UNIT 1 HARDWARE

A computer is a digital, programmable and electronic system that processes information

Processing information is an expression that includes many different actions that a computer can do with information.
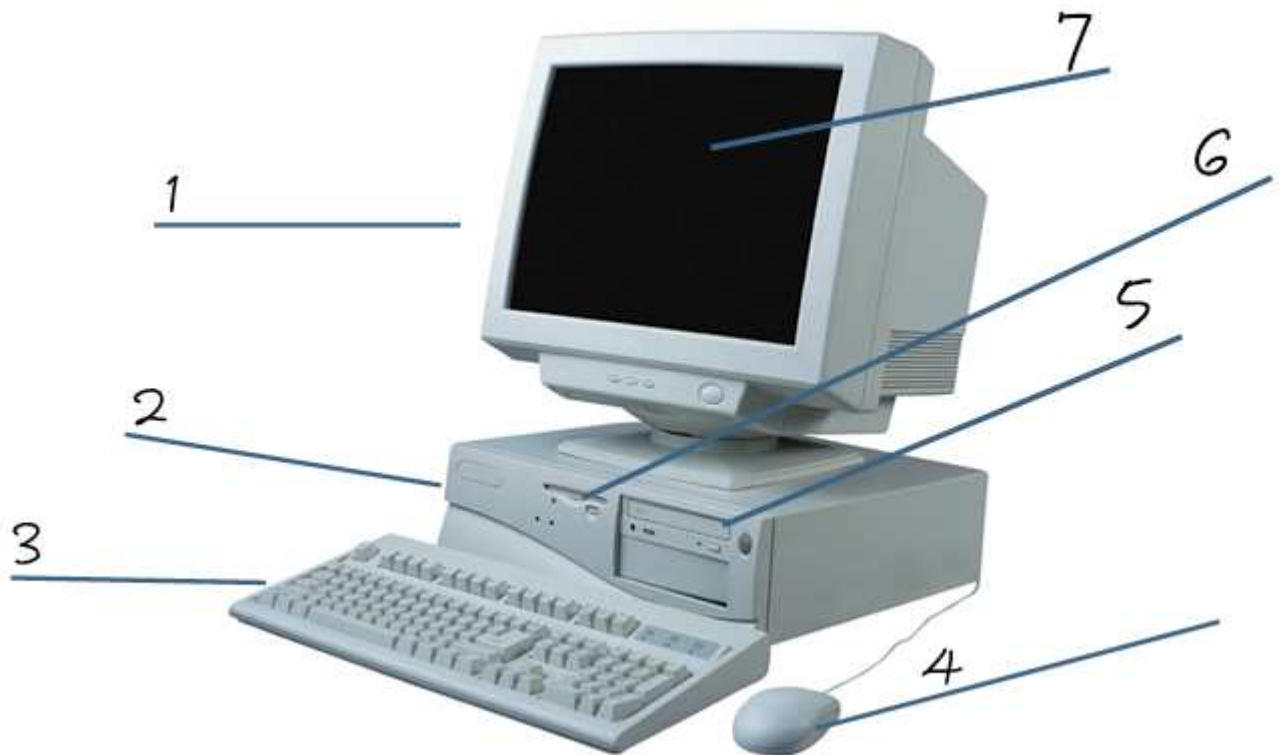
@ctivity 1.1

Brainstorm all the actions you think a computer can do with different kinds of data. Write these words down on your notebook.

