МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ

НАЦІОНАЛЬНИЙ ТЕХНІЧНИЙ УНІВЕРСИТЕТ
«ХАРКІВСЬКИЙ ПОЛІТЕХНІЧНИЙ ІНСТИТУТ»

Методичні вказівки до виконання самостійних завдань з читання до змістовного модуля «Пошук та обробка інформації» для студентів І курсу спеціальностей «Екологія», «Технології захисту навколишнього середовища»

Methodical instructions in English for individual reading tasks to module "Information Search and Processing" for first-year students majoring in Ecology and Environmental Protection Technologies

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Методичні вказівки з англійської мови до виконання самостійних завдань з читання до змістовного модуля «Пошук та обробка інформації» для студентів І курсу спеціальностей «Екологія», «Технології захисту навколишнього середовища». Methodical instructions in English for individual reading tasks to module "Information Search and Processing" for first-year students majoring in Ecology and Environmental Protection Technologies. / уклад. С. В. Сергіна, О. О. Мартинчук– Харків: НТУ „ХПІ”, 2023. – 88 с.

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ПЕРЕДМОВА

Методичні вказівки призначені для студентів І курсу спеціальностей «Екологія», «Технології захисту навколишнього середовища», які володіють англійською мовою на середньому рівні (Intermediate level). Методичні вказівки є доповненням до основного курсу модуля «Пошук та обробка інформації» і призначені для аудиторної та самостійної роботи студентів. Основна мета методичних вказівок – оволодіння спеціалізованою лексикою, розвиток навичок читання та професійної комунікації англійською мовою з актуальних проблем взаємовідносин людини з природою.

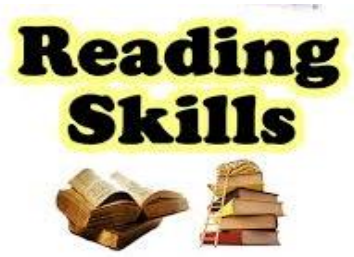
Методичні вказівки сприятимуть формуванню мовної та комунікативної компетенції, а саме здатності до узагальнення, аналізу, сприйняття інформації, вміння аргументовано та зрозуміло будувати своє мовлення.

За структурою методичні вказівки являють собою шість розділів (Sections), кожен з яких є цілісним і завершеним. Розділ починається з до текстових вправ, які допомагають прогнозувати зміст тексту і тим самим налаштовують і готують студента до сприйняття матеріалу, що підлягає вивченню.

До кожного розділу включено тексти, складені на основі оригінальної американської та англійської навчальної та наукової літератури, із завданнями для різних видів читання. Тексти сприятимуть розвитку навичок переглядового читання, яке націлює студентів на швидкий пошук основної тематичної лінії тексту та формулювання його основної ідеї; ознайомчого виду читання, що передбачає вдосконалення вміння студента знаходити й розуміти основну інформацію тексту, вміння відокремити головне від другорядного та дослідницького читання, призначеного для вироблення вмінь і навичок витягувати повну інформацію з тексту, аналізувати викладені в ньому факти, порівнювати їх, узагальнювати і робити власні висновки. Тексти забезпечені словником-мінімумом тематичної активної лексики. Наявність у розділі текстів, читання кожного з яких має свою певну мету, дає змогу формувати у студента різні стратегії читання. Дані вміння є важливими та необхідними у професійній діяльності майбутнього фахівця.

До всіх розділів включено систему лексичних вправ, що сприятимуть розширенню активного словникового запасу за фахом, формуванню навичок говоріння, розвитку монологічного мовлення, ведення дискусій на професійні теми. Кінцевим етапом роботи з текстами у кожному розділі може бути усне або письмове повідомлення на задану тему з використанням нового лексичного матеріалу.

TO THE STUDENTS



Your main task is to learn different reading techniques and use them in practice. The acquired reading skills will help you, especially in exam conditions when time is limited and you need to have faster reading, learning and memory skills.

The three main types of reading techniques are the following:

- Skimming
- Scanning
- Intensive reading

Skimming and scanning are reading techniques that use rapid eye movement and keywords to move quickly through text for slightly different purposes. Skimming is reading rapidly in order to get a general overview of the material. Scanning is reading rapidly in order to find specific facts. While skimming tells you what general information is within a section, scanning helps you locate a particular fact.

Skimming can save you hours of laborious reading. However, it is not always the most appropriate way to read. It is very useful as a preview to a more detailed reading or when reviewing a selection heavy in content. However, when you skim, you may miss important points or overlook the finer shadings of meaning, for which rapid reading or perhaps even study reading may be necessary.

Use skimming to overview your textbook chapters or to review for a test. Use skimming to decide if you need to read something at all, for example during the preliminary research for a paper. Skimming can tell you enough about the general idea and tone of the material, as well as its gross similarity or difference from other sources, to know if you need to read it at all.

To skim, prepare yourself to move rapidly through the pages. You will not read every word; you will pay special attention to typographical cues-headings, boldface and italic type, indenting, bulleted and numbered lists. You will be alert for key words and phrases, the names of people and places, dates, nouns, and unfamiliar words.

In general, follow these steps:

1. Read the *table of contents* or *chapter overview* to learn the main divisions of ideas.
2. Glance through the main headings in each chapter just to see a word or two. Read the *headings of charts and tables*.
3. Read the entire *introductory paragraph* and then the *first and last sentence* only of each following paragraph. For each paragraph, read only the first few words of each sentence or to locate the main idea.

4. Stop and quickly read the sentences containing *keywords* indicated in boldface or italics.
5. When you think you have found something significant, stop to read the entire sentence to make sure. Then go on the same way. Resist the temptation to stop to read details you do not need.
6. Read *chapter summaries* when provided.

If you cannot complete all the steps above, compromise: read only the chapter overviews and summaries, for example, or the summaries and all the boldfaced keywords. When you skim, you take a calculated risk that you may miss something. For instance, the main ideas of paragraphs are not always found in the first or last sentences (although in many textbooks they are). Ideas you miss you may pick up in a chapter overview or summary.

Good skimmers do not skim everything at the same rate or give equal attention to everything. While skimming is always faster than your normal reading speed, you should slow down in the following situations:

- When you skim introductory and concluding paragraphs
- When you skim topic sentences
- When you find an unfamiliar word
- When the material is very complicated

Scanning, too, uses keywords and organizational cues. The goal of scanning is to locate and swoop down on particular facts. If after skimming, you decide the material will be useful, go ahead and scan:

1. Know what you are looking for. Decide on a few key words or phrases-search terms, if you will.
2. Look for only one keyword at a time. If you use multiple keywords, do multiple scans.
3. Let your eyes float rapidly down the page until you find the word or phrase you want.
4. When your eye catches one of your keywords, read the surrounding material carefully.

If you are scanning for facts to answer a specific question, one step is already done for you: the question itself supplies the keywords. ***Follow these steps:***

1. Read each question completely before starting to scan. Choose your keywords from the question itself.
2. Look for answers to only one question at a time. Scan separately for each question.
3. When you locate a keyword, read the surrounding text carefully to see if it is relevant.
4. Re-read the question to determine if the answer you found answers this question.

Intensive reading involves learners reading in detail with specific learning aims and tasks. Intensive reading is short and much focused activity with the goal is to understand everything. It requires great concentration and attention to minor details. It is a type of reading where testing and increasing knowledge are primary. Such reading often includes taking notes.

Section I

ECOLOGY AS A SCIENCE

"Study nature, love nature,
stay close to nature.
It will never fail you".
(Frank Lloyd Wright)

1. Pre-reading.

- Read the questionnaire and tick (✓) the best answers for you.
- Then read the text below and check your answers.

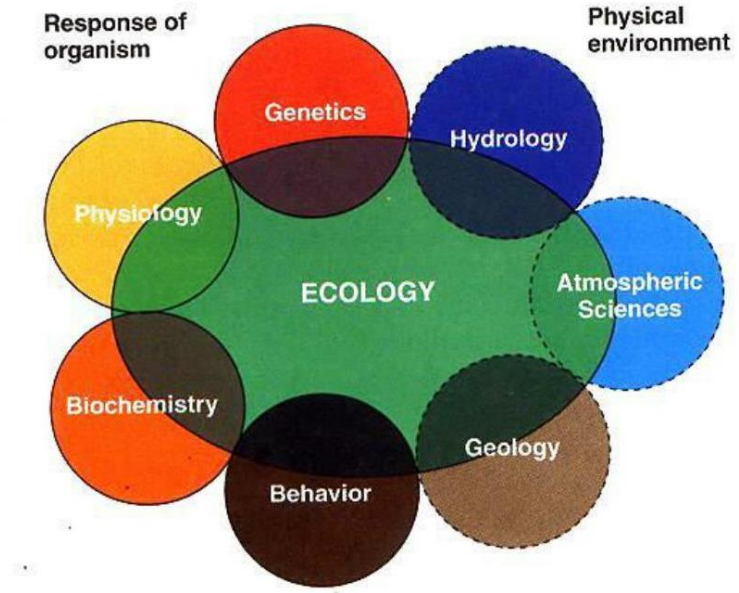
	Yes	**No**	**Don't know**
1. Ecology is a science.			
2. It deals with living organisms.			
3. It also deals with the environment of living organisms.			
4. Climate, solar insulation and geology influence the environment.			
5. Ecology is also called 'ecological science'.			
6. Ecology makes use of other sciences.			

2. Skim the text to compare your ideas with the facts.

Pay attention to the following words and wordcombinations

environment	оточуюче середовище
habitat	середовище існування, умови існування
to draw on	спиратися на, звертатися, використовувати (відомості), залучати

to distribute	розповсюджувати
in turn	у свою чергу
solar insulation	сонцезахисна ізоляція
to influence	впливати на
pests	шкідники
species	біологічний вид, тип, сорт
ecological relevance	екологічна актуальність
food scarcities	дефіцит продуктів харчування



Ecology: a General Overview

You can say 'yes' to every question in the questionnaire above. Ecology is the science that studies the number of living organisms in the environment and how they are distributed. It also studies how the quantity and distribution of organisms are influenced and in turn influence their interactions with the environment.

The environment of an organism includes factors such as climate, solar insulation, geology and the other organisms that share its habitat.

Ecology is a multidisciplinary science. Facts about ecological systems are drawn from biology, geology, meteorology, chemistry, physics, history, physiology, anthropology, including various branches of geography: hydrology, soil science, geomorphology, biogeography, etc. Originally, ecology was treated as environmental biology. Modern ecology has to deal with environmental problems caused by human activities.

The science of ecology has the following areas of study. They are plant and animal ecology, population ecology, community ecology, paleoecology.

Ecologists seek to explain:

- Life processes, interactions and adaptations;
- The movement of materials and energy through living communities;
- The successional development of ecosystems;
- The abundance and distribution of organisms and biodiversity in the context of the environment.

A new term “social ecology” was introduced to show interaction of man, society and nature, close interdependence of social and natural factors.

Other ecological approaches concern specialized areas.

Systems ecology, concentrating on input and output analysis, has stimulated the rapid development of applied ecology, concerned with the application of ecological principles to the management of natural resources, agricultural production, and problems of environmental pollution.

In applied ecology, basic ecological principles are applied to the management of populations of crops and animals, so that yields can be increased and the impact of pests reduced. Applied ecologists also study the effect of humans on their environment and on the survival of other species. Theoretical ecologists provide simulations of particular practical problems (e.g., the effects of fishing on fish populations) and develop models of general ecological relevance.

Nowadays it is evident that some of the most pressing problems in the affairs of men-expanding populations, food scarcities, environmental pollution, and all the attendant sociological – and political problems – are to a great degree ecological.

2.1. Choose the correct option.

1. Ecology studies …	**2. Ecology is also called…**	**3. Ecology makes use of …**
a. the number of organisms in the habitat.	**a.** meteorology.	**a.** other sciences.
b. how organisms are allocated.	**b.** ecological science.	**b.** the environment.
c. both of these.	**c.** ecoclimatology.	**c.** solar insulation.

2.2. Put these words in the correct column.

minerals, atoms, living organisms, cells, rocks, history of the Earth, chemical bonds, rivers, lands

Biology	**Geography**	**Geology**	**Chemistry**

2.3. Complete the sentences.

1. Ecology is the study of ____.

2. Ecology is a multidisciplinary science drawing facts from ____.

3. The science of ecology has such areas of study as ____.

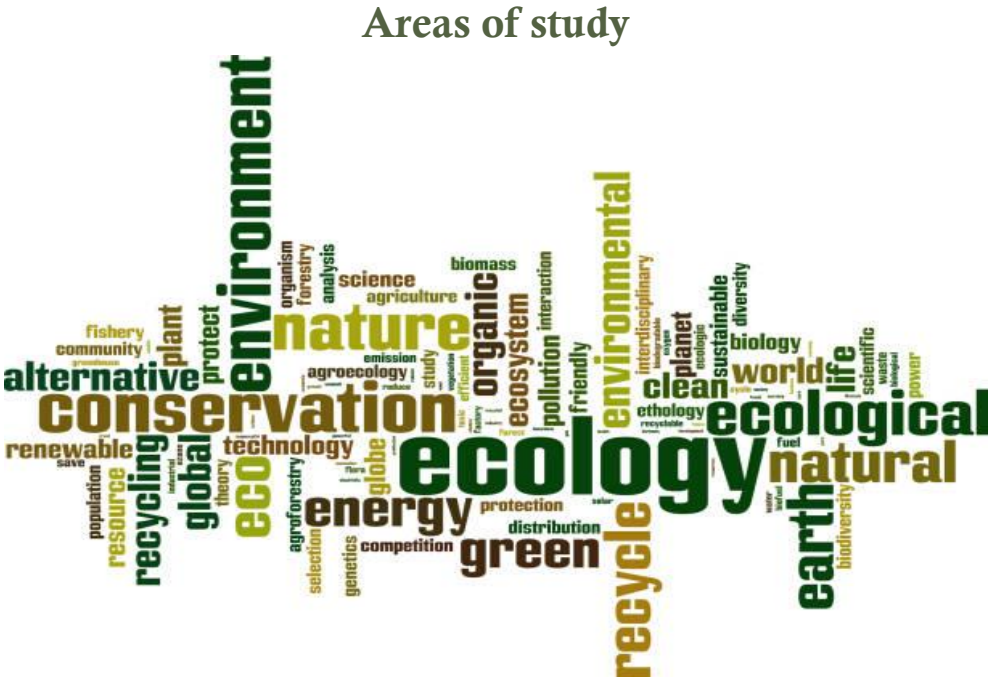
4. A term “social ecology” was introduced to ____.

5. Applied ecologists study ____.

3. Read the following text and subgroup the areas of study of ecology schematically.

Pay attention to the following words and wordcombinations

shelter	укриття, місце для ночівлі
autecology	аутекологія
nutrient cycling	кругообіг поживних речовин
synecology	синекологія
terrestrial ecology	екологія суші
estuaries	лимани, затоки
distribution	ареал
mortality	смертність
natality	походження
predator-prey relations	взаємовідносини «хижак-жертва»
behavioral responses	поведінкові реакції
to fall under	належати до



Ecology developed along two lines: the study of plants and the study of animals. Plant ecology concerns the relationships of plants to other plants and their environment.

Animal ecology concerns the study of population dynamics, distribution, behavior, and the interrelationships of animals and their environment. Because animals depend upon plants for food and shelter, animal ecology cannot be fully understood without a considerable background of plant ecology. This is particularly true in applied areas of ecology – wildlife and range management.

Both plant and animal ecology may be approached as the study of the interrelations of an individual organism with its environment, called autecology, or as the study of groups of organisms, called synecology.

Autecology, is usually concerned with the relationship of an organism to one or more variables such as humidity, light, salinity, or nutrient levels, it is easily quantified and lends itself to experimental design both in the field and the laboratory.

Important concepts developed by synecology are those concerned with nutrient cycling, energy budgets, and ecosystem development. Synecology may be subdivided according to environmental types, as terrestrial or aquatic. Terrestrial ecology, which may be further subdivided into forest, grassland, arctic, and desert ecology, concerns such aspects of terrestrial ecosystems as microclimate, soil chemistry, soil fauna, hydrologic cycles, ecogenetics, and productivity. Aquatic ecology, called limnology, is limited to freshwater stream ecology and lake ecology. The former concerns life in flowing waters; the latter, life in relatively still water. Marine ecology deals with life in the open sea and in estuaries.

The study of the geographic distribution of plants and animals is ecological plant and animal geography. The study of population growth, mortality, natality, competition, and predator-prey relations is population ecology. The study of the genetics and ecology of local races and distinct species is ecological genetics. The study of the behavioral responses of animals to their environment, and of social interactions as they affect population dynamics, is behavioral ecology. Investigations of interactions between the physical environment and the organism fall under ecoclimatology and physiological ecology. The study of groups of organisms is community ecology (though it is difficult to separate it from studies of bioenergetics, biogeochemical cycles, and trophic-dynamic aspects of the community or ecosystem ecology). That part of ecosystem ecology concerned with the analysis and understanding of the structure and function of ecosystems by the use of applied mathematics, mathematical models, and computer programs is systems ecology.

3.1. Match the following terms with their proper definitions.

Words	Definition
1. Physiological ecology	**a.** the study of the ecology of fossil organisms
2. Species ecology	**b.** the study of the organization and functioning of communities, which are assemblages of interacting populations of the species living within a particular area
3. Population ecology	**c.** the study of the relationships between individual organisms and the physical and chemical features of their environment
4. Community ecology	**d.** the study of the food-gathering techniques of individuals, the survival adaptations against predation and mating
5. Paleoecology	**e.** the study of large-scale ecological problems, which are often formulated in terms of indicators such as biomass, energy flow, and nutrient cycling
6. Behavior ecology	**f.** the study of the behavior and adaptations of particular species to the environmental condition at every stage of that individual's life cycle
7. Ecosystem ecology	**g.** the study of the processes that affect the distribution and abundance of animal and plant populations

4. Complete the interview with the expressions from the box.

at different levels, the dynamics of population, the sphere of water,
behavioral ecology, about ecology and its sub-disciplines, the sphere of air,
you can also examine, communities of species

Ecology and its Sub-disciplines

Interviewer: Mr Hale, could you tell us something **(1)** _____?
Mr Hale: Well, as you know ecology has a great number of sub-disciplines. Some are more complex than others. For example, physiological and **(2)** _____ focuses on the adaptations of the individual to his environment; population ecology examines **(3)** _____ of a single species; community ecology studies the interactions between species in an ecological community. Ecosystem and landscape ecology are even more complex.
Interviewer: Can ecology be studied **(4)** _____?

Mr Hale: Yes, of course. If you study the population level, you focus on individuals of the same species, but **(5)** _____, ecosystem or biosphere levels.
Interviewer: Can you explain how the outer layer of the planet Earth can be divided?
Mr Hale: Yes, there are basically three compartments: the hydrosphere is **(6)** _____, the lithosphere is the sphere of soil and rocks and the atmosphere is **(7)** _____.
Interviewer: And what about the biosphere?
Mr Hale: Well, that's the sphere of life. In short, it is the part of our planet occupied by life.

4.1. Read the interview again and decide if the statements below are *TRUE* or *FALSE*. Write

TRUE	*if the statement agrees with the information*
FALSE	*if the statement contradicts the information*

1. The sub-disciplines of ecology are all very complex.
2. Population ecology examines the population dynamics of a single species.
3. Ecosystem and landscape ecology are more complex than other forms of ecology.
4. If you study the population level, you concentrate on communities of species.
5. The outer layer of the planet Earth can be divided into four compartments.
6. The hydrosphere is the sphere of water.
7. The biosphere is the sphere of soil and rocks.

5. Read the dialogue and say who the people talking might be to each other.

Dialogue

1 – Why do not you begin by telling me something about yourself?
2 – What do you want to know?
1 – The usual – you know – something about your background and experience and anything personal.
2 – Well, I was born in Iowa and went to school there. My father is a chemist, and my mother is a biologist.
1 – Sounds as if you come from a professional family.
2 – That is right. One of my sisters is an ecologist and the other one teaches geography at a university.
1 – Moreover, what made you decide to get into geology?

2 – Oh, nothing in particular, I guess, I always liked collecting different stones and minerals and things like that.

1 – Now what about your experience? How long have you been working in this field?

2 – More than five years now.

1 – You have got a degree in mineralogy, haven't you?

