

CAMBRIDGE

Professional English

# Infotech

## English for computer users

**Fourth Edition**

**Student's Book**

Santiago Remacha Esteras

Fully updated with the  
latest advances in  
technology




# 1 The digital age

**A** Match the captions (1–4) with the pictures (a–d).

- 1 In education, computers can make all the difference \_\_\_\_\_
- 2 Using a cashpoint, or ATM \_\_\_\_\_
- 3 The Internet in your pocket \_\_\_\_\_
- 4 Controlling air traffic \_\_\_\_\_



**B**  How are computers used in the situations above? In pairs, discuss your ideas.

**C** Read the text and check your answers to B.

## The digital age

We are now living in what some people call *the digital age*, meaning that computers have become an essential part of our lives. Young people who have grown up with PCs and mobile phones are often called *the digital generation*. Computers help students to **perform** mathematical **operations** and improve their maths skills. They are used to **access the Internet**, to **do** basic **research** and to

communicate with other students around the world.  
 10 Teachers use projectors and interactive whiteboards to **give presentations** and teach sciences, history or language courses. PCs are also used for administrative purposes – schools use word processors to **write letters**, and databases to **keep records** of students  
 15 and teachers. A school website allows teachers to publish **exercises** for students to **complete** online.



Students can also enrol for courses via the website and parents can download official reports.

20 Mobiles let you **make** voice **calls**, **send texts**, email people and download logos, ringtones or games. With a built-in camera you can send pictures and make video calls in *face-to-face* mode. New  
25 smartphones combine a telephone with web access, video, a games console, an MP3 player, a personal digital assistant (PDA) and a GPS navigation system, all in one.

In banks, computers **store information** about the money held by each customer and enable staff to  
30 **access** large **databases** and to **carry out** financial **transactions** at high speed. They also control the cashpoints, or ATMs (automatic teller machines), which **dispense money** to customers by the use of a PIN-protected card. People use a Chip and PIN

35 card to pay for goods and services. Instead of using a signature to verify payments, customers are asked to **enter a four-digit personal identification number (PIN)**, the same number used at cashpoints; this system makes transactions more secure. With online banking, clients can easily **pay bills** and **transfer**  
40 **money** from the comfort of their homes.

Airline pilots use computers to help them control the plane. For example, monitors **display data** about fuel consumption and weather conditions. In airport control towers, computers are used to  
45 manage radar systems and regulate air traffic. On the ground, airlines are connected to travel agencies by computer. Travel agents use computers to find out about the availability of flights, prices, times, stopovers and many other details.

**D** When you read a text, you will often see a new word that you don't recognize. If you can identify what type of word it is (noun, verb, adjective, etc.) it can help you guess the meaning.

Find the words (1–10) in the text above. Can you guess the meaning from context? Are they nouns, verbs, adjectives or adverbs? Write *n*, *v*, *adj* or *adv* next to each word.

- |                                  |                             |
|----------------------------------|-----------------------------|
| 1 perform (line 6) _____         | 5 digital (line 25) _____   |
| 2 word processor (line 13) _____ | 7 store (line 27) _____     |
| 3 online (line 16) _____         | 8 financial (line 29) _____ |
| 4 download (line 18) _____       | 9 monitor (line 42) _____   |
| 6 built-in (line 21) _____       | 10 data (line 42) _____     |

**E** Match the words in D (1–10) with the correct meanings (a–j).

- |                                   |   |
|-----------------------------------|---|
| a keep, save _____                | g collection of facts or figures _____                                      |
| b execute, do _____               | h describes information that is recorded or broadcast using computers _____ |
| c monetary _____                  | i program used for text manipulation _____                                  |
| d screen _____                    | j copy files from a server to your PC or mobile _____                       |
| e integrated _____                |   |
| f connected to the Internet _____ |   |

**F**  In pairs, discuss these questions.

- How are/were computers used in your school?
- How do you think computers will be used in school in the future?

## 2 Language work: collocations 1

**A** Look at the HELP box and then match the verbs (1–5) with the nouns (a–e) to make collocations from the text on pages 2–3.

