



Ministerio de Educación

Gobierno de Chile

100 TOP

Telecommunications

WORDS TP BOOKLET

3° MEDIO



DEG

División
Educación
General

English Opens Doors Program

División de Educación General - Mineduc





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Get to know your booklet

LESSONS



Listening



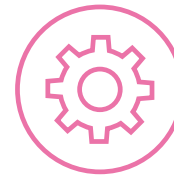
Reading



Speaking



Writing

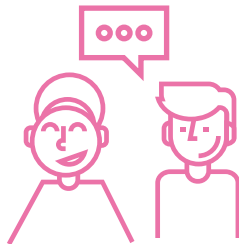


Project

ACTIVITIES



Individual



In pairs



Group Work



Think & discuss

ACTIONS



Read



Write



Watch a video



Speak



Listen



¡Bienvenido!

Welcome!

ES

A continuación, te presentamos un recurso elaborado para avanzar en uno de nuestros principales objetivos: mejorar la calidad y fortalecer la enseñanza Técnico-Profesional en el país.

La creación de este Booklet responde a la importancia de aprender el idioma inglés en el contexto de cada especialidad técnica, de manera que en el futuro puedas acceder a mayores oportunidades de especialización y en el mundo laboral.

Es por esta razón que creamos este recurso didáctico, donde proponemos tanto a docentes como estudiantes, las 100 palabras más utilizadas en cada especialidad aplicadas en contextos específicos, fundamentales para el dominio del idioma.

Dado que en el mundo de hoy es importante entregar todas las opciones para favorecer el aprendizaje del inglés, el trabajo continuo de las actividades que ofrece cada unidad te permitirá desarrollar habilidades lingüísticas como la lectura, audición, expresión escrita y oral, además de trabajar colaborativamente en los proyectos al término de cada unidad.

Esperamos que este 100 Top Words Booklet sea una contribución para el aprendizaje del idioma en la especialidad que has elegido.

EN

We are pleased to present you with this resource, which was created to advance one of our primary objectives- improving and strengthening the quality of technical professional education in Chile.

The creation of this booklet responds to the importance of learning the English language in the specific context of each technical specialty and aims to provide you with access to greater opportunities in your area of concentration, and in the labor market in general.

With that in mind we have created this educational resource, through which we propose to teachers and students alike – the 100 most commonly used words for specific contexts, fundamental to language mastery in each area of technical specialization.

Given the current importance of providing all possible opportunities to foment English language acquisition, the successive completion of the activities offered in each unit will facilitate the development of your linguistic abilities, including reading comprehension, written and oral expression, as well in collaborative learning projects provided at the end of each unit.

We hope that the “100 Top Words” Booklet will contribute to your English language learning, in the technical professional concentration that you have chosen.

Tus comentarios nos importan: escríbenos a TPenglish@mineduc.cl

Telecommunications Booklet Glossary



A	1. Amplitude (n.)	The strength of a wave of sound or electricity, measured at the strongest repeating part of the wave.
	2. Analog signal (n.)	A signal that can take on any amplitude and is well-defined at all times.
	3. Application layer (v.)	The 7th layer of OSI model that provides authentication, privacy and restriction of information to the users.
B	4. Backup (n.)	A copy of information held on a computer that is stored separately from the computer, e.g., the department's backup disks are all stored in a different building.
	5. Bandwidth (n.)	The maximum amount of information that can be sent over a network connection in a given amount of time.
	6. Baseband (n.)	The original frequency range of a transmission signal before it is converted, or modulated to a different frequency range, e.g., an audio signal may have a baseband range from 20 to 20,000 hertz.
	7. Bit (n.)	A unit of information in a computer that must be 0 or 1, e.g., a 32-bit computer (= a computer that processes 32 bits of information at a time).
	8. Bits per second (n.)	Or "bps" for short, is a measure used to show the average rate at which data is transferred between a computer and a data transmission system.
	9. Broadband (n.)	A system that makes it possible for many messages or large amounts of information to be sent at the same time and very quickly between computers or other electronic devices.
	10. Bus line (n.)	A number of conductors joined together that create a pathway to communicate with the computer processor.
C	11. Byte (n.)	A computer of information unit, consisting of a group of (usually eight) bits.
	12. Computer terminal (n.)	A piece of equipment consisting of a keyboard and screen, used for communicating with the part of a computer system that deals with information.
	13. Connector (n.)	A device that holds a wire in position in a piece of electrical equipment.
	14. Copper (n.)	A chemical element that is a reddish-brown metal, used especially for making wires and coins.
	15. CPU (n.)	Acronym for "Central Processing Unit"; the part of a computer that controls all the other parts.
	16. Customer (n.)	Someone who pays for goods or services.
D	17. Data (n.)	Information, especially facts or numbers, collected to be examined and considered and used to help decision-making, or information in an electronic form that can be stored and used by a computer.
	18. Database (n.)	A large amount of information stored in a computer system in such a way that it can be easily looked at or modified.

	19. Data Link layer (n.)	The 2nd layer of the OSI model that holds the physical layer, providing direction, error control and synchronization with a physical device.
	20. Decibel (n.)	Or “dB” for short, is a unit for measuring the loudness of a sound.
	21. Demodulation (n.)	A process to return a modulated signal to its original form, e.g., modems demodulate by returning an analog signal to its original digital form.
	22. Device (n.)	An object or machine that has been invented for a particular purpose.
	23. DNS (n.)	An acronym for “Domain Name System”, is the Internet’s system for converting alphabetic names into numeric IP addresses.
	24. Digital signal (n.)	A signal in which information is sent and received in electronic form as a series using numbers 1 and 0.
	25. Display (v.)	To show something or a collection of things in an organized way for people to see.
	26. DVI (n.)	Acronym for “Digital Visual Interface”, DVI is a video display interface developed for transmitting digital video content to display devices at resolutions as high as 2560 x 1600.
E	27. Electrical signal (n.)	A signal in the form of voltage or current that conveys information.
F	28. Fiber (n.)	A very thin glass or plastic thread through which light can travel to carry information, especially in phone, television, and computer systems.
	29. Firewall (n.)	A device or program that prevents people from seeing or using information on a computer without permission while it is connected to the internet.
	30. Frequency (n.)	The number of times that a wave, especially a sound or radio wave, is produced within a particular period, especially one second, e.g., the transmitter sends out a pulse of sound at a frequency of 6 kilohertz.
G	31. Gateway (n.)	A combination of hardware and software used to connect two networks with different protocols.
	32. GPU (n.)	Acronym for “Graphics Processing Unit”, is an electronic circuit used to speed up the creation of both 2D and 3D images.
	33. Ground (n.)	A wire that makes a connection between a piece of electrical equipment and the ground, so the user is protected against electric shocks if the equipment develops a fault.
H	34. Hard drive (n.)	A part of a computer that reads information on a hard disk, or a separate device that can be connected to a computer for the same purpose.
	35. Hardware (n.)	The physical and electronic parts of a computer, rather than the instructions it follows.

	36. Hertz (n.)	Or "Hz" for short, it's the standard unit for measuring the frequency (= the rate of repetition) of a wave. One hertz equals one repetition per second.
	37. Host (n.)	The main computer in a network (= a series of computers that are connected to each other) which controls the programs and files.
	38. Hub (n.)	A network device used to connect one or more network stations.
	39. HTTP (n.)	Acronym for "Hypertext Transfer Protocol", is a set of instructions made by a computer program that allows your computer to connect to an internet document.
	40. HDMI (n.)	Acronym for "High-Definition Multimedia Interface", is a brand name for equipment used for sending uncompressed digital signals from a sound or video source to a computer, television, screen, etc.
I	41. Interference (n.)	Noise or other electronic signals that stop you from getting good pictures or sound on a television or radio.
	42. Internet (n.)	A large system of connected computers around the world that allows people to share information and communicate with each other.
	43. Intranet (n.)	A closed system of connected computers that works like the internet and allows people within an organization to communicate with each other and share information.
	44. Input (n.)	The part that carries information to a machine, or the place where it is connected, e.g., the inputs for the CD-ROM are at the back of the computer.
	45. IP address (n.)	Abbreviation for "Internet Protocol Address", is the number given to each computer when it is connected to the internet.
	46. ISO (n.)	An acronym for "International Organization for Standardization", is an organization that makes international rules about the quality of products and services.
L	47. LAN (n.)	Acronym for "Local Area Network", is a system for connecting the computers of people who work in the same building.
	48. Laptop (n.)	A computer that is small enough to be carried around easily and is flat when closed.
	49. Link (n.)	A way of communicating between two systems, e.g., this device creates a link between computers, enabling you to share files, no matter their size.
M	50. Manufacturer (n.)	A company that produces goods in large numbers.
	51. Modem (n.)	An electronic device that allows one computer to send information to another through standard phone lines and therefore over long distances.

	52. Modulation (n.)	The process of changing the amplitude or frequency of an electrical signal by mixing it with another signal.
	53. Motherboard (n.)	The main printed circuit board that contains the CPU of a computer and makes it possible for the other parts of a computer to communicate with each other.
	54. MMF (n.)	A fiber featuring a small light-carrying core of about 50 micrometers or above.
N	55. Network (n.)	A number of computers that are connected together so that they can share information.
	56. Network card (n.)	A small piece of electronic equipment that you install in a computer to connect it to a computer network.
	57. Network layer (n.)	The 3rd layer of the OSI model that connects different networks.
	58. Node (n.)	A working station or device joined to a network.
O	59. Operating system (n.)	A set of programs that control the way a computer system works, especially how its memory is used and how different programs work together.
	60. Optical signal (n.)	An electromagnetic signal whose wavelength is extremely high.
	61. OSI Model (n.)	An acronym for "Open System Interconnection", is a conceptual framework used to describe the functions of a network system.
	62. Output (n.)	The part of a piece of electrical equipment where power, energy, or sound leaves it, e.g., linking your sound card to the speaker outputs on your receiver may cause damage to the card when you turn the volume up.
P	63. Physical layer (n.)	The 1st layer of the OSI model that transports electric current of bits through hardware and network mechanical devices.
	64. Point-to-point (n.)	A type of transmission that takes place between a single pair of stations, normally relatively close to each other. An example of this is a home intercom system with two stations.
	65. Port (n.)	A part of a computer where cables from other pieces of equipment, such as a printer, can be connected.
	66. Power (n)	The rate at which work is done or at which energy is produced, measured in watts.
	67. Presentation layer (n.)	The 6th layer of the OSI model that administers translation, encryption, and compression of data exchanged between two communicating systems.
	68. Processor (n.)	The part of a computer that performs operations on the information that is put into it.
	69. Protocol (n.)	A computer language allowing computers that are connected to each other to communicate.
	70. PSU (n)	Acronym for "Power Supply Unit", is a hardware component of a computer that supplies all the other components with power.

R**71. RAM** (n.)

Acronym for "Random Access Memory", is a type of computer memory that can be searched in any order and changed, as necessary.

72. Relay (v.)

To broadcast a signal, message, or program on television or radio, e.g., TV pictures of the war were relayed around the world by satellite.

73. Rendering (v.)

To take a computer image or file and convert it into another format or apply a modification, like shading or shadows.

74. Resistor (n.)

A part of an electrical circuit designed to produce a particular amount of resistance to the flow of current.

75. Retrieve (v.)

To recover stored information from a computer.

76. Roaming (n.)

The use of a wireless phone outside of the "home" service area defined by a service provider. Higher per-minute rates are usually charged for calls made or received while roaming. Long distance rates and a daily access fee may also apply.

77. Router (n.)

A piece of electronic equipment that connects computer networks to each other, and sends information between networks.

78. Routing (n.)

The process of sending information from one computer network to another.

S**79. Session layer** (n.)

The 5th layer of the OSI model that initiates and finishes conversations, exchanges, and dialogues between applications.

80. Server (n.)

A central computer from which other computers get information.

81. SMF (n.)

A fiber featuring a small light-carrying core of about 9 micrometers in diameter.

82. Software (n.)

The instructions that control what a computer does; computer programs.

83. Storage (n.)

The process of saving and keeping information, music, etc. on a computer.

84. Switch (n.)

A small device, usually pushed up or down with your finger, that controls and turns on or off an electric current.

85. Switching (n.)

The process to forward packets coming in from one port to a port leading towards the destination.

T**86. Terminal** (n.)

The hardware used to enter, retrieve, and display electronic data.

87. Throughput (n.)

The average rate of successful message delivery over a communication channel.

88. Transistor (n.)

A device that regulates current or voltage flow and acts as a switch or gate for electronic signals.

89. Transportation layer (n.)

The 4th layer of the OSI model that provides control from one point to the other to transfer information through the network.

U

90. Update (n.)

To make something more modern or suitable for current use by adding new information or changing its design.

91. USB (n.)

Acronym for "Universal Serial Bus", is a part of a computer to which extra peripherals such as printers, scanners, and digital cameras can be connected easily.

V

92. VGA (n.)

Acronym for "Video Graphics Adapter" or "Video Graphics Array", is a standard display that provides colored screen resolution.