2 – Just a Master's degree. After I did my degree, I began to specialize in ecology, dealing with a whole series of environmental issues.

1 – Sounds like an interesting field. By the way, could you explain me one thing? What is the difference between an environmentalist, an ecologist and a conservationist?

2 – Well, a conservationist is really someone who, in my mind, wants to keep things exactly as they are, and, as long as they can keep the world around them in the same familiar shape that they've always known it, then they're happy.

An environmentalist is someone who accepts that there is going to have to be change, but it want that change to be of such a kind that it does not destroy the earth's resources, or cause too much pollution, or anything else.

An ecologist is likely to look a lot deeper than that, into the economic and political systems that govern our lives, and to understand that there are going to have to be profound political and economic changes if we are going to preserve the environment.

Therefore, it is a sequence, if you like, or a hierarchy of depth, in terms of the extent to which one looks at the root causes of what is going wrong. In addition, think that the ecological movement, or the green movement, as I call it, is more radical, because it goes right to the root of what is going wrong. You can actually be an environmentalist, and get away with thinking that the systems are not going to change much. It is an illusion, but many people do it.

1 – Oh, thank you very much.

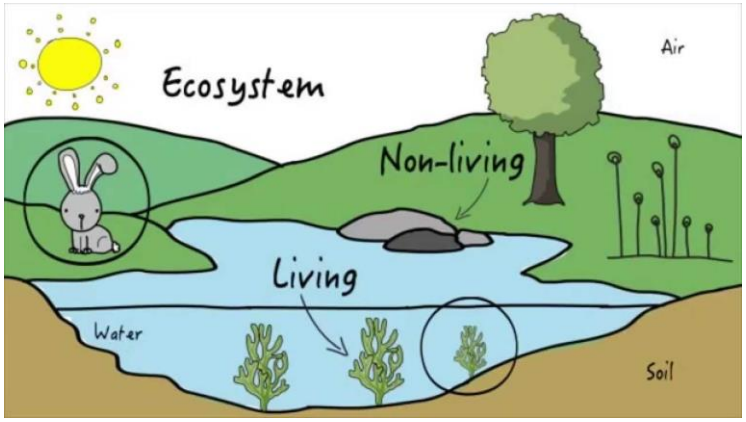
5.1. Reproduce the dialogue: *a)* abridged; *b)* in the form of a monologue using the verbs from the box

to wonder, to know, to ask, to be interested in, to confirm, to want to know, to explain, to compare, to respond

6. Read the text as quickly as you can and think about what type of text it is. Where would you find it: in a novel, a textbook or a newspaper?

Pay attention to the following words and wordcombinations

condition	умова
interaction	взаємодія
to carry out	виконувати, здійснювати
to exist	існувати
surface	поверхня
precipitation	опади
toxic substances	токсичні речовини
fungi	гриби
wastes	відходи
to digest	переварювати
to absorb	поглинати
soluble nutrients	розчинні речовини



Ecology and Ecosystems

Ecology emerged at the turn of the 19th and 20th centuries. as one of the most popular and most important aspects of biology. Ecology is the science that tries to answer such questions about how nature works.

In 1869 German zoologist, Ernst Haeckel coined the term *ecology (oekologie)* from two Greek words: *oikos,* meaning “house” or “place to live”, and *logos,* meaning “study of”.

Ecology is the study of living things in their home or environment: all external conditions and factors, living and nonliving that affect an organism. In other words, ecology is the study of interaction between organisms and their living and nonliving environment. Scientists usually carry out this study by examining different ecosystems: forests, deserts, grasslands, ponds, lakes, oceans or any organisms interacting with one another and with their nonliving environment. The word environment includes both other organisms and physical surroundings. It involves relationships between individuals within a population and between individuals of different populations. These interactions between individuals, between populations, and between organisms and their environment form ecological systems, or ecosystems.

Modern ecology, however, is now focused on the concept of the ecosystem, a functional unit consisting of interacting organisms and all aspects of the environment in any specific area. It contains both the nonliving (abiotic) and living (biotic) components through which nutrients are cycled and energy flows.

Constant interactions between living organisms and their physical environment bind these components into a stable system.

The state of balance in any ecosystem is self-sustainable so that even slight imbalances are corrected before they become severe, irreparable and fatal. Particular concern of the ecologists is with "higher" levels of life organization: from populations to biosphere.

The Earth has several major parts that play a role in sustaining life. We are part of what ecologists call the biosphere – the living and dead organisms found near the earth's surface. Virtually all life on earth exists in a thin film of air, water and rock in a zone extending from about 61 meters below the ocean surface to 6,000 meters above sea level.

The living organisms that make up the biosphere interact with one another, with energy from the sun, and with various chemicals in the atmosphere, hydrosphere and lithosphere. This collection of organisms interacting with one another and their nonliving environment is called ecosphere. The goal of ecology is to learn how the ecosphere works.

Ecosystems consist of various nonliving and living components. The nonliving or abiotic components include various physical and chemical factors. Among physical factors affecting ecosystems are sunlight and shade, temperature, precipitation, wind, soil, fire, etc. Major chemical factors include: level of water and air in soil, level of nutrients, level of toxic substances, sanity of water and some others.

The major types of organisms that make up the living or biotic components are usually classified as producers, consumers and decomposers. This classification is based on organisms' general nutritional habits. Green plants are producers as they make the organic nutrients through photosynthesis. Only producers can make their own food. They provide food directly or indirectly for animals and decomposers. We get nutrients either by eating plants or by eating animals that feed on plants.

Organisms that get the nutrients and energy they require by feeding either directly or indirectly on producers are called consumers or heterotrophs (other-feeders).

Some consumers feed on living plants and animals; the others feed on small fragments of dead plants and animals matter, called detritus. Detritus consumers called decomposers digest dead tissue or wastes and absorb their soluble nutrients. Decomposers consist of two classes: called bacteria and fungi. Bacteria and fungi decomposers in turn are an important source of food for organisms such as worms and insects living in the soil and water.

There is no waste in functioning biological communities; the wastes of one form of life are food or nutrients for other forms of life. This is how no-waste-in-nature principle works.

6.1. Scan the text and answer the following questions.

1. What is ecology?
2. How did the term "ecology" come about?
3. What are the components of biosphere?
4. What is the ecosystem and what are its major living and nonliving components?
5. How do organisms interact in an ecosystem?

6.2. Do the following statements reflect the claims of the writer in the reading passage?

Write

YES *if the statement agrees with the information*
NO *if the statement contradicts the information*

1. Ecology emerged in the late 20th century as one of the most important aspects of geology.
2. The word ecology was invented by a Frenchman naturalist Ernst Haeckel, who applied this term to the "relation of the animal both to its organic as well as its inorganic environment".
3. Originally ecology was treated as environmental biology.
4. Facts about ecological systems are drawn from biology, geology, chemistry, physics, including various branches of geography.
5. People's most pressing problems are to a large extent environmental issues.
6. Ecology emerged at the end of the last century as one of the most important aspects of geology.

6.3. Find the words in the reading passage that matches each definition.

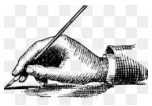
1. The complex of an ecological community and its environment functioning as a unit in nature. _____
2. The whole complex of factors that influence the form and the ability to survive of a planet or animal or ecological community. _____
3. The process by which chlorophyll-containing plants make carbohydrates from water and from carbon dioxide in the air in the presence of light. _____
4. Any of a class of microscopic plants including some that are disease producers and others that are valued esp. for their chemical effects. _____
5. Any of a major group of organisms that lack chlorophyll. _____
6. Element or compound needed for the survival, growth and reproduction of a plant or an animal. _____

6.4. Choose the words that are synonymous to the initial ones.

study	major	nonliving	nutrient
work	important	inorganic	meal
experiment	principal	abiotic	food
learning	interesting	biotic	component
research	large	detritus	dish

6.5. Paraphrase the following sentences, substitute words and expressions from the text for the underlined parts of the sentences.

1. Ecology is the science that attempts to explain how nature work. 2. In 1869 German zoologist Ernst Haeckel derived the term ecology from two Greek words. 3. Ecology studies live organisms in environment and all the surrounding factors that influence them. 4. There are several important components that help to support life on Earth. 5. Principal chemical causes include level of air pollution, soil contamination, water sanity, toxicity of matter, etc.



Using the information from the texts and additional material, prepare a presentation on the topic *"The subject of ecology and its fields of study"*.

Section II

PLANET EARTH – OUR COMMON HOME

"Earth is still the only known world on which there is life.
Our species has nowhere else to move to, at least in the near future.
To visit, yes. To settle – not yet. Whether we like it or not,
for the moment, Earth is our home".
(Carl Sagan)

1. Pre-reading.
Discuss these questions with a partner.

- When did the first living things appear on our planet?
- What is biosphere?

2. Read the text and complete the tasks after it.

Pay attention to the following words and wordcombinations

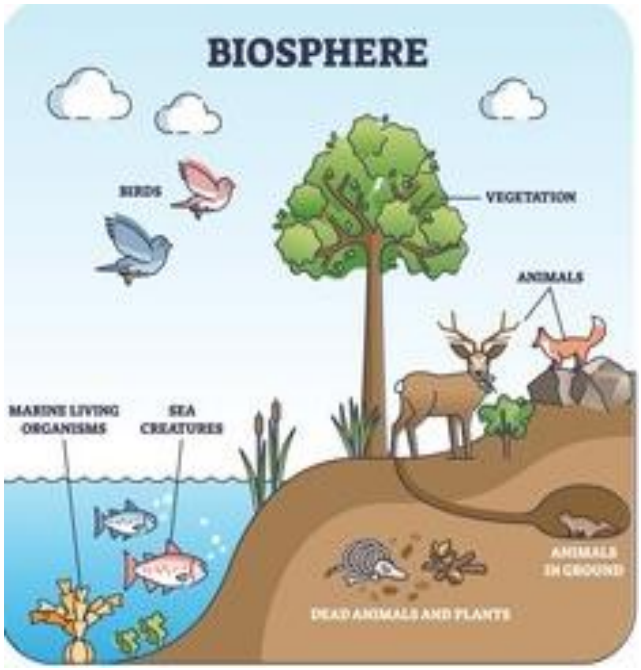
has been around on the scene	існує на нашій планеті
beavers	бобри
warrens	ділянки, де водяться кролики
"film of life"	"оболонка життя"
runs	діє, функціонує
the biotic part … is known to be called …	відомо, що частина флори та фауни даного району, називається ...
casually	випадково
deliberate efforts	цілеспрямовані зусилля

Life on the planet Earth Biosphere

The Earth is about 4.6 billion years old. The first living cells emerged between 4 billion and 3.8 billion years ago. It is only for the last 50,000 years or so that man has been around on the scene. For most of that time man made no more impact on the world than the birds building their nests, beavers their dams or rabbits their warrens.

What really set man apart from the other creatures was his invention of farming about 10,000 years ago when large, permanent settlements began to be established and man began to alter his surroundings, his environment, by his own deliberate efforts to

make his life more secure and comfortable. This was followed by the development of the use of metals, the invention of writing, the beginnings of science, the growth of cities and towns and eventually, about 250 years ago, the start of industrialization and the acceleration in population growth.



Although man is the most intelligent form of life on the planet and can change his surroundings in all sorts of ways, he is just as dependent upon the natural world as every other species, animal and plant, with whom he shares our planet. Man is not something special who can ignore and exist without nature because he is part of nature and if he fails to realize this, the results could be disastrous – and not just for man.

Life on this planet exists in what is called the *biosphere* a thin layer that is the meeting place of land, air and water.

Life only exists for a very short distance below the earth's surface and although life is to be found in the great ocean depths, this still takes us only 6 miles down. In the other direction only the hardiest of creatures can live at great heights in mountainous areas and virtually no life at all exists in the highest mountains, 5 to 5.5 miles above sea level.

At present biosphere includes vast numbers of plants, animals, and other life-forms of our planet, many of them are yet to be discovered. Biosphere is a relatively thin life-supporting layer around the Earth containing living organisms, which is strongly influenced in composition, structure and energetics by the living organisms. Part of the biosphere containing the highest concentration of living matter – the Earth's thin and fragile "film of life" – varies from a few meters in deserts and tundra to a hundred meters in tropical, forest regions and oceans.

The biosphere is a complex system of energy use and material cycling. This system runs on energy flowing into it from the Sun and it gives off energy (primarily as heat) to space.

We can divide the biosphere into two parts, living and nonliving, or biotic and abiotic. The biotic part of the biosphere consisting of fauna and flora is known to be called biota. We can further divide the abiotic portion into three parts: the solid Earth or lithosphere, liquid water or hydrosphere, and the atmosphere.

2.1. Match the verbs with their appropriate explanations.

1.	to alter	**a.**	to have within itself
2.	to create	**b.**	to appear; to come into view
3.	to contain	**c.**	to have as a beginning
4.	to exist	**d.**	to create or design smth. not existing before
5.	to emerge	**e.**	to make different, to change
6.	to originate	**f.**	to be, to continue living
7.	to invent	**g.**	to separate into parts or groups
8.	to divide	**h.**	to make smth. new

2.2. Write out the equivalents in pairs.

1.	environment	**a.**	stratum
2.	impact	**b.**	appear
3.	be around	**c.**	work out
4.	layer	**d.**	creation
5.	disastrous	**e.**	have in itself
6.	emerge	**f.**	living thing
7.	creature	**g.**	exist
8.	originate	**h.**	find out
9.	concept	**i.**	influence
10	invention	**j.**	surroundings
11.	discover	**k.**	dangerous
12.	develop	**l.**	have as a beginning
13.	contain	**m.**	idea

2.3. Choose the best alternative to complete the following sentences.

1. The first ____ ____ emerged between 4 billion and 3.8 billion years ago.

a) living things **b)** living cells **c)** living organisms

2. What really set man apart from the other creatures was his ____.

a) invention of writing **b)** use of metals **c)** invention of farming

3. To make his life more secure and comfortable man began ____.

a) to alter his environment **b)** to establish permanent settlements **c)** to develop science

4. Man is the most ____ form of life on the planet.

a) sustainable **b)** responsible **c)** dependent

5. Life on this planet ____ in what is called the biosphere.

a) emerges **b)** evolves **c)** exists

6. Man is ____ upon the natural world.

a) sustainable **b)** responsible **c)** dependent

7. The biotic part of the biosphere consists of ____.

a) flora and fauna **b)** the solid Earth **c)** the liquid water

8. Biosphere is a ____ layer around the Earth.

a) thick life-supporting **b)** thin life-supporting **c)** non-living

2.4. Find words and phrases in the text that correspond to the definitions given below.

1. A thin layer that is the meeting place of land, air and water. _____

2. The envelope of air, which surrounds the earth, consisting principally of a mixture of gases. _____

3. The solid crust of the Earth consisting of rocks and soils. _____

4. All the water of the earth in liquid and solid form. _____

5. The part of the biosphere consisting of living components (flora and fauna). _____

6. The portion of the biosphere consisting of the lithosphere, hydrosphere and the atmosphere. _____

7. The sum total of the conditions of the surrounding within which an organism, or group, or an object exists, including the natural conditions, the natural as modified by human activity and the artificial. _____

2.5. Say whether the following statements are *TRUE* or *FALSE*. Argue them using the suggested phrases.

Agreeing:	**Disagreeing:**
That's quite right	*I don't agree*
That's true	*Not really*
Yes, I (absolutely, partly) agree	*I disagree, I'm afraid*
I'm of exactly the same opinion	*I don't think that's right*
This is only partly true	*I can't agree*
As far as I know	*Surely not*
	On the contrary
	It is absolutely wrong

1. The first living cells emerged 50,000 years ago.

2. Man made no more impact on the world than all the animals taken together.

3. What really set man apart from other creatures was making his life more secure and comfortable.
4. Man is the most intelligent form of life on the planet.
5. Man is something special who is not dependent upon the natural world.
6. Life on our planet exists in a thin layer on the surface of the earth.
7. Nobody can live at great heights in mountainous areas.
8. Biosphere includes all the living forms of our planet.
9. We can divide the biosphere into several parts.
10. The biosphere is a complex system of energy use and material cycling.

3. Complete the table with the other forms of the words given. Take care with spelling. Use an English-English dictionary to help you.

Verb	Noun	Adjective
1.	acceleration	**2.**
exist	**3.**	**4.**
5.	**6.**	special
originate	**7.**	**8.**
9.	development	**10.**
establish	**11.**	**12.**
13.	system	**14.**
invent	**15.**	**16.**

4. Fill in the missing words in the sentences below. Choose from the following ones given in the box.

emerge, the solar system, ape-like-men, arrived, species, invented, concept, has been around, exists, permanent settlements, develop, alter

Planet Earth is 4,600 million years old

If we condense this inconceivable time-span into an understandable ____ **(1)** we can liken Earth to a person of 46 years of age.

Nothing is known about the first 7 years of this person's life, and whilst only scattered information ____ **(2)** about the middle span, we know that only at the age of 42 did the Earth begin to ____ **(3).** Dinosaurs and the great reptiles did not ____ **(4)** until one year ago, when the planet was 45. Mammals ____ **(5)** only 8 months ago; in the middle

of last week manlike apes evolved into ____ **(6)**, and at the weekend, the last ice age enveloped the Earth.

Modern man ____ **(7)** for 4 hours. During the last hour Man ____ **(8)** agriculture. The industrial revolution began a minute ago.

During those sixty seconds of biological time, Modern Man has made a rubbish tip of Paradise.

When ____ **(9)** began to be established, Man began to ____ **(10)** his surroundings, making his life more comfortable.

He has multiplied his numbers to plague proportions, caused the extinction of 500 ____ **(11)** of animals, and ransacked the planet for fuels and now stands like a brutish infant, gloating over this meteoric rise to ascendancy, on the brink of a war to end all wars and of effectively destroying this oasis of life in ____ **(12)**.

5. What preposition is missing? Choose from the following box but there is not necessarily only one possible choice.

in, for, to, of, on, nearby, among, with, around, without

Kunas: the world's greatest conservationists

Sounds like a true fairy tale but the Kunas are a small tribe of only 30,000 people who live ____ **(1)** a group of 360 islands, around Panama, in Central America.

They have been awarded the Global 500 which is a prize given ____ **(2)** those who are defenders of nature. The World Wildlife Fund (WWF), a famous organization engaged ____ **(3)** the conservation of natural surroundings and other experts ____ **(4)** the world have great respect ____ **(5)** them.

Why do they deserve so much respect? Because they have succeeded ____ **(6)** creating harmony between man and nature and also because their life is based ____ **(7)** solidarity. They are considered to be the most democratic in all their thinking and actions.

The Kunas have great respect for the environment. The way in which they take care ____ **(8)** nature is very simple but effective. They believe ____ **(9)** conserving their forests. They use them but do not destroy them. They are very careful how they use water. They teach their children to respect nature. They have even fought people who wanted to build hotels and houses. Tourists are invited ____ **(10)** the condition that they respect the natural surroundings.

The Kunas take decisions all together. Helping one another forms part ____ **(11)** their tradition. For example, when a few young people wanted to cultivate some land, the whole village gave them a hand.

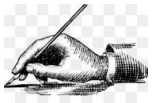
Moreover, the Kunas have good relationship ____ **(12)** the other people living ____ **(13)**. This is because the only "arm" they are equipped ____ **(14)** is dialogue and exchanging ideas. In the past, other people tried to subject them but ____ **(15)** success. The reason ____ **(16)** this victory of the Kunas is their harmony ____ **(17)** people, which is the fundamental rule of life.

6. Speak on.

1. The emergence of living creatures on the planet (to be old, to emerge, the Earth, living cells, to make impact on).

2. The appearance of man and his activities (the invention of farming, to establish permanent settlements, to alter the environment, to make life secure and comfortable, the start of industrialization, the growth of cities, population growth).

3. Biosphere – a life-supporting layer around the Earth (to exist, to include, to vary from … to, to run on, energy use, material cycling, biota, abiotic, part, to divide, concept, originate, develop).



Choose one of the following items and write an essay. Use additional material.

1. ***The origin of life on our planet.***

2. ***Man as the most intelligent form of life.***

3. ***What is biosphere?***

4. ***The development of the concept "biosphere".***

Section III

ECOLOGICAL PROBLEMS

SOIL POLLUTION

"For most of history, man has had to fight nature to survive; in this century he is beginning to realize that, in order to survive, he must protect it".

(Jacques-Yves Cousteau)

1. Pre-reading.

Discuss these questions with a partner.

