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для науковців

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Книга призначена для науковців, студентів старших курсів, аспірантів та пошукувачів, що мають складати кандидатський іспит з англійської мови, а також тих, хто готується до іспиту TOEFL.

Одинадцять розділів підручника містять тексти для читання з примітками та вправами на розуміння прочитаного, опанування лексики; граматичний матеріал (із зазначенням відмінностей американського та британського варіантів англійської мови), матеріали для розвитку навичок усного мовлення та реферування. Система вправ і тестів, а також графічна форма подачі матеріалів сприяють їх ефективному засвоєнню.

Усі розділи присвячені актуальним тенденціям розвитку сучасної науки і містять велику кількість неологізмів, які широко використовуються у науковому обігу США, але ще не зареєстровані у словниках.

Пізнавальний характер матеріалів та відсутність вузькофахової тематики мають зацікавити не лише зазначене коло фахівців, але й усіх, хто поглиблено вивчає англійську мову, в тому числі і самостійно.

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Від автора

У 1993 р. Міністерством освіти та ВАК України була запропонована нова програма підготовки до кандидатського іспиту з англійської мови, призначена для аспірантів, стажувальників, пошукувачів вченого ступеня кандидата наук. Характерною особливістю вказаної програми є перегляд окремих положень і змісту курсу англійської мови з тим, щоб він відповідав сучасним вимогам до науковців, які повинні мати високий рівень теоретичних знань, а також навички читання, письмового перекладу, анотування, співбесіди іноземною мовою з питань наукового дослідження і фаху. Орієнтиром рівня володіння англійською мовою для науковців, аспірантів і студентів є вимоги загальновідомого тесту TOEFL, елементи якого включені до структури кандидатського іспиту.

Дана книга має допомогти науковцям, аспірантам та студентам у підготовці до складання кандидатського іспиту на рівні зазначених вимог. Книга є певною мірою експериментальним підручником. За структурою кожен розділ містить матеріали для читання, відомості з граматики, вправи на розуміння прочитаного, тести з граматики і лексики, вправи на переклад та особливості словотвору. Частина граматичного матеріалу написана за функціонально-семантичним принципом із широким залученням графічної форми викладу матеріалу. Для розвитку навичок усного мовлення пропонується низка вправ у формі проблемних запитань та тем для обговорення. Книга містить 11 розділів та додаток, у якому подаються рекомендації щодо написання анотацій наукової літератури, матеріали для участі у наукових конференціях тощо.

При створенні книги було використано матеріали періодичних видань США "The Sciences" (Нью-Йоркська Академія наук), "Spectrum", "The Institute" (IEEE) та інші.

При викладі матеріалу автор намагався уникнути вузькофахової лексики, Бідтак відсутність вузькоспеціальних термінів дозволяє використовувати цю книгу фахівцям різних спеціальностей. Завдяки системному підходу при викладі змісту, а також використаним актуальним матеріалам загальнонаукового характеру книга може зацікавити не лише зазначене коло фахівців, але й більш широку аудиторію. Матеріали книги було апробовано автором на протязі декількох років у Центрі наукових досліджень та викладання іноземних мов Національної Академії наук України.

Автор вважає приємним обов'язком висловити подяку своїм вчителям - професору Жлуктенку Ю.О., члену-кореспонденту НАН України Акуленку В.В., професору Стариковій О.М., які на різних етапах плідно сприяла формуванню автора як фахівця англійської мови..

To my Parents

Позначення, які зустрічаються у книзі

☐ * ідіоми та фразеологічні звороти

☐ У книзі подається орфографія американського варіанту англійської мови, наприклад:

American English	***British English***
program	programme
favorable	favourable
color	colour
traveling	travelling
story (поверх)	storey

☐ При необхідності подаються обидва варіанти англійської мови.

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Introduction

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Chapter 1

Focus on:

Science and Scientists Steps to Better Reading

Grammar: Articles and Their Usage

Text A Read the texts and be ready to answer the questions that follow.
(1)

The word ***science*** originates from the Latin word «scientia», meaning knowledge. Science is simply a way of looking at the world. It consists of asking questions, proposing answers and testing them against the ***available evidence.***

A popular astronomer Carl Sagan wrote: «Science invites us to let the facts in, even when they don't ***conform*** to our ***preconceptions.*** It ***counsels*** us to carry alternative hypotheses in our heads and see which best match the facts». Science is a human construct and human ability.

science — knowledge which can be made into a system укр. наука
available — укр. наявний
evidence — something, such as a fact, sign or object that gives proof or reasons to believe or agree with something укр. свідотство, факти
to conform - to obey or be in accordance with established rules укр. підкорятися
preconception — an opinion formed in advance, without actual knowledge укр. упереджене уявлення
to counsel — to advise as suitable course of action укр. радити

Types of Science Products

FACTS	— are specific verifiable pieces of information obtained through observation and measurement
CONCEPTS	— are abstract ideas that are generalized from facts or specific relevant experience
PRINCIPLES	— are more complex ideas based on several related concepts
THEORIES	— consist of broadly related principles that provide an explanation for a phenomenon

The purpose of a theory is to provide the best explanation based on evidence. Theories are used to explain, relate, and predict.

1. What is the origin of the word «science»?
2. What is specific about science according to Carl Sagan?
3. What basic types of science products do you know?

(2)

Students of science ***major in*** various ***fields of science***. They take part in ***R&D*** at their institutions. The ***faculty and staff*** at the universities and institutes will help the students as they fulfill their academic and professional ***goals***.

Research advisors — well-known ***scientists*** will help their students with ***research***.

Graduate students spend most of their time in independent study and original rsearch. For example, graduate studies in the USA can be divided into two phases:

to major (in) — to study as the chief subject(s) when doing a university degree укр. спеціалізуватися
field of science — a branch of knowledge or area of activity. Synonyms: sphere, area, branch, domain, realm укр. галузь, сфера
R&D — research and development рус. научно-исследовательская робота
faculty and staff - all of teachers and other profetional workers of a university or college укр. професорсько-викладацький склад
goal — one s aim or purpose — укр. мета
Compare: objective — an aim that must be worked towards over a long period укр. стратегічна мета
research advisor – укр. науковий кервник
well-known — укр. відомий Synonyms: famous, prominent, eminent, renowned, celebrated
research — serious and detailed study of a subject, укр. дослідженя Synonyms: study, investigation
scientist — a person who works in science укр. науковець, вчений
Compare: scholar — a person with great knowledge of, and skill in studying the subject

Phase I leads to Master's ***degree*** and consists of lecture-type coursework. This degree is usually ***required*** in fields such as engineering, library science etc. The MBA, or Master of Business Administration usually takes two years.

These degrees are considered stepping stones toward a PhD. Normally few, if any laboratory courses are offered. A thesis, calling for significant research and/or design effort may be required.

Phase II leads to doctoral degree — PhD (doctorate). Students who are enrolled in a doctoral program are known as PhD candidates. They will spend some time in class, but the most important work is spent in first-hand research. It may take three years or more ***to earn*** a PhD Degree. This degree normally requires four to six years of study beyond the Bachelor's degree, culminating in lengthy, ***in-depth,*** original research of a specific topic, which may be both theoretical and applied, or purely theoretical.

Usually, doctoral studies ***focus*** very heavily on developing advanced scientific ***skills.***

A PhD dissertation is considered a unique, original contribution to human knowledge. This paper must contain views, research or designs that have not been previously published.

degree — a title given by a university to a student who has completed a course of study укр. ступінь Bachelor's Degree (baccalaureate) — ступінь бакалавра (бакалаврат) Master's Degree — ступінь магістра PhD — ступінь доктора філософії

to require — to demand by right with the expectation that it will be obeyed укр. вимагати; **requirement** — укр. вимога **required** — укр. обов'язковий Synonyms: — mandatory, obligatory required reading — обов'язкова література.

to earn — to get, to gain, to obtain — укр. отримати

in-depth — a thorough and giving careful attention to detail укр. глибокий, детальний

to focus (on) — to direct one's attention to something укр. зосереджувати увагу

skill(s) — special ability to do something well, esp. as gained by learning and practice укр. навички

technique — method of doing something that needs skill укр. методика, метод

procedure — a set of actions necessary for doing something укр.. методика

approach, way — a method of doing something or dealing with the problem укр. підхід, метод.

method — a planned way of doing something укр. метод

methodology — the set of methods used for study of a particular subject укр. методологія

issue — a subject to be talked about, argued about, укр. питання, проблема

relevant — directly connected with the subject Synonyms: pertaining to (pertinent), dealing with, regarding, concerning, relating to, touching upon, having bearing on, bearing relation to укр. релевантний, той, що має відношення, стосується

to meet the requirements — укр. відповідати вимогам

board — an official body or group that has responsibility for a particular organization or activity укр. рада

in many cases — often укр. у багатьох випадках, часто-густо

devoted — showing great fondness, caring a great deal. Compare: dedicated — very interested in or working very hard for an idea, purpose; committed укр. відданий

to be involved — to take part, to be engaged in, to participate укр. бути залученим, брати участь

aspect — a particular side of many-sided idea, plan etc. укр. аспект, бік Synonym: facet укр. грань

The best and the most suitable ***methods, techniques, approaches*** **and** ***procedures*** should be used.

Several research publications on ***issues relevant*** to the investigation should be prepared. Most universities awarding the PhD Degree also require doctoral candidates to have a reading knowledge of two foreign languages, to pass a qualifying examination that officially admits candidates to the PhD program, and to pass an oral examination on the same topic as the dissertation.

If the dissertation ***meets*** all ***the requirements*** it will be accepted and approved by a special ***board*** of academics after oral defense.

Most scientists spend many years studying and working in laboratories. Scientists can work individually or in a team. ***In many cases,*** scientists are ***devoted*** to their work and may find little time to do other things. Usually scientists **are** ***involved*** in studying various aspects of their fields,

and work on one or two major projects at one time.

A good example of a dedicated scientist and researcher is U.S. neurosurgeon Benjamin Carson. Speaking to young people around the country, Carson always concludes with the same message:

«Think big!» He explains the meaning of each letter:

T — is for talent. Recognize your God-given talent.
H — is for hope. ***Anticipate*** good things and watch for them.
I — stands for ***insight.*** Learn from people who have been where you want to go.
N — is for nice. Be nice to people — all people.
K — represents knowledge. Knowledge is the Key to your dreams, hopes and ***aspirations.***
B — is for books. We develop our minds by reading. I — equals in-depth learning, where ***acquired knowledge*** becomes part of you.
G — stands for God. Never drop God out of **your life.**

«If you can learn to think big, nothing on earth will keep you from being successful in whatever you choose to do», says Carson. And eminent American astronomer Vera Rubin has given the following piece of advice to young scientists:

«Don't ***give up.*** Remember that science is ever so ***vast;*** learn one thing very well. Doing so ... gives you great confidence, ***allows*** you ***to share*** knowledge with colleagues. It helps if you know what you really want to do. Work hard. Learn to give good talks. Be imaginative. If you are interested in science you must have a fundamental ***curiosity».***

to anticipate — to expect, to guess or imagine in advance укр. очікувати, передбачати, передчувати
insight — the power of using one's mind to see or understand the true nature of a situation укр. проникливість
aspiration — a strong desire to do something or have something, esp. something great or important. Synonym: longing укр. прагнення, поривання

***to give up =** to give in укр. здаватися

vast — very large and wide, great in amount укр. широкий, величезний
to allow — to permit, to enable укр. дозволяти
to share — to have use, pay or take part in (something) with others or among the group укр. розділяти, ділитися
curiosity — the desire to know or learn укр. допитливість
curious — eager to know or learn. Synonym: inquisitive укр. допитливий

1. What is the subject under discussion?

2. What are primary responsibilities of graduate students?

3. What is specific about each phase of graduate studies?

4. Why is it important to «think big»?

5. Why is Vera Rubin's message important specifically for young scientists?

NOTE

***as for...**
When it conies to... | що стосується
As far as ... is/are concerned...

As for
When it comes to | me — Що стосується мене (щодо мене)

As far as science is concerned, ... — що стосується науки, ...

to be about
It is about the new method. Це стосується нового метода.

to have to do (with) — стосуватися, мати відношення
The issue has little to do with science— Це питания не стосується (не має відношення до) науки.

Exercise 1. Give English equivalents for:

спеціалізуватися у галузі науки; науковий керівник; стратегічні цілі, досягати мети; відомий науковець (вчений); самостійне дослідження; детальне вивчення; теоретичні та прикладні аспекти; навички наукової роботи; Вчена Рада, унікальний внесок; питання, що стосуються дослідження; оригинальна методика; брати участь у науково-дослідній роботі; одночасно працювати над кількома проектами; бути відданим науці; не здаватися; ділитися знаннями з колегами, бути надзвичайно допитливим.

Exercise 2. Identify characteristics of a scientist by matching the two columns. The first one is done for you: 1-F.

I.

1. intelligent	A receptive of arguments and ideas
2. objective	B remaining at a task for a long amount of time to complete a task or project
3. creative	C making observations and decisions based upon evidence, not personal opinion or hearsay
4. open-minded	D very interested in working very hard, devoting a lot of time to complete a task or project
5. curious	E producing new and original ideas and things, inventive
6. talented	F having a high degree of mental capacity
7. dedicated	G having or showing special abilities for a particular type of work
8. persistent	H eager to know or learn

II.

1. decision-maker	A searching for new discoveries
2. communicator	B being able to make important choices or/and judgements
3. designer	C creating new models or designs
4. inventor	D making opinions and information known and understood by others, sharing and exchanging opinions.

Exercise 3. Give Ukrainian equivalents for:

a positive approach to failure; open-mindedness, cooperation with others; tolerance for other opinions, explanations, or points of view; avoidance of broad generalizations when evidence is limited; demand for verification, longing to know and to understand; respect for logic;
consideration for consequences.

Exercise 4. **Prepare an oral presentation about characteristics of true scientists based on Text 1 and Exercises 1-3. Tell your colleagues about yourself (see Appendix II).**

Exercise 5. **Place steps of scientific research in correct order.**

— Deciding how to solve a problem

— Choosing a topic

— Selecting an approach

— Identifying a problem

— Choosing the best solution of those available

— Expressing all ideas clearly

— Presenting materials and information correctly and clearly

— Developing a plan and time line

— Evaluating good and bad points

— Carrying out the plan on schedule

— Sharing the results with other people

— Generating ideas and methods

— Arriving at conclusions

Exercise 6. **Translate Ukrainian sentences into English. Then match the two columns.**

1. Я не фахівець у цій галузі.
2. Яка мета вашого дослідження?
3. Вона спеціалізується у галузі прикладного мовознавства.
4. Якою галуззю науки ви цікавитесь?
5. Це питания стосується вашого дослідження.
6. Якою наукою ви займаєтесь?
7. Його дисертація відповідає усім необхідним вимогам.
8. Вони беруть участь у науково-дослідній роботі.
9. Мій науковий керівник – відомий вчений.
10. Вони дійшли цікавих висновків.

A What field of science are you interested in?
B This issue deals with your investigation.
C His dissertation meets all the necessary requirements.
D What science are you doing?
E That's outside my field.
F She majors in linguistics.
G What is the objective of your research?
H My research advisor is a well-known scientist.
I They've arrived at interesting conclusions.
J They are involved in R&D.

GRAMMAR: ARTICLES AND THEIR USAGE

There exist definite (the), indefinite (a, an) and zero (Ø) articles in English.

The definite articles «the» are used with specific nouns (when the listener or reader knows what specific thing or person the speaker is talking about: Where is the dictionary? (that I gave you). Де словник? (той, що я вам дав). The method was used before. Цей метод, використовувався раніше. «The» is used when the noun is unique — «only one»: The sun is shining» (There is only one sun).

The indefinite articles «a», «an» are used with singular countable nouns that are non-specific: I need a pencil — Мені потрібен олівець.

For plural count and non-count nouns that are indefinite, we use «some» instead of «a»: I need some pencils. — Мені потрібні олівці. Would you care for some coffee? Чи хочете кави?

Ø is used for plural count and non-count nouns that are indefinite and when the speaker talks about the things in general: When Ø people can communicate with each other they get along better. Коли люди спілкуються, їм легше порозумітися.

It is useful to remember three so-called «golden rules» (with some exceptions to them):

1. Do not use the definite article «the» with non-count nouns denoting substances, abstract nouns, or when you talk about things in general: Ø Life is hard. Життя важке. Ø Tea is popular beverage. Чай популярний напій. Ø Literature and Ø music are called «the fine arts». Література та музика називаються витонченим мистецтвом.	**But:** The life of the scientist was hard. Життя вченого було важким. They lived a happy life. Вони жили щасливо. The tea I drank today was Chinese. Сьогодні вранці я пив китайський чай. Please, pass the salt. Будь ласка, передайте сіль.
2. Use either definite or indefinite articles with singular countable nouns: He is going to buy a dictionary. Він збирається придбати словник. Where is the dictionary you spoke about? Де той словник, про який ви згадували?	
3. Use indefinite article with the names of professions: He is a mathematician. Він математик. She is an engineer. Вона інженер.	**But:** They are Ø doctors. Вони лікарі. They are Ø engineers. Вони інженери.

GENERAL USAGE OF ARTICLES:

Nouns	Articles		
	a	the	Ø
single countable	a book	the book	—
plural countable	—	the books	books
uncountable	—	the water	water

ARTICLES USED WITH CERTAIN EXPRESSIONS

a	the	Ø
a couple of a dozen a pair of	at/to the office to the movies to the theater	at work at home at/to school
a lot of a great deal a great many a host of	the first the second(...) the last the ...est (the best, the biggest; the most...)	part of in stable condition according to contract in rush hour
a hundred a thousand		
two times | a day an hour		by bus/car/train on foot
what such | a + countable noun		face to face arm in arm
such what | a promising approach!		
	(the) so-called from beginning to end	

ARTICLES WITH PROPER NAMES

	Ø	the	a
Cities, states	Paris, London, New Jersey, Ohio	Exception: the Hague	
Streets, squares, avenues, roads, boulevards	Green Street, First Avenue, Peach Boulevard	Exception: the Strand	
Countries (use «the» when they have a plural name and are viewed as unions)	Canada, France, Ukraine	the Philippines, the United Kingdom (the) USA	
Geographic areas (regions)		the Orient, the Middle East, the Crimea	
Continents	Europe, Asia, South America, Africa		
Mountains, mountain peaks	Mount Everest	Exception: the Matterhorn	
Mountain ranges		the Rocky Mountains, the Alps	
Lakes	Lake Michigan		
Lakes when they form a set		the Great Lakes	
Rivers		the Danube	
Oceans and seas		the Atlantic Ocean, the Black Sea	
Gulfs		the Gulf of Mexico	
Bays	San Francisco Bay		

Canals		the Erie canal	
Planets	Mars, Venus	Exceptions: the Sun, the Moon, (the) Earth	
Separate islands	Jamaica		
Chains of islands		the Canary Islands	
Deserts		the Gobi desert	
Parks	Central Park		
Tourist attractions, famous buildings, monuments, Museums, libraries	Exception: Disneyland	the White House, the National Gallery, the Library of Congress	
with universities, colleges, schools beginning with a proper noun	Harvard University, Lambton college		
with universities, colleges, schools beginning with «university», «school», «college»		the University of Virginia, the college of arts and sciences	
Names of magazines	Time magazine		
Names of historic documents		the Treaty of Geneva	
Names of wars (except World Wars)	World War I	the War of Independence	
names of ships, Trains, airplanes		the Orient express	
names of scientific methods: a) well-known and established (the) b) those still not recognized by everyone (Ø)	Green method	the Montessori method	
proper names a) denoting family as a whole (the) as opposed To separate name (Ø) b) specifying maiden name (a)	Ann Johnson	the Johnsons	She was a Brown before marriage.

Exercise 7. Fill in the blanks with «the», «a», «an», or leave blank.

1. May I have a look at ___ book that I brought yesterday?
2. She is ___ chemist.
3. John likes __ rice.
4. Ann has decided to become ___ engineer, while Mike and Andrew would rather become __ geographers.
5. Where is ___ coffee that we bought last week?
6. ___ teachers want ___ students to succeed.
7. ___ water is essential for life.
8. Please pass ___ pepper.
9. ___ word processors can check ___ spelling.
10. In 1816 a Scottish natural philosopher invented ___ kaleidoscope.

Exercise 8. **Insert correct article or leave blank.**

___ Oriental Art Museum, ____ Asia, _____ Great Lakes, __ Tampa Bay, __ Green Park, ___ Capitol, _____ Amazon River, _____ Andes, _____ White Street, _____ Netherlands, ___ John Hopkins University, __ Discovery Park, ___ Great Salt Lake, _____ Old Dominion University ___ Washington monument, __ Mediterranean Sea, ____ Golden Gate Bridge, ____ Greece ____ California, ___ University of Washington, _____ Philadelphia,

Exercise 9. **Fill in the blanks with appropriate article or leave blank.**

1. ___ Coal is second major natural resource found in large quantities.
2. ____ Abraham Lincoln was President of ___ USA during ___ Civil War.
3. Such mighty rivers as ___ Mississippi, ___ Ohio, __ Hudson and __ Colorado irrigate the croplands.
4. Jane wants to study ___ business at ____ University of Illinois.
5. ___ Panama Canal was under American control from 1904 to 1978.
6. He has graduated from ____ Ohio State University.
7. ____ Rhode Island is the smallest state in ___ USA.
8. Puerto Rico is an island of about 9,000 square kilometers in ____ Caribbean Sea.
9. Among the University's undergraduate schools are ___ College of Arts and Sciences, _____ School of Engineering and Applied Science, ___ School of Nursing.

Text B. **Read the text and answer the questions that follow. Steps to better reading**

Step 1. Preview

Good readers preview the text first, i.e. look over the ***whole*** passage for a moment. This helps to make them good and fast readers.

A. Read the title. The first thing to do when previewing is to read the title. Titles not only announce the subject, but also make the reader think.

B. Anticipate and ***predict.*** Anticipation and prediction are two basic reading skills that are used to guess or predict how the passage will develop. We anticipate before we read a passage, and we predict after the passage begins. Our anticipation is therefore related to our own personal background knowledge on the subject. After a passage begins we find ***"clues"*** that help us predict what is going to come next. These clues may be in the meaning or in the grammatical structure of a sentence or its vocabulary.

whole — the complete amount, entire укр. увесь, цілий

to predict — to see or describe in advance as a result of knowledge, experience. Synonyms: to foretell, to forecast, to foresee, to make prognosis укр. прогнозувати

clue — something, such as an object or a piece of information that helps to find an answer to the question: «I'll never guess the answer — give me another clue!» укр. підказ, ключ, інформація

C. Read the opening paragraph. Some writers may announce what they hope. to tell you, or why they are writing. Some writers just try to get the reader's attention — they may ask a provocative question.

D. Read the closing paragraph. Writers may have something important to say in the end. Some writers repeat the main idea once more, some draw a conclusion or summarize.

E. Glance through. Skim and scan the selection. When you're skimming, go through a passage quickly in order to get a general idea of what it is about. When you're scanning you look for specific piece of information (a figure, a date, a name) that you need.

Step 2. Read for meaning.

Individual words do not tell us much. They must be combined with other words, and readers should see words in meaningful combinations. Read in «thought groups» (or message units) — try to group the words into phrases which have natural relationship to each other.

Step 3. Grasp paragraph sense.

The paragraph is the basic unit of meaning. If you can understand the main point of each paragraph, you can comprehend the author's message.

A. Find the topic sentence. The topic sentence, the sentence containing the main idea, is often the first sentence of a paragraph. It is followed by other sentences which support, develop or explain the main idea. Sometimes a topic sentence comes at the end of a paragraph (then the supporting details come first). Sometimes following the dominant noun through its repetitions and transformations into synonyms will ***eventually*** lead you to the main idea. Some paragraphs do not have a topic sentence. Such paragraphs usually create a mood or feeling, rather than present information.

eventually — at last, finally, ultimatly - укр. зрештою

B. Understand paragraph structure. Just as readers read for different reasons, writers write for different reasons. What purposes may an author have for writing?

1. Inform — give facts or information about a subject.
2. Define — provide definitions on a subject.
3. Describe — give an account of a subject in words.
4. Persuade — influence a person's opinion or behavior about something.
5. Explain — make plain or understandable, give the reason for or cause of.
6. Entertain — interest or please.
7. Illustrate, compare, contrast and so on.

to blur — to make less clear or noticeable укр. зливатися, ставати нечітким
to imply — to express, show or mean indirectly укр. мати на увазі, розуміти під

Sometimes distinctions among these types are ***blurred,*** but the purpose should always relate to the main idea. If the main idea is not stated somewhere within a paragraph, it must be inferred, or figured out from important details of the paragraph. A good reader is able to infer the things that the author ***implies.***

Step 4. Organize facts.

Understanding how the facts all fit together to deliver a message, is, after all, the reason for reading. Good readers organize facts as they read, they discover the writer's plan by looking for a clue or signal word early in the text which might **reveal** the author's structure. Every writer has a plan or outline which he follows. Sometimes the author gives you **obvious** signals. If he says «There are four reasons...» a good reader looks for a listing of four items. As you read the selection, keep the information in mind and relate it to the title.

to reveal — to show, to make known
укр. виявляти
obvious — easy to see and understand, clear
укр. очевидний

1. What is the subject of the passage?

2. What is meant by anticipation and prediction?

3. What is the difference between skimming and scanning?

4. What is the main idea of a paragraph?

5. What should you look for when you're trying to determine the main idea of a paragraph which is implied?

Exercise 10. **Read each passage and answer the questions that follow. Use context clues to determine the meaning of the unknown words.**

NOTE

Some hints for dealing with multiple choice (MC) questions.

You have to choose the one correct answer out of several options given. Remember that only one of them is fully correct, the other are incorrect, although they may well contain some words or ideas from the passage or sentence, but all incorrect options are either too vague and general, or only partly true, or irrelevant to the question (see Appendix XI).

A. Throughout the history of civilization there have been three great inventions in the field of communication. The first was the invention of writing. It enabled people to communicate with others and also to leave a written record for the future. The invention of printing allowed information to reach a wide audience. The invention of electronic communication devices has enabled people separated by vast distances to communicate. Today people can communicate by telephone to almost anyone in the world via satellite.

1. What is the main idea of the passage?

a. The importance of communication
b. Three great inventions in communication
c. How people communicate
d. The invention of the telegraph

B. The largest animal alive is the blue whale. Fully grown, these great creatures reach a length of over 30 meters. The heart of a blue whale is more than a meter in diameter. The blue whale is not a fish, even though it spends its entire life in the sea. While fish are cold-blooded, whales are warm-blooded, and they have lungs and breathe air. For all its size, a blue whale feeds mainly on tiny shrimp.

1. What is the main topic of the passage?

a. Shrimp and whales
b. Types of whales
c. The largest living animal
d. The difference between fish and mammals

C. Throughout history, gold has been precious metal, eagerly sought and cherished. It was probably the first metal to be mined because beautiful objects could be made from it — even with primitive tools. The value of gold has always been known, even before gold was used in coinage. It remains the only universally recognized standard of value in international monetary exchange. Most of the world's refined gold is absorbed by governments and central banks to provide backing for paper currency. In addition to its use for jewelry, its special properties have led to many applications in modern science and technology. The largest gold mine is located in South Africa. The largest producing gold mine in United States is the Homestake mine in South Dakota, which yields about 570,000 ounces of gold each year. Often mines throughout the world produce even larger amount of this highly prized metal.

1. With what topic is the passage mainly concerned?

a. The value of gold
b. Primitive tools
c. Arts and industry
d. Beautiful minerals

2. The author implies that

a. the United States is the largest producer of gold in the world
b. governments control the production of gold
c. the production of gold increased rapidly
d. ancient people mined gold in large quantities

3. We can conclude that
a. gold supplies are coming to the end
b. most of world's gold is used for circulating coinage
c. gold has always been considered valuable
d. more gold is used for expensive jewelry

Exercise 11. Choose the correct word and fill in the blanks.

product (produce)	producer (s)
production	productive
to produce	productivity

1. We had a very ___ meeting last week.
2. The two lasers combline ___ a powerful cutting tool.
3. The country's main ___ is oil.
4. New __ methods have led to increased __ .
5. This country is one of the world's leading oil ___ .
6. The wine bottle was marked «___ of France».

to predict	prediction	predictable

7. The economists ___ an increase in the rate of inflation.
8. You're so ___ !
9. It is hard ___ when it will happen.
10. His ___ turned out to be correct.

science	scientific	scientist

11. I'm fond of reading ___ fiction.
12. He is a famous ___ .
13. I don't need any ___ proof.

to apply	applied	application(s)

14. This rule does not ___ in your particular case.
15. A new discovery has a number of industrial ___ .
16. Her research is both theoretical and __ .

(to) require	requirement(s)	required

17. To carry out this plan would ___ increasing our staff by 20 %.
18. This monograph is ____ reading for our course.
19. Candidates who fail to meet these __ will not be admitted to the university.

curious	curiosity

20. There was an intense ___ about their plans.
21. I'm ___ about what happened.

(to) imagine	imagination	imaginative

22. You can't ___ how surprised I was.
23. She has a vivid ___ .
24. Be ___ !

(to) develop	development

25. This was an important stage in country's ___ .
26. I'd like ___ my idea.

Exercise 12. Read the text and answer the questions about it.

Alfred Nobel, the famous Swedish chemist, was born in a family where research and experimentation were almost second nature. His father tested the theories of explosives in a laboratory setup in their house. He was out of work, down and out, and he failed to apply his inventive spirit to establishing a prosperous endeavor.

Alfred Nobel acquired his father's knowledge of and enthusiasm for chemistry. Aside from developing dynamite commercially, Alfred claimed 355 patents including nitrocellulose and substitutes for leather and rubber, developed new methods for the production of synthetic silk. Alfred Nobel was a dedicated scientist who became very rich applying his knowledge of chemistry. He founded the Nobel prize, just two weeks before his death, because he preferred not to be remembered as an inventor of a potentially deadly material — dynamite. So he left some of his money to reward individuals who made substantial and valuable contribution to certain areas of science, and to the good of humanity. The Nobel prizes are awarded annually in six different fields: physics, chemistry, physiology, medicine, literature, economics (which was added later), and the cause of world peace. Nobel had set up a fund of over nine million dollars and from its interest every year on December 10, the anniversary of Nobel death, prizes of about $40,000 are awarded for important inventions and discoveries.

1. What is the best title for the passage?
   a. Alfred Nobel's heritage.
   b. The history of great inventions.
   c. Awards presented to the winners.
   d. Important contributions to chemistry.

2. It can be inferred from the passage that Alfred Nobel later viewed his invention of dynamite
   a. as the most valuable achievement
   b. with much concern for its negative effects on humanity
   c. as his father's contribution to chemistry
   d. as a natural result of studying explosives

3. According to the passage, why was Nobel prize established?
   a. to save money
   b. to recognize worthwhile contributions to science
   c. to unite scientists
   d. to lay emphasis on individual research

4. It can be inferred from the passage that originally the prizes were awarded in how many fields?
   a. 6
   b. 7
   c. 5
   d. 8

Exercise 13 **Choose the one word or phrase that best keeps the meaning of the original sentence if it is substituted for the underlined word or phrase.**

1. There are obvious disadvantages to this plan.
   a. well-known
   b. serious
   c. clear
   d. fundamental

2. I tried to <u>anticipate</u> the kind of questions they were likely to ask me at the interview.
   a. solve
   b. guess
   c. remember
   d. discuss

3. The problem would interest the <u>entire</u> community.
   a. whole
   b. large
   c. engineering
   d. small

4. It is not easy to predict this trend.
   a. cause
   b. create
   c. forecast
   d. test

5. The author discusses all <u>facets</u> of most engineering fields.
   a. prospects
   b. aspects
   c. issues
   d. forms

6. <u>Eventually,</u> they have worked out the basic concepts.
   a. lately
   b. spontaneously
   c. finally
   d. gradually

7. Most of our meetings were <u>devoted</u> to discussing scientific problems.
   a. dedicated
   b. confined
   c. conformed
   d. introduced

8. The <u>vast</u> land stretches for hundreds of miles.
   a. very small
   b. narrow
   c. very large
   d. spectacular

9. Is there any <u>evidence</u> for believing that?
   a. proof
   b. tendency
   c. opposition
   d. chance

10. He employed the one basic technique.
    a. process
    b. procedure
    c. task
    d. objective
11. She is very dedicated to her work.
    a. interested in
    b. committed to
    c. tired of
    d. disappointed with
12. They devoted a lot of time for the in-depth study of botany.
    a. independent
    b. individual
    c. thorough
    d. careful
13. He made no endeavor to help us.
    a. effort
    b. decision
    c. plan
    d. prediction
14. Human beings are much more intelligent than animals.
    a. invaluable
    b. realistic
    c. curious
    d. clever
15. Hopefully, I'll earn this degree in a year.
    a. discuss
    b. get
    c. contain
    d. study
16. How is your study progressing?
    a. topic
    b. investigation
    c. attempt
    d. procedure
17. The issue deals with international cooperation.
    a. demands
    b. touches upon
    c. anticipates
    d. allows

Noteworthy

Choose a job you love, and you will never have to work a day in your life.

(Confucius).

Chapter 2

Focus on:

The Importance of Science
Scientific Prefixes

Grammar: Expression of Quantity

Text A Read the text be ready to answer the questions that follow .

Thinking about science, Goethe once said, «To one man it is the highest thing, a heavenly goddess; to another it is a productive and proficient cow who supplies them with butter.» The ***results*** of science and the motives for doing it are ***diverse.***

Curiosity is the most powerful ***motivation*** for research professionals — and for many amateurs, too. Science clarifies, explains and ***occasionally*** predicts. Understanding a piece of universe can bring ***satisfaction*** and excitement to anyone.

Science serves the missions of ***improving*** health, national security, energy, the environment and communications, it creates new products, meets the demands of ***emerging*** markets and satisfies social needs. But even strong ***"faith*** in science may crack in ***straitened circumstances.***

When it comes to future justification for curiosity-driven and mission-oriented research, we ***encounter*** three ***related undertakings.***

First, we have to rethink the case from inside the scientific ***community.*** Government, businesses and universities must demonstrate that investments in science are the 'only way of fulfilling ***long-range goals.*** Research executives will have to document the ***ample*** returns from past investments and then outline future paths. Setting priorities will not be easy, and ***,stern*** management to ensure excellence will be ***essential.***

Second, we should broaden the dialogue. Society must be engaged in continuing exchange about national goals and research priorities. The press, industry, nonprofit organizations must participate.

Finally, we must ***expand*** the ***accessibility*** of knowledge.

The entire professional community must pay more attention to building a scientifically literate society. Support for science, and for the ***benefits*** of technology, increases with educational level.

To be successful in the twenty-first century, we need more science, not less.

result — something that happens because of an action or event. Synonym: outcome; укр. результат, наслідок
diverse — different (from each other), showing variety укр. різноманітний
motivation — need or purpose. Synonyms: incentive, stimulus, motive укр. стимул, мотивація
occasionally — укр. час від часу, інколи
to satisfy — to give enough for укр. задовольняти
to improve — to make better укр. поліпшувати
to emerge — to come or appear from inside or from being hidden укр. з'являтися, виявлятися
faith — firm belief, trust, complete confidence укр. віра
straitened circumstances — difficult because lacking money. Synonym: money is short укр. фінансова скрута
to encounter — to meet or have to deal with (esp. Something difficult) Synonym: to be faced with укр. стикатися
related — connected in some way укр. суміжний, пов'язаний
undertaking — a job, a piece of work or anything needing effort укр. нелегка справа
community — a group of people living together and/or united by shared aims and interests укр. спільнота
long-range — covering a long distance or time укр. довгостроковий
ample — enough or more than enough укр. достатній
stern — firm, strict, severe укр. суворий
essential (to, for) — completely necessary for the existence, success of something. Synonyms: most important, notable, fundamental. Also: indispensable — too important or too useful to do without укр. нагально необхідний, суттєвий, дуже важливий
to expand — to increase in size, number, volume, degree; to grow larger, to broaden укр. збільшувати, розширяти
accessible — easy to reach, enter or obtain. Synonym: obtainable укр. доступний
accessibility — доступність
access — доступ
benefit — anything that brings help, advantage or profit укр. перевага, користь

NOTE

переваги	недоліки
advantage(s) merit(s) plus(es)	disadvantage(s) demerit(s) minus(es) weakness (es) shortcoming(s) limitation(s) pitfall(s)

1. What are the motives for doing science? What is the most powerful motivation?
2. What are the missions of science?
3. Are there any problems concerning scientific development? What are possible ways of solving them?
4. What can be done to build a scientifically literate society?
5. What major conclusions does the author arrive at?
6. Why did the author mention «the goddess» and «the cow»?
7. What was the author's purpose for writing this passage (to inform, to describe, to persuade, to explain, to entertain or something else)? What is the author's opinion on the subject?

Exercise 1. Give English equivalents to:

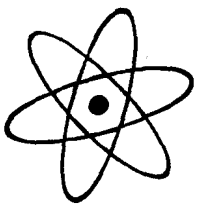
сильний стимул; професіонали та аматори; різноманітні мотиви; поліпшувати; слугувати меті; час від часу, фінансова скрута; довкілля; задовольняти потреби; довгострокові цілі; наукова спільнота; некомерційні організації; розширяти доступність знань; приділяти більше уваги; переваги науки та техніки; національна безпека; встановлювати пріоритети.

Exercise 2 Discuss the following point. Use an example provided below as possible response to the issue raised.

Problem: Around the world science is both indispensable and ***vulnerable.*** Indispensable because the world has goals that can be reached only with deeper understanding. Vulnerable because money is short and patience with research is running short, too.

Sample answer: Why support science? For hundreds of years one justification has been that research fulfills a passionate human ***quest*** for knowledge. But these days curiosity is not enough. Most people support science and think research leads to practical benefits: economic growth, better health, labor saving devices. The challenge is to integrate the drive for knowledge with the delivery of useful outputs.

vulnerable — weak, not well protected, sensitive, easily harmed укр. уразливий
quest — a long search, an attempt to find something



GRAMMAR: EXPRESSION OF QUANTITY.

I. LARGE QUANTITY

With count nouns	With both	With non-count nouns
MANY *(more, the most)* There are many books in our library. У нашій бібліотеці багато книг	A LOT OF a lot of | Books / Time багато | Книг / Часу	MUCH *(more, the most)* Much time is needed to solve this problem. Для розв'язання цієї задачі треба багато часу
A GREAT NUMBER (OF) LARGE a great number of students багато (велика кількість) студентів *not a few *quite a few *(a) host (of) There are universities | not a few quite a few in the U.S. У США багато університетів They have a host of friends. У них багато друзів.		A LARGE AMOUNT (OF) a large amount of | water (велика кількість води) / information knowledge evidence / significance

OTHER EXPRESSIONS DENOTING LARGE QUANTITY:

a great deal of	a great deal of money — багато грошей
a great variety of	a great variety of reasons (багато причин)
a wide range of	a wide range of different opinions (багато різних думок)
abundant = plentiful	The country has abundant supplies of oil and gas, У цій країні великий запас нафти та газу.
myriad(s)	a myriad stars — велика кількість зірок, міріади зірок
plethora	a plethora of suggestions — достаток, надмір пропозицій

II. SMALL QUANTITY

With count nouns	With non-count nouns
FEW *(fewer, the fewest)* They asked few questions. Вони поставили мало запитань *a few — трохи, невелика кількість I may be a few minutes late. Я можу трохи запізнитися.	LITTLE *(less, the least)* We paid little attention to the proposal. Ми майже не звернули уваги на пропозицію *a little — трохи, невелика кільюсть I have a little money У мене є трохи грошей.

minute, tiny, infinitesimal — крихітний
a bit — трохи. I'm a bit tired. Я трохи втомився
scarce — мало, обмаль. This winter snow was scarce. Цього року взимку було обмаль снігу.

Use some in affirmative sentences — I have some time. У мене є трохи часу.
Use any in negative and interrogative sentences — I don't have any information.
У мене немає ніякої (бодай найменшої) інформації.
Are there any letters for me? Чи є для мене (якісь) листи?

sufficient enough ample (a) plenty of	достатня кількість

We have plenty of time — У нас досить часу.
We have enough seats for everyone — У нас досить місць для усіх.
sufficient information — достатня інформація.
ample money — досить грошей.

a bunch of several a number (of) a couple (of)	декілька	a bunch of	students	група студентів
			flowers	букет квітів
	He wrote	several a number of	articles	

Він написав декілька (низку) статей

BUT:

The number (of) - кількість The number of students in our group is 12. В нашій групі 12 осіб.

Approximators:

Approximately Nearly About / around / some Almost Roughly	2 hours — приблизно (майже) 2 години.

Relatively Rather	I good — відносно добрий.

Succession:

The first, the second ... the last — перший, другий ... останній

***the former** — перший за переліком ***the latter** — останній за переліком	серед двох згаданих.

Of the two possibilities the former seems more interesting (than the latter).
З двох можливостей перша здається більш цікавою (ніж друга).
(Also: former — колишній, the former president — колишній президент)
*every other — через одного
every other year — кожні два роки (раз на два роки).
*in succession — поспіль, підряд

*the last but one *next to the last	Передостанній

*the last but not least — останній за переліком, але не за значеннями (важливістю)

NOTE

the last останній	the latest найновіший, найсвіжіший (про новини, інформацію, тощо)
Have you read the last book by academician Vernadsky? Ви читали останню книгу академика Вернадського? The last chapter presents conclusions. В останній главі наводяться висновки.	Have you read the latest article by our professor? Ви читали нову статтю нашого професора? The author provides the reader with the latest information. Автор надає найновішу інформацію.

Also: the late — покійний; the late president — покійний президент

the most найбільш	Most більшість
This is the most interesting article I have ever read. Це найбільш цікава стаття серед тих, що я читав.	Most scientists usually work on one or two projects at one time. Більшість вчених звичайно працює над одним або двома проектами одночасно.

Also: *for the most part = mainly — головним чином
*to make the most of — використовувати найкращим чином Make the most of your studies!
*another, a second, one more — ще один *other — ще один, інший (з декількох)
* the other — останній, що залишився

leftover, remainder vestige(s)	залишки

OTHER EXPRESSIONS:

a dozen = 12
a score = 20
a quarter =1/4
a half = 1/2

1,2,3... 80... 100... 300..,	percent Ø hundred Ø million Ø	BUT:	hundreds of millions
	billion Ø dollars		10 dollar 0 bill(s)

* billion — мільярд — 10^9
two times — двічі
three times — тричі
*** -fold** There has been a **twofold** increase in company's business.
Прибуток компанії збільшився вдвічі.

twice	as little as much	вдвічі	менший більший

NOTE

Mind such phrases as: «as much as», «as small as», «as early as»
as early as 1970 — (ще) у 1970 році

IS or ARE?

	IS		ARE
time (5 minutes, 3 years) money (40 dollars) distance (50 miles) the number a word of; a pair of 1+2, 12+80 (...) «Great Expectations» (and similar titles of books) news data evidence everything / each / everyone / anything somebody / anybody / everybody physics (and all other subjects) **statistics** (as a science of dealing with and explaining a collection of numbers which represent facts or measurements)		police goods a number several thanks data ethics **statistics** (as a collection of numbers which represent facts or measurements)	

Also

Chinese (as a language) Chinese **is** a difficult language.	the Chinese (as people) The Chinese **are** famous for their cuisine.

there + to be

There is (was) 1 professor and 2 (...) students.	There are (were) 2 students and 1 (...) professor(s).

WITH COLLECTIVE NOUNS:

committee
faculty
class
team
audience
public

IS having their meeting (as a group)

ARE going back to their homes (separately)

MIND OTHER EXPRESSIONS:

a flock of birds — пташина зграя
a swarm of bees
a school of fish
a pack of wolves
a colony of ants
a herd of cows
a pride of lions

Exercise 3. Choose the correct variant:

1. After the negotiations they made many / much changes in their preliminary proposal.
2. German is / are spoken in parts of Switzerland.
3. The number of / the amount of working women are / is increasing nowadays.
4. Professor Johnson did not give many / much information.
5. No news are / is good news.
6. Mathematics are / is an interesting subject.
7. They informed us of much / many important decisions.
8. Many thanks were / was given.
9. «Gulliver's Travels» are / is a popular book.
10. The latest statistics is / are not reliable enough.
11. All of the money were / was spent.
12. A word of gratitude was / were very pleasant.
13. The Japanese is/are known for their traditions.
14. A number of students has / have improved their English.
15. Someone have / has forgotten to put the name on the list.
16. There is / are several documents missing.
17. Statistics are / is a branch of mathematics.
18. There is/are no question of postponing the meeting.

Exercise 4. Read the text and try to appreciate its humor. Discuss the point with your colleagues.

Marion Eppley, developer of the standard cell that bears his name, was credited with the following anecdote:

A young high school student returned one afternoon to the small retail store his father operated in conjunction with a partner.

«Dad,» asked the student, «what are ethics? My teacher said that tomorrow we are going to discuss them.»

«Well,» said the father, «I'll illustrate. Imagine that a man comes into the store to buy a carton of cigarettes. I give him the cigarettes, and he gives me the money. Then, after I've given him his change, he turns to leave and I discover that the $20 bill he gave me seems thicker than usual. On closer examination I find that there are two $20 bills stuck together.

Here, my son, is the whole question of ethics. Do I or don't I tell my partner?»

I'm sure you see Eppley's point.

BORROWED PLURAL FORMS:

		Also possible:	
on a um	phenomenon — phenomena феномен (явище) феномени (явища) medium — media засіб — засоби	symposium criterion	symposia symposiums criteria criterions
is → es a → ae	analysis — analyses аналіз — аналізи formula — formulae формула — формули	formula	formulae formulas

us → i	nucleus — nuclei ядро — ядра	indices index
ix → ices ex	index — indices індекс — індекси (покажчик — покажчики)	indexes

singular	Plural
man	Men
woman	Women
child	Children
tooth	Teeth
goose	Geese
mouse	Mice
ox	Oxen
person, human being	people, human beings, humans
Aircraft Encyclopedia Equipment	
a piece of information	Information
a piece of news	News
a piece of advice	Advice
a piece of furniture	Furniture

Exercise 5. Pluralize the following words:

radius, crisis, antenna, appendix, criterion, stimulus, encyclopedia, prognosis, sanatorium, axis, aircraft, medium, matrix, nebula, phasis, optimum, syllabus, supernova, synthesis, spectrum, thesis, equipment, maximum, hypothesis, equilibrium, millennium, oasis, curriculum, phenomenon, analysis.

Exercise 6. Translate the following sentences.

1. There are infinitely many bases to choose from.

2. You may first wish to try a few examples to illustrate that formula.

3. There are many interesting results concerning matrices.

4. Unfortunately, formulas like the ones above do not come easily.

5. There did not remain any questions.

6. This is the least acceptable variant.

7. The latter procedure is much more complicated than the former one.

8. There are a lot of differences among languages.

9. Elevator makers believe that their cars can carry passengers up to at least 180 floors.

10. We do not have enough information at present to offer sound answers to these questions.

11. They have sufficient information from which to draw a conclusion.

12. The reaction accelerated fivefold.

13. These features are also important in a wide variety of applications.

Text B. Scientific prefixes

Let's meet zetta, yotta, zepto and yocto. They are not fundamental particles, they are prefixes on the scientific scale of quantities denoting, ***respectively,*** a billion trillions, a trillion trillions, a billionth of a trillionth, **respectively** — укр. відповідно and a trillionth of a trillionth. Nobody has found much practical use for them yet, but they exist if you need them, according to decisions of the *Conference Generale des Poids et Mesures,* the international body that meets every four years to govern the realm of scientific units.

10^{1} deka or deca (da), from Greek deka ten,	10^{-1} deci (d), from Latin decimus, tenth
10^{2} hecto (h), from Greek hekaton, hundred,	10^{-2} centi (c), from Latin centum, hundred
10^{3} kilo (K),, from Greek chilioi, thousand	10^{-3} milli (m), from Latin mille, thousand
10^{6} mega (M), from Greek megas, large ,	10^{-6} micro ,from Latin micro -(Greek micros), small
10^{9} giga (G), from Greek gigas, giant,	10^{-9} nano (n),, from Latin nanus (Greek nanos), dwarf
10^{12} tera (T), from Greek teras, monster,	10^{-12} pico (p),, from Spanish pico or Italian piccolo, small
10^{15} penta (P), from Greek pente, five	10^{-15} femto (f),, from Danish-Norwegian femten, fifteen
10^{18} exa (E), from Greek hex, six	10^{-18} atto (a), from Danish-Norwegian atten, eighteen
10^{21} zetta (Z), from Latin septem, seven	10^{-21} zepto (z), from Latin septem, seven
10^{24} yotta (Y), from Greek or Latin octo, eight	10^{-24} yocto (y), from Greek or Latin octo. eight

By learning the prefixes you will understand the meaning of words.