93. Volt (n.)

Or "V" for short, is the standard unit used to measure how strongly an electrical current is sent around an electrical system.

94. Voltage (n.)

The force of an electric current, measured in volts.

W

95. WAN (n.)

Acronym for "Wide Area Network", is a computer network that connects separate machines over a wide area, for example in different countries, using telecommunication systems.

96. Watt (n.)

Or "W" for short, is the standard unit for measuring electrical power.

97. Wavelength (n.)

The distance between two waves of energy, or the length of the radio wave used by a particular radio station for broadcasting.

98. Web browser (n.)

A computer program that makes it possible for you to read information on the internet.

99. Wire (n.)

Piece of thin metal thread with a layer of plastic around it, used for carrying electric current.

100. Wireless (adj.)

Using a system of radio signals rather than wires to connect computers, mobile phones, etc. to each other, e.g., a wireless connection.

Unit I: Operations and Fundamentals of Telecommunications



Goal: Comprehend the main information of oral and written texts in the context of a basic telecommunication system.

Skills: Listening, Reading, Speaking and Writing.

Project: Layers of the OSI Model.

★ 29 KEY WORDS

Analog signal (n.)	Interference (n.)	Presentation layer (n.)
Application layer (n.)	Medium (n.)	Receiver (n.)
Bandwidth (n.)	Multiplex (n.)	Session layer (n.)
Broadcast (n.)	Network layer (n.)	Throughput (n.)
Customer (n.)	Node (n.)	Transistor (n.)
Data link layer (n.)	Operating System (n.)	Transmitter (n.)
Decibel (n.)	Optical signal (n.)	Transport layer (n.)
Digital signal (n.)	OSI Model (n.)	Volt (n.)
Electrical signal (n.)	Physical layer (n.)	Watt (n.)
Hertz (n.)	Point-to-point (n.)	

WHILE YOU LISTEN

Click here to listen: 

B. Listen to a professor talking about the basics of telecommunications and complete the sentences with a word or a short phrase from the box. You will listen twice.

physical channel - a signal - receiver - broadcast communication
multiplex systems - point-to-point communication
analog signal - digital signal - frequency - amplitude
discrete signal amplitudes


For example, the term "telecommunication" means the science and practice of transmitting information ...at a distance...

1. The function of the transmitter is to take the information and convert it into _____
2. The transmission medium, also called _____, carries the signal to a receiver.
3. The function of the _____ is to take the signal from the channel and convert it back into usable information.
4. When telecommunication is between one transmitter and one receiver, the link is called _____
5. When one powerful transmitter telecommunicates with numerous receivers, the link is called _____
6. When multiple transmitters and multiple receivers have been designed to cooperate and share the same physical channel, the links are called _____
7. The two basic signals of transmission are _____
8. Analog signals may change continuously in both _____
9. Digital signals are characterized by the use of _____

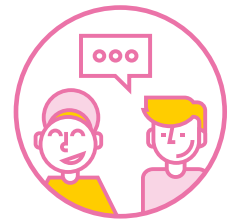
AFTER YOU LISTEN

C. Look at the figures and fill the gaps using the words in the box.

- Multiplex
- Point-to-point
- Broadcast
- Medium
- Transmitter
- Receiver



D. Answer the following questions by comparing and contrasting concepts.



1. What is the difference between **communication** and **telecommunication**?

For example, While communication is..., telecommunication is...

On the one hand, communication is... On the other hand, telecommunication is...

2. What is the difference between **point-to-point** and **broadcast communication**?

3. What is the difference between **analog** and **digital** signals?



Lesson II: Reading Comprehension

BEFORE YOU READ

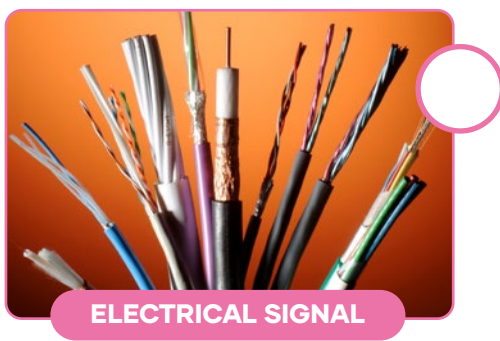
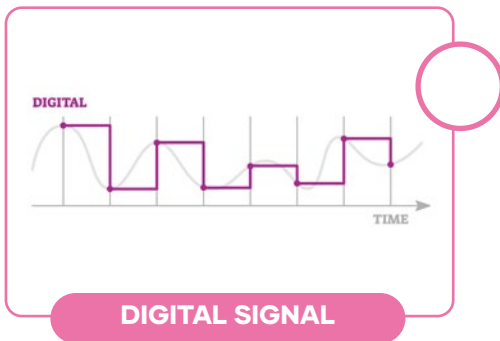
A. Compare the following images and answer the questions.



1. What do the images represent?

2. What do the images have in common?

B. Look up the definition of each type of signal in the glossary. Then, match both columns using the numbers.



1 An electromagnetic signal whose wavelength is extremely high.

2 A signal in which information is sent and received in electronic form as a series of the numbers 1 and 0.

3 A signal in the form of voltage or current that conveys information.

4 A signal that can take on any amplitude and is well-defined at every time.



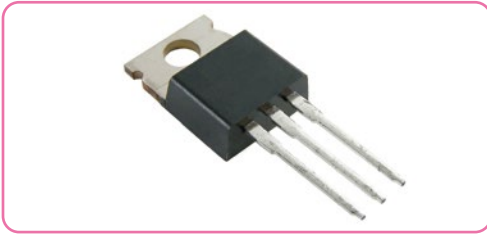
C. Read the text and look at the definitions (a - g) of the words in **bold** (1 -7). Then, fill each gap with the correct number. You can use the glossary for help.

ELECTRICAL OR OPTICAL TECHNOLOGY?

1. High **throughput** (1) network systems and high-performance **operating systems** (2) have skyrocketed for the past 20 years and will continue to do so into the future. While the performance of these systems has almost doubled over the past two decades, most if not all of such improvements in the first decade were due to higher **transistors** (3) speeds.
2. Over the past 10 years, though, improvements in transistor performance have slowed down with few power improvements from one process **node** (4) to another, limiting the integration density. Multicore parallel architectures have been employed to keep up with the demand. Interconnect technology is essential in enabling these new parallel architectures to achieve their targeted performance. Limitations in the interconnect throughput, density, and latency could hinder advances for future architectures.
3. Optical and electrical interconnect technologies have always competed to be the solution of choice. Each offers specific trade-offs based on density, reach, reliability, cost, and power in a given application.
4. System manufacturers historically have been reluctant to replace electrical interconnects with optical solutions, due to their lower complexity and lower-cost supply chain. In most generations of high-performance systems, optics seem the best choice at first since they have a much greater **bandwidth** (5) to transmit information and are immune to electromagnetic **interference** (6), but the cost advantage of their electrical counterparts wins in the end. Therefore, optical interconnects have usually ended up to be limited to longer-distance links where the attenuation in copper cable is too high for the electrical circuits to compensate.
5. However, with the performance requirements in future systems and new interconnect technologies and **customers** (7), other factors may come into the decision-making process that can affect the old paradigms. Examining the tradeoffs of the electrical and optical interconnect solutions based on different system requirements and configurations serves as a framework for the selection of proper interconnects in next-generation systems.

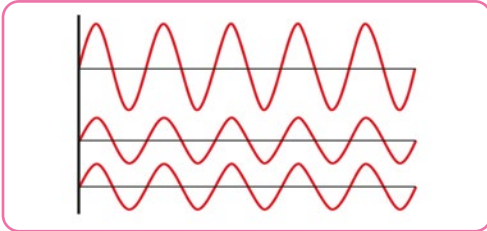
Farjadrad, R. (2014). What's the Difference Between Optical and Electrical Technology for 100-Gbit/s Connectivity in Future Systems?. *Electronicdesign.com*.

<https://www.electronicdesign.com/technologies/communications/article/21800130/whats-the-difference-between-optical-and-electrical-technology-for-100gbits-connectivity-in-future-systems>.



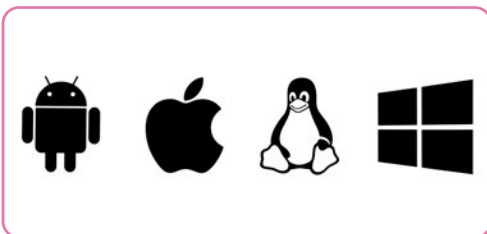
a) Transistor

A device that regulates current or voltage flow and acts as a switch or gate for electronic signals.



b) Noise

Noise or other electronic signals that stop you from getting good pictures or sound on a television or radio.



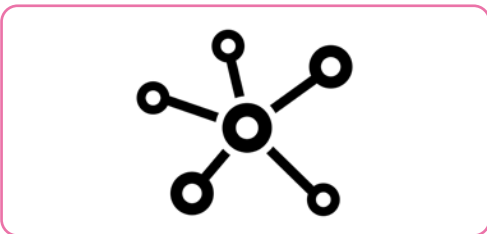
c) Operating system

A set of programs that control the way a computer system works, especially how its memory is used and how different programs work together.



d) Customer

Someone who pays for goods or services.



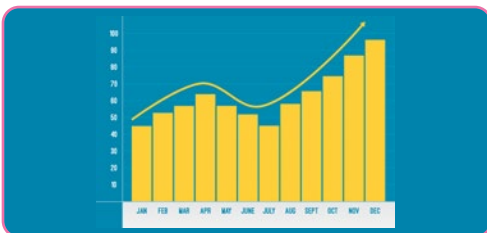
e) Network node

A working station or device joined to a network.



f) Bandwidth

The maximum amount of information that can be sent over a network connection in a given amount of time.



g) Throughput

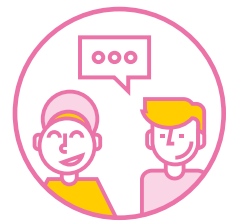
The average rate of successful message delivery over a communication channel.

D. Read the text again and decide which paragraph (1 - 5) corresponds to each sentence. Paragraphs may be chosen more than once.

- I. The paragraph explains why electrical signals have been more popular. 4
- II. The paragraph refers to the improvements in technology.
- III. The paragraph suggests that choosing a signal depends on different factors.
- IV. The paragraph indicates obstacles in developing signals.
- V. The paragraph compares electrical and optical signals.

AFTER YOU READ

E. Answer the following questions and discuss with your classmate.



1. What is the difference between electrical and optical signals?

2. Why are electrical signals more popular than optical signals?



Lesson III: Speaking

WARM UP

A. Look at the following abbreviations and comment each one. What are they? What is their purpose? Look for their definitions in the glossary.

Hz

db.

V

W

B. Look at the table and classify each unit of measurement. Discuss the meaning and purpose of amplitude, voltage, power and frequency. Share your views with the class.



AMPLITUDE	VOLTAGE	POWER	FREQUENCY

CONTROLLED PRACTICE



C. Read the following dialogue about a safety meeting between a supervisor and a student and highlight the words that you do not understand. Use a dictionary.

Supervisor: Okay, let's review the checklist for tomorrow's business trip. Where are we going?

Student: We are going to El Toro hydroelectric power plant, 90 kilometers to the east of Los Angeles, Biobío Region.

Supervisor: Give me a brief summary of the job to be completed.

Student: Our job is to repair El Toro's three-phase transformer by balancing the voltage of each phase.

Supervisor: How about the technical fact sheet of El Toro? Give me the general characteristics.

Student: El Toro has a declared power of 450 **MW**, an annual generation of 1,125,822.00 **GWh**, a frequency of 50 Hz, an average flow factor of 28,56%, and a turbine flow of 100 **m³/s**.

Supervisor: What about the characteristics of the transformer?

Student: It is a three-phase transformer with a power of 121 **MVA** and a ratio of 230/13.8.

Supervisor: What hazards may be present when working on the transformer?

Student: There could be a system breakdown, so we should monitor, power cords and keep the power off while working on the transformer. It is essential to avoid an overload so we have to distribute voltage among phases properly. Also, the transformer must be grounded to prevent static electricity from contacting the core. Finally, we have to keep the transformer and all of its components dry and set up caution signs that warn people to keep away from danger.

Supervisor: Great! Now, what type of personal protective equipment are we carrying?

Student: We packed hard hats, goggles, gloves, steel toe-cap footwear, arc and flame rated clothing, hearing protection, face shields, and leg protection.

Supervisor: Did we pack the regular gloves?

Student: Yes.

Supervisor: Since we are going to work with energized equipment, let's pack insulated rubber gloves instead.

Student: Done.

Supervisor: Excellent. We are ready to go. See you tomorrow.

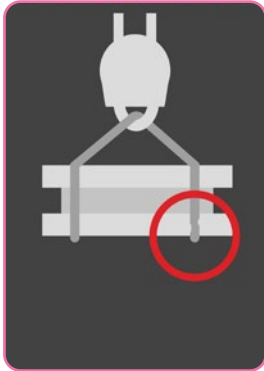
Student: Good, see you tomorrow.