- Do you think the environment protection is a concern for everyone or just for individuals?
- Is humanity troubled by the impending danger caused by planetary pollution, and is it taking any steps to prevent it?
- In your opinion, is it possible to stop pollution instantly?

2. Read the text below and compare your answers with the author's opinion.

Since ancient times Nature has served Man, being the source of his life. For thousands of years people lived in harmony with environment and it seemed to them that natural riches were unlimited. However, with the development of civilization man's interference in nature began to increase. Since the late sixties of last century, people have been alarmed by the dangers of environmental pollution.

Large cities with thousands of smoky industrial enterprises appear all over the world today. The by-products of their activity pollute the air we breathe, the water we drink, the land we grow grain and vegetables on.

Every year world industry pollutes the atmosphere with about 1000 million tons of dust and other harmful substances. Many cities suffer from smog. Vast forests are cut and

burn in fire. Their disappearance upsets the oxygen balance. As a result, some rare species of animals, birds, fish and plants disappear forever, a number of rivers and lakes dry up.

The pollution of air and the world's ocean, destruction of the ozone layer is the result of man's careless interaction with nature, a sign of the ecological crises.

Pollution is as complicated as serious problem. Automobiles are polluting the air but they provide transportation for the people. Factories pollute the air and the water but they provide jobs for people and produce necessary goods. Fertilizers and pesticides are important for growing crops but they can ruin soil.

Thus, people would have to stop using many useful things if they wanted to end pollution immediately. Most people do not want that of course. Nevertheless, pollution can be reduced gradually. Scientists and engineers can find the ways to reduce pollution from automobiles and factories. Government can pass the laws that would make enterprises take measures for reducing of pollution. Individuals and groups of people can work together to persuade enterprises to stop polluting activities.

Environmental protection is of a universal concern. That is why serious measures to create a system of ecological security should be taken.

Some progress had been already made in this direction. Countries-members of the UNO have set up environmental protection agencies. Numerous conferences have been held by these agencies to discuss problems facing ecologically poor regions. The international organization Greenpeace is also doing much to preserve the environment.

However, these are only the initial steps and they must be carried onward to protect nature, to save life on the planet not only the sake of the present but also for the future generations.

2.1. Think what title can be given to this text so as to draw the reader's attention.

2.2. Explain the meaning of the words and expressions from the text.

Environment, interference, pollution, immediately, gradually, smog, to persuade, to preserve.

3. Put each of the following words or phrases in its correct place below.

pollution, clean, consumption, drinking water, environment, drain, reducing, consumes, waste, pollute, seawater, function

The Environment

When industrialization began, little thought was given to its ____ **(1)** effects. Raw, untreated ____ **(2)** was allowed to pollute our seas and rivers. Animals were killed for profit to the point of ____ **(3)**. The loss of trees through uncontrolled ____ **(4)** caused

erosion and unstable climate, ____ **(5)** was caused by the poisonous gases man sent into the atmosphere. Chemicals in ____ **(6)** killed animal life, ____ **(7)** destroyed plants. The balance of nature was disturbed.

It is only now that we are waking up to the problem. More natural, ____ **(8)** farming is advocated. Legislation controls the ____ **(9)** of waste products into our air and water. Wildlife organizations are becoming more militant in their fight for ____ **(10)**. Replanting policies in some parts of the world mean that our forests should in future be ____ **(11)**.

We can only hope that growing public awareness and ____ **(12)** legislation will produce a world which is safe for us and will provide a good quality of life for future generations.

4. Pre-reading.

Discuss with a partner and do the task.

- What do we need land for?
- Make a list of all the types of activities that we can apply land for.

5. Skim the text to check your ideas.

Pay attention to the following words

well-being	благополуччя, добробут
vital	життєво важливий, суттєвий
by-products	побічні продукти, продукти переробки
to damage	завдавати шкоди, наносити збиток
soil	ґрунт, земля, почва
fibre	волокно, тканина
to regenerate	регенерувати, відновлювати
consequently	отже, внаслідок, тому

"When the soil disappears,

the soul disappears."

(Ymber Delecto)

The quality of the land around us is very important for our well-being. We need land to create energy, to grow fruit and vegetables and to bury waste. We also need it for mineral resources, for building houses, factories, schools and hospitals, for transportation,

for free time activities and much more. Land is also a vital habitat for plants and animals. However, many human activities, such as industry, agriculture and transportation, and their by-products, as well as intentional or accidental pollution, can damage the soil and harm the quality of land. Soil is extremely important for the environment, because water and vital substances such as vitamins, minerals and fibers are stored and regenerated in it. It is also an essential medium for growing crops. Moreover, it has another fundamental function: it acts as a barrier between the atmosphere and aquatic ecosystems. However, this barrier is lost if soil is damaged or contaminated, with the consequence that the soil becomes a source of pollutants that can enter surface or groundwater and even damage the quality of air and consequently the health of plants, animals and people. Toxic substances can be dangerous for individual species and have long-term effects on ecosystems.

5.1. Scan the text and answer the following questions.

1. What do we need land for?
2. Who is land vital habitat for?
3. What human activities can damage the soil and harm the quality of land?
4. Why is soil extremely important for the environment?
5. What is a fundamental function of soil?
6. How can toxic substances influence our environment?

5.2. Match the words with their definitions.

Words	Definition
1. waste	**a.** something created while producing or processing another product
2. habitat	**b.** waste found under the ground
3. groundwater	**c.** substances that pollute the environment
4. by-product	**d.** material that is no longer been wanted because its valuable part has already been used
5. medium	**e.** natural environment where animals and plants grow
6. pollutants	**f.** a substance that acts as a vehicle for a particular purpose

6. Pre-reading.

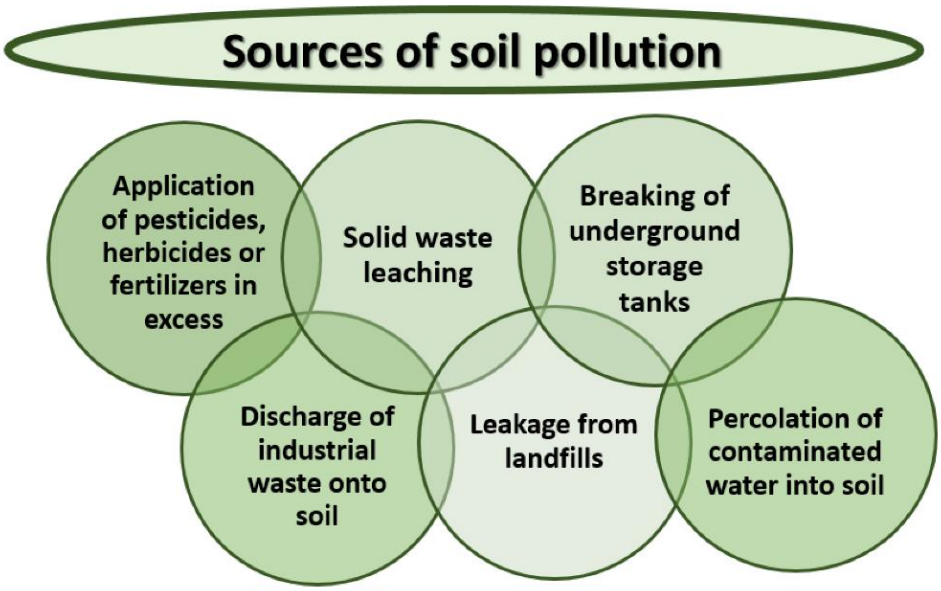
Discuss these questions with a partner.

- What do you think have been the effects of using pesticides and artificial fertilizers in modern farming?
- What causes erosion of the top layers of the soil?

7. Read the text and complete the tasks after it.

Pay attention to the following words and wordcombinations

weathering	вивітрювання, ерозія
leguminous plant	рослина із родини бобових
overgrazing	вибивання пасовища (худобою), надмірне витравлювання пасовища
deforestation	збезлісення, вирубка лісу
desertification	опустелювання
to become barren	стати неродючим (про землю)
salinization	засолення (ґрунтів)
manure	гній, добриво
eutrophication	евтрофікація (збагачення природних водойм неорганічними речовинами, що сприяють росту рослин і водоростей)



Soil forms over thousands of years from the weathering of rock. There are three types of weathering: physical weathering (where temperature changes cause the rock to expand and contract until it shatters into pieces), chemical weathering (where carbon dioxide and water form a weak acid that dissolves rocks such as limestone) and biological weathering (where the rock is broken down by the action of living things such as plant roots and bacteria). The top layer of the soil (topsoil) is rich in humus – a dark, fibrous material formed from decaying organic matter. Humus contains micronutrients such as nitrogen, minerals such as iron, and microorganisms that break down the organic matter.

Humus absorbs moisture and binds the inorganic particles together. The quality (or fertility) of soil depends on the amount of humus in it – the organic content. Good quality topsoil is dark, moist and crumbly. The middle layer of the soil contains less organic material, but it is rich in minerals because these are washed down with the rain. The lower layer (subsoil) is made of inorganic material, similar to the parent rock that originally formed the soil. All living things are made of protein, which contains nitrogen. Without nitrogen, plants and animals cannot grow, because they cannot build new tissue. Traditional farming methods rotate cereal crops (which remove nitrogen from the soil) with leguminous plants (which replace the nitrogen). Intensive farming methods, where cereals are grown every year, tend to deplete the soil of nitrogen. Repeated cropping and overgrazing (that is putting too many cattle on a small area of grassland) cause erosion of the top layers of the soil. The essential nitrates are removed with the topsoil so the nitrogen cycle, which is crucial to the balance of nature, is broken.

The earth is losing 24 billion metric tons of topsoil every year through intensive farming methods and deforestation[5]. The end stage of this loss of topsoil is desertification, where all the organic and mineral content of the soil has disappeared, leaving only poor quality subsoil, which cannot support plant growth. About 20 million hectares of productive land become barren every year because of soil erosion. Thirty percent of the world's land surface is threatened with desertification. Another hazard of intensive farming is salinization[8], which is caused by perennial irrigation (that is, irrigation year after year without a break) in arid climates. All soil contains some salt, which is washed away when it rains. Where rainfall is minimal, the salt content of the soil is very high. Evaporation from reservoirs and irrigation channels increases the salinity of the water. When a new irrigation scheme raises the water table, salt from the soil dissolves in the water and rises to the surface. Unless the area is left fallow and unirrigated for a season so that the salty water can drain away, the land will become permanently salinized and unable to support plant life.

The quality of soil can be improved by adding fertilizers. Organic fertilizers are made from animal and plant material such as compost (rotting plant matter) or manure (animal excreta) which return essential micronutrients such as nitrates, phosphates and potash to the soil. Artificial (inorganic) fertilizers are manufactured compounds that contain high concentrations of these micronutrients; they are much more powerful than natural organic fertilizers. However, they cause environmental damage by a process called eutrophication[0]. Excess nitrogen is washed out of the soil with the run-off after it rains. It passes into rivers and lakes, and encourages the growth of algae (seaweed) in the water and of wild plants on nearby land. Overgrowth of algae upsets the balance of nature in lakes and seas. Overcrowding on the banks causes the plants to rot and die. The air becomes contaminated with nitrous oxide, which contributes to the greenhouse effect. Like nitrates, phosphates and potash are taken up by growing plants and returned to the soil in

animal excreta. The phosphates and potash in artificial fertilizers must be extracted from rocks by mining, but these mineral resources will not last forever. If we continue to damp animal and human waste into the sea instead of using it to fertilize the soil, our entire reserves of these precious minerals will be lost at the bottom of the oceans. Artificial fertilizers add a few selected micronutrients, but because they cause rapid plant growth, they deplete the soil of other nutrients. Plants grown in artificial fertilizers are often tasteless and have a low nutritional value. They may be contaminated with chemical residues from the fertilizer manufacturing process. For both environmental and health reasons, many consumers today prefer to buy organic vegetables – that is, vegetables grown without any artificial fertilizers.

7.1. Pair the verbs in column *A* with a suitable phrase in column *B*.

A		B	
1.	to encourage	**a.**	the organic matter
2.	to contribute	**b.**	the inorganic particles together
3.	to break down	**c.**	the rock to expand and contract
4.	to buy	**d.**	rocks
5.	to deplete	**i.**	new tissue
6.	to bind	**f.**	nitrogen from soil
7.	to cause	**g.**	plant growth
8.	to dump	**h.**	to the greenhouse effect
9.	to dissolve	**i.**	animal and human waste into the sea
10.	to support	**j.**	the soil of other nutrients
11.	to build	**k.**	organic vegetables
12.	to remove	**l.**	the growth of algal

7.2. Say whether the following statements are *TRUE* or *FALSE*. Justify your answers with the information from the text. For the statements you consider false provide the correct information.

Here are the possible openings for you: *really (sure); absolutely so; it cannot be denied; it can be easily proved; that is only partly true; as far as I remember; as far as I know (have learnt) from the contents; this is generally believed to be true; this is believed by some to be true.*

1. Artificial fertilizers cause environmental damage.

2. Too much nitrogen causes too much growth of seaweed and wild plants nearby.

3. The plants do not rot and do not die.

4. The essential nitrates are removed with the topsoil, so the nitrogen cycle is broken.

5. The air becomes contaminated with nitrous oxide, but this does not lead to greenhouse effect.

7.3. Fill in the missing words in the sentences below. Choose from the following putting the verbs in the right tense and voice.

try	*fall*	*cost*	*wash*	*kill*
introduce	*accelerate*	*grow*	*cause*	*have*
increase	*deplete*	*absorb*	*associate*	*reduce*
secrete	*accumulate*	*use*	*fail*	*make*
suit				

1. Organic vegetables ____ also ____ **(1)** without pesticides.
2. Pesticides ____ ____ **(2)** by the crops and ____ **(3)** into the rivers and the sea.
3. Some pesticides ____ **(4)** in the human body and ____ ____ **(5)** in breast milk.
4. Some pesticides may ____ **(6)** cancer, miscarriage or even birth defects.
5. Intensive farming of high-yield strains ____ usually ____ **(7)** with heavy use of both fertilizers and pesticides.
6. Organic farming methods ____ usually ____ **(8)** these high-yield strains.
7. Intensive farming methods which successfully ____ **(9)** crop yields in temperate zones often ____ **(10)** in tropical climates.
8. Tropical heat ____ **(11)** microorganisms, so tropical soil ____ **(12)** a lower organic content.
9. This ____ **(13)** its capacity to ____ **(14)** water and ____ **(15)** it particularly vulnerable to erosion.
10. In general, tropical regions ____ more ____ **(16)** to subsistence farming than to the large-scale, intensive production of cash crops.
11. If the people ____ **(17)** to introduce intensive farming methods, yield may ____ **(18)** temporarily, but they eventually ____ **(19)** still further and soil erosion ____ **(20)**.
12. Intensive farming techniques ____ **(21)** crop yield in the short term but ____ **(22)** the quality of the soil in the long term, particularly in tropical regions.
13. Intensive farming is yet another example of the "live now, pay later" philosophy that may ultimately ____ **(23)** us the earth.

7.4. Choose the best alternative to complete the following sentences.

1. The top layer of the soil is rich in ____.
a) clay **b)** limestone **c)** humus

2. The quality of soil depends on the ____ of humus in it.
a) weathering **b)** amount **c)** types

3. The middle layer of the soil ____ less organic material.
a) contain **b)** changes **c)** absorbs

4. The lower layer is made of inorganic material, ____ to the parent rock.
a) contrary **b)** similar **c)** like

5. Without nitrogen plants and animals cannot ____.

a) form **b)** bind **c)** grow

6. Repeated cropping and overgrazing cause ____ of the top layer of the soil.

a) weathering **b)** erosion **c)** moisture

7. The end stage of the loss of topsoil is ____.

a) desertification **b)** erosion **c)** weathering

8. Salinization is caused by perennial ____ in arid climates.

a) farming **b)** irrigation **c)** evaporation

9. The quality of soil can be ____ by adding fertilizers.

a) damaged **b)** increased **c)** improved

10. Artificial fertilizers cause environmental ____ by a process called eutrophication.

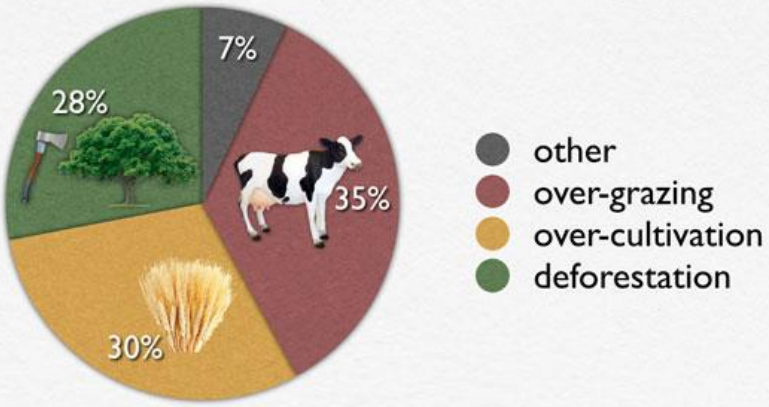
a) effect **b)** damage **c)** growth

8. Look at the chart below and write sentences comparing how deforestation, overgrowth, and overgrazing have affected land degradation overall and in three separate regions of the world. Use comparative and superlative adjectives.

Causes of land degradation by region

Region	% land degraded by...			
	Deforestation	Over-cultivation	Over-grazing	Total land degraded
North America	0.2	3.3	1.5	5%
Europe	9.8	7.7	5.5	23%
Oceania*	1.7	0	11.3	13%

Causes of worldwide land degradation



9. Choose someone as a scientist and answer the students' questions.

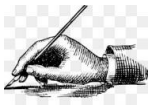
What is (are)	the end stage of the loss of topsoil
Could you explain to me	why productive land becomes barren
Can you tell me about	the process of desertification
What do you mean by	what perennial irrigation causes
Why	what increases the salinity of the water
How	the quality of soil can be improved

10. ***Speak on.***

1. The weathering of rock. (to form; to cause the rock to expand and contract; to shatter into pieces; to form a weak acid; to dissolve rocks; to break down; to be formed from decaying organic matter; to contain; to absorb moisture; to bind inorganic particles together; to depend on)

2. Farming methods. (to rotate cereal crops; to deplete the soil; to cause erosion; to remove; to be crucial; deforestation; desertification; poor quality subsoil; to support plant growth; to become barren; to be threatened with; salinization; perennial irrigation; arid climates; to increase the salinity of water; to be left fallow; to support plant life)

3. How to improve the quality of soil. (to add fertilizers; to return micronutrients to the soil; to contain; artificial fertilizers; natural organic fertilizers; to cause environmental damage; to encourage the growth of algae; to upset the balance of nature)



Choose one of the following items and write an essay using additional material.

1. Protection of the soil against pollution.

2. Ways to prevent soil salinization.

3. Protection of the soil against erosion.

Section IV

WATER POLLUTION

"Water is everywhere; it touches the past and prepares the future;
it trickles beneath the poles and is present at high altitudes.
If there is anything truly mysterious about this planet, it is water".
(Loren Eisley)

1. Pre-reading.

Discuss these questions with a partner.

- How much water do you think you use every day?
- Where does the water for your house and town come from?

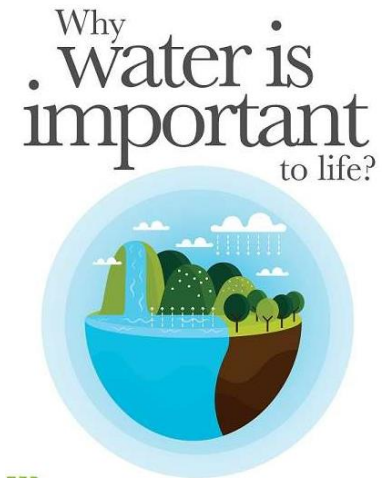
2. Read the text and complete the tasks after it.

Pay attention to the following words and wordcombinations

to survive	вижити
to perish	загинути
to contaminate	забруднити, заразити
a question of water and little else	питання про воду та дещо про інше
to get rid of wastes	позбутися відходів
lubricating fluid	змащувальна рідина
digestive tract	шлунково-кишковий тракт
the minute cells	дрібні, мілкі клітини
exhalation	видихання
perspiration	потіння
domestic	побутовий

There is no life without water. Although it is possible to survive for more than a month without food, it is not possible to live more than a few days without water. Man soon perishes without water. However, not all water helps him to survive: if it is contaminated, then also he may die before this time.