- |            |                 |
|------------|-----------------|
| 1 give     | a money         |
| 2 keep     | b a PIN         |
| 3 access   | c databases     |
| 4 enter    | d presentations |
| 5 transfer | e records       |

**B** Use collocations from A and the HELP box to complete these sentences.


- Thanks to Wi-Fi, it's now easy to \_\_\_\_\_ from cafés, hotels, parks and many other public places.
- Online banking lets you \_\_\_\_\_ between your accounts easily and securely.
- Skype is a technology that enables users to \_\_\_\_\_ over the Internet for free.
- In many universities, students are encouraged to \_\_\_\_\_ using PowerPoint in order to make their talks more visually attractive.
- The Web has revolutionized the way people \_\_\_\_\_ – with sites such as Google and Wikipedia, you can find the information you need in seconds.
- Cookies allow a website to \_\_\_\_\_ on a user's machine and later retrieve it; when you visit the website again, it remembers your preferences.
- With the latest mobile phones, you can \_\_\_\_\_ with multimedia attachments – pictures, audio, even video.

### HELP box

#### Collocations 1

Verbs and nouns often go together in English to make set phrases, for example **access the Internet**. These word combinations are called **collocations**, and they are very common. Learning collocations instead of individual words can help you remember which verb to use with which noun. Here are some examples from the text on pages 2–3: **perform operations, do research, make calls, send texts, display data, write letters, store information, complete exercises, carry out transactions.**

## 3 Computers at work


**A**  Listen to four people talking about how they use computers at work. Write each speaker's job in the table.

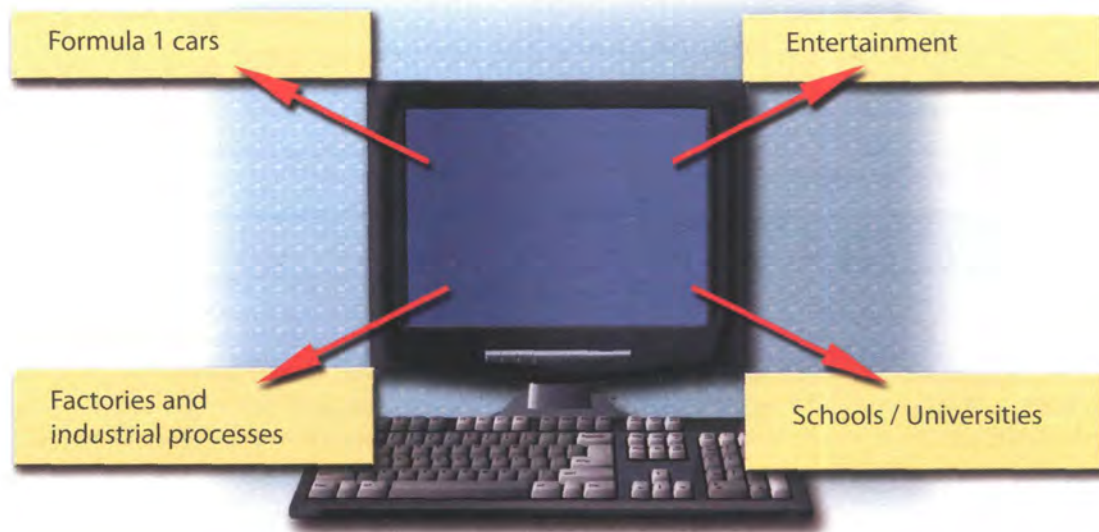
electrical engineer    secretary    librarian    composer		
Speaker	Job	What they use computers for
1		
2		
3		
4		

**B**  Listen again and write what each speaker uses their computer for.



## 5 Other applications

**A**  In small groups, choose one of the areas in the diagram below and discuss what you can do with computers in that area. Look at the *Useful language* box below to help you.



### Useful language

**Formula 1 cars:** design and build the car, test virtual models, control electronic components, monitor engine speed, store (vital) information, display data, analyse and communicate data

**Entertainment:** download music, burn CDs, play games, take photos, edit photos, make video clips, watch movies on a DVD player, watch TV on the computer, listen to MP3s, listen to the radio via the Web

**Factories and industrial processes:** design products, do calculations, control industrial robots, control assembly lines, keep record of stocks (materials and equipment)

**School/University:** access the Internet, enrol online, search the Web, prepare exams, write documents, complete exercises online, do research, prepare presentations

Computers are used to ...

A PC can also be used for ...

People use computers to ...

**B**  Write a short presentation summarizing your discussion. Then ask one person from your group to give a summary of the group's ideas to the rest of the class.