Prefix	Meaning
a - , ab -	not having
ambi -	Both
anti -	Against
bi -	having or involving two, coming or occurring twice
mono -, uni -	single, one
tri -	having or involving three, coming or occurring three times
by-	Secondary
co -, corn -, col -, con -, cor -	together with
dis -, mis -, mal -	not, bad, wrong,
ex-	out, from
extra -	beyond, outside
fore -	before (in time or order)
pre -, ante -	before, prior
contra -,	Against
in -, im -, ir -, il -, un -	Not
inter -	Between
micro -	Small
multi -, poly -	more than one or two, many
octo -, octa -	Eight
out -	to do better than
post -	After
pseudo -	not real, false
quadra -	four, one-fourth
retro -	Backward
semi -, hemi -, demi -	Half
sept-	Seven
sub -	under, below, beneath, underneath, lower
syn -	same, together
trans -	Across
over -	too much
under -	too little

Exercise 7. Match the two columns:

1. to coexist	A. speaking two languages
2. to postpone	B. a period of ten years
3. overpopulation	C. not logical
4. illogical	D. having two meanings
5. miscalculation	E. to make later
6. to underpay	F. not typically
7. trilingual	G. to exist together at the same time
8. to rewrite	H. wrong calculation
9. unfair	I. too many people
10. ambiguous.	J. speaking three languages
11. bilingual	K. not fair
12. atypically	L. to write again in a better way
13. decade	M. to perform better than somebody
14. to outperform	N. to pay too little
15. malfunction	O. someone greater than a human but less than God
16. demigod	P. a fault in operation

Exercise 8. Try to guess the meaning of the following words. If necessary, consult the dictionary.

contradict, uniform, combine, decade, antecedent, byproduct, international, foresee, impossible, ambivalent, unknown, collaborate, transportation, disorder, monologue, unilateral, bimonthly, semiannual, microscope, subterranean, cooperate, unusual, monopoly, synthesis, bicycle, antipathy, polyglot, reaffirm, demigod, triangle, intermediate, predict, dislike, overestimate, multimillionaire, illegal, infinity, misinform, bilateral, retrospect, preview, hemisphere, outplay, undervalue.

Exercise 9. Read the. text concentrating on «quantity» words. Render it into Ukrainian.

Although the beginning of «electronics» is usually dated around the 1920s, this represents a myopic view of technology. We can now see that the telegraph and the telephone are the first two landmarks of the electronic age. After Alexander Graham Bell had sent his voice from one room to another in 1876, society could never be the same again.

Electron, this invisible, *ubiquitous,* weightless object has given us power over nature of which our ancestors never dreamed. Until the closing years of the nineteenth century, people used electricity without knowing what it was. One of the most dramatic events was the invention of the X-ray tube — the ancestor of vacuum **ubiquitous** — existing tubes which followed. X-rays were discovered in 1895 — the electron or being everywhere itself just one year later. It was then realized that an electric current consists of myriads of these submicroscopic particles, each carrying a minute negative charge. Until 1948, electronics was almost synonymous with the vacuum tube. By the late 1940's, the vacuum tube had shrunk from the object as large as an electric bulb, to a cylinder not much

bigger than a man's thumb. Then three scientists at the Bell Telephone Laboratories invented the transistor and we moved from the Paleoelectronic to the Neoelectronic Age. But a really efficient, reliable and universal communications system can be achieved only with the aid of satellites. With the improvement of communications the role of cities as meeting places and centers of social interaction will become obsolete, as people will be able to meet face to face (individually or in groups) without even leaving their homes.

Exercise 10. Choose the correct word and fill in the blanks.

(to) improve	improvement

1. Your work shows considerable __ .
2. I want to __ my German.
3. Your English *if* getting better, but there is still room for __ .

(to) benefit	beneficial

4. He had the _____ of a first-class education.
5. The fall in prices will be :__ to our business.
6. He is most likely __ .

technology	technological	technologist

7. The system uses advanced computer and satellite __ .
8. We witness the rapid pace ____ change.
9. A specialist in technology is called ____.
10. We use the latest ____.

Exercise 11. Read the passage and answer the questions about it.

When colonists from Europe first arrived in America, they had to decide what to preserve of their cultural heritage, and what to discard. They also had to decide upon a means to preserve and build upon their legacy. Their answer was the town school. Within 30' years of the founding of the first settlement in Massachusetts (1620), all towns were required to hire a schoolmaster to teach reading, writing and arithmetic, as well as religion; larger towns were required to establish grammar schools to prepare children for the university. In 1787 the Continental Congress required every new township in the Northwest Territory to preserve one plot and land for public schools.

At the university level, Harvard (Massachusetts) was founded in 1636, and William and Mary (Virginia) in 1693. By 1776, on the eve of its revolution, America had 14 colleges in the new country and another score were founded by 1800. By that time schooling meant not only preserving parts of the classical education, but also teaching skills necessary to build a new North American Nation. Americans freely borrowed from English, French and German precedents.

1. Which of the following is the best title for this passage?
   a. European colonists in America
   b. American educational system
   c. Grammar schools and universities
   d. The first steps of American education

2. Which of the following is NOT mentioned in the passage as a subject?
   a. religion
   b. reading
   c. astronomy
   d. arithmetic
3. How many colleges were founded by 1800?
   a. 14
   b. 34
   c. 20
   d. 30
4. In line 2 the word «heritage» could be best replaced by which of the following?
   a. pride
   b. example
   c. criterion
   d. legacy
5. The author implies that
   a. public schools were the first to appear
   b. there were quite a few universities
   c. William and Mary established town schools
   d. there was a tendency towards linking theory to practice

Exercise 12. Choose the one word of phrase that best keeps the meaning of the original sentence if it is substituted for the underlined word or phrase.

1. He was given <u>ample</u> money for the journey.
   a. enough
   b. little
   c. some
   d. no

2. The program deals with <u>diverse</u> subjects.
   a. all
   b. interesting
   c. challenging
   d. different

3. Good timing is <u>essential</u> to our plans.
   a. useful
   b. important
   c. realistic
   d. interesting

4. With strong <u>motivation</u> it is easier to learn a foreign language.
   a. problem
   b. will
   c. prediction
   d. need

5. What was the <u>outcome?</u>
   a. result
   b. issue
   c. question
   d. occasion

6. This machinery is obsolete.
   a. new
   b. universal
   c. outdated
   d. good
7. The theory has myriads of followers.
   a. some
   b. a great number of
   c. a plenty of
   d. few
8. We were faced with a lot of problems.
   a. found
   b. renewed
   c. resolved
   d. encountered
9. Several approaches have emerged in recent years.
   a. appeared
   b. lost importance
   c. formed
   d. disappeared
10. They made a minute improvement.
    a. instant
    b. very small
    c. considerable
    d. very important
11. We have carried out several experiments.
    a. the number of
    b. a lot of
    c. few
    d. a number of
12. At present we do not have enough information.
    a. sufficient
    b. pertinent
    c. updated
    d. important
13. Electron is a ubiquitous object.
    a. valuable
    b. infinitesimal
    c. omnipresent
    d. weightless
14. Computer is a reliable tool.
    a. dependable
    b. sophisticated
    c. expensive
    d. common
15. Water is the most abundant resource on the Earth, and one of the most important.
    a. rare
    b. useful
    c. significant
    d. plentiful

16. The article concerns huge woodland areas.
    a. concluded by
    b. denies
    c. provides
    d. regards
17. A second, more rigorous course may be offered as an elective.
    a. the other
    b. another
    c. the second
    d. other
18. A telephone is an indispensable piece of equipment in any office.
    a. beneficial
    b. compatible
    c. very reliable
    d. extremely important
19. It was one of the most dramatic events.
    a. usual
    b. exciting
    c. sad
    d. obvious

Noteworthy

The name «quark» was coined by Irish poet and novelist James Joyce in the 1930s, and adopted by quantum physicist Murray Gell-Mann in 1964. Gell-Mann took it from the novel «Finnegan's Wake» in which a flock of seaswans sings this song to one of the characters:

«Three quarks for Muster Mark!
Sure he hasn't got much of a bark
And sure any he has it's all beside the mark».

Although «quark» had no relevance to physics, it was probably as good a name as any for a mysterious building block of matter.

Chapter 3

Focus on:

Science and Society Using Graphics

Grammar: System of Tenses (Review)

Text A. Read the text and be ready to answer the questions that follow.

In industrial countries, there is a close correlation ***between*** the rate of increase in the number of graduate engineers and the level of industrial productivity.

The speed at which new knowledge is ***transferred*** *to* industry is a key factor in preserving economy's ***competitive*** position vis-a-vis ***tough*** rivals.

The modern world is facing several disturbing ***trends*** in human resources. In quantitative terms, we will have ***to cope with*** the ***consequences*** *of* an aging population, a decline in the working population. In more qualitative terms, there is a ***mismatch*** between the supply of young graduates and the needs of industry ***resulting*** in skills shortage. For that matter, continuing vocational training and retraining in a constantly changing industrial and technological context need ***radical*** improvement. It has been shown that intellectual capital depreciates by 7% every year if it is not ***maintained.***

To improve the situation, some recommendations have been made. Most of these are what one would expect — attract more young people into science, more science in schools, better contact between industry and education, investment in continuing education to make labor mobility ***respond*** to regional needs, and to avoid a ***brain drain.***

The United States, Japan and Germany each employ between roughly fifty and seventy-five scientists and engineers for every 10000 workers in the labor force. In developing countries the number is between five and ten. By emphasizing education at all levels and by selectively entering globally competitive markets, countries ***prosper.*** That prosperity then ***enables*** higher investments in R&D reguired for economic development. ***The very dynamics*** of R&D institutions is changing. Universities create hybrid academic-industrial centers, often with partial goverment funding, to accelerate the transfer of scientific results to commercial applications.

between & among: when you are talking about only two things use
between, укр, серед (двох)
If you are talking of three or more things use **among,** укр, серед (трьох та більше)
to transfer — to move from one place to another укр. переносити, переміщати
competitive — based on competition
укр. конкурентоспроможний
competitor — Synonym: rival укр. конкурент, суперник
tough — difficult to do or deal with, not easy, needing effort укр. складний
trend — a general tendency or direction in the way a situation is changing or developing укр. тенденція
to cope with — to deal successfully with a difficult situation укр. справлятися, переборювати
consequences — results, outcome укр. наслідки, результати
mismatch — укр. невідповідність
to result in — to have as a result; to cause;
укр. спричиняти, призводити (до)
vocational training — укр. професійно-технічна підготовка
retraining — Synonym: in-service укр. перепідготовка
Also: staff development — підвищення кваліфікації
radical — having wide and important effects.
Synonym: drastic укр. радикальний
to maintain — to continue to have (do) as before, to keep up, to take care (of), to support укр. підтримувати
to respond — to do something in answer, to react
укр. відповідати, реагувати
brain drain — a movement of large number of highlyskilled or professional people from the country where they were trained to other countries where they can earn more money укр. відплив спеціалістів/фахівців
to prosper — to become successful and rich.
Synonyms: to thrive, to flourish укр. процвітати
to enable — to permit, to allow укр. дозволяти
the very dynamics — укр. власне динаміка (сама динаміка)
Compare: the very fact — сам факт

1. What is a key factor in preserving economy's competitiveness?
2. What is meant by disturbing trends in human resources?
3. Why is it necessary to maintain intellectual capital?
4. What is a brain drain?
5. What are the new forms of linkages between science and industry?

Exercise 1. Give English equivalents to:

сильний суперник, тривожна тенденція, справлятися з наслідками, професійно-технічна освіта, переподготовка, радикальне поліпшення, залучати молодь до науки, подовжена освіта, реагувати на потреби, уникати відпливу спеціалістів, процвітати, прискорювати процес.

Exercise 2. Give Ukrainian equivalents of:

industrial countries; modern world; disturbing trend; to cope with the consequences; the very dynamics; brain drain; skills shortage; mismatch; competitive.

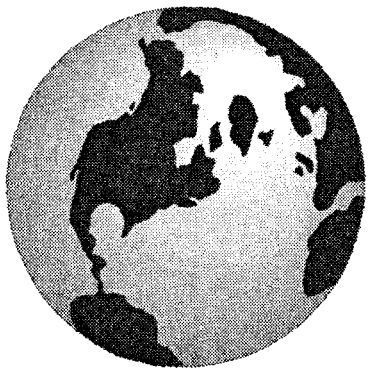
Exercise 3. Translate Ukrainian sentences into English. Then match the two columns.

1. У них є багато зарубіжних конкурентов.
2. Вони наголошують на важливості освіти на Всіх рівнях.
3. Професійна освіта допоможе вам пристосуватися до нових умов.
4. Внески (інвестиції) у науку дають велику соціальну віддачу.
5. Які показники результативности науково-дослідної роботи?

A. Investments in science generate high rates of social return.
B. What are the output indicators of R&D?
C. They emphasize education at all levels.
D. Vocational education will help you to adjust to new industrial context.
E. They have a lot of foreign competitors.

Exercise 4. Discuss the following point with your colleagues.

Scientists think globally and act competitively. International competition is the norm. But scientists also have a tradition of global cooperation, just as corporations now seek global alliances and share the costs of research and development to reach new markets. By blending competition and collaboration, the international scientific system works. As many Asian nations have shown, the patient building of national base of technology and education flourishes when linked to global networks of research.



GRAMMAR: SYSTEM OF TENSES

Simple Present (Present Indefinite) (Present Indefinite) «now»	Present Progressive (Present Continuous) «already in progress now»
Express:	
1. General realtionships and timeless truths Time changes everything. Час змінює усе.	1. Actions in progress: He is studying for an exam | now / at the moment Зараз він готується до іспиту. This device is becoming more and more popular. Цей прилад набуває (зараз) все більшої популярності.
2. Permanent states: Ann likes mathematics. Енн любить математику.	2. Uncompleted actions: She is still looking for a job. Вона все ще шукає роботу. John is making dinner. Джон готує вечерю.
3. Habitual and recurring actions: John jogs every morning. Джон бігає щоранку.	3. Repetition and duration, temporary states and activities: He is taking English classes this year. Цього року він відвідує заняття з англійської мови. She is living with her parents this month. Цього місяця вона мешкає разом з батьками.
4. Mental perception and emotions: He never worries. Він ніколи не хвилюється.	4. Emotional comment on present habit: She is always cracking jokes! Завжди вона шуткує!
5. Definite future plans or schedules She completes her studies in a month. Через місяць вона закінчить навчання.	5. Future events: I'm leaving at 7 a.m. tomorrow. Я їду завтра о 7 годині ранку. The deleaation is coming tomorrow. Завтра прибуває делегація.
6. Events with future time adverbials: After she completes her studies, she plans to stay here for good. Після закінчення навчання вона планує залишитись тут назавжди.	
7. Future events with verbs *open/close, beam/end, come/leave:* The class begins at 8 a.m. Заняття починаються о 8 годині ранку. The store closes at 10 p.m. Крамниця зачиняється о 10 годині вечора. He comes tomorrow. Він прибуває завтра.	

Tense markers

usually/generally/as a rule sometimes/from time to time rarely/seldom/hardly ever never/almost never often/ frequently always every day morning other day	now/right now/at the moment still today this year/week these days always

NOTE

Use ONLY Simple Present with stative verbs:

Understand
Know
Believe
Like
Remember
Need
want/wish
mean
prefer
appear
seem
sound
smell
look
taste
have

I know it.
Я знаю це.
I understand what you mean.
Я розумію, що ви маєте на увазі.
This idea sounds nice.
Ця ідея звучить непогано.

Projects look OK on paper.
Food tastes delicious.
I have two dictionaries.

BUT:
I'm looking at you.
He's tasting food.
We're having a party next Sunday.

Exercise 5. Choose the correct form of the verbs from the parentheses:

1. I (understand / am understanding) now.

2. This melody (is sounding / sounds) nice.

3. Barbara always (goes / is going) to work at 7 a.m.

4. Coffee (is smelling / smells) good.

5. She usually (phones / is phoning) in the evening.

SIMPLE FUTURE
(Future Indefinite)

«at a certain time in the future»

1. probable future events:

I will call you*
Я подзвоню тобі

later
tomorrow
in 2 hours
next month
tonight
soon
one of these days
(цими)днями
(по відношенню до майбутнього)
5 years from now
the day after tomorrow

←Tense markers

I will help you
Я допоможу тобі
I'll get the phone
Я підійду до телефона

NOTE

I/we s/he they	**will**	***(American English)***		I/we s/he they	**shall** **will**	***(British English)***

2. mental perception and emotions:

You'll	like it! love	Тобі це обов'язково сподобається!

NOTE

DO NOT use Future Tense in a sentence where there are two clauses, one of which is time clause beginning with ***when; before; until; after/as soon as; unless; should*** (as equivalent of ***if).***

I will do it	if when before after as soon as	you come.

Unless it rains, the competition will be held outside.
Якщо не буде дощу, змагання будуть проведені надворі.
Should you come, I will meet you.
Якщо ти приїдеш, я тебе зустріну.

3. to be going to future:
a. future plans, intentions:
She is going to study at the university.
Вона збирається навчатися в університеті
I'm going to do it no matter what!
Я збираюся це зробити (зроблю це) будь-що!
b. probable and immediate future events:
The class is going to start in a minute.
За хвилину почнуться заняття.
Also: The laboratory is (just) about to close.
Лабораторію вже майже зачинили.

NOTE

Talking about the future you may well use the following expressions:
*** in the long run** — in the distant future, укр. у далекому майбутньому, на перспективу.
*** in the short run**—in the near future, soon, укр. незабаром
—Why are you learning Spanish?
— I think it will be useful in the long run.

Past Progressive (Past Continuous)	Future Progressive (Future Continuous)
Express:	
«in progress at a time in the past»	«in progress at a certain time in the future»
l. events in progress at a specific time: He was studying at 10 p.m. Вчора о 10 годині вечора він вчився.	1. events that will be in progress at a time in the future; will last for a period of time in the future: I will be delivering a lecture on philosophy from 9 a.m. till 11 a.m. tomorrow. She will be working on her paper for the next two weeks. Вона працюватиме над статтею два наступні тижні.
2. interrupted actions: I was reading when she came. Я читав у той момент, коли вона прийшла.	Tense markers from 5 a.m. till 7 a.m. this time | tomorrow / next year 10 years from now still for 2 | hours / days at 8 a.m. tomorrow when X come(s)
3. two actions in the past continued at the same time: He was reading while I was writing my esseay. Він читав у той час, коли я писав твір.	
4. repetition and iteration: I was reading all dav long. Я читав цілий день. Tense markers yesterday | at 5 p.m. / from 3 p.m. to 10 p.m. all day long while **NOTE** Use while with Past Progressive, and when with Simple Past	

Exercise 6. Choose the correct form of the verb from the parentheses:

1. When Melissa arrived everyone (was studying / studied),
2. At three o'clock she (was studying / studied).
3. At. this time tomorrow we (wi]l be taking / will take) the test.
4. I (will call / am calling) you one of these days.
5. John (was reading / read) while Mary (was watching / watched) TV.

Simple Past «at a certain time in the past»	**Present Perfect** «in the past but related in some way to the present»
Express:	
1. events that took place at a definite time in the past: We discussed it yesterday. Ми обговорили це учора. tense markers in 1990 when X was 20 as a child yesterday last year / month the day before yesterday long ago once upon a time **the other day** (цими) днями (по відношенню до минулого) this morning (the morning is over) eventually / finally at that time 2 hours ago / later (for the) first / last time	1. actions happened at an indefinite time in the past: We have already discussed it. Ми вже обговорили це (колись раніше). tense markers **lately / recently / of late /** **in recent years** (останнім часом) up to now so far already never ever . since in the past yet during the past 2 days
2. events that lasted for a time in continue to the present: He taught at Harvard for 10 years before he came here. Він викладав у Гарварді протягом 10 років перед тим, як переїхав сюди (він більше там не викладає).	2. situations that began in the past, the past: He has attended the university for 3 years. Він навчався в університеті протягом 3 років (і зараз продовжує навчатися там). He has lived in Germany since 1992 (he still lives there). Він проживає у Германії з 1992 року (і зараз також). MIND: ***since*** *is* used to indicate the beginning of the time period; ***for*** is used to indicate duration of time.
3. habitual or repeated events: She studied English every day until she passed the test. Вона вчила англійську щодня, доки не склала іспит.	3. actions completed in the past but related to the present: John has applied for several job openings and now he's waiting for the results. Джон подав заявку на кілька вакансій і зараз очікує на результати.

4. past mental perceptions or emotions: She always knew what she wanted. Вона завжди знала, чого прагне.	
NOTE **used to and be used to ...ing/noun**	
***used to** describes habits, regular activities, states in the past that no longer exist now; ***be used to ...ing/noun** means «be accustomed to», «have a habit» He used to work at the university. Раніше він працював в університеті. He is used to working at the university. Він звик працювати в утверситеті. **Or:** He is used to his present job. Він звик до своєї теперішньої роботи.	

Exercise 7. Choose the correct form of the verb from the parentheses:

1. They (bought / have bought) a dictionary the other day.
2. Laura (has taken / took) the test.
3. During the last week I (read / have read) 2 books.
4. They (have translated / translated) the article already.
5. We (didn't finish / haven't finished) the project yet.
6. He (arrived / has arrived) the day before yesterday.
7. I (haven't seen / didn't see) him recently.

Exercise 8. Choose the one option that is closest in meaning to the original sentence.

1. John used to travel a lot.
   a. He traveled a lot in the past, now he doesn't.
   b. He is accustomed to traveling.

2. Doris isn't used to working so hard.
   a. In the past she worked very much but now she doesn't.
   b. She isn't in the habit of working so hard.

3. Marilyn is used to this climate.
   a. Marilyn is accustomed to this climate.
   b. In the past Marilyn liked this climate,

4. These students are used to studying for exams in the library.
   a. They always study for exams in the library.
   b. In the past they went to the library to study.

5. He used to jog every other day.
   a. He always jogs every other day.
   b. He doesn't jog every other day anymore.

Past Perfect	Future Perfect
2 actions (or more) occurred	
Before a certain time in the past	before a certain time in the future Express:
Express	
Action(s) or state (s) that took place Before other event(s) in the past: He had studied very hard Action 1 Before he passed the exam. Action 2 Він наполегливо вчився перед тим, як склав іспит.	future event(s) happening before other future event(s): By the time you come, Action 2 we will have finished the experiment. Action 1 Коли ви прийдете, ми вже закінчимо експеримент. I will have finished translation by 9 p.m. Я закінчу переклад до дев'ятої години вечора.
Tense markers Before After When hardly ... when never ... before	Tense markers before tomorrow by 5 p.m. by the year...

NOTE

The **Present Perfect** Progressive(Continuous), the **Past Perfect** Progressive (Continuous), the **Future Perfect Progressive** (Continuous) are used mainly to emphasize the duration of activity expressed by Present Perfect, Past Perfect, and Future Perfect, respectively:

He	has taught has been teaching	mathematics for 2 years.
He	had studied had been studying	very hard before he passed the test.
By the end of the year	we will have worked/hved/taught we will have been working/living/teaching	here for 5 years.

Exercise 9. Choose the correct tense of the verbs from the parentheses.

1. By the time you come , he (study) for two hours.

2. He (say) yesterday that he (publish) his first book in 1995.

3. I (know) him for many years.

4. Carol (be) to France.

5. He (study) since 8 o'clock this morning.

6. They (finish) the project already.

7. By the time we (arrive) the conference had already begun.

Sequence of Tenses (Reported Speech)

He **says** that he Він каже, що	is studying studies вчиться studied вчився will study буде вчитися	today	here
		now	this/those
		yesterday	
		last year	
		tomorrow	
could might would	could study	two days from today	
		three days ago	
		next month/year	
He **said** that he Він казав, що	was studying studied вчиться had studied вчився would study буде вчитися	that day	there
		then	that/those
		the day before (on the previous day)	
		the year before the previous year	
		the next day the following day	
could might would	could study	two days from then	
		three days earlier	
		the following month / year	

NO tense changes are required when you mention

1. things that are always true:

Cavendish discovered that water consists of hydrogen and oxygen.

2. statements that occurred only a very short time ago:

He told me, «I can't understand your idea».
He said that he can't understand my idea.

NOTE
Questions in reported speech:
«Am I right?» asked X.

X	Asked Wondered	if whether (or not)	she/he was right

Exercise 10. Decide whether tense changes are required or not if the sentences are changed to reported speech. State the reason why.

1. My friend said, «English and French are the two official languages in Canada».
2. Shakespeare once observed, «Love is blind».
3. Yesterday morning my teacher said, «The results of your test will be here two days from today».
4. My father always told me, «To learn is never too late».
5. Last week my cousin told me, «I have already completed the essay for my classes this week».
6. When I saw Paula last month she told me, «I received John's letter two months ago».
7. Elisabeth told me, «I couldn't come earlier».
8. Michael said, «I would get the tickets».

Exercise 11. Complete the following sentences:

1. The cordless telephone ... available to the professional and general public in the years between 1970 and 1980.
   a. is becoming
   b. became
   c. has become
   d. had become

2. Recently, there ... considerable discussion about technology investments.
   a. is
   b. has been
   c. was
   d. is going to be

3. If you ... role in leadership, you are going to develop special skills.
   a. take on
   b. took on
   c. will take on
   d. were taking on

4. They ... that they had completed the task.
   a. have reported
   b. report
   c. are reporting
   d. reported

5. For many years the Academy ... science education in the schools.
   a. promoted
   b. has promoted
   c. promotes
   d. is promoting

6. She will go to the university when she ... her paper.
   a. finishes
   b. will finish
   c. finished
   d. had finished

7. We can talk about it after he ...
   a. will leave
   b. is leaving
   c. leaves
   d. has left
8. This theory is popular ... scientists.
   a. along
   b. between
   c. where
   d. among
9. The quality of education from elementary school through college ... a subject of special interest in recent years.
   a. has become
   b. became
   c. will become
   d. becomes

Text B. Read the following passage, paraphrase it. Discuss the ways graphics affects people in workplace.

As we move into the technological age, we witness the increasing use of graphics all around us, and the ***influence*** that graphics has on the way everyone thinks, The visual world in which we live reminds us that graphics has ***enormous*** impact on our lives.

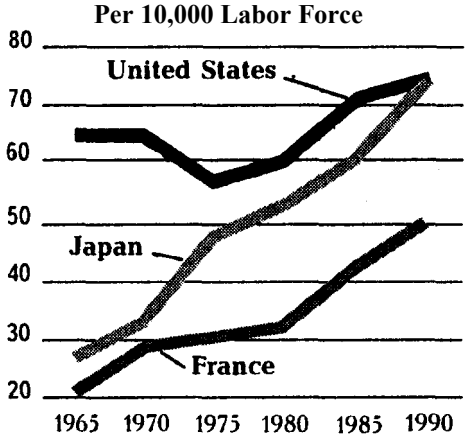
Computer users, for example, use graphic design within the texts they prepare on a word processor. Some researchers believe that graphics will ***actually*** help people communicate more effectively whether on a computer screen or a printed page. The goal of graphic design is to present information that can be understood easily and quickly. Graphic designs usually mean headlines, charts, graphs, tables, diagrams, symbols and pictures.

influence — an effect on someone or something without the use of direct force or command
Synonym: impact укр. вплив
enormous — extremely large укр. величезний
actually — in fact, really, in reality, in actuality укр. фактично, насправді

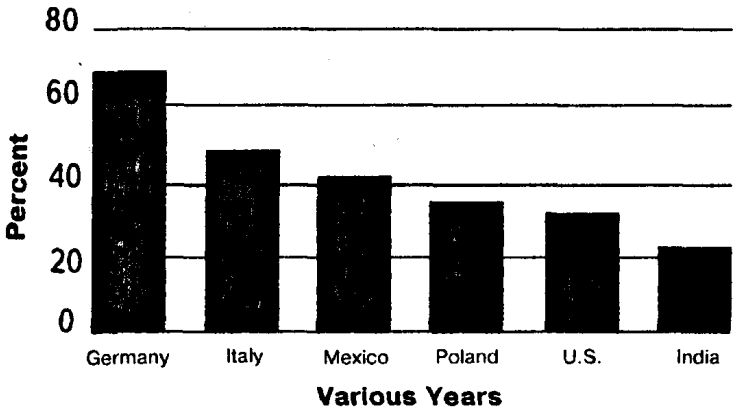
GRAPHS are a visual way of presenting information, especially statistical data. The three most important types of graphs are:

line graphs	are useful in showing changes and trends (general tendencies or directions in the way a situation is changing or developing) involving quantities or amounts over time
bar graphs	

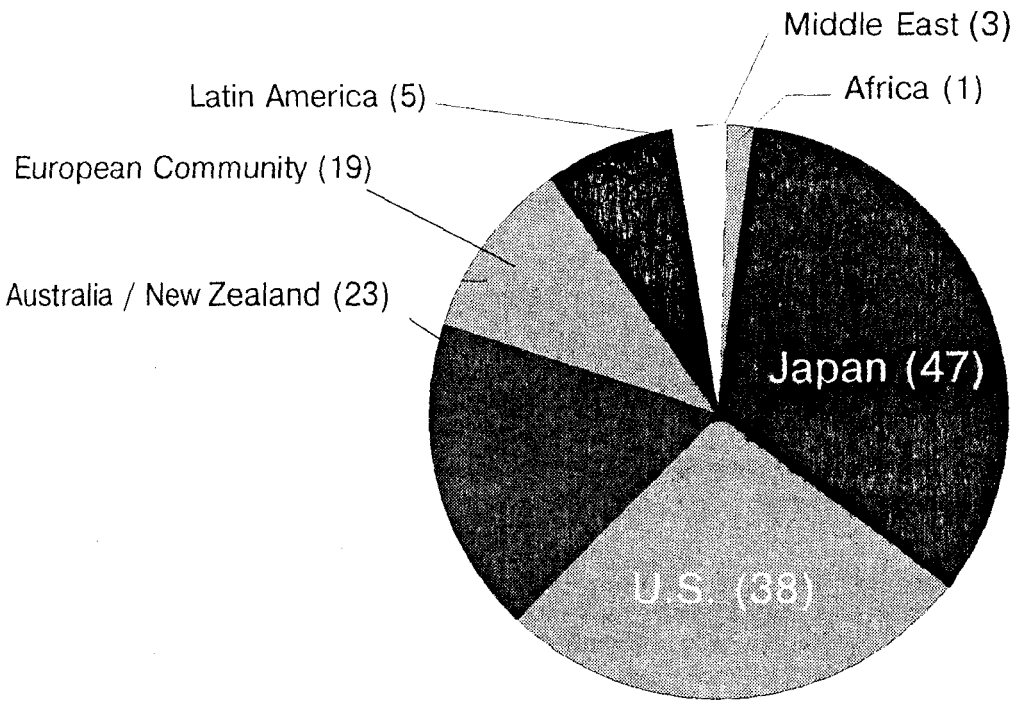
Scientists & Engineers in the Labor Force Per 10,000 Labor Force



Ratio of Science and Engineering Degrees to Total First University Degrees



R&D Scientists and Engineers
Per 10.000 Population, 1995



circle graphs | sometimes called pie graphs, show percentage, and whole is divided into parts

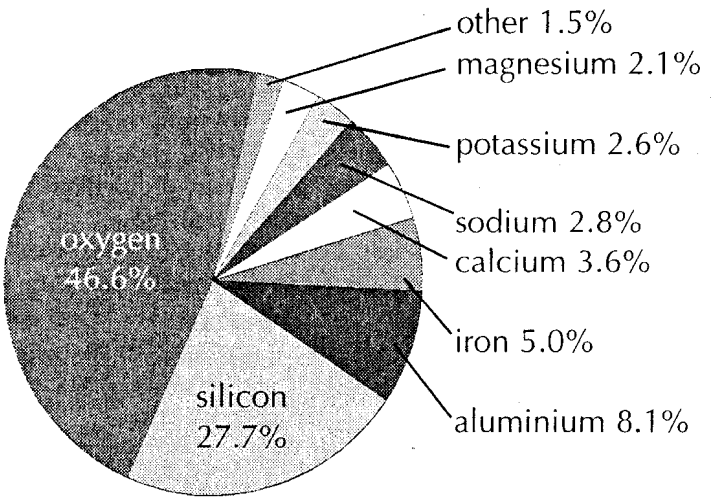
When analyzing information in a line or bar graph, note time periods and increases or decreases in amounts. In a circle graph, note the relationship of each part to the whole. Rank the percentages from the greatest to the least.

Comment on these graphs:

The present stock and flow of human resources engaged in the global discovery and application of science and technology are critical to the future pace of innovation. Historically, the world's largest reservoirs of scientists and engineers have rested in the Western economies. Over time, however, Asia, especially Japan, has begun to build equivalent ***pools of scientists*** and engineers in the labor force, and emerging economies are showing signs of producing relatively high proportions of scientists and engineers among their university graduating ***cohorts.*** As the global economy expands and nations become ever more interconnected, there may be reason to hope for a smoothing out of at least some aspects of global ***S&T*** human resources capacity.

pool of scientists, reservoir of scientists укр. кадри (резерв) вчених
cohort — any group of people who share some common quality (same age etc.) укр. когорта, група
S&T — Science and Technology укр. наука і техніка

Exercise 12. **Study the following graph and answer the questions about it:**



1. What elements make up the fourth largest percentage of the earth's crust?
2. Does oxygen make up more, less, or about the same percentage of the earth's crust as compared to all the other elements together?
3. What three elements make up almost equal percentage of the earth's crust?
4. Do sodium and calcium together make up a larger percentage than aluminium?

Exercise 13. **Choose the correct word and fill in the blanks.**

(to) increase	increasingly

1. I find it ____ difficult to work with them.
2. The population of this country has _____.

competition	competitor(s)	competitive

3. The two companies are in direct _____
4. Anyone wanting to enter the computer business faces tough _____
5. They lost the contract to their ____.
6. We've discussed the _____ nature of private industry.

(to) invest	investment(s)

7. The government is trying to attract _____ into this industry.
8. He will advise you how _____ money.
9. I've ____ a lot of time and effort into this project.

(to) prosper	prosperity	prosperous

10. Their business ____.
11. We wish you health, happiness , and ____.
12. This is a new and ____ city.

innovation(s)	innovative

13. The article dealt with _____ printing techniques.
14. Recent _____ in this field are very promising.

Exercise 14. Read the text and answer the questions about it.

William Rathje, a professor of anthropology at the University of Tucson, Arizona, has created an entirely new field of science called garbology. He conducted a scientific study of garbage left for collection, inspected and categorized some 120 tons of *garbage* and has arrived at some interesting conclusions. If you ask professor Rathje about trash, his answers might surprise you. Garbage, he points out, is an unavoidable fact of life, produced by all societies since the dawn of civilization. One of his findings is a real composition of the American waste: not plastic, not glass, not metal — but paper, which makes up more than 40 percent of the volume of waste. Another result is that middle-income families waste more food than lower or upper-income families. Rathje's research also reveals some facts about American habits of consumption. For example, lower-income households tend to throw away hazardous car-care items, middle class households discard paint, furniture, plant fertilizers.

garbage — Synonyms: litter, trash, junk укр. сміття

1. What does the passage mainly discuss?
   (A) The creation of archaeology
   (B) Methods of paper recycling
   (C) William Rathje's biography
   (D) Results from work in the field of garbology

2. According to the passage, who is William Rathje?
   (A) a university student
   (B) a sanitation engineer
   (C) an anthropology professor
   (D) a chemist

3. According to the passage, who wasted more food?
   (A) lower-and middle income families
   (B) upper-income families
   (C) middle-income families
   (D) lower-income families

4. It can be inferred from the passage that
   (A) problems with garbage appeared only recently
   (B) garbage has been produced since ancient times
   (C) Americans produce more garbage than other nations
   (D) plastic is the most common waste

5. It can be inferred from the passage that the science of garbology is important because it
   (A) provides insights into lifestyles of American families
   (B) offers work opportunities for students
   (C) is the most promising trend in science
   (D) studies modern methods of food processing

Exercise 15. Choose the one word or phrase that best keeps the meaning of the original sentence if it is substituted for it.

1. He responded to my suggestion promptly.
   (a) agreed
   (b) reacted
   (c) objected
   (d) understood

2. These two companies are rivals.
   (a) innovators
   (b) companions
   (c) competitors
   (d) investors
3. It's a tough problem.
   (a) disturbing
   (b) enormous
   (c) radical
   (d) difficult
4. The computer has made a great impact on our lives.
   a. decision
   b. reaction
   c. influence
   d. help
5. We are to face these radical changes.
   a. drastic
   b. minor
   c. relevant
   d. constant
6. We start off with trends in global communications.
   a. tendencies
   b. data
   c. priorities
   d. partnerships
7. It is difficult to predict possible consequences.
   a. chances
   b. results
   c. improvements
   d. trends
8. As soon as you arrive home, phone me.
   a. after
   b. before
   c. until
   d. unless
9. He seldom comes on time.
   a. often
   b. always
   c. sometimes
   d. rarely
10. I hope you will maintain your recent improvement.
    a. give up
    b. transfer
    c. realize
    d. keep up
11. The project will become effective in the short run.
    a. later
    b. in the distant future
    c. soon
    d. at the moment

12. Actually, IBM was world's seventh largest company in 1983.
    a. essentially
    b. on the whole
    c. finally
    d. in fact
13. Walking on the grass is not allowed.
    a. prohibited
    b. permitted
    c. proclamed
    d. proposed

Noteworthy

The science of graphology tries to establish relationship between handwriting and personality. Such relationship was first noticed by the Chinese in the eleventh century, and then in 1622 a man called Camillo Baldi ***maintained*** that each person has a characteristic handwriting. At the end of the nineteenth century graphology became a proper science. Now even figures aimless ***doodles*** are of interest to graphologists. Like dreams, doodles are products of the unconscious and can reflect a person's state of mind. Check out your recent doodles (for example, in memo pads) and find out what they could mean:

to maintain — to assert укр. наполягати, стверджувати
to doodle — to draw lines, etc. while about something

1. Faces: It's your personality you're showing. If features are faint, you tend to be withdrawn and self-conscious; when dark or overemphasized, you may be domineering but insecure. Small or closed eyes could mean you are introspective, even self-absorbed, while large eyes represent a suspicious or hypersensitive nature.
2. Geometric shapes: Circles signal affection. Three-dimensional boxes indicate frustration, but also a desire to solve problems. A triangle stands for aggression, high energy, and ambition; stars are symbols of hope and achievement.
3. Lines: Very short, sketchy strokes show you're anxious or uncertain, while long, straight ones convey determination.
4. Loops: Loosely spaced — you're feeling relaxed or lazy, but tightly drawn — you're a bit anxious.
5. Animals: Domestic pets reveal a tame personality, while birds represent high-flying ideas or the wish to escape.

Chapter 4

Focus on:

Hackers

Grammar: Structure of English Sentence. Logical Connectors

Text A Read the text and be ready to answer the questions that follow.

Who are hackers? What is hacking? Imagine that you had a properly working program that performed one task, and you needed another program to do something slightly different. Modifying the first program to create the second one was much faster than writing a new one ***from scratch.*** In other words, that led more to an ***ax-hewn*** bench than to a piece of finely crafted furniture. Taking an ax to a program to turn it into something else became the basis of the term ***to hack.***

Whereas programming is like cooking in your own kitchen — a personal act of creation — hacking is like cooking in a stranger's kitchen in the dead of night. Hacking is not for the beginners.

As one might guess, The New Hacker's Dictionary, a collection of «in crowd» terms compiled at ***MIT,*** is full of definitions of the term «hacker»:

1. A person who enjoys exploring the details of programmable systems and how to stretch their capabilities, as opposed to most users who prefer to learn Only the minimum necessary.

2. One who programs enthusiastically (even ***obsessively)*** or who enjoys programming rather than just theorizing about programming...

3. An expert or enthusiast of any kind. One might be an astronomy hacker, for example.

In «Hackers» (1984), one of the best books on the subject, Steven Levy noted in ***early*** 1960's, «a project undertaken or a product built not ***solely*** to fulfill some constructive goal, but with some wild pleasure taken in ***mere*** involvement, was called a «hack». «Secrets of Super Hacker» (1994) by Knightmare, pseudonym for Dennis Fiery (which is itself another pseudonym) offers this: «A hacker is a person with an intense love of something, be it computers, writing, nature or sports. A hacker is a person, who, because he or she has this love, also has a deep curiosity about the ***subject in question...*** For a computer hacker that means he respects the ability of computers to put him in contact with a universe of information and other people, and it means he respects those other people, and does not ***intentionally*** use knowledge of computers to be destructive. Such a definition differs a lot from the final definition in the dictionary mentioned above:

4. **A *malicious meddler*** who tries to discover sensitive information by ***poking around.*** Hence password hacker, network hacker.

But many people really forget that hacking is ***pretty harmless*** as long as the hacker avoids the ***temptation*** to cross the line and become a «malicious meddler».

In order to counteract the bad press, the hacking community tried to divide itself into good guys and bad guys. In general, those people who just liked to play and learn tried to retain the name **HACKER** by creating the term **CRACKER** for the bad guys. For crackers a major motivating force is definition number eight of «The New Hacker's Dictionary» — breaking into systems

*** from scratch** (informal) — starting from the beginning or with nothing
to hew — to cut using an ax or other cutting tool укр. рубати (сокирою)
to hack — to cut, especially roughly, violently or in uneven pieces, укр. рубати
MIT — Massachusetts Institute of Technology
obsession — a fixed and often unreasonable idea with which the mind is continually concerned укр. нав'язлива ідея
early — happening towards the beginning of a period of time укр. на початку. Compare: **late** — happening towards the end of a period of time укр. наприкінці
solely — only, hot including anything else укр. лише, виключно
mere —nothing more than; only укр. просто, не більш ніж
subject in question — under consideration, being talked about укр. питання, що розглядається
intentional — done on purpose, deliberate укр.навмисний
to meddle (in, with) — to take too much interest or take action about other people's private affairs. Synonym: to interfere (in) укр. утручатися
malicious meddler — укр. той, хто зловмисно утручається
*** to poke around —** to nose about, to search (in or for something) by examining other people's business укр. вишукувати
pretty harmless — укр. досить безпечний, нешкідливий
to tempt — to persuade or attract (someone) to do something that seems pleasant or advantageous but may be unwise or immoral. Noun — **temptation** Synonyms:
entice, lure, allure, seduction укр. спокуса

without authorization and with malicious intent. ***In any event,*** the distinction has failed **to *catch on*** outside the hacking community. All are still known as hackers.

The culture that we live in is being ***threatened*** by an oversimplified image of hackers as criminals or vandals. Anyhow, a computer hacker needs to understand how computers work, to study them, to learn programming. To hack means to be on the ***frontier,*** to be on the border. In computer science and technology this border is constantly being pushed back, and at a tremendous ***pace.*** *As* science becomes more and more computational, we need ***to come up with*** a better understanding of the nature of human activity in the information age.

in any event — in any case укр. у будь-якому разі (випадку)
*** to catch on** — (informal) to become popular укр. набувати популярності
threat — an expression of an intention to hurt, punish, cause pain etc.. Synonym: menace укр. загроза
frontier — the border, the limit or edge укр. край
pace — rate or speed укр. швидкість, темп
*** to come up with** — to have an idea about укр. спадати на думку

1. What is the subject of this passage?

2. Longman Dictionary of Contemporary English provides the following definition of the word «hacker» — someone who is able to use or change the information in other people's computers without their permission». Do you agree with this definition? Why?

3. What is the difference between hackers and crackers?

4. What are the positive and the negative sides of hacking? Express your opinion.

5. What is specific about subculture of hackers?

6. Why hackers are sometimes called «every security manager's worst nightmare» ? Give your reasons.

7. Why is the word «hacker» sometimes used as honorable connotation of the word «lawyer»? Give your reasons.

Exercise 1. **Give English equivalents of:**

виконувати одне завдання; трохи відмінний; розширяти можливості; лише, виключно; питання, що розглядається; поважати; навмисне використовувати; втручатися; набувати популярності, загрожувати; надто спрощений образ; величезна швидкість; краще розуміння; на початку 19 століття, наприкінці травня.

Exercise 2. **Translate Ukrainian sentences into English. Then match the two columns:**

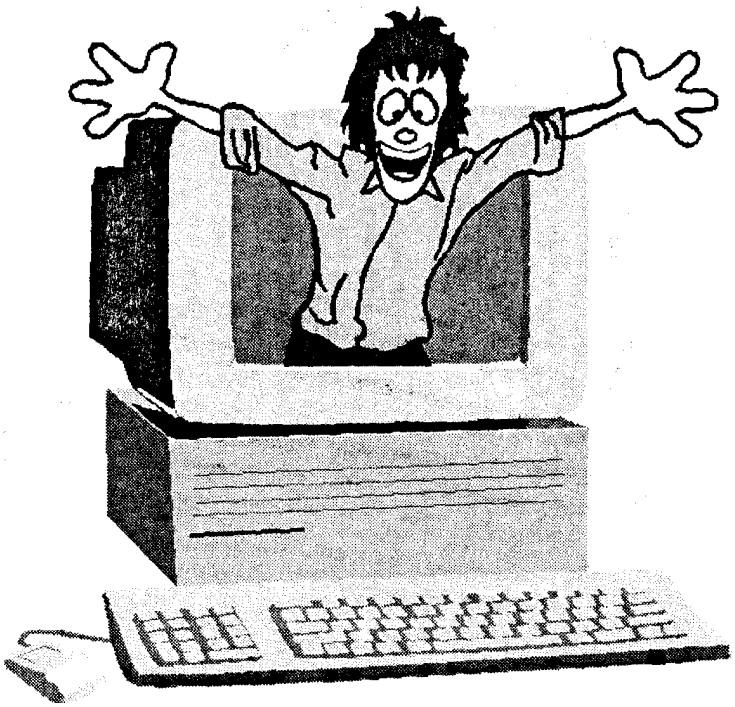
1. На жаль, ця ідея не набула популярності.
2. Сподіваюся, вам спаде на думку кращий план.
3. Цей прилад з'явився наприкінці 20 століття.
4. Він зробив це навмисне.
5. Про це (питання) не йдеться (це питання не розглядається).

A. That is not the point in question, B. He did it on purpose.
C. I hope you can come up with a better plan (than this).
D. Unfortunately, this idea failed to catch on.
E. This device appeared in late 20th century.

Exercise 3. **Render the following passage into Ukrainian.**

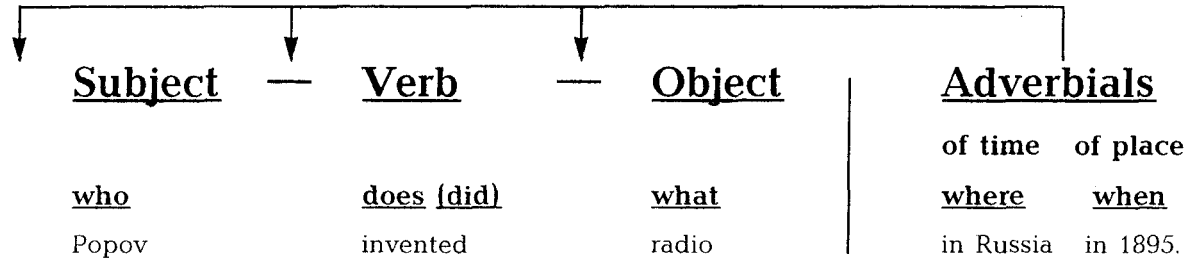
A new philosophy of conceiving scientific theory is about to be born in the so-called computer laboratory, which, so to speak, stands half-way between theory and experiment.

Supercomputers will allow a whole new methodological research approach dealing with reformulation of the basic principles of economic and social systems. Thanks to these «artificial brains», it will soon be possible to model present and future reality with a degree of accuracy previously unseen.