@ctivity 1.2

Label the parts of the computer using the words from the list at the bottom part of the page. Write the translation of the words you used.
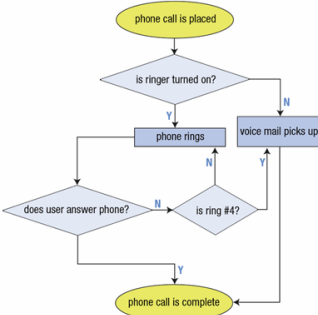

KEYBOARD, MONITOR, SYSTEM UNIT, SCREEN, MOUSE, FLOPPY DISC UNIT, CD / DVD UNIT

In our multimedia world there are many kinds of information. This matching activity will help you to find out more about it.
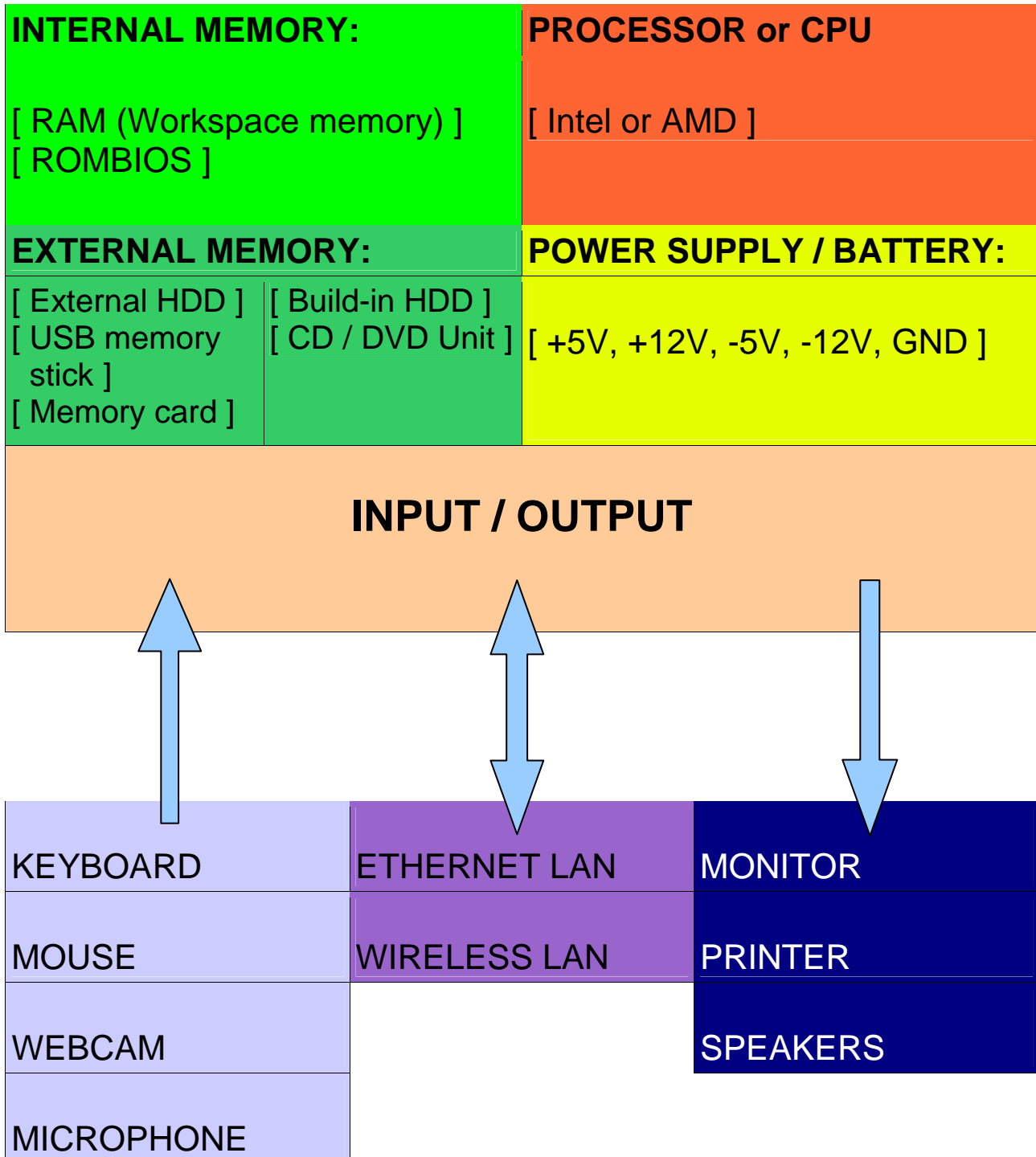
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Put the following words in the column "KIND OF INFO" to match with the examples that are in the two first columns:

program instructions, music, voice, text, graphics, video clip, alphanumerical data, control signals, machine code, films, still image, sound, numerical data, video, figures, full motion picture, diagrams, schematics, drawings, pictures.