## 1 Technical specifications

**A** Read the advertisement and translate the technical specifications into your own language.

### Dell Inspiron 9200

- Intel Core 2 Duo processor at 2.4GHz
- 2048MB RAM, expandable to 4GB
- 500GB hard drive
- Comes with Windows Vista Home Premium



**B** In pairs, answer these questions. If necessary, look at the Glossary.

- 1 What is the main function of a computer's processor?
- 2 What unit of frequency is used to measure processor speed?
- 3 What does RAM stand for?

## 2 What is inside a PC system?

**A** Read the text on page 12 and then answer these questions.

- 1 What are the main parts of the CPU?
- 2 What does ALU stand for? What does it do?
- 3 What is the function of the system clock?
- 4 How much is one gigahertz?
- 5 What type of memory is temporary?
- 6 What type of memory is permanent and includes instructions needed by the CPU?
- 7 How can RAM be increased?
- 8 What term is used to refer to the main printed circuit board?
- 9 What is a *bus*?
- 10 What is the benefit of having expansion slots?

**B** Look at these extracts from the text. What do the words in bold refer to?

- 1 **This** is built into a single chip. (line 2)
- 2 ... **which** executes program instructions and coordinates ... (line 3)
- 3 ... **that** is being executed. (line 22)
- 4 ... performance of a computer is partly determined by the speed of **its** processor. (line 25)
- 5 ... the CPU looks for **it** on the hard disk ... (line 35)
- 6 ... inside the computer to communicate with **each other**. (line 52)



## What is inside a PC system?

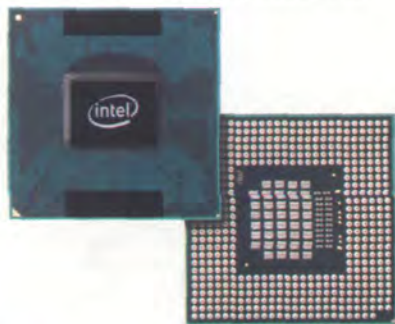
### Processing

The nerve centre of a PC is the **processor**, also called the **CPU**, or **central processing unit**. This is built into a single **chip** which executes program instructions and coordinates the activities that take place within the computer system. The chip itself is a small piece of silicon with a complex electrical circuit called an **integrated circuit**.

The processor consists of three main parts:

- The **control unit** examines the instructions in the user's program, interprets each instruction and causes the circuits and the rest of the components – monitor, disk drives, etc. – to execute the functions specified.
- The **arithmetic logic unit (ALU)** performs mathematical calculations (+, -, etc.) and logical operations (AND, OR, NOT).
- The **registers** are high-speed units of memory used to store and control data. One of the registers (the program counter, or PC) keeps track of the next instruction to be performed in the main memory. The other (the instruction register, or IR) holds the instruction that is being executed (see Fig. 1 on page 13).

The power and performance of a computer is partly determined by the speed of its processor. A **system clock** sends out signals at fixed intervals to measure and synchronize the flow of data. **Clock speed** is measured in **gigahertz (GHz)**. For example, a CPU running at 4GHz (four thousand million hertz, or cycles, per second) will enable your PC to handle the most demanding applications.



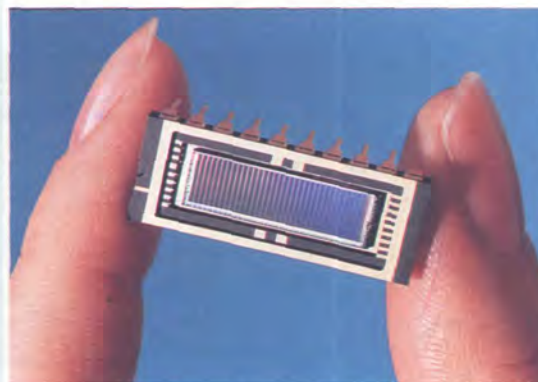
*The Intel Core 2 Duo processor; other chip manufacturers are AMD and Motorola*

### RAM and ROM

The programs and data which pass through the processor must be loaded into the main memory in order to be processed. Therefore, when the user runs a program, the CPU looks for it on the hard disk and transfers a copy into the **RAM** chips. **RAM (random access memory)** is volatile – that is, its information is lost when the computer is turned off. However,

**ROM (read only memory)** is non-volatile, containing instructions and routines for the basic operations of the CPU. The **BIOS (basic input/output system)** uses ROM to control communication with peripherals.