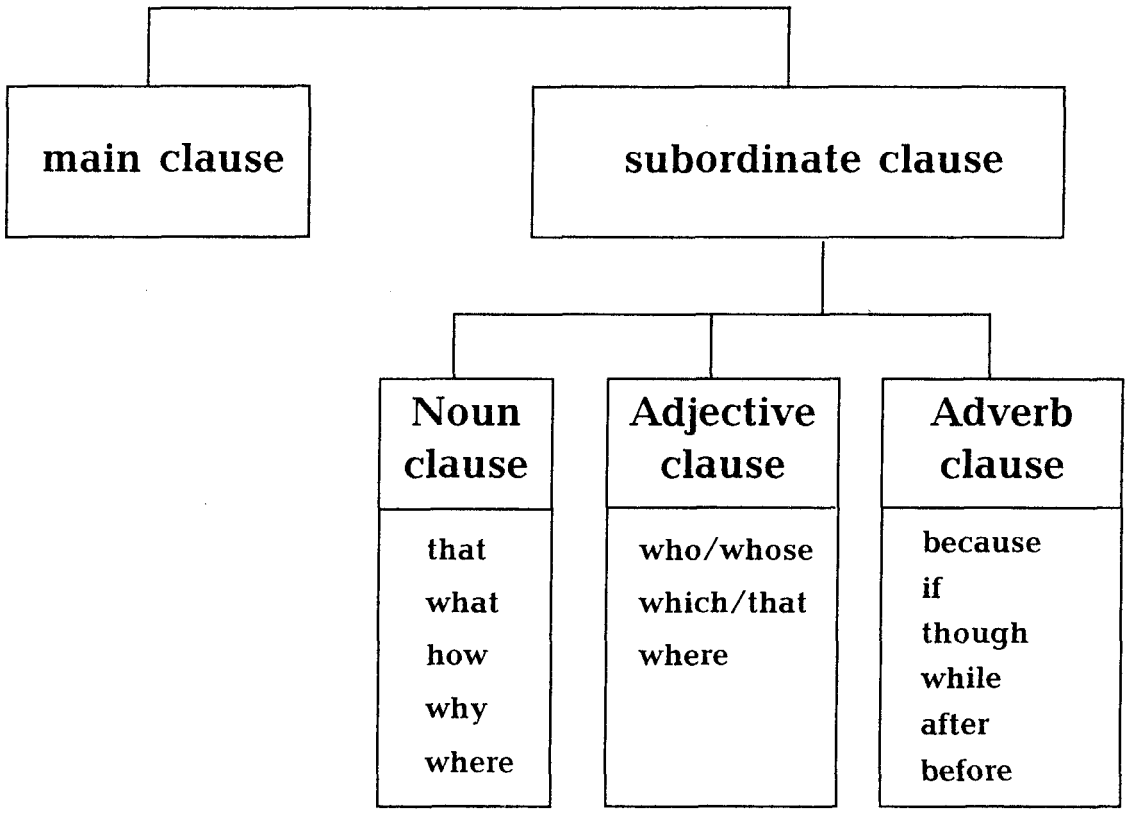


Grammar: STRUCTURE OF ENGLISH SENTENCE

The basic structure of an English simple sentence is **S — V — O**:



The basic structure of an English COMPLEX sentence is:



A main clause has a subject and a verb that stand independently:

He is reading the book.

A subordinate clause also has a subject and a predicate but is dependent on the main clause and cannot stand independently:

He is reading the book	that I gave him.
main clause	subordinate clause

Mind that a **complex sentence** may consist of **two independent clauses:**

She likes physics, and he likes mathematics.

Exercise 4. Fill in the blanks with one of the variants.

1. ... he is speaking about is exciting.
   a. that
   b. what
   c. while
   d. when

2. You might know a person ... has gotten a job like this.
   a. which
   b. whom
   c. who
   d. how

3. I don't know ... to go.
   a. after
   b. that
   c. because
   d. where

4. ... we need more information is obvious.
   a. before
   b. while
   c. that
   d. what

5. ... you go to Italy, you should visit Rome.
   a. after
   b. as
   c. when
   d. unless

6. No one is sure ... makes him think so.
   a. when
   b. why
   c. what
   d. how

7. ... the introduction of the washing machine people spent much more time cleaning their clothes.
   a. after
   b. prior to
   c. at present
   d. during

8. Scientists are still uncertain about ... this phenomenon occurs.
   a. which
   b. how
   c. about
   d. with

LOGICAL CONNECTORS

Logical connectors are essential for connecting clauses, and are essential for good writing. We will classify logical connectors (or transitions) according to the function they fulfill. Mind that some logical connectors belong to more than one category (depending on the context and the speaker's intention).

Additional Information

and also too, as well as well as and so ... X також	John likes physics and **also** chemistry. Джон любить фізику, а також хімію. Alan likes physics, **too.** Алану також подобається фізика. Alan likes physics as well as John. Alan likes physics and so does John. Алану, як і Джону, подобається фізика.
either (expresses negation) також (ні)	Helen doesn't like astronomy. Mary doesn't like it, **either.** Хелен не подобається астрономія. Мері також.
in addition, additionally, moreover what is more further, furthermore до того ж, більше того besides окрім (того)	The procedures in question can be used in physics. **Moreover** **In addition** | Some of them can be used in astronomy. **Besides** Методи, що розглядаються, можуть бути використані у фізиці. До того ж (окрім того), деякі з них можуть використовуватись в астрономії.
both ... and як ..., так і	The course gives **both** general introduction to computers **and** provides practical experience. Курс надає як загальну інформацію про комп'ютери, так і можливють набуття практичного досвіду.
not only ... but also не тільки, але й	The method is **not only** easy, **but also** accurate. Метод не лише легкий, але й надійний.
together with, along with alongside разом з, поруч	**This problem** | **together with** **along with** **alongside** mentioned above is of prime importance. Ця проблема разом з зазначеними вище є надзвичайно важливою.
another, one more, a second ще один	**Another** question is to be answered promptly. Треба швидко дати відповідь ще на одне питания.
the next наступний	**The next** step is to make an experiment. Наступний крок — зробити експеримент.
not to mention не кажучи вже про	Word processors are very useful — they can help writers rearrange word order, **not to mention** checking spelling. Текстові редактори дуже корисні — вони можуть допомогти змінити порядок слів, не кажучи вже про виправлення помилок.
*the listing goes on — перелік можна продовжити *in order to supplement, ... — для того, щоб додати/доповнити	

IS or ARE?

I. Subjects joined by «and», «both ... and» take a plural verb:
Professor and his students **are** coming. Both professor and his students **are,** coming.
II. The following phrases take a **singular** verb:

Professor	together with along with accompanied by as well as in addition to	his students **is** coming.

III. Expression «not only ... but also» takes **either singular or plural verb** depending on the **subject nearest** to it:

Not only the professor, but also his students **are** coming.
Not only the students, but also their professor **is** coming.

EXEMPLIFICATION

The steps for saving your computer file are quite simple.

for example
for instance
to illustrate
an example of this
a case in point
e.g.
наприклад

To illustrate
For example
For instance
I will show you how to save the file you have just created.

Зберегти файл у комп'ютері дуже просто.
Наприклад, зараз я покажу вам, як зберегти щойно створений файл.

specifically
especially
particularly
in particular
зокрема

He is very difficult to get along with.
A case in point occurred today.
З ним дуже важко порозумітися.
Наприклад, сьогодні трапився такий випадок.

i.e. = that is
тобто

We still need to arrange several details.
Specifically
In particular
we have to get all the necessary information.

Нам все ще треба з'ясувати декілька деталей.
Зокрема, нам треба отримати всю необхідну інформацію.

in other words
to put it another way
інакше кажучи

The book dealt with traveling.
That is
Namely
In other words
it discussed climate, language, food in Japan.

Книга була присвячена подорожам.
Інакше кажучи (а саме) у ній розглядалися питання клімату, мови, їжі в Японії.

namely
a
ca
ме

SUMMARY

to sum up
in summary
summing it (all) up
in sum
to summarize
to conclude
in conclusion
підсумовуючи

In summary
Summing it up
In conclusion
To summarize
the findings of the research to date suggest that not all answers have been found.

Підсумовуючи результата дослідження, можна сказати, що знайдені ще не всі відповіді на запитання.

on the whole all in all in general
generally speaking
загалом

On the whole
In general
All in all
the new approach can be beneficial in several ways.

Загалом, новий підхід може бути корисним з декількох точок зору.

in brief
briefly
in short
in a word
*in a nutshell
коротше кажучи

In brief
In a word
In a nutshell
we had to start it all over again.

Коротше кажучи, треба було починати все знову.

CONTRAST

Human soon will be able to travel through space.

but
yet
however
nevertheless
nonetheless
still
але, зате, проте

However
But
Still
Nevertheless
he will never be able to conquer it.

Людина скоро зможе подорожувати у космічному просторі. Однак (але) вона ніколи не зможе його підкорити.

on the one hand ...
з одного боку
on the other hand
з іншого боку ...

Although urban development destroys the ecological balance, it

on the other hand
on the contrary
provides needed employment for many people.

Хоча урбанізація руйнує екологічний баланс, однак (з іншого боку) вона створює необхідні для багатьох людей робочі місця.

on the contrary
alternatively (yet)
conversely
однак, з іншого боку, навпаки

unlike
на відміну

Unlike Paul, Tom always comes on time.
На відміну від Пола, Том завжди приходить вчасно.

rather than
а не

The decision was taken for ecological **rather than** economic reasons.
Рішення було прийняте виходячи з екологічних, а не економічних міркувань.

otherwise
протилежний

He says he is right but I think **otherwise.**
Він каже, що правий, але я так не думаю (маю протилежну думку).

Professor didn't imply that science is in perfect state. **Rather,** he said, the task is to think how to maintain commitment to it.

rather
скоріш(е), раніш(е)

Професор не мав на увазі, що наука у бездоганному стані. Скоріше, він казав про те, що треба добре подумати про те, як зберегти відданість цій справі.

to be opposed to
as opposed to
протиставляти

The former method **is opposed to** the latter one.
Перший метод протиставляється другому.

though
(at the end of a clause) = nevertheless
однак, проте

It's a tough job. I like it, **though.**
Це складна робота, однак вона мені подобається.

vs. = versus
проти/протиставлення

The debate was on environment **vs.** industrial development.
Дискусія була присвячена питанням охорони довкілля у протиставленні розвитку промисловості.

pros and cons
за та проти

It is necessary that we consider all **pros and cons.**
Необхідно взяти до уваги усі за та проти.

PURPOSE

to
in order to
in order that
для того щоб, аби, задля

We've done it | **to** / **in order to** | save time.

Ми зробили це для того, щоб зекономити час.

They used this technique **for** convenience.
Вони використали цей метод для зручності.

for для
for ... to щоб, аби

It will be useful **for** you **to** know how to operate the device.
Вам буде корисно знати, як користуватися приладом.

for the purpose of
with the aim of
for the sake of
for the reason of
in behalf of
with the view of
з метою, заради

You should not miss this opportunity | **for the reason of** / **in behalf of** / **for the sake of** | your future.

Ви не повинні втрачати таку можливість заради вашого майбутнього.

lest
щоб не, аби не

Write down the number **lest** you forget it.
Запишіть номер, щоб не забути його.

CONCESSION

though
although
even though
albeit
хоча

Attitudes to this problem are changing
although
though
albeit
slowly.
Відношення до цієї проблеми змінюється, хоча й поступово.

yet
while
whereas
хоч, хоча

It is difficult, **yet** rewarding.
Це складна, але вдячна справа.
While
Whereas
I understand what you say, I can't agree with you.
Хоч я розумію, що ви кажете, але не можу з вами погодитися.

in spite of
despite
regardless of
notwithstanding
(the fact that)
незважаючи на

In spite of
Despite
I the delay, we arrived on time.
Незважаючи на затримку, ми прибули вчасно.

whether
незалежно від
незалежно чи

The results are to be recorded, **whether** successful or not.
Результати треба записати незалежно від того, чи будуть вони успішними , чи ні.

with (all)
незважаючи на

With all its limitations, the procedure is still applicable.
Незважаючи на усі недоліки, методику все ж можна використовувати.

no matter
незважаючи на

I'll finish the experiment, **no matter** how long it takes.
Я закінчу експеримент незважаючи на те, скільки часу для цього буде потрібно.

for all (that)

For all his efforts, he failed.
Незважаючи на усі зусилля, йому це не вдалося.
It's a victory, **for all that.**
І все ж це перемога.

as ... may seem

Strange **as it may seem,** I like it.
(Хоча) це може видатися дивним, проте мені це подобається.

whatever що б не
whoever хто б не
whenever коли б не
wherever де б не

It is a good project, **whatever** you may say.
Що б ви не казали, це добрий проект.

REASON, CAUSE AND EFFECT (RESULT)

because
since
for
for the reason that
in that
тому що, бо

He was admitted to the University | **because since for in that for the reason that**

he successfully passed all exams.
Його зарахували до університету, бо він успішно склав усі іспити.

thanks to
due to
owing to
because of
on account of
завдяки, дякуючи

They obtained accurate results | **because of thanks to owing to due to**

up-to-date sophisticated equipment.
Вони отримали точні результати завдяки сучасному складному обладнанню.

so
відтак

He encountered many problems, **so** he went to see his advisor.
Він натрапив на багато проблем і відтак пішов до свого керівника.

to result in
to have as a result
to cause
to end in
to lead to
призводити до,
закінчуватися

The experiment **resulted in** no success.
Експеримент не призвів до успіху.

thus
hence
therefore
тому, відтак

He forgot the meaning of this English word.
Thus / **Therefore** / **For this reason** | he decided to consult the dictionary.
Він забув значення цього англійського слова і вирішив звернутись до словника.

as a consequence
consequently
as a result
for this reason
внаслідок

"to bring about =
to bring into being
спричиняти, викликати

Science has **brought about** many changes in our lives.
Наука спричинила багато змін (або: призвела до багатьох змін).

* (From this) it follows —
звідси випливає

effect(s) result(s)
consequence(s) implication(s)
результат (и)
aftermath
наслідки

Exercise 5. Render the following passage into Ukrainian. Pay special attention to logical connectors.

Various educational traditions have always laid emphasis on the learning of other languages. One effect of knowing a second language is that a person can experience first hand the great literature of other people, the power and subtleties of the original. The ability to read in another language reinforces one more effect: the gaining of knowledge about other cultures. Through reading and speaking a foreign language one can gain insight into the life of a different culture. Perhaps the most powerful effect of learning other languages is communication. With a second — or third — or fourth language one can make contact with other human beings. Many people study foreign languages because of more practical reasons for acquiring a new language. However, the effects are considerable. Since greater understanding of other cultures and communication with other people are so important, we would all do well if we studied at least one more language.

EXPRESSION OF COMPARISON

I


As
as ... as
similar to
alike
такий же, як і
подібний, аналогічний

Nobody does it **as** well **as** you do.
Ніхто не зробить цього краще ніж ви (так добре, як ви).

This method is **similar to** the previous one.
Цей метод подібний (аналогічний) до попереднього.

equally
in the same way
similarly
likewise
in an identical manner
аналопчно, подібно

We must pay a lot of attention to general secondary education, but **equally** we shouldn't forget higher education.
Ми повинні приділяти багато уваги загальній середній освіті, аналогічно, ми не повинні забувати і про вищу.

the same
такий самий

quite the same
almost the same
very much the same
майже такий самий

American English and Canadian English are
almost / **very much** | the same.

exactly / precisely / just the same
такий самий, однаковий

to have much in common
мати багато спільного

Both theories **have much in common.**
Обидві теорії мають багато спільного.

to resemble — to look like
бути подібним

NOTE

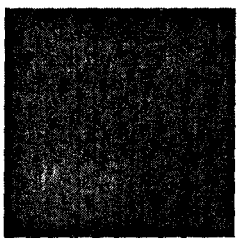
LIKE or AS?

Use like before nouns or pronouns, but if nouns or pronouns are followed by verbs, use as:
He behaves like you. He behaves as. you often do.

II.

to be different from відрізнятися від	Our department is **different from** theirs. Наш відділ відрізняється від їхнього.
not as ... as not so ... as не такий, як	John is **not as** careful **as** Ann. Джон не такий уважний, як Енн.
less (than) менше ніж	My experiment is **less** important **than** yours. Мій експеримент менш важливий, ніж ваш.
more (than) більше ніж	This article is **far more** informative. Ця стаття значно більш інформативна.
much many far markedly — more (less)	This method is **markedly less** efficient. Цей метод значно менш ефективний.
значно більше (менше) somewhat a bit slightly дещо	The new device is **a bit** / **somewhat** smaller. Новий прилад дещо менший за розмірами.

III.



the ...-est (of all) the most (the least) найбільш (найменш)	She translates **the best** (of all). Вона перекладає найкраще (від усіх).
by far the ...-est мабуть, най-...	He is **by far the brightest** student. Мабуть, Він найбільш талановитий студент.

DOUBLE COMPARATIVE

the ... the чим ... тим	**The more** we learn, **the more** we know. Чим більше ми вчимося, тим більше ми знаємо.
less and less усе менше і менше	He became less **and** less interested in the subject. Він виявляв усе менше і менше зацікавленості.
more and more усе більше та більше	
*well | over above значно більше	The level is **well above** average. Рівень значно перевищує середній.

NOTE

Comparatives and superlatives of adjectives:
1. Adjectives of one syllable:
add ...-er and ...-est big - **bigger, -the biggest**
2. Adjectives of three or more syllables:
use **more** and **the most** interesting **- more** interesting, - **the most** interesting
3. Adjectives of two syllables ending in:
...-y, **...-ly, ...-ow, ...-le, ...-er, ...-ure,** take **...-er** and **...-est** – easy **- easier, - the easiest**
4. Adjectives of two syllables that end in
...-ful, ...-less, ...-re, ...-ic, ...-ate, ...-ish, ..,-ent, ...-ous, ...-ing, ...-gn, ...-mn, and
also adjectives «guilty» and «eager» take **more** and **the most.**

IRREGULAR FORMATION

Positive	Comparative	Superlative
good	Better	the best
bad	Worse	the worst
little	Less	the least
many | much	More	the most
far	Farther Further	the farthest (about distance) the furthest
old	Older Elder	the oldest the eldest (especially about siblings)

Exercise 6. Complete the following table:

Positive	Comparative	Superlative
1. sophisticated	more sophisticated	the most sophisticated
2. …	less intelligent	…
3. famous	…	…
4. …	worse	…
5. comfortable	…	…
6. careful	…	…
7. …	…	the brightest
8. useful	…	…
9. guilty	…	…
10. …	harder	…

Exercise 7 Render the following passage into Ukrainian. Pay special attention to logical connectors.

John F. Kennedy and Abraham Lincoln lived in different times and had very different family and educational backgrounds. Kennedy was born in 1917, whereas Lincoln was born more than a hundred years earlier than Kennedy, in 1809. Kennedy came from a very rich family, but Lincoln's family, on the other hand, was not wealthy at all. Kennedy graduated from Harvard University, while Lincoln had only one year of formal schooling. In spite of this fact, he became a well-known lawyer.

Despite these differences between Kennedy and Lincoln, some interesting similarities between the two are evident. For example, take their political careers. Lincoln began his political career as a Congressman. Similarly, Kennedy also began his political career as a Congressman. They were both elected to the U.S. House of Representatives — Lincoln in 1847, and Kennedy in 1947 — just one hundred years apart. Another interesting coincidence is that Lincoln and Kennedy were elected presidents of the U.S. in a year ending with the number 60 — Lincoln in 1860, Kennedy in 1960, respectively. Furthermore, both men were presidents during the years of civil unrest in the country.

There are some similarities between the two first ladies — Jacqueline Kennedy and Marry Todd Lincoln. For example, both were socially prominent women. Another interesting similarity between Kennedy and Lincoln was the fact that both presidents had vice-presidents named Johnson. Lincoln's vice-president was named Andrew Johnson, and Kennedy's — Lyndon Johnson.

These are only a few similarities in the destinies of these two men who had a tremendous impact on social and political life in the USA.

Exercise 8 Select the appropriate logical connector from the word list, and insert it in the passage:
however; by contrast; like; while

Postmodernism,... modernism before it, is a term covering several different tendencies, directions, and styles. Postmodernism is more populist, ... modernism is more elitist and exclusive. Postmodernism has brought about a renewed partnership between the old and the new. Postmodernism recognizes that a work of art can reflect many aspects of life. Modernism ... was more puritanical. Postmodernism, ... , saw the need to face openness and cultural diversity.

Exercise 9. Fill in the blanks with one of the variants.

A.

1. John turned off the radio ... he could study.
   a. so that
   b. now that
   c. due to
   d. while

2. Some substances are hard, ... others are brittle.
   a. if
   b. when
   c. unless
   d. but

3. ... the procedures of science can appear very precise, the means of making scientific discoveries are far from perfect.
   a. although
   b. because
   c. owing to
   d. because of

4. Scientists and engineers, ... become more productive, need both easy to use and very flexible software.
   a. rather than
   b. therefore
   c. in order to
   d. in order of

5. This will probably continue ... the recession goes worldwide.
   a. unless
   b. again
   c. but
   d. for

B.

1. Both literature and music .. the fine arts.
   a. is
   b. are

2. When in Rome, do ... the Romans do.
   a. as
   b. like

3. John isn't much ... his brother.
   a. as
   b. like

4. Not only Mary, but also her parents ... leaving tomorrow.
   a. is
   b. are

5. The new director, together with his colleagues, ... arriving today,
   a. are
   b. is

Exercise 10. Find the one synonym to the underlined word:

1. In spite of the delay, we arrived on time.
   a. because
   b. despite
   c. due to
   d. because of

2. The debate has nonetheless enlarged our knowledge on the issue.
   a. alternatively
   b. nevertheless
   c. notwithstanding
   d. also

3. This problem together with mentioned above is of prime importance.
   a. rather than
   b. moreover
   c. besides
   d. alongside

4. In brief, we had to start it from scratch.
   a. finally
   b. in summary
   c. in a word
   d. in conclusion

5. These two methods are almost the same.
   a. not always
   b. very much
   c. sometimes
   d. never

6. The experiment has valuable implications.
   a. reasons
   b. indications
   c. prospects
   d. consequences

7. The experiment resulted in no success.
   a. followed
   b. realized
   c. caused
   d. accounted for

Exercise 11. Translate the following sentences:

1. There are far more possibilities for those who have a good command of English.
2. Our teacher is different from theirs.
3. This is by far the best approach.
4. This is the most sophisticated device I've ever seen.
5. He became more and more interested in the project.
6. This invention has brought about many changes in our lives.
7. Why did you do it? Was it on account of what I said yesterday?
8. They have considered all pros and cons.
9. He says it's a genuine coin, but I think otherwise.
10 They proposed that we discuss theoretical aspects rather than applied.
11. Unlike his students, professor Smith always comes on time.
12. Although Denmark is an agricultural country it is also modern and industrialized.
13. The new edition is not so expensive as the old edition..
14. This observation leads us to the following definition.
15. We don't prove the theorem here, but rather, we illustrate it with two examples.
16. To prove things Euclid made certain assumptions which he called axioms.
17. They have markedly different approaches to the problem.
18. Try not to talk too much in conversations, but don't be silent, either.

Text B Study some terms from «The New Hacker's Dictionary» mentioned in Text A, and try to appreciate the humor.

angry fruit salad: n. A bad interface design that uses too many colors.
baud barf: /bawd barf/ n. The garbage one sometimes gets on the monitor when encountering ***spurious*** data, caused, for example, by an incorrect protocol setting.
spurious _ wrong, false
beige toaster: n. A Macintosh PC.
bit rot: n. The hypotethical disease of unused programs or features that stop working after enough time has passed, even if «nothing has changed». The theory explains that bits decay as if radioactive.
bletcherous:/blech-(e)-rus/ adj. Disgusting in design or function; esthetically unappealing.
bulletproof: adj. Descriptive of an algorithm or implementation considered extremely ***robust*** and capable of correctly recovering from any imaginable exception condition. This is a rare and valued quality.
robust — strong, effective
chrome: n. Showy features contributing little or nothing to the power of a system.
glork:/glork/ interj. Term of surprise, uttered when, say, trying to save the results of two hours of editing, you find that the system has crashed.
guru: n. An expert, implying not only the possession of wizardly skill but a history of being a knowledge resource for others.
demigod: n. Hacker with a national reputation and a major role in the development of a design, tool, or game known to over half of the hacker community.
face time: n. Time spent interacting with somebody face-to-face (as opposed to over an electronic link).
New Testament: n. The second edition of K&R's (Brian Kernighan and Dennis Ritchie's) «The C Programming Language» (Prentice-Hall, 1988), describing ANSI Standard C. The first edition is referred to as the Old Testament.
to debug — to search for or remove bugs (faults) in a computer program
programming: n. 1. Classically, the art of ***debugging*** **a** blank sheet of paper. 2. A pastime ***akin*** to banging one's head against a wall, but less rewarding.
a bug — (informal) a fault or difficulty in a machine, system, computer program
softy: n. Hardware hackers' term for a software expert ignorant of hardware.
akin — similar, having the same character or nature

spaghetti code: n. Code with a complex and ***tangled*** control structure, especially one using many GOTO's, exceptions, or other unstructured branching constructs.

tangle — confused, disordered mass/state

tense: adj. Of programs, very clever and efficient.

troglodyte mode: n. Programming with the lights turned off, sunglasses on, and the terminal inverted (black on white) because your eyes hurt.

vaporware: Products announced far in advance of any release (which may or may not actually take place).

wedged: adj. Stuck, incapable of proceeding without help (whereas crashing describes total nonfunctioning). The system may be capable of doing a few things, but is not fully operational.

WIMP environment: [acronym of Window, Icon, Menu, Pointing device] n. A graphical user— interface-based environment, as described by a hacker who prefers command-line interfaces for their superior flexibility and extensibility. Macintoshes and Microsoft Windows use WIMP interfaces.

wizard: n. A person who knows how a complex piece of software or hardware works and can find and fix bugs quickly in an emergency.

wizard — a person with unusual, almost magical abilities

Exercise 13. Choose the correct word and fill in the blanks.

(to) create	creation	creativity	creative

1. His designs are always _____
2. You should use your ____.
3. The project will _____ a sensation.
4. The report proposed is the ____ of an independent committee.

(to be) capable of	capability

5. We are not ____ improving it.
6. They will not doubt her _____ for the job.

(to) modify	modification(s)

7. A few ___ to the plan will _____ it.
8. The design has been ____.
9. Scientists _____ their views in the light of new evidence.

Exercise 14. Read the passage and answer the questions about it.

The world of telecommunications is changing rapidly. New devices become invaluable for both professionals and general public. Consider business travelers who must be able to maintain contact with the office, no matter what the time or place, since negotiations often involve decisions based on the latest figures. New telecommunications products and services on the market make staying in touch easier than ever before.

Personal portable products include calculators, portable radios and pocket telephones. The pocket telephone is really remarkable. The possibility to call or be called anyplace and any time permits the pocket telephone to be often considered as almost magic personal item. Another widespread device is cellular telephone. Car phones have proven indispensable for emergencies as well as for routine business. Pocket-size organizers — tiny computers that can store all kinds of information — may serve as phone and address directories, calculators and calendars. They help businessmen with heavy and hectic schedules.

Smaller, lighter fax machines allow instantaneous transmission of data to any location having a compatible fax machine. Faxing is becoming the primary means of sending and receiving short documents.

In the future we will see the explosive growth of communication services.

1. What is the best title for the passage?
   a. The business traveler
   b. New telecommunications products and services
   c. Everyday communications
   d. Business negotiations

2. It can be inferred from the passage that business travelers need to maintain contact with the office because
   a. there are many new products
   b. they have to do it every day
   c. they must have the latest information for negotiations
   d. it is a company's requirement

3. According to the passage, mobile phone service
   a. is very useful in case of accidents
   b. costs too much
   c. is not yet available on the airplanes
   d. will soon appear on the market

4. It can be inferred from the passage that pocket-size computers are especially useful for businessmen who
   a. have no cellular phones
   b. have few/many clients
   c. contact the office frequently
   d. have very busy itineraries

5. It can be inferred from the passage that fax machines
   a. cannot be used with phone service
   b. will soon replace mail delivery of short documents
   c. are of little use nowadays
   d. are not small and light enough

Exercise 15.

1. These plants look like small roses.
   a. resemble
   b. turn into
   c. behave
   d. appear

2. Unfortunately, this property is almost completely lost.
   a. very slightly
   b. nearly entirely
   c. not so much
   d. forever

3. I'm at a loss for I don't know what to do.
   a. that is
   b. since
   c. as if
   d. when

4. These devices are extremely accurate.
   a. safe
   b. original
   c. versatile
   d. precise

5. Because there is no exact definition for biological aging, it is difficult to determine when the phenomenon begins.
   a. while
   b. though
   c. due to
   d. since

6. Roget's Thesaurus, a collection of English words and phrases, is arranged by the ideas they express rather than by alphabetical order.
   a. as well as
   b. unless
   c. together with
   d. instead of

7. She got the job in that she was the best candidate.
   a. although
   b. as soon as
   c. because
   d. while

8. I succeeded because of your help.
   a. since
   b. in spite of
   c. nevertheless
   d. thanks to

9. Another indicator is provided by our committee.
   a. a different
   b. one more
   c. other
   d. the other

10. Despite our efforts, we failed.
   a. because of
   b. owing to
   c. as opposed to
   d. in spite of

11. These two concepts are different, even though they use the same word.
   a. because
   b. although
   c. however
   d. therefore

12. In an identical manner, we see that this law holds.
   a. regularly
   b. similarly
   c. finally
   d. gradually

13. In general, it is possible to be more specific.
   a. furthermore
   b. in short
   c. for instance
   d. on the whole

14. The evidence is compelling, albeit indirect.
    a. hence
    b. although
    c. on the other hand
    d. because

15. The scope of application of photographic technigues has expanded tremendously.
    a. diversely
    b. obviously
    c. gradually
    d. enormously

16. He expressed it either with deliberate intent, or spontaneously.
    a. on purpose
    b. by contrast
    c. with respect
    d. on the other hand

17. This technique should be differentiated from the previous one.
    a. be compared with
    b. be opposed to
    c. not be confused with
    d. not be replaced by

18. Like everything else in office technology, telephone systems are getting smaller and more powerful.
    a. smarter
    b. more space-saving .
    c. cost-effective
    d. less expensive

19. In a broad sense, this application is quite possible.
    a. alternatively
    b. in general
    c. on the contrary
    d. from now on

20. I'm concerned solely for your future.
    a. solitary
    b. not only
    c. somehow
    d. only

21. For all its many problems, the United States system of education has achieved much.
    a. still
    b. as opposed to
    c. in spite of
    d. by turns

Noteworthy

«When we begin the study of any science, we are in a situation similar to that of children; and the course by which we have to advance is precisely the same which nature follows in the formation of their ideas».

Antoine Lament Lavoisier

Antoine Laurent Lavoisier (1743 — 1794) in the preface to «Elements of Chemistry». (Lavoisier originated the oxygen theory of combustion and is considered the father of modern chemistry).

Chapter 5

Focus on:

Of Truth and Theories Avoiding Sexist Language

Grammar: Mood.

TextA Read the text and be ready to answer the questions that follow.

We regard as «true» the simplest explanation that satisfies all the data we have about any given thing. This principle is known as Occam's ***razor;*** it is named after a 14th century British philosopher who originally proposed it. Without this rule, we would always be ***subject to*** such ***complicated doubts*** that we would accept nothing as known. Occam's razor sometimes called the Principle of Simplicity, is a razor in a sense that it is a cutting edge that allows distinction to be made among theories.

razor — укр. бритва
subject to — tending or likely (to have), causing to experience укр. зазнавати
complicated — difficult to understand or deal with укр. складний
doubt — (a feeling of) uncertainty of belief or opinion, lack of confidence укр. сумнів

Science is based on Occam's razor, though we don't usually think about it. Sometimes, something that we call «true» might be more accurately described as a theory. The scientific method is based on hypotheses and theories. A hypothesis is an explanation of why something happens or happened. When it is shown that the hypothesis actually explains most of the facts known, then we may call it a theory. We usually test a theory by seeing whether it can predict things that were not previously observed, and then by trying ***to confirm*** whether the predictions are ***valid.***

An example of a theory is the Newtonian theory of gravitation, which for many years explained almost all the planetary motions. Only a small discrepancy in the orbit of Mercury remained unexplained. In 1916, Albert Einstein presented a general theory of relativity as a better explanation of gravitation. The theory explained the ***discrepancy*** in Mercury's orbit. When his predictions were verified, his theory was widely accepted.

to confirm — to give support or certainty to (a fact, statement etc.) e.g. by providing more proof or by stating that something is true or correct
Synonyms: to verify, to prove, to corroborate
укр. підтверджувати, стверджувати
valid — firmly based on what is true or reasonable укр. дійсний. Antonym — invalid
discrepancy (between) — difference, lack of agreement or similarity — укр. розбіжність, розходження, невідповідність

Is Newton's theory «true»? Yes, in most regions of space. Is Einstein's theory«true»? We say so, although we may also think that one day a new theory will come along that is more general than Einstein's in the same way that Einstein's is more general than Newton's.

1. What is specific about «Occam's razor»?

2. What is the correlation between the hypothesis and the theory?

3. What are possible ways of testing a theory?

Exercise 1. Give English equivalents of:

сумніви; найпростіше пояснення; вперше запропонувати принцип; невелика розбіжність; більш точний опис; краще пояснення; широко визнавати; загальна теорія відносності; підтверджувати; фактично пояснювати; дійсний.

NOTE

Probability may be expressed in English in many different ways (see Expression of Conditions (chapter 5), Modal Verbs (chapter 6).

Mind several linguistic devices that usually express probability (for a more detailed list see appendix X).

(It is) possible/probable (that) possibly/probably можливо, ймовірно

(It is) impossible (that)

(It is) likely (that) схоже

(It is) unlikely (that) несхоже

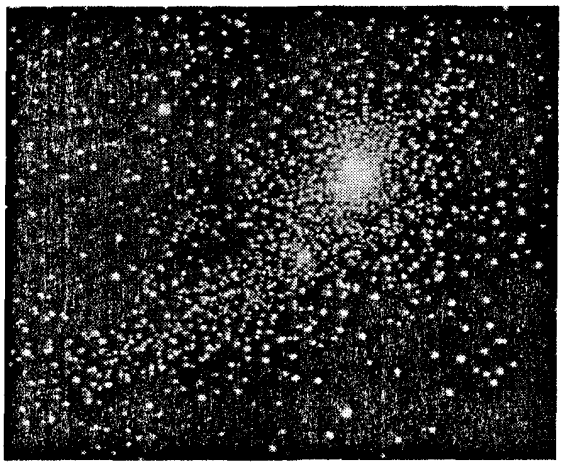
There is	strong / high	probability	that
	definite	possibility	

дуже ймвірно

Exercise 2. **Read the text. Find linguistic devices expressing probability and hypotheses. Render the passage into Ukrainian.**

In 1705, the English astronomer Edmond Halley applied the new theory of gravity developed by his friend Isaac Newton to determine the orbits of comets from observations of their positions in the sky. He reported that the orbits of the bright comets that had appeared in 1531, 1607, and 1682 were about the same. He was troubled, though, that the intervals between appearances were not quite equal. The scientist resolved this difficulty by analyzing the effect on the comet's orbit by the gravity of Jupiter and Saturn. Halley said that we were possibly observing a single comet orbiting the sun. He predicted that it would return in 1758. The reappearance of this comet on Christmas night of that year, 16 years after Halley's death was the proof of Halley's hypothesis; the comet has since been known as Halley's comet. It seems probable that the bright comets reported every 74 to 79 years since 240 B.C. were earlier appearances. The comet will be back in the inner solar system in 2061, but only in May 2134 will we have a spectacular view from the Earth's surface, though we may not be ***limited*** to the Earth's surface by that time.

to limit — to keep within a certain area, size, amount, number, limits. Synonyms: to restrict, to confine



GRAMMAR: MOOD. EXPRESSION OF CONDITIONS

Mood is any of three special forms of verbs that express:
a fact or action — Indicative Mood — дійсний спосіб

He	is studying studies	studied	will study.
Він	вчиться	вчився	буде вчитися

a command — Imperative Mood — наказовий спосіб

Do as most men do, then most men will think well of you.

Робіть, як більшість людей, і тоді про вас будуть думати добре.

a wish, a doubt — Subjunctive Mood — умовний спосіб

What would you do in my place?

(May) success attend you!

Хай щастить!

If only I knew!

Якби ж я знав!

SEMANTIC TYPES OF CONDITIONAL SENTENCES

FACTUAL express relationships that are true and unchanging	If when(ever)	the temperature gets to 0° C, water freezes.	
	Коли температура сягає 0° С, вода замерзає.		
	If it is 11 p. т., the library is closed.		
	Якщо зараз 11 година вечора, бібліотека зачинена.		
	If it is September, 13, it's my father's birthday.		
	Якщо сьогодні 13 вересня, це день народження мого батька.		
FUTURE **(PREDICATIVE)** express future plans	If I	may might ... ... should happen to should happen to	have the time, I'll call you.
	Якщо у мене буде час, я вам зателефоную.		
HYPOTHETICAL express unlikely yet possible events **IMAGINATIVE**	If she had the possibility she would visit Toronto.		
	Якби у неї була можливість, вона б відвідала Торонто (може у неї ще буде нагода).		
COUNTERFACTUAL express impossible events or states	If Newton were alive, he would live in England.		
	Якби Ньютон був живий, він жив би в Англії.		

TYPES OF CONDITIONS

REAL	UNREAL	
	PRESENT	PAST

REAL CONDITIONS

if якщо even if навіть якщо only if тільки якщо on condition (that) за умови in case, in the event якщо, в разі, за умови	**If** you study hard, you will pass the exam. Якщо ви будете наполегливо вчитися, то зможете скласти іспит (зміст: ви можете вчитися зараз, тобто ця умова є реальною).
provided (that), providing (that) за умови	I will go **provided that** you go too. Я піду за умови, що й ви також підете.
suppose / imagine assuming (that) ... припустімо What if ... ? а якщо Should (as equalent of «if») якщо, якщо трапиться	**Suppose** it rains, what shall we do? Припустімо, піде дощ — що ми будемо робити? **What if** we change the approach? А якщо змінити підхід? (що відбудеться, якщо ...) **Should** you be interested, I have a book on the subject. Якщо (трапиться, що) ви зацікавитесь, у мене є книга з цього питання.
unless якщо не	**Unless** you study hard, you won't pass the exam. Якщо ви не будете наполегливо вчитися, ви не зможете скласти іспит.
lest щоб не, аби не	Write down the rule **lest** you forget it. Запишіть це правило, аби не забути його.
if ... would якщо (захочете)	**If** you **would** let me come ... Якщо ви дозволите (захочете дозволити) мені прийти ...

UNREAL CONDITIONS

Present	Past
If you **studied** hard, you **would pass** the exam. Якби ви наполегливо вчилися, то склали б іспит. (зміст: зараз ви не вчитеся наполегливо, тобто зараз умова є нереальною).	If you **had studied** hard, you **would have passed** the exam. Якби ви наполегливо вчилися, то склали б іспит. (зміст: ви не вчилися наполегливо раніше, тобто умова є нереальною у минулому).
If only I knew it! Якби я тільки знав про це! (зараз) (зміст: я не знаю про це)	**If only I had known it!** Якби я тьльки знав про це! (раніше, колись, у минулому) (зміст: я не знав про це)

I wish I were there.
Як би я хотів бути там (зміст: я жалкую, що мене там немає).

I wish I had been there.
Як би я хотів бути там (зміст: я шкодую, що мене там не було).

Also: * It's a pity / I regret

Even if he **were** here, **he wouldn't help** us.
Навіть якщо б він був тут (зараз). він би нам не допоміг.

Even if he **had been** here, **he wouldn't have helped** us.
Навіть якщо б він був тут (тоді), він би нам не допоміг.

Even if I had a dictionary, I **wouldn't use** it.
Навіть якщо б у мене був зараз словник, я б не скористався ним.

Even if **I had had** a dictionary, I **wouldn't have used** it.
Навіть якщо б у мене був словник (тоді), я б не скористався ним.

Also:
*If I were in your place /shoes =
*Were I in your place / shoes
(Якщо б я був на вашому місці ...)
If I had this book ... = Had I this book ...
(Якби в мене була ця книжка ...)
*but for якби не
transforms into «if it were not for» (Present Unreal)
and «if it had not been for» (Past Unreal)

But for your help, I'd fail.
Якби не ваша допомога, я б не досяг успіху.

OTHER EXPRESSIONS DENOTING CONDITIONS:

Conditions permitting, ... Якщо дозволять умови ...
It being the case, ... Якщо це саме той випадок
if so, ...якщо так
if not, ...якщо ні
if any, if anything, ... якщо хоч щось ...
if anybody якщо хтось
if at all якщо взагалі

NOTE. Forms of Subjunctive	
Present	Past
be	***were***
infinitives WITHOUT to	

The rules of the sequences of tenses are NOT observed after:

It	is was has been	necessary необхідно important / vital важливо desirable бажано essential суттєво, важливо	that you	know it
				be here *American English*
				should know it
				should be here *British English*

It is important that they **be** present at the meeting.
Важливо, **щоб** вони **були присутні** на зборах.
Compare:It is important that they **are** present at the meeting.
Важливо, **що** вони **присутні** на зборах.

<table>
<tr><td rowspan="2">I</td><td rowspan="2">suggest(ed)
(make/made a suggestion)
propose(d)
пропонувати
insist(ed)
наполягати
order(ed)
наказувати
recommend(ed)
рекомендувати
demand(ed)
require (d) (it is/was a requirement)
вимагати</td><td rowspan="2">that you</td><td>do
know</td><td>it</td></tr>
<tr><td colspan="2">be here

American English</td></tr>
<tr><td colspan="3"></td><td>should do should know</td><td>it</td></tr>
<tr><td colspan="3"></td><td colspan="2">should be here
British English</td></tr>
</table>

We **insist (insisted)** that the meeting **be** held tomorrow.
Ми наполягаємо (наполягали), щоб засідання відбулося завтра.

BUT: Indicative Mood (and therefore regular rules of sequence of tenses) are used with the following expressions:

It is	strange/curious/surprising/astonishing (дивно) possible/probable/likely (ймовірно, схоже) unlikely (несхоже) wonderful (чудово) natural (природно)

It **is** strange that they **know** about it.
Дивно, що вони про це знають.
It **is** strange that they **knew** about it.
Дивно, що вони про це знали.
It **was** strange that they **had known** about it.
Видавалося дивним, що вони про це знали.

Memorize the following useful expressions with conditionals:

So be it.
Let it be so. Нехай буде так.

Be that as it may, ... Як би то (там) не було, ...

As	luck ill luck	would have it, ...	За	щасливим нещасливим	збігом обставин ...

Come Happen	what	may will	Що б там не було; що трапиться, то трапиться

Suffice it to say (that) ... досить сказати, (що)...
Far be it from me to ... Я далекий від того, щоб/аби ...
* If things were to be done twice, all would be wise. Мудрий по шкоді.

Exercise 3. Choose the correct option:

1. I wish you would have called.
   a. You called.
   b. You didn't call.
2. If I have money, I buy English books.
   a. I always do this.
   b. I do this when I have money.
3. If she had studied for her test, I'm sure she would have done quite well.
   a. She didn't study.
   b. She studied.
4. If Mary had been at the office, she would have helped you.
   a. Mary helped you.
   b. Mary didn't help you.
5. You could have gotten a higher score.
   a. You didn't get a high score because you didn't study.
   b. You got a high score because you studied.
6. They could have finished the project on time.
   a. They had the ability to be quicker.
   b. They finished the project on time.
7. Let's pretend that we have this opportunity.
   a. We have the opportunity.
   b. We don't have the opportunity.
8. I wish you had come back.
   a. You did not come.
   b. You came.
9. If you had done your homework, you would have gotten an excellent mark.
   a. You didn't get an excellent mark because you didn't do your homework.
   b. You did your homework, and so you got an excellent mark.
10. You could have brought a friend to the party.
    a. You came alone.
    b. You came with a friend.
11. I wish that you liked the meeting.
    a. You didn't like the meeting.
    b. You liked the meeting.
12. I hope that you enjoyed the party.
    a. You didn't enjoy the party.
    b. There is actual possibility that you liked the party.

Exercise 4. Make up microdialogues with your colleagues. Work in pairs.

What would you do if you were	10 years old again a writer a millionaire head of your department

Example:

A. I wonder, what would you do if you were a millionaire?
B. If I were a millionaire, I would give all my money to my teacher!

Exercise 5. Translate Ukrainian sentences. Then match the two columns.

1. Якби тут був мій науковий керівник, він би, безсумнівно, усе пояснив.	A. The main requirement is that our experiment be finished in time.
2. Без води не було б життя.	B. There would be no life without water.
3. Бажано, аби результати були опубліковані.	C. Most of the present-day discoveries would not have been possible without progress in science.
4. Якби був використаний цей новий метод, ми отримали б кращі результати.	D. If I had this book, I would give it to you.
5. Життя не могло б існувати на землі, якби не тепло та світло, яке вона отримує від сонця.	E. Were my research advisor here, he would undoubtedly explain everything.
6. Головна вимога — щоб наш експеримент закінчився вчасно.	F. It is necessary that they indicate methods that might be developed further.
7. Більшість сучасних винаходів була б неможливою без наукового прогресу.	G. He would have come, if he had had time yesterday.
8. Важливо, аби він ретельно виконав свою роботу.	H. Had he known the theory, he would have explained this phenomenon.
9. Якби у мене була ця книга, я б дав її вам.	I. It is desirable that the results be published.
10. Необхідно, аби вони зазначили методи, які б можна було використати надалі.	J. Life could not exist on the Earth but for the heat and light which it receives from the Sun.
11. Якби він знав теорію, він би пояснив цей феномен.	K. If this new method were applied, we would obtain better results.
12. Я хотів би сказати декілька слів.	L. It is essential that he perform his work carefully.
13. Якби вчора у нього був час, він би прийшов.	M. I would like to say a couple of words.

Exercise 6. Complete the following sentences.

1. Galileo proposed the hypothesis that all falling bodies ... at the same constant speed.
   a. dropped
   b. will drop
   c. drop
   d. would drop

2. It was natural that they ... us of the decision.
   a. inform
   b. had informed
   c. informed
   d. will inform

3. In 1913, Niels Bohr made the suggestion that electrons ... around the nucleus in orbits.
   a. spinned
   b. will spin
   c. are spinning
   d. spin

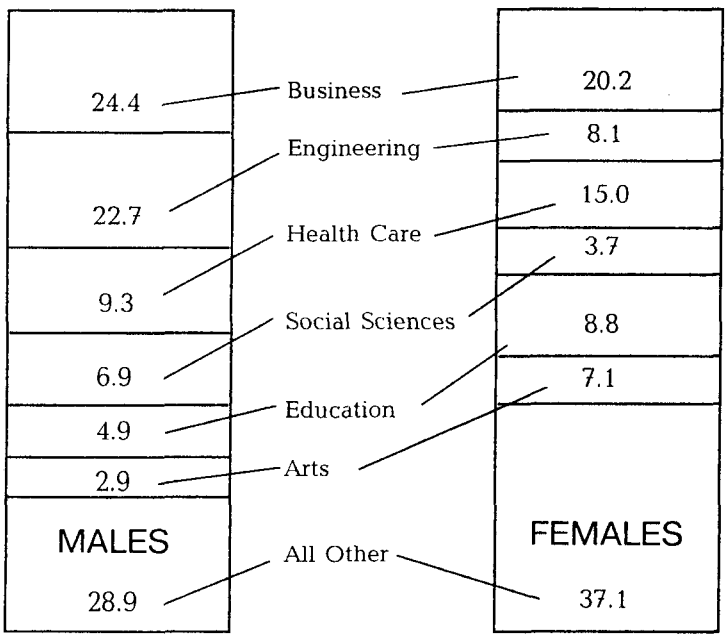
4. It is necessary that they ... the book.
   a. are publishing
   b. published
   c. publish
   d. will publish
5. They insisted that all the students ... the meeting.
   a. will attend
   b. had attended
   c. attended
   d. attend

Exercise 7. Translate the following sentences into Ukrainian.

