

МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
НАЦІОНАЛЬНИЙ ТЕХНІЧНИЙ УНІВЕРСИТЕТ УКРАЇНИ
«КИЇВСЬКИЙ ПОЛІТЕХНІЧНИЙ ІНСТИТУТ
імені ІГОРЯ СІКОРСЬКОГО»

ВСТУП ДО ЗАГАЛЬНОТЕХНІЧНОЇ АНГЛІЙСЬКОЇ МОВИ

TELECOMS MATTERS: HISTORY, EDUCATION & TRAINING

ПРАКТИКУМ

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ПРАКТИКУМ

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АНОТАЦІЯ. Практикум є навчальним посібником для забезпечення аудиторних та індивідуальних занять студентів першого курсу Інституту телекомунікаційних систем. Видання складається з чотирьох розділів (Units), які охоплюють професійно-орієнтовані теми (Topics): “Our University”, “Telecoms Jobs”, “Brief History of Telecoms”, “Famous People in Telecoms History”.

Розроблені вправи спрямовані на розвиток і удосконалення вмінь у читанні, усному мовленні, аудіюванні, письмі та перекладі, а також поліпшенні лексичних та граматичних знань студентів. Завданням практикуму є сприяння розширенню професійного тезаурусу студентів, формування інтересу до спілкування англійською мовою та підвищення мотивації студентів до навчання і майбутньої професії.

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ПЕРЕДМОВА

Практикум є навчальним посібником для забезпечення підготовки бакалаврів спеціальності **172 «Телекомунікації та радіоелектроніка»**. Видання призначене для аудиторних та індивідуальних занять студентів першого курсу Інституту телекомунікаційних систем з метою формування у них здатності користуватися іноземною мовою в обсязі, необхідному для іншомовного ситуативного спілкування, пов'язаного з навчанням в університеті та майбутнім фахом.

Укладений матеріал відповідає вимогам робочої навчальної програми з кредитного модуля **«Вступ до загальнотехнічної англійської мови»** дисципліни **«Іноземна мова»**, забезпечує 16 годин аудиторних та 4 години індивідуальних занять у першому семестрі, підтримує роботу студентів з текстами, відеоматеріалами, лексичними й граматичними вправами, розробленими до тем професійного спрямування.

Практикум складається з чотирьох розділів (Units): **Unit 1. EDUCATION IN TELECOMS, Unit 2. TRAINING IN TELECOMS, Unit 3. TELECOMS: HISTORY, Unit 4. TELECOMS: FAMOUS PEOPLE**, які охоплюють чотири професійно-орієнтовані теми (Topics): **“Our University”, “Telecoms Jobs”, “Brief History of Telecoms”, “Famous People in Telecoms History”**.

Кожна тема містить тексти, пов'язані з фахом, і розроблені до них вправи (некомунікативні, умовно-комунікативні, комунікативні), та супроводжується відео файлом з вправами. В кінці кожного розділу є завдання для самоперевірки.

Розроблені вправи спрямовані на розвиток і удосконалення вмінь у читанні, говорінні (діалогічному і монологічному мовленні), аудіюванні, письмі та перекладі, а також поліпшення лексичних знань (широкого діапазону лексики повсякденного вжитку та загальнотехнічного спрямування).

Крім того, представлено комплекс граматичних вправ (GRAMMAR SUPPLEMENT (Exercises)), узгоджених з тематикою Практикуму, для удосконалення знань з граматики: *Countable/Uncountable nouns*; вживання *some/any/no, many/much, (a) few/(a) little*; конструкція *there + to be*; *Articles*; *Past Tenses (Active/Passive)*.

Додатки APPENDIXES (Charts) містять таблиці з граматичним матеріалом для пояснення правил вживання зазначених граматичних явищ, рольову гру та вікторину.

Словниковий довідник (Glossary) включає лексичний мінімум до кожної теми посібника.

У процесі роботи з **Практикумом** студенти мають одержати необхідний рівень комунікативної компетентності, яку складають мовленнєві вміння, сформовані на основі мовних, комунікативно-пізнавальних, мовленнєвих навичок загальнотехнічного характеру.

Перевагами **Практикуму** є сприяння розширенню професійного тезаурусу студентів телекомунікаційних спеціальностей, формування інтересу до спілкування англійською мовою та підвищення мотивації студентів до навчання і майбутньої професії, а також доступність даного посібника через Інтернет мережу.

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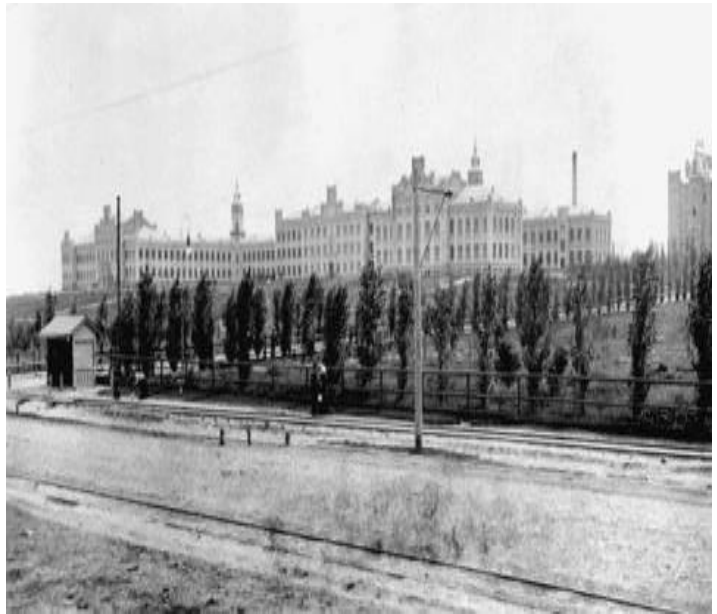
Unit 1: EDUCATION IN TELECOMS

OUR UNIVERSITY

"The roots of education are bitter, but the fruit is sweet."
Aristotle

♪ LEAD IN

1. Can you recognize the building in the picture? What do you know from the history of the National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute"? How many faculties were there in the KPI when it was founded? How many students studied at the KPI?



2. Look at the first map of the KPI premises made in 1898. Which building can you recognize? Which has been changed since that time?



3. Why have you chosen this university? Has somebody influenced your solution? What was your first impression when you entered the KPI?

4. What factors are important when choosing the university to study? Think of the following factors and discuss in pairs:

- the size of the university
- university location
- course content
- overall academic reputation
- graduate employment rates
- the quality of the academic facilities (dormitory, IT laboratories, gyms, hospitals, canteens etc.)
- links between the university and employers

5. Discuss in four groups using some useful phrases below:

Group 1. Provide the general information about the education system in Ukraine.

Group 2. List the problems of modern education.

Group 3. Highlight the good points in our education system.

Group 4. Generate the ideas on how the modern education can be improved.

Useful phrases

To be honest ...

To tell you the truth...

Personally, I think ...

It would be a nice change if

Maybe we could...

In my view/opinion ...

My opinion/view is that ...

A key factor is ...

One way forward would be ...

A lot can be achieved by ...

6. Read and translate the words and expressions connected with education. Tick the words you already know. Think of any other words related to the university life.

to apply to	to enter/ to graduate (from)	applicant
academic year	schedule/timetable	curriculum
courses	term/semester	to acquire knowledge
chair	record book	to pass/to fail (exams)
dean	evaluation/assessment	campus
dean's office	to conduct/carry out a research	scholarship
marks	Bachelor's degree	Master's degree
to major in	faculty/department	group monitor

READING and VOCABULARY

1. a) Study the following words in the box. Make sure you know them. Try to explain each notion.

department	enrolment	substantial	scientific
outpatient	employers	measuring	approximately
dormitory	campus	leisure	consecration
graduation	ceremony	manufacturer	accept

b) Practise pronunciation of the words:

substantial |səb'stænʃl|, scientific |,saɪən'tɪfɪk|, outpatient |'aʊtpeɪʃnt|, measuring |'meɪzərɪŋ|, approximately |ə'prɒksɪmətli|, dormitory |'dɔːmɪt(ə)rɪ|, campus |'kæmpəs|, leisure |'leɪzə|, consecration |kən'seɪʃ(ə)n|, graduation |grædʒu'eɪʃ(ə)n|, ceremony |'serɪməni|, manufacturer |,mænjʊ'fæktʃ(ə)rə|, accept |ək'sept|.

2. Read the text and translate it into Ukrainian.

**NATIONAL TECHNICAL UNIVERSITY OF UKRAINE
“IGOR SIKORSKY KYIV POLYTECHNIC INSTITUTE” IN BRIEF**



Examination Board with the Chairman Prof.D.I. Mendeleev celebrating the first graduation of engineers in Kyiv Politechnic Institute (1902)

The Kyiv Polytechnic Institute was founded in 1898. At that time it had four departments: Mechanical, Chemical, Agricultural, and Civil Engineering. The first enrolment constituted 360 students. The leading scientists Dmitri Mendeleev, Nikolai Zhukovsky and Kliment Timiryazev gave substantial scientific and organizational assistance in the founding of the institute. Viktor Kirpichov was the first rector of the KPI.



Buildings of Kyiv Polytechnic Institute. View from Prospect Peremogy (1902)



Students' dormitory on the 1/37 Yangela Street (1930)

The University had two campuses: the central one being located in Kiev, and the other in town of Slavutyich.

The Kyiv campus of the university is located near the city center in a park named after the university.



Greenhouse for the experiments, a garden and a pond (1903)



Teachers' buildings (1902)

The University has an outpatient medical department for the staff and students.

The KPI also considers the organized leisure to be a very important factor in bringing up young specialists.

The Knowledge Square is the center of the entire KPI complex, measuring approx. 105 x 100 meters. The Knowledge Square is connected to one of the main city streets - Peremohy (Victory) avenue. Meetings, festivals, consecration into students and graduation ceremonies take place at the square.

Various sport facilities also exist at the institute. There are training grounds, soccer fields, volleyball and basketball courts at student disposal.

In 2016 the KPI was renamed "Igor Sikorsky Kyiv Polytechnic Institute" after one of the world's leading helicopter manufacturers, the world-wide famous and talented designer of helicopters as well as fixed-wing aircrafts – Igor Sikorsky (1889–1972) – who studied at the KPI in 1907-1909.

At present the number of students at the KPI exceeds 20,000. Approximately 400 of them are international students. Over 4,500 students graduate from the KPI annually. The diploma is accepted by the European Union.

3. Answer the following questions:

1. When was the KPI founded?
2. What faculties were the first ones at the KPI?
3. What famous scientists are mentioned in the text? Can you name any other famous people, who graduated from the KPI?
4. What facilities for the students are described in the text?
5. What can you tell about the present situation at the KPI?

4. Read the words (1-7) in the table and match each word with its definition (a-g). Think in what academic situations you would use them. Share your ideas with your partner.

1	enrolment	a)	ascertain the size, amount, or degree of (something) by using an instrument or device marked in standard units
2	substantial	b)	close to; around; roughly or in the region of
3	to measure	c)	registration, the action of accepting the list of applicants
4	scientific	d)	of considerable importance, size, or worth
5	approximately	e)	a division of a large organization such as university
6	outpatient	f)	attends a hospital for treatment without staying there overnight
7	department	g)	based on or characterized by the methods and principles of science

5. Find in the text “National Technical University of Ukraine “Igor Sikorsky Kyiv Polytechnic Institute” in Brief” English equivalents to the words and expressions, then describe the facts from the text using them:

був заснований; екзаменаційна комісія; інженерно-будівельний; зарахування; провідні науковці; студентський гуртожиток; значна наукова допомога; названий на честь; амбулаторне медичне відділення; молоді спеціалісти; приблизно; закінчують університет.

6. a) Read the words in the table below and make word partnerships. Describe your partner any situations using the combinations.

leading	assistance
scientific	hostel
examination	campus
students'	scientist
university	ceremony
graduation	board

E.g. leading scientist.

b) Make up some new word partnerships. Use them in your own examples.

☺ LANGUAGE FOCUS

1. *Look at the names of study techniques (1-6) and match them with their definitions (a-f). Which of them do you consider to be the most effective? Do you know any other techniques to practice in the class?*

1	revising	a	checking and improving on a piece of work
2	highlighting	b	recording information during a class/seminar/lecture
3	editing	c	giving a brief statement of the main points of (something)
4	note-taking	d	reread work done previously to improve one's knowledge of a subject
5	summarizing	e	to read (copy or printer's proofs) to detect and mark errors to be corrected
6	proof-reading	f	draw special attention to something

2. a. *Look through the idioms and sayings about education. Try to explain each one. Do you know any Ukrainian equivalents to them?*

- to be a bookworm
- to be a copycat
- to learn something off by heart
- to live and learn
- to be a swot
- the three Rs
- to teach an old dog new tricks

b. Read the sentences and fill in the gaps with the idioms above.

1. Some children are leaving school without even the basic ...: reading, writing and arithmetic.
2. He could never learn how to use the internet. Just shows you can't
3. They call her a ... because she is studying really excessively.
4. I never knew what university campus is. Uh, well you
5. To pass the exams successfully you have to
6. He is a real He reads all the time.
7. She is always copies my work, she's such a

3. Tick the boxes to form phrases. In pairs use the phrases to form sentences.

Get	Have	Do	
✓			good marks
			an exam
			one's homework
			expelled
			a break
			a research project
			extracurricular activities

And now you are a student!!!



The “Student’s Evolution” was created in 1974 (the authors Lena Rakova and Nina Sudilkovskaya). Pay attention to the haircut of the third year student. At that time the military discipline started from the third year of study.

Discuss the following:

1. What were the authors trying to say?
2. What does each detail of this image tell us about?
3. Can this picture describe a modern student?
4. What changes have happened in society and science since that time?

Create the modern variant of the “Student’s Evolution” together with your groupmates.

✍ WRITING

Write a letter (100-120 words) to your foreign friend about university and your study in it. Use the words and expressions you have learnt in the unit.

💡 SPEAKING

Make a report or presentation about your first impressions of being a student of the Institute of Telecommunication Systems.

🔊 **LISTENING**

OXFORD vs **CAMBRIDGE**

📖 **I. Pre-watching activities.**

1. Look at the pictures and try to guess what world's known Universities are in the pictures.



Match the universities with their coat of arms.



Think and discuss: what might symbols on the coat of arms mean?

2. Find out:

Where the universities are located.

When they were founded.

What they are famous for.

3. Share with your partner the information you know about each university.

4. Read the words and expressions, make sure you know their meanings. If not, then look them up in a dictionary. Practise their pronunciation.

motion	on the grounds	volume	Nobel Prize	winners
boast	apology	splitting of the atom	pythons	

II. While-watching activities.

1. Watch the video “**Oxford** vs **Cambridge**” (Video file 1.1 or go to <https://www.youtube.com/watch?v=fVyJDV6igLk>) and find out what the most important scientific discoveries were made in the universities.

2. Watch the video again and find out which information refers to **Oxford** or **Cambridge**. The first two have been done for you.

1 Britain’s best university	O&C
2 the oldest printer in the world	C

3. Watch the video starting from 1:12 minute and try to identify who out of outstanding people studied in the universities. Find out who are: the prime ministers; writers; philosophers; scientists; actors. Fill in the table. Some of them have been done for you.

Oxford	Cambridge
Prime Ministers	Prime Ministers Robert Walpole
Writers Lewis Carroll	Writers
Philosophers/Scientists John Locke	Philosophers/Scientists
Actors	Actors John Cleese

Discuss with your partner what these people are famous for. How many Nobelists (Nobel Prize Winners) are there today who attended these universities?



III. Follow-up activities.

Make a short presentation about your University or Institute. Include the information on the most interesting events, important scientific discoveries made at your university and outstanding people who studied in it.



SELF-ASSESSMENT

UNIT 1

Choose the appropriate word to fill in the sentences below.

- 1 You can find different administrative buildings on the university
a) premises b) campus c) location
- 2 Are you satisfied with the quality of the academic ... (dormitory, gym, etc)?
a) benefits b) accommodation c) facilities
- 3 Thousands of students ... from our university every year.
a) exit b) go c) graduate
- 4 Grading the students is an integral part of the ... process.
a) checking b) evaluation c) research
- 5 To discover the new technologies first of all the research must be
a) conducted b) carried on c) leaded
- 6 Within one faculty there might be several
a) units b) departments c) divisions
- 7 In order to get the ... all the students have to study hard.
a) scholarship b) payment c) salary
- 8 To get the Bachelor's degree you need to study four ... years.
a) students' b) education c) academic
- 9 Students from other countries can live in the ... in the university campus.
a) hostels b) hotels c) dormitories
- 10 All the students are looking forward to participating in the graduation
a) parade b) ceremony c) event
- 11 Examination ... is a group of people who are responsible for the fair students' grading.
a) board b) union c) committee
- 12 When you have written a scientific paper, it is necessary to ...-read it.
a) proof b) self c) back
- 13 To build a successful career in future having ... degree it is a must for many big international companies.
a) Master's b) Master c) Magister
- 14 All the students' marks at the end of the year must be filled into the ... book.
a) credit b) record c) assessment
- 15 To remember all the important data it is highly recommended to do
a) editing b) highlighting c) note-taking

Unit 2. TRAINING IN TELECOMS

TELECOMS JOBS

*"Scientists investigate that which already is;
Engineers create that which has never been."*
Albert Einstein

👉 LEAD IN

1. *Have you already thought about your future job? Have you thought about the companies where you can work after the graduation?*



2. *Look through the short article below describing the requirements needed to become a telecom specialist. Draw your attention to the prioritized qualities which are given in italics. What abilities do you think you have? What other skills are needed? What do you have to do to develop the required qualities?*

In addition to having the ability to *communicate effectively*, telecommunications agents should generally have higher than average sales, *math and technology skills* in order to beat out the competition when applying for work with telecommunications companies. A career in telecommunications also requires the ability to *handle things quickly and efficiently*. Having the ability to *work in a fast-paced environment*, being able to *adapt quickly and dealing with difficult clients* are key skills to possess in order to be successful in this field.

3. Examine the list of the most popular telecoms careers. Which career would you choose? What does each specialist do?

- programmer
- software developer
- software tester
- web developer
- hardware developer
- helpdesk and desktop support manager
- data security specialist
- network engineer
- telecoms technician



5. a) Look at the images below. Each picture shows the logo of one of the biggest telecoms companies in the World. Which of them are familiar to you? Do they have their branches in Ukraine?

1



2



3



4



5



6



b) Read the companies' short profiles. Try to match them with their logos. Would you like to work in any of these companies?