RAM capacity can be expanded by adding extra chips, usually contained in small circuit boards called **dual in-line memory modules (DIMMs)**.



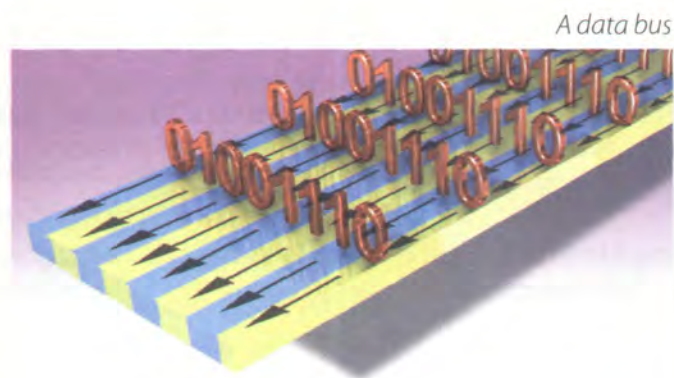
*A RAM chip*

### Buses and cards

The main circuit board inside your system is called the **motherboard** and contains the processor, the memory chips, expansions slots, and controllers for peripherals, connected by **buses** – electrical channels which allow devices inside the computer to communicate with each other. For example, the front side bus carries all data that passes from the CPU to other devices.

The size of a bus, called **bus width**, determines how much data can be transmitted. It can be compared to the number of lanes on a motorway – the larger the width, the more data can travel along the bus. For example, a 64-bit bus can transmit 64 bits of data.

**Expansion slots** allow users to install **expansion cards**, adding features like sound, memory and network capabilities.



*A data bus*



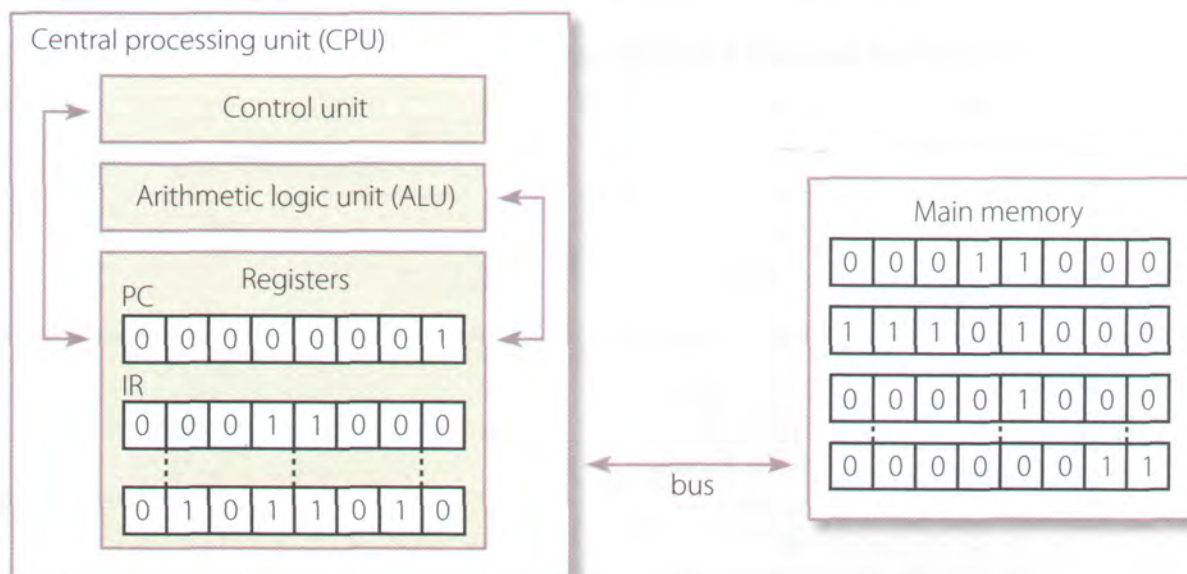


Fig. 1: Organization of a simple computer; the CPU is built into a single microprocessor chip

### 3 Language work: defining relative clauses

Look at the HELP box and then complete the sentences below with suitable relative pronouns. Give alternative options if possible. Put brackets round the relative pronouns you can leave out.