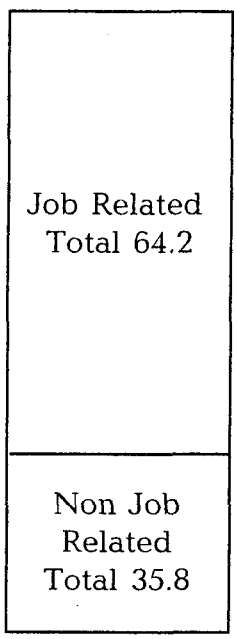
1. If we assume nothing, we can prove nothing.
2. If we generalize these facts, we can prove the following results.
3. Had we only known, we would have attended the conference.
4. It would be a mistake to think that they'are unaware of this fact.
5. Should this not be the case, we may try another approach on the basis of an alternative hypothesis.
6. In any event, it is essential that the students know this law.
7. Far be it from me to contradict you.
8. Come what will, I'll carry out this experiment.
9. Suffice it to say that this idea lacks originality.
10. As luck would have it, I performed the experiment.

Exercise 8. Comment on the following graphs. Make some predictions about adult education courses if present trends continue.

Adult education courses taken by males and females (with percentages)



Reasons and objectives for taking adult education courses (with percentages



Text B. Read the text and be ready to answer the questions about it.

Women form more than 9 percent in the U.S. engineering workforce. Still, engineering is a Male-dominated profession. Even so, many customs and habits that once seemed OK in all-male workspace, now are no longer viewed that way. Among these, the use of ***sexist*** language, either intentionally or unintentionally, is a growing source of ***anger*** in the office.

One of the issues is the general use of the masculine gender ***to denote*** both male and female subjects. In many Indo-European languages, gender marks words as masculine, feminine or neuter.

This is not always accurate, however. Perhaps the most ***ridiculous*** example is the German word for girl, «das Madchen», which is neuter. But the English language does not ***utilize*** gender. Instead, the sex of a person is designated by using the appropriate pronoun or possessive adjective. Traditionally, «he» has been used to denote a sexless person, making it a neuter pronoun. A growing ***consensus,*** though, no longer accepts this view, so that the way people communicate is changing. In «The Elements of Nonsexist Usage» (1990), Val Dumond writes that pronouns present one of the greatest challenges for avoiding sexism in language. As a first choice, Dumond suggests ***omitting*** the pronoun whenever possible. A sentence such as «An engineer should never trust his computer» can be rewritten as «An engineer should never ***trust*** a computer». Alternatively, the plural form may be employed, generating in this case «Engineers should never trust a computer».

sexism — the belief that one sex is not as good, clever, etc. as the other, esp. when this results in unfair treatment of women by men

anger — strong feeling of displeasure укр.——гнів

to denote — to be a name of; mean.
укр. позначати, виражати.

ridiculous — silly or unreasonable
укр. нісенітний, безглуздий

to utilize — to use, to make use of (to employ)
укр. використовувати

consensus — a general agreement, the opinion of most of the people in a group укр. згода, одностайність

Even in traditional correspondence the use of «Dear Sir(s)» as a universal form of address to an organization, or to an individual when (his? her? their?) sex is not known has come under fire. Some suggest that the salutatory «Dear» has itself become an archaism, and should be dropped. Letters to organizations, which are usually ***formal*** could use a «To:» line with the name of organization or department, such as «Customer Service Manager».

to omit — to leave out (by mistake or purpose)
укр. пропускати

to trust — to believe in the honesty and worth of (someone/something), to have confidence in
укр. довіряти

formal — based on or done according to correct or accepted rules, e.g. social behavior or official business. Also: official
укр. офційний, формальний

The most useful rules are to avoid the generic use of **man** to refer to both **men** and **women,** and not to imply gender when it is unnecessary to do so. Make your language inclusive, always give equal treatment to both men and women. If the sex of the subject is not relevant to the matter, it should be omitted.

For dealing with titles and job descriptions, a non-gender-specific form of the word can usually be found. Luckily, the most common terms, such as «scientist», «engineer», or «technician» are already grammatically neuter.

1. What is the subject of the passage?

2. What is one of the tendencies in language usage?

3. What are the strategies of avoiding sexism in language?

4. Give examples of some grammatically neuter terms denoting titles and job descriptions.

Exercise 9. A. The following sentences contain stereotypes of male and female roles. Propose your options to avoid stereotyping:

1. A secretary should be familiar with her duties.
2. Every member of congress will cast his vote.
3. When everyone contributes his ideas, the workshop will be very stimulating.
4. A professor should meet his students regularly.
5. A director will bring his draft.

B. Avoid sexist language by choosing the appropriate options:

spouses	to have a career	lay people	the average person/ordinary people
assistant	humanity	chairperson	police officer

1. This problem concerns the whole mankind.
2. My girl will inform committee members of the meeting.
3. Alexandra is a career woman.
4. The policeman arrested the criminal.
5. The common man will suffer most.
6. The professors and their wives attended the meeting.
7. Who is a chairman?
8. To laymen the jargon that hedges such words as WIMP can seem impenetrable.

Exercise 10. Draw a graph based on the following data. Make some predictions for the future if present trends continue.

Women-scientists in the USA (mid 1990s) Percentage of physics PhD's to women — 8 Percentage of mathematics PhD's to women — 19 Percentage of chemistry PhD's to women — 25 Percentage of biology PhD's to women — 38 Percentage of psychology PhD's to women — 56

Exercise 11. Choose the correct word and fill in the blanks.

(to) explain	explanation	explanatory

1. My assistant will ____ the diagram.
2. There is no ____ for her absense.
3. There are some _____ notes at the end of each unit.

intention	intentional

4. I had no ____ of changing my mind.
5. His absence was quite ____.

accurate	accuracy

6. His report is _____ in every detail.
7. To be on the safe side, pay special attention to the _____ of calculations.

(to) avoid	avoidance

8. I tried ____answering these questions .
9. We are discussing possible ways of _____ of danger.

theoretical	theoretically	(to) theorize	theorist (theoretician)

10. First, I'll explain how it works _____ then I'll give you a practical demonstration.
11. He is our leading _____
12. It's easy _____ about it.
13. She majors in ____ physics.
14. It's a _____ possibility, but I don't suppose it will happen.

Exercise 12. Read the passage and answer the questions about it.

What is culture? Culture is knowledge, beliefs, and behavior shared by a group of people that is learned and passed on from generation to generation.

It is not possible to say that all Americans share the same culture. It is more accurate to speak about the many cultures of Americans — the U.S. is often described as a «culture of cultures». Yet, even though it is not possible to speak of a single American culture, Americans talk about a «mainstream» U.S. culture that is shared by a majority of Americans.

When Americans describe their culture they may describe an ideal and not a real culture. For example, the following are often given as values of mainstream American culture: independence, hard work, honesty, equality of all persons. While many Americans show these values, there are also times when they do not, i.e. such values often describe an ideal way of living. The history of the USA shows Americans trying to change the values from ideal to real ones, for example, today Americans are continuing their efforts in the area of equality of women's and men's rights.

Sometimes one may overgeneralize particular features of a culture. For example, in southern U.S. «Sir» and «Ma'am» are used more frequently than in other regions, but if you have been only to southern U.S. you may think that this is true for all Americans. Overgeneralizations, called stereotypes, can create a false view of another culture. Some Overgeneralizations are positive, such as «Americans are hardworking and honest», other are negative, such as «Americans appear friendly, but don't really want to have deep relationships». Any stereotype, whether positive or negative, describes a group of people, but not individuals in that group.

Sometimes culture learning, like language learning can be tiring. This tired feeling, or culture fatigue is normal when you adapt to a different culture and language. Sometimes due to fatigue and frustration, some people become too critical of the new culture. The important thing, however, is to remember that adapting to a culture does not mean accepting everything in that culture.

1. What is the best title for the passage?
   a. Real and ideal values.
   b. Cultural stereotypes.
   c. Culture learning.
   d. Mainstream culture.

2. The U.S. can be called «a culture of cultures» because
   a. Americans are very interested in cultures
   b. there are many different cultures in the USA
   c. all Americans share the same culture
   d. American culture is a single culture

3. Independence, hard work, honesty, equality are:
   a. examples of ideal culture for all people
   b. examples of ideal American culture
   c. examples of real American culture
   d. examples of real culture for all people

4. An example of stereotype is
   a. most Americans live in the U.S.
   b. some Americans say «Ma'am» and «Sir» frequently
   c. Americans are friendly, but don't want to have deep relationships
   d. many people visit U.S. every year

5. When people are adapting to a new culture they can criticize this culture because:
   a. they have to accept everything in the new culture
   b. they overgeneralize this culture
   c. when people are tired, they may say things they don't really mean
   d. they feel homesick

Exercise 13. Choose the one word or phrase that best keeps the meaning of the underlined word or phrase if it is substituted for it:

1. It's rather complicated to explain.
   a. easy
   b. boring
   c. difficult
   d. interesting

2. The evidence confirms our predictions.
   a. tests
   b. proves
   c. challenges
   d. confines

3. Can we reach a consensus on this issue?
   a. solution
   b. agreement
   c. conclusion
   d. decision

4. I have omitted all minor details.
   a. brought about
   b. added
   c. revised
   d. left out

5. We need a formal invitation.
   a. valid
   b. official
   c. regular
   d. confirmed

6. This fact is impossible to verify.
   a. to corroborate
   b. to overestimate
   c to understand
   d. to accept

7. Don't apply for the job unless you qualify.
   a. if you don't
   b. if only
   c. in case
   d. provided that

8. It is essential that he perform his work carefully.
   a. required
   b. importable
   c. important
   d. desirable

9. Should they invite you, bring all the papers.
   a. unless
   b. if
   c. after
   d. would

10. It is highly desirable that we solve this problem.
    a. slightly
    b. usually
    c. somewhat
    d. very

11. The economists predicted an increase in the rate of inflation.
    a. made an assumption
    b. made prognosis
    c. made effort
    d. made decision

12. Assuming that you are right about this, what shall we do?
    a. even if
    b. suppose
    c. only if
    d. unless

13. Please confine yourself to the subject in question.
    a. conclude
    b. combine
    c. extend
    d. restrict

14. Provided (that) there is no opposition, we'll hold the meeting tomorrow.
    a. now
    b. so
    c. as
    d. if

Noteworthy:

To women who wish to become professional scientists I am also suggesting that they remember, ... «If you are not for yourself, who will be? And if not now, when?»

Fay *Aizenberg-Selove (a professor of physics, USA)*

UNscientifically speaking...

LET'S LOOK AT A TEST FROM A STUDENT'S POINT OF VIEW

Chronology of a test

8:30 a.m.	The student writes down the name and hopes for logical answers in the test.
8:35 a.m.	After reading the first problem, curses himself or herself for having skipped that drill exercise the night before.
8:40 a.m.	Mental block. The hallucinations begin.
8:43 a.m.	Phrases like: «That isn't coming in the test!» start tormenting the student.
8:47 a.m.	Something tells him or her how to answer the questions; takes the pencil out of the mouth and starts hopelessly filling out an answer sheet.
9:00 a.m.	Those were 10 easy points, s/he proudly pats herself/himself on the back.
9:06 a.m.	Reality check. Cold sweat. Hallucinations.
9:10 a.m.	Only 5 minutes left, the last problem has the most dreadful word one has yet to encounter in a test.
9:13 a.m.	Shamelessly starts guessing the answers to the questions that s/he is unsure about. Uses the last minutes to review the known answers, the rest is pointless. Recognizes it's never too late to pray.

Chapter 6

Focus on:

INTERNET
Acronyms and Initialisms

Grammar: Modal Verbs and Their Equivalents

Text A. Read the text and be ready the answer the questions that follow.

The terms INTERNET, World Wide Web (WWW), the information highway refer to a dynamic new way that people around the world are using for communication and accessing vast amounts of computer related information. Today, we are integrated in an electronic communications world that ***spans*** the globe and offers a myriad of services — some for payment, some free.

The Internet was born from roots of military secrecy and academic researchers engaged in ***hush-hush*** projects.

Electronic mail ***evolved*** spontaneously in mid-1960s. These early mail systems were written by a programmer or two, often as a weekend project, and had no uniformity. Then in 1969, the Advanced Research Project Agency Network (Arpanet) was begun by the U.S. government so that researchers at universities and other facilities might electronically ***ship*** computer data to each other and ***remotely launch*** computer programs. A year later, Raymond Tomlinson, a principal scientist at BBN, the main Arpanet contractor, wrote a program employing Arpanet's file transfer protocol. The software let BBN's local mail system communicate with independent mail systems at the other Arpanet sites. An additional influence came from the U.S. Department of Defense, which in 1978 ***endorsed*** the Transmission Control Protocol/ Internet Protocol (TCP/IP) as a data communications standard, and made it a requirement on Arpanet and Milnet (a government military network) in 1983. The result: e-mail quickly became a key means of communication among Arpanet users, as well as a ***vehicle*** for transmitting other information such as data files, packaged as e-mail messages. Today e-mail reaches many millions of people around the globe.

to span — to include in space or time укр. охоплювати
hush-hush (informal) — of plan, arrangement, etc. hidden from other people's knowledge, Synonym: secret
укр. таємний, секретний
to evolve — to develop gradually укр. розвиватися
to ship — to send to a distant place укр. транспортувати
remote — distant in space or time
укр. віддалений, далекий
to launch — 1) to send; 2) to begin, to start
укр. 1) посилати 2) починати
to endorse — to express approval or support укр. ухвалити **vehicle** — something by means of which something else can be passed on укр. засіб
NOTE ALSO:
vehicle — укр. будь-який транспортний засіб

Obviously, e-mail has many elements present in other forms of communication — body language, monogrammed notes etc. that give paper mail a personal touch. A few examples of «emoticons» or «smilies» that may be used in messages in a host of ways:

:-) A joking comment
;-) A flirtatious or sarcastic comment
:-(A frown, the user is upset or depressed
:-D A laugh
:-@ A scream %-) Confused
:-X My lips are sealed :* A kiss

Improvements in electronic mail services are on their way. Portable notebook computers with built-in wireless modems will enable users to send and receive e-mail anywhere. The advantages of electronic mail are many. Besides the obvious ***boon*** of avoiding telephone time-zone dissonance, e-mail gives unprecedented ***flexibility.*** new needs This flexibility may let companies

boon — something very helpful or useful укр. благо
flexible — that can change or be changed to be suitable for companies укр. гнучкий

operate with a smaller workforce — a specialist may work part-time with several project teams many hundred kilometers away. When one runs into a problem, e-mail can broadcast «does anybody know» request throughout the network. A person can say «Help» to 10000 people (which a person cannot do on the telephone), and the next morning s/he may have 15 answers to the problem, of which 13 are wrong. But s/he has answers!

With e-mail, months or years no longer pass between a researcher's completion of experiments, and the ***dissemination*** *of* results. Now, scientific papers are «published» on the network, commented on, and often revised and «republished» several times before they appear in traditional journals or are delivered at conferences. A drawback of electronic mail, though, is that the ability to move fast is not always positive. Anytime there is rush, there is less time to ***contemplate*** the results. We all make mistakes, and the increased rapidity in communications is ***depriving*** the scientist of the time to think, and talk to colleagues, and change things before they are made public. Electronic mail has some limitations. Everybody knows that it is very hard to reach a decision about something that is complex and multifaceted. Many scientists noticed that in course of lengthy and deep technical discussions carried on by means of e-mail it is hard to summarize the data presented and guide the group toward a solution — a usual result of a face-to-face meeting. But e-mail is great for collecting information, for helping people have contacts with many other people.

to disseminate — to spread (news, ideas etc) widely укр. поширювати, розповсюджувати
to contemplate — to think about something deeply укр. обмірковувати
to deprive (of) (somebody of something) — to take away from, prevent from using or having укр. позбавляти

FIDONET

Unlike the Internet, FidoNet is a telephone-based relay network, requiring people to make calls using existing public phone lines, ideally at regular intervals, to forward e-mail.

INTERNET GOPHER

Internet Gopher is a communications application designed by the University of Minnesota which allows users to access more than 5,000 Gopher servers worldwide.

NOTE

Назва *Gopher* власне походить від:

« go fer» → «go for» («піди принеси»)
gopher (ховрах)

WORLD WIDE WEB

WWW is a ***hypertext-based*** system for accessing Internet resources. Though an efficient way to share information, the Internet had a drawback. There was no problem sharing text, because everyone could use ***ASCII*** format for text files. But no such commonly agreed format existed for graphical, video, or audio data. In 1989, a London-born physicist and computer scientist, Tim Berners-Lee solved these problems while working at CERN, the European Laboratory for Particle Physics near Geneva. To help the physicists throughout the facility share information, he ***contrived*** a simple means of transmitting all kinds of data — graphical, video, audio. Berners-Lee with his associates developed the Web by modifying and combining common software protocols. The fundamental Web protocols are the hypertext mark-up language (html) and the hypertext transport protocol (http, based on TCP/IP).

Berners-Lee described his creation as an Internet-based hypermedia initiative for global information sharing. For short, he called it the World Wide Web.

Now we have a lot of new technology with the potential to help us communicate widely, quickly, and efficiently.

hypertext: internally cross-referenced written information that allows a user to jump from topic to related topic
ASCII — American Standard Code for Interchange; a set of 128 letters, numbers etc. used for easy exchange of information between a computer and other data processing machinery (вимовляється «ескі»)
to contrive — to make or invent in a clever way, esp. because of a sudden need укр. винаходити, вигадувати, вимудровувати.

1. What is the subject of the passage?

2. What are the roots of Internet?

3. What is specific about «smilies» or «emoticons»?

4. What are the obvious advantages of e-mail? Are there any limitations?

5. What is specific about FidoNet?

6. What is specific about the World Wide Web?

Exercise 1. Give English equivalents of:

світ електронних комунікацій; велика кількість послуг; безкоштовні послуги; секретний проект; програмне забезпечення; апаратне забезпечення; електронна пошта; засіб передачі інформації; ухвалити стандарт; портативні комп'ютери; запит; розповсюджувати результати; обмірковувати; багатогранна проблема; гіпертекст; вигадати простий засіб.

Exercise 2. Render the following passages into Ukrainian. Discuss the points with your colleagues.

A.

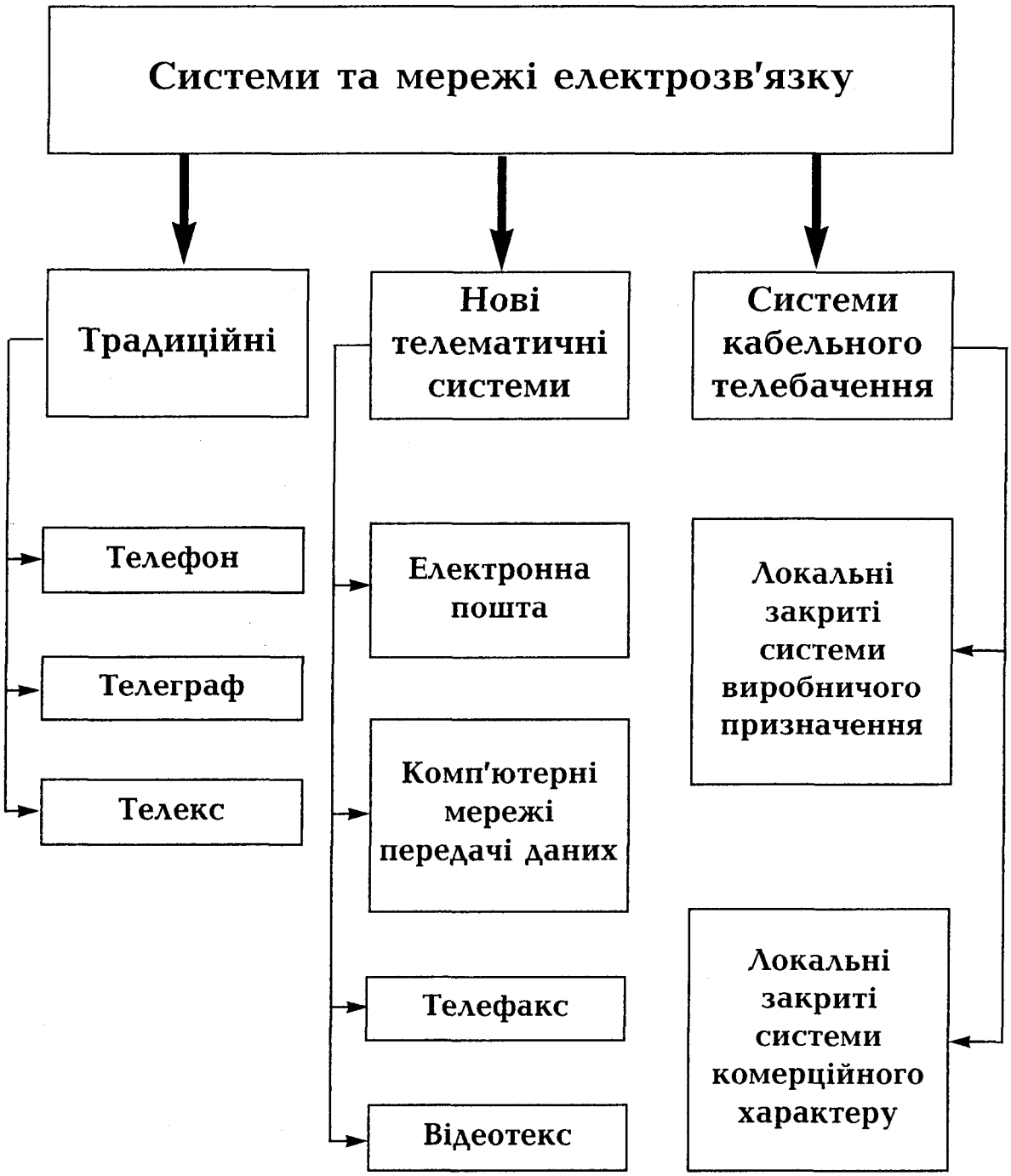
The age of the so-called information highway is beginning. This highway starts with computer operators in the 50s who begin to communicate among themselves using specialized languages and protocols. Today we think that electronic communications world (since it is digital) must be accurate, reliable, and low cost. Perhaps. In some cases. At times. Yes, e-mail is transferred across the Internet in seconds. However, if it crosses a boundary between the Internet and a relatively restricted network there can be delays of seconds, minutes or hours — just like leaving a superhighway and encountering road construction or customs checkpoint.

Perhaps, your e-mail is delivered promptly. Who will read it? Maybe that person is busy, out of town, or simply doesn't know what is needed to answer you. We need to distinguish between our expectations of the communications technology and our expectations of the people with whom we communicate.

B.

Historians of technology often tell us how long it takes for technological innovations to enter widespread use. They say that 25 years is the expected interval. The telephone, television, and fax machine, for example, all took 25 years to reach popularity. But what about the Web? It became ubiquitous all of a sudden, and this ubiquity is growing, changing our view of *all of a sudden == suddenly information, society, and business. Is another Web-like thing on its way?

Exercise 3. Translate the following table.



GRAMMAR:

MODAL VERBS AND THEIR EQUIVALENTS (PHRASAL MODALS)

Modal verbs are used when we say that we expect things to happen, or that events are possible (necessary, improbable, impossible), or when we say that things did not happen, or when we are not sure whether they happened.

Modal verbs have no -s ending for the third person singular, they are followed by the infinitive WITHOUT to (except for ***ought*** *to).*

Modal verbs can be used with perfect infinitives to talk about things that did not happen, or which we are not sure about in the past.

Modal verbs make ***questions*** and ***negative forms*** **WITHOUT** using ***do/did.***

Modal verbs are: **can, could, may, might, shall, should, will, would, must, ought to, dare.** In ***British English*** need can be both a modal verb and an ordinary verb. In ***American English*** it is NOT used as a modal.

MODAL VERBS

1. can, could, can't, couldn't, could have	meaning	equivalents (phrasal modals)
can	present ability теперішня можливість	to be able to
I can drive. Я можу (вмію) водити машину.		Ann is able to type. Енн може (вміє) друкувати.
I could speak German when I was a child. У дитинстві я вмів розмовляти німецькою.	past abilitv можливість у минулому	I was able to speak German when I was a child. У дитинстві я вмів розмовляти німецькою.
—	future abilitv можливість у майбутньому	He will be able to pass the exam. Він зможе скласти іспит.
You can/could use my phone. Можете скористатися моїм телефоном.	permission дозвіл	
The dictionary can be on this shelf. Словник може знаходитись на цій полиці. Could he be there? Може, він там? (напевне це невідомо)	possibility можливість	
Thev could have written the letter if they wanted to. Якби вони схотіли, то написали б листа (могли б написати). He could have done it. Можливо, він це і зробив (але напевне невідомо).	past possibility (uncertain if the action occurred) можливість у минулому (невідомо, чи дія відбулась)	
I can't understand. Я не можу зрозуміти. He couldn't speak. Він не міг говорити.	impossibility неможливість	
Could you wait? Чи не могли б ви зачекати?	polite request ввічливе прохання	

2 may, might, might have	meaning	equivalents (phrasal modals)
He mav/might be in the library. He might have read this book. Можливо, він прочитав цю книгу.	probability ймовірність, можливість	
You may ask any questions. Можете ставити будь-які запитання. May I speak to professor Johnson? Чи можу я поговорити з професором Джонсоном?	permission дозвіл	to be allowed to to be permitted to You're allowed to bring dictionaries. Можете принести словники.
He may go to the libraiy. Може, він піде до бібліотеки (але це не дуже ймовірно). He might go to the library. Можливо, він піде до біблютеки (але я особисто вважаю, шо це не так).	uncertain possibility малоймовірна можливість	
Thev mav/might have arrived in the morning. I'm not guite sure. Можливо, вони приїхали вранці. Я не дуже впевнений у цьому.	past possibility можливість у минулому про яку невідомо, чи вона відбулася	

3 must, must, have must not	meaning	equivalents (phrasal modals)
All students must attend these classes. Усі студенти повинні відвідувати ці заняття	necessity and obligation необхдність та обов'язковість	to be to to have to You have to (are to) come on time. Вам доведеться прийти вчасно. to have got to I've got to go to the university. Мені треба (я повинен) йти до університету.
You must read it. It's marvellous. Ви повинні прочитати — це чудова річ!	advisabilitv порада	to advise «it's a good idea»
John must be ill. Мабуть. Джон захворів. I must have lost mv book somewhere. Мабуть, я десь загубив свою книгу.	probability ймовірність, можливість	

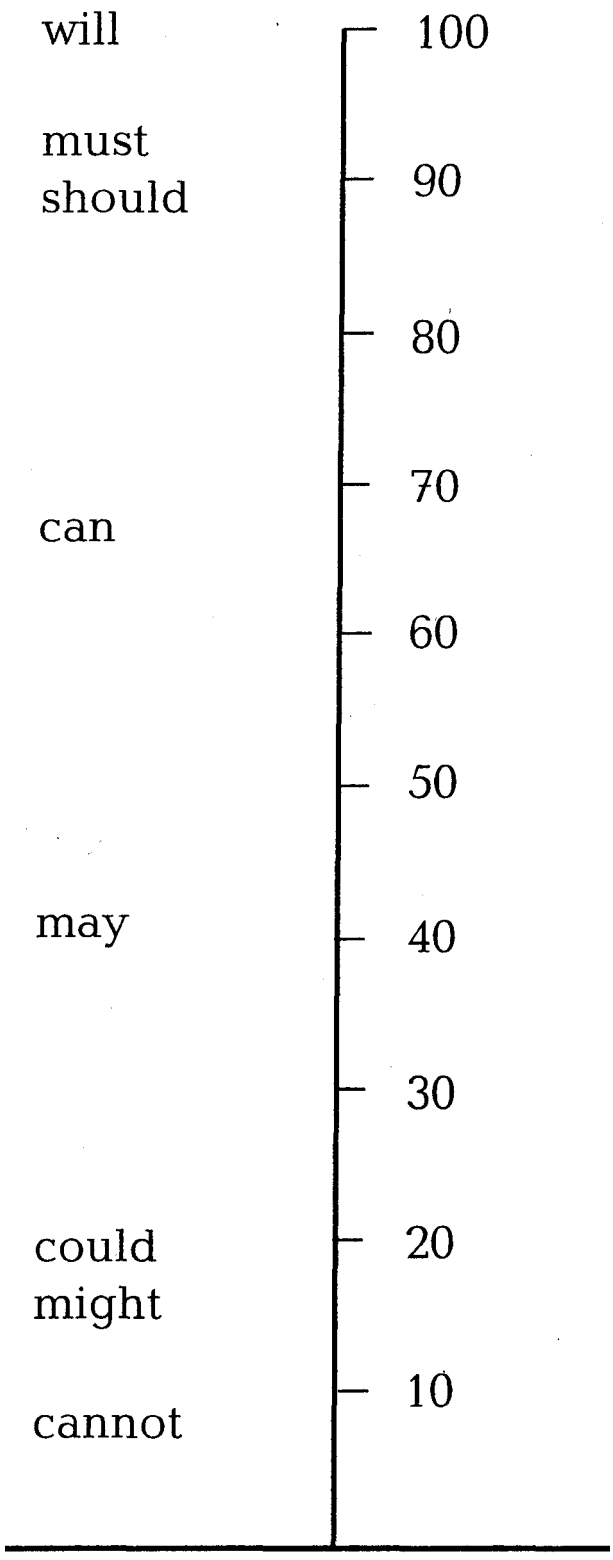
You mustn't drive fast. There is a speed limit here. Ви не повинні їхати швидко. На цій дорозі обмеження швидкості. You must not = it is forbidden **Compare:** You needn't drive fast. We've plenty of time. Не треба їхати швидко — у нас досить часу. **Also:** — Must I read? Я повинен читати? —No, you needn't. Ні, не треба. —No, you mustn't. Ні, не повинні.	absense of obligation відсутність необхідності	You don't have to = it is not required

4. shall, should, should have; will, would, would have; ought to	meaning	equivalents (phrasal modals)
Candidates should be prepared to answer questions. Кандидати повинні бути готові дати відповіді на запитання. You ought to study every day. Ви повинні вчитися щодня. MIND **negative form** for ought to: You ought to translate this article, but she shouldn't.	necessity and obligation необхідність та обов'язковість	to be supposed to You are supposed to studv every day. Ви повинні вчитися щодня.
This theory shall be referred to. На цю теорію треба (обов'язково) послатися.		
You should studv harder. Було б непогано, якби ви вчилися більш наполегливо. Perhaps, vou should have called him earlier. Можливо, треба було зателефонувати йому раніше. You ought to have given vour phone number. Треба було дати свій номер телефону.	advice (порада) advisable action (unfulfilled) порада, що не була здійснена	to advise

It should rain. Здається, зараз піде дощ (логічно припустити, що піде дощ).	logical conclusion логічний висновок	
Shall I help you? Вам допомогти?	offer пропозиція	
Ice will/would melt at 0° C. Льод тане при нульовій температурі. This procedure would not be used in this case. У цьому випадку така методика звичайно не використовується.	habitual action звичайна дія	
I would like to comment it. Мені хотілося б це прокоментувати.	wish бажання	
Would you wait? Would you mind waiting? Ви б не зачекали, будь ласка? He would not agree. Він не погодиться (не схоче погодитися).	polite request or refusal ввічливе прохання або відмова	

5. had better; would rather; dare	meaning	equivalents (phrasal modals)
You're pressed for time, you had better go. У вас обмаль часу, краще вам зараз піти.	advisablilitv порада	
I would rather not say what I think. Краще я не буду казати про те, що думаю.	preference надання переваги	to prefer
Did he dare (to) criticize the boss? І він насмілився критикувати начальника?	challenge виклик	

Probability Scale of Modals (%)



NOTE

*** a must** - something which is necessary or very important
Renovation of the laboratory is **a must.** Реконструкція лабораторії є конче необхідною.
*** able -** clever or skillful, competent
She is an **able** teacher.Вона — здібний вчитель.

Exercise 4. What does it mean to be «a fluent speaker of a foreign language»? Decide ____what a person must/should/can/may/might be able to do. Then study the numerical rating system developed by one of the departments of U.S. State Department. How would you rate your own abilities in English? If you speak other languages, rate yourself as well.

1 — Elementary proficiency
✓ able to satisfy routine travel needs (hotels, prices etc.);
✓ able to ask, answer, and understand questions and statements about simple topics related to daily life;
✓ frequent errors in grammar and vocabulary.

2 — Limited working proficiency
✓ able to satisfy routine social demands and basic work requirements;
✓ able to speak with confidence, but not easily, on such topics as current events, personal information, daily job requirements;
✓ can understand the general meaning of most conversations and speak clearly enough to be understood by all native speakers;
✓ can use simple basic grammar accurately, but may require help to express more complex ideas.

3 — Minimum professional proficiency
✓ able to satisfy all normal social and work requirements with fluency and accuracy, as well as professional discussions in a special field;
✓ can understand all conversations at normal speed;
✓ vocabulary is broad enough;
✓ errors in grammar and vocabulary are infrequent and never interfere with understanding;

4 — Full professional proficiency
✓ can handle any conversation with a high degree of fluency and precision;
✓ errors in grammar and pronunciation are extremely rare, but still listeners would not assume one to be a native speaker;
✓ can do informal interpreting to and from the language;

5 — Bilingual proficiency
✓ complete fluency in the language equivalent to that of an educated native speaker.

Exercise 5. Choose the correct option.

1.
A: Where's Ann?
B: I'm not sure. She __ at the meeting.
a. is
b. might be
c. must be
d. could have been

2.
A: How does Andy get to the University?
B: I don't really know. He __ the bus.
a. might take
b. takes
c. must take
d. will take

3.
A: It's really cold in here today.
B: Yes, somebody __ the window open.
a. must leave
b. might leave
c. must have left
d. will leave

4.
A: Have you heard the weather forecast?
B: No, but look at those clouds in the sky! I think it ____ rain.
a. could
b. is going
c. should
d. ought to

5.
A: Did Mr. Brown call while I was out?
B: I'm not sure. He __ .
a. might have
b. might
c. did
d. didn't

6.
A: Are you coming with us?
B: I'm not sure. I ___ go the library instead.
a. must
b. will
c. might
d. shall

7.

A: Can I speak to professor Johnson?

B: She's not in her office, and she doesn't have any more classes today, so she __ home.

a. might go
b. must have gone
c. will probably go
d. would probably go

Exercise 6. Render the following passage into Ukrainian. Pay special attention to linguistic devices denoting probability.

The word «dinosaur» means «terrible lizard». About 150 million years ago there were many kinds of dinosaurs. Dinosaurs have been extinct for 65 million years. Several theories have been proposed about why the dinosaurs disappeared from the face of the Earth.

One theory is the climatic change theory. This theory says that millions of years ago the climate of the world gradually became colder. The cold weather finally resulted in a severe shortage of food for the dinosaurs. The disappearance was directly caused by a shortage of food, and indirectly — by climatic changes. According to this theory, the dinosaurs may have disappeared slowly and gradually.

Evidence has recently been accumulated that this extinction was sudden and was caused by a huge asteroid that hit the Earth. Among the signs is the element iridium released from the asteroid in the impact. The impact would have raised so much dust into atmosphere that sunlight could have been shut out for months. Many species of plants and animals would not have been able to survive. In particular, large animals like dinosaurs could not have taken refuge in caves the way the smaller ones may have.

A still newer idea is based on possible periodicity of 28 million years between mass extinction on the Earth: an undiscovered companion to the Sun comes to the inner part of its orbit, and its gravity then sends a number of comets towards the Earth. Fortunately, the star — for which the name «Nemesis» is unofficially waiting — isn't due back for 15 million years even if it exists.

Scientists continue to debate these theories. In the future, evidence may be found for a new theory.

Exercise 7. Translate the following sentences into Ukrainian.

1. This, of course, does not prove the statement, but it may help to persuade you of its truth.

2. You've got to do your homework.

3. Nobody will dare deny that this is possible.

4. This might make the computations simpler, but this also reduces the usefulness of the theory.

5. Max would rather study languages than biology.

6. You could have at least sent an invitation.

7. A lecturer must be able to explain things clearly.

8. Must you leave so soon?

9. Anything is possible if you dare.

10. Often what is needed has to be greatly modified in the light of what is possible.

Text B. Read the following passage and paraphrase it.

Acronyms and Initialisms

Acronyms and initialisms are very common in English. Acronyms are words that are formed from the first letters of words in a phrase. For example, the word «laser» is an acronym for light amplification by stimulated emission of radiation. Acronyms are pronounced as words.

Initialisms, on the other hand, are not pronounced as words: each letter in an initialism is pronounced as a letter, e.g. IBM, which stands for the company International Business Machines.

More examples: avionics — aviation electronics, WORM — write once, read many, descriptive of a memory combining magnetic and laser-based recording on which the user (not a vendor) records data but cannot later modify it.

Radar

The word radar comes from radio detection and ranging. Radar is a detection device that uses radio waves to detect objects in the air.

Sonar

The word sonar comes from sound navigation and ranging. Sonar is a detection device that uses sound waves to detect objects.

REM

Most people need between six and eight hours of sleep a night. Some need more, and some need less. All of us, however, need a certain amount of REM sleep. REM means «Rapid-Eye-Movement». REM sleep happens mostly during dreams, for short periods about four to five times per night.

VIP — very important person

— висока посадова особа

CEO — chief executive officer

TBA — to be announced (about any event — a lecture, a meeting etc.)

PLA — prior learning assessment (and recognition)—екстернат

dept — department

Acad. — Academy

Assn. — Association

s/he — she or he

UN ~ United Nations (Organization) — ООН

MP — Member of Parliament

***TGIF** —Thank God it's Friday - нарешті настала п'ятниця (скоро вихдні)

Each of fifty United States has postal abbreviations for addresses in correspondence, and characteristic creeds. Study them and answer the following questions:

1. Are there any states that share a common motto? How many?
2. What state is known as «Gopher State»?

Alabama	AL	Heart of Dixie
Alaska	AK	Great Land
Arizona	AZ	Grand Canyon State
Arkansas	AR	Land of Opportunity
California	CA	Golden State
Colorado	CO	Centennial State
Connecticut	CT	Constitution State
Delaware	DE	First State
Florida	PL	Sunshine State
Georgia	GA	Empire State of the South
Hawaii	HI	Aloha State
Idaho	ID	Gem State
Illinois	IL	Land of Lincoln
Indiana	IN	Hoosier State
Iowa	LA	Hawkeye State
Kansas	KS	Sunflower State
Kentucky	KY	Bluegrass State
Louisiana	LA	Pelican State
Maine	ME	Pine Tree State
Maryland	MD	Old Line State
Massachusetts	MA	Bay State
Michigan	MI	Great Lakes State
Minnesota	MN	Gopher State
Mississippi	MS	Magnolia State
Missouri	MO	Show Me State
Montana	MT	Treasure State
Nebraska	NE	Cornhusker State
Nevada	NV	Silver State
New Hampshire	NH	Granite State
New Jersey	NJ	Garden State
New Mexico	NM	Land of Enchantment
New York	NY	Empire State

North Carolina	NC	Tar Heel State
North Dakota	ND	Flickertail State
Ohio	OH	Buckeye State
Oklahoma	OK	Sooner State
Oregon	OR	Beaver State
Pennsylvania	PA	Keystone State
Rhode Island	RI	Ocean State
South Carolina	SC	Palmetto State
South Dakota	SD	Sunshine State
Tennessee	TN	Volunteer State
Texas	TX	Lone Star State
Utah	UT	Beehive State
Vermont	VT	Green Mountain State
Virginia	VA	Old Dominion
Washington	WA	Evergreen State
West Virginia	WV	Mountain State
Wisconsin	WI	Badger State
Wyoming	WY	Eguality State

DC — District of Columbia

Exercise 8. What do the following abbreviations stand for? If necessary, consult the dictionary.

e.g., i.e., etc., R&D, 9 a.m, vs., S&T, TBA, info, ib. (ibid.), NASA, et a., ASCII, TCP/IP, VCR, WIMP, MIT, IQ, 7 p.m, Washington DC, Aug., Apr., Dec., Nov., Sept., s/he.

Exercise 9. Match the two columns.

1. Sometimes natural phenomena are reported as UFO.
2. Many students used BASIC when they first began to learn programming.
3. Most personal computers are now DOS-based.
4. TGIF is an expression of gratitude that the work week is almost over and that the weekend is about to begin.
5. The PLA process helps you identify learning gained from life and work, and may enable you to receive a diploma or certificate in less time, and with less cost.

A. disk operating system

B. thank God it's Friday

C. prior learning assessment

D. unidentified flying object

E. beginner's all-purpose symbolic instruction code

Exercise 10. Choose the correct word and fill in the blanks.

(to) collect collection collective

1. Our department usually ____ this information.
2. This museum houses a magnificent art_____.
3. We all bear _____ responsibility for this decision.

(to) experiment experimental experimentation

4. They carried out this _____ last week.
5. They _____ with the new materials.
6. This model is purely _____.
7. After much ____ they understood the nature of the phenomena.

(to) assess assessment

8. It's too early _____ the effects of the decision.
9. What we need is a good ____ of our chances.

Exercise 11. Read the passage and answer the questions about it.

Millions of visitors year round find their way to Niagara Falls. They are soon captivated by the natural beauty of the Falls themselves and the surrounding parklands that lie parallel to the Niagara River from Lake Erie to Lake Ontario. The Niagara River between Lake Erie and Lake Ontario is really a body of water flowing between the two lakes. Located on the Niagara River along the border between the United Stated and Canada, Niagara Falls actually consists of two Falls, the American Falls and the Horseshoe Falls. The former is on the U.S. side of the border, in the State of New York, while the latter is on Canadian side. About 85% the water in the Niagara River flows over the Horseshoe Falls, which is more impressive of the two falls.

Skylon Tower is one of Niagara's most famous landmarks where the «yellow bug» elevators glide the visitors smoothly to the Observation Deck, 775 feet above the Falls. Sightseers can also ride steamers «The Maid of the Mist» that come close to the boiling water of the Falls, or view them from parks on both sides of the river.

Rainbows can always be seen in the mist at Niagara Falls on bright sunny days. About 10 million people visit the Falls each year, most during the summer tourist season.

1. What is the best title for the passage?
   a. Popular Attractions
   b. Natural Wonders of the World
   c. National Parks
   d. Two Spectacular Waterfalls

2. Which of the following is entirely on the U.S. side of the border with Canada?
   a. Horseshoe Falls
   b. Niagara Falls
   c. American Falls
   d. the Niagara River

3. It can be inferred from the passage that Horseshoe Falls
   a. is less impressive fall
   b. is the larger of the two falls
   c. has 15% of the Niagara River flowing over it
   d. is in the state of New York

4. According to the passage, where can people watch the falls?
   a. From parks, boats, and Skylon
   b. From airplanes
   c. From trains
   d. From cars

5. It can be inferred from the passage that Niagara Falls
   a. generates very hot water
   b. is only impressive during the summer tourist season
   c. can be viewed from only one side of the Niagara River
   d. is a unique place of the world

Exercise 12 **Choose the one word or phrase that best keeps the meaning of the original sentence if it is substituted for it.**

1. His interests spanned a wide range of subjects.
   a. concerned
   b. included
   c. excluded
   d. connected
2. You have to consult the dictionary first.
   a. may
   b. had better
   c. might
   d. must
3. Walking on the grass is not allowed.
   a. prohibited
   b. permitted
   c. proposed
   d. discussed
4. Our bus is supposed to come in 15 minutes.
   a. will
   b. might
   c. should
   d. would
5. Language is constantly evolving.
   a. developing
   b. disappearing
   c. regulating itself
   d. emerging
6. We ship our products anywhere within North America.
   a. produce
   b. develop
   c. package
   d. send
7. I'm sure he'll contrive some way of dealing with the situation.
   a. coordinate
   b. invent
   c. discuss
   d. predict
8. WWW is a simple means of transmitting graphical, video and audio data.
   a. technology
   b. vehicle
   c. device
   d. approach

9. He may have forgotten about the appointment.
   a. has
   b. has definitely
   c. has totally
   d. has probably
10. In the distant future people may live on other planets.
   a. near
   b. happy
   c. remote
   d. uncertain

Noteworthy

«Hence we must believe that all the sciences are so interconnected, that it is much easier to study them all together than isolate one from all the others. If, therefore, anyone wishes to search out the truth of things in serious earnest, s/he should not select one special science, for all the sciences are cojoined with each other and interdependent».

Rene Descartes

in his 1629 text, "Rules for the Direction of the Mind».

A mathematician and philosopher, Descartes (1596-1650) systematized analytical geometry and is sometimes called the father of modern philosophy.

You have covered half the course!

Chapter 7

Focus on:

Interactive Multimedia
English Suffixes

Grammar: Passive Voice

Text A Read the text and be ready to answer the questions about it.

The computer is becoming more fun and more useful the less abstractly it can represent things. Television is becoming more entertaining and educational thanks to microprocessors and compact-disc ROMs ***(CD ROMs).*** Multimedia is another technology that is sure ***to boost*** personal computers. This technology combines the usual text and graphics with digitized voice and music.

With multimedia programs computers will be able ***to handle*** files of sound and full-motion video images as easily as they handle text. The computers will play voice and music in high-fidelity digital audio stereo, and will show movie-quality images. In a nutshell, multimedia is the perfect marriage of print and broadcast news. What makes it possible is rapidly evolving digital technology, and the efficiency it offers in manipulating, ***storing,*** **and** ***retrieving*** information.

CD ROM — compact disc read-only memory, a laser encoded disc that stores megabytes of randomly accessible text, imagery, and/or sound data.

to boost — to help to advance or improve укр. удосконалювати, покращувати, підтримувати
to handle — to deal with, control укр. поводитися з, керувати (управляти), маніпулювати
to store — to put or keep something while not in use for future use укр. зберігати, накопичувати
to retrieve — to find and bring back, to regain укр. шукати, поновлювати
lively — full of activity укр. жвавий
repository — a place where things are stored укр. сховище
stockpile — a large store of something укр. запас, резерв

Multimedia can mean various things. It can be an encyclopedia on a CD ROM, a multimedia electronic mail sent over the Internet. Standard reference books on computer are becoming more accessible and ***livelier:*** dictionaries pronounce words, and historical figures deliver quotes. Multimedia ***repository*** — the library of the future exists in Madison Building of the Library of Congress in Washington, D.C. This «library without walls» collections are the original multimedia. The library keeps the largest ***stockpile*** of knowledge in the world, the nearest thing to the library of Alexandria, which held the knowledge of the time in antiquity. Among the library's 100 million items are books in 470 languages, movies, television shows, maps, cartoons, and software. Some 1.8 million items are added each year — and the rate is accelerating. The library has foreign offices around the world, and document exchange with all foreign countries that have diplomatic relations with United States.

Some believe that text may become a more important force because of many multimedia applications^ Although no ***comprehensive*** study exists on the effect of interactive multimedia on learning, some ***claim*** that interactive technologies speed up learning, and often test scores rize, too. The reasons may be self-paced personalized instruction, immediate interaction and ***feedback.*** One-on-one instruction can mean that a student is not ***embarrassed*** about asking questions. Or consider built-in tests — when a user makes a mistake, s/he is taken directly back to the passage involved (all the mistakes can be monitored, too). Some studies ***suggest*** that multimedia can improve learning. The history of educational reform, though, has shown that «innovative» technologies that use different from paper medium, have done little to

comprehensive — thorough, broad, including a lot of everything укр. вичерпний, всебічний, всеосяжний
to claim — to declare to be true, to maintain укр. твердити, заявляти
feedback — remarks about or an answer to an action, process, etc.; response укр. зворотній зв'язок, відгук
to embarrass — to cause to feel anxious and uncomfortable укр. непокоити, бентежити
to suggest — to indicate, to make clear (perhaps indirectly) укр. наводити на думку

NOTE

Also: **to suggest —** to propose, to mention as possibility, state as an idea for consideration. Any suggestions? Чи є ще пропозиції? укр. пропонувати

benefit learning. Critics claim that such ***fads*** include radio in the 1940s, TV and audio tapes in the 1960s, and computer-assisted instruction in the late 1970s and early 1980s. The ***content*** of instruction, not the means of its ***conveyance,*** such researchers claim, is what influences performance results. The study performed at Massachusetts Institute of Technology (MIT) demonstrated that the medium — computer or paper — did not significantly influence overall ***aptitude*** scores, although those students who used computers had significantly higher scores in such area as analogical reasoning. Women and ***novices*** who used the computer got somewhat higher overall scores than their counterparts who used text. For men and experienced students, text or computer was not a significant factor. In a post-test questionnaire, however, majority of students reported they preferred the computer medium to paper. Although interactive multimedia may teach certain portion of **a *curriculum*** well and others poorly, it might help us solve some educational problems. We should keep one thing in mind: to be ***appreciated,*** interactive multimedia must be experienced.

fad — an interest or activity that is followed very keenly but usually only for a short time укр. швидкоплинне захоплення **content(s) —** the subject matter укр. зміст **to convey —** to make (ideas, thoughts) known укр. передавати, повідомляти; виражати **aptitude** — natural ability or skill, especially in learning укр. здібність, обдарованість **novice** — a person with no experience in a skill or subject, beginner укр. початківець, новачок
curriculum — a course of study offered in a school, college, etc. укр. курс навчання, учбовий план
to appreciate — to recognize and enjoy the good qualities or worth of укр. оцінювати, цінувати

1.What is the subject of this passage?
2. What is specific about interactive multimedia?
3. Why are multimedia applications important?
4. Why is multimedia repository called «library without walls»?
5. What are the obvious merits of interactive multimedia as far as learning is concerned?
6. Would you like to have access to various multimedia resources? State the reasons why.