<p>a) ... was founded in 1984 and is headquartered in UK. It provides mobile telecom services. The company provides voice services, fixed broadband and fixed voice and data solution, messaging services, data services, Internet on mobile, data roaming and mobile advertising & business managed services. It provides business solutions, branded phones and devices and also personal solutions.</p>	<p>d) ... was founded on January 2, 1995 and is headquartered in Bonn, Germany. It is engaged in telecommunication, information technology, information and entertainment, multimedia, security, and sales & agency services. It provides broadband, Internet, mobile communications, and IP television products and services, and solutions for information & communication technology.</p>
<p>b) ... was founded in 1981 and is headquartered in Tokyo, Japan. It is a company which provides services for information technology and telecommunication including wireless telecom services, internet service connection, and software development.</p>	<p>e) ... was founded on August 1, 1952 and is headquartered in Tokyo, Japan. It is engaged mainly in the provision of telecom services. It operates through multiple segments including: Regional Communications, Mobile Communications, Long Distance and International Communications, Data Communications, and other.</p>
<p>c) ... was founded in 1997 and is headquartered in Hong Kong. It provides mobile telecommunications services. The company offers mobile services using the TD-SCDMA standard and operates 3G business based on an IP based mobile telecom network.</p>	<p>f) ... was founded on April 19, 1924 and is headquartered in Madrid, Spain. It is an integrated telecom operator which provides solutions for communication, information and entertainment.</p>

READING and VOCABULARY

1. a) *Study the following words in the box. Make sure you know their meanings. Try to explain each notion. Try to predict what the text might be about.*

engineer	career	to manufacture	equipment
field	employment	Advancement	labour
maintain	supervise	Calculus	mechanics
electrical	specialty	Designing	co-worker
Bachelor's	digital	Technology	innovative

b) *Practise pronunciation of the words below and pay attention to the stress:*

engineer |ɛndʒɪ'nɪə|, career |kə'riə|, manufacture |,mænju'fæktʃə|, equipment |ɪ'kwɪpm(ə)nt|, employment |ɪm'plɔɪm(ə)nt|, advancement |əd'vɑ:nsm(ə)nt|, maintain |meɪn'teɪn|, supervise |'su:pəvaɪz|, calculus |'kælkjələs|, mechanics |mɪ'kæniks|, electrical |ɪ'lektrɪk(ə)l|, specialty |'speʃəlti|, designing |də'zɑ:niŋ|, co-worker |kəʊ'wɜ:kə|, bachelor's |'bætʃələz|, digital |'dɪdʒɪt(ə)l|, technology |tek'nɒlədʒi|, innovative |'ɪnəvətɪv|.

2. *Read the text and translate it into Ukrainian.*



TELECOM ENGINEER: CAREER PROFILE

Engineers who have completed an undergraduate program in electrical engineering may be interested in beginning careers as telecom engineers. This engineering specialty is also related to such careers as materials engineering and computer engineering.

Career Overview

The telecommunications (telecom) engineer career is a fairly new development in engineering specialties and has come about along with the growth of the telecommunications industry. Telecom engineers specialize in

designing and maintaining telecommunications systems. They develop, test and supervise the manufacturing of electronic equipment used in this industry; as a result, telecom engineering can be considered a specialization of the electronic engineering field.

Education

Telecom engineers are almost always required to have a bachelor's degree in electronic engineering or electronics engineering technology. This 4-year degree usually allows for entry-level telecom engineering jobs, though graduate-level education may help with employment prospects and advancement. Courses usually include higher mathematics, including calculus, along with subjects such as electricity and magnetism, mechanics, various forms of electronics and digital communications.

Skills

In general, successful telecom engineers need an advanced understanding of electrical engineering systems, an ability to grasp complex engineering concepts, understanding of the function of the telecom industry and the ability to break down advanced concepts into terms co-workers can easily grasp. Other necessary skills include problem-solving, critical thinking, system analysis and operations management.

Job Outlook and Salary

The U.S. Bureau of Labor Statistics (BLS) noted in May 2015 that there were 28,930 engineers employed within the telecommunications industry (www.bls.gov). Most of these individuals were classified as electronics engineers. As the telecom industry continues to develop, there will be a need for engineers who can create and maintain innovative systems for modern corporations.

3. Answer the following questions:

1. What are the main tasks for telecoms specialists?
2. What kind of education is required to become a telecoms expert?
3. What courses do you need to take to get a better job in telecoms field?
4. Can you name some skills which are needed to become a telecoms specialist?
5. What kind of engineers will be in demand in future?

4. Read the words (1-7) in the table and match each word with its definition (a-g). Think in what job-related situations you would use them. Share your ideas with your partner.

1	development	a)	a development or improvement
2	manufacturing	b)	the process of keeping something in good condition
3	maintenance	c)	the necessary items for a particular purpose
4	supervision	d)	making (something) on a large scale using machinery
5	equipment	e)	the abilities to perform various tasks satisfactorily
6	advancement	f)	a process of changing the situation
7	skills	g)	observing and directing somebody's work

5. Find in the text "TELECOM ENGINEER: CAREER PROFILE" English equivalents to the words and word combinations, then describe the facts from the text using them:

пов'язаний із; інженерія матеріалів; комп'ютерна інженерія; спеціалізуватись у; розробка та технічне обслуговування; виробництво електронного обладнання; галузь електронної інженерії; ступінь бакалавра; перспектива працевлаштування і вдосконалення; вища математика; цифровий зв'язок; складні інженерні поняття; співробітники; інноваційні системи.

6. Read the words in the table below and make word partnerships. Describe your partner any situations using the combinations.

telecom	Communications
complex	Industry
innovative	Equipment
digital	Concept
electronic	Analysis
system	Systems

☺ **LANGUAGE FOCUS**

1. Translate the words in a box and fill in the gaps in the article below.

<i>include</i>	<i>complaints</i>	<i>computer</i>	<i>installation</i>	<i>satellite</i>
<i>involved</i>	<i>transmission</i>	<i>solve</i>	<i>troubleshooting</i>	<i>specialist</i>

What Does Your Job Involve?

As a telecommunications specialist, you help customers design, set up and troubleshoot communication systems, plans and devices that ____ (1) both voice and data ____ (2). Depending on where you work, you may specialize in data communications, cellular capabilities, voice transmission, ____ (3) communications and cable-to-modem communications. Most of your day will be spent on a ____ (4), phone or chat room supervising the ____ (5) process, providing maintenance and ____ (6) services to clients. As a telecommunications ____ (7), you are expected to function as a client representative, troubleshooting technician, and a source of information to distributors. You may be ____ (8) in multiple projects and prepared to focus on technical issues involving maintenance, installation and troubleshooting. Successful telecommunications specialists can juggle multiple tasks, handle ____ (9), and help clients ____ (10) problems in a calm and assertive manner.

2. a) Look through the idioms and sayings about work. Try to explain each one. Do you know any Ukrainian equivalents to them?

- brain drain
- earn while you learn
- to bring home a bacon
- a dead end job
- to be snowed under
- to work your fingers to the bone/ to sweat blood
- to teach an old dog new tricks

b) Read the definitions to the idioms listed above. Match the definitions with the idioms. The first has been done for you below.

1. To be very busy.
2. A job that has no chance of promotion or advancement.
3. To work very hard.
4. The possibility of earning a salary while in training.
5. The departure of highly qualified people (scientists, engineers, etc.) for other countries, where they have better opportunities and usually better pay.
6. To earn a living for the family.

E.g. Brain drain means the departure of highly qualified people (scientists, engineers, etc.) for other countries, where they have better opportunities and usually better pay.

c) Think and share your ideas about real situations when you would use the learnt idioms.

3. Solve the following equations using the words in the box in order to get phrasal verbs often used in business. Describe to your partner any situation you can use these phrases.

<i>over</i>	<i>up</i>	<i>out</i>	<i>off</i>	<i>On</i>	<i>back</i>
-------------	-----------	------------	------------	-----------	-------------

1) to burn + ... = to be tired	6) to give + ... = to stop trying
2) to go + ... = to review	7) to put + ... = to postpone
3) to count + ... = to rely on	8) to think + ... = to consider
4) to figure + ... = to find the answer	9) to send + ... = to return
5) to find + ... = to get the information	10) to set + ... = to organize

WRITING

Write an essay “My Ideal Job in Telecoms” (100-120 words). Use the words and expressions you have learnt in the unit. Try to include the following details:

- *Why you think this job will be perfect for you;*
- *what skills and knowledge are needed for this job;*
- *what responsibilities you will have at your ideal job;*
- *what is the location of your dream job office (in case it is not a freelance job or teleworking).*

SPEAKING

Make a report or presentation about your future job in Telecoms. Try to analyze required abilities and skills. Find out what skills you need to match the work you want to do.

🔊 LISTENING

TELECOMMUNICATIONS ENGINEER

📖 I. Pre-watching activities.

1. Create a mind maps from the words "skills" and "knowledge" (you can include all your associations you have with these words).



2. Discuss these questions:

- which skills do you think are needed to be a good telecom engineer?
- what kind of skills do you think you have?

3. Look at the pictures and try to guess which skill the each picture represents. Match the pictures with the skills below.



collaboration/teamwork	decision making and ethical judgement
oral communication	critical thinking/analytical reasoning
quantitative/applied technology	written communication

2. Match these skills (1-6) with their meanings (A-F).

1	quantitative/applied technology	A	The ability to articulate your thoughts and ideas clearly and effectively in writing with your colleagues and outside of your organization
2	collaboration/teamwork	B	The ability to act with integrity, critically examine your own values, and respect how different values might be applied to address complex and ambiguous problems
3	oral communication	C	The ability to work with numbers and understand statistics, generate and manipulate data using technological tools, and stay current on changing technologies and their applications in the workplace
4	written communication	D	The ability to build collaborative relationships with colleagues and customers representing diverse cultures, races, ages, genders, religions, lifestyles, and viewpoints
5	critical thinking analytical reasoning	E	The ability to verbally articulate your thoughts and ideas clearly and effectively with your colleagues and outside of your organization
6	decision making and ethical judgement	F	The ability to obtain, interpret, and use knowledge, facts, and data to analyze situations, make decisions, and solve workplace problems

4. Read the words and expressions, make sure you know their meanings. If not, then look them up in a dictionary. Practise their pronunciation.

reception literally maintain require implement resolve
occur fault over utilized challenge solution bidder

II. While-watching activities.

Watch the video “Telecommunications engineer” (Video file 2.1 or go to <https://www.youtube.com/watch?v=w4x6yjeb41Q>) and find out as much information about Richard as possible. Try to cover these questions:

- **Which company does he work for?**
- **What are his responsibilities?**
- **What does his typical day look like?**
- **How did he build his career, what kind of education did he get?**
- **What kind of challenges or difficulties does he have at work?**

2. Watch the video again and find out what the basic skills and requirements are needed to become a good telecom expert.

III. Follow-up activities.

Find out what are the biggest telecom companies in your country. Analyse the sites of these companies and check if they have free vacancies. Try to find the information about the current requirements which you need to meet to work for these companies.

SELF-ASSESSMENT

UNIT 2

Choose the appropriate word to fill in the sentences below.

- 1 Nowadays software ... are on demand on the labour market.
a) producers b) developers c) makers
- 2 To be outstanding it is important to have ... ideas.
a) innovative b) innovation c) innovate
- 3 To get practical skills you need to work in the laboratory with special
a) equipment b) tool c) instrument
- 4 My ... is telecommunications engineer.
a) specialization b) degree c) specialty
- 5 Nokia was the leading mobile phones ... company.
a) manufacturer b) manufacturing c) manufacture
- 6 It is very important to be goal-oriented to build a successful
a) career b) job c) profession
- 7 A process of keeping something in a good condition is called
a) manufacturing b) development c) maintenance
- 8 Every company needs a good ... technician.
a) problem-shooting b) troubleshooting c) trouble-solving
- 9 Having critical thinking skills means you can ... the problem in a fast and extraordinary way.
a) fix b) solve c) decide
- 10 Telecommunications include voice and data
a) transmission b) transfer c) sending
- 11 Poor economic situation in a country can cause a brain-
a) draft b) drain c) drag
- 12 A job where you have no promotion opportunities is a ... job.
a) dead-line b) no-end c) dead-end
- 13 After finishing a complicated project you might feel burned
a) out b) up c) over
- 14 Fast decision- ... is an integral part of the high-quality specialist.
a) doing b) making c) taking
- 15 Completing test on logic might be a great
a) task b) challenge c) fail

Unit 3. TELECOMS: HISTORY

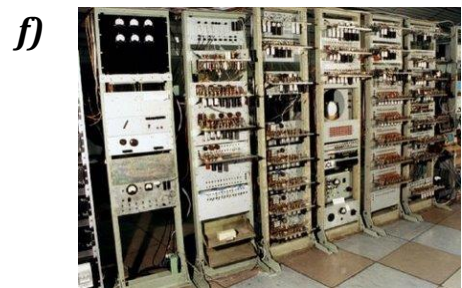
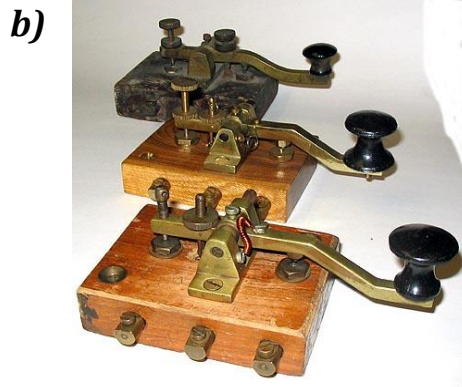
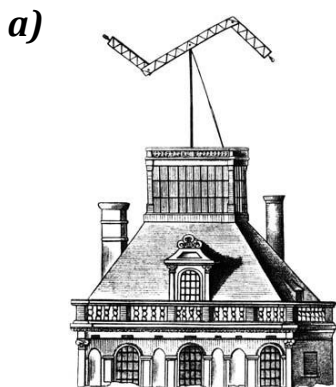
BRIEF HISTORY OF TELECOMS

"If you don't know history, then you don't know anything. You are a leaf that doesn't know it is part of a tree."

Michael Crichton

👉 LEAD IN

1. Do you know any facts from the history of telecoms? What means of early telecoms do you know?
2. Look at the following pictures and try to guess what kinds of telecoms means are depicted on them. Where can we see such devices now? Are they still used?



3. Examine the list of telecom devices and pieces of equipment. What do you know about the history of these devices? Which one is the oldest? Which one is the most modern? Which one is the most frequently used? Match the following items with the years of their creation.

1	semaphore	a)	1843
2	satellite	b)	1962
3	radio receiver	c)	1793
4	pager	d)	1980s'
5	optical fibre	e)	1936
6	fax	f)	1957
7	telegraph	g)	1894
8	telephone	h)	early 1840s'
9	mobile telephone	i)	1837
10	computer	j)	1876

READING and VOCABULARY

1. a) Study the following words in the box. Make sure you know them. Try to explain each notion and then predict what the text might be about.

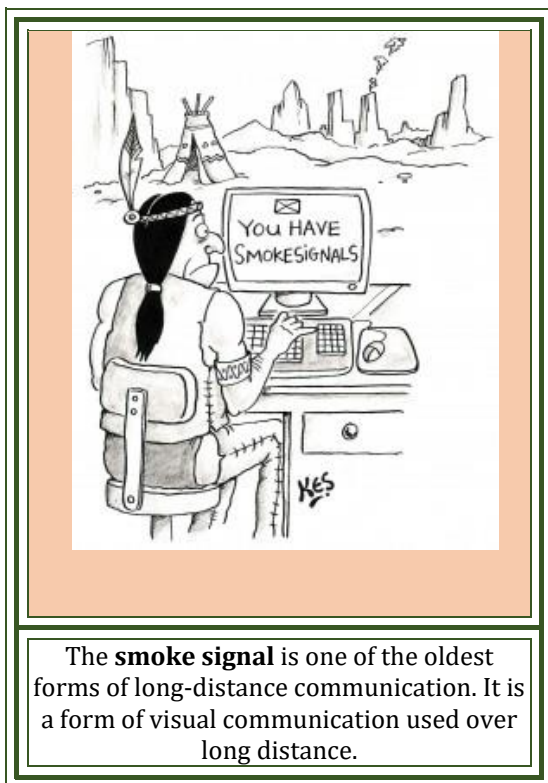
distance	significant	ancient	purpose
courier	drums	smoke	pigeon
transmitting	exchange	reliable	stretch
movement	means	receive	diaphragm
transfer	inventor	pipe	rope

b) Practise pronunciation of the words below and pay attention to the stress:

significant |sɪg'nɪfɪk(ə)nt|, ancient |'eɪnʃ(ə)nt|, purpose |'pʊ:pəs|, courier |'kʊrɪə|, pigeon |'pɪdʒɪn|, transmitting |trænz'mɪtɪŋ|, exchange |ɪks'tʃeɪndʒ|, reliable |rɪ'laɪəbl|, receive |rɪ'si:v|, diaphragm |'daɪəfræm|, transfer |træns'fɜ:|, inventor |ɪn'ventə|.

2. Read the text and translate it into Ukrainian.

LIFE BEFORE THE TELEGRAPH AND THE TELEPHONE



The history of the telephone has its roots in the distant past. The need to pass information over significant distances has always been natural to humankind even as far back as ancient times. The idea of the telephone and the need for it was therefore in the air ever since people acquired the need to communicate.

At different times in history, there were different means of communication: e.g. couriers, drums, secret signs (like the color of a sail), fire, smoke, etc.

Persia and Syria established the first pigeon messaging system around the 5th century BCE due to the discovery that pigeons have an ability to find their way back to their nests regardless of the distance. Travelers would bring doves and pigeons along with them, attach messages to them and release them to fly back home. Later on, pigeons were used by Romans to report the outcomes of sporting events and by Egyptians for military communications.

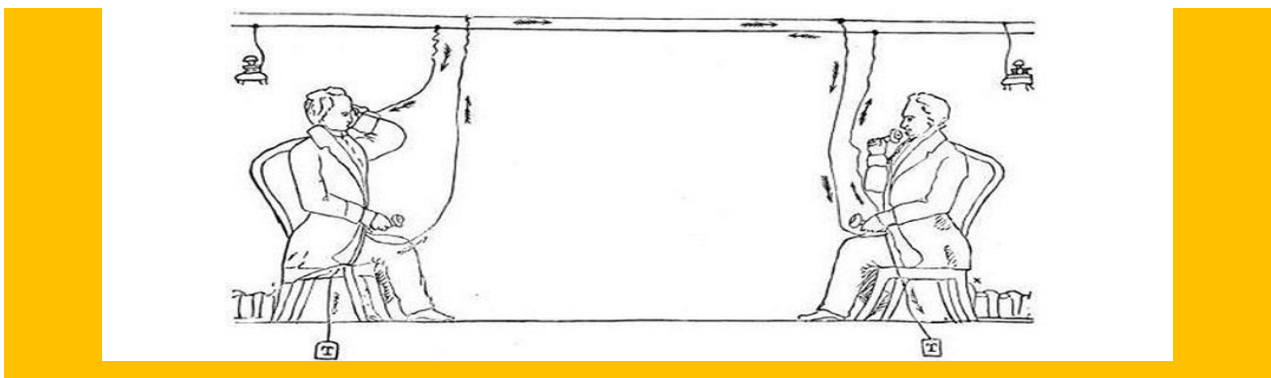


In the 6th Century B.C. the Persian King Kir commandeered 30,000 people for the sole purpose of transmitting information. These people were known as the 'King's ears'. They were all located on hill-tops and guarding towers within hearing distance of each other. They passed information from one person to the next, finally reaching the King and, in return, passed on his orders in the same

manner. According to the words of the Greek historian, Diodorus Siculus, one day of this primitive 'telephone' information exchange was the equivalent of 30 days walking distance.

The most reliable were couriers: for example, during bad weather, if nobody was willing to run with messages, they had to use their voices or other simple signals. During the Gallic war in 56 B.C., for example, a chain of 'shouters' was stretched out in order to pass information relating to the movements of Caesar's army. The speed of such information transfer could reach 100 km/h! The Medieval buildings of Pskov hosted secret narrow corridors within their walls, specially designed to pass and receive messages.

There is evidence that, in the year 968, a Chinese inventor created a device called the 'thumtsein' which was able to pass a sound through pipes.



In ancient times there was actually a rope telephone in use: basically, a rope was stretched between two diaphragms. Using vibrations, a sound was transmitted from one end to the other. In this way, a form of communication was established between two points at a short distance apart.