EXAMPLE	FILE EXTENSIONS	KIND OF INFO
This is a paragraph to show you one kind of information. This type of data is called text.	.txt .rtf .doc .odt	
1527,30 6,023 · E23	.xls .ods	
10010100 , LDA 4F Hex CR (Carriage Return) LF (Line Feed) <html><head><body>	.exe .dll .html	
	.dwg .bmp .jpg .gif	
	.wav .mp3 .wma .mid	
	.avi .wmv .rm .divx .mov .vob .flv .mp4	

Here there are the basic parts of a computer:

INTERNAL MEMORY:	PROCESSOR or CPU
[RAM (Workspace memory)] [ROMBIOS]	[Intel or AMD]

EXTERNAL MEMORY:		POWER SUPPLY / BATTERY:
[External HDD] [USB memory stick] [Memory card]	[Build-in HDD] [CD / DVD Unit]	[+5V, +12V, -5V, -12V, GND]

INPUT / OUTPUT

KEYBOARD	ETHERNET LAN	MONITOR
MOUSE	WIRELESS LAN	PRINTER
WEBCAM		SPEAKERS
MICROPHONE		

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Match the terms with their correct definitions, then write down the translation of the word to L1 in the correct place.

Terms: LCD screen, programmable, webcam, hardware, RAM, computer, software, ROM, peripheral device and USB memory stick.

TERMS	DEFINITION	TRANSLATION
	Electronic, digital and programmable system that processes information	
	Physical components of a computer	
	Programs of the computer	
	Devices that communicate with the computer to transfer input / output data	
	Volatile read-write memory device (random access memory)	
	Memory device that can only be read	
	Monitor that uses liquid crystal display technology	
	Small video camera used with computers and internet	
	Non volatile read-write memory device that plugs into the universal serial bus port	
	System or machine that runs following a set of instructions stored in a part called memory	

@ctivity 1.5

Watch one of these videos from youtube to see how a personal computer (=PC) is assembled. Write down in your notebook the name of the different computer parts that you see or hear on the selected video.

① **http://www.youtube.com/watch?v=_mHTKlc11Jg** (approx. 10 min.)

② **http://www.youtube.com/watch?v=D_E3ULURHkE&feature=related** (approx. 7 min.)

PERIPHERALS: are devices that communicate with the computer to transfer data from the outside world to the computer (input devices), from the computer to the outside world (output devices) or working both ways (input / output devices).

@ctivity 1.6

Look at the list of peripherals. Decide if they are input, output or both and tick the appropriate boxes. Then translate the word into L1. Choose one peripheral from the table and be ready to talk about it using the language frame provided below:
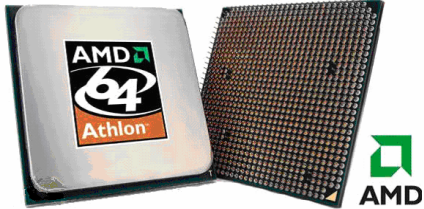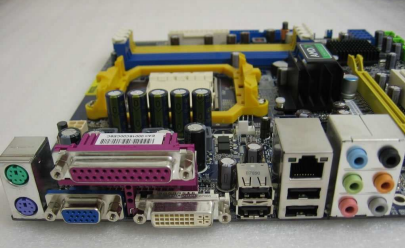
A _____ _____s	is are	(an)	input output I / O	peripheral(s)	which	is are	used for	....