- 1 That's the computer \_\_\_\_\_ I'd like to buy.
- 2 Core 2 Duo is a new Intel processor \_\_\_\_\_ contains about 291 million transistors.
- 3 A webmaster is a person \_\_\_\_\_ designs, develops and maintains a website.
- 4 A bus is an electronic pathway \_\_\_\_\_ carries signals between computer devices.
- 5 Here's the DVD \_\_\_\_\_ you lent me!
- 6 Last night I met someone \_\_\_\_\_ works for GM as a software engineer.

#### HELP box

##### Defining relative clauses

- We can define people or things with a defining (restrictive) relative clause. We use the relative pronoun **who** to refer to a person; we can also use **that**.

*A blogger is a person **who/that** keeps a web log (blog) or publishes an online diary.*

- We use the relative pronoun **which** (or **that**) to refer to a thing, not a person.

*This is built into a single chip **which/that** executes program instructions and coordinates the activities that take place within the computer system.*

- Relative pronouns can be left out when they are the object of the relative clause.

*The main circuit board (**which/that**) you have inside your system is called the motherboard ...*



## 4 How memory is measured

### A Read the text and then answer these questions.

- 1 How many digits does a binary system use?
- 2 What is a *bit*?
- 3 What is a collection of eight bits called?
- 4 What does ASCII stand for?
- 5 What is the purpose of ASCII?

### Bits and bytes

Computers do all calculations using a code made of just two numbers – 0 and 1. This system is called **binary code**. The electronic circuits in a digital computer detect the difference between two states: ON (the current passes through) or OFF (the current doesn't pass through) and represent these states as 1 or 0. Each 1 or 0 is called a **binary digit**, or **bit**.

Bits are grouped into eight-digit codes that typically represent characters (letters, numbers and symbols). Eight bits together are called a **byte**. Thus, each character on a keyboard has its own arrangement of eight bits. For example, 01000001 for the letter A, 01000010 for B, and 01000011 for C.

One bit

01000011

Example of a byte

Computers use a standard code for the binary representation of characters. This is the American Standard Code for Information Interchange, or **ASCII** – pronounced /'æski/. In order to avoid complex calculations of bytes, we use bigger units such as kilobytes, megabytes and gigabytes.

We use these units to describe the RAM memory, the storage capacity of disks and the size of a program or document.

**Note:** **bit** is pronounced /bit/; **byte** is pronounced /bait/

Unit of memory	Abbreviation	Exact memory amount
Binary digit	bit, b	1 or 0
Byte	B	8 bits
Kilobyte	KB or K	1,024 bytes ( $2^{10}$ )
Megabyte	MB	1,024 KB, or 1,048,576 bytes ( $2^{20}$ )
Gigabyte	GB	1,024 MB, or 1,073,741,824 bytes ( $2^{30}$ )
Terabyte	TB	1,024 GB, or 1,099,511,627,776 bytes ( $2^{40}$ )