3. Answer the following questions:

1. What means of telecommunication are mentioned in the text?
2. What kind of early telecoms was considered to be the most reliable?
3. What way of information transmission was described in the text?
4. What telecoms means is considered to be the first one?
5. Could you share your opinion about the effectiveness of the early telecoms means?

4. Read the words (1-7) in the table and match each word with its definition (a-g). Think in what job-related situations you would use them. Share your ideas with your partner.

1	ancient	a)	initiate or bring about
2	purpose	b)	the action or process of forwarding something
3	transmission	c)	buy or obtain (an asset or object) for oneself; learn or develop
4	to establish	d)	exchanging information by speaking, writing, or using some other medium
5	reliable	e)	belonging to the very distant past and no longer in existence
6	communication	f)	consistently good in quality or performance; able to be trusted
7	to acquire	g)	the reason for which something is done or created or for which something exists

5. Find in the text “LIFE BEFORE THE TELEGRAPH AND THE TELEPHONE” English equivalents to the words and word combinations, then describe the facts from the text using them:

значна відстань; стародавні часи; потреба у спілкуванні; єдина мета; передача інформації; згідно з; обмін інформації; комунікаційні засоби; надійніші; прості сигнали; секретні знаки; система передачі повідомлень; випускати голубів; прикріплювати повідомлення; передавати і отримувати повідомлення; встановлений зв'язок.

6. Read the words in the table below and make word partnerships. Describe your partner any situations using the combinations.

transmitting	Distance
information	Messages
significant	Information
means of	Signal
smoke	Communication
to receive	Exchange

☺ **LANGUAGE FOCUS**

1. Fill in the gaps with words formed from the words in bold.

Videotelephony

The development (1) of videotelephony involved the historical development of several technologies which _____ (2) the use of live video in addition to voice telecommunications.

The development of the crucial video technology first started in the latter half of the 1920s in the United Kingdom and the United States. This _____ (3) to



serve as an adjunct _____ (4) the use of the telephone. A number of organizations believed that videotelephony would be superior to plain voice _____ (5). However video technology was to be deployed in analog television _____ (6) long before it could become practical—or popular—for videophones. Videotelephony developed in parallel with _____ (7) voice telephone systems from the mid-to-late 20th century. Only in the late 20th century with the advent of powerful video codecs and high-speed broadband did it become a _____ (8) technology for regular use.

With the rapid _____ (9) and popularity of the Internet, it became widespread through the use of videoconferencing and webcams, which frequently utilize Internet telephony, and in business, where telepresence technology has helped _____ (10) the need to travel.

to develop

to enable

to occur

to supplement

to communicate

to broadcast

convention

to practice

to improve

reduction

2. a) Look through the idioms and sayings about history. Try to explain each one. Do you know any Ukrainian equivalents to them?

- history repeats itself
- go down in history
- to make history
- ancient history
- the rest is history

b) Read the definitions to the idioms listed above. Match the definitions with the idioms.

- 1) Someone or something from so long ago as to be completely forgotten or no longer important.
- 2) The same kinds of events seem to happen over and over.
- 3) Something that you say when you do not need to finish a story because everyone knows what happened.
- 4) To be recorded in a particular way.
- 5) To do something important that will be remembered for a long time.

c) Discuss with your group mates:

- 1) Do you believe that the history repeats itself? Could you give any example?
- 2) Have you ever done anything which went down in history?
- 3) What innovations in telecoms made history?
- 4) What telecoms devices do you think are the ancient history?
- 5) Could you give the example of a story where you can use an idiom “the rest is history”?

✍ WRITING

You are planning to visit a museum of telecoms history. You would like to invite your group mates. Write an e-mail. Try to convince your friends that the museum is worth visiting, it is interesting and useful for their study. Follow the plan to write your e-mail:



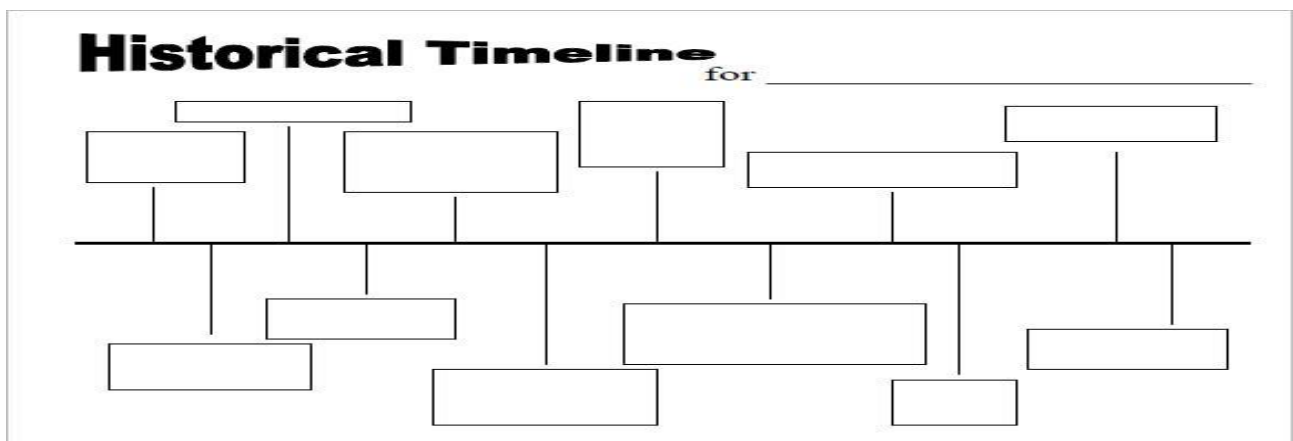
1. Start with an appropriate greeting.
2. Describe the purpose of your communication.
3. After providing the background details and the purpose of the message, cover your topic with concise language.
4. Finally, the close or conclusion engages the reader and directs further action.
5. The signature follows the conclusion and also provides contact information.

🗣 SPEAKING

Make a report or presentation about Evolution in Telecoms. Try to include the significant stages of the telecoms development.

Create a timeline of the most important inventions in the history of telecoms.

Use your own opinion. You can also create info graphics.



🔊 **LISTENING**

THE HISTORY OF TELECOMMUNICATIONS

📖 **I. Pre-watching activities.**

1. How well do you know the telecom history? Do the quiz and find out.

1. Which company was the first to produce mobile phone?

- a) Nokia b) Motorola c) Siemens

2. What was the length of the first mobile phone?

- a) 5 inches b) 8 inches c) 9 inches

3. It took 10h to charge the 1st mobile phone. How long could it work without re-charging?

- a) for half an hour b) for 5 hours c) for an hour

4. Greek prefix *tele-* (τηλε-) means "far off". What does the Latin word "*communicare*" mean?

- a) to communicate b) to share c) to speak

5. What is the standard emergency signal "SOS" in Morse Code?

- a) 3 points 3 dashes 3 points b) 3 dashes 3 points 3 dashes c) dash point dash

6. When was the conventional telephone first patented by A.G. Bell?

- a) In 1912 b) in 1776 c) in 1876

7. When was the first coin telephone installed?

- a) In 1900 b) in 1920 c) in 1930

8. The first Apple logo was the picture with Newton under the apple tree.

- a) true b) false

9. What kind of greeting for the telephone originally wanted A. G. Bell?

- a) "Aloha" b) "Ahoy" c) "Hello"

10. Which company was founded in 1865 and manufactured paper at that time?

- a) Siemens b) Nokia c) Sony Ericsson

2. Find out:

What the basic telecoms means are.

What the biggest events in the telecoms history are.

3. Discuss with your partner what telecom inventions are the most important for the society. Prove your idea.

4. Read the words and expressions, make sure you know their meanings. If not, then look them up in a dictionary. Practise their pronunciation.

brief award screwed claim inspiration plowing fields
groundbreaking invention breakthrough replacement manual calculations
to pioneer obsessed

II. While-watching activities.

1. Watch the video “The History of Telecommunications” (Video file 3.1 or go to <https://www.youtube.com/watch?v=IAALIWOXPFI>) and note down the list of the inventions mentioned.

2. Choose the appropriate linking words and adverbs from the box and fill in the gaps. Watch the video again and check yourself.

thankfully eventually fortunately obviously so despite
although immediately unfortunately furthermore but
as well as thus consequently moreover however because also

1) Once upon a time smoke signals were used to communicate to neighboring villages _____ if it was foggy that day nobody could see a thing.

2) Samuel B Morse discovered that you could send messages through an electrical code system _____ the problem was you had to be able to read code and if you couldn't you were pretty much screwed.

3) Alexander Graham Bell was the first to be awarded the patent his friends thought it was a joke at first but _____ they all phoned to congratulate him.

4) Farm boy Philip Farnsworth drew inspiration from the plowing fields to create what we now use as a television but _____ his groundbreaking invention he only actually appeared on the television once as a mystery guest.

5) The birth of the Internet revolutionized telecoms and pioneered the way for global communication over three decades later we've become obsessed with the thing and can't seem to function much without it _____ what's your breakthrough telecoms idea we'd like to know.

3. Use as many of the linking words from the exercise 2 as possible to make a short story about any discovery in telecoms mentioned in the video.

III. Follow-up activities.

Make a short presentation of a great event in the telecom history. Cover these questions:

- *When was the event?*
- *What was happening in the society at that time?*
- *Who took part in it?*
- *Why was it important?*

SELF-ASSESSMENT

UNIT 3

Choose the appropriate word to fill in the sentences below.

- 1 The discovery of electricity played the ... role in the development of telecoms.
a) significant b) satisfactory c) sophisticated
- 2 The main purpose of the internet is the information
a) transfer b) exchange c) mining
- 3 The ... signal is one of the oldest forms of the long-distance communication.
a) drums b) Morse c) smoke
- 4 The first pigeon messaging system was ... in Persia and Syria.
a) produced b) established c) manufactured
- 5 Pigeon post was one of the first ... of telecommunication.
a) means b) approaches c) devices
- 6 ... voice telephoning systems were popular in the 20th century.
a) Conventional b) Traditional c) Ordinary
- 7 At the end of the 20th century there was a rapid ... of the internet.
a) discovery b) production c) improvement
- 8 The use of floppy disks is an ... history.
a) long b) ancient c) old
- 9 Such people as G. Marconi, A.G. Bell, S. Morse ... the telecom history.
a) did b) made c) wrote
- 10 Could you please tell me the history of telecoms in
a) brief b) short c) succinct
- 11 The invention of the radio was a great
a) break free b) break up c) breakthrough
- 12 Before the calculator was invented people had to count
a) manually b) manual c) conventionally
- 13 "SOS" is a standard ... signal.
a) emergency b) rescue c) help
- 14 How long did it take to ... the first mobile phone.
a) fill in b) boost c) charge
- 15 People still use the FM ... - transmitters.
a) reception b) receiver c) sender

Unit 4. TELECOMS: FAMOUS PEOPLE

FAMOUS PEOPLE IN TELECOMS HISTORY

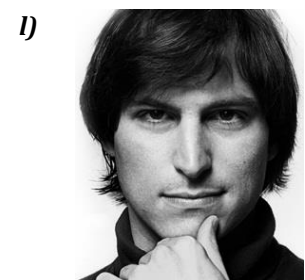
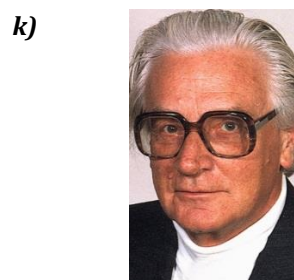
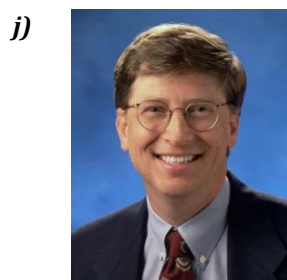
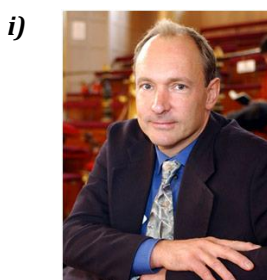
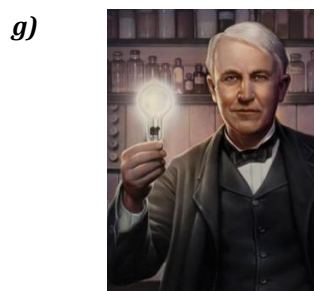
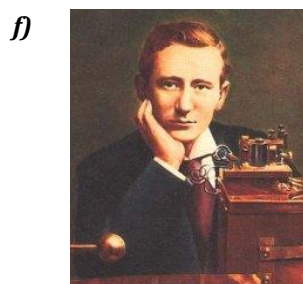
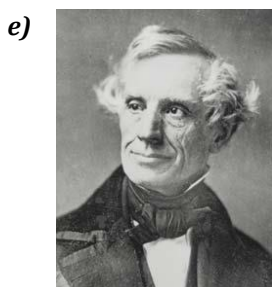
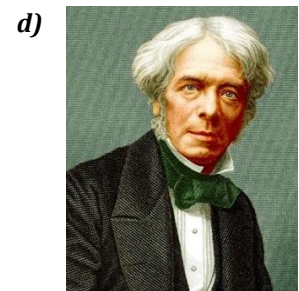
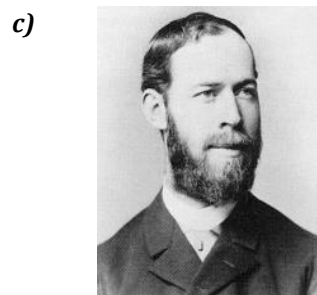
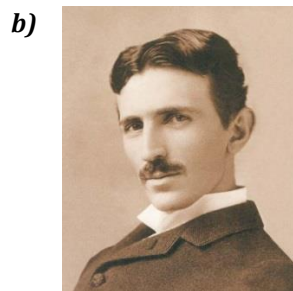
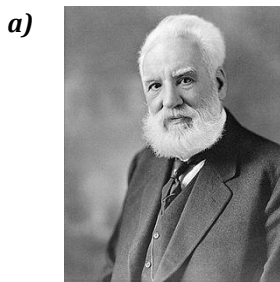
*"A society needs famous people; the question is whom it chooses for that role.
Any criticism of its choice is by implication a criticism of that society."*

Max Frisch

🎵 LEAD IN

**1. What names come up to your mind when you think of telecoms history?
Whom do you consider to be the greatest personality in telecommunications area?**

2. Look at the following pictures and try to recognize what inventors are depicted in them. What can you tell about these people?



3. a) *Examine the list of the famous people in the world history. How are they connected with telecoms? What do you know about these scientists? Match the following personalities (1-10) with the telecom devices or equipment (a-j) they invented.*

1	Alexander Graham Bell	a)	semaphore
2	Alexander Bain	b)	satellite
3	Chappe brothers	c)	radio receiver
4	Sergey Korolev	d)	fax
5	Alexander Popov	e)	telegraph
6	Charles Babbage	f)	telephone
7	Samuel Morse	g)	the 1 st general-purpose computing device
8	Konrad Zuse	h)	the 1 st electrical binary programmable computer
9	Tim Berners-Lee	i)	photograph, motion picture camera, light bulb
10	Thomas Alva Edison	j)	the WWW

b) *What other great inventors do you know? Try to find some interesting facts about famous people in telecoms history and share this information with your group mates.*

READING and VOCABULARY

1. a) *Study the following words in the box. Make sure you know them. Try to explain each notion and guess what the text is going to be about.*

recognition	complicated	equal	hardware
conceive	set	experience	software
computing	essential	boot up	draw up
deserve	notable	operating system	author
science	legend	contribute	surf

b) Practise pronunciation of the words below and pay attention to the stress: recognition |,rekəg'nɪʃn|, complicated |'kɒmplɪkeɪtɪd|, equal |'i:kw(ə)l|, conceive |kən'si:v|, experience |ɪk'spɪəriəns|, hardware |'hɑ:dweɪ|, software |'sɒf(t)weɪ|, computing |kəm'pjʊ:tɪŋ|, essential |ɪ'senʃ(ə)l|, draw up |drɔ: ʌp|, deserve |dɪ'zɜ:v|, notable |'nəʊtəb(ə)l|, author |'ɔ:θə|, science |'saɪəns|, contribute |kən'trɪbjʊ:t|, surf |sɜ:f|.

2. Read the text and translate it into Ukrainian.

WHO STANDS BEHIND COMPUTERS?

Almost everyone uses computers nowadays for different purposes: starting from shopping or working to playing games. But have you ever tried to think about where all this amazing technology came from? Who invented it all? Well, behind every company, programming language or piece of software, there is a person - or sometimes a team of people - who turned ideas into reality. We've all heard of Bill Gates, the founder of Microsoft and one of the richest men in history. Equally famous is Steve Jobs, the person who, along with Steve Wozniak, started Apple computers. However, there are hundreds of other people, from early pioneers to later geniuses, who aren't as well-known but who deserve recognition for the work they did in advancing the world of computing.



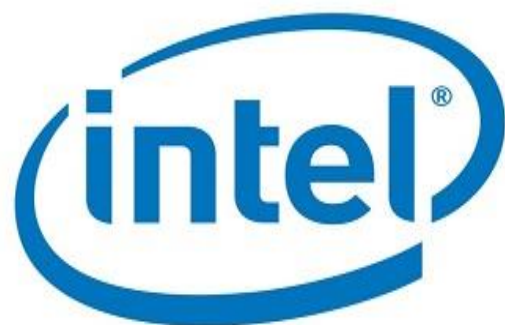
One of the first people to conceive of computers was Charles Babbage, an English mathematician and analytical philosopher who drew up plans for the first programmable computer called the Difference Engine. George Boole came up with a way of describing logical relations using mathematical symbols - now called Boolean logic - that is the basis of all modern computer processes. Vannevar Bush first proposed an idea in 1945 he called 'memex', which we now know as 'hypertext'. Another notable



figure in early computing was Alan Mathison Turing, an Englishman known as the "father of computer science". He invented the Turing Test, which is a way to find out if a computer is acting like a machine or a human.

As computing became more complicated, people needed a way to make it easier to tell computers what to do. In other words, they needed ways to program the computers. These computer instruction systems became known as computer, or programming languages. FORTRAN, the first widely used high-level programming language, was invented by an American computer scientist, John Warener Backus. Other notable North American inventors of programming languages include Dennis Ritchie, author of the C programming language, and Canadian James Gosling, known as the father of Java. One of the uses of programming languages is to create operating systems, which are essentially sets of instructions that allow computers to function. The most widely-used operating system in the world is Microsoft Windows, but there are other powerful ones that exist, such as Unix, created by Ken Thompson and his team at AT&T in 1969, and Linux, written by Linus Torvalds in 1991.

Microsoft, of course, is the largest software company in the world, but there is another company, Intel, that is equally important when it comes to hardware. Intel was started by several people who are now legends in the computer world, including Robert Noyce and Gordon Moore. Other notable is Tim Berners-Lee, the man who created the basis for the World Wide Web.



Through their creativity and hard work, all of these people contributed to shaping what we now experience as Information and Computer Technology. Every time you boot up a computer, play a video game or surf the Internet, try to remember the individuals who made these wonders possible.

3. Answer the following questions:

1. What famous people are mentioned in the text?
2. Who created the first programmable computer?
3. What is George Boole famous for?
4. Why was there a need to create programming language?
5. What IT companies are mentioned in the text? What do you know about these companies?

4. Read the words (1-7) in the table and match each word with its definition (a-g). Think in what academic or job-related situations you would use them. Share your ideas with your partner.