PERIPHERALS	INPUT	OUTPUT	TRANSLATION
*Keyboard / Keypad			
*Mouse			
*Laser Printer / Inkjet Printer			
*Scanner			
*Hard Disc Drive (HDD)			
*Monitor / LCD Screen			
Bar Code Reader			
*Web Cam			
*Microphone			
*Speakers			
Digital Camera			
*Memory Card			
Swipe Card Reader			
*USB Pen Drive / Memory Stick			
*CD / DVD RW Unit			
*Multifunction Printer			
Headphones			
Plotter			
Joystick			
Touch Screen			
Modem – Router			
Sound Card			
Digitizer Tablet			
*Network Interface Card			

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In pairs, match the images with the words on the box below and the definitions you will be provided with.

Keyboard, RAM, mouse, HDD, monitor or screen, USB memory stick, I / O connections, memory card, processor, multifunction printer, power supply, external HDD, CD / DVD unit, ROMBIOS

IMAGE	WORDS	DEFINITIONS

		9

Units for measuring information:

- To measure the amount of information stored in a memory device:

1 bit = 1b = binary digit = is the minimum amount of information in computer science or digital electronics and it is represented using the lower case letter b.

1 byte = 1B = is equal to 8 bit and is represented using the upper case letter B.

1 Kilobyte = 1KB = 1024 bytes

1 Megabyte = 1MB = 1024 KB

1 Gigabyte = 1GB = 1024 MB

1 Terabyte = 1TB = 1024 GB

1 Petabyte = 1PB = 1024 TB

- To measure the speed of information transfer (sending and receiving):

bps = bits / second = bits / s = bits per second

Bps = bytes / second = bytes per second

Kbps = Kilobits / second

Mbps = Megabits / second

Some examples of information transfer speed:

CONNECTION	SPEED
Voice modem	56 Kbps
ISDN = Integrated Services Digital Network	128 Kbps
ADSL = Asymmetric Digital Subscriber Line	1, 2, 10, 20 Mbps
Ethernet LAN (Local Area Network)	100 Mbps
Wireless LAN (Wifi)	54 Mbps

@ctivity 1.8

- Add the storage capacity of the different devices to the table below.
- Consider the capacity of single layer and double layer DVD discs and also single and double sided ones.
- Write the numbers and the units in each cell of the table.

MEMORY DEVICE	CAPACITY (units)
Floppy Disc Drive (old technology)	
Hard Disc Drive	
RAM (computer's workspace memory)	
CD-ROM	
DVD-ROM	
USB Memory Stick (Pen Drive)	
Memory Card	
HD-DVD	
Blu-Ray disc	

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The teacher will provide students with the **.doc** and the **.pdf** files for the activity.
The **TOOLS / WORD COUNT** could be a useful feature.

- Open the one page text document in WORD (**.**doc)
- Count the number of lines in that single page
- Count the number of characters in one line of the text (including blank spaces).
- Calculate when necessary and complete the table below.
- Compare the data in lines 6, 7 and 8.
- Practice some sentences using the language frames below.

#	CONCEPT	DATA (units)
1	Lines per page	
2	Characters per line	
3	Total characters in one page	
4	Bytes per character	1 byte / char.
5	Total bytes per page	
6	Total KB per page	
7	**.**DOC document size	
8	**.**PDF document size	