D. Each student will choose a character to roleplay the dialogue.
(e.g., Student A is the Supervisor, and Student B is the Technician). Then,
change roles.

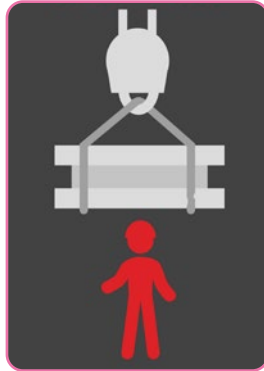


FREER PRACTICE

E. Look at the images and discuss the questions with your classmate. Then,
share with the class.



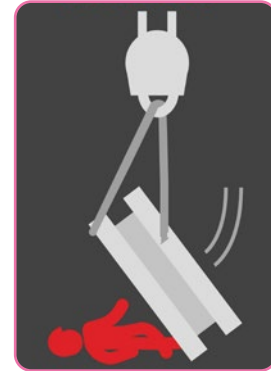
UNSAFE CONDITION



UNSAFE ACT



NEAR MISS

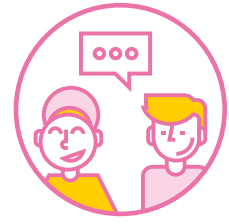


ACCIDENT

1. Why do you think accidents happen?

2. How can we prevent accidents?

WRAP UP



F. Go back to the dialogue in activity C and look at the symbols in **bold**. What is the word of each symbol? Do you know what they are used for? Make a list of them and other units of measurement that you know related to amplitude, voltage, power, frequency or another related to telecommunications.

SYMBOL	NAME	UNIT OF
W	WATT	POWER
kW	KILOWATT	POWER
MV	MEGAWATT	POWER



Lesson IV: Writing

PRE-WRITING

A. Watch this video explaining the OSI (open systems interconnection) model and complete the chart with the name and key words associated with each layer.



Watch a video

LAYER N°	NAME	KEY WORDS
1	Physical	Cable, Wireless, Devices, Jacks, Plugs, Voltages.
2		
3		
4		
5		
6		
7		



B. Write a definition for each layer using the key words you wrote.

1. Physical layer

The physical layer includes the cable and wireless connections among devices as well as specifications of jacks, plugs and voltages.

2. _____

3. _____

4. _____

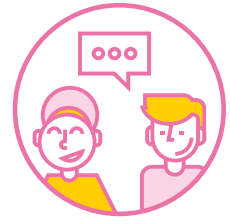
5. _____

6. _____

7. _____

REVISING

C. Read your definitions to a classmate and let him/her guess the layer. Then, provide feedback to each other's definitions. Take turns.

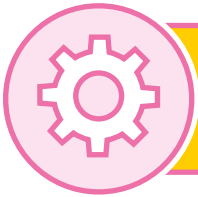


EDITING

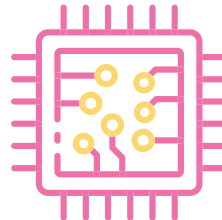
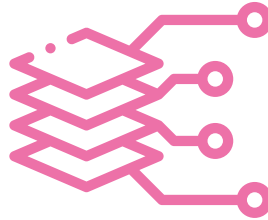
D. Edit your definitions considering the feedback from your classmate and share with the class.

PUBLISHING

E. Create a poster and draw a word cloud for each layer using the key words. Use different colors for each layer.



Project: Layers of the OSI Model



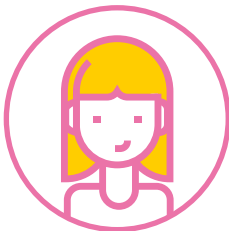
Name of the Project:	Layers of the OSI Model
Level:	Intermediate
Time:	180'
General aim:	In groups, students will present a layer of the OSI model, describing its features in detail by providing examples of services and naming protocols.
Language aim (s):	Students will practice the four skills with an emphasis on speaking.
Resources / Materials:	Computer, Data Projector, Speakers.
Teacher's role:	Guide students on their research by providing examples of reliable sources. Create and deliver a hand-out with general assessment aspects to let students know what is expected from them.
Students' roles:	Research the main features of the layer assigned, and discriminate sources to include only reliable information. Groups should assign roles to each member, such as a timekeeper to meet the deadline, a language facilitator to review grammar structure, a material keeper to store work properly, and a leader to supervise overall presentation.

PROCEDURE

1. Create a group with 3 - 4 classmates.
2. Teacher will assign one layer to your group.
3. Investigate the assigned layer on the internet and ask your specialty teacher for guidance.
4. Groups must use PPT, Prezi, Nearpod, or similar for the visual presentation. Infographics, and schemes should predominate over texts.
5. Once the visual presentation is finished, each group should practice their oral presentation considering rubric criteria.
6. Each group presents in front of the class.

FOLLOW UP	After each presentation, both the teacher and the rest of the class can provide feedback about the content and organization of visuals.
VARIATION	Audience must take notes and ask questions if desired. Presenters will ask questions to the audience about the layer. Both interactions will result in the addition of points, depending on the answers provided.
RUBRIC	Rubric to assess oral presentation.

Unit II: Basic Installation and Maintenance of a Computer Terminal



Goals: Perform maintenance and minor repairs to telecommunication equipment and systems, using the tools and maintenance guidelines provided by the manufacturer.

Skills: Listening, Reading, Speaking, Writing.

Project: Maintenance of a Computer Terminal.

★ 19 KEY WORDS

Backup (v.)	Hard drive (n.)	RAM (n.)
Computer Terminal (n.)	Hardware (n.)	Software (n.)
Connector (n.)	HDMI (n.)	Update (v.)
CPU (n.)	Motherboard (n.)	USB (n.)
Database (n.)	Port (n.)	VGA (n.)
DVI (n.)	Procedure (n.)	
GPU (n.)	PSU (n.)	



Lesson 1: Listening Comprehension

BEFORE YOU LISTEN

A. In your own words, explain which of the two pictures (A or B) best describes the term "computer terminal". Then, share and compare your ideas with a classmate.



PICTURE A



PICTURE B



WHILE YOU LISTEN

Click here to listen: 

B. Listen to professor Malcolm Tatum describing what “computer terminals” are and complete the blanks.

A computer terminal is the **(1)** _____ **hardware** _____ used to enter, retrieve, and display **(2)** _____ data. While many people think of the modern day **(3)** _____ or **(4)** _____ computer that is positioned at a workstation as being a terminal, these devices are only the **(5)** _____ in terminal types that have been used over the years. With the advent of the computers of the 1940s and 1950s, the concept of a **(6)** _____ that made it possible to feed information into the **(7)** _____, as well as retrieve information based on queries, the original concept of the **(8)** _____ came into being.

Source: Wisegeek

Tatum, M. (2021). What is a Computer Terminal?. Wisegeek.

<https://www.wise-geek.com/what-is-a-computer-terminal.htm>

C. Listen to the audio again and highlight the words that you consider to be the most relevant to include in a definition of the concept “computer terminal”.

AFTER YOU LISTEN

D. With a classmate, try to come up with your own definition for “computer terminal” including the concepts highlighted in the previous exercise. Share with the class.

A computer terminal is...



E. Compare your definition with your answers in Activity A. Were your ideas correct? Did you need to add new information? Complete the chart below.

What I knew about computer terminals	What I have learned about computer terminals



Lesson II: Reading Comprehension

BEFORE YOU READ

A. What do you understand by hardware and software? Complement your answer providing examples for each concept. Share with the class.

Hardware is



Software is

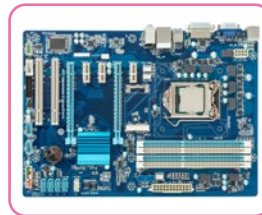
B. Circle the concepts that you consider to be hardware.



WINDOWS



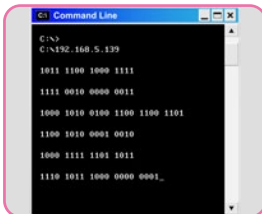
CPU (central processing unit)



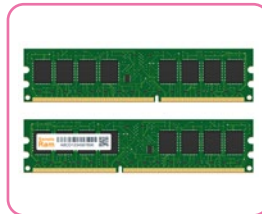
MOTHERBOARD



INTERFACE



COMMAND



RAM (random access memory)



HARD DRIVE



SYSTEM



GPU (graphics processing unit)



PROGRAM



PSU (power supply unit)

C. Read the descriptions for different hardware elements and title each paragraph with the words from the box.

CPU (central processing unit) - PSU (power supply unit) - Hard Drive - Motherboard
GPU (Graphics Processing Unit) - RAM (Random Access Memory)

Motherboard

: houses the CPU and is a hub that all other hardware runs through. It acts as a brain; allocating power where it's needed, communicating with and coordinating across all other components.

: is responsible for processing all information from programs run by your computer. It determines the 'clock speed' or the speed at which the processor processes information.

: is hardware found in the memory slots of the motherboard. Its role is to temporarily store on-the-fly information created by programs and to do so in a way that makes this data immediately accessible.

: is a storage device responsible for storing permanent and temporary data. This data comes in many different forms, but is essentially anything saved or installed on a computer.

: processes huge batches of graphic data. As opposed to the basic on-board graphic capabilities that PC motherboards supply, dedicated graphics cards interface with the motherboard via an expansion slot to work almost exclusively on graphic rendering.

: is the point where power enters your system from an external power source and is then allocated by the motherboard to individual component hardware.

Adapted from:
What is Computer Hardware? | Crucial.com. Crucial.
<https://www.crucial.com/articles/pc-builders/what-is-computer-hardware>

AFTER YOU READ



D. Name each of the pictures below using both full names and acronyms. Compare and discuss your answers from the previous exercise before completing this one.





Lesson III: Speaking

WARM UP

A. Using the pictures, list the main ports and connectors you can find in a laptop or desk computer indicating the names and main characteristics. After, watch the following video to complete your information.



Watch a video



PORT/CONNECTOR	CHARACTERISTICS
USB	It is used to connect keyboards, mice, game controllers, printers, scanners, digital cameras, etc.

INPUT AND PRACTICE



B. In the following dialogue, you will see a technician helping a customer solve a problem with one of the cables of his laptop. Practice the conversation twice playing a different role each time.

ELECTRICAL OR OPTICAL TECHNOLOGY?

Context: a customer (**C**) calls Technician Support (**T**) asking for orientation to buy a new cable for its laptop.

T: Hello, my name is Chris, what can I help you with?

C: Hello Chris, I need help to buy a new cable for my laptop.

T: Sure! I need to ask you a couple of questions if you don't mind. Do you know exactly what kind of cable you need?

C: I do not know its name. I need it to connect my laptop to a projector.

T: Ok. We have two options for that: VGA or HDMI. Can you describe the port where you connect the cable? Is it flat?

C: No, it is not completely flat and it has a bunch of little holes in it.

T: That is perfect. You probably need a VGA cable. Is your computer new?

C: No, it is quite old actually.

T: Then the VGA cable might be your only option since the HDMI ports are more common in earlier generation computers.



CONTROLLED PRACTICE

C. In pairs, perform the dialogue again and replace the underlined words with information from different ports and connectors.



FREER PRACTICE

D. Present your new dialogue to the class.

WRAP-UP

E. Discuss with the class: are there any other important ports and connectors that were not mentioned in the video? Name and describe them.



Lesson IV: Writing

WARM UP

A. Watch the following video:



Watch a video

DRAFTING

B. Choose one maintenance action for hardware and another for software from the video. Then, complete the chart below indicating what procedures and tools are necessary to perform the actions selected.

HARDWARE		SOFTWARE	
PROCEDURE	TOOLS	PROCEDURE	TOOLS

REVISING

C. Exchange your chart with a classmate and provide feedback on their work.

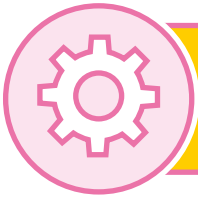
EDITING

D. Check feedback from your classmate and complete the form below.

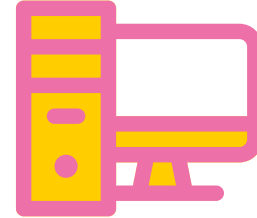
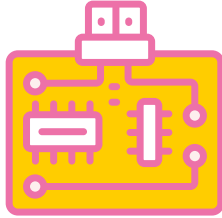
Customer: _____ _____
Technician: _____ _____
Diagnostic or requirements by the customer: Hardware: _____ _____
Software: _____ _____
Procedure: _____ _____
Tools: _____ _____

PUBLISHING

E. Present your form to the class



Project: Maintenance of a Computer Terminal



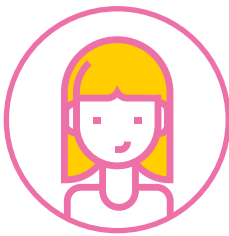
Name of the Project:	Maintenance of a Computer Terminal
Level:	Intermediate
Time:	90-135'
General aim:	Students will present a video tutorial performing essential hardware or software maintenance on a basic computer terminal, explaining the process step by step and the tools needed for it.
Language aim(s):	Students will practice the four skills with an emphasis on speaking.
Resources / Materials:	Cell phones or video cameras, microphones, a laptop or desk computer, tools necessary to perform hardware maintenance, software necessary to perform software maintenance, notebooks.
Teacher's role:	Make sure the students can obtain all of the necessary materials or provide them if necessary. Monitor the students through the maintenance process to keep them focused. Create and deliver a hand-out with general assessment aspects to let students know what is expected from them.
Students' roles:	Collect all the necessary materials and check previous information studied throughout the unit to study, practice, and perform maintenance on a computer terminal. Groups should assign roles to each member, such as a timekeeper to meet the deadline, language facilitator to review grammar structure, material keeper to store work properly, and a leader to supervise overall presentation.