1	recognition	a)	the set of software that controls the overall operation of a computer system
2	operating system	b)	the programs and other operating information used by a computer
3	to experience	c)	consisting of many interconnecting parts or elements; intricate
4	software	d)	having great strength
5	hardware	e)	appreciation or acclaim for an achievement, service, or ability
6	complicated	f)	the physical components of a computer or other electronic system
7	powerful	g)	to encounter or undergo

5. Find in the text “WHO STANDS BEHIND COMPUTERS?” English equivalents to the words and word combinations, then describe the facts from the text using them: дивовижна технологія; мова програмування; програмне забезпечення; перетворити ідеї на реальність; апаратне забезпечення; заслужувати визнання; складати плани; логічні зв'язки; математичні символи; визначна постать; обчислення стало більш складне; операційна система.

6. Read the words in the table below and make word partnerships. Describe your partner any situations using the combinations.

programming	Symbols
programmable	System
mathematical	Figure
notable	Company
operating	Language
software	Computer

☺ **LANGUAGE FOCUS**

1. Look through the words in a frame. Translate them and fill in the gaps in the article below.

<i>setbacks</i>	<i>fundamental</i>	<i>accessible</i>	<i>unrealized</i>
<i>submission</i>	<i>engineer</i>	<i>currently</i>	<i>altered</i>
<i>joined</i>	<i>announced</i>	<i>available</i>	<i>medium</i>

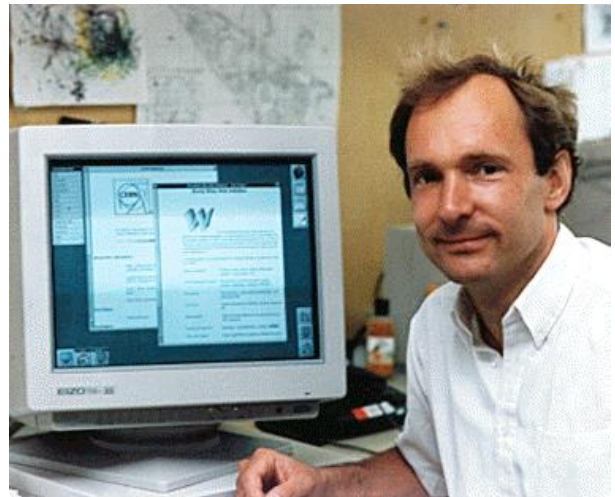
Sir Tim Berners-Lee

Web Inventor and Founding Director of the World Wide Web Foundation

Sir Tim Berners-Lee invented the World Wide Web in 1989 while working as a software _____ (1) at the CERN, physics laboratory near Geneva, Switzerland. Tim understood the _____ (2) potential of millions of computers connected together through the Internet.

Tim documented what was to become the World Wide Web with the _____ (3) of a proposal specifying a set of technologies that would make the Internet truly _____ (4) and useful to people. Despite initial _____ (5) and with

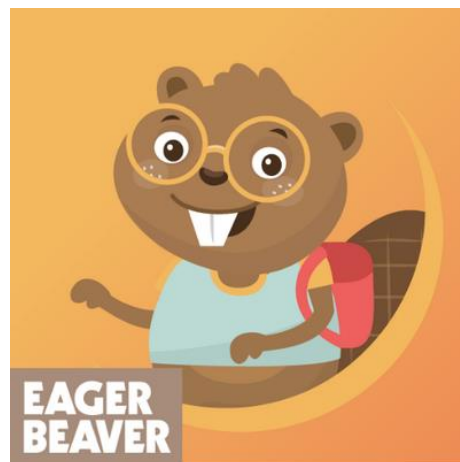
perseverance, by October of 1990, he had specified the three _____ (6) technologies that remain the foundation of today's Web (and which you may have seen appear on parts of your Web browser): HTML, URI, and HTTP. He also wrote the first Web page editor/browser ("WorldWideWeb") and the first Web



server ("httpd"). By the end of 1990, the first Web page was served. By 1991, people outside of CERN _____ (7) the new Web community, and in April 1993, CERN _____ (8) that the World Wide Web technology would be _____ (9) for anyone to use on a royalty-free basis. Since that time, the Web has changed the world, arguably becoming the most powerful communication _____ (10) the world has ever known. Whereas only roughly one-third of the people on the planet are _____ (11) using the Web (and the Web Foundation aims to accelerate this growth substantially), the Web has fundamentally _____ (12) the way we teach and learn, buy and sell, inform and are informed, agree and disagree, share and collaborate, meet and love, and tackle problems ranging from putting food on our tables to curing cancer.

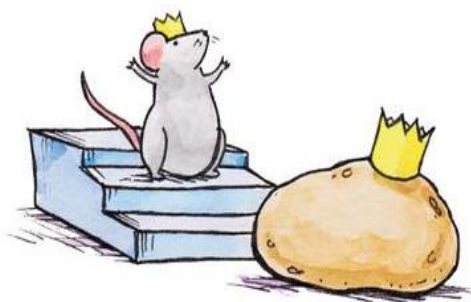
2. a) Look through the idioms and sayings describing people. Try to explain each one. Do you know any Ukrainian equivalents to them?

- bad egg
- behind the times
- big cheese
- born with a silver spoon in one's mouth
- fat cat
- eager beaver
- mouse potato
- straight as an arrow
- whiz kid



b) Read the definitions to the idioms listed above. Match the definitions with the idioms.

AND FINALLY THERE WAS PEACE
BETWEEN THE MOUSE
AND THE POTATO KINGDOMS...



... FOR NOW.

- 1) A person who has old-fashioned ideas and does not keep up with modern life in general.
- 2) A person who is born to a very rich family.
- 3) A rich and powerful person you disapprove of the way they use their money or power.
- 4) This term refers to a person who spends a lot of time in front of the computer.
- 5) Someone, usually young, who is very talented and successful at doing something.



6) Someone who is an untrustworthy person often involved in trouble.

7) Someone who is a morally upright person who is extremely honest.

8) A person who is hardworking and enthusiastic, sometimes considered overzealous.

9) This expression refers to a person who has a lot of power and influence in an organization.

c) Decide with your group mates whether:

1) You could match the listed above idioms with the famous personalities from the telecom field.

2) There is any idiom which can describe your personality.

✍ WRITING

Write a short report (100-120 words) about the famous personality from the telecoms history who inspires you.

Please include to your report the following information:

- *Basic information about this person (Name, last name, century he/she lives/ed in).*
- *The reasons for admiring this person.*
- *The information about this person's achievements.*

💡 SPEAKING

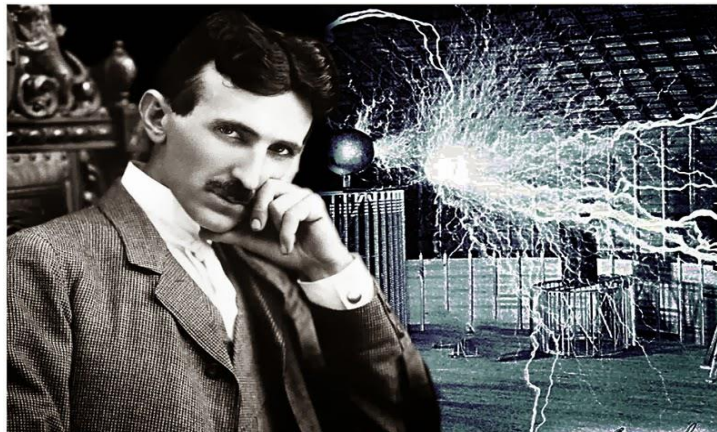
Tell your partner about the famous personality from the telecoms history who inspires you.

🔊 **LISTENING**

NIKOLA TESLA

I. Pre-watching activities.

1. Look at the picture. Do you recognize the person in it? What was he famous for?



2. Study the pictures of different inventions. Try to remember which of them belong to Nikola Tesla.

Discuss with your partner how these inventions influenced development of the modern telecoms.

3. Do you know any interesting facts about Nikola Tesla's life?

Find out:

Where and when he was born.

Where he spent his childhood.

What university he studied.

Share with your partner the information you know about this great inventor.

4. Read the words and expressions, make sure you know their meanings. If not, then look them up in a dictionary. Practise their pronunciation.

electromagnetism	Serbian	Croatia	chief electrician	induction
motor	alternating current	rotor	magnetic fields	asset
Tesla coil	direct current generators	wireless communication		the
fluorescent light	remote control	wireless telecommunications tower		
	obsessive-compulsive	disorder		

Taking into account the words in the table above can you predict Nikola Tesla's life story.

II. While-watching activities.

1. Watch the video "Nikola Tesla Biography" (Video file 4.1 or go to <https://www.youtube.com/watch?v=g1UV8FGnToo>) and find out what the most crucial events happened in his life. Take notes on:

1) Tesla's contribution	<i>the field of electromagnetism and the development of commercial electricity</i>
2) Tesla was born	
3) Study	
4) Tesla's first employment	
5) Work for the Continental Edison Company in Paris	
6) Tesla arrived in New York City	
7) The Tesla electric light and manufacturing company	
8) The Tesla coil	
9) The US military in Colorado Springs	
10) A wireless telecommunications tower	

2. Watch the video again and find out what events happened in the stated years. The first one has been done for you.

1881	<i>Tesla became chief electrician of the company and contributed to the development of the country's first telephone system</i>
1882	
1884	
1885	
1886	
1888	
1891	
1899 - 1900	

3. Watch the video once more and make a list of the inventions made by Nikola Tesla. Some of them have been done for you.

He developed a practical induction motor which is a type of AC or alternating current motor.

He supplies power to the rotor by means of electromagnetic induction.

III. Follow-up activities.

Make a short presentation or a report about any scientist you admire. Include the information on the most interesting events in his/her life, important scientific discoveries made by him/her.

SELF-ASSESSMENT

UNIT 4

Choose the appropriate word to fill in the sentences below.

- 1 Nikola Tesla made a great ... in the development of modern electrical devices.
a) contributing b) contribution c) contribute
- 2 If you spend all your time in from of a computer you'll be the real
a) coach potato b) coach tomato c) mouse potato
- 3 There are two types of electrical currents: ... and direct.
a) alternating b) alternative c) alternate
- 4 ... communication allows people communication without cords.
a) Corded b) Wired c) Wireless
- 5 The theory of magnetic ... must be studied in this university.
a) curves b) fields c) poles
- 6 Nowadays to change the TV channel you only need to press a button on your
a) remote control b) remote access c) distant control
- 7 Operation system is a set of ... that controls the overall operation of a computer.
a) program b) software c) hardware
- 8 Tim Berners Lee is a highly- ... scientist.
a) recognize b) recognizing c) recognized
- 9 One of the uses of ... languages is to create OS.
a) program b) programmer c) programming
- 10 Charles Babbage drew ... plans for the first programmable computer.
a) on b) up c) back
- 11 Computers are used nowadays for many different
a) purposes b) goal c) objectives
- 12 Due to the talented inventors now we can ... digital era.
a) experience b) survive c) watch
- 13 Steve Wozniak made a lot of ... in the development of the Apple Corporation.
a) achievements b) devices c) stuff
- 14 ... may be described as physical components of computers.
a) Software b) OS c) Hardware
- 15 The application programs have become more ... nowadays.
a) recognized b) talented c) complicated

GRAMMAR SUPPLEMENT

🔔 GRAMMAR 1. Countable / uncountable nouns (some, any, no).

First study **APPENDIX 1**, then practise the exercises below.

Ex. 1. Write down countable/uncountable nouns into the correct column.

The first has been done for you.

~~information~~; assignment; enrolment; research; scholarship; training; ~~course~~; semester; leisure; improvement; equipment; examination; progress; academic paper; program; knowledge; advice; intelligence; schedule; faculty; department; communication; homework; attention; campus; technology; device; curriculum; education; graduation; assessment; content

Countable	Uncountable
course	information

Ex.2. Form pairs of synonyms. One should be countable another one uncountable. *The first pair has been done for you.*

academic — paper; training/education; assignment; knowledge; device; recommendation; progress; gadget; ~~research~~; course; software; equipment; fact; technology; homework; improvement; advice; program

Countable	Uncountable
academic paper	research

Ex. 3. Write down plural form of the irregular nouns below. The first has been done for you.

syllabus – <i>syllabi</i>
thesis –
curriculum –
datum –
analysis –
emphasis –
hypothesis –
appendix –
index –
criterion –
phenomenon –
formula –
symposium –
nucleus –
radius –
half –
basis –
matrix –
antenna –
medium –

Ex. 4. Translate into English. Pay attention to singular and plural forms of some nouns. Make up a sentence with each word. The first has been done for you. Example: The *enrolment* of the university in 1907-1908 was 636 students.

зарахування (до університету) – *enrolment*

розклад (занять) –	антени –
знання –	засоби –
критерії –	симпозіуми –
тези –	ядро –
оцінювання –	навчальні плани –
дані –	основи –
радіуси –	стипендія –
обладнання –	формули –
матриці –	дослідження –
завдання –	коефіцієнти –

Ex. 5. Fill in the quotes with the correct noun from the box below. *The first has been done for you.*

phenomena; intelligence; antenna; technology; progress; data; education;
criteria; information; media; analysis; knowledge; education

1. Everybody gets so much information all day long that they lose their common sense.
2. _____ plus character is the goal of true _____.
3. The science of today is the _____ of tomorrow.
4. The world is full of strange _____ that cannot be explained by the laws of logic or science.
5. _____ is a treasure, but practice is the key to it.
6. You can have _____ without information, but you cannot have _____ without data.
7. Curiosity begins as an act of tearing to pieces or _____.
8. All _____ means war with society.
9. I am like a TV _____. I catch everything that is in the air, and then I do it my way.
10. Information imposes certain _____ on how it can be stored.
11. Smart phones and social _____ expand our universe. We can connect with others or collect information easier and faster than ever.

Ex. 6. Fill in the gaps with some, any, no.

1. Would you like me to search for _____ information about software control?
2. There are _____ communications that are conducted face to face.
3. There are _____ technology shortcuts to good education.
4. There aren't _____ available channels to transmit or receive data.
5. The hard drive is almost full. There is _____ space left to download this file.
6. Do you know _____ formulas that can help me in my research?

7. If there is _____ struggle, there is _____ progress.
8. Could you give me _____ basic knowledge as for high-capacity digital radio communication systems?
9. Is there _____ improvement in the educational system in your country?
10. There are _____ antivirus programs in my operating system.

Ex. 7. Translate the sentences into Ukrainian.

1. If there is no signal you will not be able to connect to the Internet.
2. You can check your computer for viruses in case if some programs are infected with them.
3. Microsoft hasn't developed any new intelligent devices yet.
4. There are no algorithms that this receiver can execute within a very short period of time.
5. Is there any 4G mobile network in your city?
6. Some applications of the next generation phones will be very useful, one of them is an X-Ray device that reveals information about any location at which you point your phone.

Ex. 8. Translate the sentences into English (use some, any, no).

1. Чи ви чули якісь новини про технологічні інновації в сфері телекомунікацій?
2. Деякі гаджети працюють без жодних проблем. Саме тому ніяких змін не повинно бути зроблено, щоб переробити їх.
3. Існують рекомендації щодо того, як удосконалити цю освітню програму.
4. Ніяке програмне забезпечення не працює без апаратного забезпечення.
5. Дайте мені кілька порад про те, як написати інформативну тезу!
6. Чи є який-небудь прогрес у цьому дослідженні? Компанія не має грошей, щоб його фінансувати.

🔔 **GRAMMAR 2. There + to be (is, are, was, were, will be).**

First study **APPENDIX 2**, then do the exercises below.

Ex. 1. Fill in the table. Write down the correct form of the grammatical structure There + to be. Some have been done for you.

Types of sen-ces	#	Present Indefinite	Past Indefinite	Future Indefinite	Present Perfect	Past Perfect
Affirmative (Positive)	Sing.	<i>There is</i>				
	Pl.					
Interrogative (Question)	Sing.					
	Pl.		<i>Were there...?</i>			
Negative	Sing.			<i>There will be no</i>		
	Pl.					

Ex. 2. Transform the sentences (negative into affirmative; affirmative ⇒ negative; questions ⇒ affirmative; affirmative ⇒ questions). Use some, any, no if possible. The one has been done for you.

E. g: There was **no** antenna installed in my apartment yesterday.

*There was **an** antenna installed in my apartment yesterday.*

1. Has there been any progress in your research paper lately?
2. Soon there will be some new technologies in Japan that will substitute human workers in such spheres of life as cleaning, selling and taxi driving.
3. There have been new courses added to the curriculum.
4. There will be certain criteria described in the course outline according to which students will be graded.
5. Are there any old matrices that should be replaced by the new ones?

6. There is no bigger source of information than the World Web.

Ex. 3. Put the words in the right order to make sentences. *The one has been done for you.*

E. g: there / English / some / of / that / can / use / pieces / we / our / useful / lessons / are / equipment / during.

There are some useful pieces of equipment that we can use during our English lessons.

1) there / be / interesting / any / discussed / in / media / will / phenomenon / the?

2) data / was / there / luck / analyzing / any / the / in?

3) introduced / has / planet / one / been / extraterrestrial / hypothesis / recently / Earth / had / that / there / technology / been / to / by / creatures / brought.

4) University / has / a / been / enrolment / drastic / there / of / to / drop / recently / our / student.

5) has / no / attention / day / some / paid / to / the / there / that / students / been / face / problems / every.

6) dramatic / telephone / there / been / in / have / communication / changes.

Ex. 4. Translate the sentences into English. Use grammatical structure **There + to be. *The one has been done for you.***

E. g. У нього не було причини кидати навчання.

There was no reason for him to drop out of college.

1. Чи є таке завдання яке б ти не зміг виконати?

2. Будуть нові інтерактивні інновації, які піднімуть людське життя на вищий рівень існування.

3. Чи буде у нього шанс витримати цю кризу?

4. Існує три конкуруючих стандарти у галузі цифрового телевізійного мовлення .

5. Чи існує унікальна адреса у комп'ютері, підключеному до Інтернету, яка може бути використана іншими комп'ютерами для того, щоб направити інформацію до неї?

6. Існує зростаюче занепокоєння щодо нерівноправного доступу до телекомунікаційних послуг серед різних країнах світу - це відомо як "цифрова нерівність".

Ex. 5. Make interrogative and negative sentences. Use both any and no Indefinite Pronouns in the negative sentence. The first has been done for you.

E. g. There had been competitors to ATM, such as Multiprotocol Label Switching (MPLS), that performed a similar task and were expected to supplant ATM in the future.

a) ***Had there been any*** competitors to ATM, such as Multiprotocol Label Switching (MPLS), that performed a similar task and were expected to supplant ATM in the future?

b) ***There hadn't been any*** competitors to ATM that performed a similar task and were expected to supplant ATM in the future.

c) ***There had been no*** competitors to ATM that performed a similar task and were expected to supplant ATM in the future.

1. There have already been new combinations of phase-shift keying and amplitude-shift keying that were used in high-capacity digital radio communication systems.

2. There will be more advanced analog communication systems and digital communication systems in the future.

3. There are several different modulation schemes available to achieve this with the help of amplitude modulation (AM) and frequency modulation (FM).

4. There have been three standards in use for broadcasting color TV.

5. There are analog communication systems and digital communication systems.

Ex. 6. Choose any quote you like and write down an essay (100-120 words). Use countable / uncountable words from this unit, grammatical structure There + to be, Indefinite Pronouns (some, any, no).