The _____ document size	is	bigger smaller	than	the _____ one

The _____ document size	is	_____ Kilobytes

@ctivity 1.10

- Fill the cells of the first column with data from the computer you are working with.
- Look for more information to complete columns 2 and 3 using the information found in one of the following web pages:

www.pcworld.co.uk   www.packardbell.com

www.compaq.com   www.acer.com

|	ICT CLASSROOM	DESKTOP	LAPTOP
*Source of information			
*Make & Model			
*Processor type			
Processor speed (MHz)			
*RAM Memory size (GB)			
*Hard Drive Capacity (GB)			
CD / DVD Drive & type			
*Screen size (inches)			
*Screen type (pixels) (SVGA, XGA, WXGA)			
Graphics card make			
Graphics card memory size			
Modem (56 Kbps)			
*Wireless			
*Ethernet			
*Number of USB ports (rear + front = total)			
Firewire connections (IEEE 1394)			
Memory card reader (types of cards supported)			
*Operating System			
Software titles included			
Battery type			
Battery life (holds up to)			
Weight (Kg)			
*Warranty (years)			
*Price (currency)			

- Begin the tree next page on **START** and follow the sentences in order.
- If you think it's a true sentence, move up the tree.
- If you think it's a false sentence, move down the tree.

SENTENCES:

1. The scanner is an output device
2. RAM is a kind of read / write memory
3. ROM is a chip that contains the Central Processing Unit
4. The operating system is part of the computer's hardware