PROCEDURE

1. Listen to the teacher explain the importance of performing hardware and software maintenance on basic computer terminals.
2. Watch 2 other tutorials as examples for the project.
3. Form groups of 3-4 students. Take time to come up with ideas for the tutorials: you must decide whether you will perform hardware or software maintenance, list the tools necessary, and write a sample script mentioning and describing the process step by step.
4. Once your group gathers all the necessary materials and information, you can start with the recording of the video.
5. When all the videos are done, each group presents the tutorials to the rest of the class.

FOLLOW UP	After each presentation, both the teacher and the rest of the class can provide feedback about the content and technical aspects of the tutorials.
VARIATION	All the class must watch all the tutorials. The authors of the tutorials can ask questions to the audience at the end of each presentation.
RUBRIC	Rubric to assess video presentation.

Unit III: Network Installation And Settings.



Goals: Use English knowledge in text comprehension and production to determine the necessary equipment and network systems for an effective and efficient connectivity, according to the requirements of the user.

Skills: Listening, Reading, Speaking, Writing.

Project: Improving the Network of my School.

★ 20 KEY WORDS

Copper (n.)

Fiber (n.)

Hub (n.)

Internet (n.)

LAN (n.)

Link (n.)

MMF (n.)

Network (n.)

Network card (n.)

Node (n.)

Relay (n.)

Router (n.)

Routing (n.)

Signal (n.)

SMF (n.)

Switch (n.)

Switching (n.)

Terminal (n.)

WAN (n.)

Wireless (adj.)



Lesson 1: Listening Comprehension

BEFORE YOU LISTEN



A. Define the term "telecommunication network" including the words from the box.

NODE(S) LINKS CIRCUIT MESSAGE SIGNAL DESTINATION TERMINAL



A telecommunication network is _____

WHILE YOU LISTEN

Click here to listen: 

B. Read the following definition of "telecommunication network". Then, listen to the audio linked below twice, then cross out the words that are incorrect and write the correct words next to them.

A telecommunications network is a network of internal nodes, links, and any intermediate nodes which are connected to produce telecommunication between the devices.

The transportation links connect the nodes. The nodes use circuit switching, image switching, or packet switching to pass the signal through the correct links, and nodes to reach the correct destination computer.

Adapted from:
Reading: Telecommunications Network | Introduction to Computer Applications and Concepts.
Courses.lumenlearning.com.
<https://courses.lumenlearning.com/zeliite115/chapter/reading-telecommunications-network/>

AFTER YOU LISTEN

C. Compare your definition from activity A to the one from the audio. Complete the chart mentioning the similarities and differences between both definitions. Share your thoughts with the class.

SIMILARITIES	DIFFERENCES



Lesson II: Reading Comprehension

BEFORE YOU READ

A. Answer the following questions:



How relevant are telecommunications networks to our life?

Do you think telecommunications networks bring more benefits or drawbacks to business?

B. Write the names of the businesses/institutions/jobs from the box next to the type of network that fits best. You may use the terms from the box more than once. Share your answers with the class and explain.

**a family bakery shop - school - supermarket
private teacher - delivery - dental office
selling branches - realtor - book editor**

COMPUTER NETWORK	
INTERNET NETWORK	
TELEPHONE NETWORK	

WHILE YOU READ

- C. Read the following text. Underline the benefits and characteristics of the different types of telecommunications networks.

Telecommunications can greatly increase and expand resources to all types of people. For example, businesses need a good telecommunications network if they plan to expand their company. With the Internet, computer, and telephone networks, businesses can allocate their resources efficiently.

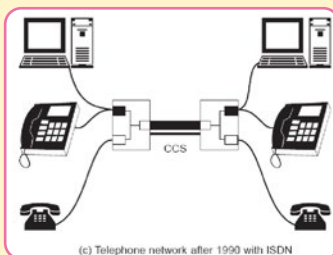
Computer Network: consists of computers and devices connected to one another. Information can be transferred from one device to the next. For example, an office filled with computers can share files, making them accessible on each separate device. Computer networks can range from a local network area to a wide area network.



Internet Network: Access to the network allows users to into many resources. Over time the Internet network will replace books. This will enable users to discover information almost instantly and apply concepts to different situations.



Telephone Network: The telephone network connects people to one another. This network can be used in a variety of ways. It is a system where a specific business focuses on routing and servicing calls for another business.



(c) Telephone network after 1990 with ISDN

Adapted from Lumen Learning

<https://courses.lumenlearning.com/zeliite115/chapter/reading-telecommunications-network>

AFTER YOU READ

D. According to the text, choose the correct answer for the following questions. You can help yourself with the information you underlined previously.

1. In what way do telecommunications networks help businesses?

- A.** Businesses can become better-known in their community.
- B.** By expanding the company and assigning resources efficiently.
- C.** It makes it easier to create a better work environment.

2. Computer networks include:

- A.** only the computers connected to a unique terminal.
- B.** computers and other individual devices.
- C.** computers and other devices connected to each other.

3. The types of computer networks are:

- A.** local or wide area networks.
- B.** public or private networks.
- C.** open or closed networks.

4. It is believed that internet networks:

- A.** will disappear.
- B.** will be replaced by other technologies.
- C.** will replace books.

5. What is a major benefit of internet networks?

- A.** They save information for later.
- B.** They provide completely accurate information.
- C.** They provide information instantly.

6. Telephone networks help businesses to:

- A.** connect to each other.
- B.** arrange meetings in real time.
- C.** exchange contact information.



Lesson III: Speaking

WARM UP

A. With a partner, write W (wired), WL (wireless), C (copper) or F (fiber) next to each description.

1	Cheaper and better for short distances.	
2	Does not use cables.	
3	They can be made of copper or fiber.	
4	More expensive, better for long distances.	
5	Single Mode works in distances under 500 mts.	
6	Multi-Mode works in distances over 2 kms.	



INPUT AND PRACTICE

B. Below, you will see a dialogue of a company (C) reaching out to another one called “Network Connections” (NC) for advice on the renovation of their network. Complete dialogue with concepts from the box.

connecting devices	fiber cables	WIFI	Single Mode Fiber
Single Mode Fiber	wired and wireless	expensive	wired
wireless	Multi-Mode Fiber	switch	copper

NC) Hello, you’ve reached Network Connections, how can I help you?

C) Hi, two of our branches are merging and we need to renovate the network in our offices. What options are there when it comes to connecting devices ?

NC) There are two options: _____ and _____.

C) What is the difference between these two options?

NC) _____ connections use copper or fiber cables. While _____ connections do not use cables. _____ is an example of a wireless connection.

C) If I want to have a wired connection, which option is better?

NC) It will depend on your needs. While the _____ cables are cheaper they are better for short distances. On the other hand, the _____ are more expensive but perform better for long distances.

C) Are cables the only necessary equipment?

NC) If you want to have more than two devices connected to each other, you will need a _____.

C) I think we will go with fiber.

NC) Ok, let me mention that there are also two types of fiber connections.

C) What is the difference?

NC) _____ is cheaper and works fine for short distances under 500 mts. There is also the _____, which is more _____ but can work for distances over 2 kms.

C) Ok. We need to connect some devices that are in the same building.

NC) Perfect! In that case I suggest the _____.

Adapted from Network Direction. Youtube.com. (2018).
<https://www.youtube.com/watch?v=Ud8UeNgdaz4>

FREER PRACTICE

C. Practice your dialogue twice switching roles each time.



FREER PRACTICE

D. Present your final dialogue to the class. When you have finished, let your classmates give you feedback on your answers.

WRAP UP

E. Answer the following question and share your answers with the class:

What kind of network connection (wired or wireless, copper or fiber) do you think is more suitable for your school? Why?

I think the best network connection for my school is _____



Lesson IV: Writing

PRE WRITING

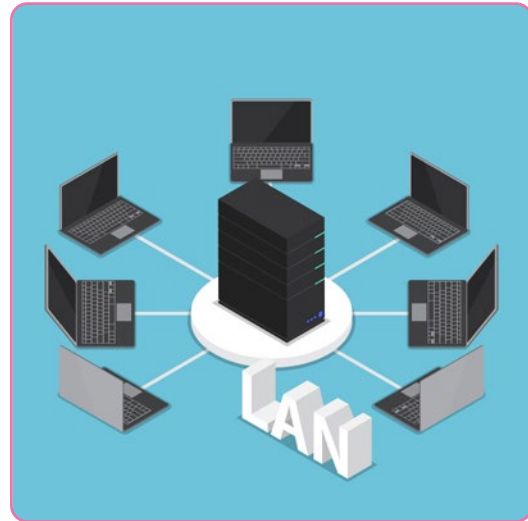
A. Answer the following questions:



What is a LAN?

What are some characteristics of a LAN?

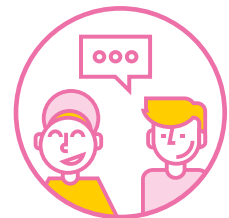
What elements are necessary to build a LAN?



DRAFTING

A. Create a brochure on the advantages of Local Area Networks (LAN) and the elements required to build one.

B. You can collect information from the following links
<https://www.comptia.org/content/guides/what-is-a-local-area-network>
<https://www.guru99.com/types-of-computer-network.html#3>



C. Complete the chart with the necessary information.



What is LAN? (acronym, places, instances in which it is useful, characteristics)	Advantages of LAN (at least four of them)	Components needed (name and characteristics)

REVISING

D. Compare your chart with another group and give feedback to each other and determine if they are complete and correct.

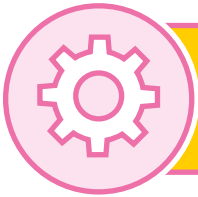


EDITING

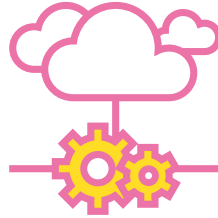
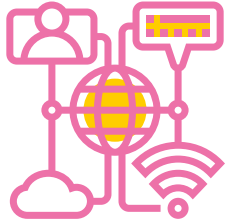
E. On a different piece of paper, rewrite the chart from exercise C including the feedback received in exercise D.

PUBLISHING

F. Present your chart to the teacher and the rest of the class.



Project: "Improving the Network of my School"



Name of the Project:	"Productive Software Digital Presentation"
Level:	Intermediate
Time:	90-135' min
General aim:	Students will elaborate a work-plan proposal to improve a specific network connection of their school.
Language aim (s):	Students will practice the four skills with emphasis on speaking.
Resources / Materials:	Computers, printer (if available).
Teacher's role:	<p>Make sure the students are able to collect all the materials, or provide them if necessary.</p> <p>Monitor the students through the elaboration process in order to keep them focused and answer their questions.</p> <p>Create and deliver a hand-out with general assessment aspects so students know what is expected from them.</p>
Students' roles:	<p>Collect all the necessary materials and information to elaborate the proposal and to create the presentation:</p> <ul style="list-style-type: none"> - Select a connection network from the school which they consider is necessary to improve: office telephones, internet, computers laboratory, etc. - Elaborate an improvement proposal: diagnostic and needs, mention work steps, list materials, and tools to be used, benefits of the recommended changes. - Groups should assign roles to each member, such as a timekeeper to meet the deadline, language facilitator to review grammar structure, material keeper to store work properly, and a leader to supervise overall presentation.

PROCEDURE

1. Listen to the instructions of the teacher.
2. Form groups of 3-4 students and select the type of network you would like to improve.
3. Collect diagnostic information: devices used, ask people if the network works properly or how, could be improved, determine steps to follow, select tools and materials to be used during the process.
4. Start with the elaboration of your group proposals.
5. Groups can exchange their draft presentations and give feedback to each other before the elaboration of the final versions.

FOLLOW UP

Next class after the presentations, students will vote which proposal is the best to be given to the school council.