- “Technology has the shelf life of a banana.”
- “It has become appallingly obvious that our technology has exceeded our humanity.”
- “Any sufficiently advanced technology is equivalent to magic.”
- “Ethics has been changed with technology.”
- “So much technology, so little talent.”
- “Technology is a useful servant but a dangerous master.”
- “Education is a progressive discovery of our own ignorance.”
- “Education makes people easy to lead but difficult to drive: easy to govern, but impossible to enslave.”

🔔 GRAMMAR 3. ARTICLES.

First study **APPENDIX 3**, then do the exercises below.

Ex. 1. Decide which category of words is used with *a (an), the, no* article.

Complete the table. *The first one is done for you.*

	Specific	Non-Specific	Generic In general
Count Singular	<i>The</i>		*
Count Plural			*
Non-count			

Ex. 2. Put the words into the right box according to the use of articles. *The first word has been done for you.*

Exam, university, institute, mark, error, European Union, book-worn, information, Knowledge Square, Peremohy (Victory) avenue, center of, work, job, most successful, "Kyiv Polytechnica" newspaper, Ukraine, USA, Suez Canal, entire, Dnipro, most people, United Nations, East, English, Ukrainian language, Prime Minister, Prince Charles, Safari, Titanic, Carpathian mountains, Hoverla, Earth, Moon, only person, equator, couple of, equipment, news, advice, knowledge, aircraft, Black Sea, World War II, college of arts and sciences, Harvard University, Canary Islands, fuel, iron, lot of, first, last, Sunday, Room 5, White House, Windsor Castle.

a	an	the	no
	<i>exam</i>		

Ex. 3. Read the sentences below. Fill in the gaps with a, an or no article. The first sentence has been done for you.

1. Does anyone have a cell phone? I need to make ___ emergency phone call.
2. Larry doesn't own ___ car. He rides ___ motorcycle to ___ University.
3. Is there ___ Internet cafe around here? I need to send ___ important email.
4. That company makes ___ app to let you instantly translate ___ things with ___ iPhone. That's ___ useful tool for ___ students.
5. Is this ___ phone number? It's really hard to read. Is that ___ "1" or ___ "7"?
6. "Photo" doesn't start with ___ "F"; it starts with ___ "P". And "write" starts with ___ "W", not ___ "R".
7. Sheriff works for ___ Egyptian company which specializes in ___ designing and maintaining telecommunications systems. He is going to ___ European conference next month to discuss ___ research on online services in North Africa.
8. I wanted to buy ___ new smartphone, but the salesman didn't have ___ information on the model I wanted. I need ___ help making ___ decision before I buy anything.

Ex. 4. Choose a, an or the for each blank below. The first one has been done for you.

1. A: What's wrong?
B: I have a bad headache.
2. A: Why was today's class cancelled?
B: Because ___ lecturer is sick.
3. A: What does he do?
B: He's ___ engineer.
4. A: What did Tom buy?
B: He bought ___ new camera.
5. A: How long does it take to get to the institute?
B: It takes about ___ hour.

6. A: Why can't you travel?

B: I don't have ___ passport.

7. A: Where does your group-mate live?

B: In ___ apartment on 5th Avenue.

8. A: I don't understand what "brain drain" means.

B: You need to buy ___ dictionary.

Ex. 5. Choose *the* or -- for "no article" for each blank below. The first one has been done for you.

1. Christy loves the English; it's one of her favorite languages.

2. The school teaches ___ blind people to read.

3. Louis Braille created a writing system to allow ___ blind to read.

4. The conference started at ___ noon and didn't finish until late in ___ evening.

We spent ___ whole time listening to boring speeches.

5. Did you know that ___ Austrians speak ___ German?

6. We visited ___ Niagara Falls while we were crossing the border between ___ Canada and ___ United States.

7. Dr. Arnold works at ___ Carnot Telecom Institute, that offers cutting-edge research.

8. The linguist specialized in ___ Arabic. She spent years studying local dialects in ___ Sahara Desert as well as in remote parts of ___ Middle East.

9. Unfortunately, ___ yesterday I had to spend ___ whole day studying for my Electrodynamics final. I think I did well on the test, but I won't know until ___ next week.

10. My cable television company has terrible customer service! I think ___ tomorrow, I'm going to call them up and cancel my service.

Ex. 6. Fill in the dialogue. Choose *a, an, the* or -- for “no article” for each blank below. The first sentence has been done for you.

A: I'm ***an*** operations engineer. I work for ***the*** Mobi telecommunication company in (/) Chicago. It is ___ world's leading product-testing / device-testing, validation and safety company. We work with ___ biggest technology brands in ___ world to ensure their products meet industry specifications. What do you do for ___ living?

B: I'm ___ professor at ___ Boston College. I used to work at ___ University of Arizona, but I recently decided to relocate back to ___ East Coast. I grew up in ___ Massachusetts, and I missed ___ ocean.

A: I have ___ friend who is ___ professor there, Dr. Michael Smart. Maybe you know him. He's in ___ computing department.

B: No, ___ name doesn't ring any bells. But I'm ___ professor of sociology, and ___ computing department is in ___ same building. What does he look like?

A: He's ___ tall redhead with ___ incredibly hilarious sense of humor. He's ___ funniest man you've ever met in your life. We both studied together at ___ Georgetown University.

B: Oh, of course! I met him at ___ university function ___ last year. He's ___ great scientist.

A: Wow, it's ___ small world, isn't it?

GRAMMAR 4. MANY/MUCH; FEW/LITTLE.

First study **APPENDIX 4**, then practise the exercises below.

Ex. 1. Put these nouns into the correct column. Pay attention to the type of sentence and plural forms of the noun.

improvement, program, time, industry, development, system, information,
satellite, money, computer, equipment, opportunity

Many (negative sentences, questions)	Much (negative sentences, questions)	A Lot Of (affirmative sentences)
<i>programs</i>	<i>improvement</i>	<i>programs improvement</i>

Make up affirmative, negative sentences and questions with the words above.

E.g. A lot of scientific programs need to be properly developed. (affirmative)

There is not much improvement in this field of study. (negative)

How many programs have been developed recently? (question)

Ex. 2. Make the opposite using few and little.

knowledge, energy, service, exam, progress, solution, accommodation, news,
software, education, work, network

<i>much knowledge</i>	<i>little knowledge</i>
<i>many services</i>	<i>few services</i>

Ex. 3. Correct the mistakes if needed.

*E.g. We don't have **many** software at the moment. (**much** software)*

1. I can't give you many information about the company.
2. I need few equipment for this project.
3. How many people are there in your office?
4. There isn't many development going on in the country.
5. There are only few opportunities for new graduates this year.
6. My son earns much money now.
7. I don't have many time to solve this problem.
8. There are only a few telephone networks in this country.

Ex. 4. Put many/much/a lot of/few/a few/ little/a little into the sentences.

*E.g. Don't use **a lot** where **a little** will do.*

1. I haven't heard news about recent events in Europe.
2. One must talk and listen
3. literature that students read at school is classical.
4. This year only colleagues of mine will get the promotion.
5. There is not time left for you to participate in multiple projects.
6. damage was done to the computer system.
7. How times did you change the password?
8. knowledge is a dangerous thing and when the citizens became better educated, they began to make choices that the government did not like.
9. There are three things which if one does not know, one cannot live long in the world: what is too for one, what is too for one, and what is just right for one.
10. If you have, give of your wealth; if you have, give of your heart.

Ex. 5. Translate into English using many/much/a lot of/few/a few/ little/a little.

*E.g. Я не можу вийти сьогодні ввечері, тому що у мене **багато** роботи.*

*I can't go out tonight because I've got **a lot of** work.*

1. Бідна людина не та, у якої мало, а та, яка потребує більшого.
2. У мене є трохи грошей, так що ми можемо піти в кіно.
3. Зала була майже порожня. Кілька людей були присутні в ній.
4. Вона пішла і повернулася через кілька хвилин.
5. Скільки приватних і громадських мереж є в вашому місті?
6. Я не можу купити цей дорогий телефон сьогодні. У мене дуже мало грошей.
7. Скільки вільного місця на цьому диску?
8. Яку кількість послуг і рішень може забезпечити ваша фірма?

Ex. 6. Choose a proverb and express your opinion. Write down 7-10 sentences.

1. Don't use a lot where a little will do.
2. One must talk little and listen much.
3. A poor person isn't he who has little, but he who needs a lot.
4. A truly wise person uses few words.
5. A little knowledge is a dangerous thing.

🔔 GRAMMAR 5. PAST TENSES (ACTIVE).

First study **APPENDIX 5 PAST TENSES (ACTIVE)**, then do the exercises below.

Ex. 1. Put the verbs in brackets in the *Past Simple* or *Past Continuous* form.

The first one has been done for you.

1. Prehistoric man relied (**rely**) on fire and smoke signals as well as drum messages to encode information over a limited geographic area.
2. The hydraulic semaphore _____ (**involve**) a network of identical containers on separate hills, each with a vertical rod which _____ (**float**) in it.
3. Using the maritime flag semaphore as a starting point, the Chappe brothers, two French inventors, _____ (**create**) the first optical telegraph system in 1790.
4. Inventor Thomas Alva Edison _____ (**make**) incredible strides in sound recording and transmission while he _____ (**design**) the first acoustic phonograph.
5. While Tesla _____ (**experiment**) with wireless transmission he _____ (**create**) a more efficient light bulb.
6. In 1896 Marconi **sent** his first long-distance wireless transmission when he **was working** on his own versions of wireless transmission of sound.

Ex. 2. Put the verbs in brackets in the *Past Simple* or *Past Perfect* form.

The first sentence has been done for you.

1. In 1880, Alexander Graham Bell took (**take**) the money he had received (**receive**) for successfully creating the telephone, set up (**set**) a lab and got (**get**) to work improving his invention.
2. In 1809, Thomas S. Sommering _____ (**propose**) a telegraphic system which he _____ (**compose**) of a battery, 35 wires and a group of sensors made of gold.

3. By the mid-1870s, the telegraph _____ **(become)** the “nervous system of commerce”, according to Western Union President William Orton.
4. In 1977 Illinois Bell _____ **(install)** the first cellular telephone network comprising 10 base stations (cells).
5. Fibre made the internet possible and, in turn, made instantaneous communication a commodity rather than expensive luxury that it _____ **(be)** throughout the 20th century.
6. Throughout his early life Charles Wheatstone _____ **(develop)** a keen experimental bent.

Ex. 3. Put the verbs in brackets in the *Past Simple* or *Past Perfect Continuous* form. The first sentence has been done for you.

1. Whilst Samuel B. Morse, Alfred Vail and Leonard Gale had been working **(work)** on their electrical telegraph since 1835, it was not until 1840 that they patented **(patent)** what is now known as the Morse Code.
2. Inventor Thomas Alva Edison _____ **(try)** to improve and finalize the model for the telephone for a long time when he _____ **(realize)** that by attaching a needle to the phonograph diaphragm and a tin-foil cylinder he could record and play back sounds.
3. Edison’s colleague, Tivadar Puskas, _____ **(experiment)** with telegraph exchanges until he _____ **(apply)** his thinking to the newly invented telephone.
4. Thomas Edison _____ **(experiment)** with the electrical transmission of sound for a long time until he _____ **(invent)** his own version of the telephone.
5. Alexander Graham Bell _____ **(try)** to figure out a way to transmit speech electronically until he successfully _____ **(invent)** the telephone in March of 1876.

6. Phillip T. Farnsworth _____ **(work)** on a method to transmit images until he _____ **(discover)** that you could encode radio waves with an image and then project them back onto the screen.

Ex. 4. Put the verbs in brackets in the *Past Perfect* or *Past Perfect Continuous* form. The first sentence has been done for you.

1. Samuel B. Morse had been working **(work)** on the idea of a recording telegraph with friends Alfred Vail and Leonard Gale for several years.

2. Wheastone and Cooke exploited the relatively new discovery which Michael Faraday _____ **(present)** as electro-magnetism.

3. Nikolo Tesla _____ **(work)** for Edison's company a year when he became famous in American business circles.

4. By the mid 1990s the Internet, thanks to the creation of the World-Wide-Web, _____ **(become)** a serious mass market communications medium and information resource.

5. Samuel B. Morse _____ **(demonstrate)** his apparatus by 1843.

6. People _____ **(use)** the fax machine for many years until the Internet was introduced.

Ex. 5. Choose the appropriate *past* form to fill in the sentences below. The first one has been done for you.

1. In 1876, while Alexander Graham Bell, a Scottish doctor, was working on a new type of telegraph he _____ a) _____ for his assistant, who was able to hear his voice over the wire.

a) called	b) was calling	c) had called	d) had been calling
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2. In 1895, a young Italian named Guglielmo Marconi invented what he called "the wireless telegraph" while he _____ in his parents' attic.

a) experimented	b) was experimenting	c) had experimented	d) had been experimenting
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3. In England in 1878, John Loggie Baird, a Scottish amateur scientist, successfully _____ the first TV picture, after years of work, in 1926, with his mechanical system.

a) transmitted	b) was transmitting	c) had transmitted	d) had been transmitting
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4. Young Edison _____ for months all through the Midwest, before finding a job with the Associated Press bureau news wire.

a) travelled	b) was travelling	c) had travelled	d) had been travelling
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5. By the mid 1940s, the number of television stations _____.

a) grew	b) was growing	c) had grown	d) had been growing
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6. Nobel laureate Ferdinand Braun _____ the cathode ray tube, the basis of all modern television cameras and receivers.

a) invented	b) was inventing	c) had invented	d) had been inventing
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7. One day Philo Farnsworth was inspired while he _____ in the fields among rows of vegetables.

a) worked	b) was working	c) had worked	d) had been working
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8. The students _____ "Fundamentals of Circles Theory" for two semesters before they passed the exam.

a) learned	b) was learning	c) had learned	d) had been learning
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9. Before the turn of the 20th century, Tesla _____ a powerful coil that was capable of generating high voltages and frequencies.

a) invented	b) was inventing	c) had invented	d) had been inventing
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10. Philo Farnsworth successfully _____ electronic television in San Francisco, in 1927.

a) demonstrated	b) was demonstrating	c) had demonstrated	d) had been demonstrating
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Ex. 6. Form negative sentences and questions using the sentences below drawing attention to the *past forms* (see *APPENDIX 5 past active*).

1. In 968 a Chinese inventor **created** a device called the 'thumtsein'.
2. Ukraine **was also developing** its international telecommunications networks, in the meantime.
3. By the mid 1990s the Internet **had become** a serious mass market communications medium and information resource.
4. People **had been using** the fax machine for many years until the Internet was introduced.

Ex. 7. Translate the sentences from *Ukrainian* into *English* using appropriate *past forms*.

1. У різні часи історії існували різні комунікаційні засоби.
2. До появи інтернету, впродовж декількох десятиліть, люди користувалися факс машиною для передачі й отримання повідомлень на значні відстані.
3. Коли ми проводили експеримент у лабораторії, то краще зрозуміли механізм передачі сигналу.
4. Студенти виконали декілька лабораторних робіт до того, як склали іспит.
5. В стародавні часи греки пересилали повідомлення з іменами переможців Олімпійських ігор до різних міст, використовуючи голубів.
6. До 1854 року, Джеймс Ліндсі продемонстрував передачу сигналу на значну відстань, використовуючи воду як джерело передачі.
7. Саме у той час, коли Олександр Белл брав участь у конкурсі на рішення проблеми ущільнення телеграфних ланцюгів, він відкрив ефект телефонування.
8. Антоніо Меуччі проводив експерименти впродовж кількох років, доки винайшов електрогенератор.
9. Ніколо Тесла прожив багато років у готелі Нью-Йоркер, доки не помер у 1943 році.
10. До 1900 року Ніколо Тесла запатентував понад 40 винаходів.

🔔 GRAMMAR 6. PAST TENSES (PASSIVE).

First study **APPENDIX 5 PAST TENSES (PASSIVE)** then do the exercises below.

Ex. 1. Fill in the sentences with *Past Simple* or *Past Continuous* forms. The first one has been done for you.

1. Homing pigeons were used (**use**) by Romans to report the outcomes of sporting events.
2. The oscillography _____ (**not operate**) that time because it _____ (**disconnect**).
3. In the 4th century BCE, the hydraulic semaphore _____ (**design**) in ancient Greece as a method of communication.
4. Robert Hooke noticed that at that moment the sound _____ (**transmit**) over the wire into the attached earpiece.
5. Long time ago signals _____ (**not send**) over a distance by means of special devices.
6. The data _____ (**process**) quickly because we had replaced the accelerator.

Ex. 2. Fill in the sentences with *Past Simple* or *Past Perfect* forms. The first one has been done for you.

1. The first radio telephone calls from the U.S. to Japan were first made (**make**) in 1934.
2. Robert Hooke discovered that sound _____ (**transmit**) over wire or string into an attached earpiece or mouthpiece.
3. By 1896, the telephone _____ (**introduce**) in all Swiss cantons.
4. An underwater cable from Tasmania to Victoria _____ (**not replace**) until 1869.
5. In 1867, the first dots and dashes _____ (**flash**) by signal lamps at sea.
6. Steve Jobs told that he _____ (**press**) to leave the company.

Ex. 5. Choose the appropriate *past* form to fill in the sentences below. The first one has been done for you.

1. Homing pigeons **b)** by Egyptians for military communications.

a) was used	b) were used	c) was being used	d) had been used
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2. The recipient of this signal waved a white kerchief to show that it _____.

a) was received	b) were received	c) was being received	d) had been received
-----------------	------------------	-----------------------	----------------------

3. While the satellite antenna _____ we were reading the instruction.

a) was installed	b) were installed	c) was being installed	d) had been installed
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4. An electrical telegraph _____ independently _____ and _____ in the United States in 1837 by Samuel Morse.

a) was developed and patented	b) were developed and patented	c) was being developed and patented	d) had been developed and patented
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5. More and more telecoms stations _____ over the country that time.

a) was constructed	b) were constructed	c) were being constructed	d) had been constructed
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6. The first radio-telephone service from the U.K. to the U.S. _____ by February of 1927.

a) was established	b) were established	c) were being established	d) had been established
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7. We suspected that our beacon signals _____ by the enemy at that moment.

a) was intercepted	b) were intercepted	c) were being intercepted	d) had been intercepted
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8. America's first telegram _____ by Morse on January 6, 1838, across two miles of wiring.

a) was sent	b) were sent	c) were being sent	d) had been sent
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9. The system wasn't working because the loudspeaker _____ wrongly _____.

a) was connected	b) were connected	c) was being connected	d) had been connected
------------------	-------------------	------------------------	-----------------------

10. While the mobile phone _____, we were repairing its cover.

a) was recharged	b) were recharged	c) was being recharged	d) had been recharged
------------------	-------------------	------------------------	-----------------------

Ex. 6. Form negative sentences and questions using the sentences below drawing attention to the *past forms* (see *APPENDIX 5 past passive*).

1. An electromagnetic telegraph **was created** by Baron Schilling in 1832.
2. More and more telecoms stations **were being constructed** over the country that time.
3. By 1968 the Australian telecommunications system **had been plugged** into the international telecommunications network.

Ex. 7. Translate the sentences from *Ukrainian* into *English* using appropriate *past passive forms*.

1. Свійські голуби використовувалися як засіб передачі інформації протягом століть різними культурами.
2. У середні віки, ланцюги маяків широко використовувалися на верхівках гір як засіб передачі сигналу.
3. До 1793 року перша фіксована система телеграфу між Ліллем та Парижем створена французьким інженером Клодом Шапе.
4. Перші механічні телефони були засновані на звуковій передачі через труби.
5. В той час, коли запускали перший комерційний електричний телеграф Сір Чарльз Вітстон та сір Вільям Кук не розглядали їхній пристрій, як новий.