Where have you finished?
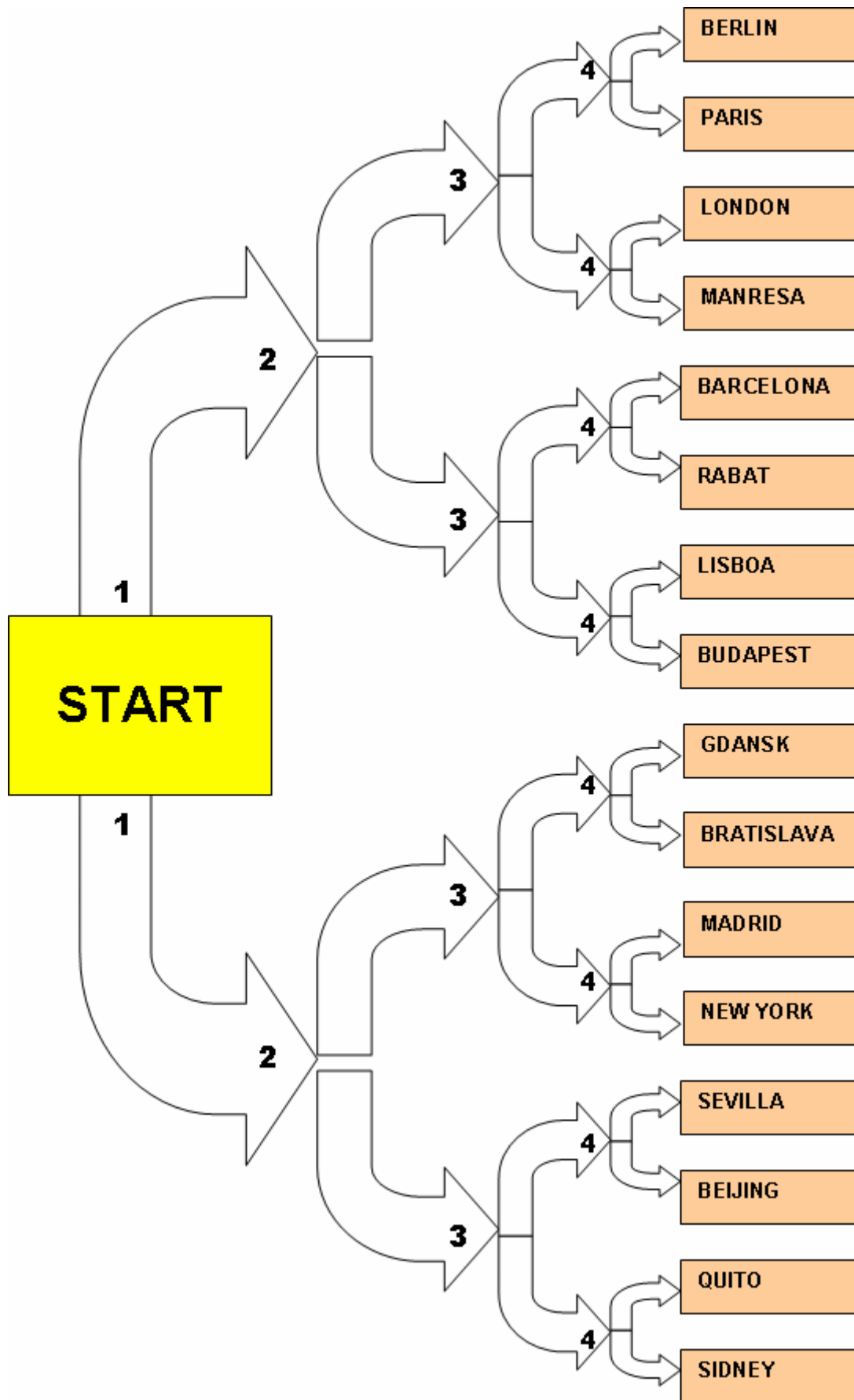
@ctivity 1.12

Do a loop game with the terms and sentences below:

1   BIT
In a memory device when power is turned off stored information is lost
2   PIXEL
In a device that stores information it means it can be read, written or deleted
3   WIRELESS
Binary digit. In computer science it's the minimum amount of information
4   VOLATILE
Electronic integrated circuit
5   READ / WRITE
Communication done by means of electromagnetic waves (radiofrequency waves), that is, not using wires
6   BOOT or BOOTSTRAP
Data that may contain letters, numbers and punctuation characters
7   ALPHANUMERICAL
It's a way of coding information using ones and zeros (binary code)
8   DIGITAL
Each one of the input / output connections the computer has to communicate with the outside world and plug devices into.
9   MULTIMEDIA
Physical place or device to store information
10   PORT
It's related to all different kinds of information such as: text, numerical quantities, pictures, sound and video.
11   CHIP or MICROCHIP
Internal process that initialises and checks the hardware components in a computer and then transfers control to the Operating System (OS)
12   MEMORY
Picture element or picture dot

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Complete the words with the missing letters:

ACRONYMS	MEANING
*HDD	H_ _d D_ _c D_ _ _e
FDD	F_ _ _ _y D_ _c D_ _ _e
*ROM	R_ _d O_ _y M_ _ _ _y
*RAM	R_ _ _ _m A_ _ _ _s M_ _ _ _y
*CPU	C_ _ _ _ _l P_ _ _ _ _ _ _ _g U_ _t
*LCD	L_ _ _ _d C_ _ _ _ _l D_ _ _ _ _y
*USB	U_ _ _ _ _ _ _l S_ _ _ _l B_s
*DVD	D_ _ _ _ _l V_ _ _ _ _ _ _e D_ _c / D_ _ _ _ _l V_ _ _o D_ _c
EPOS	E_ _ _ _ _ _ _ _c P_ _ _t of S_ _e
OCR	O_ _ _ _ _l C_ _ _ _ _ _ _r R_ _ _ _ _ _ _ _ _n
WAN	W_ _e A_ _a N_ _ _ _ _k
*LAN	L_ _ _l A_ _a N_ _ _ _ _k
*PDA	P_ _ _ _ _ _l D_ _ _ _ _l A_ _ _ _ _ _ _t
BIOS	B_ _ _c I_ _ _t / O_ _ _ _t S_ _ _ _m
*I / O	I_ _ _t / O_ _ _ _t
CD-A	A_ _ _o C_ _ _ _ _t D_ _c (CD)
*CD-ROM	R_ _d O_ _y CD (for computers)
*CD-R	R_ _ _ _ _ _ _ _ CD (only once, non erasable)
CD-RW	R_ _ _ _ _ _ _ _e CD (readable, writable and erasable many times)
*DVD-ROM	R_ _d O_ _y D_ _ _ _ _l V_ _ _ _ _ _ _e D_ _c (DVD)
*DVD-R	R_ _ _ _ _ _ _ _e DVD (only once, non erasable)
DVD-RW	R_ _ _ _ _ _ _ _e DVD (readable, writeable and erasable many times)
*ICT	I_ _ _ _ _ _ _ _ _n and C_ _ _ _ _ _ _ _ _ _ _n T_ _ _ _ _ _ _ _y
SVGA	S_ _ _r V_ _ _o G_ _ _ _ _ _s Array (800 x 600 pixels)
XGA	E_ _ _ _ _ _d G_ _ _ _ _ _s A_ _ _y (1024 x 768 pixels)
WXGA	W_ _e E_ _ _ _ _ _ _d G_ _ _ _ _ _s A_ _ _y (1366 x 768 pixels)
MODEM	M_ _ _ _ _ _ _r D_ _ _ _ _ _ _ _ _r device
VDU	V_ _ _o D_ _ _ _ _y U_ _t