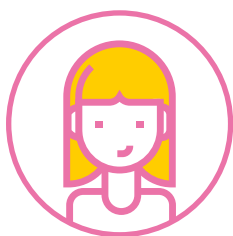
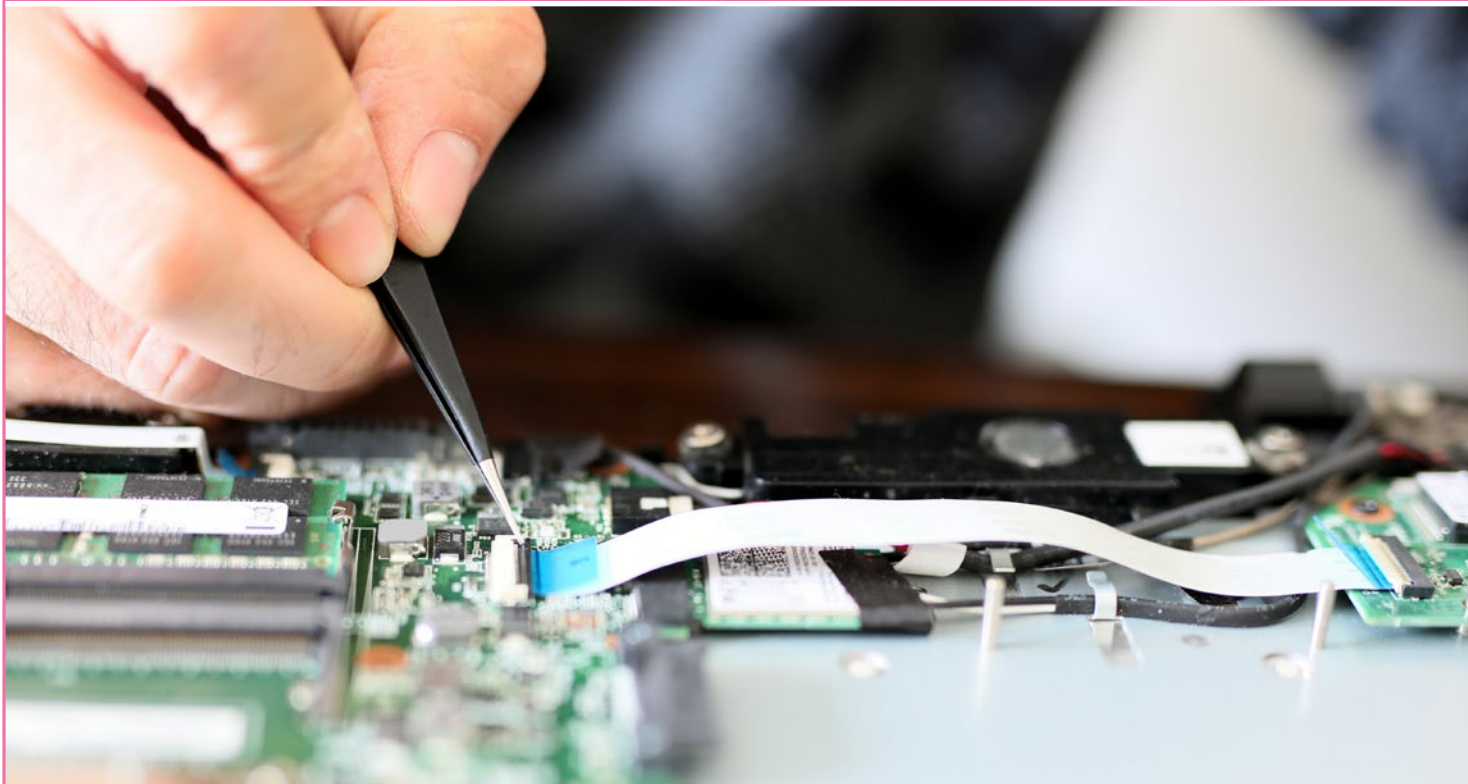
VARIATION

Students deliver their brochures to different members of the community.

RUBRIC

Rubric to assess the presentations.

Unit IV: Maintenance Of Basic Electronic Circuits



Goals: Produce and comprehend oral and written texts fluently while performing maintenance of basic electronic circuits.

Skills: Listening, Reading, Speaking, Writing.

Project: Telecommunications Fair.

☆ 15 KEY WORDS

AC supply (n.)

Bus line (n.)

Chassis ground (n.)

DC supply (n.)

Ground (n.)

Input (n.)

Output (n.)

Pulse generator (n.)

Resistance (n.)

Resistor (n.)

Signal ground (n.)

Sinusoidal generator (n.)

Terminal (n.)

Triangular wave generator (n.)

Wire (n.)

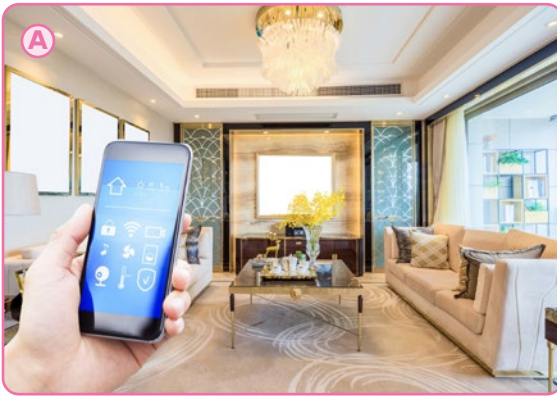


Lesson 1: Listening Comprehension

BEFORE YOU LISTEN



A. Look at the images (a - b) and answer the questions that follow. Then, share your answers with the class.



1. What is the difference between image a and b?

2. In your opinion, what are electronics?


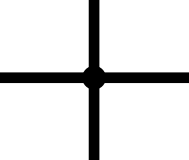
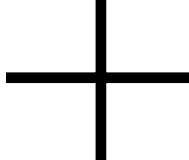



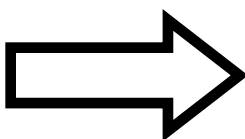
3. Are telecommunications similar or different to electronics? How? Explain your answer.

WHILE YOU LISTEN

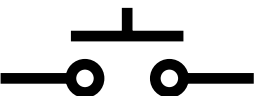

Click here to listen: 

B. Listen to a professor talking about electrical and electronic symbols. Then, fill in the blanks corresponding to images 1 – 22 with the name of each symbol.


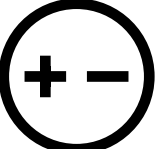
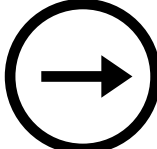
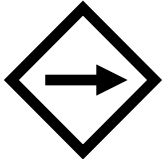
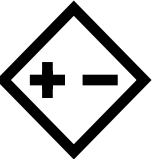

WIRES

			
1	2	3	4
			
5	6	7	

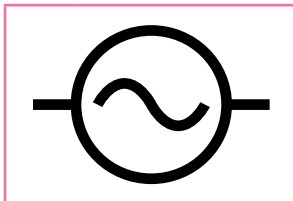
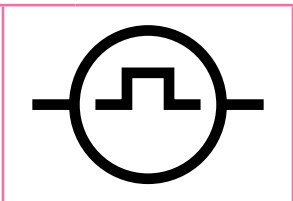
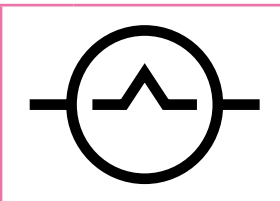
SWITCHES

	
8	9

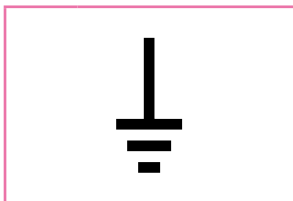
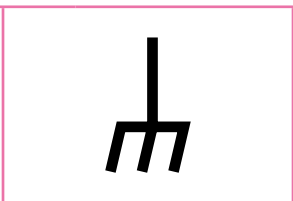
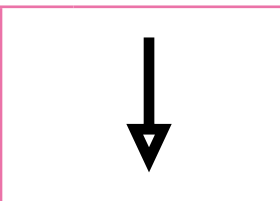
SOURCES

		
10	11	12
		
13	14	15

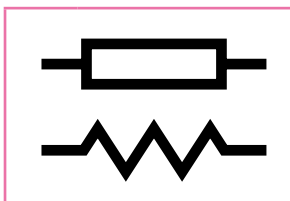
WAVE GENERATORS

					
16		17		18	

GROUND SYMBOLS

					
19		20		21	

RESISTOR SYMBOLS

	
22	

C. Listen to the audio again and answer the questions.

1. Wires and conductors are also known as...

- A. Resistors
- B. Power lines
- C. Constant sources
- D. Voltages

2. A characteristic of connected wires is that they...

- A. oppose the flow of current
- B. are used as reference points
- C. provide current to the circuit
- D. do not show junction points



3. A bus line is ...

- A. a number of conductors joined together
- B. a controlled current source
- C. a barrier between user and circuit
- D. a potential reference point

4. What is the difference between a constant current source and a controlled current source?

- A. The constant source uses voltage, while the controlled source does not.
- B. The constant source provides supply to the circuit, while the controlled source receives it.
- C. The constant source is an independent current source, while the controlled source is dependent.
- D. The constant source regulates the controlled current source.

5. A resistor is...

- A. a device that provides current.
- B. a device that opposes the flow of current.
- C. a device that acts as a barrier between the user and circuit.
- D. a device that prevents electric shock.

AFTER YOU LISTEN

D. What other electrical or electronic symbols do you know? Draw and name at least five. Share your answers with the class.

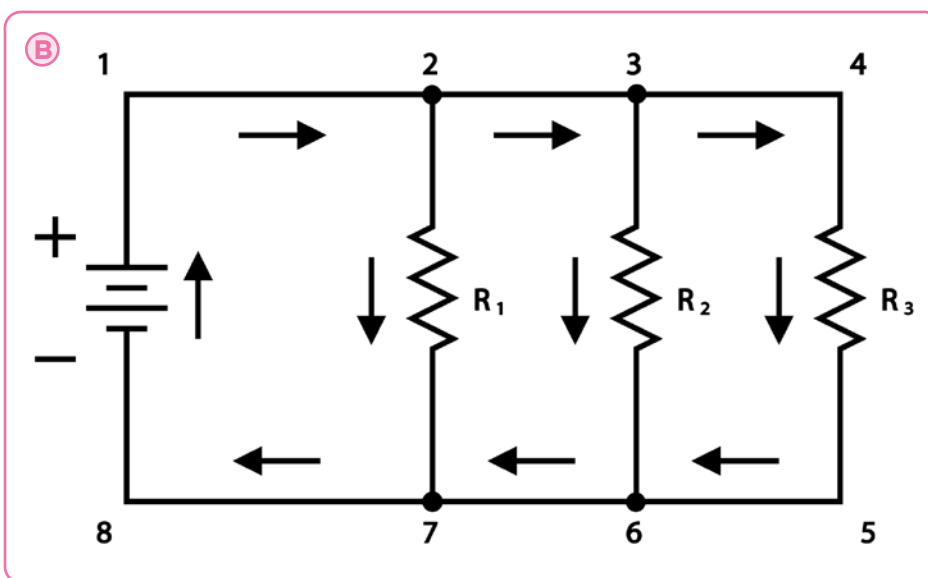
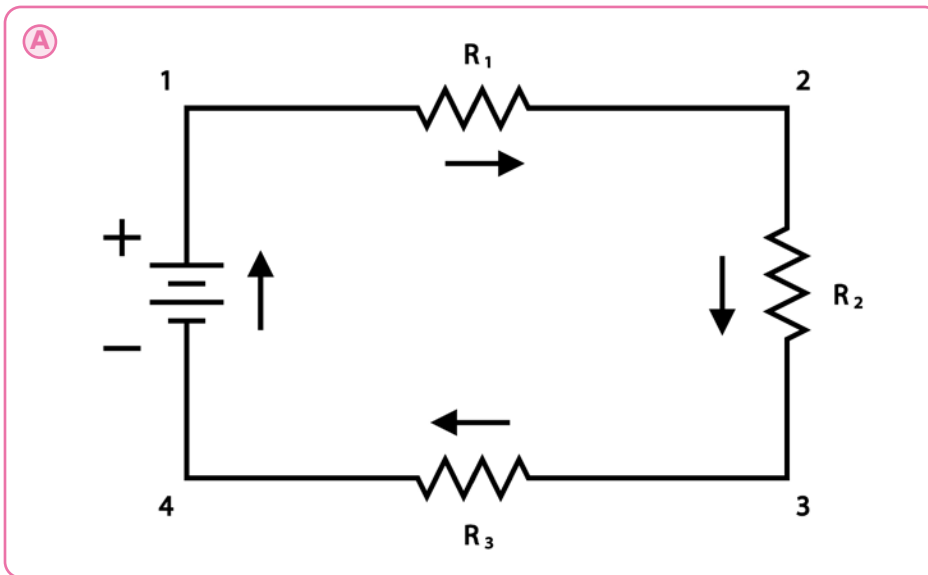




Lesson II: Reading Comprehension

BEFORE YOU READ

A. Look at circuits a and b. What do you know about them? How are they different and how are they similar? Discuss with your partner and then share with the class.



WHILE YOU READ

- B. Read the text and circle unknown words. Write them in your notebook and look up their meaning in the dictionary.

WHAT ARE SERIES AND PARALLEL CIRCUITS?

Circuits consisting of just one battery and one load resistance are very simple to analyze, but they are not often found in practical applications. Usually, we find circuits where more than two components are connected. There are two basic ways in which to connect more than two circuit components: series and parallel.