6. Перший трансатлантичний телеграфний кабель було успішно прокладено 27 липня 1866, що дозволило вперше здійснити трансатлантичну телекомунікацію.
7. Версія телеграфу Самюеля Морзе безуспішно продемонстрували до того як перший комерційний електричний телеграф було відкрито 9 квітня 1839 року.
8. В той час, коли підключали осцилограф, в лабораторії зникло світло.
9. Вугільний мікрофон Томаса Едісона використовувався майже без змін до 1980 року.
10. Обробка сигналу проводилася вчора о цій годині.

COUNTABLE AND UNCOUNTABLE NOUNS

Nouns can be either **countable** or **uncountable**. **Countable nouns** (or **count nouns**) are those that refer to something that can be counted. They have both singular and plural forms (e.g. *cat/cats; woman/women; country/countries*). In the singular, they can be preceded by *a* or *an*. Most nouns come into this category.

A smaller number of nouns do not typically refer to things that can be counted and so they do not regularly have a plural form: these are known as **uncountable nouns** (or **mass nouns**). Examples include: *rain, flour, earth, wine, or wood*. Uncountable nouns can't be preceded by *a* or *an*. Many abstract nouns are typically uncountable, e.g. *happiness, truth, darkness, humour*.

Uncountable nouns tend to belong to one of the following categories:

<i>Liquids and Gases</i>	<i>Solid and Granular Substances</i>	<i>Energy Words and Forces</i>
<ul style="list-style-type: none"> • water • coffee • milk • air • oxygen 	<ul style="list-style-type: none"> • wood • metal • cheese • sand • rice 	<ul style="list-style-type: none"> • electricity • sunshine • radiation • heat • magnetism

<i>Subjects</i>	<i>Grouped Concepts</i>	<i>Information and Abstract Concepts</i>
<ul style="list-style-type: none"> • French • Chemistry • Economics • Science • Maths 	<ul style="list-style-type: none"> • fruit • money • food • vocabulary • news 	<ul style="list-style-type: none"> • information • advice • education • democracy • intelligence

	+	?	-
	some	any	no/not any
CN	<p style="text-align: center;">There are some books on the table.</p>	<p style="text-align: center;">Are there any books on the table?</p>	<p style="text-align: center;">There are no books on the table./There are not any books on the table.</p>
UN	<p style="text-align: center;">There is some water in the glass.</p>	<p style="text-align: center;">Is there any water in the glass?</p>	<p style="text-align: center;">There is no water in the glass./ There is not any water in the glass.</p>

THERE + TO BE

Types of sentences	#	Present Indefinite	Past Indefinite	Future Indefinite	Present Perfect	Past Perfect
Affirmative (Positive)	Sing.	There is	There was	There will be	There has been	There had been
	Pl.	There are	There were		There have been	
Interrogative (Question)	Sing.	Is there	Was there	Will there be	Has there been	Had there been
	Pl.	Are there	Were there		Have there been	
Negative	Sing.	There is no	There was no	There will be no	There has been no	There had been no
	Pl.	There are no	There were no		There have been no	

APPENDIX 3

a indefinite	an indefinite	the definite	no article
singular countable nouns	singular countable nouns	singular or plural nouns	uncountable nouns
before consonants	before vowels	before both consonants and vowels	before both consonants and vowels
not specifically known to the speaker or listener	not specifically known to the speaker or listener	specific object known to both the speaker and listener	general things abstract expressions
In front of professions <i>a teacher</i> <i>a manager</i>	In front of professions <i>an actress</i> <i>an architector</i>	When referring to a group of people by use of an adjective rather than a noun <i>the young</i> <i>the rich</i> <i>the unemployed</i> <i>the disabled</i>	
instead of <i>per</i> <i>once a month</i>	instead of <i>per</i> <i>60 km an hour</i>	Collection of states in a country <i>the United States</i> <i>the Philippines</i> <i>the Netherlands</i>	Countries, cities and streets <i>England</i> <i>London</i> <i>Kennedy blvd.</i>
		Rivers, Oceans, Seas, Groups of Mountains & Islands <i>the Dnipro</i> <i>the Atlantic Ocean</i> <i>the Red Sea</i> <i>the Carpathians</i> <i>the Hawaiian Islands</i>	The names of single mountains <i>Goverla Mountain</i>
		Ordinal numbers (1st,2nd,3rd) <i>the first chapter</i> <i>the third paragraph</i>	Cardinal numbers (1,2,3) <i>Chapter 1</i> <i>Room 15</i>
		Titles of People When a title is used without a name <i>the queen</i> <i>the professor</i>	Titles of People When a title is given with a name <i>Queen Elizabeth</i> <i>Professor Winston</i>

		<p>Schools</p> <p>When a school has "of" in its title <i>the University of London</i></p>	<p>Schools</p> <p>When a school does not have "of" in its title <i>Lincoln High School</i></p>
		<p>When referring to the <u>location</u> <i>The meeting is at the university.</i></p>	<p>When referring to an <u>activity</u> <i>I am going to university now.</i></p>
		<p>Unique Objects</p> <p><i>the sun</i> <i>the universe</i></p>	<p>In front of a company</p> <p><i>Cisco Systems</i> <i>Microsoft</i> <i>Facebook</i></p>
		<p>Part of a larger group</p> <p><i>None of the students</i></p>	
		<p>Proper names consisting of noun and / or adjective + noun</p> <p><i>the White House,</i> <i>the British Museum</i></p>	<p>Most places consisting of just the name of a person/place followed by a noun</p> <p><i>McDonald's,</i> <i>Buckingham Palace,</i> <i>Kennedy Airport,</i> <i>Cambridge University</i></p>
		<p>In hotel names and for newspapers</p> <p><i>the Sheraton</i> <i>the Times</i></p>	
		<p>For currencies</p> <p><i>the US dollar</i></p>	
		<p>Many forms of entertaining</p> <p><i>to the cinema/movies, the theatre,</i> <i>the circus, the ballet, or the opera.</i></p>	
		<p>The names of musical instruments</p> <p><i>I play the piano.</i></p>	
		<p>With parts of the body</p> <p><i>the head, the hand</i></p>	

Much - Many

A Lot Of - Lots Of

= a large quantity of something

Much and **Many** are mainly used in **negative sentences** and **questions**. They are **not** common in affirmative sentences though still possible. **Much** is used with **uncountable nouns**. **Many** is used with **plural countable nouns**.

MUCH

+ UNCOUNTABLE NOUNS

- I don't have **much** time.
- He doesn't need **much** money.
- Does it use **much** electricity?

MANY

+ PLURAL COUNTABLE NOUNS

- There aren't **many** chairs in the room.
- I don't have **many** friends.
- Do you think **many** people will go?

With **affirmative sentences**, we prefer **a lot of** instead of **much/many**. **A lot of / lots of** are **not** common in negative sentences or questions. **A lot of** can be used with **countable nouns** and **uncountable nouns**.
a lot of = lots of

A LOT OF

+ UNCOUNTABLE NOUNS

- I need **a lot of** coffee.
(= I need **lots of** coffee.)
- There is **a lot of** traffic today.

A LOT OF

+ PLURAL COUNTABLE NOUNS

- She has **a lot of** friends.
(= She has **lots of** friends.)
- There are **a lot of** cars on the street.

Few - Little

A Few - A little

= a small quantity; a small amount

FEW + Plural Countable Nouns

A FEW + Plural Countable Nouns

LITTLE + Uncountable Nouns

A LITTLE + Uncountable Nouns

= **not many**; not enough; nearly no ...

= **some**; a small amount

= **not much**; not enough; nearly no ...

= **some**; a small amount

FEW = NOT MANY

(FEW normally conveys a negative idea)

- He has **few** good friends.
(negative idea - not enough)
- **Few** people went to the concert.
- There are **few** honest politicians.

LITTLE = NOT MUCH

(LITTLE normally conveys a negative idea)

- There was **little** time to finish it.
(negative idea - nearly no time)
- He has **little** patience with others.
- They have **little** money to spend.

A FEW = SOME (a small amount)

(A FEW normally conveys a positive idea)

- He has **a few** friends that will help.
(positive idea - a small amount)
- I have **a few** days off next month.
- She has won **a few** awards.

A LITTLE = SOME (a small amount)

(A LITTLE normally conveys a positive idea)

- I have **a little** milk you can use.
(positive idea - a small amount)
- She has **a little** time to relax now.
- I have earned **a little** extra money.

PAST TENSES

ACTIVE	TIME EXPRESSIONS	PASSIVE
PAST SIMPLE		
V-ed or (2-nd form ir.) We learned (learnt) English Did we learn English? We didn't learn English	<i>yesterday</i> <i>ago</i> <i>in 2015</i> <i>on Sunday</i> <i>last week</i>	was, were + V-ed or (3-rd form ir.) English was learned (learnt) Was English learned (learnt)? English wasn't learned (learnt)
PAST CONTINUOUS		
was, were + V-ing We were learning English Were we learning English? We weren't learning English	<i>at 5 o'clock</i> <i>when</i> <i>while</i>	was, were + being + V-ed (3-rd form ir.) English was being learned (learnt) Was English being learned (learnt)? English wasn't being learned (learnt)
PAST PERFECT SIMPLE		
had + V-ed (3-rd form ir.) We had learned (learnt) English Had we learned (learnt) English? We hadn't learned (learnt) English	<i>before</i> <i>by the time</i>	had + been + V-ed (3-rd form ir.) English had been learned (learnt) Had English been learned (learnt) English hadn't been learned (learnt)
PAST PERFECT CONTINUOUS		
had + been + V-ing We had been learning English Had we been learning English? We hadn't been learning English	<i>for, since</i> <i>how long</i> <i>all day</i> <i>before</i> <i>by</i>	-

THE USE OF PAST TENSES

PAST SIMPLE	PAST CONTINUOUS	PAST PERFECT SIMPLE	PAST PERFECT CONTINUOUS
<p>is used:</p> <p>1 to express a finished time (action) in the past (<i>yesterday, ten minutes ago, in 1985, when I was a child</i>)</p>	<p>is used:</p> <p>1 to express an action which was in progress at a stated time in the past. <i>At 3 o'clock yesterday afternoon he was learning English.</i></p>	<p>is used:</p> <p>1 to express an action which happened in the past before another past action. The action which happened earlier in the past is in the Past Perfect Simple, & the action which happened later is in the Past Simple. <i>He had done his assignment before he left.</i></p>	<p>is used:</p> <p>1 to show that something started in the past and continued up until another time in the past. <i>She had been working at that company for three years when it went out of business.</i></p>
<p>2 to say that one thing happened after another <i>I came into the room, took off my coat and sat down on the chair.</i></p>	<p>2 for a past action which was in progress when another action interrupted it <i>The students were doing a lab work when the Professor came.</i></p>	<p>2 for an action which happened before a stated time in the past <i>They have completed all the tasks by five o'clock.</i></p>	<p>2 to show cause and effect <i>The students failed the final test because they had not been attending classes.</i></p>
<p>3 to express frequent activities in the past <i>When I was a child I used to go to the Black Sea.</i></p>	<p>3 for two or more actions which were happening at the same time in the past (simultaneous actions) <i>We were collecting data while the technician was repairing the equipment.</i></p>	<p>3 as the past equivalent of the Present Perfect Simple. That is, we use the Past Perfect Simple for an action which started & finished in the past, but we use the Present Perfect Simple for an action which started in the past & finished in the present <i>Jill wasn't at home. She had gone out.</i></p>	
<p>4 to ask When...? or What time...? (not Present Perfect) <i>When did she arrive?</i> <i>What time did you finish work?</i></p>	<p>4 to give the background information in a story <i>The sun was shining & the birds were singing.</i></p>		
<p>5 to talk about people who are no longer alive <i>Nikolo Tesla patented more than 100 inventions.</i></p>			

ROLE PLAY

Activity	Role play
Topic of the Lesson	<i>University</i>
Semester	1
Aims	Asking for and giving information, describing
Skills	Writing, speaking
Type	Communicative, receptive-productive
Instruction	This summer in England you have got acquainted with new friends. One of them is a student from Oxford University. His name is John and he is the second-year-student. You are a student of the NTUU "KPI". Ask each other about the life in Universities. Act the conversation. Use role and cue cards.
Level	Intermediate/advanced
Organisation	Individuals, pairs
Interaction	Student, student ↔ student
Preparation	A handout per student
Time	15–20 minutes
Procedure	<p><i>Step 1:</i> The teacher outlines the task.</p> <p><i>Step 2:</i> Each student receives a copy of role and cue cards.</p> <p><i>Step 3:</i> The students write questions and answers.</p> <p><i>Step 4:</i> The students role play the dialogue.</p>
Control	Teacher

A

Ask your partner the questions about Oxford University:

- 1) about the history of Oxford
- 2) about quantity of colleges
- 3) about the structure and organization of colleges
- 4) about notable scientists of Oxford University
- 5) about teaching
- 6) about the most well-known and oldest clubs and societies
- 7) about the department where your friend studies
- 8) about the degree course that your friend takes at Oxford

Here are the answers to your partner's questions:

- 1) On August 31 1898, the order of the Russian Emperor Nicolai II on the opening of Kyiv Polytechnic Institute was proclaimed. Four Colleges: Mechanical (109 students), Engineering (101 students), Agricultural (87 students) and Chemical (63 students). Professor V.L. Kirpichov, an outstanding scientist in the field of mechanics and strength of materials.
- 2) The Civil Engineering Institute, the Technological Institute of Light and Food Industry, the Institute of Civil Aviation, the Automobile and Road Building Institute, the Agricultural Institute.
- 3) 68 specialities and 70 specializations
- 4) E.O. Paton, the founder of electric welding; M.L. Konovalov, a well-known chemist; L.P. Bardin, the greatest metallurgist in the country; A.M. Liulka, the chief of aeroplane engines and S.P. Korolyov, the great designer of spaceships. President of the First Examining Board in chemical faculty was D.I. Mendelejev.
- 5) Training of full-time students lasts 5 years and 6 months, of tuition by correspondence – 5 years 10 months.
- 6) Physics and Technology Institute
- 7) Applied Mathematics/Applied Physics/Information security

B

Here are the answers to your partner's questions:

- 1) Oxford – the oldest university in Europe; mentioned in the Anglo-Saxon Chronicle (911 A.D.); earliest charter is dated to 1213.
- 2) 38 colleges and 6 Permanent Private Halls of religious foundation.
- 3) Each college has its name, its coat of arms; governed by a Master; each college has a chapel, a dining hall, a library (total number of libraries – 102), rooms for undergraduates, the Master, for teaching purposes.
- 4) Robert Hooke, Robert Boyle, Albert Einstein, Erwin Schrödinger, Sir Timothy John "Tim" Berners-Lee (a British computer scientist, MIT professor and the inventor of the World Wide Web) and others.
- 5) Undergraduate teaching is centered on the tutorial (1–4 students spend an hour with an academic discussing their week's work); e.g. an essay (humanities, most social sciences, some mathematical, physical, and life sciences) or problem sheet (most mathematical, physical, and life sciences, and some social sciences). Students usually have one or two tutorials a week. Lectures, classes and seminars. Graduate students undertaking taught degrees are usually instructed through classes and seminars, though there is more focus upon individual research.
- 6) Oxford A.F.C.(association football club), Oxford University Boat Club (rowing club), Oxford University Cricket Club (Cricket team whose matches are accorded First Class Status.), Oxford University Newman Society (Catholic speaker and debating society), Oxford University Scientific Society, others.
- 7) The Department of Computer Science.
- 8) BA in Computer Science (CS). CS is about learning and understanding the mathematical, scientific, engineering principles underlying every kind of computing system, from mobile phones and the internet, via systems that interpret natural language, to the supercomputers that forecast tomorrow's weather or simulate the effects of disease on the human heart.

Ask your partner the questions about the KPI:

- 1) about the history of the KPI (date, colleges, rector)
- 2) about institutes that were organized on the KPI basis
- 3) about quantity of specialities and specializations
- 4) about famous scientists of the University
- 5) about training
- 6) about the institute where your friend studies
- 7) about the degree course that your friend takes at the KPI

The Evolution of Telecommunications

QUIZ

- 1 What kind of signals were used in Illiad in 1200 BC according to Homer?
a) fire signals b) smoke signals c) drums signals
- 2 What kind of birds were used to deliver letters in 700 BC – 300 BC ?
a) doves b) falcons c) vultures
- 3 The arrival of the Spanish Armada was announced with the ...
a) semaphore signals b) signal lights c) signal fires
- 4 The Chappe brothers established the first semaphore signals in ...
a) 1605 b) 1793 c) 1812
- 5 Who created an acoustic string telephone that conveyed sound over a taut extended wire by mechanical vibration in 1667?
a) William Spenser b) Thomas Moore c) Robert Hooke
- 6 Who was the first to publicly demonstrate the first telegraph in 1837?
a) Thomas Edison b) Samuel Morse c) Alexander Bain
- 7 In 1861 Johann Philipp Reis managed to transfer voice electrically over a distance of ... with his Reis telephone
a) 3000 m b) 560 km c) 340 feet
- 8 FAX was invented in 1843 by the Scottish physicist ...
a) Arch Joseph Cronin b) Alexander Bain c) Robert Hooke
- 9 Edwin T. Holmes of Boston began to sell burglar alarm in
a) 1858 b) 1900 c) 1958
- 10 Was Innocenzo Manzetti interested in patenting his “speaking telegraph”?
a) Yes, he was. b) No, he wasn’t c) I don’t know.
- 11 When was “@” invented by Giorgio Stabile?
a) 15 years ago b) 50 years ago c) 500 years ago
- 12 In 1865 Maxwell mathematically predicted the propagation of electromagnetic waves through ...
a) water b) solid materials c) space
- 13 The first ... telegraph line was successfully laid in 1866.
a) transsiberian b) transpacific c) transatlantic
- 14 Who invented multiplex telegraphy in 1870?
a) Henry Ericson b) Thomas Edison c) Hans Peterson
- 15 Who was the first to invent the telephone in 1876?
a) Charles Babbage b) James Gosling c) Alex. Gr. Bell
- 16 In 1884 Paul Nipkow obtained a patent in Germany for ... , using a selenium cell and a mechanical scanning disk.
a) TV b) radio c) telephone
- 17 Alexander Popov built one of the first radio receivers in ...
a) 1870 b) 1882 c) 1894
- 18 Who proved the existence of electromagnetic waves in 1887?
a) Heinrich Hertz b) Michael Faraday c) Samuel Morse