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In pairs, predict the missing words in the left column and write them down. Complete the data about your computer at home individually and then compare it with your partner.

	☐ Desktop ☐ Laptop	Make:	
YEAR			
	INTEL ☐ Celeron ☐ Centrino ☐ Pentium IV, Pentium D ☐ Dual Core ☐ Quad Core ☐ _____	AMD ☐ Sempron ☐ Athlon 64 ☐ Athlon x2 ☐ Phenom x4 ☐ _____	
	☐ 1GB	☐ 2GB	☐ 3GB ☐ _____
	GB		
	☐ CRT ☐ LCD	Inches:	
	☐ INJECTION ☐ LASER ☐ MULTIFUNCTION	Make:	
_____ Ports	Front ( ) + Back ( ) = TOTAL ( )		
FIREWIRE Port (IEEE 1394)	☐ YES	☐ NO	
_____ Units	How many? ☐ DVD-ROM ☐ DVD-R/W	☐ Multisystem +/- ☐ Double Side ☐ Double Layer	
WIFI	☐ YES	☐ NO	
ETHERNET LAN Connection	☐ YES	☐ NO	
VIDEO Capture	☐ YES	☐ NO	
TV Tuner	☐ YES	☐ NO	
	☐ 56Kb	☐ ADSL 1M	☐ ADSL 2M ☐ _____

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ICT QUESTIONNAIRE . Individually answer this questionnaire. Then, in pairs, comment on some answers (questions from 1.4 to 1.9, 2.4, 2.6, 4.2, 4.14, 4.16 and from 5.10 to 5.14). The teacher will ask you to share with the rest of the class some of your answers and opinions about the topic.

TELEVISION	Home	
	YES	NO
1.1 Have you got cable TV ?	❏	❏
1.2 Have you got a satellite dish ?	❏	❏
1.3 Have you got a TV set with panoramic screen (wide format, 16:9) ?	❏	❏
1.4 Have you subscribed to a PPV (Pay Per View) TV system ?	❏	❏
1.5 Have you got digital terrestrial TV broadcasting ? (DVB-T = Digital Video Broadcasting-Terrestrial)	❏	❏
	❏	❏

1.6 How many hours per day (average) do you watch TV at home on weekdays ?			
1.7 How many hours per day (average) do you watch TV at home at weekends ?			
1.8 How many TV sets have you got at home ?			
1.9 How many hours per day (average) do you play video games (video console) on your TV or on your computer ?			
1.10 How many TV channels are available in every language ? (TERRESTRIAL CHANNELS ONLY, DIGITAL AND ANALOGUE BUT NOT SATELLITE)		#channels	language
	Analogue		
	Digital (DVB-T)		
	Cable		

VIDEO and DVD	Home	
	YES	NO
2.1 Have you got a VCR (Video Cassette Recorder) ?	❏	❏
2.2 Have you got a DVD player (DVD-ROM unit) ?	❏	❏
2.3 Have you got a DVD recorder (DVD-R/W unit) ?	❏	❏
2.4 Have you got a digital video camera ?	❏	❏
2.5 Have you got a digital picture camera ?	❏	❏
	❏	❏