SERIES CIRCUITS

The basic idea of a “series” connection is that components are connected end-to-end (in a line) to form a single path through which current can flow. See image 1 below:

Image 1

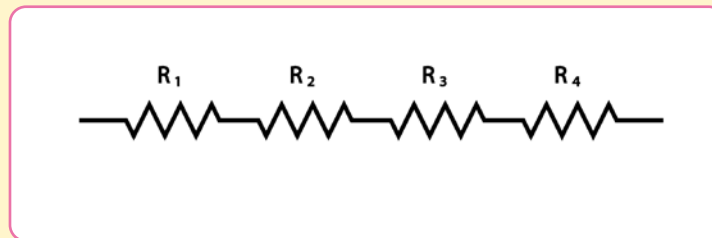


Image 2

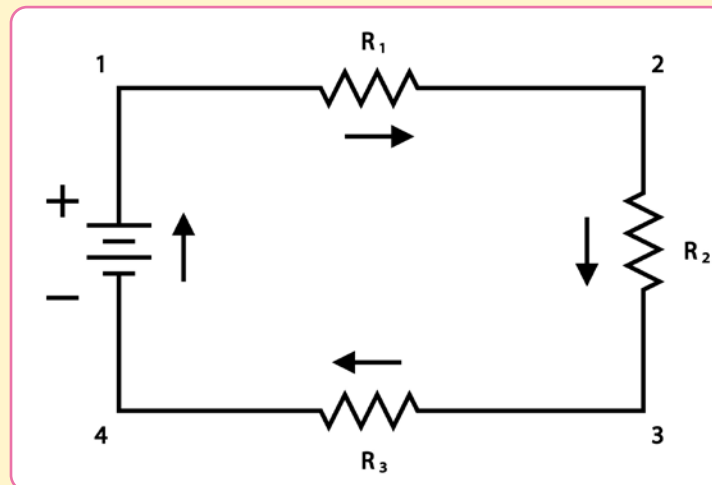


Image 2 has three resistors (labeled R₁, R₂, and R₃) connected in a long chain from one terminal of the battery to the other. Here the current flows in a clockwise direction, from point 1 to point 2 to point 3 to point 4 and back around to 1.

PARALLEL CIRCUITS

The basic idea of a “parallel” connection is that all components are connected across each other’s leads. In a purely parallel circuit, there are never more than two sets of electrically common points, no matter how many components are connected. There are many paths for current flow, but only one voltage across all components. Take a look at image 3:

Image 3

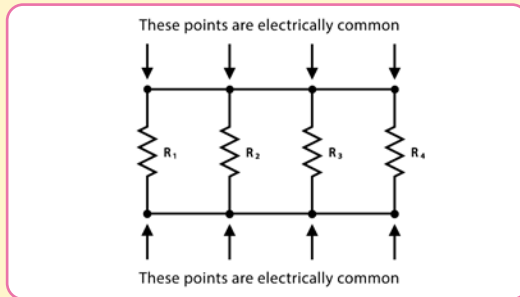


Image 4

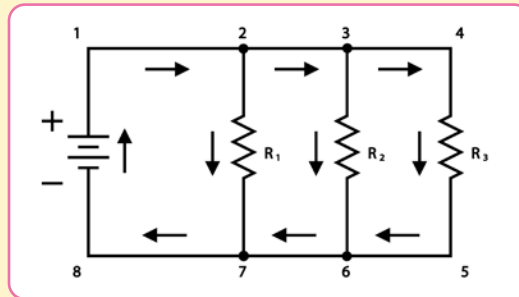


Image 4 has three resistors, but this time they form more than one continuous path for current to flow. There’s one path from 1 to 2 to 7 to 8 and back to 1 again. There’s another path from 1 to 2 to 3 to 6 to 7 to 8 and back to 1 again. Finally, there’s a third path from 1 to 2 to 3 to 4 to 5 to 6 to 7 to 8 and back to 1 again. Each path (through R1, R2, and R3) is called a branch.

The defining characteristic of a parallel circuit is that all components are connected between the same set of electrically common points. Looking at the schematic diagram, we see that points 1, 2, 3, and 4 are all electrically common. So are points 8, 7, 6, and 5. Note that all resistors, as well as the battery, are connected between these two sets of points.

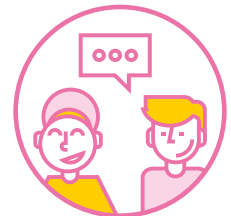
Adapted from What are “Series” and “Parallel” Circuits? | Series And Parallel Circuits | Electronics Textbook. Allaboutcircuits.com.

<https://www.allaboutcircuits.com/textbook/direct-current/chpt-5/what-are-series-and-parallel-circuits>

AFTER YOU READ

C. Read the text again and fill the series-parallel circuit comparison chart.

SERIES CIRCUIT	PARALLEL CIRCUIT
It has one continuous current flow	It has more than one continuous current flow





Lesson III: Speaking

WARM UP





Click here to listen: 

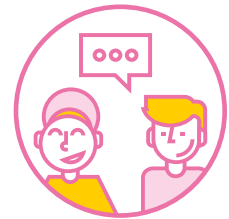
A. Look at the images (1 - 2) and discuss the impact of electronics on each field. Share your discussion points with the class.



CONTROLLED PRACTICE

B. Listen to an electrician talking about 4 different instruments of electronic measurement and fill in the blanks with the corresponding number.

COLUMN A		COLUMN B	
A			An instrument that measures either direct or alternating electric current in amperes.
B			A laboratory instrument used in medicine that displays and analyzes the waveform of electronic signals.
C			An instrument that measures voltage across any two components of an electric circuit.
D			An instrument for measuring different properties of an electric circuit, such as resistance, voltage, or current.



FREER PRACTICE

- C.** Now practice the definitions of each instrument without reading activity B. Use the flashcards from the appendix of this booklet.

WRAP UP

- D.** What other areas are developed and influenced by electronics besides medicine and music? Create a word cloud using the word "electronics" as the central theme. Then, present and comment with the class.





Lesson IV: Writing

PRE WRITING

A. Look at the image and answer the questions below. Share your answers with the class.



1. In your own words, what is home automation?

2. What are the benefits of home automation?

B. In this lesson, you will write a brief essay about a home automation idea. Determine what information should be included, and share your ideas with the class.

C. Now look at the following example and confirm what is needed in a brief essay.

Title

REMOTE FINDER

Introduction

I have always been a TV fan, so I like to invite friends to my place and watch marathons of different series. The only problem is that I regularly lose my TV remote somewhere, because everyone uses it.

Body

That is why my home automation idea is to create the "Remote Finder": a triple-tap switch near the TV that will make the remote start beeping.

Conclusion

With my "Remote Finder", I will never waste time looking for my TV remote again.

DRAFTING

D. Think of a home automation idea that could help you and your family at home (e.g., lights, access, alarms, camera surveillance, garden watering, kitchen appliances, etc.)

E. Write a brief problem-solution essay with a "Title" of a product (e.g., Remote Finder), 2 – 3 sentences for "Introduction" of the problem, 2 – 4 sentences for a "Body" description of the product and its solution, and 2 – 3 sentences for "Conclusion" as in the example provided above.

Title

Introduction

Body

Conclusion

REVISING

F. Use the following checklist to assess your classmate's draft. Once finished, return the draft and comments.

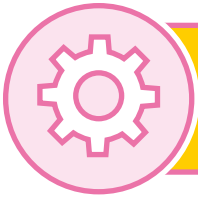
ESSAY	TICK IF INCLUDED	COMMENTS AND SUGGESTIONS
Title		
Introduction		
Body		
Conclusion		
Comments:		

EDITING

G. Re-write your brief essay taking into account your classmate's feedback.
(Re-check criteria from the checklist).

PUBLISHING

H. Submit the final version to your teacher.



Project: "Telecommunications Fair"

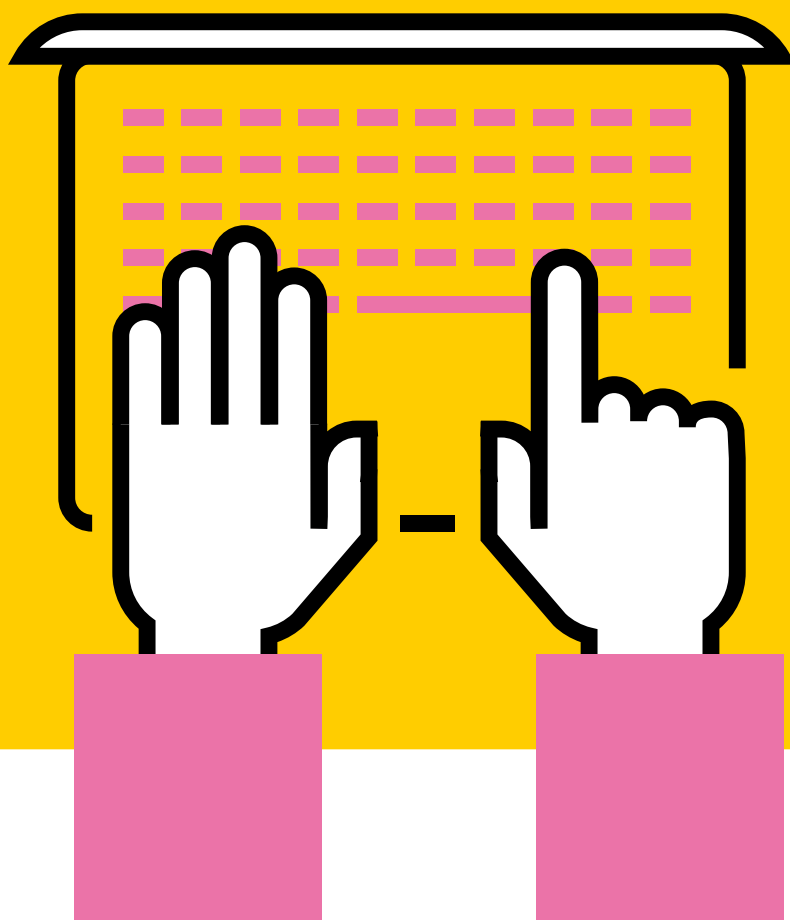


Name of the Project:	"Telecommunications Fair"
Level:	Intermediate
Time:	90-135' min
General aim:	<p>Students will elaborate a brochure with key information learned throughout the units for a TP fair in their school to explain to future TP students what they can learn in the Telecommunications program.</p> <p>This brochure must also be presented orally to their audience with a scale version of their brochure on a piece of cardboard.</p> <div data-bbox="565 1136 1266 1682" data-label="Image"> </div>
Language aim(s):	Students will practice the four skills with emphasis on speaking and writing.
Resources / Materials:	Piece of cardboard, pictures, markers, computer, printer (if available).

Teacher's role:	<p>Make sure the students are able to collect all of the necessary materials, or provide them if necessary.</p> <p>Monitor the students through the elaboration process to keep them focused and answer their questions.</p> <p>Create and deliver a hand-out with general assessment aspects to let students know what is expected from them.</p>
Students' roles	<p>Collect all the necessary materials and review previous information studied throughout this year to create the brochure and a script answering the following questions:</p> <ul style="list-style-type: none"> - What is telecommunication? - What are the fundamentals of Telecommunication(s)? - Explain how to install and maintain a computer terminal. - Explain how to install a network. - Explain how a basic electronic circuit works. <p>Groups should assign roles to each member, such as a timekeeper to meet the deadline, language facilitator to review grammar structure, material keeper to store work properly, and a leader to supervise overall presentation.</p>

PROCEDURE	
<ol style="list-style-type: none"> 1. Students listen to the teacher give the instructions and explain the objective of the project. 2. Form groups of 3-4 students. Brainstorm ideas for the brochure and decide the role of each classmate (Information collector, designer of the brochure and cardboard, presenter, etc.) Complete all tasks described in the students' roles, selecting accurate and helpful visual aids. 3. Ask your teacher for feedback, and start the elaboration of the brochures. 4. Groups can exchange their draft brochures and give feedback to each other before the elaboration of the final versions. 	
FOLLOW UP	Next class after the TP fair, students display their cardboard brochure presentations in different facilities to show their work to the rest of the school.
VARIATION	<p>Next class after the TP fair, students share with the class the following questions:</p> <ul style="list-style-type: none"> - Was our brochure attractive? - Was our presentation clear for the audience? - How did I feel during the oral presentation?
RUBRIC	Rubric to assess the brochures and the presentations.

Appendix



ANSWER KEYS UNIT I:

LESSON I

Activity B:

1. A signal
2. Physical channel
3. Receiver
4. Point-to-point communication.
5. Broadcast communication
6. Multiplex systems.
7. analog signal and digital signal.
8. frequency and amplitude
9. discrete signal amplitudes

Activity C:

1. Transmitter
2. Medium
3. Receiver
4. Point-to-point
5. Broadcast
6. Multiplex

LESSON II

Activity B:

- | | |
|-------------------|---|
| Digital signal | 2 |
| Analog signal | 4 |
| Electrical signal | 3 |
| Optical signal | 1 |

Activity C:

- a. 3
- b. 6
- c. 2
- d. 7
- e. 4
- f. 5
- g. 1

Activity D:

- I. 4
- II. 1
- III. 5
- IV. 2
- V. 4

ANSWER KEYS UNIT II:

LESSON I

Activity B:

1. Hardware
2. Electronic
3. Desktop
4. Laptop
5. Latest
6. Workstation
7. Database
8. Computer terminal

Activity D:

Must include the following concepts: hardware, laptop, desktop, data.