Exercise 1. Give English equivalents of:

розвага; управляти; поєднувати графічне зображення та звук; технологія, що швидко розвивається; довідники; бібліотека майбутнього; сховище; мультфільм; покращувати;
всебічне дослідження; твердити; зворотній зв'язок; бентежити; деякі дослідження наводять на думку; приносити користь; пропозиція; так звані новаторські технології; швидкоплинне захоплення; впливати на загальні результати тестування; початківці; анкета; віддавати перевагу комп'ютеру над іншими засобами; випробувати.

Exercise 2 Sometimes the words *to solve* and *to decide* are misused.

To solve means to find a solution to; укр. розв'язувати (вирииувати).
To decide means to reach a decision about; укр. вирішувати.

Translate Ukrainian sentences, then match the two columns:

1. Ви можете розв'язати це рівняння?	A. It will be no easy matter to solve this problem.
2. Ми вирішили погодитися з вами.	B. They've decided to postpone the meeting.
3. Цю проблему буде нелегко вирішити (розв'язати).	C. This is the solution to all our problems.
4. Вони вирішили перенести збори.	D. Can you solve this equation?
5. Ось вирішення усіх наших проблем.	E. This is our final decision.
6. Це наше остаточне рішення.	F. We've decided to agree with you.

GRAMMAR: THE PASSIVE VOICE

The English passive is by far the most frequent in scientific writings, and least frequent in conversation.
Passive formation:

Samuel Morse **invented** the electric telegraph in 1835.
subject **object**
AGENT
*to b*e + Participle II
The electric telegraph **was invented** by Samuel Morse.

Note that the majority of passive sentences that occur in speech and writing (about 85 percent) are agentless (do not have an explicit agent): Many *people* are employed in manufacturing.

We denote an agent or instrument the following way:
The poem was written **by** John. (agent, doer)
Вірш написаний Джоном.
The poem was written **with** pencil, (instrument)
Вірш написаний олівцем.
The results were obtained **by** professor Smith **with** the help of new equipment.
Результати були отримані професором Смітом на новому обладнанні (за допомоги нового обладнання).

1.
Sometimes there is significant difference between the active and passive voice. Compare:
Few people read many books. (Meaning: there are few people in the world who read lots of books.)
Many books are read by few people. (Meaning: there are many books that are read by very few people.)
2.
Some passive sentences in English have no active voice variant:
John **was born** in England.
3.
Do NOT use passive with the following words: ***lack, resemble, fit, have.***

THE PASSIVE IS USUALLY USED:

1. When the agent is unknown:
   The book was stolen.
2. When the agent is redundant:
   French is spoken in France.
3. When the writer wants the statement to sound objective (the agent or the source of information are not mentioned):

It is thought/believed/assumed (Вважають, що ...) **It is rumored ...** (Ходять чутки, що ...) ***It used to be thought...*** (Раніше вважали, що...)	that this is a promising method.

They discuss the issue	The issue is discussed
They are discussing the issue	The issue is being discussed
They discussed the issue	The issue was discussed
They had discussed the issue	The issue had been discussed
They have discussed the issue	The issue has been discussed
They were discussing the issue	The issue was being discussed
They will discuss the issue	The issue will be discussed
They must discuss the issue	The issue must be discussed

Mind specific passive constructions and the ways of translating them into Ukrainian:

1. Indirect Passive:

a. She gave her sister a book.
object 1 object 2
(indirect) (direct)
A book was given to her sister, (direct passive) **Her sister was given** a book. (indirect passive)
Scientists were invited to the conference.
Вчених запросили на конференцію.
They were shown brand-new equipment.
Їм показали найновіше обладнання.

2. Prepositional Passive

a. The terms were **insisted on.**
На строках наполягали.
The lecture was **followed by** a discussion.
За лекцією йшла дискусія.
The lecture was **Sue-ceded** by another one.
За однією лекцією йшла інша.
The conference was **preceded by** preliminary arrangements.
Конференції передувала попередня підготовка (або: перед конференцією було проведено підготовку).
All manufacturing processes are **subject/subjected to** change.
Усі технологічні процеси зазнають змін.
The resolution was **objected to** by almost everyone.
Проти резолюції були майже усі.

b.
They | make use (object) | of a device (object)

Use is made of a device. | Прилад використовують.
A device is made use of.

They | take steps (object) | to improve the situation. | Вживають заходів для поліпшення ситуації.
Steps are taken to improve the situation.

Other ways of expressing passive:

Suffixes -able. -ibie:

Much of our work is predicted in theory, which is **demonstrable** but not **provable.**
Значну частину нашоїї роботи було передбачено у теорії, яку можна продемонструвати, але не довести.

Suffix -ee:
nominee — той, кого призначають
attendee — той, хто мае бути присутнім

Phrases:

to be exposed to — зазнавати

under consideration in question	— (те), що розглядається	The issue **under consideration** - питання, що розглядається The problems **in question** — проблеми, що розглядаються

The passive is usually found with the following verbs and set phrases:

to answer	відповідати
to promise	обіцяти
to offer	пропонувати
to invite	запрошувати
to affect	впливати (на)
to follow to succeed	іти слідом (за)
to allow to permit	дозволяти
to join to connect to link	з'єднувати, поєднувати
to influence	впливати
to tell	казати
to speak	говорити
to report	повідомляти
to watch	спостерігати
to precede	передувати
to ask to ask a question to pose a question	питати, ставити питання
to depend on to rely on	покладатися на
to object to	заперечувати
to think of/about	думати (про)
to call for	вимагати
to agree upon	погоджуватися
to comment on	коментувати
to insist on/upon	наполягати (на)

to do away with to get rid of	покінчити (з)
to send for	посилати (за)
to account for	пояснювати, ураховувати (зважати)
to use — to make use of	використовувати
to refer — to make reference to	посилатися (на)
to mention — to make mention of	згадувати (про)
to contribute — to make contribution	робити внесок
to consider — to give consideration to	розглядати
to pay/give/draw/call attention to	приділяти увагу
to take notice/note of	звертати увагу
to make attempt	робити спробу
to make effort	робити зусилля
to lay/place emphasis (on)	наголошувати (на)
to take advantage of	скористатися (перевагою)
to take opportunity of	скористатися (можливістю)
to take steps	вживати заходів
to take care of	турбуватися (про), вживати застережних (запобіжних) заходів

The Get-Passive is used in spoken and informal English. The **get-passive** is used with verbs denoting ONLY actions and processes, NOT states. The **get-passive** is more common with animate subjects (usually actively involved in a process):

The President **was** elected last year. The President **got** elected last year.

Compare:

They will get married next week. (action, process)	They have been married for 7 years. (state)

Exercise 3. Translate Ukrainian sentences. Then match the two columns:

1. Цю проблему треба вирішити (розв'язати).
2. Всі спостереження зробила група відомих вчених.
3. Професору поставили багато запитань.
4. Експеримент провели минулого тижня.
5. Відвідувачів приймають щодня.
6. Проект критикувало багато людей.
7. Проблему вперше усвідомили декілька років тому.
8. Йому не треба казати двічі.
9. Фармацевтичній промисловості приділяють багато уваги.
10. Про цю нову теорію багато говорять та пишуть.
11. Пішли чутки, що йому запропонували фінансову підтримку.
12. У Канаді розмовляють англійською та французькою мовами.
13. Нас попросили прийти якомога раніше.

A. English and French are spoken in Canada.
B. Visitors are received every day.
C. He doesn't need to be told twice.
D. The problem was first recognized several years ago.
E. Professor was asked a lot of questions.
F. Pharmaceutical industry is paid great attention to.
G. This new theory is much spoken and written about.
H. The project was sharply criticized by many people.
I. It was rumored that he was offered financial support.
J. The problem must be solved.
K. This experiment was made last week.
L. We were asked to come as early as possible.
M. All observations were made by a team of well-known scientists.

Exercise 4. Complete the sentences.

1. The observed phenomena ... into generalized statements.
   a. organized
   b. are organized
   c. organizing
   d. are organizing

2. A lot of universities ... in the university towns in the USA.
   a. locating
   b. to locate
   c. are located
   d. is located

3. They ... how to operate the equipment last month.
   a. are shown
   b. have been shown
   c. will be shown
   d. were shown

4. Our TV set ... yet.
   a. was not repaired
   b. is not repaired
   c. is not being repaired
   d. has not been repaired

5. A new edition of this encyclopedia ....
   a. is printing now
   b. is now printing
   c. is being printed now
   d. now prints

6. His works ... all over the world.
   a. is widely known
   b. widely known
   c. to be widely known
   d. are widely known

7. An attempt ... to find a pattern of consistency in all observations of the system under study.
   a. is made
   b. made
   c. are made
   d. to be made

8. His later works were ....
   a. took notice of
   b. taken notice of
   c. taking notice of
   d. take notice of

9. This new instrument can really ... .
   a. is relied upon
   b. was relied upon
   c. be relied upon
   d. has been relied upon

10. This book ... by a famous writer.
    a. was written
    b. were written
    c. was writing
    d. to be written

11. All contributions ... by a board of reviewers next month.
    a. were revised
    b. will be revised
    c. are being revised
    d. have been revised

Exercise 5. Translate the following sentences into Ukrainian.

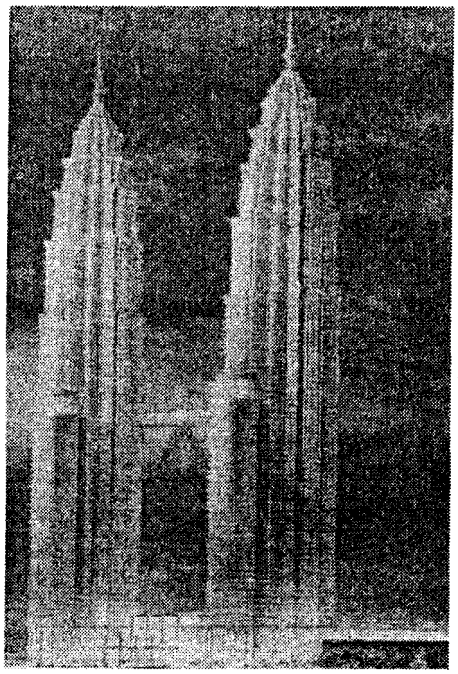
1. The paper is concerned with three questions.
2. We were informed of the meeting.
3. Only a few examples will be given here.
4. The theory is being much spoken about.
5. The negotiations will not be finished until Monday.
6. I was paid cash.
7. Heating was followed by cooling.
8. This method was done away with many years ago.
9. They were asked whether the laboratory would be provided with the necessary equipment.
10. This problem is being investigated by our team, and the results will be published soon.
11. They were shown new tools.
12. This problem was not even thought of a couple of years ago.
13. A new exhibition has been organized by our company.
14. The problem was dealt with in a number of papers.
15. A large amount of research is being conducted in the field of telecommunications.
16. It is unbelievable that he should have made such a mistake.
17. Of course, the issue in question will play an important role.
18. The new evidence cannot be accounted for by existing theories.
19. It is thought that this equipment can be relied upon.
20. They have been given sufficient information.
21. As recently as the 1950s blacks and whites were not allowed to get married in many southern states in the U.S.
22. The merits of new technology have been taken notice of.
23. It is known that care must be taken of fundamental research.
24. These facts play an important role in the process under study.
25. What method should be chosen in any particular case depends on a number of factors.
26. Provided certain basic requirements are met, the work may be completed in time.
27. The necessity of applied research is insisted upon.
28. There is little doubt that in the course of further development of all sciences extensive use will be made of a wide range of computers.
29. It is hoped that the technique may be significantly improved.
30. The assistant was sent for.
31. The new data have been obtained, presented, and discussed recently.
32. The result of our experiment is greatly affected by laboratory conditions.
33. I was told to wait.

Exercise 6. **Prepare a report on one of the famous constructions in the world, i.e. The Empire State Building, the Golden Gate Bridge, the Eiffel Tower, the Statue of Liberty, Pyramids of Egypt etc.**

Sample answer:

The first Seven Wonders of the World, cataloged 23 centuries ago, comprised massive piles of cut stone that marked the dawn of civil engineering. Even a 1930s list of Modern Wonders honored such civil engineering ***feats*** as the Empire State Building and the Golden Gate Bridge. Today, electronics is indispensable to these Wonders, consuming such massive quantities of labor, money and resources that they can be called «megaprojects».

An example of such spectacular projects is Kuala Lumpur City Center (KLCC) in Malaysia, a city-within-a-city that contains the 450-meter-high Petronas towers, named after national petroleum company. The Petronas towers include 436000 m^2 of floor space. The twin towers are joined half way up — at the 41 and 42 floors by a 58.4-meter-long sky bridge. In addition, the towers have 44-story side towers. The skyscrapers rize from a six-story retail ***mall.***



feat — an action needing strenght, skill, or courage
mall — a large shopping center

Text B ENGLISH SUFFIXES

A suffix is a combination of letters added at the end of a word. Suffixes help us recognize the function of words:

ADJECTIVE SUFFIXES

-able, -ible,	verifiable, compatible
-ant, -ent	important, fluent
-ish	childish
-ary,-ory	auxiliary, obligatory
-like	sunlike
-some	awesome
-ous	harmonious
-ly	lively
-y	steady
-worthy	noteworthy
-ful	careful
-less	careless
-proof	waterproof

VERB SUFFIXES

-ate	translate
-en	thicken
-ize	theorize
-fy, -ify	magnify

NOUN SUFFIXES

-er, -eer	teacher, engineer
-or	professor
-ee	employee
-ist	scientist
-ian	historian
-age	storage
-ance,-ence	acceptance, difference
-ism	realism
-ity	simplicity
-ment	development
-ness	softness
-ion, -tion, -sion	division, hibernation, conclusion
-ship	friendship
-dom	freedom
-hood	neighborhood

The suffix ***-aholic*** has been applied to many things recently. The original word ***alcoholic*** was used to describe a person addicted to alcohol. Now we use such words as ***workaholics*** (people who love their jobs, «addicted» to them), ***shopaholics*** (addicted to shopping), ***sportaholics*** (addicted to sports), ***TVaholics*** (addicted to watching television), and other ***somethingaholics.***

Exercise 7. Translate the following words into Ukrainian. If necessary, consult the dictionary.

autonomous, tireless, periodicity, criticize, optimism, physician, criticism, thankworthy, foliage, nominate, yellowish, reformer, justify, courage, satisfactory, verifiable, advantage, simplicity, shortage, probability, darken, classify, mandatory, believable, heritage, integrate, trustee, rechargeable, amendment, friendlike, boredom, provable, quoteworthy, geographer, simplify, fellowship, competent, grantee, girlhood, resistant, vendor, workaholic, astronomer, relationship, visible, disputable, parenthood, volunteer, memorize, memorable.

Exercise 8.

1. Make nouns from these words:
occur, leader, fit, absent, report, design, develop, free, tender, select, depend, agree, require.
2. Make verbs from these words:
symbol, false, strength, active, soft, normal, fresh, valid, signal, legal, individual.
3. Make adjectives from these words:
praise, afford, present, wash, reuse, hazard, noise, use, trust, faith, salt, adjust, flaw.

Exercise 9. Read the passage and answer the questions about it.

Archaeology is the recovery and interpretation of objects and informaton that together provide clues to the past. These clues are often thought of as coming solely from the objects that have remained from the culture of past times. The challenge is to discover evidence without destroying it. An archaeologist should know how to recover evidence carefully, what to observe, how to preserve what is found. The precise location of everything that is found, together with identification of soils is often of crucial importance in the efforts to interpret and understand what has happened in the past. Archaeology requires many skills. Below ground archaeology must be attempted only by trained and skilled people who work carefully and scientifically. Archaeology should never be done simply for fun or simply to collect objects. Many archaeologists spend years

researching an area before even attempting to excavate and dig at an archaeological site.

Archaeology is not limited to remote ages. It is a technique for discovering and conserving evidence of all times and places.

1. The author's purpose is to
   a. provide historical report
   b. define archaeology
   c. discuss excavation sites
   d. explain essentials of museum conservation

2. According to the passage, archaeologists must be careful about
   a. collecting objects
   b. digging on historic locations
   c. having fun
   d. preserving evidence

3. It can be inferred from the passage that an archaeologist must be an expert in recognizing
   a. pottery
   b. coins
   c. soils
   d. metal objects

4. According to the author, archaeology should not be attempted simply for
   a. research
   b. fun
   c. learning
   d. writing reports

5. The author stresses the archaeologist's need for
   a. sense of humor
   b. determination
   c. punctuality
   d. skills

Exercise 10 Choose the one word or phrase that best keeps the meaning of the original sentence if it is substituted for it.

1. This computer can retrieve stored information in a matter of seconds.
   a. remove
   b. regain
   c. relate
   d. rewrite

2. The latest figures suggest that the situation is improving.
   a. deny
   b. propose
   c. indicate
   d. clearly demonstrate

3. I'd like to suggest an alternative plan.
   a. propose
   b. discuss
   c. discard
   d. indicate

4. We appreciate this technology.
   a. experience
   b. recognize
   c. approbate
   d. improve
5. They know how to handle the setup.
   a. install
   b. enhance
   c. dismantle
   d. control
6. The dictionary consists of 1,804.pages — an indication of Completeness and dependability.
   a. accuracy
   b. reliability
   c. readability
   d. viability
7. The newspaper provides comprehensive coverage of world affairs.
   a. cursory
   b. interesting
   c. brief
   d. thorough
8. All sorts of reference books are available here.
   a. affordable
   b. obtainable
   c. presentable
   d. understandable
9. It is necessary that we boost our industry.
   a. handle
   b. appreciate
   c. improve
   d. computerize
10. Even if a person is fluent in a foreign language, s/he may still have communication problems.
    a. knowledgeable
    b. comfortable
    c. involved
    d. normal
11. Our call for new suggestions produced very little response.
    a. feedback
    b. concern
    c. discussion
    d. liveliness
12. We use incinerators to get rid of waste products.
    a. to collect
    b. to identify
    c. to regulate
    d. to do away with
13. This road links several villages.
    a. depends on
    b. disconnects
    c. puzzles
    d. joins

Noteworthy

«... geometry, arithmetics, music, physics, medicine, architechture, and all the science subject to experiment and reason must be added to if they are to become perfect. The ancients found them merely sketched by their predecessors, and we'll leave them to our successors in a more perfected state than we received them.»

Blaise Pascal

in his «Preface to the Treatise on the Vacuum.» A French mathematician and philosopher, Pascal (1623—1662) formulated the theory of probability together with Pierre de Fermat.

Chapter 8

Focus on:

Virtual Reality Classifying Techno-Types

Grammar: Verbals Participle

Text A Read the text and be ready to answer the questions that follow

Virtual reality is *a* combination of various interface technologies that enables a user to intuitively interact with an ***immersive*** and dynamic computer-generated ***enviroment.*** Some people prefer the term virtual environment. Virtual reality (VR) has an ability to immerse users in the interactive three-dimensional (3-D) world. Another approach, called ***augmented*** reality is the use of computer-generated visuals to ***enhance*** **a** ***perception*** of his or her physical environment, providing a combination of the virtual and real world. In general, a VR system consists of a display, a tracking device for interactivity, a computer image generator, a three-dimensional database, and application software. There exist several types of displays. The greatest sense of immersion is provided by the head-mounted display (HMD) that blocks out the real world. A head-coupled display (HCD) is like a huge pair of binoculars supported by a movable robot-like arm; HCD can offer better resolution, a wider field of view, and a benefit of quick entry and exit. Of the various input devices used in VR, the wired glove (a glove wired 'with sensors and connected to a computer for gesture recognition enabling interaction with objects in three-dimensional virtual enviroments) is often the most useful. Its user can touch both virtual and real objects without difficulty.

virtual reality — віртуальна (уявна) реальність **to immerse** — to cause (oneself) to enter deeply into activity; absorb укр. занурюватися, заглиблюватися **environment** — physical, social and natural conditions in which people live Synonyms: surrounding(s), milieu укр; навколишній (оточуючий) світ; середовище
to augment — (to cause to) become bigger, more valuable, better укр. збільшувати
to enhance — to increase in strength or amount укр. посилювати
to perceive — to have knowledge of (something) through one of the senses or through the mind, to understand
perception — укр. сприйняття, відчування

VR has all sorts of entertainment; possibilities, like immersive video games, and many practical ones, too. VR has the potential of revolutionizing design and manufacturing. Some predict savings in time and money, better market response, and better products. Virtual prototyping may ***reduce*** or ***eliminate*** the need for costly ***mock-ups.*** Moreover, it will permit the direct ***involvement*** of human beings in performance and ergonomic studies, providing immediate feedback. For instance, passengers will be able to comment on the convenience and look of a virtual car's interior. Engineering analysis will become more efficient through the integration of ***simulation*** results with virtual prototypes. Eventually, it will be possible ***to alter*** designs and see the immediate effects. Virtual simulation of assembly, production and maintenance tasks will reveal possible problems at an early stage of the design process. There are numerous scientific VR visualizations, from atoms to galaxies that may be used for educational and research purposes. Virtual reality applications in medicine include at least two trends in health care: the extensive use of ultrasound and magnetic resonance imaging (MRI) and minimally invasive surgery (such as endoscopic procedures, in which the doctor looks not at the patient but at a video screen to guide an optical fiber, light ***probe.*** Entertainment uses for VR have received the most attention, and experts agree that this large market will be a driving force in VR technology development.

huge — extremely large Synonyms: enormous, tremendous, gigantic укр. величезний
to reduce — to make less in size, amount, price, degree. etc.'укр. зменшувати
to eliminate — to remove or get rid of completely укр. ліквідовувати
mock-up — a full-size model of something planned to be made or built укр. макет, модель
involvement — укр. залучення
simulation — representation, imitation, model укр. імітація, відтворення, моделювання
to alter — to make or become different, but without changing into something else укр. змінювати
probe — укр. зонд
mature — fully grown and developed укр. зрілий
to assess — to judge the quality, importance or worth of; Synonym: to evaluate укр. оцінювати

Mature enough, virtual reality still needs a lot of work and ***assessment*** before it can become a

common tool for industry. Building synthetic enviroment usually means hard work. When perfected, virtual reality systems may enhance people's activities, ***enliven*** and accelerate education and scientific modeling, in addition to ***devising*** new forms of ***recreation.***

to enliven — to make more active, cheerful, or interesting укр. пожвавлювати
to devise — to plan or invent cleverly укр. вигадувати, розробляти
recreation — way of spending free time
Also: leisure, free time укр. відпочинок, дозвілля

1. What is specific about virtual reality?

2. What are principal parts of a VR system?

3. What are possible applications of virtual reality?

Exercise 1. Give English equivalents of:

поєднання різних технологій; віртуальне (уявне) середовище; візуальний; посилювати сприйняття; широке використання; складання, виробництво та обслуговування;
комп'ютерне зображення; змінювати конструкцію; макет; оцінювати; моделювання; рушійна сила; пожвавлювати навчання.

Exercise 2. Discuss the following point with your colleagues.

One cannot deny the positive impact that personal computers with ***elaborate*** graphical environments have had on modern engineering practice. However, one unfortunate result has been the encouragement of a type of engineering characterized as «cosmetic». «Cosmetic» engineering is more concerned with appearance than substance. It is performed by engineers whose first priority is to create things that look good: content and performance are of Secondary importance. In other words, an engineering effort is «cosmetic» if it produces pleasing and professional-looking outputs whose content is, however, trivial or invalid. «Cosmetic» engineers enjoy their work. They produce things that look good and make the customer feel happy. Real engineering involves complex and intellectually demanding tasks. «Cosmetic» engineering, by contrast, is relatively easy. Prerequisites for the job include knowledge of how to use a PC plus familiarity with one or more graphics packages. This is not to deny appearance, but an automatic washing machine should be able to wash clothes in addition to attractive surface smoothness. Still many people are good at making money with ***gimmicks*****!**

Cosmetic engineering ***jeopardizes*** the success of any project to which if is applied and corrupts the intellectual integrity of the people in organizations that ***foster*** it. Just imagine a demonstrable project that has only one fault: it produces ***erroneous*** results.

elaborate — full of detail, carefully worked out and with a
large number of parts
gimmick — a trick or object which is used only to attract
people's attention, especially, in. attempt to sell something
to jeopardize — to put at risk or in danger
to foster — to help to develop; to nurture .
erroneous — incorrect, mistaken

GRAMMAR: VERBALS (Non-Finite Forms of the Verbs) PARTICIPLE

There exist the following types of **verbs** in English:

— notional verbs смислові	They **study** English.
— auxiliary verbs допоміжні	**Do** you like the book? I **haven't** decided yet. We **will** see you later.
— modal verbs модальні	**I can** do it.
— link-verbs дієслова-зв'язки	He **is** a scientist.
— substitutes дієслова-замісники	He likes physics, and so **do** I.
— emphatic do дієслово-підсилювач	**I do** need this information.

English notional verbs are characterized by a great variety of **forms** that can be divided into two main groups: **finite** and **non-finite** (verbals).

Особові (finite) форми виражають особу, число, час, стан, спосіб дії, і виступають у реченні присудком.

Безособові (non-finite) форми не мають звичайних форм особи, числа, способу, та не виступають у ролі присудка, хоча и можуть входити до його складу.

VERBALS are:

— Participle
— Infinitive
— Gerund

Participle

Tenses	Active	Passive
Simple (indefinite)	doing	(being) done
Perfect	having done	having been done

Participle I
moving object
предмет, що рухається

Participle II
the **installed** machines
or
the machines **installed**
встановлені машини (машини, що встановлені)

Perfect Participle

Having made* the experiment he **left** the laboratory.
Зробивши експеримент, він залишив лабораторію.

** Перфектні форми дієприкметника вказують на завершеність дії по відношенню до дії, яку виражає присудок*

Participles in a Sentence *(A,B,C)*

A. Attributes Означення	The project **proposed** by professor is very promising. Проект, **запропонований** професором, має великі перспективи. The paper **presented** attracted a great deal of attention. **Прочитана** доповідь привернула багато уваги. This is the article **so much spoken about.** Ось стаття, **про яку так багато говорять.** The scientist **investigating** this problem works at our Institute. Вчений, **що (який, котрий) досліджує** цю проблему, працює у нашему інституті. This is the best method **known.** Це найкращий серед **відомих** методів.

NOTE

A few **Participles II** change their meaning according to their position

the people **involved** = the people **concerned**

the people who were affected by what was happening люди,
про яких йде мова
(можливі варіанти перекладу:
те/ті, що розглядаються/аналізуються,
дані, пов'язані з)

BUT:	**BUT:**
an **involved** explanation = a **complicated** explanation складне пояснення	**a concerned** expression = a **worried** expression стурбований вираз
Mind the meaning of the verbs:	
to involve включати, залучати The experiment <u>involves</u> three stages. <u>involved</u> Експеримент <u>включає</u> три стадії. <u>включав</u> This is the paper <u>involving</u> the latest data. Ось доповідь, яка залучає останні дані.	**to concern** стосуватися The problems <u>concern</u> all of us. <u>concerned</u> Ці проблеми <u>стосуються</u> усіх нас. <u>стосувалися</u> This is the article <u>concerning</u> the new method. Ось стаття, <u>що стосується</u> нового метода.
***ALSO:** I didn't realize that this experiment <u>would involve</u> so much concern. Я не усвідомлював, що цей експеримент <u>здатний викликати</u> таку тривогу.	***ALSO:** I <u>concern myself with</u> history = I <u>am interested in</u> history Я цікавлюся історією. ***all concerned** усі зацікавлені особи

Exercise 3. Translate the following sentences into Ukrainian

1. They were very interested in the subject discussed.
2. Methods employed in solving this problem are strongly influenced by the research objectives.
3. The survey concerned synthesized materials.
4. The method used depended upon the material selected.
5. Hydrogen is the lightest element known.
6. The temperature of the substance obtained remained constant.
7. The complexity of the technique involved increased considerably.
8. The procedure proposed provided the required parameters.
9. The questions posed concerned the project.
10. We are involved in a research project on satellite communications.
11. He suggested the best solution to the problem concerned.
12. The exhibition attended by representatives of all the enterprises concerned attracted a lot of attention.
13. The ninety projects exhibited were selected from those entered by 1,460 students participating in the contest.

B.

Adverbial Modifiers Обставини	When While discussing progress in their work scientists decided to carry out another experiment. Обговорюючи (під час обговорення) досягнуті результати, вчені вирішили провести ще один експеримент. Computer is a complex device when if viewed as a whole. Комп'ютер — складний прилад, якшо розглядати його в цілому. Being invited too late, we couldn't attend the conference. Ми не змогли відвідати конференцію, бо нас запросили дуже пізно. When going into reaction, elements change their properties. Вступаючи у реакцію, елементи змінюють свої властивості. Having discussed the issue, they went to the library. Обговоривши це питания, вони пішли до бібліотеки. Having been discovered this law became known to many scientists. Після того, як закон було відкрито, він став відомий багатьом вченим. Considered from this point of view the issue is of little importance. Якщо розглядати питания з цієї точки зору, то воно не має великого значення. Unless otherwise stated, ... Якшо немає особливих застережень,…

NOTE

Mind the translation of certain set expressions containing participles:
Given — Якщо є; за умови; якщо
Stated — Якщо сформулювати
Seen — Якщо розглядати
Granted — Припустімо, (а далі?)
Let's take it for granted — Давайте вважати, що це доведено / зрозуміла річ
It being so — За таких умов
This being the case — Якщо справи ідуть таким чином (у такий спосіб)

C. Parentheses вставні слова	frankly speaking — чесно кажучи generally speaking — у цілому broadly considered — якщо розглядати в іншому putting it another way — інакше кажучи as already mentioned — як вже було сказано as emphasized above — як уже наголошувалося раніше

Exercise 4. Translate the following sentences into Ukrainian.

1. If completed, the experiment will make it possible to draw definite conclusions.

2. Given certain conditions, such experiments could be done by almost everyone.

3. When presented at the conference this work caused a lot of interest.

4. Putting it another way, this is as far as we can go.

5. Melting ice keeps the same temperature while melting.

6. Only one of the theories concerned takes it for granted.

7. Unless otherwise stated, follow the usual procedure.

8. When being pure, water is a colorless liquid.

9. Stated in a simple form, the hypothesis runs as follows.

10. Having been tested, the device was recommended to production.

11. While working on this project, we performed many experiments.

12. Translating these sentences I didn't consult the dictionary.

13. Frankly speaking, I don't like the approach proposed.

PARTICIPAL CONSTRUCTIONS

Subjective	to see	**Objective**
The students were seen making the experiment. Бачили, як студенти робили експеримент.	to watch to hear	We saw the students making the experiment. Ми бачили, як студенти роблять експеримент.

NOTE

to have (get) *something* **done**
someone **do** something
I had *the letter* **translated** (somebody did it for me).
Мені переклали листа.
I had *John* **translate** the letter (John did it for me).
Джон переклав мені листа.
Compare:
I have translated the letter (I have done it myself). Я (сам) переклав листа.

OTHER CONSTRUCTIONS

It being late, we postponed the meeting.	Ми відклали збори, бо (тому що) було пізно.
The session was over, with many problems left unsolved.	Засідання закінчилось, але (причому, а) багато питань залишилось невирішеними.
The first experiment was hard to perform, the other ones causing no trouble.	Лише перший експеримент було складно провести, усі інші минули без проблем.
The results as presented at the conference are very promising.	Результата у тому вигляді, як їх подано на конференції, є дуже перспективними.
The phenomenon thus discovered puzzled almost everyone.	Явище, яке було відкрито таким чином, здивувало майже усіх.

NOTE

Set-phrases with participles

standing committee — постійно діючий комітет

abstracting journal — реферативний журнал

steering / **organizing** committee — оргкомітет

learned society — наукове товариство /nid/

naked eye — неозброєне око, /kid/ Also: **unaided** eye

NOTE

Presenting the report is my colleague.
Доповідь читає моя колега.
Більш детально про такі звороти
див. Chapter 11, Emphasis.

Exercise 5. Translate the following sentences into Ukrainian.

1. Conditions permitting, we will carry out the experiment tomorrow.

2. (With) the experiment being carried out, we started new investigations.

3. The existing data being limited, no definite conclusion could be made.

4. Technology having reached a high stage of development, new materials became available.

5. We continued the experiment, with our graduate students helping us.

6. The discussion being over, the steering committee continued its work.

7. We watched the laboratory assistants making preparations for our experiments.

Exercise 6. Choose the one correct answer from the options provided.

1. I had my cousin proofread my brother's article. Who proofread the article?
   a. I myself
   b. my brother
   c. my cousin

2. The students have finished the project ahead of time to their advisor's delight. Who finished the project?
   a. somebody else
   b. the students
   c. the advisor

3. Since I was pressed for time with nobody helping me, I had my report typed. Who typed the report?
   a. somebody else
   b. I myself
   c. nobody

Exercise 7. Complete the sentences.

1. Automobiles ... propane gas emit fewer dangerous pollutants into the atmosphere.
   a. use
   b. using
   c. can use
   d. when used

2. ... precision instruments require delicate handling.
   a. Using
   b. The use of
   c. When used
   d. To use

3. The study performed ... complex mechanisms.
   a. revealed
   b. reveal
   c. revealing
   d. when revealed

4. Choose the phrase that best keeps the meaning of the original sentence if ... for it.
   a. is it substituted
   b. substituting
   c. is substituted
   d. it is substituted

5. The method previously ... is being widely used.
   a. mentioning
   b. if mentioned
   c. mentions
   d. mentioned

6. Some issues are mentioned but not ... in full detail.
   a. discussing
   b. discussed
   c. when discussed
   d. discuss

7. VCR is a sophisticated device ... as a whole.
   a. when viewing
   b. when viewed
   c. viewing
   d. views

8. Anthropologists work in the branch of social science ... the relationship of human beings and their cultures.
   a. when involved
   b. involved
   c. involving
   d. involves

9. A complete system can be ... inside.
   a. installed
   b. installing
   c. installs
   d. install

10. Potatoes, a popular food in Ukraine, are most delicious ... .
   a. when roasting
   b. roasting
   c. roast
   d. when roasted

11. The force ... bodies of matter together is gravity.
   a. drawing
   b. draws
   c. when drawn
   d. drawn

12. This colorless, tasteless gas does not react instantly ... with other substances.
   a. mixing
   b. it mixed
   c. when mixing
   d. when mixed

13. This substance is higly explosive if ... to an open flame.
   a. it exposed
   b. exposing
   c. exposed
   d. is it

Text B Read the text and define your techno-type.

Technical professionals sometimes take for granted their ease with electronic ***marvels.*** Unfortunately, though, ***it seems*** that there is an ever-widening ***gap*** between the «knows» and the «know-nots». Recent studies point out that while the hardware is becoming more sophisticated, the users may not be keeping pace. Some people may even be classified as technophobic, and some are ***intimidated*** by computers and are ***afraid*** they may damage a PC if they use it without assistance, or would not use a computer unless forced to. Based on these ***findings,*** Dell Computers has developed a new approach to the computer business: techno-typing. Techno-typing is the key to helping people understand what computers can do specifically for them and how to find their perfect PC match. Dell is using the data to develop computers targeted at specific techno-types:

marvel — something (or someone) that causes wonder and admiration; wonderful thing укр. чудо, диво
it seems — укр. очевидно, певно, здається
gap — an empty space between two objects укр. розрив
to intimidate — to frighten укр. лякати
afraid — full of fear, frightened, scared укр. наляканий
findings — something learned as a result of an official inquiry укр. отримані дані

* Techno-Wizard: generally a technology expert or hobbyist who wants the hottest technology for the lowest price. Greatest concern is losing the edge.

* Techno-To-Go: wants a computer that comes ready to go right out of the box. Interested in what a computer can do but not in how it works. Greatest ***concern*** is being left alone without service and support.

* Techno-Boomer: wants to look smart; researches and seeks recommendations before making a ***purchase.*** Greatest concern is making the wrong decision,

* Techno-Phobe: rejects technology or avoids it whenever possible.

* Techno-Teamer: uses a computer at work and as part of a network. Productivity is a primary concern for work that is largely team oriented. Greatest concern is network failure.

concern — a matter of interest, importance or worry to someone укр. важливість, турбота
purchase — укр. покупка

. . . . . .

NOTE

CLASSIFYING is an important mental skill.
Usually classifications contain:
1) the name of the class
2) members of the class
3) basis for classification *** According to Text B we have:
1) technology users;
2) Techno-Wizards, Techno-To-Gos, Techno-Boomers, Techno-Phobes, Techno-Teamers;
3) attitude toward and aptitude for technology.
While classifying, use the following words and phrases:
class, group, category, division;
to classify, to group, to categorize, to divide;
classification, grouping.

can be divided into	types
X(s) belong(s) to	categories fall(s)
into	groups

*** Sometimes they are not explicitly expressed, but implied.

Exercise 8. **Read the following text. Find all examples of classifying. Give the name of the class, members of the class, and basis for classification.**

The earliest computing device was the abacus used by the ancient Greeks and Romans. Sliding scales date back almost two millenia. In 1642, French philosopher-mathematician Pascal built a mechanical adding machine, and in 1671, German philosopher-mathematician Gottfried Leibniz built a machine to perform multiplication. In 1835, British mathematician Charles Babbage designed the first mechanical computer. The work of another British mathematician Alan Turing, in the 1930s, marked the next major milestone: he developed the mathematical theory of computation (by the way, the name of the test for measuring the success of computer programs that are claimed to have «Artificial Intelligence» is Turing). In 1940s, American mathematician John van Neumann developed the basic design for today's electronic computers. Finally, with the development of the transistor in 1952 and the subsequent microelectronic revolution, the Computer Age started.

A computer is a collection of various components. At the heart is the CPU (central processing unit), which performs all the computations. This is supported by memory which holds current program and data, and «logic arrays», which help move information around the system. Peripheral devices, or add-ons, can be attached. These will normally be keyboards and VDU (visual display unit) screens for user I/O (input and output), disc drive units for mass memory storage, and printers for printed output. The program and data to be manipulated — text, figures, images, or sounds — are input into the computer which then processes the data and outputs the result. The results can be printed out, displayed on VDU, or stored in memory for subsequent manipulation. Whatever the task, a computer can function in only one of four ways: input/output operations, arithmetical operations, logic and comparison operation, and movement of data to, from, and within the central memory of the machine. The programmer devises a set of instructions — algorithms that utilize these four functions in a combination appropriate to the job in question.

There are four «sizes», corresponding roughly to their memory capacity and processing speed. Microcomputers are the smallest, usually single-user machines often referred to as home computers, are used in small business, at home, and in schools. Minicomputers, also known as personal computers are generally larger, and may support up to 30 users at once. They will be found in medium-sized business and university departments. Mainframes, which can often service hundreds of users at once, are found in large organizations. Supercomputers are the most powerful of all. They are mostly used for special highly complex scientific tasks.

Exercise 9.

(to) recognize recognition recognized

1. John is a young author struggling for____.
2. Our city has changed so much you wouldn't ____ it.
3. He is a ____ authority on materials science.

(to) alter alteration(s) .

4. There have been a few ____ to our proposal.
5. This dress will have to be ____.

(to) add addition(s)

6. We should _____ some more names to the list.
7. I would like _____ something to what you've said.
8. ____ are made to the project, of course.
9. In ____ to giving a general introduction, the course also provides practical discussion.

Exercise 10. Read the passage and answer the questions that follow.

In the middle of Salisbury plain in southern England, a circle of massive stones marks one of the strangest monuments known to humanity. Stonehenge contains a set of giant standing stones weighing 25 tons each. They form a circle surrounding two horseshoe-shaped patterns. The circle is more than 30 meters wide and 4 meters high, raized 4 meters above the ground. Their place of origin is unknown. The discovery that many of the stones were brought from hundreds of miles away to this particular spot, makes the matter even more interesting. «Why» is not the only question. How?

Scientists point out that Stonehenge has been built over a period of many centuries, during three distinct phases. It has been realized since 1771 (after having been forgotten for perhaps thousands of years) that at the summer solstice — the day in the year (currently June 21st) when the Sun is the farthest north and the day is the longest — the Sun rizes directly over a particular stone, caled the Heelstone (located 60 meters outside the outer circle of stones) as seen from the center of Stonehenge. So probably the people who built Stonehenge must have had substantial astronomical knowledge.

1. What is the best title for the passage?
   a. Early astronomers
   b. Salisbury plain
   c. Gigantic projects
   d. One of the famous mysteries

2. It can be inferred from the passage that
   a. the stones were cut from quarries
   b. it was easy to transport the stones
   c. the Heelstone is not very heavy
   d. an incredible amount of work went into making the construction

3. According to the author of this passage
   a. Stonehenge is located in northern England
   b. giant monuments have puzzling features
   c. some stones were put on top of each other
   d. the stones were not transported from a great distance

4. The author implies that
   a. nobody knows for sure how the stones got there, and what their exact purpose was
   b. not many people undertook this construction project
   c. Stonehenge is not a mystery anymore
   d. the circle is less than 30 meters wide

5. The passage was most probably written by a specialist in
   a. astrology
   b. archaeoastronomy
   c. biology
   d. philosophy

Exercise 11 **Choose the one word or phrase that best keeps the meaning of the original sentence if it is substituted for it.**

1. This article concerns archaeological findings.
   a. is about
   b. surveys
   c. overviews
   d. concludes by

2. We were unable to perceive where the problem lay.
   a. conclude
   b. understand
   c. foresee
   d. check

3. What is your assessment of her chances of winning?
   a. prediction
   b. suggestion
   c. feeling
   d. evaluation

4. Some people are scared of sophisticated technology.
   a. interested in
   b. informed
   c. afraid of
   d. aware of

5. In general, our business plan is OK, but I think we should make some alterations.
   a. radical improvement
   b. slight changes
   c. useful amendments
   d. important corrections

6. There are many gigantic buildings in New York.
   a. tall
   b. modern
   c. gorgeous
   d. huge

7. Virtual reality is an electronic marvel.
   a. wonder
   b. gimmick
   c. monitor
   d. device

8. He decided to buy a new computer.
   a. sell
   b. advertise
   c. purchase
   d. assess

9. The study revealed an extremely involved mechanism.
   a. simple
   b. interesting
   c. complicated
   d. strange

10. He concerns himself with astronomy.
    a. is tired of
    b. is interested in
    c. doesn't like
    d. thinks it is necessary to study

11. This theory involves a lot of aspects.
    a. assumes
    b. studies
    c. includes
    d. concludes

12. We really like this pleasant working enviroment.
    a. space
    b. milieu
    c. group
    d. feature

13. You should send your papers to our organizing committee.
    a. working
    b. standing
    c. conference
    d. steering

Noteworthy

If you want something done, give it to a busy man ... and he will have his secretary do it.

UNscientifically speaking...

ALCHEMY

The alchemists tried to change base metals to gold. See how we can change BASE to GOLD in just 4 steps by changing one letter at a time:

BASE
baLe
balD
bOld
GOLD

Change :

a) HATE
_____
_____
_____
LOVE

b) TAKE
_____
_____
_____
GIVE

c) MORE
_____
_____
_____
_____
_____
LESS

Clues:
a) possess; bee's home; dwell.
b) body of water; be fond of, enjoy; dwell, have life.
c) female horse; German money; a cover to disguise the face; quantity; disorder or untidiness.

(after English Teaching Forum, Jan. 1994)

Chapter 9

Focus on:

Energy Sources
Environment

Grammar: Verbals
Infinitive

Text A Read the text and be ready to answer the questions that follow.

Fossil fuels

Coal, petroleum, and natural gas are known as fossil fuels. ***Fossil*** fuels are believed to have been formed from the remains of prehistoric plants and animals. Coal originates from ancient ***swamps,*** petroleum and natural gas were formed from ancient marine plants and animals. Coal is still an important ***source*** of electricity. Along with iron ***ore,*** it is also used to make steel. Because coal is a solid fuel, it has certain disadvantages, and burning it causes acid rain and air ***pollution.*** Displaced by cleaner fuels, coal consumption declined ***rapidly*** during the middle of the twentieth century. But coal reserves are estimated to be enormous, and, assuming that pollution control and clean-burning technologies now being researched are fully ***implemented,*** coal may still remain a major source of energy.

fossil — укр. викопний
swamp — an area of land which is always full or covered with water укр. болото
source — a place from which something comes; means of supply укр. джерело
ore — rock, earth etc. from which metal can be obtained укр. руда
to pollute — to make (air, water, soil etc.) dangerously impure or unfit for use укр. забруднювати
rapid — fast, quick, swift укр. швидкий
to implement — to carry out or put into practice укр. впроваджувати, здійснювати
fuel — material that is used for producing heat or power укр. паливо
to say nothing of — укр. не кажучи вже про
well — a place where water (oil) can be taken from underground укр. свердловина
to ship — to send to a distant place by post or other means, укр. перевозити
pipeline — a line of connected pipes, often underground, especially for carrying liquids or gas a long distance укр. трубопровід

The main use of petroleum is for liquid ***fuels*** such as gasoline, diesel and jet fuel, ***to say nothing of*** heat and electricity generation. Also many chemicals are produced from petroleum. These petrochemicals include chemical fertilizers, explosives, medicines etc. Oil at present accounts for around 45 percent of the planet's total energy consumption, and natural gas a further 25 percent. Natural gas is often found in the same ***wells*** with oil, but it may also be found separately. Natural gas is the cleanest-burning fuel that can be ***shipped*** through ***pipelines.***

Nuclear energy

The world's first nuclear power plant began producing electricity in Britain in 1956. Originally, nuclear power was seen as a clean, inexpensive power source. Today, however, the nuclear power industry faces two serious problems: nuclear accidents and nuclear ***waste.*** Since the Chernobyl ***accident*** public opposition to expansion of nuclear power has grown.

accident — something unpleasant or damaging укр. аварія
waste — used damaged or unwanted matter укр. відходи

Alternative (renewable) energy sources

While oil has a ***unique*** status as an energy source, it is ***by no means*** without competition. Other fossil fuels, such as coal and gas, are often less ***costly*** and compete effectively in certain sectors, such as electric power generation. However, there are energy resources (not based on fossil fuels) that are essentially ***inexhaustible,*** such as solar energy and other kinds of renewable energy. Flowing water is an important energy source. Hydroelectric power, or hydropower, produced by the force of running water is a renewable and relatively pollution-free source of electrical energy. As such energy sources as coal, oil, and natural gas become ***depleted,*** it will prove

unique — being the only one of its type укр. унікальний
by no means — Ні в якому разі
costly — costing a lot of money укр. дорогий
to exhaust — to use up completely укр. виснажувати, вичерпувати
to deplete — to lessen greatly in amount укр. вичерпувати, виробляти

advantageous to many countries currently dependent on those sources to develop and make available alternative energy technology. Many countries have favorable natural conditions for developing geothermal, wind, solar, and ***tidal*** energy sources. Geothermal energy makes use of underground heat which escapes to the surface through hot ***springs.*** Geothermal power is believed to be of great potential. New Zealand, Iceland, and several other countries now operate successful power plants.