"Man and his life has in fact been described as a question of water and little else". The air surrounding him contains enormous quantities of water in the form of vapor. The surface of the earth is 70 % water.



Water is far more important to the human body than carbohydrates, proteins, vitamins, minerals and fats all combined. It transports nutrients throughout the body, gets rid of wastes, helps chemicals in the body to react with one another and provides part of the lubricating fluid round the joints of the body as well as the eyes. In addition and perhaps most important in many ways, water acts as an air-conditioner and a universal solvent as well as providing lubrication along the digestive tract[5]. About 65 % of our body weight consists of water. All body tissues are at least 70 % water while our blood comprises almost all water and almost 25 % of our bones take the form of water. Expressed in terms of actual quantities, the minute cells that help to form our bodies contain about 28 liters of fluid and are surrounded by a further 14 liters of fluid. In addition, we all have about 4.5 liters of blood in our body. Thus, approximately 45 liters of all our body fluid is in the form of water.

An average adult drinks up to three liters of water a day. Ironically, this intake is often in the form of tea, coffee and soft drinks, which actually act as diuretics, reducing the body's water content. Most of the things we eat, however, comprise at least 65 % water. A lettuce, for example, contains 94 % water, a potato 80 % water, rice 75 % and meat 70 %.

There is no risk of drinking too much water as the body can easily dispose of the water that it does not need. This is done through excretion, exhalation and perspiration. There is, however, a danger caused by drinking insufficient water, and, by far the most common problem in hot weather is dehydration.

So far, we have been concerned chiefly with the amount of water we use for drinking purposes. In addition, each person uses about 150 liters of water a day for domestic above purposes. In addition, everyone is indirectly dependent on water in many ways – without even realizing it. For example, we use water whenever we switch on the television! Water is even used to produce electricity and drive all kinds of machinery in addition to its more obvious uses in agriculture, drainage, firefighting, etc.

2.1. Complete the following sentences given in the text.

1. Not all water helps man to ____

2. The air surrounding man contains ____

3. Water transports ____

4. Water acts as ____

5. Our blood comprises ____

6. An average adult drinks up ____

7. The body can easily dispose of ____
8. Drinking insufficient water will result in ____
9. Water is even used to ____

2.2. Add a preposition to the following sentences. A good dictionary can help you to find a suitable preposition to use.
1. Without water, there is little chance ____ anyone surviving for more than a few days.
2. About 65 % of our body consists ____ water.
3. Expressed in terms of quantities, our body is made up ____ over 45 % water.
4. Drinking water is almost always good ____ one's health.
5. It also helps chemicals in our body to react ____ one another.
6. Water is much better ____ you than any other drink.
7. In fact, it is rarely dangerous ____ anyone to drink too much water.
8. Not drinking enough water will lead ____ dehydration.
9. People who suffer ____ dehydration lack energy and eventually die.

2.3. Put the following points in the order that they were treated in the text.
a. Amount of water in the human body
b. Results of not drinking enough water
c. Importance of water for survival
d. Use of water in the home
e. Amount of water in food
f. Importance of water for the body

1_____2_____3_____4_____5_____6_____
Are each of the points listed above treated in separate paragraphs? If not, discuss why not?

3. Answer the following questions.
1. Can you live without water? Why?
2. Is water important to be human body?
3. Do you think everyone should pay for the water they use? Should it be free?
4. Is there a storage of water in your town?

4. Pre-reading.
In a small group discuss the current problems associated with water pollution and make notes of your main points.

5. Read the text below and compare your notes with the points made by the author. Is water pollution a real threat to humanity?

Pay attention to the following words and wordcombinations

destruction	знищення
contamination	зараження, забруднення, отруєння
aquifers	водоносні горизонти
leaching	вилуговування
debris	сміття, уламки
suspended matter	зважені речовини
devastating effects	руйнівні, катастрофічні наслідки
draining	злив, стікання
dumping	скидання, злиття
suffocating	удушення
protozoa	найпростіші
to eliminate	знищення, ліквідація
solvents	розчинники
dissolved oxygen	розчинений кисень

Water Pollution Problems

Water pollution is the contamination of water sources by substances that make the water unusable for drinking, cooking, cleaning, swimming, and other activities. The polluted water is not fit for drinking and is harmful to living beings such as animals, birds, and human beings. Water pollution is a source of many deadly diseases that cause harm, diseases, and even kill human civilization.

Water pollution leads to the destruction of the environment and all of its components.

Water pollution is the contamination of water sources by substances that make the water unusable for drinking, cooking, cleaning, swimming, and other activities. The polluted water is not fit for drinking and is harmful to living beings such as animals, birds, and human beings. Water pollution is a source of many deadly diseases that cause harm, diseases, and even kill human civilization.
Water pollution leads to the destruction of the environment and all of its components.

The main types of water pollution include groundwater pollution, surface water pollution, suspended matter, oil spillages, microbiological pollution, chemical water pollution, thermal pollution, and oxygen-depletion pollution.

Groundwater comes from below the Earth's surface, found in stores called aquifers. A key source of water pollution that ends up in groundwater resources comes from agriculture. Fertilizers and pesticides applied to farmland are easily absorbed into the ground, or they can be transported as runoff during rainfall. Groundwater can also become contaminated when waste from landfills and septic systems leaches into the ground. Once these harmful chemicals find their way into groundwater, they are often extracted from wells or boreholes, compromising the quality of water. Therefore, when water is extracted from groundwater resources, it is important that the groundwater must be tested and treated so that it is safe for drinking water supplies and other human uses.

Surface water refers to all bodies of water above the Earth's surface, such as oceans, lakes, and rivers. Surface water pollution occurs in three ways: naturally (flooding or tsunamis, which pick up fertilizers, pesticides, debris, and other contaminants), accidentally (oil spills and agricultural runoff), and intentionally (industries dumping waste directly into waterways).

Waste such as plastics, rubber, and other man-made materials that are improperly disposed of and cannot be broken down easily in water is called particulate or suspended matter. The suspended particles either settle at the bottom of water sources, damaging marine life and leaching toxic chemicals into drinking water supplies, or they float on the surface of the water, preventing oxygen and sunlight from penetrating the water below. As the suspended matter breaks down into smaller particulate matter, the suspended toxic chemicals threaten the survival of aquatic plants and animals.

Water can be polluted from accidental oil spills, transportation, runoff, and intentionally dumping. Oil spillage can have devastating effects on water environments, and they are extremely difficult to remove; just one liter of oil can pollute one million liters of water. Oil spills make up 12% of the oil that enters the world's oceans. The rest of the oil spillages come from shipping/transport, draining, and dumping. Most oil spills are localized, but even a small amount of oil can be extremely hazardous to humans and marine life. Once oil enters the water, it quickly spreads over the surface, reducing the amount of oxygen and sunlight that can penetrate the water's surface preventing plants to photosynthesize, and suffocating fish. Water pollution from oil spillage also damages the feathers of seabirds, preventing them from flying and exposes them to oil ingestion when they catch fish.

Microbiological pollution is a type of naturally occurring water pollution. It comes from microorganisms such as bacteria, viruses, and protozoa that can cause waterborne diseases such as cholera. This type of water pollution is common in areas where people

drink untreated water. Humans are very sensitive to this type of water pollution; therefore adequate drinking water systems play an important role in eliminating microbiological pollution. If water is not treated, it causes serious illnesses to humans that drink the contaminated water, and it can also cause fish and other aquatic organisms to die.

Chemicals are the most common type of water pollution, and many industries use chemicals that can end up in water systems. These chemicals can be anything from metals and solvents in industrial operations, fertilizers and pesticides in the agricultural industry to chemicals used in pest control companies. When the chemicals enter the soil and water systems, it has negative impacts on humans, livestock, and fish that utilize these environments. In water settings, chemical water pollution is very toxic to aquatic life, inhibiting their growth, affecting their reproduction, or even causing death.

Heat is also considered a type of water pollution, as it reduces the ability of water to hold dissolved oxygen (DO); as the temperature of water increases, the level of DO decreases. Thermal pollution also increases the rate of metabolism in fish and damages larvae and eggs in rivers. The main source of thermal pollution comes from power plants discharging cooling water into rivers. The raising of temperatures due to global warming is also thought to be a type of thermal water pollution.

Another consequence of nutrient water pollution is oxygen depletion. When oxygen levels are too low, any life that relies on oxygen for respiration will be killed off, and anaerobic organisms will survive. As many anaerobic organisms produce ammonia and other harmful toxins, this can make water even more dangerous for aquatic life that lives in these environments, and humans that rely on water resources for drinking water.

We are responsible for reducing water pollution, and that starts with environmental monitoring. Monitoring water at the source (surface water and groundwater systems) is critical to measure the water quality and remove any pollutants. The UN Global Environment Monitoring System (GEMS), which is coordinated by UNEP, now includes 344 water-monitoring stations in 59 countries.

5.1. Read the text again and fill in the chart below.

Type of water pollution	Causes	Effects

5.2. Complete this puzzle from the words found in this text, the definitions for which are given below. The number of letters in each word is given in brackets. What word appears vertically?

1. A colorless odorless gaseous chemical element that is found in the air, is essential to life, and is involved in combustion ***(6)***

2. Material (as manure *or* a chemical mixture) for enriching land ***(10)***

3. An organism too tiny to be seen by the unaided eye ***(13)***

4. Physical material from what something is made *or* which has discrete existence ***(9)***

5. The whole body of salt water that covers nearly three fourths of the surface of the earth ***(5)***

6. An agent used to destroy pests ***(9)***

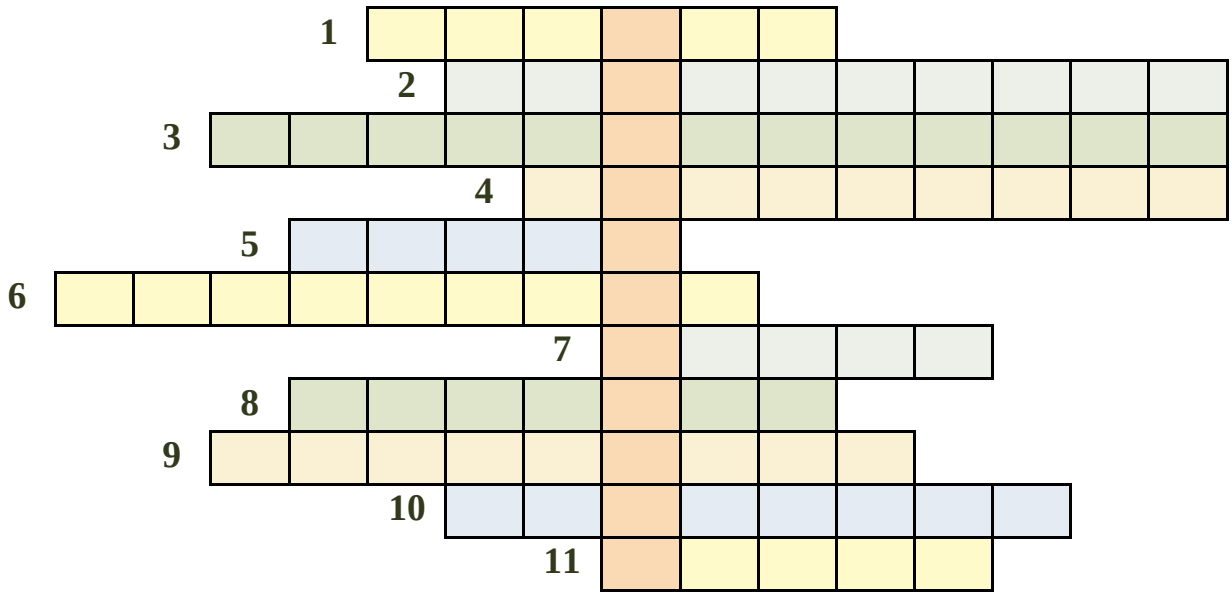
7. An unwanted by-products of a manufacturing or chemical process ***(5)***

8. A tidal wave caused by an underwater earthquake or volcanic eruption ***(7)***

9. Contaminating an environment with man-made waste ***(9)***

10. A substance obtained by a chemical process *or* used for producing a chemical effect ***(8)***

11. A natural stream larger than a brook ***(5)***



6. Think about what we can do to keep the waters clean and the laws and conventions protecting them. Write some simple guidelines in your everyday life.

7. Read the text and think what title can be given to it so as to draw the reader's attention.

Ever since man progressed from a hunting to an agricultural society, with the corresponding development of stable communities, the phenomenon of water pollution has been his constant companion. As agricultural methods improved, a smaller percentage of the population produced all the food needed; larger communities and diverse secondary

industries developed and grew into the present modern society. Concurrent with this growth, however, was the increasing percentage of waste materials and the problems of disposal. When the total volume of waste from a community was relatively small, the easiest method of disposal was to "throw it away", usually into the nearest receptacle. Since man cannot exist without water, community development and city growth centered in areas where the water supplies were adequate and continuous. Initially this meant development in river valleys, and thus the nearest receptacle for wastes was the river.

The term "pollution" has been variously defined by many people, but if it may be described here as "the detrimental effects on a localized ecological structure by the addition of the waste products of a society", then it is apparent that the first noticeable pollution problems should have involved the supply of drinking water.

It is in this particular area that the question of pollution takes on a new meaning. Is a body of water polluted when it directly affects man, or should it be classified as polluted when the ecological structure is first upset? The hydrosphere is a dynamic system containing physiochemical and biological equilibria, and there is no doubt that a normally active waterway has a large capacity to assimilate wastes. However, in many areas this capacity is now being reached or exceeded so that many waterways are becoming increasingly contaminated. Before this contamination becomes readily noticeable however, equilibria are changed and the Ecological structure may be seriously affected. Some examples of water systems where the effects of becoming increasingly apparent are the Adriatic, Baltic, and Mediterranean seas; the Thames, Rhine, and Seine rivers; and the Great Lakes in America and Canada. However, dynamic systems have a regeneration, and with careful planning, even the most seriously polluted waterways may be brought back into full use. An example of river regeneration on a large scale is the successful attempt to restore the Thames estuary. Many countries have joined to improve the management of the 214 river basins that are shared by more than one country. These schemes are already improving water quality and management of the North American Great Lakes and of the European Rhine.

7.1. Discuss the main points of the text with your partner. Use the following prompts.

1. What is this text about?

2. In what way is the term "pollution" defined?

3. What is the hydrosphere?

4. In what water systems are the effects of pollution becoming apparent?

8. Fill in the text with the appropriate word from the box.

pollution, clean, consumption, drinking water, environment, drain, reducing, consumes, waste, pollute, seawater, function

When you ask for a glass of water with your meal in a restaurant, you do not expect to pay for it, do you? To millions of people in our world that glass of clean is a luxury they cannot afford.

Ninety-seven percent of the earth's water is ____ **(1)**.Two percent of the remainder is locked up in icecaps and glaciers.

So what do we do with the tiny fraction left to us? Why, we waste and ____ **(2)** it, of course! We spend billions trying to ____ **(3)** it up and then fight over what remains!

There are over 5,000 staff on the Royal site and if everyone were given a share of the site water consumption, they would need space for 56 gallons (254 liters) every day. The cost to the Royal is £250,000 every year. Unbelievably, six years ago our ____ **(4)** was over twice what it is now. I do not believe for a minute that each of us ____ **(5)** 448 pints of water every day, so where does it go? The answer most certainly is down the ____ **(6)**. Hospitals need lots of water to ____ **(7)** but much of it is wasted. Ask yourself the next time you leave a tap running, "do I need to ____ **(8)** as much water as I do?" Do not forget, the water in your tap had to be pumped to a high pressure at great electrical expense. By ____ **(9)** waste you also save energy, reduce water and air ____ **(10)** and help create a better ____ **(11)** for everyone. Your conscience should tell you it is the right thing to do. Set an example now.

9. Fill in the gaps with the proper Active or Passive form of the verb. Mind the Tenses.

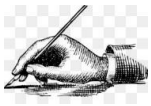
Possible Water Shortage

The world needs ***1 (shock into)*** ____ saving water, A United Nations conference ***2 (tell)*** ____ yesterday. Delegates ***3 (tell)*** ____, that a disaster like the oil crisis of the 1970s ***4 (help)*** to spur conservation in the face of growing demand and pollution problems. As reported at the International Conference on Water and the Environment in Dublin, conflicts ***5 (arise)*** as countries ***6 (fight over)*** dwindling water supplies. The Dublin summit ***7 (have)*** the authority and the ammunition to administer that shock. There ***8 (be)*** ____ now no longer an unlimited supply of fresh water and international competition for it is growing. As demand ***9 (grow)*** ____, the competition ***10 (become)*** ____ fiercer, more violent.

With no clear consensus on how best to use shared water resources for the benefit of all states, that competition ***11 (become)*** ____ conflict. One quarter of the world's population still ***12 (lack)*** ____ safe water and sanitation, according to the World Health Organization. Moreover, the earth's population ***13 (expect)*** ____ to grow by 60 percent within 30 years to 8,000 million. Most of the extra mouths ***14 (be)*** ____ in the southern hemisphere where supplies ***15 (already jeopardize)*** ____ by poor irrigation, dirty industrial practices and erosion. Dr. Hiroshi Nakajima, Director General of the WHO, ***16 (say)*** ____ cases of cholera ***17 (rise)*** ____ to levels unheard of in modern times. He said that safe water and sanitation ***18 (be)*** ____ the foundation for health, and health ***19 (be)*** ____ the foundation for global development. Fifteen out of every 1,000 children born in developing countries ***20 (die)*** ____ before they ***21 (reach)*** ____ the age of five from diarrhea caused by polluted water. Mr. Clive Wicks, a senior conservationist at the World Wide Fund for Nature said that water ***22 (go)*** ____ to the dominant world issue into the next century.

10. Speak on:

The shortage of water in the world. (consumption, to affect, demand, good quality water, industrial waste, population growth, reasons, sewage, to decrease, to increase, water supplies, deforestation, to reduce, intensive farming, factors)



Write a report on the following topic "*The Importance of Water for my Life*".

Section V

ECOLOGICAL PROBLEMS AT ATMOSPHERE

"Air pollution is turning Mother Nature prematurely gray".
(Irv Kupcinet)

1. Pre-reading.
Describe the air pollution problems you know about using the following expressions:
I would like to draw your attention to
In my opinion
As far as I know
I believe that
To the best of my knowledge
The fact of the matter is that

2. Read the text below. Compare your notes with the points made by the author and then complete the tasks after it.

Pay attention to the following words and wordcombinations

Sulphur oxides	оксиди сірки
soot	сажа
suspended particulate matter	зважені тверді частинки
chest disease	запалення легень
to irritate	подразнювати
vehicle exhausts	вихлопні гази автомобіля
lead	свинець
fossil fuels	викопні види палива
nitric acid	азотна кислота
to dissolve	розчиняти
timber industry	лісопереробна промисловість
limestone	вапняк

What are the sources of air pollution?

Air pollution comes in many forms, but four pollutants are particularly important: the Sulphur oxides, emitted mainly by power stations and industry; nitrogen oxides, emitted mainly by vehicles; and soot and dust, known technically as suspended particulate matter (SPM), found everywhere where fuels are burnt.

Air pollution comes in many forms, but four pollutants are particularly important: the Sulphur oxides, emitted mainly by power stations and industry; nitrogen oxides, emitted mainly by vehicles; and soot and dust, known technically as suspended particulate matter (SPM), found everywhere where fuels are burnt.

Some 60 per cent of the pollution is blamed on the exhausts of motor vehicles and a further 30 per cent is caused by industry. The car is an ecological disaster. It is now the world's number one polluter. From the beginning to the end of its life, one car produces an enormous quantity of pollution. The production of one car results in 1,500 kilos of waste, and 75 million meters of polluted air.

The ozone layer in the upper atmosphere protects us from solar radiation, but ozone at ground level is a major air pollutant. It causes chest disease, particularly asthma, and irritates the eyes and skin. Ozone at ground level comes from motor vehicles. Hydrocarbons and nitrogen oxides in vehicle exhausts combine with one another in sunlight to produce ozone. This photochemical smog is worst in traffic-congested cities on hot, dry summer days, whereas Sulphur-based smog occurs on cold, damp winter days. Photochemical smog is especially common when the vehicle engines are old and poorly maintained, as often occurs in developing countries. The toxic emissions from car exhausts can be reduced considerably by installing catalytic converters on the engines. These devices are now compulsory in new cars in many developed countries, but they are rarely found in developing countries.