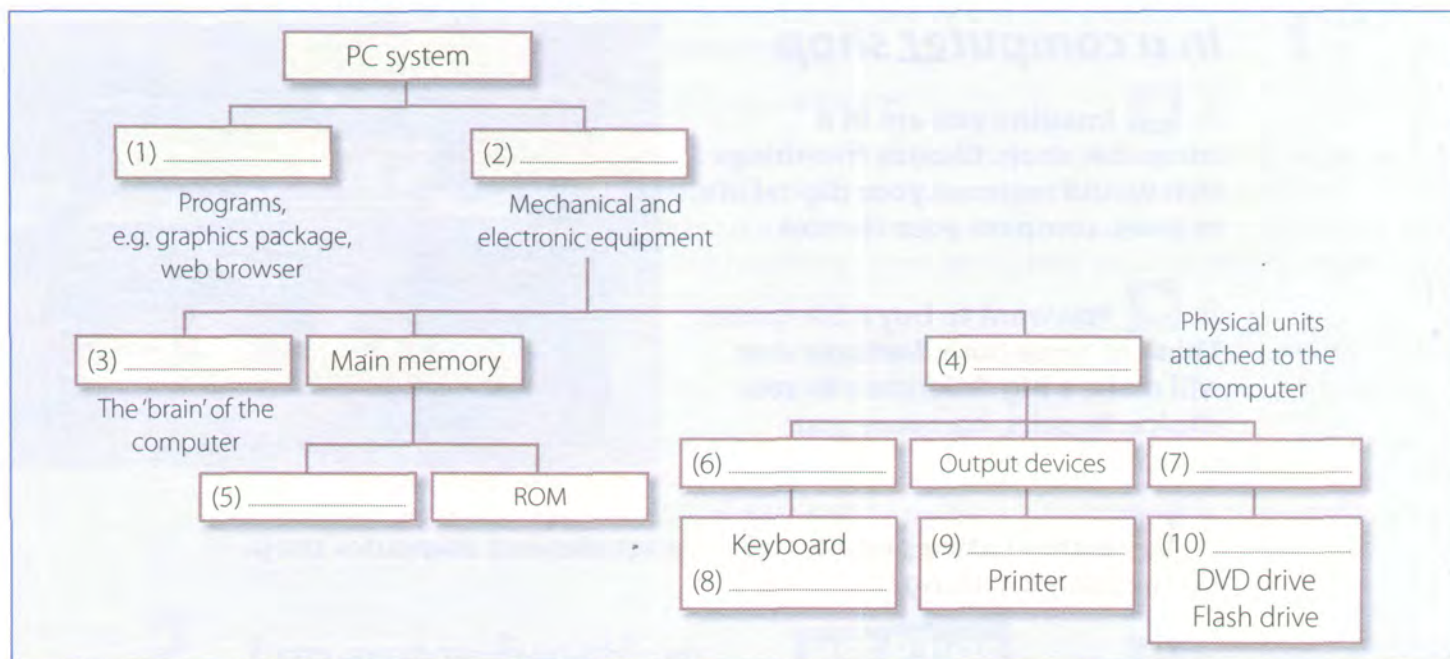
### B Complete these descriptions with the correct unit of memory.

- 1 A \_\_\_\_\_ is about one trillion bytes – about as much text as the books and magazines in a huge library.
- 2 A \_\_\_\_\_ is about one million bytes – about as much text as a 300-page novel.
- 3 A \_\_\_\_\_ is about one thousand bytes – equivalent to one sheet of A4.
- 4 A \_\_\_\_\_ is about one billion bytes – about as much text as 1,000 books.
- 5 A \_\_\_\_\_ can store a single character, such as the letter *h* or number 7.



## 5 A PC system

**A** Complete this diagram of a PC system. Look at Units 1, 2 and 3 to help you.



**B** In pairs, compare your answers.

**C**  Listen to a teacher explaining the diagram to her class and check your answers.

## 6 Your ideal computer system

**A** Make notes about the features of the computer that you would most like to have. Think about the features in the box.

CPU   Speed   Optical disc drives   Wireless connectivity   Minimum/maximum RAM  
Monitor   Ports and card memory slots   Hard disk   Software

**B**  In pairs, describe your ideal computer system. Give reasons for your choices.

### Useful language

*It's got ...*

*It's very fast. It runs at ...*

*The standard RAM memory is ... and it's expandable ...*

*The hard disk can hold ...*

*I need a large, flat LCD screen because ...*

*As for the Internet, ...*



## 1 Interacting with your computer

Read the description of input devices and then label the pictures (1–8) with words from the text.

**Input devices** are the pieces of hardware which allow us to enter information into the computer. The most common are the **keyboard** and the **mouse**. We can also

interact with a computer by using one of these: a **light pen**, a **scanner**, a **trackball**, a **graphics tablet**, a **game controller** or a **microphone**.



1 \_\_\_\_\_



2 \_\_\_\_\_



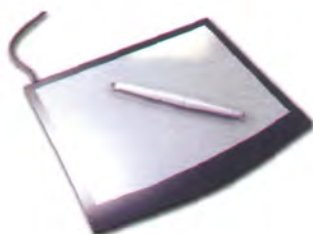
3 \_\_\_\_\_



4 \_\_\_\_\_



5 \_\_\_\_\_



6 \_\_\_\_\_



7 \_\_\_\_\_



8 \_\_\_\_\_

## 2 Describing input devices



**A** Listen to a computer technician describing three input devices. Write which devices he's talking about.

1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_



**B** Listen again and complete these extracts.

- 1 This device is \_\_\_\_\_ enter information into the computer.
- 2 ... it may also \_\_\_\_\_ function keys and editing keys \_\_\_\_\_ special purposes.
- 3 This is a device \_\_\_\_\_ the cursor and selecting items on the screen.
- 4 It usually \_\_\_\_\_ two buttons and a wheel.
- 5 ... the user \_\_\_\_\_ activate icons or select items and text.
- 6 It \_\_\_\_\_ detecting light from the computer screen and is used by pointing it directly at the screen display.
- 7 It \_\_\_\_\_ the user \_\_\_\_\_ answer multiple-choice questions and ...