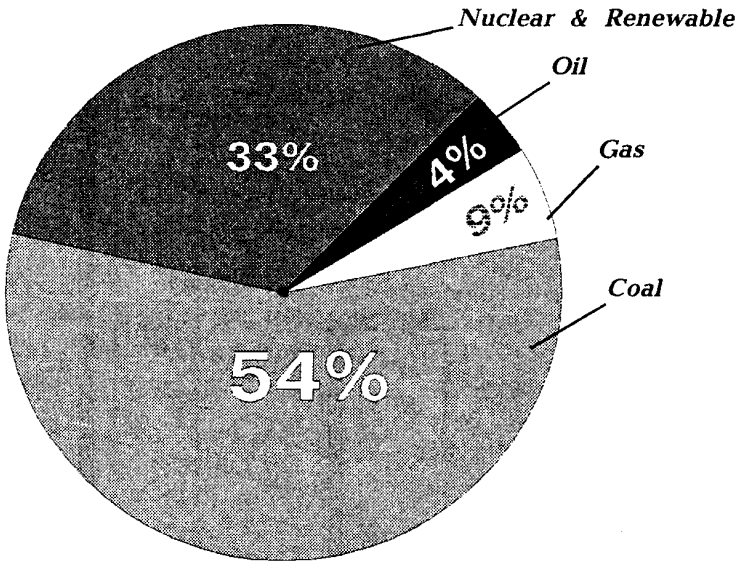
tide — a current of water caused by the regular rize and fall of the sea caused by the pull of the moon and the sun укр. приплив та відплив
spring — a place where water comes up naturally from the ground укр. джерело

Solar energy involves capturing the sun's light energy and converting it into heat or electricity. The technology exists to ***harness*** solar power, but solar energy collectors are expensive. Tidal energy could be a source of hydroelectric power in limited areas and has been pioneered in France. Attempts to raise deep ocean water to generate electricity are ***under way*** in Hawaii and other places. Wind can also be harnessed to produce electricity by the use of machines called aerogenerators. Wind is an unpredictable energy source that requires storage technology to fully use its benefits. ***Recycling*** or burning industrial and domestic garbage can also be used as a source of energy.

In the oceans, air, land, underground the Earth has ***virtually*** unlimited energy sources. Many of them are nonrenewable, and may be of short supply in the future. We should *seek* and improve energy sources and use them more efficiently to maintain our energy supply and reduce environmental ***hazards.***

to harness — to use (a natural force) to produce useful power укр. приборкувати, підкоряти
to be under .way — moving forward укр. (починати) запроваджувати в життя, здійснювати
to recycle — to treat (a substance that has already been used) so that it is fit to use again укр. переробляти для повторного використання
virtually — almost, very nearly, practically укр. практично, майже
to seek — to make a search (for); to look for; try to find or get укр. шукати
hazard — something likely to cause damage or loss; a danger or risk укр. ризик, небезпека

Sources of Electricity Generated in the USA



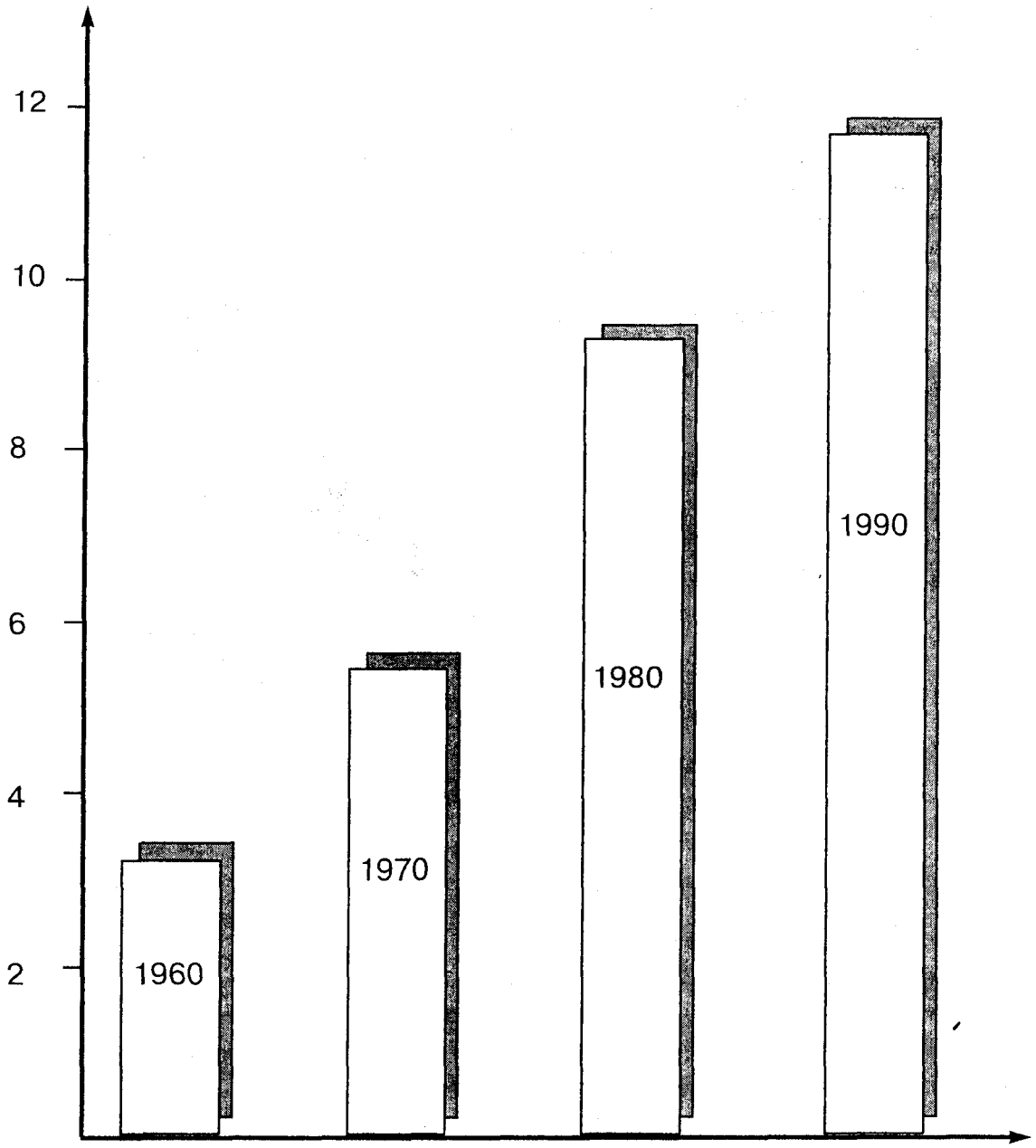
1. What is the subject of the passage?
2. What kinds of natural resources do you know?
3. What are the main uses of coal, petroleum, and gas?
4. What are the positive and the negative aspects of nuclear energy as a power source?
5. What is specific about renewable energy sources?
6. What are the positive and the negative aspects of various renewable energy sources? Give your opinion. State the reasons why.

Exercise 1. **Give English equivalents of:**

морські рослини та тварини; важливе джерело; поряд з; тверде паливо; кислотний дощ; забруднення повітря; найчистіше паливо; альтернативні джерела енергії; енергія припливу та відпливу; перші спроби починають запроваджуватись у життя; приборкувати; майже необмежені можливості; джерела енергії, що поновлюються; зменшувати небезпеку для довкілля.

Exercise 2. **A. Make some predictions about the world electricity consumption if present trends continue.**

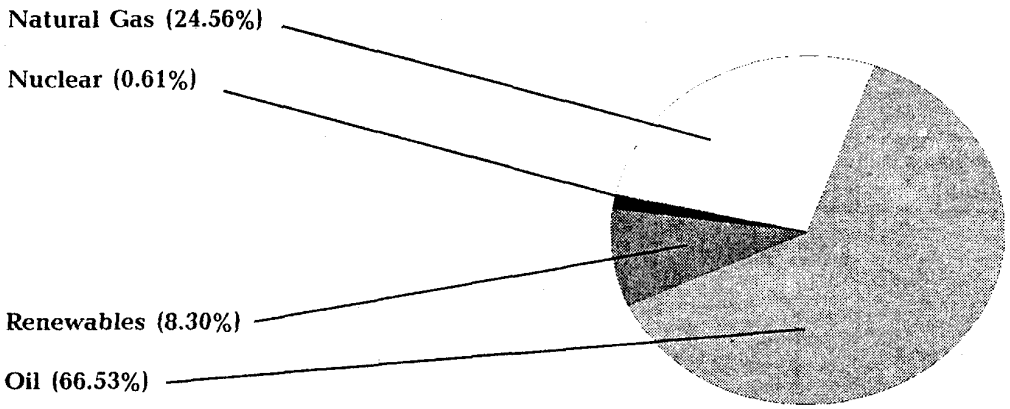
World Consumption of Electricity (10^6 GWh)



B. What does comparison of world energy consumption by source reveal?

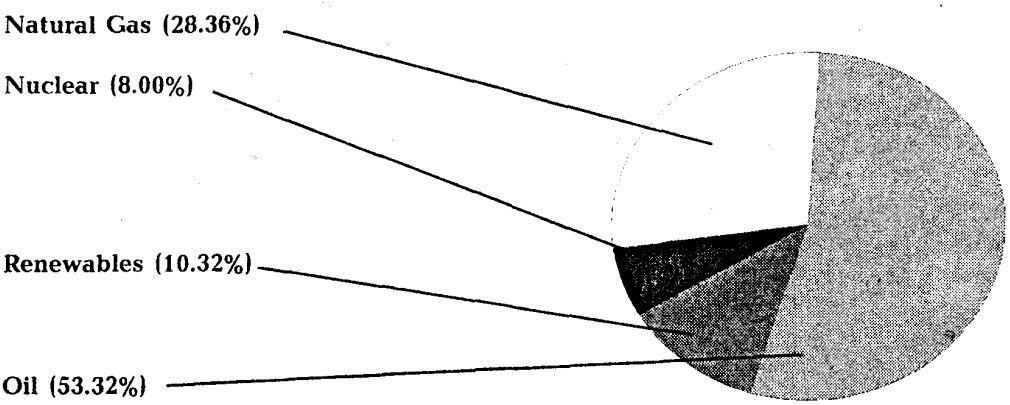
World Energy Consumption — 1970

Total: 206.7 Quadrillion Btu



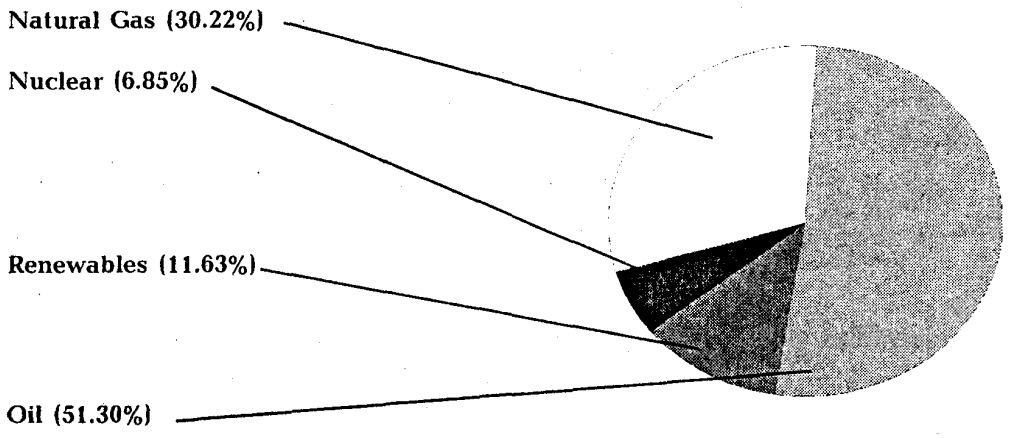
World Energy Consumption — 1990

Total: 345.6 Quadrillion Btu



World Energy Consumption — 2010

Total: 471.1 Quadrillion Btu



GRAMMAR: VERBALS
INFINITIVE

Tenses	Active	Passive
Simple (Indefinite)	to do	to be done
Progressive (Continuous)	to be doing	—
Perfect	to have done	to have been done
Perfect Progressive (Continuous)	to have been doing	—

Infinitive in a Sentence

Subject
Частина присудка

To explain this phenomenon is not easy.
Пояснити це явище — нелегка справа.
To err is human.
Людині властиво помилятися.

Object
Додаток

Our aim is to master English.
Наша мета — вивчити англійську мову.

We are to study English.	Ми повинні вчити англійську мову.
We have to study English.	

They had to work hard.
Їм довелося напружено працювати.
You must have read this article.
Мабуть, ви прочитали цю статтю.
You could have done it better.
Ви могли б зробити це краще.

Attribute
Означення

Science teaches us to create.
Наука вчить нас творити.

* * *

The article to be translated is here.
Стаття, яку треба перекласти, знаходиться тут.
The problem to be solved is extremely difficult.
Проблема, яку треба вирішити, дуже складна.
The conference to be followed by an exhibition is to take place tomorow.
Конференція, яка буде супроводжуватися роботою виставки, має відбутися завтра.

He was the first (scientist) to study this phenomenon. the last the next the only
Він був першим (вченим), хто вивчав це явище. останнім наступним єдиним.

---

* * * Передається значення необхідності дії, зокрема , у майбутньому.

Adverbial Modifiers
Обставини

You must study hard (in order) to excel.
Ви повинні наполегливо вчитися,
аби досягти успіху (бути кращим).
This method is (not) accurate enough to give reliable results.
Цей метод (не)достатньо точний,
щоб за його допомоги отримати надійні результати.
These details are **too** important **to be** neglected.
Ці деталі надто важливі, щоб ними нехтувати.

Hydrogen and oxygen unite	to make to form to yield to bring about to produce to give (rise to)	water.

Кисень та водень поєднуються, утворюючи (з утворенням) води.

Parentheses
Вставні слова

to sum up to summarize	підсумовуючи

to begin with — почнемо з того, що
to be on the safe side* — про всяк випадок
to put it another way — інакше кажучи

to say nothing of not to mention	не кажучи вже про

so to say/speak — так би мовити
that is to say — тобто
to put it briefly — коротше кажучи

Exercise 3. Translate the following sentences into Ukrainian.

1. It is never too late to learn.
2. Newton was the first to realize the universality of gravity.
3. The subject is important enough to be discussed in full detail.
4. These methods are to be described in the next chapter.
5. Jenny was the first architect to use a steel frame in a tall building.
6. Water is to be purified to meet our needs.
7. The intention of the author is to show some newly developed methods.
8. Elisha Otis was the first to demonstrate a steam-powered elevator in New York in 1853.
9. These factors combine to make the problem very complicated.
10. To be on the safe side, we are to take into consideration everything.
11. The two guantities are added to yield the desired result.
12. This is the rule not to be forgotten.
13. She was the last to join our group.
14. The problem is too complex to be solved right away.
15. To get the best results, follow the directions carefully.
16. To know everything is to know nothing.

Constructions with the Infinitive

Subjective
Підмет з інфінітивом
He is known to be a reliable person.
Відомо, що він надійна людина. / Він, як відомо, надійна людина.
The article is said to be very interesting.
Кажуть, що це дуже цікава стаття. / Ця стаття, кажуть, дуже цікава.
She is expected to come.
Очікують, що вона прийде.

to know
to think
to consider | вважати
to believe
to suppose
to find виявляти
to say
to report повідомляти
to expect очікувати
to state констатувати
to see | спостерігати
to watch
to observe

Objective
Додаток з інфінітивом
I know him to be a reliable person.
Я знаю, що він надійна людина.
We consider this problem to be of great inportance.
Ми вважаємо, що це надзвичайно важлива проблема.
They reported him to win the prize.
Повідомили, що він здобув премію.

to be likely ймовірно
to be unlikely малоймовірно
to be sure напевне
та після Participle II

He is | (un)likely / sure | to come

(Мало)ймовірно, що він прийде.
Він обов'язково прийде.

Only the methods known from practical experience to be reliable have been used.
Було використано лише ті методи, котрі, як відомо з практичного досвіду, є надійними.

to happen / to chance | ставатися
to seem / to appear | здаватися
to prove / to turn out | виявлятися

He seems to know the rule.
Здається, він знає це правило.

It turned out to be a | success. / failure.
Це виявилося | успіхом / невдачею.

to allow
to permit
to enable
| дозволяти

This device enables accurate measurements to be carried out.
Цей прилад дозволяє зробити точні виміри.

to want
to wish
to desire
| бажати

to like
to love

Do you want me to help?
Ви хочете, щоб я допоміг?

They should be made **to comply** with safety regulations.
Їх треба примусити підкоритися правилам безпеки.

to make* — примушувати; зробити так, щоб...

* Teachers should make their students **study.**
Вчителі повинні зробити так, щоб їхні учні вчилися.

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* When the verb **make** is *passive,* its complement is infinitive WITH **to,** when *active* — infinitive WITHOUT **to.**

For+to+Infinitive Construction

I explain it for you to understand,
Я поясню це, щоб/аби ви зрозум1ли.
There is not enough time for this article to be published this year.
Недостатньо часу для того, аби ця стаття вийшла друком цього року.
That was for him to decide.
Це повинен був вирішити він. (Порівняйте: *It was up to him).

NOTE

Bare Infinitive (інфінітив без to)
Do NOT use **to:**

1. after modal and auxiliary verbs:
I don't Ø understand you.
Я не розумію вас.
If one can't Ø have what one loves, one must Ø love what one has.
Якщо не маєш того, що любиш, люби те, що маєш.

2. after let, would rather, had better, make (active), and in the sentences beginning with Why:
Let us Ø be. friends.
Давайте будемо друзями.
I would rather not Ø do it.
Я ліпше цього не робитиму.
What makes you Ø think so?
Що примушує вас думати саме так?
Why not Ø come?
Чому б **не прийти?**

NOTE

Split Infinitive (розщеплений інфінітив)
Really, I want to understand you. Спавді, я хочу зрозумгги вас. I want **to** really **understand** you. Я справді хочу зрозумгги вас.

NOTE

Sometimes **to** can be used INSTEAD of the infinitive:
I would not do it even if I wanted **to.**
I would not do it even if I wanted **to do it.**
Я б не зробив цього, навіть якщо б і хотів (це зробити).
— Would you like some tea?
— I'd | love to. I like to.
— Ви хотіли б випити чаю?
— З задоволенням.

BUT:

Mind the verb **try:**
— Can you do this?
— I'll **try.**
— Ви можете це зробити?
— Спробую.

Exercise 4. Translate the following sentences into Ukrainian.

1. He is said to have graduated from Princeton University.
2. He appears to be concerned with the problem.
3. The law in question is likely to account for this phenomenon. 5. Science is known to affect the lives of people.
5. He asked for the papers to be brought.
6. One can assume this to be self-evident.
7. The work is unlikely to contribute to the solution of the problem.
8. The research is believed to be of great importance,
9. Everything is ready for the experiment to begin.
10. The data obtained appear to be quite correct.
11. Actually, Stonehenge turns out to have been built over a period of many centuries.
12. A substance known to possess such properties is called water.
13. We suppose this method to be of great practical value.
14. The procedure has proved to be complicated.
15. We want the experimental data to be presented as soon as possible.
16. The conclusion is sure to be of great theoretical interest.
17. The final results turned out to be not what we had expected.
18. They want the scientists to study this problem.
20. Substances thought to possess the properties in question were thoroughly investigated.
21. He appears to mention this fact in his monograph.
22. This approach allows to quickly analyze the data.
23. He was made to come early.
24. All factors likely to affect the accuracy of the experiment should be carefully observed.
25. The results turned out to be extremely interesting.
26. To begin with, investigations seem to appear at times when societies need them.
27. I want to finally know it.

Exercise 5. Translate Ukrainian sentences. Then match the two columns.

1. Дозвольте сказати декілька слів.	A. It will be easy fer us to settle this problem.
2. Схема здається надто спрощеною.	B. They expect us to come on time.
3. Я прийшов сюди першим.	C. The problem is important enough to be considered.
4. Проблема досить важлива для того, щоб її розглянути.	D. To avoid making mistakes is very difficult.
5. Іноді дуже важко зробити так, щоб інші зрозуміли вашу думку.	E. Let me say a couple of words.
6. Вони очікують, що ми прийдемо вчасно.	F. It will be interesting for you to listen to his speech.
7. Нам буде досить легко владнати цю справу.	G. The scheme appears to be oversimplified.
8. Дуже важко уникнути помилок.	H. It is sometimes very difficult to make people see your point.
9. Вам буде цікаво послухати його промову.	I. I was the first to come here.

Exercise 6. Complete the following sentences.

1. Louise Nevelson is believed by many critics ... the greatest 20th century sculptor.
   a. to be
   b. have been
   c. has been
   d. being

2. The line where the Earth and the sky ... to meet is the horizon.
   a. it seems
   b. seems
   c. seemingly
   d. seem

3. The exceptions are too numerous ... any rule to be formulated.
   a. to
   b. for
   c. since
   d. as

4. To understand is ... deep structure.
   a. grasping
   b. to grasp
   c. having grasped
   d. grasped

5. ... this work requires great skill.
   a. Accomplishment
   b. Having accomplished
   c. To accomplish
   d. When accomplished

6. The tendency ... liquids to turn into gases is well-known.
   a. that
   b. if
   c. for
   d. when

7. Athletes who compete in the Olympic games ... to be amateurs.
   a. are supposed
   b. suppose
   c. they suppose
   d. supposedly

8. One can be amazed by the variety of life ... in tidal pools.
   a. seeing
   b. to see
   c. when seen
   d. to be seen

9. Telemarketing and telesales ... as the most cost-effective way of generating new business.
   a. to be widely recognized
   b. are widely recognized
   c. to have been widely recognized
   d. widely recognized

10. Service hotlines, advice lines, and telephone information service ... vital competitive weapons.
    a. are seen as
    b. to see as
    c. to be seen as
    d. is seen as

11. This network ... to the technical standards that apply in this country.
    a. are tailored to conform
    b. tailored to conform
    c. to tailor to conform
    d. is tailored to conform

12. Biomedical research continues ... scientists with new insights into the workings of the human body at the molecular level.
    a. to be provided
    b. to provide
    c. provide
    d. how to provide

Text B Read the following passages and paraphrase them.

1. Green Products

Recent polls of citizens of both developing and industrialized countries found that a majority considered environmental protection more important than economic growth. Many European countries already have environmental product-labeling initiatives. In the United States, the U.S. Environmental Protection Agency (EPA) has been working with industry to define environmental goals and ***facilitate*** cooperation in achieving them. One result is a labeling program for energy-efficient computers. Design-for-the-environment initiatives are growing.

Design-for-environment (DFE) programs call for careful inclusion of environmentally safe attributes in the early design stages of new products, as opposed to re-engineering them later in the product cycle. Implementing DFE is increasingly critical if companies want to be globally competitive. These programs are also proving to be economically ***sound,*** emphasizing consideration of materials and energy, and , as a result, enhance profit potential. Recycling efforts can reduce the volume of ***raw materials.*** Maximizing the use of recyclable materials opens up ***revenue*** possibilities at the end of a product life cycle. Component reliability, a fundamental design goal in the electronics industry, supports the re-use

to facilitate — to make easy or easier; help укр. полегшувати, допомагати, сприяти **sound —** showing good sense Synonyms: reasonable, sensible
укр. із здоровим глуздом (розумом), тверезий, розсудливий, розумний
raw material — not yet treated for use, in a natural state укр. сировина
revenue — income укр. доход
to refurbish — to make clean and fresh again. Synonyms: to renovate, to overhaul
укр. поновлювати
landfill — укр. звалище, смітник

of such parts in new or *refurbished* equipment, again saving raw materials, manufacturing costs, and time. Manufacturing innovations contribute to environmental soundness while boosting manufacturing efficiency. Xerox corporation estimates that its environmental programs already save the company more than $100 million annually. One initiative at Xerox seeks such complete reuse of recycling of business equipment products that no materials need to be taken to a ***landfill.*** Another approach is manufacturing involving disassembling a machine, replacing worn-out parts with new, remanufactured or used components. Then machine is cleaned and tested to ensure it meets quality and reliability criteria for a newly manufactured machine.

To meet the challenge of zero waste material, the following issues must be addressed:

- Product simplification.
- Design for disassembly rather than merely assembly.
- Incorporating recyclable materials.

Some labels for environmentally preferred products

Governments and nonprofit organizations are promoting the use of ecolabels to identify environmentally preferred products for consumers.

MILJÖMÄRKT
Nordic countries

RECYCLING SYMBOL

ちきゅうにやさしい
Japan Environment Association, Tokyo

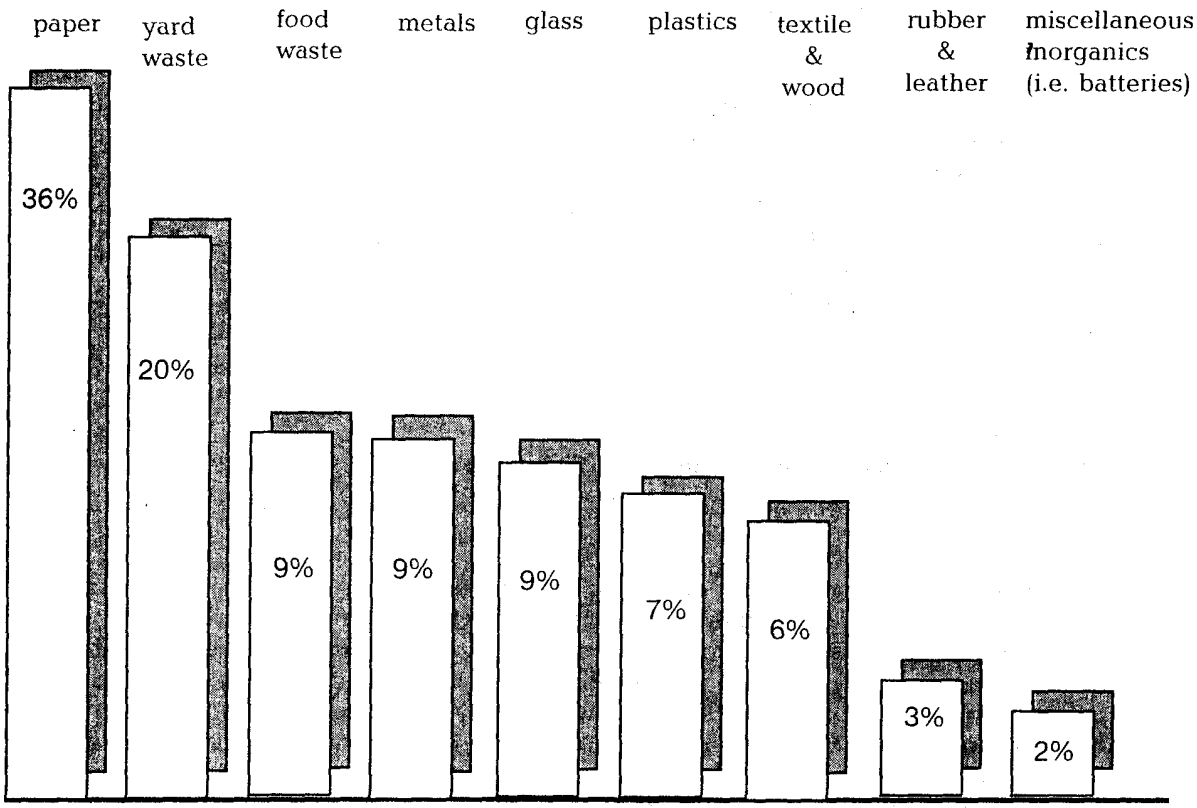
GREEN SEAL
Green Seal, Washington, DC

ENVIRONMENTAL CHOICE · CHOIX ENVIRONNEMENTAL ·
M – Official mark of Environment Canada
M – Marque officielle d'Environnement Canada
Canada

Umweltzeichen
weil schadstoffarm
Germany

European Community

What's in a Landfill?



2. Modeling the World's Climate

Will global warming turn green fields into desert? Will the hole in the atmosphere's ozone layer repair itself? These are among the problems ***tackled*** by simulations on supercomputers. Climate modelers use numerical simulations and complex calculations. At the ***core*** of today's simulations of climate are the General Circulation Models (GCM). Used by scientists around the world, this method of modeling the earth's climate is based on a set of fundamental

to tackle — to take action in order to deal with укр. працювати над розв'язанням (вирішенням)
core (of) — the most important and central part of anything укр. стрижень, сутність, суть, ядро

equations. The method involves dividing the atmosphere into a series of three-dimensional boxes (grid-cells or grid-points), and then solving these equations for each box.

Perhaps one of the most far-reaching questions that climate modelers today are addressing is the ***greenhouse*** effect and its influence on global warming. The greenhouse effect is the tendency of certain gases in the atmosphere, ***notably*** carbon dioxide, to trap heat below

greenhouse — укр. парник **notably** — especially, particularly укр. особливо ж, а надто

them in the same way that glass traps heat in a greenhouse. This is a key question because it can dramatically affect environment and society.

Climate modeling has its sister science, numerical forecasting of the weather ***in terms of*** temperatures, winds, and ***precipitation.*** Most of the basic formulae derive from Newton's laws, and a simple climatic model can be created from just a few equations: e.g. the second law of motion, conservation of mass, the first law of thermodynamics etc. These equations were first used to model the atmosphere in the 1920s by a British scientist, Lewis F. Richardson. He developed «computing forms» to solve them for different locations on the globe. He ***envisioned*** a large amphitheater representing

in terms of — with regard to укр. у термінах; з точки зору; у розумінні; з урахуванням
precipitation — укр. опади (метеорол.)
to envision — to see in the mind as a future possibility Synonym: to foresee укр. передбачати

the world, locations around the hall representing different geographic regions. A sort of «computing amphitheater» came into existence in the 1950s with the birth of the Eniac computer at Princeton University in New Jersey. Weather simulation was one of the first major problems run on this early computer and ever since then climate and weather modeling have been among the first applications transported to the «supercomputer» of each era. A primitive climate model was developed in 1956, and in the early 1960s, the first ***full-scale*** GCMs were developed. Today, there are well over two dozen of these general circulation models in the world. Researchers would like ***to couple*** other earth systems with GCM. Topography, ground and

full-scale — укр. у повному обсязі
to couple — to join together, connect укр. з'єднувати
terrestrial — укр. наземний
marine — укр. морський

surface water hydrology, ***terrestrial*** ecosystems, ***marine*** biochemistry are all being modeled separately today and could, if coupled with today's GCMs, improve them greatly.

Exercise 7. Discuss the following point. Give your opinion.

Concern about the way people are damaging the environment is not new. In the USA, for instance, one of the first environmentalists was Henry David Thoreau, who spent several years living in a small hut on the shore of an isolated pond. He wrote a famous book, *Walden,* about his experience. In his book, Thoreau recommended that men and women learn to live more simply. While Thoreau's book was praised by many people, few actually followed his advice.

Another man named John Muir helped launch the first major conservation movement. He urged that Americans set aside some parts of the country so that they would never be farmed. One of such places was one of the first national parks 'in the U.S. — the Yosemite Valley.

Exercise 8.

One result of the U.S. Environmental Protection agency (EPA) activities is labeling all products made with chlorofluorocarbon (CFC). Do you think such labeling is necessary for our country? Do you think special return and recycle programs (e.g for batteries) are a must? Discuss these points with your colleagues.

WARNING
Manufactured with CFC — 113 and/or l,l,l,Trichloroethane; these substances harm public health and environment by destroying ozone in the upper atmosphere.

U.S. Environmental Protection Agency

Exercise 9. Organize a round-table discussion «Put the Earth First». Use the materials provided below as possible guidelines for your discussion.

A.

Scientists are ethically obligated to make sure that his or her work is environmentally sound. It is not possible for a scientist to hide behind the claim that scientists only create things, and others determine when and how they are used. If they can damage our environment, someone may use them to the misfortune of us all. Thus, the scientists have the obligation not to create things that are harmful to the environment.

B.

Every scientist is the «end user» of some other scientist's work. Sooner or later, we all are going to realize that «we» are «they». Why not begin at the environment in the design phase of the project?

C.

We not only have a responsibility to protect the environment but to attempt to improve the world we live in through technology development. We should contribute to society in a beneficial way, and take responsibility for what we create.

D.

Scientists have a very strong ethical obligation to make sure that their work, at the "Very least, minimizes damage on the environment, and, if possible, helps protect the environment.

E.

It seems that each design or product a scientist makes can be characterized as safe or not safe. However, impacts on environment are extremely varied. For example, wind and hydropower are supposed to be environmentally benign, but we now know that they may be dangerous to birds and fish.

F.

Why stop at scientists? Everyone has an obligation to protect our environment. We all use it, we all live in it. However, scientists tend to be more educated than the average populace and therefore must consider how our creations will benefit not only humanity, but the environment as well.

G.

We should talk not of human AGAINST nature, but of human AND nature.

Exercise 10.

importance important

1. He is one of the ____ people in our company.
2. The real _____ of this invention is hard to overestimate.
3. It's ____to learn foreign languages.

(to) recycle recycled recyclable

4. This bag is made of _____ paper.
5. It's possible _____ glass.
6. This plastic is _____.

reliable reliably (un) reliability

7. He may forget about it, he is not very____.
8. I'm _____ informed of it.
9. You can depend only on _____ source of information.
10. _____ is opposite to reliability.

possible possibility possibly

11. They have many ____ to improve the system.
12. This is only one of many ____ answers.
13. Please, do it as soon as ____.
14. It's _____ that the store is still open.
15. Could you _____ lend me 20 dollars ?
16. There is strong____ that they won't come.
17. Let's consider another ____.

responsible responsibility

18. Who is ____ for this work?
19. He is very ____.
20. I take full ____ for this work.
21. It's his _____ to make the decision.

Exercise 11. Read the passage and answer the questions that follow.

For many years Antarctica was thought to be only an archipelago with islands tied together above sea level by ice. It was thought to be made up of two small subcontinents — East Antarctica, the larger, and West Antarctica, containing the Antarctic Peninsula. The two continents were supposed to be separated below sea level. Modern geophysical studies, however, have revealed a fairly complete picture of the Antarctic landform below its ice cover. Now we know that West Antarctica is connected to the main part of the continent by a chain of mountains well above the sea level. The bedrock of much of East Antarctica appears to be above sea level; some of it (in the Transantarctic Mountains) is far above sea level. Whether mineral wealth lies hidden by ice is unknown. No deposits rich enough to be economically useful have been found. Interpretation of continental structure is an important objective of any extensive geologic investigation, yet except for the earth's ocean basins, no area the size of Antarctica is so geologically unknown. With 98 percent of the continent covered by ice, it is extremely difficult to decipher the continent's general structure.

1. This text is concerned primarily with the
   a. geological composition of Antarctica
   b. continents of the world
   c. exploration of minerals in Antarctica
   d. earth's ocean basins
2. According to the passage, Antarctica is made up of
   a. two subcontinents
   b. connected land masses
   c. several islands
   d. two peninsulas
3. It can be inferred from the passage that little is known about Antarctica's
   a. climate and size
   b. landform
   c. bedrock
   d. mineral wealth
4. The author implies that
   a. Antarctica used to be an archipelago
   b. Antarctica supplies rich mineral resources
   c. the Earth's ocean basins are not thoroughly investigated
   d. much of East Antarctica is above sea level
5. How much of Antarctica is covered by ice?
   a. 90 percent
   b. 89 percent
   c. 88 percent
   d. 98 percent

Ecxercise 12. **Choose the one word or phrase that best keeps the meaning of the original sentence if it is substituted for it.**

1. Virtually all the members were in agreement with the proposal.
   a. actually
   b. almost
   c. eventually
   d. seemingly

2. Our project is now under way.
   a. under examination
   b. being discussed
   c. moving forward
   d. under consideration

3. Hopefully, the committee's suggestions will be implemented soon.
   a. studied
   b. discarded
   c. discussed
   d. carried out

4. These factories seem to pollute the air.
   a. make clean
   b. make impure
   c. harness
   d. affect .

5. The mine was closed because of coal exhaustion.
   a. production
   b. depletion
   c. recycling
   d. deposits

6. Their choice turned out to be a mistake.
   a. proved
   b. seemed
   c. happened
   d. is considered

7. They coupled the carriages of the train together,
   a. disconnected
   b. connected
   c. moved
   d. separated

8. We observe rapid changes in the world of computer technology.
   a. slow
   b. radical
   c. slight
   d. fast

9. They discussed hydroelectric and geothermal power, to say nothing of solar energy.
   a. that is to say
   b. not to mention
   c. to put it briefly
   d. to put it another way

10. He seems to know what they mean.
    a. is likely
    b. happens
    c. is sure
    d. appears

11. At present, I don't envision any difficulties.
    a. foresee
    b. observe
    c. encounter
    d. look for

12. It is a good idea to overhaul this aircraft.
    a. make use of
    b. purchase
    c. get rid of
    d. refurbish

Noteworthy

I cannot give you a formula for success, but I can give you a formula for failure: try to please everybody.

Herbert Swope

Chapter 10

Focus on:

Evolution of Manufacturing
Intelligent Manufacturing

Grammar: Verbals
Gerund

Text B Read the text and be ready to answer the questions that follow.

Manufacturing technology is the technology of process control. It is machines, human labor, and the organization of work brought together to control a manufacturing process. Whenever the approach to process control ***shifts*** significantly, many parameters change. These shifts suggest six epochs in manufacturing. The new technology dictates changes in the nature and organization of manufacturing, and in the machines used to effect those changes.

The English system of manufacture originated in the late 18th century with the invention of general-purpose machine tools, such as ***lathes,*** that could be used to fabricate a variety of workpieces. The American system of manufacture that emerged in the mid-1800s emphasized precision and interchangeability of parts.

The era of scientific management began in the late 1800s with the works of Frederick Winslow Taylor, a U.S. mechanical engineer whose principles of manufacturing management are known as Taylorism. Recognizing that the workers themselves were limiting the speed and efficiency of machines, Taylor claimed that these activities could be measured, analyzed, and controlled with techniques analogous to those applicable to physical objects. Using job analysis and time study, he determined a standard rate of output for each job. This approach placed control in the hands of management, which could monitor a worker's productivity by comparing his or her output against a standard.

Next came the era of process improvement, in the mid-20th century, based on statistical process control (SPC). Invented in the U.S. in the 1930s, SPC assumes that machines are ***intrinsically*** imprecise, since the identical procedure will produce different results on the same machine at different times. It emphasized «outliers» (out-of-control) situations rather than ***mean*** performance;

directed management's attention away from the worker toward machines. Whereas scientific management is concerned with manufacturing problems in essentially static forms, SPC is concerned with the dynamism of the processes.

Numerical control (NC) arrived in the 1970s with the microprocessor. NC combines the ***versatility*** *of* general-purpose machines with the precision and control of special-purpose machines. It emphasized adaptability above stability. It also implies experimentation, learning, place and nature of work.

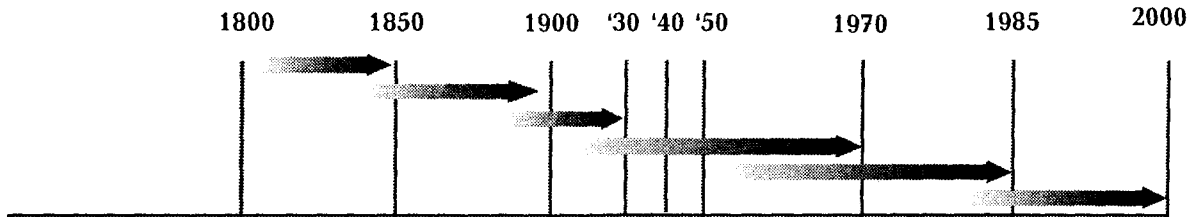
to shift — to change (in position or direction), move from one place to another укр. змінювати; переміщати
lathe — укр. верстат
intrinsic — being part of the nature or character of someone or something; Synonym: inherent укр. внутрішньо властивий, притаманний за природою
mean— average укр. середній; звичайний; пересічний
numerical control — укр. числове програмне управління
versatile — having many different uses укр. універсальний, багатоцільовий, різнобічний,
intelligence — укр. інтелект, розвинені логіко-інформащйні можливості
extension — укр. продовження
cohesive — укр. згуртований

Manufacturing entered the computer-integrated era in the late 1980s. Computer-integrated manufacturing (CIM) is based on information about, and models of functional expertise that make it possible to examine and systematize the interactions among functions. Recognizing these interactions and predicting their consequences constitutes system ***intelligence.*** The systems enabled by CIM are extraordinary, to say nothing of versatility in the form of new products and processes.

Each of six manufacturing epochs focused on a particular aspect of process control — from accuracy, precision, and reproducibility to stability, adaptability, and versatility.

The first three epochs embraced mechanization, with manufacturing conceived in terms of increasing efficiency and control. The engineering focus was on machines, and labor was required to adapt to machines and, ultimately, to become yet another machine. Now the emphasis is on versatility and intelligence. Machines have come to be viewed as ***extensions*** of the mind that can enhance cognitive abilities of human beings. This shift, based on information technology, suggests new managerial imperatives (like building small ***cohesive*** teams), broadens the role of engineering management, and starts treating manufacturing as a service.

Evolution of Manufacturing



	The English system of manufacture	The American system of manufacture	Scientific management (Taylorism)	Process improvement (statistical process control)	Numerical control	Computer-integrated manufacturing
Productivity increase over previous epoch	4:1	3:1	3:1	3:2	3:1	3:1
Process focus	Accuracy	Repeatability	Reproducibility	Stability	Adaptability	Versatility
Work philosophy	«Perfect»	«Satisfy»	«Reproduce»	«Monitor»	«Control»	«Develop»
Skills required (machine operator)	Mechanical craft	Repetitive subskill	Repetitive subskill	Diagnostic ability	Experimentation	Learning generalizing, abstracting

1. What is the subject of this passage?

2. What is manufacturing technology?

3. How can we classify epochs in manufacturing?

4. What is specific about each epoch?

5. What is meant by CIM? Why are interactions among functions so important?

Exercise 1. Give English equivalents of:

велика кількість параметрів; наприкінці 18 сторіччя; верстат; виробляти різноманітні речі; епоха наукового менеджменту; обмежувати ефективність; стандарти результативності; відволікати увагу; універсальні системи; комп'ютерні інтегровані виробництва; людська праця; невеликий згуртований колектив.

Exercise 2. Give Ukrainian equivalents to:

to dictate changes; nature and organization of manufacturing; to effect changes; the system originated in early (late) XIX century; to fabricate a variety of workpieces; to emphasize precision and interchangeability of parts; the workers themselves; to place control in the hands of management; to monitor productivity; different results at different times; adaptability vs. stability; to focus on a particular aspect.

GRAMMAR: VERBALS
GERUND

	active	passive
Simple (Indefinite) Perfect	using having used	being used having been used

GERUNDS and NOUNS ending ...ing

NO plural ending Writing poetry is difficult.

Take plural ending I have read some of his writings recently.

PREPOSITIONS are often used

BEFORE Gerunds
I am fond **of** cooking.

AFTER Nouns
The cooking **of** your sister is better than mine.

GERUNDS and INFINITIVES

express something real, fulfilled
I tried closing the door. (MEANING: I closed the door). I forgot mailing the letter. (MEANING: I mailed the letter, but I can't remember when).

express something hypothetical, unfulfilled
I tried to close the door. **(MEANING:** I didn't close the door). I forgot to mail the letter. **(MEANING:** I didn't mail the letter).

ARE USED WITH THE FOLLOWING VERBS:

enjoy
avoid
consider
appreciate
forgive
postpone put-off
quit
suggest
admit
deny
go on keep on

hope want
expect
afford

BOTH Infinitive and Gerund are used with
(dis)like
begin start
continue
stop
remember
forget
try

They like *working hard*
continued *to work hard*

USE GERUND WITH THE FOLLOWING EXPRESSIONS

I am	capable of (здатний) fond of (подобатися) accustomed to (призвичаїтися) interested in (цікавитися) successful in (досягати успіху) afraid of (боятися) tired of (втомитися)	doing a lot of work
I have no	excuse (вибачення) reason for (причина) possibility of (можливість)	coming so late
They	succeed in (мати успіх) insist on (наполягати на) think of (думати про) thank for (дякувати) object to заперечувати, виступати проти * rely on * count on розраховувати * feel like * don't mind не бути проти	getting a job
It's	* worth * worthwhile варто * not worth(while) * no use не варто	postponing the meeting

They	* can't help * can't resist не могти не * can't stand * can't bear ненавидіти	doing nothing
We	* look forward to з нетерпінням чекати	hearing from you
	Would you mind* Чи не могли б ви ...	coming later?
	*/найбільш ввічлива форма прохання/	

GERUND in a Sentence

Subject
Підмет

Reading books is useful.
Читати книги — корисно.
Carrying out this task is of great importance.
Дуже важливо виконати це завдання.
Виконання цього завдання має велике значення.

Part of Predicate

His favorite pastime is listening to music.

How about What about	postponing the test?

Object
Додаток

He insisted on translating the text.
Він наполягав на перекладі тексту.
Ann likes studying foreign languages.
Енн подобається вивчати іноземні мови.

Attribute
Означення

There are two reasons for discussing the problem.
Існують дві причини для обговорення проблеми.
The boiling temperature of water is 100 C.
Температура кипіння води — 100 С.
(ПОР1ВНЯЙТЕ: boiling water (Participle I) — вода, що кипить)

Adverbial modifiers
Обставини

On entering the room, he greeted everyone.
Зайшовши до кімнати, він привітав усіх присутніх.
After discussing the problem they arrived at important conclusions.
Після обговорення проблеми вони дійшли важливих висновків.

CONSTRUCTIONS WITH GERUND
Noun with 's / Possessive Adjective + Gerund

I object to your participating.	Я виступаю проти вашої участі.
I know of John's coming late.	Я знаю, що Джон прийде пізно.
The scientist's having discovered this phenomenon made him famous.	Відкриття вченим цього явища зробило його відомим.

MIND the difference between

Possessive Adjectives		**AND**	**Possessive Pronouns**
My	Our	Mine	Ours
Your	Your	Yours	Yours
His/Her/Its	Their	His/Hers/Its	Theirs

Exercise 3. Translate the following sentences into Ukrainian.

1. Forecasting future is always an uncertain business.
2. We learn much by reading books.
3. Writing essays in English requires practice.
4. It is worth remembering this rule.
5. They are capable of constructing these facilities.
6. Active animal life exists at all temperatures from the melting point of ice, to about 40° below the boiling point of water.
7. There are many reasons for questioning this theory.
8. The exhibition was worth attending.
9. He could not help joining the discussion.
10. I really thank you for taking all the trouble.
11. If you are not interested in asking questions, you are not interested in having answers.
12. The problem is worth solving.
13. I like to work without being disturbed.
14. Your studying much now will help you in your future work.
15. We succeeded in obtaining reliable results. -
16. They know about our investigating the problem.
17. In spite of his being tired, he continued to work.
18. I object to your discussing this issue now.
19. A true scientist is interested in being told about his or her mistakes.
20. I know of your having read this article.
21. He went away without having told us the necessary information.
22. The result of his investigation depended upon his having applied the proper method.
23. Academician Artzimovich once humorously defined science as a practice of the scientist's satisfying his or her curiosity at the expense of the government.

Exercise 4. Complete the following sentences.

1. This book succeeds in ... structuralist theory.
   a. being told
   b. telling
   c. to tell
   d. have told
2. ... having been invited to take part in the conference was quite unexpected.
   a. we
   b. our
   c. us
   d. ours
3. By thoroughly ... the experiment we obtained good results.
   a. conduct
   b. having conducted
   c. to conduct
   d. conducting
4. After ... the problem in full detail they decided to solve it.
   a. discussion
   b. discussing
   c. having been discussed
   d. to discuss
5. In spite of not ... any university education, Faraday made his great discoveries.
   a. to have
   b. have
   c. having
   d. has
6. Everything depends on ... finishing the project on time.
   a. your
   b. for you
   c. yours
   d. you
7. He was capable of ... the task.
   a. performance
   b. performing
   c. perform
   d. to perform
8. ... journals is important for every scientist.
   a. We read
   b. While reading
   c. Reading
   d. Read
9. One cannot master a foreign language without ... at it regularly.
   a. working
   b. to work
   c. works
   d. work
10. Automatic Call Distribution is the only way of ... that calls are answered without delay, in quick succession.
   a. to make sure
   b. will make sure
   c. when making sure
   d. making sure

Exercise 5. **Fill in the blanks with the gerund or the infinitive form of the word given.**

1. It's difficult to quit __(smoke).
2. On my way home I stopped __(buy) some greeting cards at the bookstore.
3. I can't translate this article because I forgot ___(bring) the dictionary with me.
4. __(Wait) for exam made him more and more anxious.
5. Many children have stopped ___(play) traditional children's games and ___(seem) ___(prefer) ___(play) computer games.
6. They say he can't afford __(spend) much money on travels.