Another toxic component of car exhaust fumes is lead**.** Until quite recently, all gasoline contained a lead-based compound which made the gasoline burn more smoothly. Lead is a very poisonous metal. Human beings cannot excrete lead, so it accumulates in the body. Even in tiny concentrations (25 milligrams per liter), it can cause headaches, abdominal pains, miscarriages and general tiredness. Lead is particularly toxic to growing brain cells. Lead pollution from car exhaust probably reduces the intelligence of children who live in crowded cities. Today, more and more cars are made to run on unleaded gasoline.

In the past, air pollution in industrialized countries caused a visible haze called smog. Smog is a mixture of different pollutants and water vapor in still, cold air. It occurs in unusual weather conditions when there is temperature inversion – that is, a layer of cold air close to the ground with a layer of warmer air above it. In normal weather condi-

tions, air near the ground is warmer than air higher up; warm air rises and the air circulates. With temperature inversion, the air does not circulate so pollutants become trapped close to the ground. When these pollutants combine with fog, they form a visible suspension in the air; this is known as smog. The main sources of Sulphur dioxide and soot are fossil fuels, particularly coal. Oil, natural gas and hard, black coal produce much less Sulphur dioxide than soft, brown coal. Sulphur dioxide is, incidentally, also emitted from volcanoes when they erupt; this "natural" Sulphur dioxide can cause the same environmental problems as industrial emissions. Fortunately, volcanoes do not erupt very often!

Smog is very bad for health. Water vapor combines with Sulphur dioxide to form Sulphuric acid and with nitrogen monoxide to form nitric acid. These acids irritate the lungs. In the famous London smog of 1952, about 4,000 people died in two weeks from chest diseases such as bronchitis and pneumonia. In 1956, the British government introduced legislation against air pollution – the Clean Air Act. It became illegal to burn coal or wood in residential areas. People had to use smokeless fuel such as gas or electricity. The Clean Air Act also said that industries must build tall chimneys to release their waste high into the atmosphere. This was a shortsighted policy, because the industries were not required to improve their production processes. Industrial pollution in Britain did not decrease after the Clean Air Act; it was simply released into the upper atmosphere.

Air pollution in the upper atmosphere does not cause smog, but it has other harmful effects. Sulphuric and nitric acids are carried long distances with air currents and become acid rain. Acid rain damages crops and forests, destroys aquatic life in lakes and rivers. Acid rain destroys buildings, corroding metal and dissolving stone, causing millions of pounds worth of damage. Some important historical monuments are being washed away by acid rain. The timber and fishing industries in Sweden have suffered badly because of acid rain originating in British factories and power stations. Trees have died, and lakes that were once full of plants and fish are now devoid of all life. In sandstone or limestone regions, certain chemicals within the rock will reduce the acidity of the water. This is called natural buffering. However, if the lake lies on an insoluble or acidic rock such as granite, no natural buffering will occur and the acidity of the water will remain high. Scientists have tried to reduce the acidity of lakes artificially by adding chemicals to the water, but this intended remedy sometimes upsets the ecological balance even further.

The air we breathe is no longer clean and pure. "Developments" that have made our lifestyle more comfortable (such as industrialization, urbanization and the use of private cars) all pollute the earth's atmosphere. Reducing air pollution should be a priority in all countries. Industries should invest in environmentally friendly production methods. We should all use our cars less and buy vehicles that have catalytic converters and run on unleaded gasoline. Governments should legislate to reduce the levels of toxic emissions from cars, power stations, factories and domestic chimneys. Air pollution today is often

invisible, but we should not ignore the danger it is causing to our own health, the health of our children and the health of the planet.

2.1. Complete the sentences.

1. When the pollutants combine with fog, they _____
2. Sulphur dioxide is also emitted from _____
3. Sulphuric and nitric acids irritate _____
4. The Clean Air Act said _____
5. Acid rain damages _____
6. Trees have died and lakes are _____
7. Ozone at ground level is _____
8. Photochemical smog is worst in _____
9. The toxic emissions from car exhausts can be reduced by _____
10. The air we breathe is _____
11. Industries should invest in _____

2.2. Do the following statements reflect the claims of the writer in the reading passage? Write

YES *if the statement agrees with the information*
NO *if the statement contradicts the information*

1. Smog occurs because of normal weather conditions.
2. The major sources of sulfur dioxide and soot are fossil fuels.
3. In the early 20th century, the British government passed a law against air pollution.
4. Thanks to the British government's enactment of the Clean Air Act, industrial pollution has been greatly reduced.
5. In areas with sandstone or limestone, certain chemicals in the rocks reduce the acidity of water, causing what is called a natural buffering reaction.
6. Toxic emissions from automobile exhaust cannot be lowered.

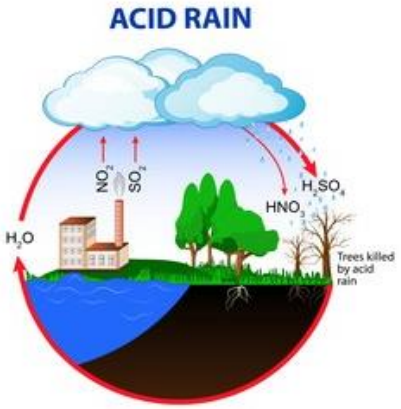
3. Imagine that you work for an advertising agency, and you have to create a campaign how to prevent air pollution. In groups, prepare a poster – with a picture and a slogan. Compare your work with other groups and vote for the best campaign.

4. Read the text and say what the main problem with air pollution consist in. Explain how people try to curb air pollution.

Pay attention to the following words and wordcombinations

to emerge as a concern	викликати занепокоєння
to curb emissions	обмежити викиди

to put legislation in place	запровадити відповідне законодавство
combustion	згоряння
carbon monoxide	оксид вуглецю
nitrogen dioxide	двоокис азоту
ground-level ozone	приземний озон
meanwhile	тим часом
pines	сосни
oaks	дуби
fluidized bed combustion	спалювання в киплячому шарі
lime	вапно



A major problem with air pollution is that it does not obey national boundaries. The planet's wind cycles and currents can carry pollution hundreds of miles away from its original source. Therefore, Britain is a large contributor to air pollution in Sweden and creates more for Norway than Norway does itself. The pollutants of the USA end up on the eastern coast of Canada.

Acid rain emerged as a concern in the 1960s with observations of dying lakes and forest damage in Northern Europe, the United States and Canada. It was one of the first environmental issues to demonstrate how the chief pollutants – oxides of Sulphur and nitrogen – can be carried hundreds of miles by winds before being washed out of the atmosphere in rain, snow and fog.

As evidence grew of the links between air pollution and environmental damage, legislation to curb emissions was put in place. The 1979 Geneva Convention on Long-Range Transboundary Air Pollution set targets for reduction of Sulphur and nitrogen emissions in Europe that have largely been achieved. The 1970 and 1990 Clean Air Acts have led to similar improvements in the USA.

Many nations have adopted air quality standards to safeguard the public against the most common pollutants. These include Sulphur dioxide[3], carbon monoxide, suspended particulate matter, ground-level ozone, nitrogen dioxide and lead – all of which are tied directly or indirectly to the combustion[5] of fossil fuels. Substantial investments in pollution control have lowered the levels of these pollutants in many cities of some developed countries. However, poor air quality is still a major concern throughout the industrialized world.

Meanwhile, urban air pollution has worsened in most large cities in the developing world, a situation driven by population growth, industrialization arid increased vehicle

use. Despite pollution control effects, air quality has approached the dangerous levels, recorded in London in the 1950s, in such megacities as Delhi, Jakarta and Mexico City.

In some parts of Asia, such as Southeast China, Northeast India, Thailand and the Republic of Korea, and in the Pacific region acid rain is now emerging as a major problem. In the Asia region, the use of Sulphur-containing coal and oil is very high. In 1990, 34 million metric tons of Sulphur dioxide were emitted there, which is over 40 per cent more, than in North America. The effects are already being felt in the agriculture. In India wheat, growing near a power plant suffered a 49-per cent reduction in yield. Other ecosystems are also beginning to suffer. Pines and oaks in acid rain-affected areas of the Republic of Korea showed significant declines in growth rates since 1970.

Many countries in the world are trying to solve the problem of air pollution in various ways, either by trying to burn fossil fuels more cleanly or by fitting catalytic converters to their cars, so fewer poisonous gases are produced. In some countries, like Sweden for example, new power plants use a method called fluidized bed combustion, which cuts Sulphur emission down by 80 per cent. In Germany, sulphurous smoke is sprayed with lime to produce gypsum, which is then used for building roads. Developing technologies like this may raise the price of electricity a little, but will save millions of trees plants and animals and human health.

4.1. Fill in the table below showing the consequences of air pollution on the global scale, measures taken to combat air pollution and the countries involved in this process.

Pars of the world	Countries-contributors to air pollution	Countries / cities affected by air pollution	The main air pollutants and the consequences of the pollution	Measures taken to combat air pollution
European continent				
The Pacific region				
The Asia region				

4.2. Discuss the issues raised in the text with your partner. Use the following prompts.

1. What does this text deal with?
2. What is the cause of acid rain?
3. What are the effects of acid rain?
4. What are the chief sources of harmful emissions?
5. How is humankind trying to solve the problem of air pollution?
6. Are these attempts successful?

5. Complete each sentences with one of the words or phrases in the box.

because, because of, so, so that

1. Urban air pollution has worsened ____ population growth, industrialization, and increased use of motorized vehicles.
2. Sweden's forestry and fishing industries have been hit hard ____ acid rain.
3. Acid rain makes the ground very acidic in these areas, ____ some tree species cannot survive in acidic soil.
4. In many lakes the fish are dying. Anglers are worried ____ every year there are fewer fish and some lakes have no fish at all
5. Now scientists are also beginning to study the effects of acid rain on larger animals. They believe that some deer in Poland are less healthy ____ acid rain.
6. Humanity must not ignore the dangers of air pollution ____ it poses a threat to human health and the planet as a whole.
7. Significant investments have been made in pollution control, ____ pollution has decreased in some developed countries.
8. New air purification technologies must be developed ____ millions of trees, plants, and animals are saved, as well as human health.

6. Pre-reading.
Discuss with a partner.

- What is ozone layer depletion?

7. Read the text to search for the following information.

1. A layer of the atmosphere where most of the atmospheric air and almost all of the atmospheric water vapor is concentrated
2. Where the ozone layer ends

2. Season of ozone hole increasing over Antarctica in the Southern Hemisphere
3. The date of signing of the successful international agreement on phasing out the production and consumption of ozone-depleting substances

Pay attention to the following words and wordcombinations

ozone layer	озоновий шар
greenhouse effect	парниковий ефект
to cause	викликати, спричиняти
ultraviolet radiation	ультрафіолетове випромінювання
to protect	захищати
chlorofluorocarbons	хлорофторуглеводні (хлорфторвуглеці)
irreversible	незворотній
to destroy	знищувати
disastrous consequences	катастрофічні, жахливі наслідки
to reduce	зменшити

The hole in the ozone layer

The atmosphere is the layer of gas that surrounds the earth. The composition of the atmosphere changes with the distance from the earth's surface. The layer near the surface – the troposphere – contains the air we breathe, which is 78 percent nitrogen, 21 percent oxygen, 0.03 percent carbon dioxide, and 1 percent inert gases such as argon.

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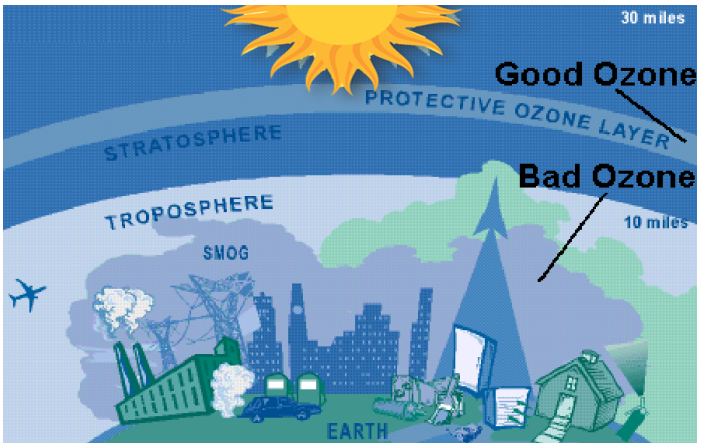


Water vapor, small particles of dust, and tiny quantities of other gases such as helium, ozone, nitrous oxide, and methane, are also present. The stratosphere contains thin, cold air with less oxygen and no dust or water vapor. The ionosphere contains very thin air and electrically charged particles, which reflect electromagnetic waves.

The lower part of the stratosphere contains a band of warm gas called the ozone layer (between 15 and 40 kilometers above sea level). It plays a very important role.

Ozone absorbs very shortwave ultraviolet radiation – that is, the harmful, burning rays from the sun. These rays kill plants and cause burns, skin cancer, and cataracts in animals and man. The ozone layer protects us from these damaging effects.

The damage of ozone layer has been caused by complex chemical reactions involving chlorine and bromine. The manmade chemicals chlorofluorocarbons (CFCs) break up ozone molecules. CFCs occur in some aerosols (such as deodorants, hair sprays and cleaning fluids), expanded polystyrene (such as fast-food packaging) and the cooling mechanism of refrigerators. At ground level, these compounds are chemically non-reactive. However, they are carried on wind systems up into the high atmosphere, where the ozone layer is. CFCs can be broken up by the intense sunlight, but before their destruction CFCs gases become reactive and damage the ozone layer. Most scientists now accept that CFCs are very bad for the environment. They have already caused a large hole in the ozone layer.

The hole in the ozone layer is formed over the Antarctic continent each spring. During the long dark Antarctic winter, the atmosphere becomes colder than anywhere else on the Earth. Strong winds enclose the cold air above the Antarctic, allowing ice clouds to form. The ice crystals provide the sites where chlorine reacts with ozone when sunlight returns in the spring, and results in the ozone hole. In early summer, the ozone hole mixes with the rest of the air mass of the stratosphere. Over the past years, the concentration of chlorine in the atmosphere have been steadily increasing, and as a result – more ozone layer has been destroyed.

Ozone itself is a useful protective layer above our heads, but in the cities is pollutant agent. CFCs also contribute to the greenhouse effect. An increase in the greenhouse effect may lead to global warming, with disastrous consequences.

Some environmentalists argue that governments should ban all production of CFCs immediately to prevent an irreversible environmental crisis.

When chlorofluorocarbons and other substances were scientifically proven to cause a hole in the "ozone layer" that protects all life on Earth, the global community abandoned their use. Representatives of 46 countries signed the Montreal Protocol on Substances that Deplete the Ozone Layer on September 16, 1987. In particular, it bans the production and sale of hazardous substances that deplete the ozone layer. The Montreal Protocol has already banned the production and use of more than 100 kinds of chemicals. Many of these substances contribute to global warming. Since then more substances included for control. As a result, the amount of chlorine and bromine in the atmosphere is decreasing. With less chlorine in the atmosphere, the ozone hole should become smaller, and eventually close up. This global commitment is expected to restore the ozone layer to 1980 levels by mid-century. Reducing the "ozone hole" is one of the successful examples of international cooperation.

7.1. Scan the text to do the following task.

Read the article about Global warming. Do the following statements agree with the information in the reading passage? Write

TRUE	*if the statement agrees with the information*
FALSE	*if the statement contradicts the information*
NOT GIVEN	*if there is no information on this*

1. The air we breathe consists mainly of oxygen.

2. The air is thinner in the ionosphere than in the stratosphere.

3. Chlorofluorocarbons are the main factor in the greenhouse effect.

4. By breaking up ozone molecules, chlorofluorocarbons have caused a hole in the ozone layer.

5. Forty-six countries have decided to phase out chlorofluorocarbons completely.

6. Nowadays there are fewer products containing chlorofluorocarbons.

8. The sun's energy reaches the earth as infrared radiation.

7.2. Choose someone to act as a President of the National Center for Atmospheric Research and answer the visitors' questions.

What is (are)	the role of the atmosphere
Could you explain to me	the components of the atmosphere
Can you tell me about	the ozone layer depletion
What do you mean by	the causes of the ozone hole
Why	CFCs

7.3. Speak on:

1. The composition of the atmosphere. (to surround the earth, to be divided into, a layer, to contain, to be present, electrically charged particles, to reflect waves)

2. The ozone layer depletion. (to absorb UV radiation, to cause burns, damaging effects, CFCs, to contribute to the greenhouse effect, to occur in, to prevent an irreversible environmental crisis)

8. Pre-reading.

Discuss with a partner.

- What are the causes of greenhouse effect?

9. Read and decide which title *A, B*, or *C* is the best title for the article.

A *Climate Change in the USA in the 21st Century*

B *The 100-Year Forecast: Very Hot*

C *Global Warming: Problems or Benefits?*

Pay attention to the following words and wordcombinations

weatherman	метеоролог
global warming	глобальне потепління
carbon dioxide	двоокис вуглецю
to trap	утримувати
to prevent	запобігати
emission	виділення, розповсюдження
to crush	знищувати
to predict	передбачити
methane	метан
environmental refugees	екобіженці
to respire	дихати
to erupt	вивергатися
to decompose	розкладатися

If you want to know, what the weather is going to be like this weekend, ask a weatherman. If you want to know what it will be like in 100 years, ask a scientist.

The most important influence on the weather of the future is likely to be global warming. Global warming may or may not be the great environmental crisis of the next century.

Here is what we know about global warming. Since the Industrial Age (say, 1800), the concentration of the so-called "greenhouse gases" – carbon dioxide, methane and others – in the atmosphere has risen about 30 per cent. In the past century, temperatures have increased 1 degree Fahrenheit. One opinion is that these tendencies are connected. Industrial and transportation emissions increased carbon dioxide, trapping more heat in the atmosphere and raising temperatures. Another opinion is that the small temperature rise is a natural climatic variation.

The higher average temperatures produced by global warming could cause dramatic changes in the weather. Less rain might fall over large land masses. Central Africa, south Asia and some parts of the United States could risk severe drought and famine. More rain might fall in coastal areas and over the oceans; there might be more storms and hurricanes in the Pacific. A rise in the earth's average temperature of only one or two degrees would probably melt large expanses of ice in the Arctic and the Antarctic (the polar ice caps) and raise sea levels. Sea levels throughout the world are already rising by about two millimeters a year. If the polar ice caps melt, sea levels could rise by more than a meter over a few decades. Many heavily populated regions, such as Bangladesh, the Nile delta, the Netherlands and Indonesia, would be permanently flooded. Cities are often found on the coast where a river meets the sea, so many of the world's major population centers could become uninhabitable. About one billion people would lose their homes and become environmental refugees. Some islands, such as the Maldives in the Pacific, might disappear completely.

The next hundred years, most scientists agree, will see the Earth heat up further. How much further is open to debate: in 1995, hundreds of scientists from around the world predicted a rise of anywhere between 1.8 and 6.3 degrees by 2100. However, some regions will warm much less and others, especially of northern continents, will warm much more. The USA is facing a temperature rise of 5 to 10 degrees. Nevertheless, really, it is anybody's guess and the answer may be everybody's problem.

We do not know what the effects of warming might be. Warmer weather might make some areas more attractive and others less. Because what will happen to the world is still uncertain, what will happen to a particular region is even more uncertain.

Carbon dioxide accounts for 55 percent of the greenhouse effect; CFCs account for 17 percent; methane for 15 percent and nitrous oxide for 5 percent.

Carbon dioxide occurs naturally in the atmosphere. It is produced when animals and plants respire. Nevertheless, "natural" carbon dioxide forms only 0.03 percent of the atmosphere.

Carbon dioxide is also produced when living things burn, so it is a by-product of industrial processes which use fossil fuels (coal, gas or oil), and motor vehicles which burn gasoline or diesel fuel. It is also produced when volcanoes erupt and when tropical

rainforests are cleared by burning. Methane is also a "natural" gas, produced when living things decompose in the absence of oxygen. Methane in the atmosphere comes from rotting vegetation, particularly rice fields, and from cattle. It also comes from leaks in the extraction of natural gas. Methane in the atmosphere breaks down relatively quickly (in about 10 years, compared to over 100 years for carbon dioxide and CFCs), so it is a relatively minor environmental problem.