- 19 What inventor worked as a teacher at school for deaf children?
 a) Nicola Tesla b) Alex. Gr. Bell c) Thomas Edison
- 20 What did Marconi patent in 1896?
 a) semaphore b) light bulb c) wireless telegraph
- 21 Popular from the 1890s to the 1930s, the candlestick phone was separated
 Into ... pieces.
 a) three b) two c) four
- 22 What is the kind of phone , when to dial you would rotate the dial to the
 number you wanted and then release.
 a) rotary phone b) candlestick phone c) cellular phone
- 23 SCR – 194 and 195 were the first portable AM radios, what range did they
 have?
 a) 1-mile range b) 5-mile range c) 10-mile range
- 24 In 1942 Motorola produced the first
 a) " walkie talkie" b) "carrier talkie" c) "handie talkie"
- 25 The Turing machine was invented in
 a) 1936 b) 1965 c) 1946
- 26 Konrad Zuse's Z3 early computer worked
 a) in pair with Z2 b) in complete isolation c) with other computers
- 27 Hewlett-Packard's 200A Audio Oscillator was used for
 a) testing equipment b) connecting several c) providing service for
 for engineers networks customers
- 28 Harvard Mark-1, designed and built by IBM in 1944 was
 a) a flat-sized b) a box-sized c) a room-sized
- 29 In 1953 IBM shipped its first electronic computer, the 701. During three
 years of production they sold
 a) 6 machines b) 19 machines c) 105 machines
- 30 Ericson's Mobile System A (MTA) was the first ... automatic system for cars.
 a) partly b) fully c) combined
- 31 When did AT&T introduce Touch-Tone, which allowed phones to use a
 keypad to dial numbers and make phone calls?
 a) 1900 b) 1945 c) 1963
- 32 In which research center, in 1974 , did researchers design the first work
 station with built-in mouse for input ?
 a) IBM b) AT&T c) Xerox Palo Alto
- 33 The IBM 5100, the first portable computer was produced in
 a) 1953 b) 1961 c) 1975
- 34 In 1977 what device became an instant success with its printed circuit
 mother-board, switching power supply, keyboard, case assembly?
 a) Microsoft XP b) Android c) The Apple II
- 35 In what country was the first colour television introduced?
 a) in the UK b) in France c) in the USA

- 36 What kind of the first IBM computer “Acorn” was introduced in 1981?
a) supercomputer b) personal c) portable
- 37 Motorola’s Dyna TAC cellular phone was made available to the public, costing
a) \$4000 b) \$200 c) \$500
- 38 What is the first personal computer with a GUI, a drop-down menu & icon?
a) Ericsson’s Dyna b) Apple’s Lisa c) Motorola Simon
- 39 When did Microsoft announce Windows?
a) 1961 b) 1969 c) 1985
- 40 Who developed Hyper-Text Markup Language (HTML), giving rise to the WWW?
a) Tim Berners-Lee b) Howard Aiken c) Alan Turing
- 41 When did the term” Wi-Fi” become part of the computing language?
a) 1974 b) 1986 c) 1999
- 42 What brand of mobile phone was one of the first to allow picture messages?
a) Sumsung 312 b) Nokia 3210 c) Ericsson 603
- 43 What kind of camera phone offered a mere 0.1 megapixel resolution in 2000?
a) Canon b) Fujifilm c) Sharp
- 44 When did Steve Jobs introduce the Apple iPhone a revolutionary touchscreen smartphone?
a) 2007 b) 1999 c) 1991
- 45 Which company was the first to meet 4G standards for cellular phone, Running on the WiMAX network?
a) TeliaSonera b) Vodafone c) Sprint
- 46 The fifth Generation of Mobile Wireless Communication Network means:
a) All IP b) Voice and Data c) All Operators
- 47 Which system was based on beam-division multiple access and relay with group cooperation?
a) 5G b) 4G c) 3G
- 48 When did the UK Government announce the setting up of a 5G Innovation Centre at the University of Surrey?
a) 2000 b) 2012 c) 2005
- 49 What country does a telecom equipment vendor Huawei belong to?
a) Japan b) Korea c) China
- 50 When did NTT DoCoMo start testing 5G mobile networks with Alcatel Lucent, Ericsson, Fujitsu, NEC, Nokia and Samsung?
a) 2010 b) 2000 c) 2013

GLOSSARY

UNIT 1

<i>WORD/EXPRESSION</i>	<i>TRANSLATION</i>
academic facilities	університетське оснащення
acquire knowledge	отримувати знання
applicant	абітурієнт
assessment	атестація; оцінювання
boast	хвалитися
canteen	їдальня
consecration	посвячення у студенти
copycat	студент, який списує роботу у інших
curriculum	навчальна програма
dormitory	університетський гуртожиток
enrolment	зарахування
graduate employment rate	працевлаштування випускників
group monitor	староста групи
major in	спеціалізуватися
outpatient	амбулаторний
proof-reading	коректура; редагування
scholarship	стипендія
splitting of the atom	розщеплення ядра атома
substantial	суттєвий, істотний
volume	том

UNIT 2

<i>WORD/EXPRESSION</i>	<i>TRANSLATION</i>
advancement	просування; прогрес
analytical reasoning	аналітичне мислення
bidder	претендент
collaboration	співпраця
complaints	скарги
co-worker	колега
decision making	прийняття рішення
equipment	обладнання
ethical judgement	етичне судження (рішення)
fault	несправність; дефект
implement	виконувати; втілювати
installation	установка; монтаж
literally	буквально
maintain	підтримувати; обслуговувати
postpone	відкласти; відстрочувати
quantitative/applied technology	прикладні технології
require	вимагати
supervise	контролювати; наглядати
transmission	передання
troubleshooting	діагностування

UNIT 3

<i>WORD/EXPRESSION</i>	<i>TRANSLATION</i>
ancient	давній; старовинний
award	нагорода
breakthrough	прорив
broadcast	передавати; транслявати
courier	кур'єр; посланець
drums	барабани
establish	влаштувати; встановити
groundbreaking invention	новаторське; революційне відкриття
manual calculations	розрахунки вручну
means	засоби
optical fibre	оптоволокну
pigeon	голуб
pipe	труба
plowing fields	оранка поля
replacement	заміна; заміщення
rope	мотузка
satellite	супутник
semaphore	семафор
smoke	дим
stretch	розтягати

UNIT 4

<i>WORD/EXPRESSION</i>	<i>TRANSLATION</i>
accessible	доступний
alternating current	змінний струм
altered	змінений; видозмінений
asset	актив; надбання; перевага
boot up	завантажити
Conceive	обмірковувати; задумувати
Contribute	вносити; спрямовувати
direct current generator	генератор постійного струму
Disorder	розлад; безладдя; безпорядок
fluorescent light	флуоресцентне світло
induction motor	індукційний двигун
magnetic fields	магнітні поля
obsessive-compulsive disorder	обсесивно-компульсивний розлад («одержимість ідеєю»)
recognition	визнання
rotor	ротор
Setback	завада; перешкода; затримка
Submission	подання; представлення
surf the Internet	користуватися інтернетом; пошук в інтернеті
the Tesla coil	катушка Тесла
wireless communication	бездротовий зв'язок

Video scripts

1.1. Oxford vs Cambridge

00:03
Britain and Ireland have some of the
00:05
world's greatest centres of learning
00:06
over 50 universities in fact but I
00:12
propose the motion that Oxford is
00:14
Britain's best university
00:19
I oppose the motion on the grounds that
00:22
Cambridge is quite clearly Britain's
00:25
best university the Cambridge University
00:28
Press is the oldest printer and
00:30
publisher in the world and the biggest
00:32
academic press find it in the 11th
00:36
century Oxford was the first University
00:38
of Britain and then they built a better
00:41
one Oxford has 11 libraries and over 11
00:46
million volumes housed on a hundred and
00:48
20 miles of shelving which is why our
00:51
English Dictionary is the dictionary the
00:53
world uses we have the world's oldest
00:56
university Museum and 47 Nobel Prize
00:59
winners have studied or taught at Oxford
01:03
we have 161 Nobel Prizes a world record
01:08
and we have educated 15 British prime
01:12
ministers including Robert Walpole
01:14
Britain's first ever PM you may have had
01:17
the first but we've taught more 26
01:20
British Prime Minister's of India Oxford
01:22
including Margaret Thatcher Tony Blair
01:24
and the other Cameron is that a boast or
01:27
an apology
01:31
also the writers evening wall Lewis
01:34
Carroll Aldous Huxley Oscar Wilde jr.

01:36
art Okun and Graham Greene all studied
01:39
here we've had
01:44
Ian Foster samuel peeps and Nabokov JG
01:48
Ballard Iris Murdoch a a mil Douglas
01:50
Adams and Michael Crichton
01:55
the philosophers John Locke and Thomas
01:58
Hobbes have spent time at Oxford as have
02:00
scientific pioneers such as Albert
02:02
Einstein and Erwin Schrodinger well some
02:07
of the world's most important scientific
02:10
discoveries were made at Cambridge
02:11
including the electron and the splitting
02:14
of the atom cause of motion here and
02:16
Darwin wrote his theory of evolution we
02:21
educated Tim berners-lee inventor of the
02:24
world wide web we invented the world's
02:29
first computers and the webcam
02:39
well we taught the actors Hugh Grant
02:42
Kate Beckinsale Richard Burton and Ron
02:45
Atkinson and Monty Python's Michael
02:47
Palin and Terry Jones yeah what we talk
02:50
three pythons John Cleese Eric Idle and
02:53
Graham Chapman other people who
02:56
performed with the Cambridge Footlights
02:57
include Stephen Fry Emma Thompson and
03:00
Sasha Bam and we've one more boat races
03:04
I propose that the motion is tied agreed

2.1. Telecommunications Engineer

hello anybody there ah bad reception I
00:14
got no bars it's awful
00:16
telecommunications engineers they're
00:18

important they're the ones keeping us
00:19
all connected without them no internet
00:21
no radio no banking and no phones
00:24
imagine that so if your internet working
00:26
quite literally this could be the job
00:28
for you sir just to want that pen sir
00:31
yes please networks and systems are how
00:35
our daily lives are connected and as a
00:37
telecommunications engineer your job is
00:39
to plan design and build these networks
00:42
as well as analyze potential problems
00:44
and develop all sorts of software sound
00:46
complicated well that's why I'm here at
00:48
Bank West to talk to an expert
00:50
Richard hence our made good to meet you
00:53
nice to meet you
00:57
that's that that looks complicated
00:58
that's really question oh yeah but you
01:01
do but then you're a telecommunications
01:02
engineer sure hmm what is that tell me
01:04
about your career so I'm a network
01:05
engineer and I work for bankwest and we
01:07
build design and maintain all the
01:09
network infrastructure that connects all
01:11
your phones PCs and servers together all
01:13
right so what's like a typical day for
01:14
you what sort of jobs do you get up to
01:16
typical day is a normal office day
01:18
nine-to-five we do a mixture of project
01:21
and operational work so the project work
01:24
would be building new infrastructure new
01:26
projects you know the bank might require
01:28
a new technology to be implemented or a
01:31
new site to be built will design
01:33

instruction for that and then the
01:35
operational work would be resolving
01:36
faults that might occur hardware
01:38
failures capacity management making sure
01:40
that none of our networking structure
01:41
gets over utilized basically your job is
01:44
to connect people connect computers
01:46
connect phones make sure all those
01:47
connections are working properly right
01:49
that's right so all your phones PCs
01:51
servers connect now through the network
01:54
people like the most important person in
01:56
the world I mean my phone every day I
01:58
love you okay so how'd you get into it
02:00
in the first place so I had always had a
02:02
passion for technology like pulling
02:03
things apart investigating how they
02:05
worked I went through high school did my
02:07
TA get my doors opened in chemistry and
02:09
physics and maths end up going to go at
02:11
University and studying better
02:12
technology from there I developed a
02:14
passion for networking infrastructure so
02:16
I got exposed to it through University
02:18
and then I ended up landing a job a nice
02:21
play all right challenges what is
02:23
difficult about this job one of the
02:24
biggest challenges and one of the things
02:26
I love doing is getting presented with a
02:27
complex problem and resolving it with an
02:29
elegant solution okay time for the edge
02:31
questions here we go number one if I
02:33
want to become a telecommunications or a
02:35
network engineer auto accident so
02:36

there's two ways about it
02:37
you can go through university study some
02:39
science or some engineering or a common
02:41
way for people to enter this industry is
02:43
to go through your cisco certification
02:44
and become a CCNA what sort of person is
02:47
going to be best suited to doing what
02:49
you do you did a passion for technology
02:50
numberline most important thing and I
02:52
will see you through other than that you
02:54
need strong analytical skills they build
02:56
you work within a team and a passion to
02:58
keep learning throughout your career
02:59
cool and finally if you could got a
03:01
piece of advice when you first started
03:03
what do you wish that somebody had told
03:04
you so you have a passion for something
03:05
follow it wholeheartedly put your put
03:07
your career on it
03:08
it's going to
03:08
it's gonna reward you a down bidder so
03:10
if you have a bit of interest you go for
03:12
it that's right you hug that down am I
03:14
am i stuffing it up we're starting it up
03:16
did stuff it up Nancy Mary look I don't
03:20
need you anymore because the world has
03:22
moved on and telecommunications
03:23
engineers are keeping us all connected
03:25
and if this sounds like a career that
03:26
you could be into you need more
03:27
information whatever stage you're at in
03:29
your career you can get on the Career
03:30
Center website for investigation
03:32
exploration and planning your next step
03:34

so do you still want your page how are
03:36
you still working authorized by the
03:43
government of Western Australia Perth

3.1. The History of Telecommunications

what's the future of telecoms here's a
00:02
brief history of how it all started
00:04
once upon a time smoke signals were used
00:08
to communicate to neighboring villages
00:09
although if it was foggy that day nobody
00:12
could see a thing the carrier pigeon was
00:15
discovered whilst training pigeons in
00:17
Egypt they became so popular that one
00:19
pigeon went on to win an award yes a
00:21
pigeon won an award Samuel B Morse
00:25
discovered that you could send messages
00:27
through an electrical code system the
00:29
problem was you had to be able to read
00:31
code and if you couldn't you were pretty
00:33
much screwed when it came to the
00:36
electric telephone there were several
00:37
founders who all claimed to have
00:39
discovered it but Alexander Graham Bell
00:41
was the first to be awarded the patent
00:43
his friends thought it was a joke at
00:44
first but eventually they all phoned to
00:46
congratulate him farm boy Philip
00:49
Farnsworth drew inspiration from the
00:51
plowing fields to create what we now use
00:53
as a television but despite his
00:55
groundbreaking invention he only
00:57
actually appeared on the television once
00:58
as a mystery guest the digital computer
01:03
was a revolutionary breakthrough created
01:05
as a direct replacement for doing manual
01:07

calculations giving us more time to make
01:09
tea and fewer reasons to use our brains
01:12
the birth of the Internet revolutionised
01:15
telecoms and pioneered the way for
01:17
global communication over three decades
01:19
later we've become obsessed with the
01:21
thing and can't seem to function much
01:22
without it so what's your breakthrough
01:26
telecoms idea we'd like to know so we
01:28
can make a video about you get in touch
01:31
with us at boosting cocom

4.1. Nikola Tesla Biography

Nikola Tesla played an essential role in
00:17
the field of electromagnetism and
00:19
greatly contributed to the development
00:21
of commercial electricity Tesla was born
00:23
to Serbian parents in modern-day Croatia
00:25
in pursuit of an engineering career he
00:27
attended the Technical University of
00:29
Graz in Austria and later Charles
00:31
University in Prague Tesla's first
00:33
employment was at a telegraph
00:34
engineering office in Budapest Hungary
00:36
in 1881 he became chief electrician of
00:39
the company and contributed to the
00:41
development of the country's first
00:42
telephone system
00:43
Tesla went to work for the Continental
00:45
Edison Company in Paris in 1882 he
00:47
developed a practical induction motor
00:49
which is a type of AC or alternating
00:50
current motor the supplies power to the
00:53
rotor by means of electromagnetic
00:54
induction he built various devices that
00:57

utilized rotating magnetic fields the
00:59
principal element necessary for the
01:00
operation of the alternating current
01:02
motor in 1884 Tesla arrived in New York
01:05
City after being hired by Thomas Edison
01:07
he quickly became a crucial asset and
01:10
was presented with the opportunity to
01:11
improve Edison's direct current
01:12
generators in 1885 if George
01:15
Westinghouse brought the patent rights
01:16
to Tesla's polyphase system of
01:18
alternating current dynamos motors and
01:20
transformers the purchase initiated an
01:22
unprecedented power struggle between
01:24
Thomas Edison's direct current systems
01:25
and the Tesla Westinghouse alternating
01:28
current systems the Tesla electric light
01:30
and manufacturing company was formed in
01:32
1886 but investors ultimately disagreed
01:35
with Tesla's methods and he was removed
01:36
from his position and in 1888 he
01:38
presented his brushless alternating
01:40
current induction motor before the
01:41
American Institute of Electrical
01:42
Engineers he invented the Tesla coil in
01:45
1891 the Tesla coil is widely used today
01:48
in television and radio as well as other
01:50
electronic equipment for wireless
01:52
communication he became an American
01:54
citizen that same year Tesla produced
01:56
numerous electrical motors revolutionary
01:58
forms of generators and transformers as
02:00
well as a system of alternating current
02:02
power transmission he invented the
02:04

fluorescent light and became infatuated
02:05
with the wireless transmission of power
02:07
Tesla claimed to have created the
02:09
technology of remote control he
02:11
demonstrated a radio-controlled boat for
02:13
the US military in Colorado Springs
02:15
where Tesla lived from 1899 until early
02:18
1900 he experimented with methods to
02:20
transmit electrical power wirelessly
02:21
over long distances he proved the earth
02:24
could be used as a conductor and was
02:26
able to transfer energy to receiving
02:27

devices through longer
02:29
Juden or waves he produced artificial
02:31
lighting with some discharges up to 135
02:33
feet long after returning to New York he
02:36
designed a wireless telecommunications
02:38
tower which was constructed in Long
02:39
Island and later dismantled during World
02:41
War one it is thought that Nikola Tesla
02:43
may have suffered from
02:44
obsessive-compulsive disorder he became
02:47
a recluse in the last years of his life
02:48
and died alone in The New Yorker Hotel

ANSWER KEY
(GRAMMAR EXERCISES)

GRAMMAR 1. 🛎 Countable / uncountable nouns (some, any, no).

Ex. 1. Answers.

Countable	Uncountable
course	information
schedule	knowledge
curriculum	leisure
semester	enrolment
faculty	research
department	equipment
campus	progress
scholarship	training
examination	education
academic paper	communication
device	intelligence
assessment	graduation
improvement	advice
assignment	homework
program	technology
	attention
	content

Ex. 2. Answers.

Countable	Uncountable
academic paper	research
device	equipment
fact	knowledge
improvement	progress
course	training/education
recommendation	advice
assignment	homework
program	software
gadget	technology

Ex. 3. Answers.

syllabus – syllabi thesis – theses curriculum – curricula datum – data analysis – analyses emphasis – emphases hypothesis – hypotheses appendix – appendices index – indices criterion – criteria phenomenon – phenomena formula – formulae/formulas symposium – symposiums/symposia nucleus – nuclei radius – radii half – halves basis – bases matrix – matrices antenna – antennae medium – media	timetable; knowledge; criteria; theses; assessment; data; radii; equipment; matrices; assignment; antennae; media; symposiums/symposia; nucleus; (syllabus)/syllabi; (curricula); bases; scholarship; formulae/formulas; research; indices
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Ex. 5. Answers.

1. Everybody gets so much **information** all day long that they lose their common sense.
2. **Intelligence** plus character is the goal of true **education**.
3. The science of today is the **technology** of tomorrow.
4. The world is full of strange **phenomena** that cannot be explained by the laws of logic or science.
5. **Knowledge** is a treasure, but practice is the key to it.
6. You can have **data** without information, but you cannot have **information** without data.
7. Curiosity begins as an act of tearing to pieces or **analysis**.
8. All **progress** means war with society.
9. I am like a TV **antenna**. I catch everything that is in the air, and then I do it my way.
10. Information imposes certain **criteria** on how it can be stored.
11. Smart phones and social **media** expand our universe. We can connect with others or collect information easier and faster than ever.