Exercise 6. **This survey will help you identify some of your personality traits, that will help you discover some occupations in which you would have the most interest. Pay special attention to translating verbals.**

Step One: **Circle the number of any item — subject, activity, or type of person — that is appealing to you. Leave all others blank.**

1. Farming
2. Advanced math
3. Being in a play
4. Studying people in other lands
5. Talking to people at a party
6. Word processing
7. Auto mechanics
8. Astronomy
9. Drawing or painting
10. Going to church
11. Work on a sales campaign
12. Using a cash register
13. Carpentry (working with wood)
14. Physics
15. Foreign language
16. Teaching students
17. Buying clothes for a store
18. Working from 9:00 am to 5:00 pm
19. Setting type for a print shop
20. Using a chemistry set
21. Reading art and music magazines
22. Helping people with personal problems
23. Selling life insurance
24. Typing reports
25. Driving a truck
26. Working in a lab
27. Musicians
28. Making new friends
29. Leaders
30. Following a budget
31. Fixing electrical appliances
32. Building rocket models
33. Creative writing
34. Attending sports events
35. Being class President
36. Using OT (office technology)
37. Building things
38. Doing puzzles
39. Fashion design
40. Belonging to a club
41. Giving speeches
42. Keeping detailed records
43. Wildlife biology
44. Being in a science fair
45. Going to concerts
46. Working with older people
47. Salespeople
48. File letters & reports

Step Two: **On the chart below, again circle the numbers of the items which appealed to you. After you've finished, count the numbers circled on each line. Write the two highest categories on the lines below. These are the clusters in which you have the most interest. For example, if you scored highest in Social, and second highest in Artistic, your Code would be «SA». You would want to concentrate your career exploration efforts in those two categories.**

R — Realistic	**1**	**7**	**13**	**19**	**25**	**31**	**37**	**43**
I — Investigative	**2**	**8**	**14**	**20**	**26**	**32**	**38**	**44**
A — Artistic	**3**	**9**	**15**	**21**	**27**	**33**	**39**	**45**
S — Social	**4**	**10**	**16**	**22**	**28**	**34**	**40**	**46**
E — Enterprising	**5**	**11**	**17**	**23**	**29**	**35**	**41**	**47**
C — Conventional	**6**	**12**	**18**	**24**	**30**	**36**	**42**	**48**

I scored highest in _____
I scored second highest in _____
My Code is _____

OCCUPATIONAL CATEGORIES

REALISTIC OCCUPATIONS

Realistic people prefer physical activities and hands-on projects. They prefer working alone, and are often found out of doors and in jobs such as forestry, farm management, construction, geology, hazardous waste management, auto repair, manufacturing, and natural gas exploring.

INVESTIGATIVE OCCUPATIONS

Investigative people have science and mathematical abilities, and tend to be problem solvers. They prefer working on their own, and enjoy occupations such as medical and lab technology, chemistry, engineering.

ARTISTIC OCCUPATIONS

Artistic people tend to seek opportunities to use their talents to create beauty in art, music, or literature. They usually show emotions more easily than other people, and are found in occupations like musician, artist, writer, and actor. They prefer situations that provide opportunities for creative expression. Artistic people often enjoy working alone.

SOCIAL OCCUPATIONS

Social people like being with other people, helping others and working in jobs that directly affect other people. They socialize well, and go into occupations such as teaching, nursing, psychology, and religious service.

ENTERPRISING OCCUPATIONS

Enterprising people tend to be leaders. They have speaking, sales and managerial skills, and enjoy having prestige and high status. They like to influence others, and like occupations such as salesperson, financial manager, travel agent, hotel manager, and real estate.

CONVENTIONAL OCCUPATIONS

Conventional people like to keep things neat and organized. They enjoy doing computations, keeping records, and are interested in using office skills. They enjoy working with charts, and writing reports. They are self-controlled and enjoy status and authority. They prefer occupations like banking, secretary, accountant.

Text B Read the text and be ready to answer the questions that follow.

Manufacturing is a prime generator of wealth and is critical in establishing a sound basis for economic growth. Manufacturing is a cornerstone of all economic activities, and efforts to continuously ***advance*** manufacturing technology are therefore ***vital*** to a richer and more stable future. Scientists undertake ***feasibility studies*** to develop next-generation advanced manufacturing technologies related to the following phenomena:

— the globalization of ***corporate*** activities;

— greater sophistication in manufacturing operations;

— changes in market requirements (e.g. more ***diversified*** needs);

— changes in human factors, including ***shortage*** of skilled labor;

— problems due to the need to preserve natural resources and the environment;

— increased investments required for manufacturing systems and R&D.

Globalization presents particular problem because, depending upon the nature and purpose of its activities, a company may have various facilities located around the world. To manage those facilities effectively, and to handle its policy making and production planning, a company needs a communications network that interconnects its multiple plants and other facilities. Setting up such a network is essential for exchanging data through an internationally ***compatible*** communications system. Increasingly, companies are finding they need a common intercompany communications system that enables different firms to exchange information.

to advance — to move forward in development, to improve укр. розвивати, покращувати

vital (to, for) — very necessary, of the greatest importance укр. нагально потрібний, надзвичайно важливий

feasible — able to be carried out or done, possible and reasonable укр. здійснимий

feasibility study — укр. техніко-економічне обгрунтування **corporate** — of, belonging to or shared by all the members of a group/corporation

Synonym:

collective

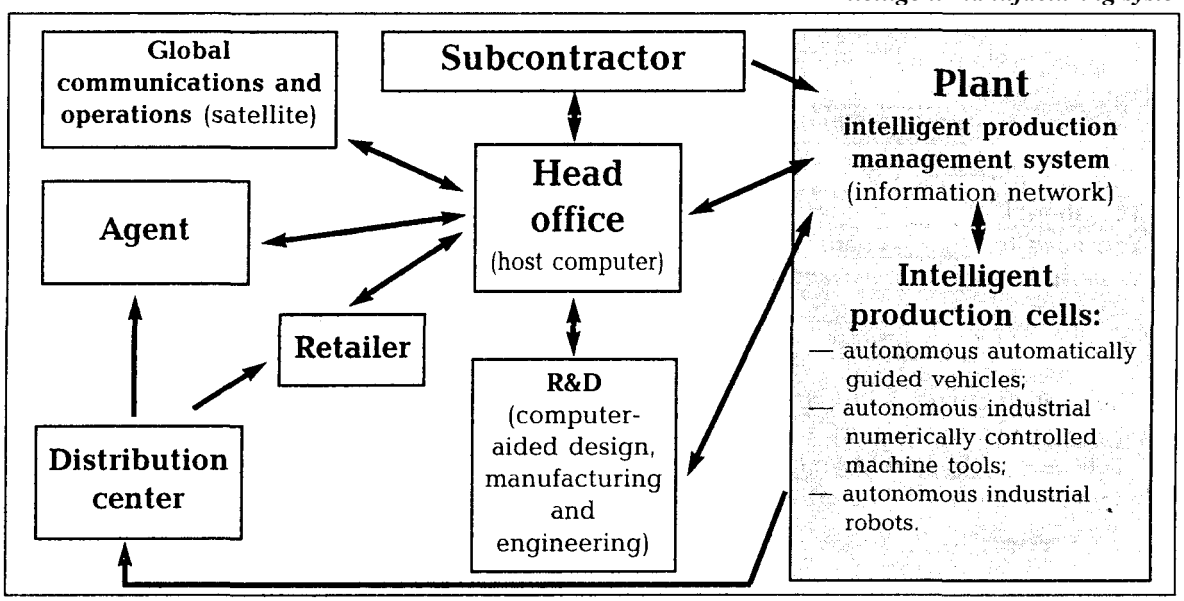
to diversify — to make or become different in form, quality, aims, or activities; vary укр. урізноманітнювати

shortage (of) — a condition of having less than needed; lacking укр. нестача, брак

compatible (with) — able to exist together, or be used together with another thing укр. сумісний, той, що сполучується (поєднується)

Future plants based on the intelligent manufacturing system concept are expected to include such autonomous and intelligent systems as industrial robots, numerically controlled machine tools and interacting with an intelligent production management system. Computer-aided design, manufacturing and engineering at an R&D center will help in the rapid development of new products matched to customers needs. A global communications network with standardized interfaces will link the head office to the manufacturing plants, sales agents, and subcontractors.

Intelligent manufacturing system



1. What is the problem under discussion?
2. What is a prime generator of wealth and basis for economic growth?
3. What is meant by a feasibility study?
4. What phenomena should be taken into account by all manufacturers?
5. What is specific about future plants and manufacturing systems?

Exercise 7. Discuss the following point with your colleagues.

The goal of manufacturing at companies throughout the world is processing orders sooner and faster. The ***buzzwords*** are «lean», to describe efficient, unwasteful, less costly manufacturing; «agile», said of manufacturing system's speed in reconfiguring itself to meet changing demands; and «flexible», meaning the system's ability to adjust to customers preferences. Customer satisfaction is usually first on the list of priorities.

buzzword — a word or phrase especially related to a specialized subject, which is thought to express something important but is often hard to understand

Exercise 8. Render the following passage into Ukrainian.

The workplace has changed. Today's employers are asking workers to do more. Now workers have to manage their workstations, schedule their time, think about quality, solve problems, and apply their skills to new technologies.

Manufacturing, too, has changed. Factory employees no longer necessarily perform routine, repetitive tasks. Because of the use of flexible automated manufacturing systems and electronically controlled (rather than mechanical) equipment,

to troubleshoot — to discover and remove cause of trouble in machines, organizations, etc.

they must process information symbolically. Instead of manufacturing parts of a machine, for example, workers must now interact with symbols on a computer. The workers must use complex diagnostic equipment for ***troubleshooting.***

Exercise 9.

(to) manufacturemanufacturer(s)manufacturing

1. This firm ____ computers.
2. The _____ of these components is very expensive.
3. Our microwave oven didn't work, so we sent it to the ____.
4. They promise new job openings in the _____ sector.

(to) organize organization organized

5. They support a charity ____.
6. You should ____ a conference next year.
7. You have to ____ your facts first in order to make a good speech.
8. What a well- _____ structure it is!

precise precision precisely

9. The train is supposed to come at about 11 a.m., 11.05, to be _____
10. _____ instruments are widely used nowadays.
11. Tell me ____ what you want.
12. — You advise me to wait a little?

Exercise 10. Read the text and answer the questions about it.

Isaac Newton (1642 — 1727) was born in England. Newton set modern physics on its feet by deriving laws showing how objects move on the Earth and in space, and by finding the law that describes gravity. For many years he developed his ideas about the nature of motion and about gravitation. In order to derive them mathematically, he invented calculus. Newton long withheld publishing his results, possibly out of shyness. Finally, Edmond Halley, whose name we associate with the famous comet, persuaded Newton to publish his works. A few years later, in 1687, the «Philosophiae Naturalis Principia Mathematica» (Mathematical Principles of Natural Philosophy) was published. He built the first reflecting telescope in 1668, and used it to study how the planets move.

Newton's most intellectually fertile years were those right after his graduation from college when he returned home to the country. Newton was a professor of mathematics at Cambridge University, later in life went into government service. His tomb in Westminster Abbey bears the epitaph: «Mortals, congratulate yourselves that so great a man has lived for the honor of the human race». Newton made many discoveries that are part of modern science. Even now scientists still refer to «Newton's laws of motion», «Newtonian telescopes», «Newton's laws of gravitation». Scientists measure the force due to gravity in units called newtons.

1. What is the best title for the passage?
   a. Newtonian telescope
   b. Great invention
   c. Isaac Newton
   d. Edmond Halley

2. According to the author, Newton worked most productively
   a. as a professor at Cambridge University
   b. during his government service
   c. while studying at college
   d. right after graduation from college

3. It can be inferred from the passage that Isaac Newton
   a. did not publish Principia in 1687
   b. published his works together with Halley
   c. wanted to publish his works as soon as possible
   d. was probably a modest person

4. According to the passage Isaac Newton build his reflecting telescope at the age of
   a. 40
   b. 26
   c. 28
   d. 36

5. The passage was probably written by a specialist in
   a. geology
   b. geography
   c. ecology
   d. astronomy

Exercise 11. Choose the one word or phrase that best keeps the meaning of the original sentence if it is substituted for it.

1. We really need to advance this technology.
   a. approach
   b. improve
   c. reproduce
   d. realize

2. There is no shortage of these materials.
   a. abundance
   b. need
   c. analogue
   d. lack

3. Nylon is a versatile material.
   a. is very useful
   b. is indispensable
   c. has many different uses
   d. has very few uses

4. I'm accustomed to getting up early.
   a. used to
   b. not used to
   c. interested in
   d. capable of

5. That's a very sound suggestion.
   a. silly
   b. strange
   c. reasonable
   d. timely

6. I feel like studying tonight.
   a. don't like
   b. don't need
   c. don't mind
   d. don't want

7. He says he can't bear being shouted at.
   a. can't resist
   b. can't stand
   c. can't forgive
   d. can't thank for

8. You can rely on my doing it.
   a. find out
   b. insist on
   c. object to
   d. count on

9. We all share corporate responsibility.
   a. collective
   b. government
   c. partial
   d. this

10. He admitted the intrinsic merits of my idea.
    a. innovative
    b. intriguing
    c. inherent
    d. valuable

11. Ballet originated in Italy in the 1400s.
    a. coexisted with
    b. developed in
    c. began in
    d. brought about

12. Ultimately, the success of the product depends on good marketing.
    a. in the beginning
    b. in the end
    c. usually
    d. from time to time

Noteworthy

Genius is 1 percent inspiration and 99 percent perspiration.
Thomas Edison

UNscientifically speaking...

THEOREM:

It doesn't matter if something I buy turns out to be a mistake and unreturnable, because three years ago I found fifty dollars on the street, so THAT BALANCES EVERYTHING OUT!

Chapter 11

Focus on:

DOs and DON'Ts for Young Scientists On Innovators and Innovations

Grammar: Emphasis

Text A Read the text and be ready to answer the questions that follow.

DOs and DON'Ts may be defined as the rules of behavior. They are meant to emphasize certain points that might be useful.

1. DO relate what you are doing to the overall system or project objective.

Make it your business to understand how your part of a project fits into the system being designed and what mission or objective that system is trying ***to accomplish.*** Putting it another way, try to understand the big picture.

to accomplish — to succeed in doing something; to finish successfully Synonym: to achieve укр. здійснювати, завершувати

There are two reasons for doing this. It makes your job more interesting and exciting and it may suggest a simpler, better approach to your part of work. There are hundreds of cases where someone completed the assigned part of a larger system, and, after learning the overall objective, pointed out a much better way to accomplish the same objective. If the people around you are too busy, try asking the boss at a lunchtime to tell you «a little more about how you fit into overall program». Thus, DON'T be afraid to challenge the planned way of doing something or to propose a new way.

2. DO give credit to others for their ideas and contributions.

It's the right, ethical and professional thing to do. Your listeners or readers will be more comfortable and impressed knowing you have explored the field. They will also assume that the work not credited to others is yours. Furthermore, the persons receiving the credit will respect you and be more likely to share their other new thoughts with you. Within a group, such behavior is often ***crucial*** to effective cooperation. To give emphasis and add a bit of fun, identify a particularly original idea with the originator's name: «Johnson's Chart», «Harris Technique».

crucial (to, for) — of deciding importance укр. вирішальний

3. DO keep learning.

DO join professional society. DO read articles and books, use the library, and attend professional meetings. Set up a requirement of reading at least one scientific paper a week. Select difficult ones. If you don't understand the paper, ask others. DON'T give up.

DO write papers. It's hard and takes time and discipline, but it's important for you and your profession. DO document your work. Write it down. In his book on computers and hackers, «The Cuckoo's Egg», Cliff Stoll quotes the

Astronomer's ***Rule of Thumb:*** «If you didn't **rule of thumb —** укр. емпіричне правило write it down, it didn't happen».

DO become a «local» expert in some area, even if it's a fairly narrow one.

4. DO plan and schedule your work.

Make a detailed plan of all you must do to finish the job. As someone said: «Plan the work, then work the plan».

Assume complete responsibility for your own career. Develop and maintain a strategic plan from Day One. This plan is mandatory for judging your career progress.

5. DO develop a thorough understanding of entrepreneurship and practical business knowledge.

Get yourself involved in seeking solutions to some problems of real importance (education, health care etc.). DO try to understand the user and his or her needs.

6. DO learn to express yourself clearly in speech and writing.

1. What is meant by DOs and DON'Ts?

2. What is the role of emphatic **do** in this text?

3. Indicate the elements of the text that show the author's recommendations, as well as the most categorical statements.

4. What is the purpose of citing in this passage?

5. What is specific about each piece of advice? Why is it important to follow them?

Exercise 1. Give English equivalents of:

завершувати проект; кращий шлях; посилатися на праці; бути вирішальним для ефективної співпраці; бути спеціалістом у досить вузькій галузі; планувати роботу; розробляти стратегічний план; розв'язувати справді важливі проблеми; підприємництво.

Exercise 2. Give Ukrainian equivalents of:

to emphasize the point; to fit into overall project (system); to challenge the planned way of doing something; to explore the field; to share thoughts and ideas; crucial factor; to assume responsibility; to judge the progress; entrepreneurship.

Exercise 3. Render the following passage into Ukrainian.

How to Speak in Public

Be prepared

- ✓ Find out why you are there, what is expected of you, how much time you have.
- ✓ Note down the points you want to make. Don't try to memorize a whole speech — key words on index cards are often useful.
- ✓ Check and double-check technical equipment (microphones, slide projectors, visual presenters etc.). Make sure you know where the power switch is.

What you say

- ✓ Say what you need to say as clearly as possible. Repeat key phrases/points at the end.
- ✓ Any new information you can incorporate into your speech such as recent statistics, will help to keep your audience interested. However, be careful not to base your whole talk on statistics and/or background information. Tell them something they don't already know. At the end of your talk ask if there are any questions. You can be sure that if you speak effectively, people will remember you.

Coping with nerves

- ✓ Take a couple of deep breaths before starting. Think of professional achievements you are proud of and keep it at the back of your mind.
- ✓ Speak clearly and smile. Keep your body relaxed and use controlled gestures and pauses for emphasis.

GRAMMAR: EMPHASIS

Emphasis (intensification) may be signaled in various ways including special stress, intonation, grammar patterns, choice of words etc.

Emphatic DO
дієслово — підсилювач

This theory **does hold.**
Ця теорія є **дійсно** справедливою.
It **did seem** strange.
Це **справді** видавалося дивним.

Reflexive pronoun after noun
зворотний займенник після іменника

Science itself proceeds from the known (dull) to the unknown (interesting).
Власне наука йде від відомого (нецікавого) до невідомого (цікавого).

Double negation
подвійне заперечення

The case is **not** improbable.
Випадок є ймовірним **(не** є неймовірним).
It is **not** that we are doing **nothing** about this problem.
Ми вживаємо певні заходи стосовно цієї проблеми **(невірно,** що ми **нічого не** робимо).

It is/was ... that/who It was not until ... that

NOTE
Важливо **відрізняти** цю конструкцію від безособових зворотів типу
It is believed
It is known
It is interesting
It is (not) surprising

It was professor Johnson **who** delivered a lecture last week.
Саме професор Джонсон прочитав лекцію минулого тижня.
It is this theory **that** is of interest to us.
Саме ця теорія цікавить нас.
It was not until 1895 **that** Popov invented radio.
І лише у 1895 р. Попов винайшов радіо

IS or ARE?

It **was** the student It **was** the students	who helped us

not only ... but also ...
both ... and...

He visited **not only** Washington, **but also** New York.
Він відвідав не тільки Вашінгтон, але також і Нью-Йорк.
Або: He visited **both** Washington **and** New York.

either ... or ...
neither ... nor ...

Neither my father **nor** I were there.
Ані мій батько, ані я не були там.
It's **either** black **or** white.
Колір або чорний, або білий.

hardly ...
scarcely ...

Hardly/Scarcely had they arrived when they had to leave again.
Ледве (тільки-но) вони приїхали, і повинні знову їхати.

Inversion Інверсія — непрямий порядок слів	I will never go there (прямий порядок слів) **Never will I go** there (непрямий порядок слів). Я ніколи не піду туди. **Not once did they try.** Вони не спробували жодного разу. **Little do we know!** Як же мало ми знаємо! I can't do it. **Neither can I.** Він не може цього зробити. Я також. They didn't inform us about the conference. **Nor did they sent** the invitations. Вони не пов1домили нас про конференцію. Вони також: не надіслали запрошень. **Isn't it interesting!** Як цікаво!
Double inversion Подвійна інверсія (на початку речення — складний присудок, виражений дієприкметником I або II, іменником з прийменником або прикметником)	**Presented** in a picture is a scheme. На малюнку показана схема. **Confirming** this theory is another fact. Цю теорію стверджує ще один факт. **Of importance** is his point of view. Його точка зору має важливе значення.
Emphatic words емфатичні слова (слова-підсилювачі)	He **alone** can help us. **Only** he can help us. Тільки (лише) він може допомогти нам. **Even** under such conditions will the reaction proceed. Навіть за таких умов відбувається ця реакція.
really, indeed	**So** much work, and **so** little time! Так багато роботи, і так мало часу! **Such** an interesting idea! Яка цікава ідея!
certainly, only, even, so, such, too, very, extremely, intensely, just;	The task is **too** difficult. Завдання надто складне. Imagine **the very** idea! Тільки уявіть собі власне ідею! It's **just** a matter of time. Це справа лише часу.
*as much as ,*as late (early) as та подібні	**I really** want to help you. Я справді хочу допомогти вам.
*well + verb	You may **well agree** with them. Ви можете цілком погодитися з ними. The discovery was made **as early as** XVIII century. Це відкриття зробили ще у XVIII столітті.

Exercise 4. Translate the following sentences into Ukrainian.

1. It's really the spirit of inquiry.
2. He said he would come and he did come.
3. The fact is extremely useful.
4. That the author does have this view is obvious.
5. Only now do I realize the significance of the new method.
6. Related to our discussion are many other subjects.
7. This idea is not sufficiently unusual.
8. Texas alone is larger than France, and Alaska is twice as big as Texas.
9. It is by no means unreasonable to compare these data.
10. It was this article that I wanted to read.
11. It is satellite communications that my article deals with.
12. It was not until 1995 that this book was published.
13. It did cause quite a few difficulties.
14. The case is not improbable.
15. Indeed, Copernicus had even studied medicine in Italy as a medical advisor to his uncle, the bishop.
16. Only recently have we done it.
17. You may well think so.
18. It is this category that is of interest to us.
19. The law does hold.
20. They did not present any information. Nor did they provide financial support.
21. It was not until many years after Kepler discovered his three laws of planetary orbits that the laws were derived mathematically from basic physical principles.
22. Not only did the application of scientific knowledge to industrial progress open many possibilities, but from the mid-19th century onward it raised many questions as well.
23. Why should sophisticated computers be difficult to use?
24. For many computer scientists and engineers the answer to this question is an emphatic yes.
25. They performed as many as (as few as) three experiments yesterday.
26. Rarely is the assistant here on time.

Exercise 5. Make necessary changes in the sentences for emphasis.

Example. We haven't missed our English class, (not once).
Not once have we massed our English class.

1. I wouldn't go there (under no circumstances).
2. He is a great speaker, (isn't).
3. We can't make an exception, (in no case).

Exercise 6. Complete the following statements with information about yourself.

1. Not once (Never) ... .

2. Under no circumstances ... .

3. Not for all money in the world (Not for anything) ... .

4. Not until next year ... .

Exercise 7. Complete the following sentences.

1. It is only under these conditions ... satisfactory results can be achieved.
   a. how
   b. then
   c. when
   d. that

2. ... in his chapter are general tendencies of telecommunications development.
   a. Discussing
   b. To discuss
   c. Discussed
   d. It was the discussion

3. ... created the donkey and elephant that symbolize the Democratic and Republican parties.
   a. It was Thomas Nast who
   b. Although Thomas Nast
   c. Thomas Nast, who
   d. That was Thomas Nast

4. Only rarely ... neuroses leave a person unable to function in everyday situation.
   a. had
   b. are
   c. do
   d. that

5. An ultrasonic wave has ... a high frequency that it is inaudible.
   a. therefore
   b. above
   c. thus
   d. such

6. Vegetables can be purchased not only fresh .. canned and frozen.
   a. also
   b. both
   c. but also
   d. but both

7. Not until the first land plants developed ... .
   a. land animals appeared
   b. did land animals appear
   c. would land animals appear
   d. the land animals appear

8. Only along the coasts of Greenland ... areas where people can live.
   a. there are
   b. is there
   c. there were
   d. are there

9. It was the impact of the railroad ... agriculture to the West.
   a. it expanded
   b. that expanded
   c. that. it expanded
   d. when it expanded

10. ... patriotic, they were fighting for the freedom of their countiy.
   a. for they
   b. because of
   c. intensely
   d. intensity

Text B Read the text and be ready to answer the questions that follow.

Many scientists agree that the most important characteristics of the innovative mind are an open mind and ***persistence*** in the face of ***discouragement.*** The two are related. Great innovators intrinsically enjoy their work, and therefore keep an open mind. Not fearing failure, they have little ***hesitancy*** in trying something new, like fine artists who say, «You've got to draw it wrong before you draw it right». Even if an experiment fails, they learn from it. Another important thing is freedom that really ***nurtures*** discovery.

Successful innovators follow different patterns of inventions. A common characteristic, however, is the ability to step back and view a larger picture. For innovative process both mental and experimental models are equally important. Prior to synthesizing the invention, the innovator ***compartmentalizes*** experiential knowledge. Metaphorically speaking, one puts all the things one knows on cards and throws them into the air. As they hit the floor in interesting combinations, new insight may be revealed.

Inventors indeed do combine patience, skill and pragmatism with an intense, sometimes romantic refusal to give up.

Pathbreakers usually ***build on*** the work of others before them; rarely does genius come without a ***pedigree.*** Consider the laser. Its origins go back to fundamental research on microwave spectroscopy, which, in 1954, led to the operation of the first maser (that is still in use in radio astronomy). But by the late 1950s the laser emerged (now applied in printing, surgery, telecommunications, optical scanning, the precision cutting of materials, the reproduction of music etc.) In other instances, curiosity plays a key role. Thus the question arises:

«What is innovation?» As a matter of fact — how is innovation really defined? The answer is ***anything but straightforward.***

to persist — to continue the course of action in spite of opposition or warning укр. уперто робити
persistence — укр. завзятість, наполегливість
to discourage — to take away courage, confidence or hope from укр. розчаровувати, зневірятися
to hesitate — to pause before making a decision or taking an action укр. вагатися
hesitant — showing uncertainty about deciding to act укр. той, що вагається
to nurture — to give care to, to cause or encourage to develop укр. плекати
to compartmentalize — to divide into separate divisions; to categorize укр. розділяти, категоризувати
pathbreaker — укр. першовідкривач
to build on — to use as a base for further development укр. грунтуватися, базуватися
pedigree — ancestry укр. родовід
anything but — far from, not at all укр. все, що завгодно (будь-що), тільки не **straightforward** — not difficult to understand or explain, simple; not hiding anything укр. простий, прямий

Anyway, some inventors are lucky, some are just doing their jobs — but all help define the essence of innovation on which technological progress ultimately depends.

1. What is the problem under discussion?

2. Does the author give a definition of innovation?

3. What qualities do we expect to find in an innovator?

4. What is usually disregarded by an innovator?

5. Why does the author mention «throwing cards»?

6. What example is given to illustrate the history of inventions?

Exercise 8. Read the passage and try to appreciate its humor. How does the author produce humorous effect?

The Ax Story

The story of two lumberjacks has meaning for all of us. The young man was anxious to prove that he was a better woodcutter than his older friend. One day he challenged the older woodcutter to a contest to determine who could cut the largest number of trees in a single day.

Daylight found the young man at work chopping his way through a number of trees and never stopping to take a break. He was a very hard worker. Meanwhile the veteran would chop for two hours and then leave only to return an hour later.

At the end of the day the young man was sure he had won the contest since he took no breaks and chopped all day. However, when the logs were counted, the veteran had won. «This can't be», cried the young man. «I worked all day without stopping, but you took frequent breaks». The veteran replied, «It's really very simple. I wasn't taking a break, I was sharpening my ax».

Exercise 9. Read the passage. Give your opinion on the subject. What else would you I add to the list? Give the reasons why.

A checklist for information age

◊ Lean to type, because time is money.

◊ Learn to use a laser printer, a fax/modem, and software that includes a word processor and spreadsheet.

◊ Learn to use a what-you-see-is-what-you-get (WYSIWYG) word processor on a personal computer.

◊ Get a personal computer mail account with Internet access and learn how to use e-mail.

◊ Prepare two resumes, one nicely formatted on the word processor, the other in plain text (ASCII) to send by e-mail.

◊ Learn how information is disseminated electronically.

◊ Learn how to protect your privacy and trade secrets.

◊ Work on your communications skills not only across all media but also in person.

Exercise 10.

(to) refuse refusal

1. They _____ an innovation.
2. I ____ to answer that question.
3. It was a polite _____.

(to) agree agreement

4. They were unable to reach _____
5. I _____ with you entirely.
6. We _____ on a plan.
7. You have broken the terms of our _____

anxious anxiously anxiety

8. I was terribly _____ about you.
9. There is a lot of _____ among the staff about annual ehxibition.
10. It was an ____ wait for the results of our exam.
11. I waited _____ by the phone.

Exercise 11. Read the passage and answer the questions about it.

Charles Snow was born in a lower middle-class family in England in 1905, educated there at secondary school and the university college. He went to Christ's College, Cambridge, and after taking a PhD for research in physics he joined the government service where he worked as a scientific expert during the Second World War, and as a Civil Service commissioner (1945-60).

Snow's first work of fiction was a detective story «Death Under Sail» (1932). Starting in 1935, he wrote a seguence of novels under the general title of «Strangers and Brothers», covering more than fifty years of the life of a lawyer, Lewis Eliot, his brother Martin Eliot, a physicist, and the various friends and colleagues they associated with in business, scientific endeavor and the public service. In these books Snow, being an upholder of realistic traditions, draws a vast canvas of the British way of life, as well as of complex moral problems. Among his other books are «The Search» (1934), «Time of Hope» (1949), «The Masters» (1951), «The Sleep of Reason» (1968), «Corridors of Power» (1964), «The Physicists» (1980). Snow has also written a collection of biographical portraits and a critical biography.

For his service in industry and government Snow received a knighthood in 1964 and was made a Parliamentary Secretary to the Ministry of Technology. His public lectures were collected in a volume «Public Affairs» (1971). In one of them ho speaks of himself as of a bridge between the literary traditional culture and the culture of science.

C. Snow died in 1980.

1. What is the best title for the passage?
   a. England's greatest writers
   b. The life and works of C. Snow
   c. A famous scientist
   d. American playwrights

2. It can be inferred from the passage that Snow
   a. became a scientist as well as a writer
   b. studied at Oxford
   c. did not care much for academic studies
   d. has written a lot of plays

3. According to the passage Snow was
   a. a modernist
   b. a realist
   c. a post-modernist
   d. a pessimist

4. It can be inferred from the passage that Snow was 59 years old when he
   a. wrote «The Masters»
   b. became a Parliamentary Secretary
   c. received the Nobel Prize
   d. died

5. Which of the following is NOT mentioned in the passage as Snow's literary works?
   a. detective stories
   b. biographical portraits
   c. critical biography
   d. science fiction

Exercise 12 **Choose the one word or phrase that best keep the meaning of the original sentence if it is substituted for it.**

1. The question is quite straightforward.
   a. complex
   b. original
   c. unusual
   d. simple

2. They've accomplished a great deal in the last few weeks.
   a. acquired
   b. advertised
   c. achieved
   d. finished

3. This constuction is anything but safe.
   a. somewhat
   b. not at all
   c. quite
   d. very

4. Innovators have little hesitancy in trying something new.
   a. time
   b. indecision
   c. experience
   d. hope

5. These negotiations are crucial to our project.
   a. of little importance
   b. of some importance
   c. of no importance
   d. of deciding importance

6. I think it's a fairly difficult exercise.
   a. rather
   b. very
   c. an unusually
   d. anything but

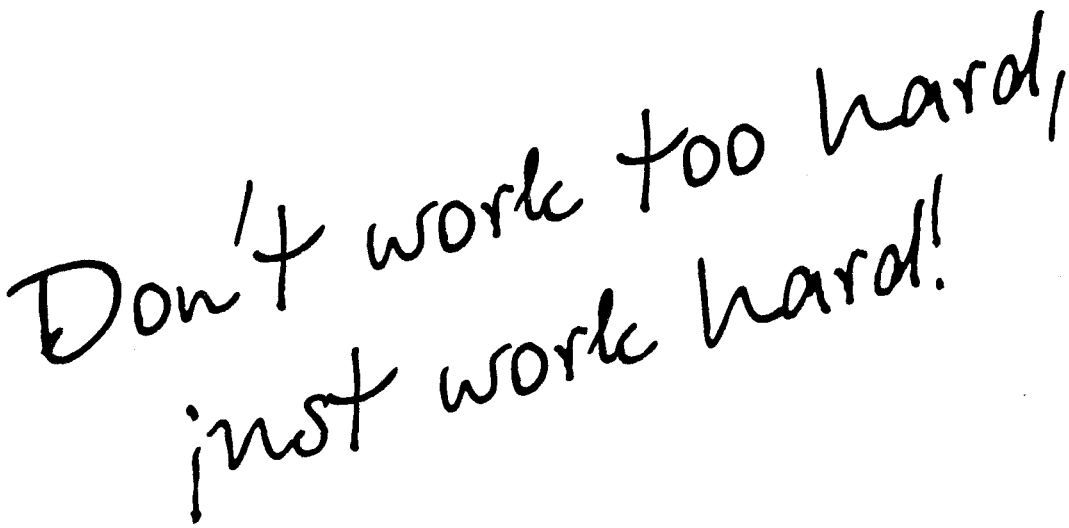
7. Gravity works <u>equally</u> on all bodies.
   a. objectively
   b. energetically
   c. identically
   d. clearly

8. Inventors <u>do</u> combine patience, skill and pragmatism.
   a. finally
   b. now
   c. really
   d. jointly

9. The situation is <u>not impossible.</u>
   a. not possible
   b. possible
   c. quite easy
   d. not difficult

10. It's <u>really</u> the spirit of innovation.
    a. ultimately
    b. realistically
    c. metaphorically
    d. indeed

Noteworthy



Appendix

I

USEFUL EXPRESSIONS FOR DISCUSSION

Expression of

FEEDBACK

SAY	DO
Oh, sure. О, так	Make eye contact with the speaker.
Oh, I see. О, зрозуміло	Nod your head.
Uh-huh.	Smile.
Uhm-hmm.	Look surprised when something surprises you.
Well.	
All riqht. Добре	

During the discussion:

INITIATE THE DISCUSSION

Perhaps we could begin by discussing our problem.
Можливо, ми почнемо з обговорення нашого питання.
Could I suggest that we get everyone's opinion on that?
Будь ласка, ваші думки з цього приводу?

ASK PEOPLE FOR OPINIONS, INFORMATION, AND EXPLANATIONS.

Could you tell us what you think? Чи не могли б ви сказати, що ви думаєте? Does anyone know more about this? Може, хтось знає ще щось стосовно цього?

I	wonder am wondering was wondering	why...	Цікаво, чому ...

OFFER OPINIONS AND GIVE INFORMATION

I believe that ... Я вважаю, що ... — I guess... ***American English***
In my opinion ... На мою думку ...
It seems to me that ... Здається ...
My feeling is that ... Я відчуваю, що ...
I have every reason to believe that ... Я маю підстави вважати, що ...

SUMMARIZE INFORMATION

To summarize, ... Підсумовуючи, ...

ENCOURAGE PEOPLE TO SPEAK BY BEING COOPERATIVE AND BY ACCEPTING DIFFERENT POINTS OF VIEW.

Do you agree? Ви згодні?
Do you have the same opinion? Ви також думаете так? Have you got...
American English ***British English***
I think some people here probably disagree with us. I'd like to hear what they have to say.
Можливо дехто з присутніх не згоден з нами. Хотілося б послухати, що вони скажуть.
I know Alex has a different point of view. I'd be interested in hearing it.
Я знаю, що Алекс має іншу думку. Мені було б цікаво її почути.
Do you consider (believe) that ... Ви вважаете, що ...

II ABOUT YOU

1.

Are you a			scientist? (post)graduate student? biologist? geographer?
I wonder	if whether	you are a	mathematician? specialist in information technology? physicist? chemist? linguist?

Yes, that's right I'm afraid
that's wrong

2.

What is your educational background?

I *graduated from ... in ... I have graduated from ...*

3.

Who is your | research advisor?
supervisor?

Academician ...
Professor ...
Doctor ...

4.

What is the subject/topic of your What do you mean by ... Explain the term ...	research? investigation? thesis? dissertation?

5.

Why is your work important?

It reveals some new facts | *about ...*
indispensable for ...

It deals with the problems that have not been studied before.
It is an insight into ...

6.

What is the aim / goal / objective / of your research?

In oder to reach my goal I have to ...	*to obtain* *to show* *to verify* *to demonstrate* *to confirm*

7.

What are the	methods procedures techniques	of your research?

8.

What is the possible application of your work?

Is your work	*theoretical?* *applied?* *both theoretical and applied* *purely theoretical?* *part of your Institute Research Program?*

9.

Have you already obtained any valuable results?

Yes, I have. (...)

I do hope to obtain (more) promising results in the	*near future;* *soon.*

What do you do with the data you obtain?
Is it difficult to analyze the results?
(How) can you claim that the problem you studied is solved?

10.

What (equipment) do you use in your work?

I use *sophisticated devices; laboratory equipment.*
I don't use any special equipment (devices).

Do you use a computer?
What for?

I use *a computer to store and to process the necessary data.*

What software do you use?

11.

Have you got any publications on the subject you study?

I have already published	*several* a *number of*	*articles.* *papers.*

Not yet.

12.

Did you take part in any scientific conference?
Where?
When?

13.

Do you carry out research individually or in a team?

I work in a team.
I do independent research. / I work independently.

14.

What (scientific) journals do you read/
What do you like to read?

I'm fond of...
I prefer ... to ...

15.

Are you interested in ... ?

Is this problem	interesting? of interest? important? of importance? of significance?

16.

What part of your dissertation have you already completed?

III

ABSTRACT (a short summary of a paper)

Наводяться: загальний напрямок, завдання, мета дослідження, короткий виклад теоретичних та експериментальних результатів, загальні висновки.

За змістом та методами дослідження

1	2	3
анотації наукових статей, де наводяться результати оригінальних теоретичних і/або експериментальних досліджень	анотації наукових статей — узагальнень	анотації оглядових наукових статей
«Characteristics of ...»	«Prospects for ...»	«An overview of ...»
(... are examined)	*(The potential for ... is examined)*	*(A summary/overview of... is presented)*

1

The present paper		studies ... examines the problem of ... concentrates on analyzing ... describes ...
This paper		presents ... deals with ... considers ... proposes a new approach to ...
Considered here are a) ... b) ... c) ...		
In this paper we discuss ...		
The (main)	objective goal aim purpose	of this paper is to ...
An efficient method is proposed for ... The method is based on ... Aspects of ... are discussed, It is shown / demonstrated that ... Special attention / consideration is given to ... Studies of ... also indicate that ... Recommendations for ... are presented. Conclusions regarding ... are | made arrived at. The results of | theoretical experimental | study are presented.		
The novel theoretical model is verified by experimental results. Experimental data and analytical results are found to be in good agreement. The experimental results showed excellent agreement with theory.		

2

In this general paper the role of ... in ... is discussed.

The extension of ... and possibilities of its practical application to ... are considered.

Subject matter related to ... as well as to ... is considered.

3

A review of ... essential for ... is presented.

Present status and theoretical (experimental) results of ... are summarized.

A bibliography of ... references is included.

IV

CONFERENCE MINI-VOCABULARY

a world ~ всесвітня	symposium симпозіум	a research ~ наукова
international ~ міжнародна	conference ~ конференція	a stimulating ~ цікава
a regular ~ чергова		an annual ~ щорічна

скликати, збирати ~	to convene a ~
відкриття ~	opening of a ~
	opening ceremony / session
рамки (межі) ~	scope of a ~
тематика ~	topics, themes, subjects, subject-matter of a ~
хід ~	the course of a ~
бути організатором ~	to host a ~
організовувати -	to organize a ~
проводити ~	to run a ~
при сприянні ...	under the auspices of ...
місце проведення ~	location/place of a ~
точна дата	the exact date
заздалегідь	in advance
ухвалити дату	to approve the date
завершувати ~	to conclude a ~
закривати ~	to close a ~
учасник	participant, attendee
брати участь	to take part,
	to participate
заявка	an application form
анкета	questionnaire
заповнювати анкету	to fill out a questionnaire
ставити підпис	to sign
рукопис	a manuscript
екземпляр	a copy (of)
праці конференції	proceedings/transactions
дошка для оголошень	bulletin board
стіл для довідок	an information desk
реєстраційний внесок	a fee (a registration fee)
звільнити від сплати реєстраційного внеску	to exempt from paying a registration free
культурна програма	social events

a written ~
письмове

invitation ~
запрошення

oral ~
усне

a formal ~
офіційне

to invite
to refuse an ~
to decline an ~
to turn down an ~
запрошувати
відмовлятися від ~

to accept ~
to consider ~
прийняти ~
розглянути питания про

long-term ~
довгострокова

program ~
програма

~ in brief
коротка
a final ~
остаточний
варіант

preliminary ~
попередня

current ~
програма, що діє на
поточний момент

a draft ~
проект

to develop a ~
to offer a ~
according to the program
розробити ~
запропонувати ~
за програмою

deputy ~
заступник

chairperson
(chairman, chairwoman) ~
голова

chairmanship
головування

newly elected ~
щойно обраний (обрана)

to preside
to be in the chair
головувати

to act as a ~
виконувати обов'язки

(at a conference, meeting)

invited ~ запрошений	speaker ~ доповідач	plenary ~ пленарний
principal ~ основний		keynote ~ головний

список доповідачів	a list of speakers
стендова доповідь	poster presentation
засідання	session
семінар	workshop
обговорення	discussion
дебати, дискусія	debate

важливе актуальне	питання, проблема	important urgent burning vital	question problem matter issue point

точка зору	point of view, viewpoint
порядок денний	agenda
включити до порядку денного	to include in the agenda
регламент	time-limit
протокол	minutes
бюлетень	ballot
голосувати	to vote

BASIC CRITERIA
regarding the level of papers

ORIGINALITY	Does the paper present a new idea or development which has not previously been published?
TECHNICAL/SCIENTIFIC VALUE	Docs the paper present an important step in the process of going from an idea or concept into an industrial product?
CLARITY AND SUITABILITY	Is the subject well presented? Does it clearly state what results have been obtained? Is it suitable for presentation at this particular conference?

REGISTRATION FORM

To pre-register complete this form and return it to the organisers.

□ I am interested in the conference. Please send me a conference program and registration form

□ I am unable to attend but would like to remain on your mailing list

Please complete in block letters (type or print)

Title (Mr/Mrs/Ms): _____

First name: _____

Last name: _____

Job title: _____

Position held: _____

Organisation: _____

Address: _____

Postcode/zipcode: _____

Country: _____

Spouse's name (if attending) _____

Telephone: _____

Fax: _____

E-mail: _____

Signature: Date: _____

V

TIPS ON RESUME WRITING

The traditional academic *curriculum vitae* (c.v.) highlights your education. A *resume* highlights experience and abilities. It includes:

a) personal data *(leave out such personal data as age and marital status).*

NAME
MAILING ADDRESS
Telephone number
FAX, e-mail number

b) educational background *(mention your degree, college or university attended, areas of special training).*

EDUCATION

c) work experience

EXPERIENCE

d) references.

VI

TYPES OF QUESTIONS

1. General questions

Загальні запитання — це запитання, на які можна відповісти «так» чи «ні». Присудок ставиться перед підметом, якщо він виражений дієсловом to be (або to have ***у British English)*** в Simple Present та Simple Past:

Are you here?

Перед підметом ставиться допоміжне або модальне дієслово, якщо це дієслово входить до складу присудка:

Can you speak Italian? Are you
writing a letter? Will you do this
research?

Якщо присудок виражений дієсловом у Simple Present або Simple Past, (крім дієслів to be (to have — ***British English),*** перед підметом ставиться допоміжне слово do (does, did):

Do you know this rule?
Did he come yesterday?
MIND: Do you have this book? ***(American English)***
Have you got this book? ***(British English)***

У заперечній форм заперечна частка not ставиться перед смисловим дієсловом, або зливається з допоміжним або модальним дієсловом. Такі запитання в українській мові перекладаються «невже». В англійські мові ствердна відповідь на запитання у заперечній формі завжди починається словом yes:

— Don't you want to join us?
— Yes, I do.
— Didn't you see him?
— Yes, I did.
— Won't you come later?
— Yes, I will.

2. Special question

Спеціальні запитання починаються словами who? what? when? why? where? which? whose? how much/many?

— Who wrote this article?
— I did.

What did you do yesterday?

3. Alternative questions

Альтернативні запитання стосуються одного з двох явищ, речей, і завжди вживаються зі сполучником or:

Shall I read or translate this passage? What test is more
difficult: TOEFL or GRE? Did Bill or did Laura enter
the university?

4. Disjunctive questions

Роз'єднувальні запитання складаються з двох частин: перша — стверджувальне або запитальне речення з прямим порядком слів, друга — коротке загальне запитання. Якщо перша частина запитання є стверджувальним реченням, то дієслово у другій частині стоїть у заперечній формі і навпаки:

You have already translated the text, haven't you?
He cannot (can't) understand it, can he?
There is a solution to the problem, isn't there?
He visited Canada last year, didn't he?

MIND:
Everyone {someone) has read the announcement, haven't they?

NOTE

Rhetorical questions — риторичні запитання

a. Direct rhetorical questions often introduce a topic:

What do we know about ... ?
What is the nature of ... ?

b. The leading rhetorical questions are used to focus on the main points of a topic:

□ with positive implication:
Isn't Chinese hard to learn? (Implication: it is hard to learn Chinese)

□ with negative implication:
Who was more interested in the project than John? (Implication: no one was more interested in the project).

VII

Verbs MAKE and DO

MAKE	DO
create or produce something	action
ALSO used with food and meals, and nouns related to verbs:	
They discovered a new star — they made an important discovery. I phoned him — I made a quick phone call.	
MAKE	DO
an agreement an announcement an attempt a change a decision	a degree research (work) experiment business engineering (etc.)
a meal (prepare a meal) dinner	one's best one's duty
a comment remark	good harm
an effort an estimate an impression (on someone) mistake money progress request	the homework the housework the dishes (мити посуд)

VIII
IRREGULAR VERBS

Present	Past	Past Participle
cost	cost	cost
cut	cut	cut
hit	hit	hit
hurt	hurt	hurt
let	let	let
put	put	put
set	set	set
split	split	split
build	built	built
lend	lent	lent
send	sent	sent
spend	spent	spent
hold	held	held
lead	led	led
read /ri:d/	read /red/	read /red/
understand	understood	understood
deal	dealt	dealt
feel	felt	felt
mean	meant	meant
leave	left	left
meet	met	met
lose	lost	lost
sleep	slept	slept
get	got	got (gotten —***American English)***
win	won	won
sell	sold	sold
tell	told	told
sit	sat	sat
stand	stood	stood
strike	struck	struck
make	made	made
say	said	said
hear	heard	heard
come	came	come
become	became	become
run	ran	run
begin	began	begun
drink	drank	drunk
swim	swam	swum
sink	sank	sunk
ring	rang	rung
break	broke	broken
choose	chose	chosen
give	gave	given
freeze	froze	frozen

steal	stole	stolen
take	took	taken
rise	rose	risen
speak	spoke	spoken
write	wrote	written
grow	grew	grown
know	knew	known
throw	threw	thrown
draw	drew	drawn
bring	brought	brought
buy	bought	bought
seek	sought	sought
catch	caught	caught
teach	taught	taught
think	thought	thought
eat	ate	eaten
fall	fell	fallen
do	did	done
go	went	gone
forget	forgot	forgotten
see	saw	seen
draw	drew	drawn
hide	hid	hidden (hid)

MIND:

find	found	found
found	founded	founded
feel	felt	felt
fall	fell	fallen
lay	laid	laid
lie	lay	lain

to learn —	learnt/learned	—	learnt/learned
to dream —	dreamt/dreamed	—	dreamt/dreamed
to burn —	burnt/burned	—	burnt/burned

IX

FREQUENCY SCALE

always
nearly always, almost always
usually, generally, normally, regularly («on most occasions»)
frequently, often («on many occasions»)
sometimes («on some occasions»)
rarely, seldom («on few occasions»)
hardly (scarcely) ever («almost never»)
never

X

PROBABILITY SCALE

It is highly probable
There is high probability
In all probability
It is probable
In all likelihood
It is very likely
More than likely
It is likely
It is very possible
It is possible
It is not impossible
It is not unlikely
It is not very probable
It is not very likely
It is unlikely

XI

TOEFL: FIRST STEPS

The TOEFL test, developed in 1964 is intended to evaluate the English proficiency of nonnative speakers who wish to study in colleges or universities in English- speaking countries.