However, some scientists believe that huge quantities of methane are trapped within the polar ice caps and will be released suddenly if the polar ice caps melt. This phenomenon would accelerate global warming. Nitrous oxide in the atmosphere comes from bacteria beneath the earth's surface, which convert nitrates in the soil to the gases nitrogen and nitrous oxide.

The increased use of artificial fertilizers in recent years has increased the production of nitrous oxide. Levels of nitrous oxide in the air will continue to increase for many years, because there is already a large reservoir of artificial nitrates within the soil.

We do not know how to prevent warming. What can be done to stop the greenhouse effect from worsening? The most important way is to reduce the emission of carbon dioxide by industry and motor vehicles.

We cannot see, hear, taste or smell the earth's atmosphere, but it provides vital oxygen, protects us from damaging solar radiation and stabilizes the Earth's climate. Pollution has already caused a large hole in the ozone layer and increased global warming. Some people do not believe that CFCs are harmful. They are ignoring the scientific evidence. Some people argue that the phenomenon of global warming has not yet been proven beyond doubt. It is difficult to prove that average temperatures throughout the world are half a degree higher than they were 50 years ago. But it is surely sensible to try to reduce emissions of greenhouse gases today, rather than wait for another 10 or 15 years until the phenomenon of global warming is absolutely certain.

But stabilizing emissions is not enough. No one knows how to lower emissions without crushing the world economy. Reducing CFC production and greenhouse gas emission will cost money and compromise our comfortable lifestyle. However, if we do not take action to protect the earth's atmosphere, it will soon become unable to protect us. Based on present knowledge, the best way of coping with warming – if it happens – would be to adapt to it.

9.1. Scan the text to do the following task.

Read the article about Global warming. Do the following statements agree with the information in the reading passage? Write

TRUE	*if the statement agrees with the information*
FALSE	*if the statement contradicts the information*
NOT GIVEN	*if there is no information on this*

1. We know more about global warming than we do not.
2. Because the concentration of greenhouse gases in the atmosphere has risen, temperatures have increased.
3. The scientists are sure of how much the temperature will rise in the next century.
4. Man-made contributions to the greenhouse effect can rise average temperatures between 2 and 8 degrees by the year 2050.
4. By 2100 northern regions will warm less than other regions.
5. Stabilizing emissions can prevent global warming.
6. Experience shows that environmental pollution also leads to immense economic losses.
7. Without the greenhouse effect the climate on the earth would be much colder.
8. Because of global warming there is now a risk of drought and famine in parts of Africa and Asia.
9. If there is a rise in temperature of one or two degrees, the sea level will rise about 2 millimeters a year.

9.2. Pair the verbs in column *A* with a suitable phrase in column *B*. You must find a match for every word but there is not necessarily only one correct solution!

A		B	
1.	to absorb	**a.**	global warming
2.	to accelerate	**b.**	in the absence of oxygen
3.	to break up	**c.**	shortwave ultraviolet radiation
4.	to cause	**d.**	waves
5.	to compromise	**i.**	an irreversible environmental crisis
6.	to contain	**f.**	disastrous consequences
7.	to contribute	**g.**	burns, skin cancer
8.	to decompose	**h.**	us from damaging effects
9.	to prevent	**i.**	ozone molecules
10.	to protect	**j.**	the greenhouse effect
11.	to reduce	**k.**	the earth
12.	to reflect	**l.**	severe drought and famine
13.	to risk	**m.**	emissions of greenhouse gases
14.	to lead to	**n.**	our life
15.	to surround	**o.**	electrically charged particles

9.3. Complete the phrases below by adding an appropriate noun. Some can combine with more than one noun.

warming, changes, rays, effect, disaster, consequences, energy, pollution, famine, fumes, fuels, layer, gases

1) global	**2)** exhaust	**3)** harmful
4) ozone	**5)** solar	**6)** damaging
7) nuclear	**8)** greenhouse	**9)** disastrous
10) natural	**11)** fossil	**12)** dramatic
13) air	**14)** recycled	**15)** severe

10. Fill in the gaps with any appropriate preposition.

1. Natural sources contribute ____ **(1)** the depletion of the ozone layer, but not as much as human activity. Natural sources account ____ **(2)** approximately 15-20 % of ozone damage.

2. The most important gas which leads ____ **(3)** acidification is Sulphur dioxide.

3. There is no direct observational evidence linking ozone depletion ____ **(4)** higher incidence of skin cancer ____ **(5)** human beings.

4. Ozone concentrations ____ **(6)** the lower stratosphere over Antarctica will increase ____ **(7)** 5–10 % by 2020.

5. Air pollution is a major environmental health problem affecting ____ **(8)** the developing and the developed countries alike.

6. The ionosphere protects the biosphere ____ **(9)** the harmful effect of cosmic radiation and influences ____ **(10)** the reflection and absorption of radio waves.

7. Twelve European countries have agreed to reduce nitrogen oxide emissions ____ **(11)** 30 % ____ **(12)** 2010.

11. The following paragraph describes the greenhouse effect but the verbs have been omitted. Rewrite the paragraph, putting the verbs in the correct form. You may have to use a verb more than once. The verbs you can use are:

to know, to reflect, to absorb, to arrive, to conserve, to occur, to be, to freeze, to transmit

The Greenhouse Effect

Another environmental problem is the greenhouse effect. Some gases ____ **(1)** shortwave radiation but not longwave radiation. The sun's energy ____ **(2)** as shortwave radiation; some of this ____ **(3)** away in the clouds and upper atmosphere and some ____ **(4)** into

the ground. About 5 percent of the energy ____ **(5)** off the earth's surface as longwave radiation. Certain gases in the upper troposphere especially carbon dioxide, methane and CFCs – ____ **(6)** this longwave radiation back to the earth. The glass in a greenhouse ____ **(7)** heat by the same principle, so these gases ____ **(8)** as "greenhouse gases". The greenhouse effect ____ **(9)** very important, if it did not ____ **(10)** at all, the temperature of the planet ____ **(11)** 40 degrees lower and the oceans ____ **(12).**

12. Fill in the proper forms of adjectives.

When we throw our garbage away, the garbage goes to landfills. Landfills are those big hills that you go by on an expressway that stink. They are full of garbage. The garbage is then sometimes burned. This sends an enormous amount of greenhouse gasses into the air and makes global warming ____ ***1 (bad)***.

Another thing that makes global warming ____ ***2 (bad)*** is when people cut down trees. Trees and other plants collect carbon dioxide (CO2), which is a greenhouse gas.

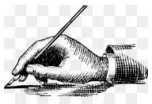
Carbon dioxide is the air that our body lets out when we breathe. With ____ ***3 (few)*** trees, it is ____ ***4 (hard)*** for people to breathe because there is ____ ***5 (much)*** CO2 in the air, and we don"t breathe CO2, we breathe oxygen. Plants collect the CO2 that we breathe out, and they give back oxygen that we breathe in. With ____ ***6 (little)*** trees and other plants, such as algae, there is ____ ***7 (little)*** air for us, and ____ ***8 (many)*** greenhouse gases are sent into the air. This means that it is very important to protect our trees to stop the greenhouse effect, and also so we can breathe and live.

This gas, CO2, collects light and heat (radiant energy), produced by the sun, and this makes the earth ____ ***9 (warm)***. ____ ***10 (little)*** greenhouse gasses will rise into the air, and global warming will slow down.

13. Speak on:

1. The greenhouse effect. (to account for, carbon dioxide, methane, nitrous oxide, to occur naturally, to be produced, to burn fossil fuels, decompose, leaks in the extraction, to come from, artificial fertilizers)

2. The ways to prevent greenhouse effect. (to reduce the emission, CFCs, to cause a large hole, the use of fertilizers, carbon dioxide)



Write down a list of the sources of air pollution that exist in the area where you live and write a short essay about the possible solutions to these problems. Discuss your projects in class.

In my area there is a lot of air pollution due to the chemicals the farmers use on their fields ...

Section VI

HELPING TO RESERVE THE PLANET

SAVING THE FOREST

"The world's forests are a shared stolen treasure that we must put back for our children's future".

(Desmond Tutu)

1. Pre-reading.

Discuss these questions with a partner.

- What role do forests play in man's life?
- What types of forests are there on the earth's land surface?
- What is happening to the world's forest resources?

2. Read the text and complete the tasks after it.

Pay attention to the following words and wordcombinations

forcible intrusion	насильницьке втручання
assets	багатства, природні ресурси
wondrous diversity	дивовижне різноманіття
possession	надбання, спадщина
timbered areas	лісові масиви
croplands	посівні угіддя
deforestation	вирубка лісів, знеліснення
logging	заготівля деревини
shady canopy	тінистий полог
to nourish	підживлювати
nursery seedlings	саджанці з пітомника
parched clear-cuts	пересохлі суцільні вирубки, галявини

Rage against the Dying of the forests

The air, water and soil are not the only victims of man's forcible intrusion. The purity of the air and the preservation of bodies of water and soil largely depend on the conservation of forests.

Forests – boreal, coniferous, temperate and tropical rainforests – cover 30 % of the earth's land surface. They are one of the Earth's best assets. They absorb carbon dioxide

and exhale oxygen, acting as the lungs of our planet, control (moderate) the climate, prevent soil erosion, reduce flood risk and serve as genetic banks for a wondrous diversity of plant and animal life.

Let us look at what is now happening to the human-kind's most valuable possession. In the 21st century, the world finds itself undergoing the most rapid and complete deforestation it has ever experienced under the human hand. The world's forestry resources are shrinking at an alarming rate. Population increase has led communities to dilate outwards by clearing forests, as growth of cities often means expansion into. More and more forests are turning into houses and the fuel to heat these houses. Land is becoming increasingly scarce, and as a result, forests are being destroyed.

Unfortunately, today the forest is viewed only as a source of raw materials for various branches of economy. Apparently, there is no sphere of human activity or industry, which does not need timber. Despite the success registered by chemistry and the advent of new synthetic materials, there is a steady growth in the world consumption of wood products.

Well, the forests have always been generous with their riches – as far as they are able. However, they are not limitless. They are being exhausted and the habitats of innumerable other species of both flora and fauna are destroyed as a side effect.

A number of factors provokes deforestation. Nevertheless, it is not only the deliberate felling of trees, which is reducing the world's tree cover; trees are also disappearing because of pollution. Acid rain kills plants and trees. In California in the USA, for example, over a million trees are dead or dying because of smog from the big cities affecting them. In Scandinavia many trees similarly affected by sulphuric acid emissions from power stations and factories in Britain being blown across the North Sea. Nearly half of all trees in Germany are diseased. Polluted streams poison the forest from the inside. Dust, accumulated on leaves, interferes with the process of photosynthesis. Trash, which people leave in the forest, hurts forest inhabitants. Yet logging remains the primary cause of forest destruction.

The most hazardous thing about deforestation is that forestry appears to be an irrecoverable natural resource. Replanting does not guarantee survival. Without the shady canopy of big trees and the moist forest floor to nourish them, nursery seedlings are bound to die on parched clear-cuts. Therefore, when industry claims planting ten seedlings for one tree cut, it means absolutely nothing for the forest. Ten seedlings cannot replace a hundred-year-old tree.

Steady loss of natural forest leads to the loss of animal habitat and decline in animal diversity and abundance. A complex product of the centuries of evolution, forests may be gone forever. It means that the humanity must apply all its efforts now, until it is too late. Taught by the results of our negligence, we have finally come to realize that man must look after the world, or there will be no world to look after.

2.1. Say whether the following statements are *TRUE* or *FALSE*. Argue them using the suggested phrases.

Agreeing:	**Disagreeing:**
That's quite right	*I don't agree*
That's true	*Not really*
Yes, I (absolutely, partly) agree	*I disagree, I'm afraid*
I'm of exactly the same opinion	*I don't think that's right*
This is only partly true	*I can't agree*
As far as I know	*Surely not*

1. Deforestation affects air, soil and water objects.
2. The world's forestry resources are disappearing alarmingly.
3. The forest could not be saved even if people take more care of it.
4. The riches of the forest are limited and are being exhausted through Man's greed and stupidity.
5. Man defends his reasons for destroying forests with short-term economic arguments.
6. Deforestation does not cause flooding and erosion.
7. As the world's forests are being reduced, the amount of oxygen in the air is increasing all the time.
8. Deforestation is provoked by logging.

2.2. Complete the following sentences.
1. Trees are one of the Earth's best assets because they absorb _____ they provide _____
2. The world's forestry resources _____
3. The largest cause of the destruction of rainforests is _____
4. People cut down trees for _____
5. Many trees in Europe _____
6. Today the forest is viewed only as _____
7. The most hazardous thing about deforestation is _____
8. Steady loss of natural forest leads to _____
9. Man must look after the world, or _____

2.3. Write out the equivalents in pairs.

1.	take in	**a.**	diversity
2.	habitat	**b.**	decline
3.	clear	**c.**	asset
4.	control	**d.**	emission
5.	give out	**e.**	absorb
6.	reason	**f.**	rate
7.	variety	**g.**	poisonous
8.	possession	**h.**	moderate
9.	reduce	**i.**	shrink
10	speed	**j.**	cause
11.	decrease	**k.**	exhale
12.	toxic	**l.**	fell
13.	discharge	**m.**	environment

2.4. Find words and phrases in the text that correspond to the definitions given below.

1. Breathing organs in the chest of man and other animals. _____
2. Large area of land covered with trees. _____
3. Young plant newly grown from a seed. _____
4. A group of animals, plants or microorganisms that share a common genetic structure. _____
5. Area of land covered with growing trees (not as extensive as a forest). _____
6. State of becoming less in amount or importance. _____
7. Wood prepared for use in building. _____
8. Many different forms. _____

3. Fill in the gaps with any appropriate preposition.

1. The threat of extinction affects ____ almost every species on earth, down ____ the tiniest microbe.
2. The balance of nature within rainforest ecosystem depend ____ the complex interaction between millions of species of living organisms.
3. The wood is used ____ the local people ____ firewood.
4. ____ the close of 20 century one million of rainforest species were extinct.
5. The loss ____ forests would cause a decline ____ the world's supply ____ oxygen.
6. Uncontrolled exploitation of forests ____ commercial purposes leads ____ soil erosion brings ____ floods, fires and acid rains.

7. One ____ four chemicals or medicines found ____ the chemist's contain compounds derived ____ rainforest species.
8. Satellite images of the Brazilian Amazon show that the forest cover has been lost ____ an alarming rate.

4. Complete the table with the other forms of the words given. Take care with spelling. Use an English-English dictionary to help you.

Verb	Noun	Adjective
consume	**1.**	**2.**
3.	**4.**	possessive
5.	**6.**	special
erode	**7.**	**8.**
9.	reduction	**10.**
11.	**12.**	emissive
destruct	**13.**	**14.**
15.	**16.**	applicable
17.	evolution	**18.**
conserve	**19.**	**20.**
21.	**22.**	expansive
expand	**23.**	**24.**
prevent	**25.**	**26.**
27.	completion	**28.**

5. Fill in the missing words in the sentences below. Choose from the following putting the verbs in the right tense.

dam, to destroy, to encourage, flood, in danger, international, medicine, to protect, to supply, to reduce, fuel, wood, to slow down

Tropical forests have ____ **(1)** us with very many sorts of plants for food, ____ **(2)** and industry. They could probably supply many more. They also ____ **(3)** ____ **(4)** and drought, keep water lean, and ____ **(5)** the Greenhouse Effect. Bu the tropical forests ____ **(6)** to make room for things like farms, ranches, mines and hydroelectric ____ **(7)**. About 20 million hectares are lost each year – an area more than twice the size of Austria. WWF is working to ____ **(8)** and save the forests that are ____ **(9)**, to plant new trees for ____ **(10)** and to slow down the Greenhouse Effect, and to ____ **(11)** governments to think about the forests and their importance when giving ____ **(12)** aid.

6. Pre-reading.

Do you agree with the statements below? State your point of view on this issue.

- Protecting rainforests is the only key to our survival on the planet.
- Trees play an important role in stabilizing the climate.
- Forests are the primary natural means of water management.

7. Read the text below and compare your answers with the author's opinion.

Pay attention to the following words and wordcombinations

fragile soil	крихкий ґрунт
torrents	бурхливі потоки
transpiration	транспірація (процес випаровування води)
convection	конвекція (перенесення тепла потоками самої речовини)
decaying vegetation	гниюча рослинність
recycling	переробка
crucial	вирішальний, суттєвий
primitive tribal societies	первісні племінні общини

Why do we need to conserve the rainforests?

First, because the rainforests are the lungs of the world. They take in carbon dioxide and give out oxygen by photosynthesis. The loss of vegetation in the rainforests magnifies the greenhouse effect. We are producing more and more carbon dioxide from burning fossil fuels. The capacity of the rainforests to absorb this environmentally toxic gas is becoming ever more crucial.

Second, the rainforests are the world's most important means of storing water. The trees soak up water in the rainy season and slowly release it into the ground and rivers. This protects the fragile soil from the potentially devastating effects of tropical storms. The rainforests supply water to the rivers during the dry season. If they did not do this, many rivers would disappear in the dry season and become raging torrents in the rainy season, flooding the nearby fields and washing away the soil.

Third, the rainforests control the climate. Seventy-five percent of the rain that falls on the tropical rainforests enters the trees from the soil by transpiration and then evaporates from the surface of the leaves. (The other 25 percent of the rainwater stays in the soil and enters the rivers as run-off). These two processes are known together as "evapotranspiration." The heat energy required to evaporate the water from the forests cools the equatorial regions. The clouds formed by the water vapor also cool the land by reflecting

solar radiation back into space. These clouds are carried to cooler parts of the earth by natural convection, where they release warm rain, which raises the temperature in these areas. If the rainforests disappear, so will the rain. Without the rainforests, the temperature difference between the tropics and the temperate zones would be far greater.

Fourth, the rainforests are a reservoir of micronutrients. Tropical rainforests usually grow on poor soil. Most of the essential nutrients are stored not in the soil but within the trees themselves. The roots of the trees, which make up about 60 percent of their mass, do not grow deep into the soil. They spread out and form a thick network a few meters beneath the surface. These shallow roots absorb free nutrients released from the thick layer of decaying vegetation on the forest floor. Recycling of these nutrients is crucial to the survival of the ecosystem that the rainforests support. When the trees are cut down, vital nutrients are washed away with the run-off and a whole ecosystem quickly dies.

Fifth, the rainforests, and the ecosystems that they support, are an important source of raw materials for many different industries. They supply us with hundreds of useful products.

One very important benefit is the supply of medicinal plants. About 80 percent of all traditional herbal medicines and 25 percent of modern Western medicines are extracted from plants that grow in the rainforests. We do not know how many important medicines are lying undiscovered within the rainforests.

Loss of plant species within the rainforests will mean that many lifesaving drugs will never be discovered. One last – and very important – reason for conserving the rainforests is that they are the home of several million people, who still live in primitive tribal societies within the forests. We have both a moral and a scientific duty to protect the homelands of these unique and fascinating societies. The tribal people are more than an anthropological curiosity. They are the key to the living resources of the rainforests.

7.1. Think what title can be given to this text so as to draw the reader's attention.

7.2. Put the following sentences in logical order.

a. The tropical rainforests provide habitat for primitive tribes.

b. Erosion and flooding tend to follow deforestation.

c. The rainforests act as the lungs of the planet.

d. When the trees are cut down thoughtlessly vital nutrients are washed away.

f. The rainforests moderate temperature extremes.

g. These forests are important source of raw materials.

h. The consequence is that less carbon dioxide is being absorbed which leads to a global warming.

i. The rain will disappear with the rainforests.

j. The rainforests are the world's most important means of storing water.
k. The world's forests are being reduced, the amount of carbon dioxide in the air is increasing as more and more fuel is being burned.

1____2____3____4____5____6____7____8____9____10____11____

7.3. Rearrange and write out the four sentences so that they form a summary of the points given in the text.

1. Moreover, one other benefit relates to the supply of many raw materials, products and medicinal plants.
2. Finally, the homes of millions of people are to be found in the rainforests and this homeland should be protected for moral and scientific reasons.
3. They act as the lungs and watersheds of the world; they control the climate and are a reservoir of micronutrients.
4. There are a number of reasons why the rainforests should be conserved.

8. Read the text. Chose the one best alternative to each question following it. Answer all questions based on what stated or implied in the text.