Ex. 6. Answers.

1. Would you like me to search for **some** information about software control?
2. There are **some** communications that are conducted face to face.
3. There are **no** technology shortcuts to good education.
4. There aren't **any** available channels to transmit or receive data.
5. The hard drive is almost full. There is **no** space left to download this file.
6. Do you know **any** formulas that can help me in my research?
7. If there is **no** struggle, there is **no** progress.
8. Could you give me **some** basic knowledge as for high-capacity digital radio communication systems?
9. Is there **any** improvement in the educational system in your country?
10. There are **no** antivirus programs in my operating system.

Ex. 7. Answers.

1. Якщо немає сигналу Ви не зможете підключитися до Інтернету.
2. Ви можете перевірити свій комп'ютер на наявність вірусів у випадку, якщо деякі програми заразили їх.
3. Microsoft поки не розробив які-небудь нові інтелектуальні пристрої.
4. Немає алгоритмів, які б цей ресивер міг би виконати протягом дуже короткого періоду часу.
5. Чи є мобільна мережа 4G у вашому місті?
6. Деякі програми телефонів наступного покоління будуть дуже корисними, одна з них являє собою рентген, який показує інформацію про будь-яке місце, в яке ви направляєте свій телефон.

Ex. 8. Answers.

1. Have you heard any news about technological innovations in the sphere of telecommunication?
2. Some gadgets operate without any problems. That is why no changes should be made to alter them.
3. There are some recommendations on how to make some improvement in this educational program.
4. No machine can do the work of one extraordinary man.
5. Give me some advice on how to write an informative thesis!
6. Is there any progress in this research? The company doesn't have any money to finance it.

🔔 GRAMMAR 2. There + to be (is, are, was, were, will be).**Ex. 1. Answers.**

Types of sentences	#	Present Indefinite	Past Indefinite	Future Indefinite	Present Perfect	Past Perfect
Affirmative (Positive)	Sing.	There is	There was	There will be	There has been	There had been
	Pl.	There are	There were		There have been	
Interrogative (Question)	Sing.	Is there	Was there	Will there be	Has there been	Had there been
	Pl.	Are there	Were there		Have there been	
Negative	Sing.	There is no	There was no	There will be no	There has been no	There had been no
	Pl.	There are no	There were no		There have been no	

Ex. 2. Answers.

1. There has been some progress in your/my research paper lately.
2. There won't be any new technologies in Japan that will substitute human workers in such spheres of life as cleaning, selling and taxi driving.
3. There haven't been any new courses added to the curriculum/There have been no new courses added to the curriculum.
4. There won't be any certain criteria described in the course outline according to which students will be graded.
5. There are some old matrices that should be replaced by the new ones?
6. There is some bigger source of information than the World Web.

Ex. 3. Answers.

1. Will there be any interesting phenomenon discussed in the media?
2. Was there any luck in analyzing the data?
3. There has been one hypothesis introduced recently that technology had been brought to planet Earth by extraterrestrial creatures.
4. There has been a drastic drop of student enrolment to our University recently.
5. There has been no attention paid to the problems that some students face every day.
6. There have been dramatic changes in telephone communication.

Ex. 4. Answers.

1. Is there any assignment that you can't fulfill?
2. There will be some new interactive innovations that will bring human lives into higher level of existence.
3. Will there be any chance for him to endure this crisis?
4. There are three competing standards in digital television broadcasting.
5. Is there a unique IP address in any computer connected to the Internet that can be used by other computers to route information to it?
6. There is increasing worry about the inequitable access to telecommunication services amongst various countries of the world—this is known as the digital divide.

Ex. 5. Answers.

1. Have there already been new combinations of phase-shift keying and amplitude-shift keying that were used in high-capacity digital radio communication systems? / There haven't been any new combinations of phase-shift keying and amplitude-shift keying that were used in high-capacity digital radio communication systems. / There have been no new combinations of phase-shift keying and amplitude-shift keying that were used in high-capacity digital radio communication systems.
2. Will there be more advanced analog communication systems and digital communication systems in the future? / There won't be any advanced analog communication systems and digital communication systems in the future. / There will be no advanced analog communication systems and digital communication systems in the future.
3. Are there several different modulation schemes available to achieve this with the help of amplitude modulation (AM) and frequency modulation (FM)? There aren't any modulation schemes available to achieve this with the help of amplitude modulation (AM) and frequency modulation (FM). / There are no modulation schemes available to achieve this with the help of amplitude modulation (AM) and frequency modulation (FM).
4. Have there been any standards in use for broadcasting color TV? / There haven't been any standards in use for broadcasting color TV. / There have been no standards in use for broadcasting color TV.

5. Are there any analog communication systems and digital communication systems? / There aren't any analog communication systems and digital communication systems. / There are no analog communication systems and digital communication systems.

GRAMMAR 3. ARTICLES.

Ex. 1. Answers.

	Specific (This one, that one) (This/that group) Which one? Which ones?	Non-Specific Any one Any group One of many One of many groups	Generic In general
Count Singular	The apple The bird The child	An apple A bird A child	* *
Count Plural	The apples The birds The children	Some apples Some birds Some children	Apples Birds Children
Non-count	The water The information	Some water Some information	Water Information

Notes:

Specific articles are used with nouns which have been identified previously. (The speaker and the listener both know which thing/person/substance/idea is being referred to.)

- **The** teacher is coming up **the** stairs. (Both listener and speaker know which teacher and which stairs.) Give me **the** red shirt. (I know which one you are talking about.)

Non-specific articles are used with nouns that have not been identified previously (by *both* the speaker and the listener.) They are used with items that have not been singled-out yet. (Note: As soon as the items are identified, they require a specific article.)

- I want **a** candy bar. (Any candy bar will do.) Which one do you want? (Asking for specification) **The** one on the right. (I choose that one.) Give me **some** milk. (Any milk is fine.) I need **some** new shoes. (But I haven't decided which ones to buy yet.)
I bought **some** shoes at Valmart. (I know which shoes, but you don't.) These are **the** shoes that I bought. (Now we both know which ones.)

Non-count and *plural* nouns are used **without** articles in the *generic* sense.

- *Cats* are afraid of *dogs*. (in general) *Water* is necessary for *survival*.

*However, *singular count* nouns cannot stand alone in a sentence, so an article (usually *a* or *an*) is used.

Oranges contain Vitamin C. (generally)

Orange contains Vitamin C. (incorrect)

An orange contains Vitamin C. (okay)

	Specific	Non-Specific	Generic In general
Count Singular	The	An	*
Count Plural	The	no	no
Non-count	The	no	no

Ex. 2. Answers.

A	An	the	no
University, mark, book-worn, job, couple of, lot of,	Exam, institute, error,	European Union, Knowledge Square, center of, most successful, "Kyiv Polytechnica" newspaper, United Nations, East, Ukrainian language, Prime Minister, Safari, Titanic, Black Sea, Carpathian mountains, Earth, Moon, only person, equator, college of arts and sciences, Canary Islands, first, last, White House	information, Peremohy (Victory) avenue, work, English, Prince Charles, Hoverla, equipment, news, advice, knowledge, aircraft, World War II, Harvard University, fuel, iron, Sunday, Room 5, Windsor Castle.

Ex. 3. Answers.

1. Does anyone have **a** cell phone? I need to make **an** emergency phone call.
2. Larry doesn't own **a** car. He rides **a** motorcycle to work.
3. Is there **an** Internet cafe around here? I need to send **an** important email.
4. That company makes **an** app to let you instantly translate (/) things with **an** iPhone. That's **a** useful tool for **a** frequent traveler.
5. Is this **a** phone number? It's really hard to read. Is that **a** "1" or **a** "7"?
6. "Photo" doesn't start with (/) "F"; it starts with (/) "P". And "write" starts with (/) "W", not (/) "R".
7. Samir works for **an** Egyptian company which specializes in (/) information technology. He is going to **a** European conference next month to discuss (/) research on online sales in North Africa.
8. I wanted to buy **a** new smartphone, but the salesman didn't have (/) information on the model I wanted. I need (/) help making **a** decision before I buy anything.

Ex. 4. Answers.

1. A: What's wrong?
B: I have **a** bad headache.
2. A: Why was today's class cancelled?
B: Because **the** teacher is sick.
3. A: What does he do?
B: He's **an** engineer.
4. A: What did Tom buy?
B: He bought **a** new camera.
5. A: How long does it take to get to the institute?
B: It takes about **an** hour.
6. A: Why can't you travel?
B: I don't have **a** passport.
7. A: Where does your group-mate live?
B: In **an** apartment on 5th Avenue.
8. A: I don't understand what this word means.
B: You need to buy **a** dictionary.

Ex. 5. Answers.

1. Betty loves (/) Dutch; it's one of her favorite languages.
2. The school teaches (/) blind people to read.
3. Louis Braille created a writing system to allow **the** blind to read.
4. The conference started at (/) noon and didn't finish until late in **the** evening. We spent **the** whole time listening to boring speeches.
5. Did you know that (/) Austrians speak (/) German?
6. We visited (/) Niagara Falls while we were crossing the border between (/) Canada and **the** United States.
7. Dr. Arnold works at **the** Scripps Research Institute, a non-profit medical research facility.

8. The linguist specialized in (/) Arabic. She spent years studying local dialects in **the** Sahara Desert as well as in remote parts of **the** Middle East.
9. Unfortunately, (/) yesterday I had to spend **the** whole day studying for my biology final. I think I did well on the test, but I won't know until (/) next week.
10. My cable television company has terrible customer service! I think (/) tomorrow, I'm going to call them up and cancel my service.

Ex. 6. Answers.

A: A: I'm **an** operations engineer. I work for **a** telecommunication company in (/) Chicago. It is **the** world's leading product-testing / device-testing, validation and safety company. We work with **the** biggest technology brands in **the** world to ensure their products meet industry specifications. What do you do for **a** living?

B: I'm **a** professor at (/) Boston College. I used to work at **the** University of Arizona, but I recently decided to relocate back to **the** East Coast. I grew up in (/) Massachusetts, and I missed **the** ocean.

A: I have **a** friend who is **a** professor there, Dr. Gina Townsend. Maybe you know her. She's in **the** anthropology department.

B: No, **the** name doesn't ring any bells. But I'm **a** professor of sociology, and **the** anthropology department is in **the** same building. What does she look like?

A: She's **a** tall redhead with **an** incredibly hilarious sense of humor. She's **the** funniest woman you've ever met in your life. We both studied together at (/) Georgetown University.

B: Oh, of course! I met her at **a** university function (/) last year. She's **an** amazing woman.

A: Wow, it's **a** small world, isn't it?

🔔 GRAMMAR 4. MANY/MUCH; FEW/LITTLE.

Ex. 1. Answers.

Much (negative sentences, questions)	Many (negative sentences, questions)	A Lot Of (affirmative sentences)
improvement	programs	improvement, programs
Time	industries	time, industries
development	systems	development, systems
information	satellites	information, satellites
Money	computers	money, computers
Equipment	opportunities	equipment, opportunities

Ex. 2. Answers

much knowledge	little knowledge
many services	few services
many exams	few exams
much progress	little progress
many solutions	few solutions
much accommodation	little accommodation
much news	little news
much software	little software
many networks	few networks

Ex. 3. Answers.

1. I can't give you **much** information about the company.
2. I need **little** equipment for this project.
3. How many people are there in your office?
4. There isn't **much** development going on in the country.
5. There are only few opportunities for new graduates this year.
6. My son earns much money now.
7. I don't have **much** time to solve this problem.
8. There are only a few telephone networks in this country.

Ex. 4. Answers.

1. I haven't heard **much** news about recent events in Europe.
2. One must talk **little** and listen **much**.
3. **A lot of** literature that students read at school is classical.
4. This year only **a few** colleagues of mine will get the promotion.
5. There is not **much** time left for you to participate in multiple projects.
6. **A little** damage was done to the computer system.
7. How **many** times did you change the password?
8. **A little** knowledge is a dangerous thing and when the citizens became better educated, they began to make choices that the government did not like.
9. There are three things which if one does not know, one cannot live long in the world: what is too **much** for one, what is too **little** for one, and what is just right for one.
10. If you have **much**, give of your wealth; if you have **little**, give of your heart.

Ex. 5. Answers.

1. A poor person isn't he who has **little**, but he who needs a lot.
2. I have **a little** money, so we can go to the cinema.
3. The hall was almost empty. There were **few** people in it.
4. She left and returned in **a few** minutes.
5. How **many** private and public networks are there in your city?
6. I can't buy this expensive hat today. I have too **little** money.
7. How **much** space is available on this disc?
8. How **many** services and solutions can your firm provide?

🔔 GRAMMAR 5. PAST TENSES (ACTIVE).

Ex. 1. Answers.

1. Prehistoric man **relied** (rely) on fire and smoke signals as well as drum messages to encode information over a limited geographic area.
2. The hydraulic semaphore **involved** a network of identical containers on separate hills, each with a vertical rod which **was floating** in it.
3. Using the maritime flag semaphore as a starting point, the Chappe brothers, two French inventors, **created** the first optical telegraph system in 1790.
4. Inventor Thomas Alva Edison **made** incredible strides in sound recording and transmission while he **was designing** the first acoustic phonograph.
5. While Tesla **was experimenting** with wireless transmission he **created** a more efficient light bulb.
6. In 1896 Marconi **sent** his first long-distance wireless transmission when he **was working** on his own versions of wireless transmission of sound.

Ex. 2. Answers.

1. In 1880, Alexander Graham Bell **took** the money he **had received** for successfully creating the telephone, **set up** a lab and **got** to work improving his invention.
2. In 1809, Thomas S. Sommering **proposed** a telegraphic system which he **had composed** of a battery, 35 wires and a group of sensors made of gold.
3. By the mid-1870s, the telegraph **had become** the “nervous system of commerce”, according to Western Union President William Orton.
4. In 1977 Illinois Bell **installed** the first cellular telephone network comprising 10 base stations (cells).
5. Fibre made the internet possible and, in turn, made instantaneous communication a commodity rather than expensive luxury that it **had been** throughout the 20th century.
6. Throughout his early life Charles Wheatstone **had developed** a keen experimental bent.

Ex. 3. Answers.

1. Whilst Samuel B. Morse, Alfred Vail and Leonard Gale **had been working** on their electrical telegraph since 1835, it was not until 1840 that they **patented** what is now known as the Morse Code.
2. Inventor Thomas Alva Edison **had been trying** to improve and finalize the model for the telephone for a long time when he **realized** that by attaching a needle to the phonograph diaphragm and a tin-foil cylinder he could record and play back sounds.
3. Edison’s colleague, Tivadar Puskas, **had been experimenting** with telegraph exchanges until he **applied** his thinking to the newly invented telephone.
4. Thomas Edison **had been experimenting** with the electrical transmission of sound for a long time until he **invented** his own version of the telephone.
5. Alexander Graham Bell **had been trying** to figure out a way to transmit speech electronically until he successfully **invented** the telephone in March of 1876.
6. Phillip T. Farnsworth **had been working** on a method to transmit images until he **discovered** that you could encode radio waves with an image and then project them back onto the screen.

Ex. 4. Answers.

1. Samuel B. Morse **had been working** on the idea of a recording telegraph with friends Alfred Vail and Leonard Gale for several years.
2. Wheastone and Cooke exploited the relatively new discovery which Michael Faraday **had presented** as electro-magnetism.

- Nikolo Tesla **had been working** for Edison's company a year when he became famous in American business circles.
- By the mid 1990s the Internet, thanks to the creation of the World-Wide-Web, **had become** a serious mass market communications medium and information resource.
- Samuel B. Morse **had demonstrated** his apparatus by 1843.
- People **had been using** the fax machine for many years until the Internet was introduced.

Ex. 5. Answers.

1. a) 2. b) was experimenting 3. a) transmitted	4. d) had been travelling 5. c) had grown 6. a) invented	7. b) was working 8. d) had been learning	9. c) had invented 10. a) demonstrated
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Ex. 7. Answers.

- У різні часи історії існували різні комунікаційні засоби.
- До появи інтернету, впродовж декількох десятиліть, люди користувалися факс машиною для передачі й отримання повідомлень на значні відстані.
- Коли ми проводили експеримент у лабораторії, то краще зрозуміли механізм передачі сигналу.
- Студенти виконали декілька лабораторних робіт до того, як склали іспит.
- В стародавні часи греки пересилали повідомлення з іменами переможців Олімпійських ігор до різних міст, використовуючи голубів.
- До 1854 року, Джеймс Ліндсі продемонстрував передачу сигналу на значну відстань, використовуючи воду як джерело передачі.
- Саме у той час, коли Олександр Белл брав участь у конкурсі на рішення проблеми ущільнення телеграфних ланцюгів, він відкрив ефект телефонування.
- Антоніо Меуччі проводив експерименти впродовж кількох років, допоки винайшов електрогенератор.
- Ніколо Тесла прожив багато років у готелі Нью-Йоркер, допоки не помер у 1943 році.
- До 1900 року Ніколо Тесла запатентував понад 40 винаходів.

GRAMMAR 6. PAST TENSES (PASSIVE).

Ex. 1. Answers.

- Homing pigeons **were used** by Romans to report the outcomes of sporting events.
- The oscillography **wasn't being operated** that time because it **was disconnected**.
- In the 4th century BCE, the hydraulic semaphore **was designed** in ancient Greece as a method of communication.
- Robert Hooke noticed that at that moment the sound **was being transmitted** over the wire into the attached earpiece.
- Long time ago signals **weren't sent** over a distance by means of special devices.
- The data **were being processed** quickly because we had replaced the accelerator.

Ex. 2. Answers.

- The first radio telephone calls from the U.S. to Japan **were** first **made** in 1934.
- Robert Hooke discovered that sound **was transmitted** over wire or string into an attached earpiece or mouthpiece.
- By 1896, the telephone **had been introduced** in all Swiss cantons.

4. An underwater cable from Tasmania to Victoria **hadn't been replaced** until 1869.
5. In 1867, the first dots and dashes **were flashed** by signal lamps at sea.
6. Steve Jobs told that he **had been pressed** to leave the company.

Ex. 5. Answers.

1. b) were used	4. b) were developed and patented	7. c) were being intercepted	9. d) had been connected
2. d) had been received	5. c) were being constructed	8. a) was sent	10. c) was being recharged
3. c) was being installed	6. d) had been established		

Ex. 7. Answers.

1. Свійські голуби використовувалися як засіб передачі інформації протягом століть різними культурами.
2. У середні віки, ланцюги маяків широко використовувалися на верхівках гір як засіб передачі сигналу.
3. До 1793 року перша фіксована система телеграфу між Ліллем та Парижем створена французьким інженером Клодом Шапе.
4. Перші механічні телефони були засновані на звуковій передачі через труби.
The very earliest mechanical telephones were based on sound transmission through pipes.
5. В той час, коли запускали перший комерційний електричний телеграф Сір Чарльз Вітстон та сір Вільям Кук не розглядали їхній пристрій, як новий.
6. Перший трансатлантичний телеграфний кабель було успішно прокладено 27 липня 1866, що дозволило вперше здійснити трансатлантичну телекомунікацію.
7. Версія телеграфу Самюеля Морзе безуспішно продемонстрували до того як перший комерційний електричний телеграф було відкрито 9 квітня 1839 року.
8. В той час, коли підключали осцилограф, в лабораторії зникло світло.
9. Вугільний мікрофон Томаса Едісона використовувався майже без змін до 1980 року.
10. Обробка сигналу проводилася вчора о цій годині.

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