Over 600000 students take the test each year in more than 170 countries.

Section 1 — Listening Comprehension measures the ability to recognize and understand English as it is spoken in North America.

Section 2 — Structure and Written Expression measures the ability to recognize important grammatical points in English.

Section 3 — Vocabulary and Reading Comprehension measures the ability to understand the meaning of words and phrases in written English as well as reading comprehension of passages from various academic subjects.

Tips on Section 1

The problems tested include vocabulary and structures that are most frequently used in English as it is spoken in North America.

Part A складається з питань, половина яких передає інформацію прямо та недвозначно. Проте друга половина питань може передавати непряму пораду, пропозицто і т.і, або містити фразеологічний (ідіоматичний) зворот. Такі більш складні структури складають уже 2/3 у Part B. Головною складністю Part C є обсяг текстів. Наведемо декілька прикладів:

Part A.

Приклад 1

Ви почуете: He tasted the coffee. Вам треба
вибрати одну з відповідей:
(A) He took the whole fee
(B) He tried the beverage
(C) The coffee was hot
(D) He had a test last week

Правильна відповідь — B. He tried the beverage є власне перефразуванням:
to taste — to try; coffee як один з видів beverages.

Приклад 2

Ви почуете: What are you going to do tomorrow? Відповіді:
(A) What are your plans for tomorrow?
(B) Will it rain tomorrow?
(C) What are you doing in the morning?
(D) Will you close the door?

Правильна відповідь — A, зворот to be going to передає плани на майбутне.

Приклад 3

Ви почуете: Isn't it an incredible journey! Відповіді:
(A) The journey is not very interesting.
(B) The journey is really amazing.
(C) I can't believe it's George.
(D) I don't like traveling.

Правильна відповідь — B, зазначена фраза — своєрідне риторичне питання (за змістом) та вигук (за формою).

Ще калька прикладів перефразування —
every other year — every two years;
in a day — the day after tomorrow;
as soon as you graduate — after your graduation:
There was a two-fold increase — the increase doubled. Перевіряється знання таких зворотів, як, наприклад,

used to та to be used to ...ing:
Janis used to work hard — she worked hard in the past:
Janis isn't used to working so hard — she isn't accustomed to hard work (she has no habit)

умовних речень (звороти I wish ..., If only ...),
емфатичних зворотів (типу She herself didn't know what to do — she didn't know what to do, she had no idea what to do, або Never have you done such a thing - this is tlie first time you have done it.)

Part B.

Приклад 1

— What a nice picture! Did you paint it yourself, Sue?
— Well, it was my mother's idea, but I had John do it.
Who painted the picture?
Відповіді:
(A) John's brother
(B) Sue's mother
(C) John
(D) Sue

Аби дата правильну відповідь — C — необхідно знати зворот to have / get something done. someone do something.

Приклад 2

— I'm thirsty.
— Could you bring some cold water? What does the woman offer the man to do?
(A) Bring some water (правильна в1дпов1дь)
(B) Close the door
(C) Bring some wine
(D) Call her on Thursday

Також можливі запитання типу:
What is the woman's (man's) occupation?
Where does this conversation (most probably) take place/occur?
Наприклад,
— We'd like something for dessert.
— How about our house specialty — raspberry pie?
Where does the conversation (most probably) take place/occur?:
(A) In a supermarket
(B) In the garden
(C) In a restaurant (правильна відповідь)
(D) In the street

Певну складність становлять питания типу «What does the woman / man mean?» «What do we learn from the conversation?», «What could be inferred from this conversation?», «What does the woman/man imply?», коли питають про те, що мається на увазі, про що непрямо йдеться.

— The weather is perfect. Will you go to the beach?
— I guess so.
What does the woman mean?
(A) She doesn't like the weather
(B) She will probably go to the beach
(C) She doesn't agree with the man
(D) She thinks it's too hot

Правильна відповідь — B, вирази I *guess so, I think so, I wouldn't say no to ...* передають непряму згоду.

Окремо слід наголосити на розрізненні фразеологічних зворотів:
— I don't know whether Mark is kidding or not.
— He is always pulling my leg, too. What do we learn from a man's response?
(A) He thinks Mark is a good kid
(B) He has long legs
(C) He doesn't know if it is true
(D) He says Mark makes playful fun of him as well

Аби дати правильну відповідь D треба знати значення виразів ***to make fun, to kid, to pull someone's leg*** (обманювати).
Наведемо декілька типових фразеолопчних зворотів:

— Can we postpone this test? — That is out of the question!	i.e. impossible
— Do you often cry? — Once in a blue moon!	i.e. almost never
— Are you here on vacation? — Actually, I'm going to stay here for good.	i.e. permanently, forever
— Why are you learning Spanish? — I think it will be useful in the long run.	i.e. in the distant future
— Will you come to dance tonight? — I'm looking forward to it!	i.e. want it happen in future
— Sorry, I'm late. — Never mind.	i.e. don't worry, it's OK
— It was a swell party! — It sure was! або — You bet!	i.e. Sure! Of course! Ще б пак! Авжеж!
— Boy, it's hot! — You can say that again.	i.e. I completely agree with you.
— I do like your room! — I still need some chairs to fit the bill.	i.e. really i.e. to match
— Do you live on campus? — No, I don't.	to live on campus — жити у студентському містечку to live off campus — жити за його межами
— I can't concentrate on this work! — Take your time.	i.e. don't hurry
— I would rather not do it. — It's up to you.	i.e. prefer i.e. The decision is yours

— Will you go jogging? — I'm afraid, not. I'm a little bit under the weather today.	jogging — біг підтюпцем i.e. slightly ill (but not seriously)
— It took so much time to write this article! — But it was well worth the trouble.	i.e. it deserved difficulty
— I'm so tired. — Can I lend you a hand?	i.e. Can 1 help you?
— Wish me good luck, — I'll keep my fingers crossed for you!	i.e. wish me well i.e. I wish that nothing goes wrong
— Thanks for your help! — Anytime!	i.e. My pleasure. You're welcome. Don't mention it.

Для аудіювання пропонуються більш довгі бесіди та тексти науково-популярного характеру (уривки з лекцій, діалоги з життя студентів тощо). Наприклад:

The regulations of the Graduate School provide for two plans of study for the Master's degree. Plan A requires 24 hours of course work plus a written thesis. Plan B requires 30 hours of course work and submission of the more modest Master's essay.

It should be noted that, by devoting a third year to the Master's Program, it's usually possible for a student to complete both the Master's Program and the requirements for Secondary teaching certification. The coordinator of secondary teaching major will advise Master's Students interested in certification, and there is a checklist of requirements for the combined programs available in the department office.

What is the (main) topic of the text?

Відповіді:

(A) Two plans for M.A. studies (правильна відповідь)
(B) Teaching certification
(C) A new course
(D) Regulations for undergraduate students

Who is the speaker addressing?

(A) Educational specialists
(B) Pupils
(C) Students (правильна відповідь)
(D) Professors

(Можливе запитання: «Who is the speaker?»)

Which program demands a more serious thesis?

(A) Plan B
(B) Plans A and B
(C) Plan A (правильна відповідь)
(D) Secondary Teaching Certification

Where a checklist of the requirements for the combined programs can be found?

(A) Behind the department office.
(B) Near the department office
(C) At the dean's office
(D) In the department office (правильна відповідь)

Tips on Section 2

The language tested is formal, rather than conversational. The topics of the sentences are of a general academic nature.

Section 2 складається з двох частин, у першій треба додати частину речення, якої не вистачає, у другій — знайти слово, конструкцію або зворот з помилкою. Корисно повторити такі сполучення як neither ... nor, either ... or, both ... and, in spite of, despite, to approve of, to be aware of, to differ from, to be capable oL to interfere with. to be opposed to, to refer ta, to worry about, to distinguish between, to be known for. to be satisfied with, possibility of, exception to та ін.

Checklist for Section 2

1. Missing subject

... spend the winter in a state of hibernation.
(A) That many animals
(B) Because animals
(C) Many animals (правильна в1дпов1дь)
(D) While animals

2. Repeated subject

The students they will have to take the test.
A B C D
Відповідь — B
Chemicals used in the home they should be stored out of reach of children.
A B C D
Відповідь — B

3. Verbs (tense, agreement or form)

The Universal Product Code ... in 1973.
(A) introduced
(B) is introduced
(C) was introduced (правильна відповідь)
(D) has been introduced
These devices have been first used in, 1890.
A B C D
Відповідь — B (правильно were).

4. Pronouns (form or agreement)

She was a scientist whose studied anthropology as well as history.
A B C D
Відповідь — B. Правильно — who.

5. —ING and —ED forms

I enjoy to speak foreign languages.
A B C D
Відповідь — B (після слова enjoy вживається герундій — speaking).
They were ... in our publications.
(A) interesting
(B) interest
(C) interested
(D) to be interested
Відповідь — C.

6. Articles and Singular/Plural Nouns

The oxygen is known to be the most abundant element.
A B C D
Відповідь — A.
American university degrees are awarded on completion of a specified amount of courses
A B
which earn students credits.
C D
Відповідь — B (правильно — number)

7. Comparatives and superlatives.

The more we studied the subject, ... we liked it.
(A) the least
(B) less
(C) at least
(D) the less
Відповідь — D.

8. Word forms (nouns, verbs, adjectives or adverbs).

Electronics is the. world's most important industrialization.
A B C D
Відповідь — D (правильно — industry).

9. Vocabulary usage.

I looked at a. movie on television today.
A B C D
Відповідь — A (правильно — watched
to look — подивитися, поглянути to watch — дивитися досить довго).
Strange as it may seem. I have very little knowledge in electricity.
A B C D
Відповідь — D (правильно — knowledge of).

10. Conditional sentences.

If it will rain, I'll come and meet you in the car.
A B C D
Відповідь — B (правильно — if it rains, ...).
If there were no unemployment we will not have the amount of crime we have today.
A B C D
Відповідь — B (правильно — would).

11. Unnecessary repetition

The invention of the. laser greatly expanded the power of scientific researh tremendously.
A B C D
Відповідь — D (greatly та tremendously означають одне і те саме).

12. Parallel structures

These people are famous for their unique language, colorful costumes, and independent.
A B C D
Відповідь — D (правильно — independence).

13. Word order

This process requires the use of 10 muscles different.
A B C D
Відповідь — D (правильно — different muscles).
Корисно запам'ятати правило порядку слів у словосполученні, яке складається з багатьох компонентів:
OpShACOM — Opinion, Shape, Age, Color, Origin, Material
an interesting new American magazine.
opinion age origin

Tips on Section 3

This section tests the ability to understand meanings of words and reading materials.

Part A.

Example

An event of momentous proportion prevented me from arriving on time.
(A) important
(B) trivial
(C) strong
(D) influential
Відповідь — A. Зверніть увагу на т.зв. «фальшивих друзів перекладача» типу:

momentous — важливий, а не моментальний
data - дані, а не дата
decade - десятиріччя, а не декада
complexion — колір обличчя, а не комплекція.
technicalassistance - консулътації, консультативна допомога

Part B.

1. All information needed to answer the questions is given in the passages.
2. Previous vocabulary knowledge is helpful for the readings. The topics are usually from science and technology (55%), arts (music, literature — 25%), U.S. Government and History (20%). Therefore, any extensive reading in these areas is helpful.
3. There are seven types of questions which normally occur:
a) main idea
(The main theme of the passage is ... , What does the passage mainly discuss?
With what topic is the passage mainly concerned?
What is the main topic of the passage?
Which of the following is the best title for the passage? etc.)
b) factual (dates, figures etc.)
c) inference
(What is the author's viewpoint/attitude/tone? It can be inferred from the passage that ... The author implies that ...)
d) vocabulary;
e) asking what a word refers to;
f) identifying what the author did NOT say;
g) asking the topic of the previous or following paragraph.
4. Extensive paraphrasing is used.
5. There are several strategies. Use the one that you think works best for you.
Strategy #1

a) Scan the entire passage for general meaning. Don't worry about understanding every word.
b) Now read the passage carefully.
c) Read each question and scan back for the answer.

Strategy #*2*

a) Read each question quickly.
b) Read the entire passage carefully.
c) Reread each question and scan back for the answer.

Test of written English (TWE)

Since 1986 the TOEFL examination has included a writing test — a thirty-minute essay. The examinees are asked to write on a specific topic (express or support an opinion, defend a point of view, or interpret information presented in a chart or graph).
A good essay is
— well-organized and well-developed;
— effectively addresses the writing task;
— uses appropriate examples and details to support and/or illustrate ideas;
— demonstrates syntactic variety, range of vocabulary, appropriate word choice;
— shows unity and progression.

TIPS ON TWE

An essay has three parts:
1. An introduction (where the main idea is stated).
2. Body paragraph(s) (made up of topic sentence and supporting sentences).
3. Conclusion (restatement of the main idea, writer's opinion/viewpoint on the topic).

	Introduction
	Topic sentence
Body	Supporting sentence 1
	Supporting sentence 2
	Conclusion

The number of paragraphs depends on the number of points you want to discuss.
Outlining is a way of organizing your thoughts before you write. There are several steps that precede the outlining
1) brainstorming (writing down as many ideas and details as possible);
2) grouping the ideas.

Make use of transitions (logical connectors). You may begin the essay with such phrases as:
Many people think that ... (but others believe that ...) It goes without saying that ... X is important because ...

USE

one the one hand ... on the other hand ...
First ... second ... third ...
for instance ...
in addition ...
also ...
moreover ...
likewise ... /similarly ...
(yet) conversely/by turns
despite/ in spite of
In my opinion ...
Personally, I think that ...

NOTE

The clause marker ***therefore*** occurs after a Semicolon (;) or period (•), NOT a comma (,)

SAMPLE ESSAY

The key to protecting the environment is action. We all must work together to make the environment as clean and healthy as possible. Give specific reasons why.

Environmentalists say that protecting the health of our planet will help us all. However, it is realty hard to change our lives enough to prevent global pollution. The biggest- trouble, for example, with most air pollutants is that they are invisible. That makes it difficult to see 'how dangerous they are.

Consider such dangerous pollutant as carbon dioxide. Carbon dioxide comes from things we do every day like driving cars. A gallon of gasoline weight eight founds. If you burn it in the engine of a car it releases more than five founds of carbon in the form of carbon dioxide. Even our gas stoves give off carbon dioxide.

New kinds of cars and furnaces that run on solar power or wind power or some other kind of renewable energy will help conserve scarce fuel and reduce the amount of pollutants being released into our air, land, and water. But while we an waiting for those kiwis of things to come along, we need to use less gas, oil and coal It's true that we probably can't give up cars altogether — hut we can

use them less. People could walk and bike many more places than they do now. At least, they could drive small cars that use less gas.

Now many people are fighting for the environment, but despite the work of many people, each year the health of our earth get worse. Unless we are willing to work on saving the environment, it will probably keep getting worse. But if we choose to care about our planet, we could leave the world greener than we found it

Final Test

120 questions

I. Read the passage and choose the one best answer to each question.

Safe drinking water is often taken for granted in the modern world. But have you ever thought how important water is? All animals and plants are mostly water. A person's body is about 65 percent water. Each of us needs to drink at least five pints of water each day. Big animals need about 15 gallons of water a day. Water has other uses too. It is used for washing and air conditioning, household work and gardening. Steel, gasoline, paper and most other products are made with the help of water. Power plants use water for cooling. Farms, of course, need water to grow food. Worldwide, the major use of water (approximately 73 percent) is in agriculture. Water is also used for swimming, boating, and other kinds of recreation. We can easily see that life would be impossible without water. That is why it is so important to keep our water clean. Yet, polluted water is becoming very common. Water that has become polluted is unsafe to use. Pollution can happen when untreated wastes have been dumped into it. Polluted water can smell, have garbage floating in it, and be unfit for boating or swimming. But even water that looks clean and smells good can be polluted. It may be loaded with germs and dangerous chemicals you cannot see.

One way of polluting water is to allow fertilizers and untreated wastes to wash from farms and building sites into waterways after rain. Human is making more waste than nature can handle. More and better waste water treatment is needed. People fundamentally depend on recycled waste water for domestic use and drinking supplies. Over 50 percent of the water drunk in Western Europe and North America is reprocessed. Finland and the Netherlands use more than 70 percent reprocessed water, and Denmark and Sweden exceed 90 percent. Clean water is so important to our lives. We should make an effort to make sure we have enough of it.

1. This passage is mainly concerned with
   a. fresh water animals
   b. the importance of water
   c. popular waterways
   d. kinds of recreation

2. This article suggests that polluted water
   a. always looks dirty
   b. carries many germs
   c. is not very common
   d. is safe to use

3. It can be inferred from the passage that polluted water
   a. always has an odor
   b. is usually found near the ocean
   c. sometimes looks safe and clean
   d. is used for swimming rather than boating

4. According to the passage, water often becomes polluted because we allow
   a. oil barges to travel the waterways
   b. people to swim and boat in clean water
   c. bacteria to feed on some wastes
   d. untreated wastes to enter our waterways

5. According to the passage, which of the following can keep our water clean?
   a. stronger chemicals
   b. treatment plants
   c. intensive farming
   d. wire fences

II. Complete the following sentences

6. The answers ... are based on our experience.
   a. provided
   b. provide
   c. providing
   d. when provided

7. They can visit ... more places next year.
   a. much
   b. many
   c. a little
   d. fewer

8. Teachers should ... energetic, enthusiastic and reliable.
   a. flexible
   b. to be flexible
   c. be flexible
   d. flexibility

9. They should know and understand the curriculum as well as effective techniques for ... the curriculum to the students.
   a. deliver
   b. delivering
   c. delivered
   d. having delivered

10. Everybody is interested in the problem ... at our scientific conference.
   a. to discuss
   b. when discussion
   c. that discussed
   d. to be discussed

11. When encouraged to do so, students actively participate in learning by ..., exploring, and discussing.
   a. investigating
   b. to investigate
   c. investigation
   d. investigate

12. Weekly seminars ... to discuss the appropriate application of technology.
   a. to be designed
   b. designing
   c. designed
   d. are designed

13. ... anything go wrong, the whole project would fail.
   a. When
   b. Should
   c. Unfortunately
   d. As ill luck would have it

14. Oxygen ... to be the most abundant element.
   a. known
   b. to know
   c. is known
   d. knowing

15. It was necessary that this work ... done in time.
    a. to be
    b. had been
    c. was
    d. be

16. The experimental data are said ... with theoretical expectations.
    a. to coincide
    b. coincide
    c coinciding
    d. coincided

17. ... is human.
    a. mistaken
    b. to err
    c. err
    d. mistakes

18. If they ... tomorrow, I'll meet them at the station.
    a. will come
    b. came
    c. comes
    d. come

19. If he ... the problem better, he wouldn't have made this mistake.
    a. knew
    b. had known
    c. knows
    d. is to know

20. This law is ... to be used in science universally.
    a. may
    b. probably
    c. can
    d. likely

21. If the metal ... heated, it would melt.
    a. was
    b. were
    c. had been
    d. is being

22. — What is your cousin?
    a. That's she.
    b. I haven't got any.
    c. It was she.
    d. She's a teacher,

23. — Have you ever been to Canada?
    a. Not until
    b. None.
    c. Not yet.
    d. Still.

24. ... clever idea!
    a. So
    b. What a
    c. What
    d. How

25. Last year ... many tourists here.
    a. it was
    b. they were
    c. there was
    d. there were

26. By the time we arrive the movie ....
    a. will have started
    b. has to start
    c. had started
    d. has started

27. Would you care for some more coffee? There's still ... left.
    a. a little
    b. a few
    c. little
    d. few

28. She didn't mind ... late because she enjoyed it.
    a. to work
    b. working
    c. works
    d. worked

29. Professor was surprised her assistant was out. « He ... somewhere», she thought.
    a. ought to have gone
    b. is going to
    c. goes
    d. must have gone

30. ... I need is a good dictionary.
    a. How that
    b. Which
    c. What
    d. That

31. They ... don't believe it even though we've shown them the evidence.
    a. yet
    b. still
    c. already
    d. no longer

32. He was very generous ... his efforts to save.
    a. however
    b. although
    c. nevertheless
    d. in spite of

33. IEEE stands ... «Institute of Electrical and Electronics Engineers».
    a. as
    b. for
    c. like

d. by

34. — I missed my English classes last week. — So ... .
    a. I did
    b. I have
    c. have I
    d. did I

35. They couldn't help ... that the professor was worried.
    a. notice
    b. noticing
    c. to notice
    d. noticed

36. This flour can be used ... cakes.
    a. to do
    b. when doing
    c. to make
    d. and making

37. Cassandra, ... , has been the subject of many poems.
    a. the Greek heroine
    b. that Greek heroine was
    c. was the Greek heroine
    d. who the Greek heroine was

38. ... included Germany, Brazil, and Australia.
    a. When countries
    b. To survey countries
    c. Countries surveyed
    d. It was survey

39. Multimedia applications ... voice, text and image.
    a. combines
    b. combination
    c. combining
    d. combine

40. ... for a way to improve the performance of your system?
    a. You are looking
    b. When you look
    c. Are you looking
    d. That you look

41. The smaller the phenomena a scientist is investigating, ... is the eguipment needed to conduct research.
    a. the biggest
    b. then big
    c. the bigger
    d. and the bigger

42. His short stay in Europe was very important to Jack, ... provided the background to several of his experiments.
    a. it was
    b. much of
    c. for it
    d. by then

43. I ... him recently.
    a. didn't see
    b. hasn't seen
    c. will not see
    d. haven't seen

44. To understand is ... .
    a. forgiving
    b. to forgive
    c. forgives
    d. forgive

45. ... the process what matters is how energy is released.
    a. When
    b. For
    c. How
    d. This

46. ... that they all are here.
    a. It is surprised
    b. Is it surprising
    c. It is surprising
    d. What is surprising

47. .... heat is produced.
    a. That certain chemicals are mixed together
    b. The mixing of certain chemicals
    c. Whenever certain chemicals are mixed together
    d. How certain chemicals are mixed together

48. ... a new point of view on the problem.
    a. Is there
    b. There are
    c. There is
    d. There being

49. The former theory is ... more interesting than the latter.
    a. many
    b. the least
    c. fewer
    d. much

50. A logarithm is ... as an exponent.
    a. known what
    b. known what it is
    c. what is known
    d. what it is known

51. It is this approach ... makes everything clear.
    a. when
    b. that
    c. how
    d. while

52. Only rarely ... naturally.
    a. they occur
    b. do they occur
    c. they would occur

d. they will occur

53. ... that they were the first to discover this phenomenon.
    a. Is it believed
    b. It is believing
    c. It is believed
    d. How it is believed

54. These special cases are worth ... .
    a. to highlight
    b. highlighting
    c. highlighted
    d. to be highlighted

55. The acceleration of all ... bodies is the same independent of their size, shape or mass.
    a. failed
    b. falling
    c. fall
    d. falls

56. ... , this substance proved to have promising properties.
    a. When examining
    b. To examine
    c. When examined
    d. They examined

III. Choose the one word or phrase that best keeps the meaning of the original sentence if it is substituted for the underlined word or phrase.

57. A Master's Degree candidate must prepare a research paper called thesis. But some master's programs involve a great deal of independent study and individual research.
    a. some
    b. part of
    c. a lot of
    d. little

58. This package is apparently from overseas.
    a. perhaps
    b. obviously
    c. strangely
    d. really

59. Technology acts as a catalyst to bring about changes that energize learning environments.
    a. believe in
    b. cause
    c. carry out
    d. foresee

60. Teachers need to feel comfortable with technology. Furthermore, guidance in when and how to appropriately use technology is often needed.
    a. nevertheless
    b. in general
    c. in a nutshell
    d. moreover

61. My book is virtually finished.
    a. really
    b. almost
    c. appropriately
    d. eventually

62. We have 100$. That's plenty.
    a. too much
    b. enough
    c. not enough
    d. big money

63. The international character of the Institute gives it some important advantages.
    a. limitations
    b. activities
    c. merits
    d. linkages

64. The first of these new trends is to be seen in rapidly changing political environment.
    a. problems
    b. tendencies
    c. elements
    d. issues

65. The number of working women increases every year.
    a. grows
    b. decreases
    c. meets
    d. reorganizes

66. Some crops must be rotated periodically with other crops.
    a. constantly
    b. simultaneously
    c. regularly
    d. rarely

67. Scientists once thought that human origins were in Asia.
    a. decidedly
    b. always
    c. vaguely
    d. at one time

68. The Center was established *to.* stimulate and accelerate the use of computers and software tools in education.
    a. in order of
    b. as
    c. for
    d. in order to

69. He looked somewhat upset.
    a. not very
    b. a little
    c. as always
    d. very

70. People often use their first names rather than their family names when talking.
    a. together with
    b. sooner or later
    c. and also
    d. instead of

71. At present the world population is doubling every 37 years.
    a. usually
    b. customarily
    c. currently
    d. universally

72. This popular conception is not supported by research.
    a. notion
    b. imagery
    c. misinterpretation
    d. reaction

73. Gravity works equally on all objects.
    a. objectively
    b. clearly
    c. energetically
    d. identically

74. Some differences between these two cultures are obvious.
    a. non-verbal
    b. verbal
    c. evident
    d. normal

75. Revolutions have always dramatically altered the course of historic events.
    a. changed
    b. reduced
    c. joined
    d. expanded

76. Although we know what these changes are due to, some gaps still exist in our knowledge of their nature.
    a. However
    b. Thus
    c. Even though
    d. Also

77. Another indicator is even more important.
    a. the other
    b. the only
    c. other
    d. one more

78. They've decided to treat the problem in full detail.
    a. discard
    b. predict
    c. deal with
    d. realize

79. He exerts all his power to get things done.
    a. gives away
    b. ignores
    c. avoids
    d. makes active use of

80. Their office is adjacent to the library.
    a. remote
    b. very close
    c. very far
    d. a long way

81. There is promise of yet greater advances, thanks to biotechnology.
    a. trying
    b. owing to
    c. grateful
    d. coming

82. I can't understand it because it's too complicated.
    a. because of
    b. rather
    c. since
    d. owing to

83. Biomedical research continues to provide scientists with new insights into the workings of human body.
    a. prevents
    b. liberates
    c. proclaims
    d. goes on

84. The flights were canceled because of bad weather conditions.
    a. due to
    b. because
    c. instead of
    d. despite

85. Shorthand methods enable people to write more rapidly.
    a. more legibly
    b. more decoratively
    c. at greater speed
    d. more precisely

86. The brief reports did not leave time for any details.
    a. short
    b. extended
    c. long
    d. weak

87. Your version of the report doesn't seem to agree with the facts.
    a. project
    b. aspect
    c. interpretation
    d. correlation

88. Notebook computers are swiftly replacing traditional ones.
    a. rapidly
    b. gradually
    c. finally
    d. previously

89. George is a brilliant scientist.
    a. mediocre
    b. shining
    c. talented
    d. hard-working

90. You will learn English through intensive program.
    a. updated
    b. crash
    c. modern
    d. progressive

91. A barometer is a device for measuring changes in atmospheric pressure.
    a. method
    b. invention
    c. figure
    d. instrument

92. Nearly all weather occurs in the troposphere.
    a. almost
    b. entirely
    c. barely
    d. closely

93. Tides are a latent source of electric power.
    a. expensive
    b. important
    c. valuable
    d. potential

94. This method involved studying genuine material.
    a. genetic
    b. realistic
    c. authentic
    d. different

95. Tides are caused by the gravitational influence of the moon on ocean level.
    a. impact
    b. affluence
    c. superfluity
    d. reality

96. English physicist Henry Cavendish first confirmed that water is a combination of hydrogen and oxygen.
    a. explained
    b. verified
    c. thought
    d. proposed

97. In spite of these promising results, we need more training in this area.
    a. although
    b. so that
    c. despite
    d. in order to

98. In this respect we seem to be undergoing the combined effects of the process.
    a. appear
    b. prove
    c. happen
    d. have

99. This museum houses one of the finest collections in the world.
    a. promotes
    b. creates
    c. contains
    d. advertises

100. We were discussing the actual collection and processing of pertinent data.
    a. the latest
    b. relevant
    c. promising
    d. important

101. One of the ways of presenting findings is through publications.
    a. prognoses
    b. hypotheses
    c. analyses
    d. results

102. In the past decade, a number of trends have influenced educational policies.
    a. 10 days
    b. 10 months
    c. 10 weeks
    d. 10 years

103. Other trends, too, have emerged in the course of the last three or four years.
    a. disappeared
    b. appeared
    c. expressed
    d. turned out

104. He devoted himself completely to science.
    a. suddenly
    b. immediately
    c. entirely
    d. effectively

105. It is hard to cope with social problems in big cities.
    a. handle
    b. know
    c. witness
    d. find

106. Stars move in identifiable patterns in the heavens with regularity and precision.
    a. stability
    b. exactness
    c. provision
    d. accessibility

107. Mahatma Gandhi was an outstanding humanitarian.
    a. exhaustive
    b. remarkable
    c. charitable

d. stable

108. She completely disregarded all our objections.
a. disliked
b. ignored
c. overestimated
d. agreed with

109. This is undoubtedly true.
a. vaguely
b. certainly
c. maybe
d. alternatively

110. Many people are unaware of this fact.
a. are capable of
b. doubt
c. realize
d. don't know

111. The problems we witness are the consequences of former years.
a. know
b. observe
c. disregard
d. solve

112. Washington was the first city in history to be created solely for the purpose of governance .
a. partly
b. arbitrarily
c. reasonably
d. exclusively

113. In a way I can see what you mean, even though I don't share your point of view.
a. I'm sure
b. As a rule
c. In a sense
d. Rather

114. The first factor is speed of response.
a. activity
b. reaction
c. appearance
d. disappearance

115. These data are useful for forecasts.
a. prognosis
b. analyses
c. prognoses
d. discussion

116. They gave us quite a bit of help.
a. a lot of
b. very little
c. very quiet
d. not much

117. They've answered all the questions save two.
a. and saved
b. namely
c. together with

d. except

118. In other words, the simulator would serve as a training and research tool in place of the real one.
   a. rather
   b. instead of
   c. located on
   d. close to

119. We didn't realize that fact.
   a. understand
   b. follow
   c. foresee
   d. demonstrate

120. He attempted to figure out the problem.
   a. express
   b. solve
   c. discuss
   d. pose

ANSWER KEY

CHAPTER 1

Ex. 2

I. l.F, 2.C, 3.E, 4.A, 5.H, 6.G, 7.D, 8.B.
II. l.B, 2.D, 3.C, 4.A.

Ex. 6

I.E. 2.G, 3.F, 4.A, 5.B, 6.D, 7.C, 8.J, 9.H, 10.1.

Ex.7

1. the; 2.a; 3,_ ; 4.an, _ ; 5.the; 6._,_; 7._; 8.the; 9_,_; lO.the,

Ex. 8.

the, _, the, _, __, the, the, the, __, the, _, _, _, _, the, the, the, _, _, the, _.

Ex. 9

l._; 2. _, (the), the; 3. the, the, the, the; 4. _, the; 5. the; 6,_; 7_, (the); 8. the; 9. the, the, the.

Ex. 10

A. b; B. c; C. l.a, 2.b, 3.c.

Ex.11

1. productive; 2. to produce; 3. product; 4. production, productivity; 5. producers; 6. produce; 7. predict; 8. predictable; 9. to predict; 10. prediction; 11. science; 12. scientist; 13. scientific; 14. apply; 15. applications; 16. applied; 17. require; 18. required; 19. requirements; 20. curiosity; 21. curious; 22. imagine; 23. imagination; 24. imaginative; 25. development; 26. to develop.

Ex. 12

l.a; 2.b; 3.b; 4.c

Ex. 13

l.c; 2.b; 3 a; 4.c; 5.b; 6. c; 7.a; 8. c; 9.a; Ю.Ь; ll.b; 12.c; 13.a; 14.d; 15. b; 16. b; 17. b.

CHAPTER 2

Ex. 3

1. many; 2. is; 3. the number of, is increasing; 4, much; 5. is; 6. is; 7. many; 8. were; 9. is; 10. are; 11. was; 12. was; 13. are; 14. have; 15. has; 16. are; 17. is; 18. is.

Ex. 5

radii, crises, antennae (antennas), appendices, criteria, stimuli, encyclopedia, prognoses, sanatoria (sanatoriums), axes, aircraft, media, matrices, nebulae, phases, optima, syllabi (syllabuses), supernovae, syntheses, spectra, theses, equipment, maxima, hypotheses, equilibria, millennia, oases, curricula, phenomena, analyses.

Ex. 7

l.G, 2.E, 3.1, 4.C, 5.H, 6.N, 7.J, 8.L, 9.K, 10.D, ll.A, 12.F, 13.B, 14.M, 15.P, 16.O.

Ex. 10

1. improvement; 2. improve; 3. improvement; 4. benefit; 5. beneficial; 6. to benefit; 7. technology; 8. technological ; 9. a technologist; 10. technology.

Ex. 11

l.d; 2.c; 3.Ь; 4.d; 5.d.

Ex. 12

La; 2.d; 3.b; 4.d; 5.a; 6.c; 7.b; 8.d; 9.a; lO.b; ll.d; 12.a; 13.c; 14.a; 15.d; 16.d; 1?.b; 18.d; 19.b.

CHAPTER 3

Ex. 3

1.E, 2.C, 3.D; 4.A, 5.B

Ex. 5

1. understand; 2. sounds; 3. goes; 4. smells; 5.phones

Ex. 6

1. was studying; 2. was studying; 3. will be taking ; 4. will call; 5. was reading, was watching.

Ex. 7

1. bought; 2. has taken; 3. have read; 4. have translated; 5. haven't finished; 6. arrived; 7. haven't seen.

Ex. 8

l.a; 2.b; 3.a; 4.a; 5.b.

Ex. 9

1. will have studied; 2. said, had published; 3. have known; 4. has been; 5. has studied (has been studying); 6. have finished; 7 .arrived.

Ex. 10

1. My friend said that English and French are the two official languages in Canada.
2. Shakespeare once observed that love is blind.
3. Yesterday morning my teacher said that the results of our test would be there two days from then.
4. My father always told me that to learn is never too late.
5. Last week my cousin told me that he had already completed the essay for his classes that week.
6. When I saw Paula last month she told me that she had received John's letter two months earlier.
7. Elizabeth told me that she couldn't come earlier.
8. Michael said that he would get the tickets.

Ex. 11

l.b; 2.b; 3.a; 4.d; 5.b; 6.a; 7.c; 8.d; 9.a.

Ex. 13

1. increasingly; 2, increased; 3. competition; 4. competitors; 5. competitor(s); 6. competitive; 7. investments; 8. to invest; 9. invested; 10. prospers; 11. prosperity; 12, prosperous; 13. innovative; 14. innovations.

Ex.14

l.d; 2.c; 3.c; 4.b; 5.a.

Ex. 15

l.b; 2.c; 3,d; 4,c; 5,a; 6.a; 7.b; 8.a; 9.d; lO.d; ll.c; 12.d; 13.a.

CHAPTER 4

Ex. 2

l.D, 2.C, 3.E, 4.B, 5.A

Ex. 5

1.b, 2. c, 3,d, 4.c, 5.c, 6.c, 7.b, 8.b

Ex. 6

2. intelligent, the least intelligent; 3. more (less) famous, the most (the least) famous; 4. bad, the worst; 5. more (less) comfortable, the most (the least) comfortable; 6. more (less) careful, the most (the least) careful; 7. bright, brighter; 8. more (less) useful, the most (the least) useful; 9. more (less) guilty, the most (the least) guilty; 10. hard, the hardest.

Ex. 8

like; while; by contrast; however

Ex. 9

A. La; 2. d; 3. a; 4. c; 5. a;
B. 1. are; 2. as; 3. like; 4. are; 5. is.

Ex. 10

l.fe; 2.b; 3.d; 4,c; 5,b; 6.d; 7.c.

Ex. 13

1. creative; 2. creativity; 3. create; 4.creation; 5. capable of; 6. capability; 7. modifications, modify; 8. modified; 9. modify.

Ex. 14

1 — b; 2 — c; 3 — a; 4 — d; 5 — b.

Ex. 15

l.a; 2. b; 3.b; 4.d; 5,d; 6.d; 7.c; 8.d; 9. b; lO.d; ll.b; 12,b; 13.d; 14.b; 15.d; 16.a; 17.c; 18.b; 19.b; 20.d; 21.c.

CHAPTER 5

Ex. 3

l.b; 2.b; 3.a; 4.b; 5.a; 6.a; 7.b; 8.a; 9.a; lO.a; ll.a; 12.b.

Ex. 5

1. E; 2. B; 3. I; 4. K; 5. J; 6. A; 7. C; 8. L; 9. D; 10. F; 11. H; 12. M; 13. G.

Ex. 6

l.c; 2.b; 3.d; 4.c; 5.d.

Ex. 9

A.
1. Secretaries should be familiar with their duties.
2. Members of congress will cast their votes.
3. When everyone contributes the ideas, the workshop will be very stimulating.
4. Professors should meet their students regularly.
5. A director will bring the draft.

B.
1. humanity; 2. assistant; 3. has a career; 4. police officer; 5. the average person/ordinary people; 6. spouses; 7. chairperson; 8. lay people.

Ex. 11

1. explain; 2. explanation; 3. explanatory; 4. intention; 5. intentional; 6. accurate; 7. accuracy; 8. to avoid; 9. avoidance; 10. theoretically; 11. theorist (theoretician); 12. to theorize; 13. theoretical; 14, theoretical.

Ex. 12

l.c; 2.b; 3.b; 4.c; 5.c.

Ex. 13

l.c; 2.b; 3.b; 4.d; 5.b; 6.a; 7.a; 8.c; 9.b; lO.d; ll.b; 12.b; 13.d; 14.d.

CHAPTER 6

Ex. 5

l.b; 2.a; 3.c; 4.c; 5,a; 6.c; 7.b.

Ex. 9

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

Ex. 10

1. collects; 2. collection; 3. collective; 4. experiment; 5. experiment; 6. experimental; 7. experimentation; 8. to assess; 9. assessment.

Ex. 11

l.d; 2.c; 3.b; 4.a; 5.d.

Ex. 12

l.b; 2.d; 3.a; 4.c; 5.a; 6.d; 7.b; 8.b ; 9.d; lO.c.

CHAPTER 7

Ex. 2

1. D; 2. F; 3. A; 4. B; 5. C; 6. E

Ex. 3

1. J; 2. M; 3. E; 4. K; 5. B; 6. H; 7. D; 8. C; 9. F; 10. G;. 11. I; 12. A; 13. L

Ex. 4

l.b; 2.c; 3.d; 4.d; 5.c; 6.d; 7.a; 8.b; 9.c; 10.a; ll.b

Ex. 8
1.
occurrence; leadership; fitness; absentee; reporter; designer; development (developer); freedom; tenderness; selection; dependence; agreement; requirement;
2.
symbolize; falsify; strengthen; activate; soften; normalize; freshen; validate; signalize; legalize; individualize;
3.
praiseworthy; affordable; presentable; washable; reusable; hazardous; noiseless; useful (useless); trustworthy; faithful; salty; adjustable; flawless.

Ex. 9

l.b; 2,d; 3.c; 4.b; 5,d.

Ex. 10

l.b; 2.c; 3.a; 4.b; 5.d; 6.b; 7.d; 8.b; 9,c; IO.a; ll.a; 12.d; 13.d.

CHAPTER 8

Ex.6

l.c; 2.b; 3.a.

Ex.7

l.b; 2.c; 3,a; 4.d; 5.d; 6.b; 7.b; 8.c; 9.a; lO.d; ll.a; 12.d; 13.c.

Ex.9

1. recognition; 2. recognize; 3. recognized; 4. alterations; 5. altered; 6. add; 7. to add; 8. additions; 9. addition.

Ex.10

l.d; 2,d; 3.c; 4.a; 5.b.

Ex.11

La; 2.b; 3.d; 4.c; 5.b; 6.d; 7.a; 8.c; 9.c; lO.b; ll.c; 12.b; 13.d.

CHAPTER 9

Ex. 5

1. E; 2. G; 3. I; 4. C; 5. H; 6. B; 7.A ; 8. D; 9. F.

Ex. 6

l.a; 2.d; 3,b; 4.b; 5,c; 6.c; 7.a; 8.d; 9.b; lO.a; ll.d; 12.b.

Ex. 10

1. important; 2. importance; 3. important; 4. recycled; 5. to recycle; 6. recyclable; 7. reliable; 8. reliably; 9. reliable; 10. unrealibility; 11. possibilities; 12. possible; 13. possible; 14. possible; 15. possibly; 16. possibility; 17. possibility; 18. responsible; 19. responsible; 20. responsibility; 21. responsibility.

Ex. 11

l.a; 2.b; 3.d ; 4.d ; 5.d.

Ex. 12

l.b; 2.c; 3.d; 4.b; 5,b; 6.a; 7.b; 8.d; 9.b; lO.d; ll.a; 12.d.

CHAPTER 10

Ex. 4

l.b; 2.b; 3.d; 4.b; 5.c; 6.a; 7.b; 8.c; 9.a; lO.d.

Ex. 5

1. smoking; 2. to buy; 3. to bring; 4. waiting; 5. playing, seem, to prefer, playing; 6. to spend.

Ex. 9

1. manufactures; 2. manufacturing; 3. manufacturer; 4. manufacturing; 5. organization; 6. organize; 7. organize; 8. oganized; 9. precise; 10. precision; 11. precisely; 12. precisely.

Ex. 10

l.c; 2.d; 3.d; 4.b; 5.d.

Ex. 11

l.b; 2.d; 3.c; 4.a; 5.c; 6.c; 7.b; 8.d; 9.a; lO.c; ll.c; 12.b.

CHAPTER 11

Ex. 5

1. Under no circumstances will I go there.
2. Isn't he a great speaker!
3. In no case can we make an exception.

Ex. 6

Answers will vary.

Ex.7

l.d; 2,c; 3.a; 4,c; 5.d; 6,c; 7.b; 8.d; 9.b; l0.c.

Ex.10

1. refused; 2. refuse(d); 3. refusal; 4. agreement; 5. agree; 6. agree(d); 7. agreement; 8. anxious; 9. anxiety; 10. anxious; 11 .anxiously.

Ex.11

l.b; 2.a; 3.b; 4.b; 5.d.

Ex.12

l.d; 2,c; 3.b; 4.b; 5.d; 6.a; 7.c; 8.c; 9.b; l0.d.

FINAL TEST

I
1. b
2. b
3. c
4. d
5. b

II

6. a
7. b
8. c
9. b
10. d
11. a
12. d
13. b
14. c
15. d
16. a
17. b
18. d
19. b
20. d
21. b
22. d
23. c
24. b
25. d
26. a
27. a
28. b
29. d
30. c
31. b
32. d
33. b
34. d
35. b
36. c
37. a
38. c
39. d
40. c
41. c
42. c
43. d
44. b
45. b
46. c
47. c
48. c
49. d
50. c
51. b
52. b
53. c
54. b
55. b
56. c

III

57. c
58. b
59. b
60. d
61. b
62. b
63. c
64. b
65. a
66. c
67. d
68. d
69. b
70. d
71. c
72. c
73. d
74. c
75. a
76. c
77. d
78. c
79. d
80. b
81. b
82. c
83. d
84. a
85. c
86. a
87. c
88. a
89. c
90. b
91. d
92. a
93. d
94. c
95. a
96. b
97. c
98. a
99. c
100. b
101. d
102. d
103. b
104. c
105. a
106. b
107. b
108. b
109. b
110. d
111. b
112. d
113. c
114. b
115. c
116. a
117. d
118. b
119. a
120. b

Пумпянский А.А. Чтение и перевод английской научной и технической литературы. М. — Наука, 1968.
Хорпби А.С. Конструкции и обороты современного английского языка. М. — 1992
Гордон Е.М., Крылова И.П. Грамматика современного английского языка. М. — Высшая школа, 1980.
Новицкая Г.М., Кучин Н.Д. Практическая грамматика английского языка. М. — Высшая школа, 1979.
Категория количества в современных европейских языках /Отв. ред. В. В. Акуленко. К. — Наукова думка, 1990
Медведева Л. М. Части речи и залог /на материале английского языка. К. — Вища школа, 1983
Зильбсрман Л.И. Структурно-семантический анализ текста. М. — Наука, 1982.
Шахова Н.И. и др. Learn to Read Science. Курс английского языка для аспирантов. М. — Наука, 19ЯО,
Шахова Н.И. и др. Learn to Read Science. Курс английского языка для аспирантов и научных работников. 2-е изд., переработанное. М. — Наука, 1993.
Михельсон Т.Н., Успенская Н.В. Сборник упражнений но основным разделам грамматики английского языка. 5-е изд., исправленное. Ленинград, 1989.
Рубцова М.Г. Обучение чтению английской научной и технической литературы, Лексико-грамматичсский справочник. М. — Наука, 1989.
Ільченко М.Ю. Проблеми розвитку телекомунікащй в Україні /Вісті Академії інженерних наук України. — № 1, 1994, с.l7 — 33.
Ильченко О.М. TOEFL: начальный этап. К., 1993.

TOEFL: Test and Score Manual. — Princeton, 1990.
TOEFL Test of Written English Guide. — Princeton, 1989.
TOEFL Institutional Testing Program, — Princeton, 1991.
Reading for TOEFL. Listening to TOEFL. Understanding TOEFL. TOEFL Sample Test. — Princeton, 1901.
Ronald E. Feare. Key to Success on the TOEFL. Oxford University Press, 1989.
Milada Broukal, Enid Nolan-Woods. NTC's Preparation for the TOEFL. — Macmillan Publishers, 1992.

Leech G., Svartvik J. A Communicative Grammar of English. Moscow: Prosveshcheniye, 1983.
Swan M. Practical English Usage. Oxford: Oxford University Press, 1980.
Thompson A.J., Martinet A.V. A Practical English Grammar. Fourth edition. Oxford: Oxford University 1're.s.s, 1986.
Celce-Murcia M., Larsen-Freeman D. The Grammar Book, Heinle and Heinlc Publishers, 1983.
Levine D.R., Baxter J., McNulty P. The Culture Puzzle. Cross-Cultural Communication for English as a .Second Language. Prentice Hall Inc., 1987.
Pasachoff J.M. Astronomy: From the Earth to the Universe. Saunders College Publishing, 1995.

Spectrum 1991—1995
The Sciences 1991—1995
The. Institute 1991—1995
The World & 1 . March 1991.

Словники

Большой англо-русский словарь : в 2-х т. / Под общ. рук. И.Р. Гальперина. М. — Русский язык, 1977.
Русско-английский словарь / Под рук. Р.С. Даглиша. М. — Русский язык, 1990.
Медведева Л.М., Медведева Н.Ю. Англо-українсько-росіїський словник усталених виразів. Хит — Тернопіль, 1992.
Михеева А.В. и др. Словарь-минимум для чтения научной литературы на английском языке. — М. 1985.
Справочник участника международных конференций (английский язык). М, — Наука, 1985
Hutchinson Pocket Encyclopaedia. London : Helicon, 1987.
New Webster's Dictionary of English Language. College Edition. — Delhi: Surjeet Publications, 1988.
Hornby A.S. Oxford Advanced Learner's Dictionary of Current English. — Oxford University Press, 1978.
Longman Dictionary of Contemporary English. Longman Group UK Limited, 1987.
Longman Dictionary of Common Errors. M.— Русский язык, 1991.
New Roget's Thesaurus. — Miami. — Florida, PS1 and Assosiates Inc, 1991.
Urdang L. A Basic Dictionary of Synonyms and Antonyms. Delhi, Vision books, 1983.
Lehncrt M. Reverse Dictionary of Present-Day English. Leipzig: VEB Verlag Enzyclopadie, 1971.

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