What can we do to conserve what is left of the rainforest? One important step is to reduce the demand for new hardwood products. Governments could do this by putting a high tax on these products. The revenue from a tropical hardwood tax could fund conservation projects. So far, governments have been reluctant to introduce a tax on hardwood. Like all new taxes, it would make the government unpopular!

The demand for hardwood in the West is falling even without a tropical hardwood tax. Many environmentally conscious people today refuse to buy goods that are made from tropical hardwoods. Some timber companies now concentrate on selling softwoods such as pine and beech instead. Other companies recycle hardwood by taking apart old furniture.

Restricting the activities of the timber trade will not, on its own, save the rainforests. We must also address the other causes of deforestation – lack of alternative fuel, the need to create grazing land for cattle and the widespread public ignorance about the ecological importance of the rainforests. In 1987, several international organizations launched the Tropical Forest Action Plan, a five-year plan to invest money in forestry, conservation and agricultural projects.

Their aims were:

- to plant new hardwood forests, particularly in vital watershed zones,
- to provide alternative firewood supplies from fast-growing soft wood trees (such as eucalyptus),
- to promote the practice of agroforestry (in which cattle graze within the forests so that farmers do not need to cut down trees),
- to encourage research into conservation and forestry in the developing countries.

The Tropical Forest Action Plan has made some progress toward reforestation. However, environmentalists have criticized such projects for spending most of their money on building ugly plantations of fast-growing trees all of the same species. They spend only a small fraction of their funds on conserving the existing forests or on research. Their ultimate aim is to grow hardwood trees as a renewable cash crop, rather than to conserve the rainforests and the great diversity of plant and animal life within them. It takes about 150 years for a hardwood tree to reach maturity, but it takes many centuries for the full rainforest ecosystem to become established. According to critics, such projects are not worth the recycled paper they are printed on conservation costs money. The developing countries cannot afford to forgo the immediate revenue that they can earn by selling timber or raising cattle. However, they could, and should, try to develop the economic potential of the rich resources that grow beneath the trees – the non-timber forest products. The medicinal plants in the rainforests have great scientific potential, but they also have enormous economic value. Harvesting medicinal herbs for the pharmaceutical industry is potentially more profitable for the developing countries than selling timber or raising cattle on the deforested land.

The plight of the disappearing tropical rainforests is one of the most urgent environmental crises in the world today.

Conserving the rainforests is an ecological imperative that demands personal sacrifices from all people. But the fight to save the rainforests has hardly begun.

1. *Which of the following does that text mainly discuss?*

a) The demand for hardwood products.

b) The rainforests could be saved if people take more care of them.

c) The effective ways to conserve the unique ecosystem.

d) The tropical rainforests are disappearing and the TFAP needs money to preserve them.

2. *The word "imperative" is closest in meaning to*

a) necessity **b)** task **c)** aim **d)** purpose

3. *What conclusion can be made about reforestation?*

a) Replanting does not guarantee survival.

b) The amount of reforestation is still less than deforestation.

c) Reforestation is not worth speaking about.

d) More money should be spent on reforestation.

4. *The author would probable characterize the fight for the rainforests as*

a) impossible **b)** certain **c)** ineffective **d)** promising

5. *Which of the following is not true*

a) a mature tree can not be replaced by 12 seedlings,

b) Many people do not want to buy hardwood products.

c) Developing countries can benefit from growing medicinal.

d) Developing countries invest money into conservation and forestry.

6. *The word "plight" is closest in meaning to*

a) problem **b)** condition **c)** position **d)** question

7. *All of the following are ways to save the rainforest except*

a) harvesting medicinal herbs

b) hardwood and paper recycling

c) launching environmentally – friendly projects

d) providing alternative energy sources

8. *All of the following are synonyms of the word "forgo" except*

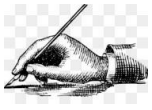
a) refuse **b)** decompose **c)** decline **d)** retract

9. Speak on.

1. The importance of trees (forest (tree) cover, to absorb carbon dioxide, to exhale oxygen, to control, soil erosion, to reduce flood risk, wondrous diversity, to provide a home, to be extinct, species)

2. The causes of deforestation (to be provoked by, commercial logging, creation of cropland, fuel, to be diseased, sulphuric acid emissions, to affect, acid rains, to make luxury furniture, throwaway goods)

3. The consequences of deforestation (Irrecoverable natural resource, replanting, to lead to, loss, habitat, decline (in), warming of the oceans, to magnify greenhouse effect, erosion and flooding)



Write a report on the following topic *"What would you do to preserve the forest in your country?"*

10. Pre-reading.

Before you read the text, look at the following quotation. Do you agree with it?

"The greatest threat to our planet is the belief that someone else will save it."

(Robert Swan)

Discuss these questions with a partner.

- What has to be done to save both the planet and humanity?
- What are the reasons for it?
-

11. Skim the text to check your ideas.

How to save the planet and humanity

Let us face reality. The Earth is going to be the first planet terraformed. The human race is killing our planet by flooding land, sea, and air with pollution and by over use. Plants and animals are unable to adapt quickly enough to the changes in the environment that mankind is causing. The Earth is becoming less capable of sustaining the world's population. Even humanity is at risk of becoming extinct because of the long-term effects of global warming. Here are some recommendations of what has to be done to save both the planet and humanity.

Recycle everything! Instead of having our trash sent to landfills, everything that people consume and eventually throw out must be recycled. Therefore, we need recycling plants for batteries, electronics, organic (food and garden) wastes, medals, etc. in addition to recycling paper, plastic, glass, and aluminum.

Pollution Free Energy! Reducing energy utilization, such as energy efficient light bulbs, cars, and washing machines will not solve this problem; but only delay this problem from being solved as soon as possible.

Population Control. Right now, the Earth cannot sustain the existing human population indefinitely, and this is not including the current population growth. As a result, the world's resources are quickly dwindling without replacements. The only logical solution to this problem is population control. Since the world cannot indefinitely support the entire human population, then the world's population needs to decrease to a level so that the planet can sustain both humanity and wildlife indefinitely.

Renewable Resources. Humanity is currently consuming more resources than the planet can renew, and this does not include non-renewable resources such as oil. Therefore, business will eventually have to convert to strictly self-sustainable and renewable resources in the near future.

Environmental Protection. The human race is destroying vast regions of the planet, so much so that the planet's ability of supporting life is decreasing. Throughout the world, forests and wild lands must no longer be allowed to be destroyed for human development, and this still may not be enough to support all wildlife. Law must revive land that has become infertile because of man's actions, such as strip mining and deforestation. The world's oceans also need to be globally managed, since the world's fish population is suffering from overfishing. It is estimated that the world's oceans will no longer be commercially useful for fishing between 2030 and 2060. Even air pollution needs to be completely regulated until all air is clean and remains that way.

Manage Global Warming. Global warming is going to decimate the human civilization if left unchecked. Further actions must be necessary to either prevent or manage global warming. For instance, intentionally flood large portions of land to prevent the world's ocean from destroying coastal cities and farmland, redirect rivers to not deposit their water into the oceans but into lakes, valleys, canyons, aquifers, empty oil fields, and where ever else possible, use seawater to flood large sections of unused land, such as deserts. These solutions will definitely have major consequences, but will not include the uncontrolled destruction of cities and countless lives.

11.1. Arrange the sentences in the abstract in a logical order.

a. The previous solutions above will help slow down global warming, but they will not prevent global warming.

b. Here are some recommendations of what has to be done to save both the planet and humanity.

c. Since the world cannot indefinitely support the entire human population, then the world's population needs to decrease to a level so that the planet can sustain both humanity and wildlife indefinitely.

d. Therefore, further actions must be necessary to either prevent or manage global warming.

e. Land that has become infertile because of man's actions, such as strip mining and deforestation, must be revived by law.

f. Instead of having our trash sent to landfills, everything that people consume and eventually throw out must be recycled.

g. Right now, the Earth cannot sustain the existing human population indefinitely, and this is not including the current population growth.

1_____2_____3_____4_____5_____6_____7_____

12. Answer the following questions.

1) Are we really changing the Earth's environment? Why?
2) What can be done to help save the Earth's environment?
3) Is it possible to develop natural resources?
4) What ways of supplying energy do you know?
5) Do land, air and water work as an ecosystem to maintain the "great chain of life"?
6) Can the ecological problems be solved on a local scale?
7) What is the use of recycling?
8) Can nature protection be an effective substitute for national conflicts?

13. Fill in the gaps with the proper tense: *Present Simple, Present Progressive, will, be going to*.

Its policies also ____ ***1 (aim)*** at protecting the ozone layer and at ensuring that the climate dimension ____ ***2 (be)*** appropriately present in all Community policies and that adaptation measures ____ ***3 (reduce)*** the European Union's vulnerability to the impacts of climate change.

The politicians ____ ***4 (may/want)*** to reduce carbon emissions, but it ____ ***5*** *(be)* the designers and engineers that ____ ***6 (decide)*** whether it can be done, together with the specifiers and installers who ____ ***7 (make)*** it a reality.

It's a future that ____ ***8 (present)*** new opportunities and challenges for us all, as well as one that ____ ***9 (bring)*** great change to the type of products and services we ____ ***10 (offer)***.

The restriction and prohibition of various forms of pollutants that ____ ***11 (have)*** a potentially damaging effect on the environment ____ ***12 (be)*** prominent green issues that ____ ***13 (affect)*** us all, especially those people who ____ ***14 (live)*** in large towns and cities where the air quality ____ ***15 (be)*** frequently very poor.

Low carbon electricity ____ ***16 (mean)***, to most greens, renewable sources of energy which ____ ***17 (provoke)*** something approaching a full-scale revolt.

14. C**hoose the correct alternative.**

Are you ***interested/interesting*** in the environment? Are you ***tired/tiring*** of talking about it but doing nothing? Environmental groups need you to be a volunteer and help with their ***excited/exiting*** new campaigns.

If you are ***bored/boring*** with your weekends, get involved and become a volunteer! It is ***satisfied/satisfying*** to know that you can make a difference. You will probably make some ***amazed/amazing*** new friends too.

So, if you are ***worried/worrying*** about the future of the planet, contact our local environmental group or visit the website. If you cannot donate your time as a volunteer, you can be a cyber-activist, just send an email – you will be ***surprised/surprising*** how easy it is!

April 22 - is a special day around the world. Inhabitants of Earth celebrate *Earth day* on that day. Earth day is a time when many people show that they care for our fragile planet. They show concern about the threats the planet faces. It is a day for people to learn what they can do to preserve the planet Earth.

Human beings have a responsibility to take care of this planet. **As guardians of nature, one can follow these simple tasks to help preserve this world for the next generation.**

15. Look through and say which of them is/are the most important and why.

Conserve Energy:

- ❖ Wash clothes with warm or cold water instead of hot
- ❖ Use compact fluorescent light bulbs to save money and energy
- ❖ Lower the thermostat on your water heater to 120

Create Less Trash:

- ❖ Reuse items like bags and containers when possible
- ❖ Use reusable plates and utensils instead of disposable ones
- ❖ Buy products that you can reuse

Save water:

- ❖ Check and fix any water leaks
- ❖ Install water-saving devices on your faucets and toilets
- ❖ Don't wash dishes with the water running continuously

Become Proactive: If you walk past garbage, pick it up and threw it away next to the garbage can that is probably five feet away.

Reduce Toxicity:

- ❖ Use traps instead of rat and mouse poisons and insect killers
- ❖ Have your home tested for radon
- ❖ Create a wildlife habitat in your yard

Register For E-statements, it saves gas and trees. Also, pay bills online and email instead of writing letters.

Protect our air:

- ❖ Shut off electrical equipment in the evening when you leave work
- ❖ Report smoking vehicles to your local air agency
- ❖ Avoid slow-burning, smoldering fires. They produce the largest amount of pollution

16. Check your environmental awareness. Are you a nature-friendly person?

1. What are the major resource and environmental problems in the area where you live?

2. What major types of vegetation grow naturally in your area? What effects have people and their activities on local biodiversity?

3. Are there rivers, lakes, wetland, or oceans nearby? What do you think of the water quality in your area?

4. Are there any plants in your area? If so, what types are they, what are their safety records?

5. What proportion of your diet comes from animals? What proportions come from plants? How much of your food is grown locally? How much is imported? How much of your food is produces organically?

6. How would you rate the quality of the air you breathe: good, fair, or poor? What are the major sources of air pollution in your area? What is the quality of indoor air where you live and study?

WWWF, formally known as the World Wildlife Fund (www.wwf.org or www.panda.org) and Greenpeace (www.greenpeace.org) are two of the world's best-known environmental campaign groups. Both of them have branches in many countries. Look at their websites and find out what they are doing in or near your country. Write to them to find out what conservation and environmental issues are important. Send them your written work about an environmental problem.

APPENDIX I. Academic Writing Task: Describing processes

Read the following advice on describing processes

1. Try to understand the whole process. It may be difficult for many to comprehend a process at the beginning but practicing them regularly will surely give good outcomes. Locate the opening and the culmination of the process. Calculate the number of stages and know what every stage does and the connection of the stages with the stages before and after it.
2. Begin with an introductory sentence, which summarize the whole process. You must paraphrase the question title. You cannot copy the question directly.
3. Give an overview of the picture provided.

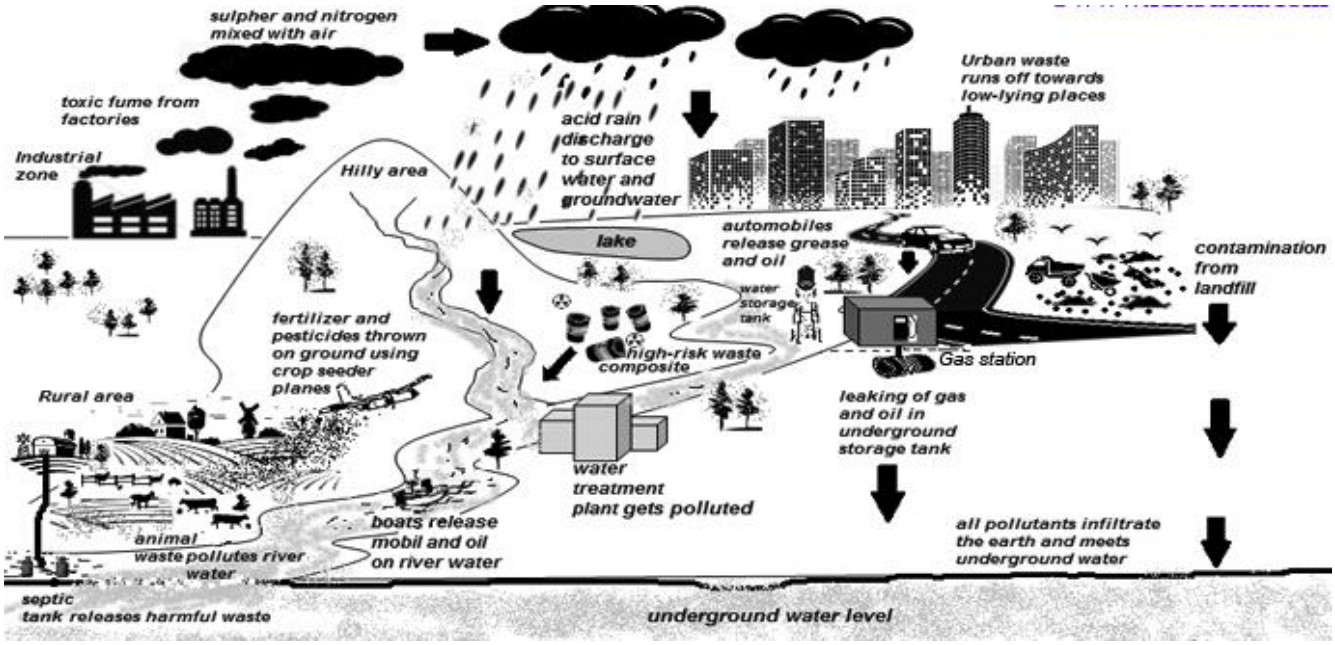
Features/characteristics of an overview: How to write

- It summarizes the complete happenings in task.
- Only one sentence is used to write an overview.
- An overview is generally found just after the introductory statement.
- Overview does not contain any specific information. So, avoid writing numbers in it. Use numbers for the detail part.
- For *line graph* look for changes that happened from the beginning to the end.
- For *cycle/process diagram*, you can mention the total number of stages. You can also include the beginning and end of the process here.
- Start the overview with suitable phrases like, *"Overall, it is clearly seen from the ____ that", "It can be seen clearly that", "It is apparent from the figures that"* etc.

4. Find a way of organizing your description. Learn how to divide the process.
5. Choose a tense, which is appropriate for the topic. It is important to use ***Present Indefinite Tense*** or ***Simple Present Tense Active and Passive voice*** structures.
6. Try to identify any distinct stages in the process.
7. Use the notes on the diagram, but try to express them in your own words, where possible.
8. Remember to use sequence expressions to link the stages. Use connectors where necessary but do not overdo it.
9. When you feel to add any information or words that is not present in the picture, be sure it directly indicates the point where it is used.
10. Never add any personal opinions, reasons, or effects. You are to write on the information you see.
11. When the writing is done, check it thoroughly to find out the mistakes.

1. Try to follow the given instructions to answer a process diagram.

The diagram illustrates how water becomes polluted in urban and rural areas.



1.1. Look at this process diagram. How many independent segments can you divide this process into?

1.2. Answer some questions by looking at the given picture to have a clear understanding of it. If you can answer these questions well, your writing will become easier.

1. What is this picture about?

2. Is it a natural process, a cycle or a production or manufacturing process?

3. Where does it start and where does it end?

4. How many stages are there (Remember that sometimes the number of stages are not included).

5. Do we need to include any information that is not available in the picture?

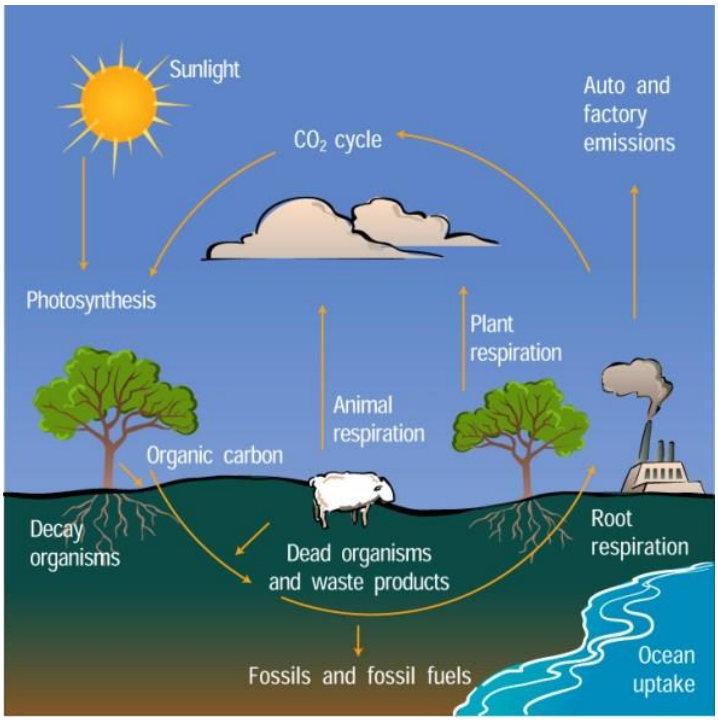
6. Is any stage connected to any other stage?

1.3. Try to put together some of the pictures from Task 1 and practice asking questions with your partners. Write down the answers in your notebook. Then compare the answers with the other.

1.4. Now complete process describing.

2. A cycle diagram is a variation on the process diagram in which the process repeats itself. Write a 150-word description of this diagram.

The diagram below illustrates the carbon cycle in nature.