2.6 How many video movies (DVD) does your family rent per week ?	

TELEPHONY		YES	NO
3.1 Have you got a mobile (cellular) phone ?		❑	❑
3.2 Are there different phone companies in your country ?		❑	❑
		❑	❑

3.3 How many mobile phones has your family got ?	
3.4 How many messages (average) do you send per day ? (SMS = Short Message Service)	
3.5 What make is your mobile phone ?	❑ Alcatel ❑ Mitsubishi ❑ Motorola ❑ Nokia ❑ Samsung ❑ Siemens ❑ SonyEricsson ❑ Other

PERSONAL COMPUTERS (PC)	Home	
	YES	NO
4.1 Have you got a personal computer (PC) at home ?	❑	❑
4.2 Have you got a portable computer (Laptop)?	❑	❑
4.3 Have you got a CD-ROM unit in the computer you use ?	❑	❑
4.4 Have you got a CD-R/W unit (CD recorder) in the computer you use ?	❑	❑
4.5 Have you got a DVD-ROM unit in the computer you use ?	❑	❑
4.6 Have you got a DVD recorder unit in the computer you use ?	❑	❑
4.7 Have you got a scanner at home ?	❑	❑
4.8 Have you got a webcam ?	❑	❑
4.9 Do you use Microsoft Windows operating system ?	❑	❑
4.10 Do you use Linux operating system ?	❑	❑
4.11 Do you play video games on your computer ?	❑	❑
	❑	❑

4.12 How many computer rooms are there at your school ?	
4.13 When you use the computer at school during a lesson, how many students per computer work on it?	❑ 1 student per computer ❑ 2 students per computer ❑ 3 students per computer
4.14 How often do you play video games on your computer?	❑ every day ❑ more than twice a week ❑ twice a week ❑ once a week ❑ less frequently
4.15 What kind of processor is installed in your computer ?	❑ INTEL (Pentium or similar) ❑ AMD (Athlon or similar) ❑ Other

4.16 How old is the computer you have got at home ?	❑ less than 1 year old ❑ between 1 and 2 years old ❑ between 2 and 3 years old ❑ more than 3 years old	
4.17 How many computers have you got at home ?	Desktop	
	Laptop (portable)	

INTERNET	Home	
	YES	NO
5.1 Have you got an internet connection ?	❑	❑
5.2 Is it a broadband (fast) connection (ADSL or similar) ?	❑	❑
5.3 Have you designed a web page ?	❑	❑
5.4 Have you ever participated in an internet forum ?	❑	❑
5.5 Have you got e-mail address ?	❑	❑
5.6 Do you use e-mail services to communicate with other people ?	❑	❑
5.7 Do you use internet chats ?	❑	❑
5.8 Are there cybercafes in your town ?	❑	❑
5.9 Do you listen to MP3 music ?	❑	❑
5.10 Do you download MP3 music from internet?	❑	❑
5.11 Do you download films from internet ?	❑	❑
5.12 Have you designed your own blog ?	❑	❑

5.13 How often do you connect to internet chats (Messenger, Skype, Gtalk, etc.?	❑ every day ❑ more than twice a week ❑ twice a week ❑ once a week ❑ less frequently
5.14 How many films did your family download last month from internet ?	

@ctivity 1.16

SELF ASSESSMENT UNIT 1

Name:		Date:		
Can do:		**Very well**	**Quite well**	**Needs to be reviewed**
Identify the parts of a computer				
Classify peripheral devices (input/output)				
Explain the basics about parts and peripherals				
Define some terms related to computers				
Differentiate hardware from software				
Work and calculate using digital information units properly				
Give different opinions about the importance of computers				
Communicate what you have learnt				