LESSON II

Activity B:

1. CPU
2. Motherboard
3. Ram
4. Hard drive
5. GPU
6. PSU

Activity D:

1. PSU (power supply unit)
2. GPU (graphics processing unit)
3. Hard drive
4. RAM (random access memory)
5. CPU (central processing unit)
6. Motherboard.

LESSON III

Activity A:

USB:
flat rectangle
communicate with other electronic devices
different versions for different devices

HDMI:
not fully flat
used to transfer audio and video
up to 10k

VGA:

group of holes
common in earlier generation computers
supports 1440p resolution

LESSON IV

Hardware*: update, back up, ventilation.

Software*: update, disk space, back up, antivirus, passwords authentication, monitoring, phishing.

*some answers can be considered in both categories since hardware is needed to perform software maintenance.

ANSWER KEYS UNIT III:

LESSON I

Activity B:

1. network → collection
2. internal → terminal
3. produce → enable
4. devices → terminals
5. transportation → transmission
6. image → message
7. computer → terminal

LESSON II

1. B
2. C
3. A
4. C
5. C
6. A

LESSON III

Activity A:

1. C
2. WL
3. W
4. F
5. F
6. F

Activity B:

1. Connecting devices
2. Wired and wireless
3. Wired
4. Wireless
5. WIFI
6. Copper
7. Fiber cables
8. Switch
9. Single Mode Fiber
10. Multi-Mode Fiber
11. Expensive
12. Single Mode Fiber

ANSWER KEYS UNIT IV:

LESSON I

Activity B:

1. Wire / Conductor
2. Connected wires
3. Unconnected wires
4. Input bus line
5. Output bus line
6. Terminal
7. Bus line
8. Push button normally open
9. Push button normally closed
10. AC supply
11. DC supply
12. Constant current source
13. Controlled current source
14. Controlled voltage source
15. Single cell battery
16. Sinusoidal generator
17. Pulse generator
18. Triangular wave generator
19. Ground
20. Signal ground
21. Chassis ground
22. Fixed resistor

Activity C:

1. B
2. D
3. A
4. C
5. B

LESSON III

Activity B:

- A. 3
- B. 1
- C. 4
- D. 2

UNIT I PROJECT RUBRIC

CRITERIA	NOT MEETING (1)	DEVELOPING (2)	APPROACHING (3)	MEETING (4)	SCORE
Use of English	Student speech is not clear at all and has 16 or more grammatical errors.	Student speech is mostly unclear and has between 10 to 15 grammatical errors.	Student speech is mostly clear and has between 4 to 9 grammatical errors.	Student speech is all clear and has zero to 3 grammatical errors.	
Hesitation	Student hesitation completely impedes message delivery.	Student hesitation impedes most of the message delivery.	Student hesitation does not impede message delivery.	Student has no hesitation and message is delivered confidently.	
Body language and Eye contact	Student reads a script, does not look at the audience and there is no body language.	Student partially reads a script, sometimes looks at the audience and body language is partial.	Student does not read a script, looks at the audience most times and body language is partial.	Student does not read a script, looks at the audience at all times and uses body language effectively.	
Use of Tic's	Presentation has no PPT.	-	-	Presentation has.	
Timing	Presentation lasts less than 10 minutes or more than 11 minutes.	-	-	Presentation lasts between 10 to 11 minutes.	
Content and sources	Content is not clear and source is nonexistent.	Content is partially clear and source is unreliable.	Content is partially clear and source is reliable.	Content is clear and source is reliable.	
TOTAL					/24

UNIT II PROJECT RUBRIC

CRITERIA	NOT MEETING (1)	DEVELOPING (2)	APPROACHING (3)	MEETING (4)	SCORE
Objective of the video	The objective of the video is not mentioned.	The objective of the video is not explicit and hardly explained.	The objective is not explicit but can be identified and is explained.	The objective of the video is clearly expressed and explained.	
Importance of maintenance	Students do not mention the importance of performing maintenance.	The importance of performing maintenance is not explicit and hardly explained.	The importance of performing maintenance is not explicitly mentioned but can be identified.	Students mention and thoroughly explain the importance of performing maintenance.	
Steps	Students neither number nor list the steps in the maintenance process.	Steps are not mentioned nor numbered but can still be differentiated from each other throughout the video.	The steps are mentioned and numbered but not clearly differentiated from each other throughout the video.	Students number and mention all the steps in the maintenance process and can be clearly differentiated from each other throughout the video.	
Tools	Students do not list, name or show the tools used in the video.	Students present only one of the following actions: list, name and show tools used in the video.	Students present only two of the following actions: list, name and show tools used in the video.	Students list, name and show the tools used in the video.	
Oral skills	Students are hard to listen to. There are many silent moments and grammatical errors.	The voice volume is low. There are grammatical and pronunciation errors. Students are understood with difficulties.	Students make few grammatical errors but are still fluent and easily understood.	Students use a clear voice and proper volume expressing fluently without grammatical errors.	
TOTAL					/20

UNIT III PROJECT RUBRIC

CRITERIA	NOT MEETING (1)	DEVELOPING (2)	APPROACHING (3)	MEETING (4)	SCORE
Diagnostic	Students do not mention the reasons for the selection of the network to be improved.	The reasons for the selection of the network to be improved are not explicit, and are hardly explained during the presentation.	The reasons for the selection of the network to be improved are not explicit but can be identified, and are explained during the presentation.	Students clearly express and explain the reasons for the selection of the network to be improved.	
Steps and tools	Students neither mention the tools nor list the steps involved in the improvement process.	Students only mention either the tools or the steps to follow, but not both.	Students do not list the tools or the steps to follow but they can be identified during the presentation.	Students clearly mention the tools and list the steps involved in the improvement process.	
Benefits	Students do not mention the benefits of improving the selected network.	The benefits of improving the selected network are not explicitly mentioned and can be hardly identified.	The benefits of improving the selected network are not explicitly mentioned but can be identified.	Students clearly mention the benefits of improving the selected network.	
Technical	The vocabulary used is not technical and is difficult to understand by the general audience.	Students use technical vocabulary but do not explain it to make it understandable for the general audience.	The students do not explain the technical vocabulary, but it is still understandable for the general audience.	The students use accurate technical vocabulary, and explain it to make it understandable for a general audience.	
Oral skills	Language is very difficult to understand. There are many silent moments and grammatical errors.	Language is difficult to understand, and the voice volume is low. There are grammatical and pronunciation errors.	Language is comprehensible. Students make few grammatical errors but are still fluent and easily understood.	Language and voice are clear with adequate volume, expressing words fluently without grammatical errors.	
TOTAL					/20.

UNIT IV PROJECT RUBRIC

CRITERIA	NOT MEETING (1)	DEVELOPING (2)	APPROACHING (3)	MEETING (4)	SCORE
Objective of the brochure and presentation	Students do not mention the objective of the brochure during the presentation.	The objective of the brochure is not explicit and hardly explained during the presentation.	The objective of the brochure is not explicit but can be identified and is explained during the presentation.	The objective of the brochure is clearly expressed and explained in the presentation.	
Units covered	Only 1 out of 4 units are covered in the brochure.	Only 2 out of 4 units are covered in the brochure.	Only 3 out of 4 units are covered in the brochure.	All four units are covered in the brochure.	
Design	The information is neither well organized nor effectively supported with attractive or accurate visuals.	The information is not well organized, in long paragraphs but the visual support is effective.	The information is well organized in short paragraphs but the visual support could be improved.	The information is well organized in short paragraphs and effectively supported with attractive and accurate visuals.	
Oral skills	Language is very difficult to understand. There are many silent moments and grammatical mistakes.	Language is difficult to understand, and the voice volume is low. There are grammatical and pronunciation mistakes.	Language is comprehensible. Students make few grammatical mistakes but are still fluent and easily understood.	Language and voice are clear with adequate volume, expressing words fluently without grammatical mistakes.	
TOTAL					/16.

SCRIPTS

UNIT 1: Lesson I B.

Audio Transcript

The term “telecommunication” is derived from the Greek stem “tele” meaning “at a distance” and the word “communications” meaning “the science and practice of transmitting information”. A basic telecommunication system consists of three primary units that are always present in some form: First, there is the transmitter, which takes information and converts it into a signal. Then, there is the transmission medium, also called “physical channel” that carries the signal. Finally, there is the receiver that takes the signal from the channel and converts it back into usable information.

When telecommunication occurs between one transmitter and one receiver, the link is called point-to-point communication, and when one powerful transmitter sends information to numerous receivers, the link is called broadcast communication.

Telecommunications in which multiple transmitters and multiple receivers have been designed to cooperate and share the same physical channel are called multiplex systems. The sharing of physical channels using multiplexing often gives very large reductions in costs.

Also, when we talk about the physical channel, it is important to mention the two basic signals of transmission: the analog signal, and the digital signal.

Analog signals may change continuously in both frequency and amplitude, and are commonly used for audio and visual communication.

Digital signals, on the other hand, are characterized by the use of discrete signal amplitudes. A binary digital signal, for example, has only two allowed values representing the binary digits “ON” and “OFF”.

Adapted from
Wright, E., Reynders, D., & Mackay, S. (2004). Practical Telecommunications and Wireless Communications.
Newnes [Imprint].

UNIT 2:

Lesson I

Audio Transcript

A computer terminal is the hardware used to enter, retrieve, and display electronic data. While many people think of the modern-day desktop or laptop computer that is positioned at a workstation as being a terminal, these devices are only the latest in terminal types that have been used over the years. With the advent of the computers of the 1940s and 1950s, the concept of a workstation that made it possible to feed information into the database, as well as retrieve information based on queries, the original concept of the computer terminal came into being.

Source: Wisegeek

Tatum, M. (2021). What is a Computer Terminal?. Wisegeek.

<https://www.wise-geek.com/what-is-a-computer-terminal.htm>

UNIT 3:

Lesson I

Audio Transcript

A telecommunications network is a collection of terminal nodes, links and any intermediate nodes which are connected to enable telecommunication between the terminals.

The transmission links connect the nodes together. The nodes use circuit switching, message switching or packet switching to pass the signal through the correct links and nodes to reach the correct destination terminal.

Adapted from:

Reading: Telecommunications Network | Introduction to Computer Applications and Concepts.
Courses.lumenlearning.com.

<https://courses.lumenlearning.com/zeliite115/chapter/reading-telecommunications-network/>

UNIT 3:

Lesson I

Audio transcript

Well, first of all let's talk about wires. In image 1 we have a wire or conductor of electrical current. It is also called a power line or an electric line. Image 2 represents connected wires because it does not show the junction point. On the contrary, image 3 represents unconnected wires. Image 4 represents the input bus line that receives incoming data, while image 5 represents the output bus line for outgoing data. Image 6 is a terminal, and represents a start or end point. Then, image 7 represents a bus line, which is a number of conductors joined together.

As for switches, on the one hand image 8 represents a push button normally open, this switch is in ON state when the button is pressed otherwise it is in OFF state. On the other hand, image 9 represents a push button normally closed, which means the switch is initially ON state and it goes OFF state when it is released.

Moving on to sources, images 10 and 11 represent an AC supply and a DC supply respectively. Image 12 represents a constant current source which is an independent current source delivering constant current. Image 13 represents a controlled current source which depends on other sources, like voltage or current. Image 14 represents a controlled voltage source and it also depends on voltage or current. Image 15 is a single cell battery, and this provides supply to the circuit.

As for wave generators, image 17 represents a sinusoidal generator, image 18 a pulse generator, and image 19 a triangular wave generator.

In ground symbols, we have image 20 representing ground, forgive the redundancy, and it is used as zero potential reference. It is the potential of perfectly conducting earth. Image 21 represents a signal ground, and it is a reference point from which the signal is measured. Image 22 represents a chassis ground and it acts as a barrier between user and circuit and prevents electric shock.

Finally, image 23 represents a fixed resistor. This device opposes the flow of current in a circuit.

Lesson III

Audio transcript

Okay, let's talk about different instruments of electronic measurement. First of all, there is the voltmeter. This instrument, as the name suggests, measures the voltage levels around electrical circuits, voltage drop across a single component or the sum of voltage drops across two or more components of a circuit.