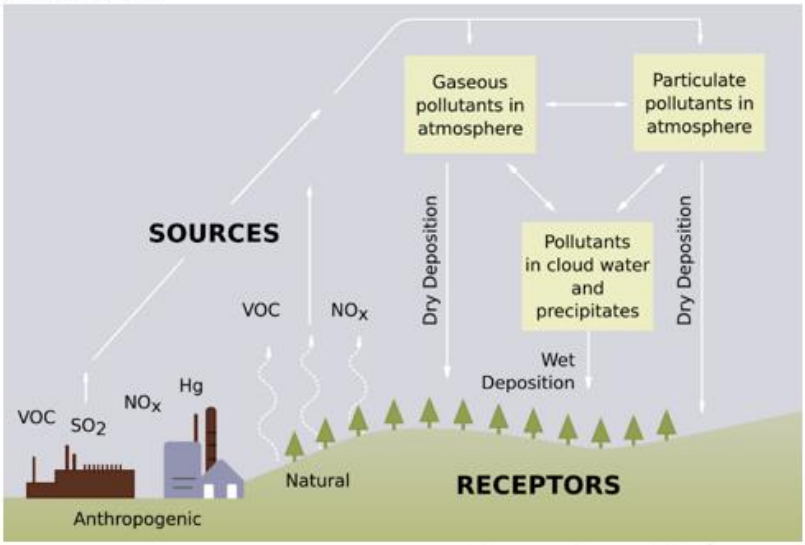


3. You should spend about 20 minutes on this task.

The diagram shows the processes involved in the formation of acid rain.

Summarise the information by selecting and reporting the main features, and make comparisons where relevant.

Write at least 150 words.

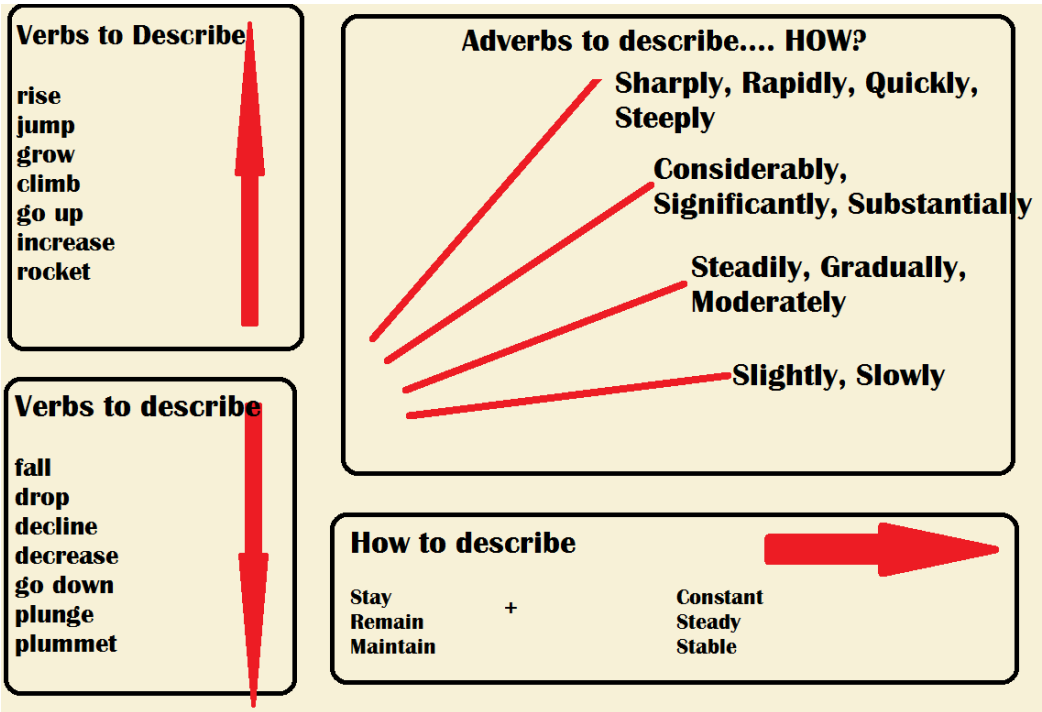


APPENDIX II. Academic Writing Task:
Handling data – line graphs

Tips

1. Change the words in the question to introduce your answer, e.g. *This graph shows = This graph illustrates*.
2. The second paragraph should give an overview of the main points the graph shows (imagine you are describing the results to someone who cannot see the graph).
3. The following paragraphs should describe the main patterns or trends in more detail.
4. Use precise vocabulary like *steadily declined* and *a sharp increase* to describe trends. Use *linking* expressions like *while* and *in contrast* to make comparisons.
5. The question asks you only to 'Summaries the information'. Do not give reasons why these trends might have occurred *or* your personal preferences on the topic.

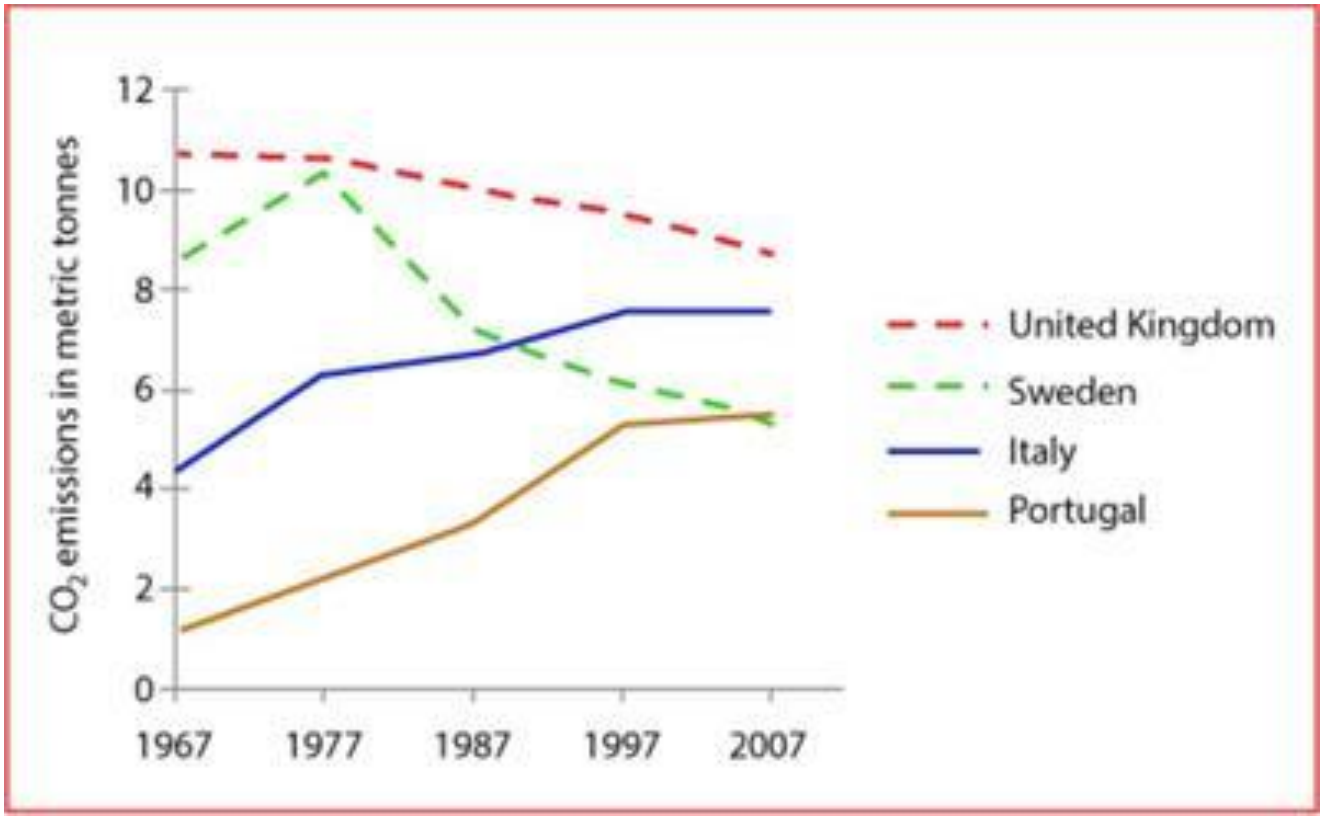
Useful language



1. Look at chart. Which sentences, *a* or *b*, is better summary of the chart?

a The graph shows carbon dioxide (CO2) emissions in Britain, Sweden, Italy, and Portugal from the end of the 70s to the end of 20th century.

b The graph shows average carbon dioxide (CO2) emissions per person in the United Kingdom, Sweden, Italy and Portugal in selected years between 1967 and 2007.



2. Use appropriate vocabulary from the Useful language box above to complete the following sentences:

Noun + adjective

EXAMPLE: In 1987, Sweden had a *sharp decline* in CO2 emissions.

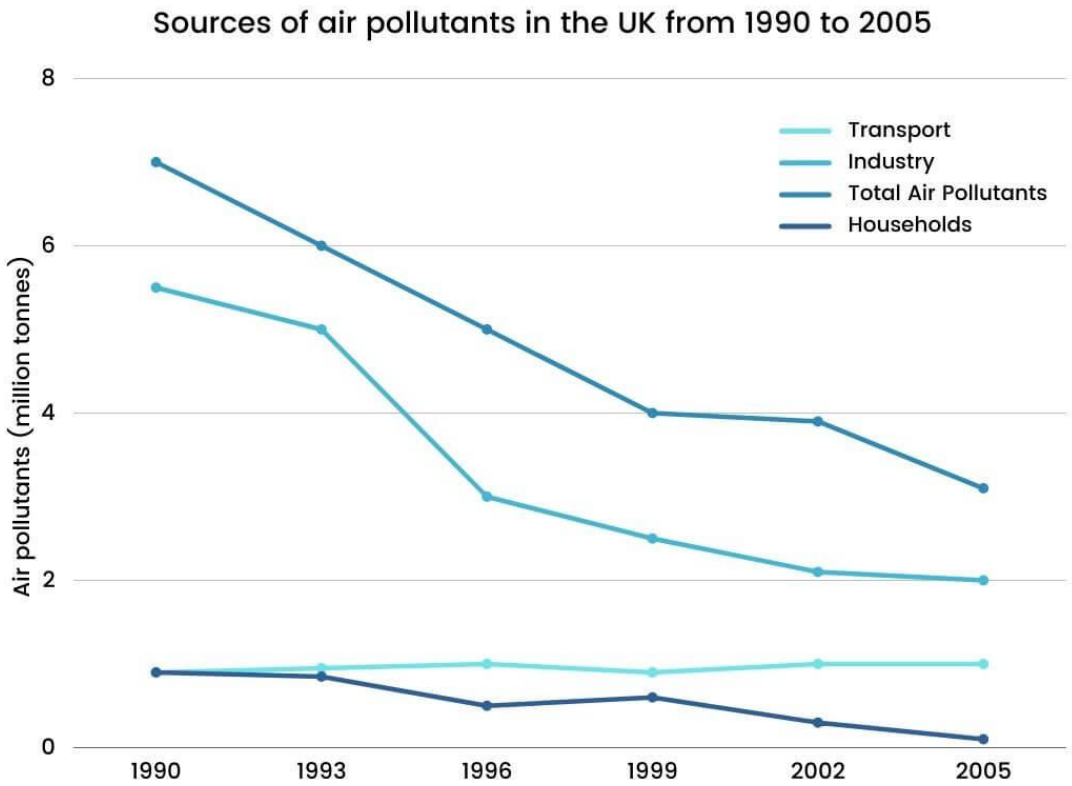
1. Italy faced a ____ in CO2 emissions from 1967 to 1977.
2. Sweden registered a ____ in CO2 emissions from 1997 to 2007.
3. Portugal has seen a ____ in CO2 emissions from 1967 to 1997.

Verb + adverb/adjective/noun

EXAMPLE: In England CO2 emissions *remained constant* from 1967 to 1977

4. In England CO2 emissions ____ between 1977 and 2007.
5. In Sweden CO2 emissions ____ in 1977.
6. In Italy CO2 emissions ____ from 1967 to 1977.
7. In Portugal CO2 emissions ____ from 1997 to 2007.

3. Complete the report below, which describes the chart showing different sources of air pollutants in the UK from 1990 to 2005. Each space has a cine to the type of word needed, to help you.



The line graph illustrates data on three sources of air pollutants in the UK **0** (preposition) *during* the period 1990 to 2005.

Overall, it is clear that the total amount of pollutants in the air **1** (verb) ____ over the years. Predominantly, the amount of air pollutants from industrial sources **2** (verb and adverb) ____.

The total volume of air pollutants in the UK, in 1990, was nearly 7 million tons. In 1999, this figure **3** (verb and adverb) ____ to 4 million tons. Thereafter, it continued to **4** (verb) ____ and was just over 3 million tons by the end of that period.

5.5 million tons of air pollution was taken by the industry in 1990. Then, throughout the period, there was a **5** (noun) ____, and the figure reached up to 2 million tons by 2005, with a specific **6** (adjective and noun) ____ **7** (preposition) ____ 1993 and 1996. On the contrary, the air pollutant's amount was lower from the sources of transport and household. From transport, air pollution **8** (verb and adjective) ____ at approximately 1 million tons from 1990 to 2005. On the other hand, pollutants from households 9 (verb) ____ from nearly 1 million tons to almost 0.1 million tons in 2005.

APPENDIX III. REVISION

ENVIRONMENT - DEFINITIONS







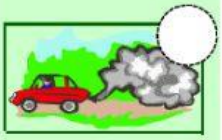


A MATCH THE WORDS/ PHRASES WITH THE RIGHT PICTURE.

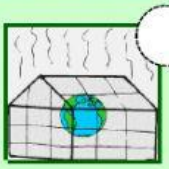
1. AIR POLLUTION
2. OZONE LAYER
3. RAINFOREST
4. ENERGY
5. ENDANGERED ANIMALS
6. ENVIRONMENT
7. ENVIRONMENTALIST
8. PESTICIDE
9. DEFORESTATION
10. RECYCLE
11. ACID RAIN
12. GLOBAL WARMING
13. AEROSOL SPRAY
14. EXHAUST FUMES
15. PLANET
16. GREENHOUSE EFFECT
17. WATER CONTAMINATION

B WRITE THE WORDS/ PHRASES ABOVE NEXT TO THE RIGHT DEFINITION.

1. TOXIC GASES EXPELLED BY CARS. _____
2. THE RISE IN TEMPERATURE CAUSED BY GASES IN THE ATMOSPHERE. _____
3. ANIMALS WHICH ARE IN DANGER OF BECOMING EXTINCT. _____
4. THE PROCESS BY WHICH THE EARTH IS HEATED WHEN THE ATMOSPHERE TRAPS HEAT FROM THE SUN. _____
5. POLLUTED WATER FALLING FROM THE CLOUDS. _____
6. A TYPE OF SPRAY CONTAINING PRESSURISED LIQUID. _____
7. POLLUTION OF THE ATMOSPHERE. _____
8. A DENSE FOREST IN A TROPICAL REGION. _____
9. IT PROTECTS US FROM THE SUN'S ULTRAVIOLET RADIATION. _____
10. THE NATURAL WORLD IN WHICH PEOPLE, ANIMALS AND PLANTS LIVE. _____
11. THE POWER THAT COMES FROM COAL, ELECTRICITY, GAS, ETC. THAT IS USED FOR PRODUCING HEAT. _____
12. CUTTING DOWN TREES OVER A LARGE AREA. _____
13. PUT USED OBJECTS AND MATERIALS THROUGH A PROCESS SO THAT THEY CAN BE USED AGAIN. _____
14. A PERSON WHO WANTS TO PROTECT THE ENVIRONMENT. _____
15. A CHEMICAL SUBSTANCE THAT IS USED FOR KILLING ANIMALS, ESPECIALLY INSECTS THAT EAT FOOD CROPS. _____
16. ADD A CHEMICAL SUBSTANCE WHICH WILL MAKE THE WATER DIRTY OR HARMFUL. _____
17. A LARGE BODY IN SPACE THAT MOVES AROUND THE SUN. _____





How much do you know about the...

Environment

1 **What do you call the area that is inhabited by a particular species?**

a) Habitat.
b) Environment.
c) Biosphere.

2 **What do you call the processing of used materials and their reuse?**

a) Recycling.
b) Reusing.
c) Reprocessing.

3 **Which layer protects the Earth from UV rays?**

a) Oxygen.
b) Nitrogen.
c) Ozone.

4 **The process by which the Earth's temperature is increasing is called the ...**

a) biothermal effect.
b) greenhouse effect.
c) temperature effect.

5 **Which of the following is biodegradable?**

a) Plastic.
b) Paper.
c) Glass.

6 **What is the term for the complete disappearance of a species?**

a) Termination.
b) Disappearance.
c) Extinction.

7 **What do you call renewable safe sources of energy?**

a) Alternative energies.
b) Bio-energies.
c) Solar energies.

8 **Which of these energy sources is renewable?**

a) Coal.
b) Natural gas.
c) Wind.

9 **What do you call the rain that contains many chemicals and is harmful?**

a) Smog.
b) Acid rain.
c) Monsoon.

10 **What do you call a substance that pollutes the air, water or soil?**

a) Pollutant.
b) Pesticides.
c) Acid.

11 **What is the most used renewable energy source in the world?**

a) Hydro energy.
b) Solar energy.
c) Wind energy.

12 **Which of these animals is not in danger becoming extinct?**

a) Panda bears.
b) Polar bears.
c) Grizzly bears.

13 **What type of shopping bag is more eco-friendly?**

a) Paper.
b) Plastic.
c) Neither.

14 **Global warming will cause an increase of ...**

a) Heat waves.
b) Hurricanes.
c) Both.

15 **Which gas is responsible for global warming?**

a) Carbon dioxide.
b) Oxygen.
c) Hydrogen.

16 **What are some of the consequences of deforestation?**

a) Loss of habitats.
b) Soil erosion.
c) Both.

17 **Which of the following is not a fossil fuel?**

a) Coal.
b) Wood.
c) Oil.

18 **Which of these human activities contributes the most for global warming?**

a) Using fossil fuels.
b) Cutting down trees.
c) Riding bicycles.

19 **Which of the following can be recycled?**

a) Milk cartons.
b) Plastic bottles.
c) Both.

20 **Which is the following animals is not yet extinct?**

a) Tasmanian tiger.
b) Dodo.
c) Javan rhinoceros.

21 **Rainforest land is most often cleared for ...**

a) factories.
b) farmland.
c) pasture.

HOW GREEN ARE YOU?

Do the quiz and find out if you behave in a proper way to help save our planet

1.Do you sort out glass, paper, plastic bottles and cans ?

a ❒ Yes , always.
b ❒ Sometimes.
c ❒ Never.

2. Do you buy fair trade products or organic or local food.

a ❒ Yes , always..
b❒ Sometimes.
c❒ Never, it's too expensive.

3. Do you use your own shopping bags?

a ❒ Yes , always
b ❒ Often
c ❒ Once in a while

4. Do you recycle light bulbs and used batteries?

a ❒ Yes , always.
b ❒ Sometimes.
c ❒ Never.

5. Do you always dispose of garbage in a proper way?

a ❒ Yes , always of course.
b ❒ Most of the times
c ❒ Sometimes I don't pay attention!

6. Do you bother picking up other people's litter?

a ❒ Yes , always.
b ❒ Sometimes.
c ❒ Never

7. Do you switch off the lights when you leave a room ?

a ❒ Yes , always.
b ❒ Sometimes.
c ❒ Never

8. Do you switch off other electric appliances at night? (TV ,computer..)

a ❒ Yes , always.
b ❒ Sometimes.
c ❒ Never

9. Do you put on warmer clothes when it's cold instead of putting on the heating ?

a ❒ Yes , always.
b ❒ Sometimes.
c ❒ Never, I prefer putting the heating on more.

10. Do you have showers instead of baths?

a ❒ Yes , always.
b ❒ Often .
c ❒ Never

11. Do you close the tap while you brush your teeth?

a ❒ Yes , always.
b ❒ Sometimes.
c ❒ Never, I never think about it.

12. Do you leave the fridge door open when you do the cooking?

a ❒ No, never., I always close it.
b ❒ Sometimes.
c ❒ Yes , it often happens

13. Do you use public transport or a bike or walk when possible?

a ❒ Yes , always.
b ❒ Sometimes.
c ❒ Never

14. Do you have and use a composter at home?

a ❒ Yes.(2 pts)
b ❒ No . (0 pt)

RESULTS

Check the number of points you have and see if you are GREEN !
a → 2 points b → 1 point c → 0 point (except question 14)

From 22 to 28 Congratulations, you are making real good efforts to help save our planet. Keep up the good work!	From 13 to 21 . Well, you should do better , the environment is not really your priority but you can improve, can't you !	Below 12 No , no, no !!That's not possible , you should definitely do a lot more to leave an acceptable environment to your children and grandchildren!

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для студентів І курсу спеціальностей «Екологія»,
«Технології захисту навколишнього середовища»

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