### 3 Describing functions and features

**A** Look at the HELP box and then use the notes below to write a description of the Sony PlayStation 3 controller.



#### Sony PlayStation 3 controller

##### Functions

- control video games
- hold it with both hands, use thumbs to handle directional sticks and face buttons

##### Features

- six-axis sensing system (capable of sensing motion in six directions: up, down, left, right, forwards and backwards)
- wireless controller (Bluetooth)
- USB mini port and cable for wired play and automatic battery charging

#### HELP box

##### Describing functions

In the listening, the mouse was described using **for + gerund**:

*This is a device **for controlling** the cursor and selecting items on the screen.*

There are other ways of describing a device's function:

- **used + to + infinitive**  
*It's **used to control** ...*
- relative pronoun + verb  
*This is a device **which controls** ...*
- relative pronoun + **used + to + infinitive**  
*This is a device **which/that is used to control** ...*
- **work by + gerund**  
*It **works by detecting** light from the computer screen.*

##### Describing features

We can describe features like this:


*An optical mouse **has** an optical sensor instead of a ball underneath.*

*It usually **features** two buttons and a wheel.*

*You **can** connect it to a USB port.*

*A wireless mouse **works/operates** without cables.*

*It **allows** the user **to** answer multiple-choice questions and ...*

**B**  In pairs, choose one of these input devices and describe its functions and features. Try to guess which device your partner is describing.