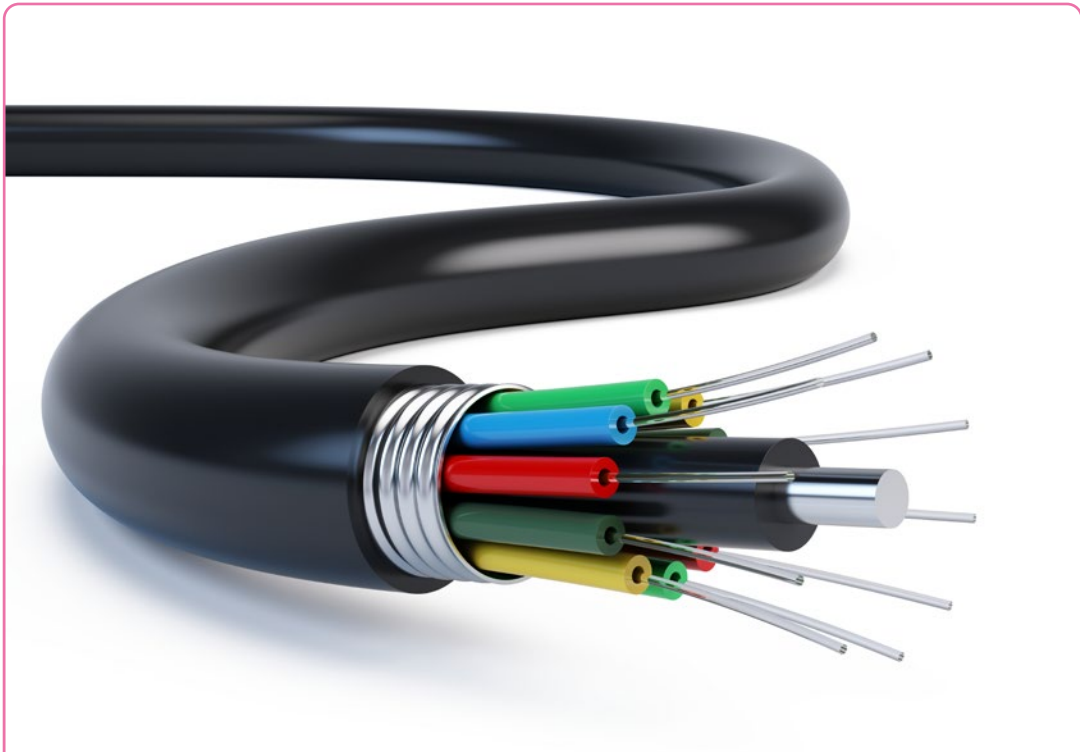
Then, we have the ammeter. This instrument measures either direct or alternating electric current in amperes. An ammeter can measure a wide range of current values because at high values only a small portion of the current is directed through the meter mechanism, while a shunt in parallel with the meter carries the major portion.

Another instrument is the multimeter. This tool is indispensable for testing, diagnosing, and troubleshooting electrical currents, components, and devices. Multimeters come in both, digital and analog versions and measure electrical voltage, current, and resistance.

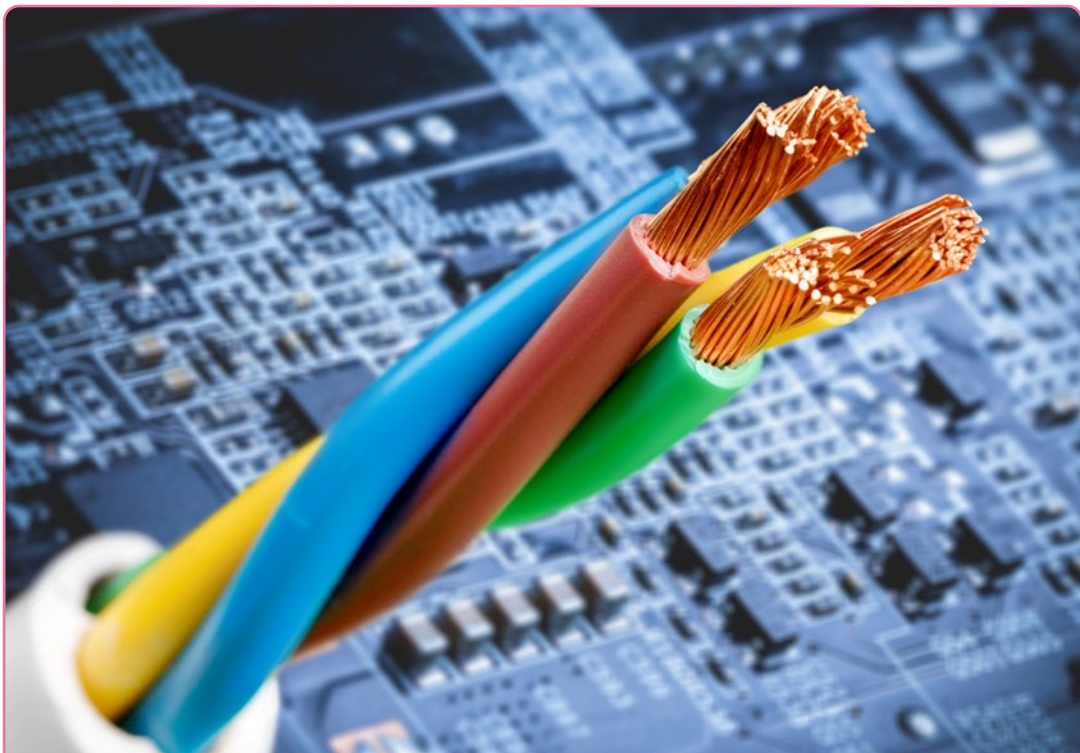
Finally, we have the oscilloscope. This instrument is used in medicine to measure the changes in pulsations in the arteries, especially of the extremities by displaying and analyzing the waveform of electronic signals.

Flashcards

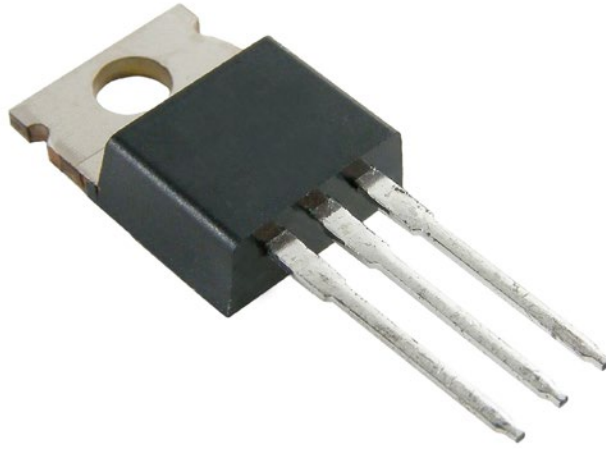




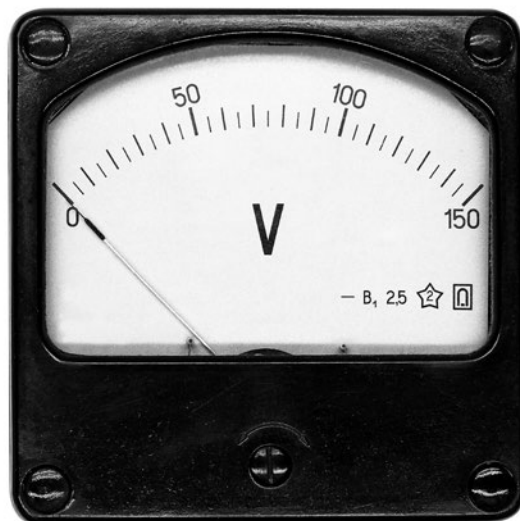
OPTICAL FIBER



COPPER CABLE



TRANSISTOR



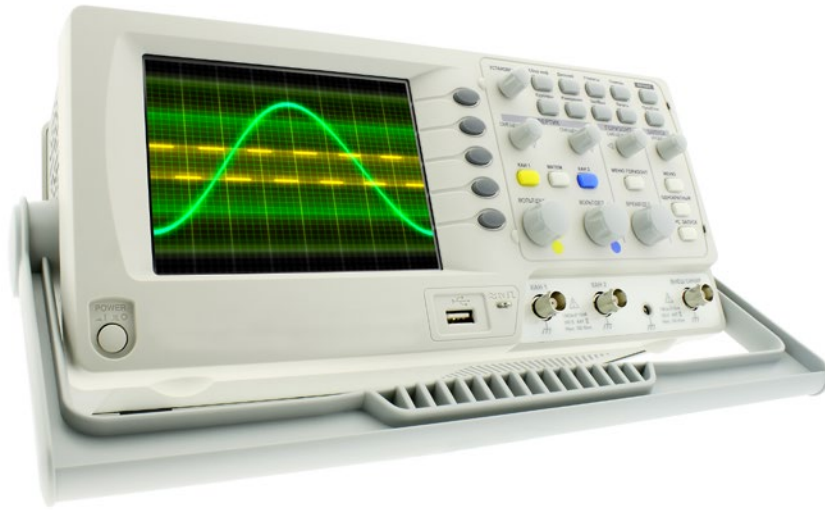
VOLTMETER



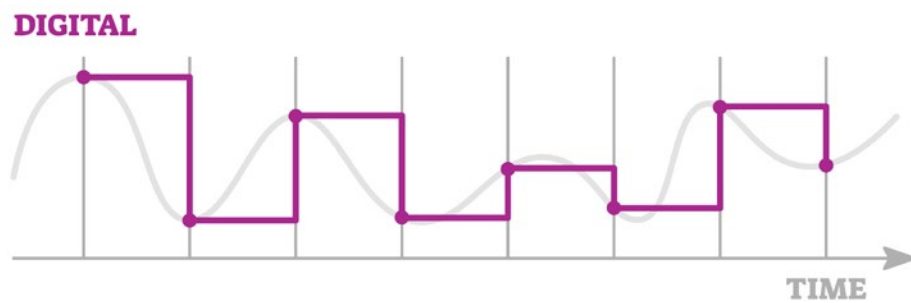
AMMETER



MULTIMETER

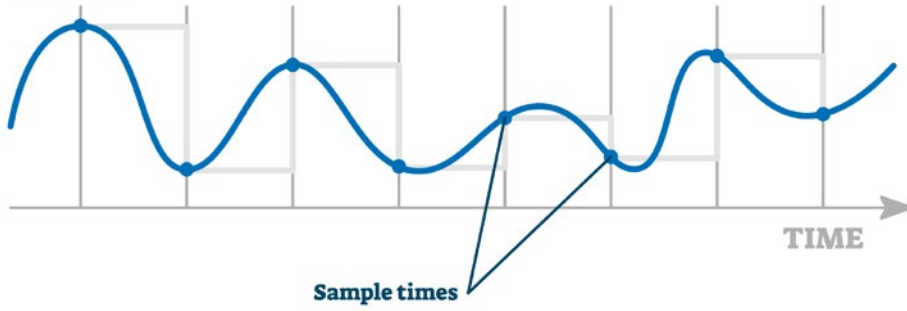


OSCILLOMETER



DIGITAL SIGNAL

ANALOG



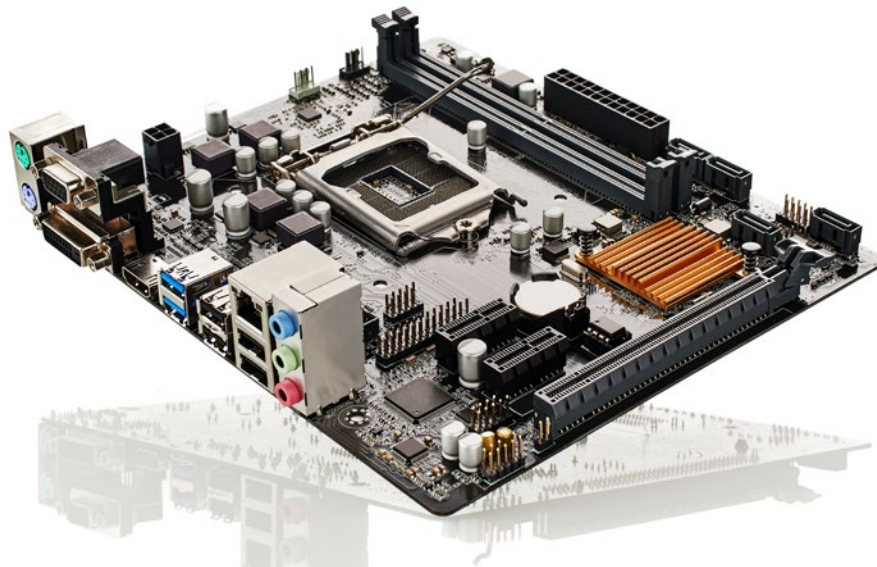
ANALOG SIGNAL



MODEM



LAPTOP



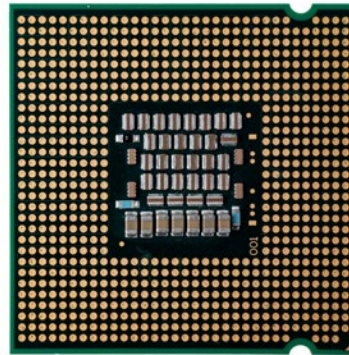
MOTHERBOARD



NETWORK CARD



HARD DRIVE



PROCESSOR

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