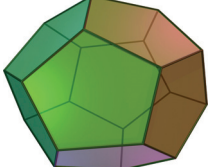
6   *Read the text on p. 212 of* New Mechways *and choose the right option.*

1.   Euclid died in
- ☐ a. 300 BC.
- ☐ b. 350 BC.
- ☐ c. 400 AD.
- ☐ d. No one knows.

2.   Euclid's most influential book was
- ☐ a. Phaenomena.
- ☐ b. On divisions.
- ☐ c. The Elements.
- ☐ d. The Republic.

3.   Euclid
- ☐ a. studied Mathematics in Sparta with the students of Socrates.
- ☐ b. studied Mathematics in Olympia with the students of the Alexandrian School.
- ☐ c. was not fond of Mathematics.
- ☐ d. studied Mathematics in Athens with the students of Plato.

4.   Euclid wrote a carefully organized synthesis of the knowledge of
- ☐ a. Algebra.
- ☐ b. Geometry.
- ☐ c. Astronomy.
- ☐ d. Arithmetic.

5.   The Latin version of The Elements was printed
- ☐ a. in the fifteenth century.
- ☐ b. in the sixteenth century.
- ☐ c. in the twentieth century.
- ☐ d. No one knows.

6.   Eliminate the one who was not a mathematician.
- ☐ a. Hippocrates.
- ☐ b. Pythagoras.
- ☐ c. Aristophanes.
- ☐ d. Theaetetus.

7.   Fundamentals of number theory are
- ☐ a. congruent triangles and parallel lines.
- ☐ b. tangents and inscribed angles.
- ☐ c. prime numbers and greatest common denominator.
- ☐ d. geometric series and volumes.

7 *Reding for pleasure. Here is some more information on the Platonic solids.*

The so-called **Platonic Solids** are three-dimensional figures made of regular polygons. There are only five possible ones: tetrahedron, cube, octahedron, dodecahedron and icosahedron.	
The **tetrahedron** is made of 4 equilateral triangles. It has 4 faces, 4 vertices, 6 edges.	
The **cube** is made of 6 squares. It has 6 faces, 8 vertices, 12 edges.	
The **octahedron** is made of 8 equilateral triangles. It has 8 faces, 6 vertices, 12 edges.	
The **dodecahedron** is made of 12 regular pentagons. It has 12 faces, 20 vertices, 30 edges.	
The **icosahedron** is made of 20 equilateral triangles. It has 20 faces, 12 vertices, 30 edges.	