Bar code reader



Touchpad on a portable PC



Webcam



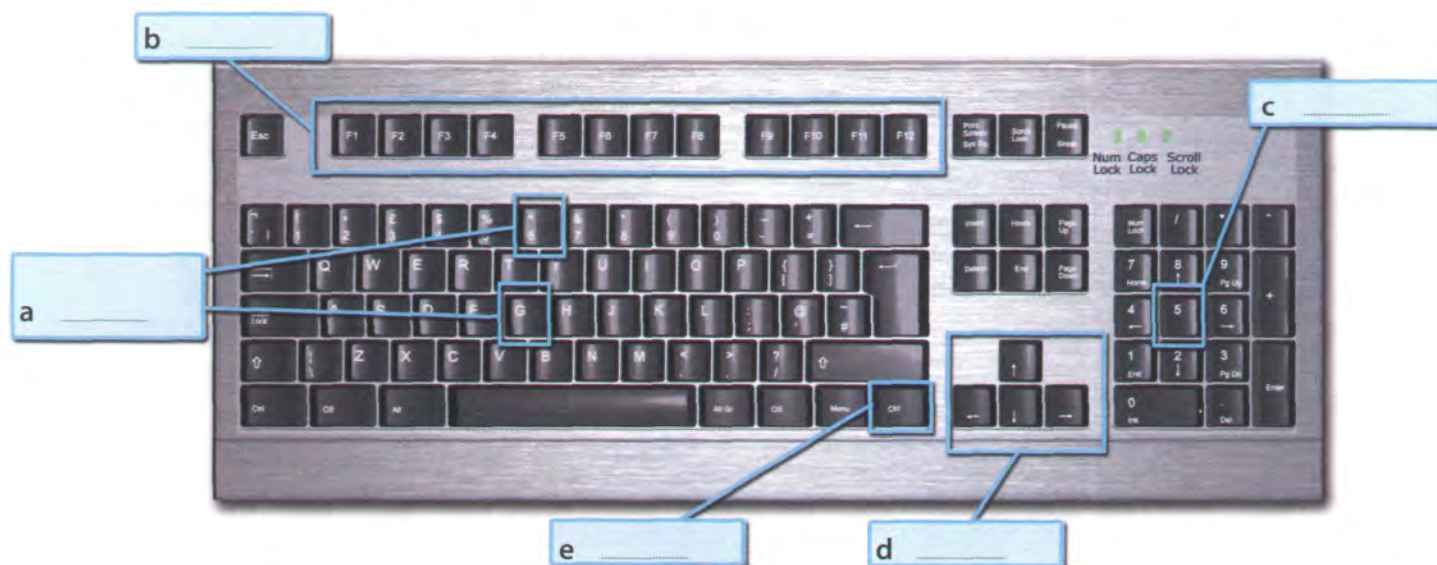
Touch screen



## 4 The keyboard

### A Label the picture of a standard keyboard with the groups of keys (1–5).

- Cursor control keys** include arrow keys that move the insertion point up, down, right and left, and keys such as *End*, *Home*, *Page Up* and *Page Down*, which are used in word processing to move around a long document.
- Alphanumeric keys** represent letters and numbers, as arranged on a typewriter.
- Function keys** appear at the top of the keyboard and can be programmed to do special tasks.
- Dedicated keys** are used to issue commands or to produce alternative characters, e.g. the *Ctrl* key or the *Alt* key.
- A **numeric keypad** appears to the right of the main keyboard. The *Num Lock* key is used to switch from numbers to editing keys.



A PC-compatible keyboard

### B Match the descriptions (1–8) with the names of the keys (a–h). Then find them on the keyboard.

- A long key at the bottom of the keyboard. Each time it is pressed, it produces a blank space.
- It moves the cursor to the beginning of a new line. It is also used to confirm commands.
- It works in combination with other keys. For example, you press this key and C to copy the selected text.
- It removes the character to the left of the cursor or any selected text.
- It produces UPPER CASE characters.
- It produces UPPER CASE letters, but it does not affect numbers and symbols.
- It moves the cursor horizontally to the right for a fixed number of spaces (in tabulations and data fields).
- They are used to move the cursor, as an alternative to the mouse.

- a arrow keys
- b return/enter
- c Caps Lock
- d shift
- e tab
- f space bar
- g backspace
- h Ctrl



## 5 Mouse actions

Complete this text about the mouse with verbs from the box.

click    double-click    drag    grab    select    move    control

### Mouse actions

A mouse allows you to (1) \_\_\_\_\_ the cursor and move around the screen very quickly. Making the same movements with the arrow keys on the keyboard would take much longer. As you (2) \_\_\_\_\_ the mouse on your desk, the pointer on the screen moves in the same direction. The pointer usually looks like an I-bar, an arrow, or a pointing hand, depending on what you are doing.

A mouse has one or more buttons to communicate with the computer. For example, if you want to place the insertion point or choose a menu option, you just (3) \_\_\_\_\_ (press and release) on the mouse button, and the option is chosen.

The mouse is also used to (4) \_\_\_\_\_ text and

items on the screen. You can highlight text to be deleted, copied or edited in some way.

The mouse is widely used in graphics and design. When you want to move an image, you position the pointer on the object you want to move, press the mouse button, and (5) \_\_\_\_\_ the image to a new location on the screen. Similarly, the mouse is used to change the shape of a graphic object. For example, if you want to convert a square into a rectangle, you (6) \_\_\_\_\_ one corner of the square and stretch it into a rectangle.

The mouse is also used to start a program or open a document: you put the pointer on the file name and (7) \_\_\_\_\_ on the name – that is, you rapidly press and release the mouse button twice.

GOOD. NOW, BAT THE MOUSE  
OVER THE CAT FOOD DISH ICON  
AND DOUBLE  
CLICK.



www.CartoonStock.com



## 6 **Speech recognition systems**



**A** Listen to an interview with Anne Simpson, an expert in voice input technologies and tick (✓) the features she mentions.

Speech recognition systems:

- ☐ need a good sound card and a microphone.
- ☐ can take dictation with accuracy.
- ☐ allow you to create and compile a computer program.
- ☐ allow you to execute programs and navigate around menus using voice commands.
- ☐ allow you to surf the Web by speaking.
- ☐ allow you to design graphics.



**B** Listen again and answer these questions.

- 1 What do people usually use to communicate with a computer?
- 2 How do you get the best results from speech recognition software?
- 3 What rate of accuracy is possible with the software?
- 4 How can you train the software to be more accurate?
- 5 What kinds of words aren't in the software's dictionary?



**C** In groups, discuss these questions.

- 1 What are the benefits of speech recognition software?
- 2 What kind of tasks would you find speech recognition useful for?
- 3 Who would benefit most from advances in speech recognition technology?
- 4 What is the future of this kind of technology?  
Do you think it will ever be possible to control your computer using only your thoughts?

*You talk, it types – speech recognition software lets you operate computers by voice command*

