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«БАШКИРСКИЙ ГОСУДАРСТВЕННЫЙ АГРАРНЫЙ УНИВЕРСИТЕТ»

WORLD AROUND

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INTRODUCTION

Dear friend!

World around is a book about the environment around us. You may ask what the environment is. The environment contains many different parts, just like the pieces of a big jigsaw puzzle: human beings, animals, buildings, the earth, the climate, etc. All these parts interconnect. And if you want to protect the world, you must understand these connections.

World around contains 12 units which discuss environmental issues; introduce some basic concepts of vocabulary, language use, and grammar; include exercises of various difficulty levels. All exercises are designed to predict and built on the information from the text. The book ends with Grammar Review which contains grammar rules necessary for doing grammar exercises in each unit. You can also find texts for Supplementary Reading and Glossary.

Along the way, you will have a great opportunity to explore the world you live in. We hope you will discover and learn a lot of interesting things. Have a great and interesting journey! Good luck!

Sincerely yours,
authors.

UNIT 1

POPULATION AND THE ENVIRONMENT

Today natural resources constitute a threat to public health and development. Water shortages, soil exhaustion, loss of forests, air and water pollution afflict many areas (figure 1.1). Most developed countries currently consume more resources, than they can regenerate. At the same time most developing countries with rapid population growth face the urgent need to improve their standards of living.



Water shortage



Soil exhaustion



Loss of forests



Water pollution

Figure 1.1

The link between population growth and the environmental impact seems obvious at first glance: more people consume more resources, damage more of the

earth and generate more waste. A very small proportion of the population consumes the majority of the world's resources.

Human action has transformed between one-third and one-half on the entire land surface on the earth. We have lost more than one-quarter of the planet's birds and two-thirds of major fisheries are fully exploited, over-exploited or depleted. We live in the period of the greatest extinction of plant (figure 1.3) and animal species (figure 1.2). Two of every three species are estimated to be in decline.



Figure 1.2 The West African black rhinoceros was a subspecies of the black rhino that was declared extinct in 2011

About three-quarters of all current population growth is urban. As cities grow larger, their impact on the environment grows exponentially. Millions people move from country side (rural area) to the city to seek a better place to live, but they often find that their lives become more difficult. Urban areas also export their wastes and pollutants, affecting environmental and health conditions far from the cities themselves.

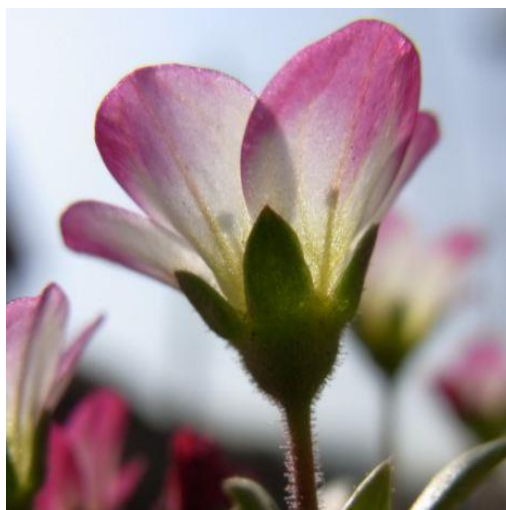


Figure 1.3 *The Saxifraga rosacea became extinct in 1960 due to overgrazing and pollution. Dominic Price, director of the Trust said: 'It's so easy to think of species extinction as something that happened decades ago in England, but year upon year we continue to lose species, at a rate which is far higher than would occur naturally'*

It is 1) _____ to balance the requirements of growing population with the necessity of conserving earth's natural assets. Improving 2) _____ standards without destroying the environment is a global challenge. While the 3) _____ growth has slowed, the absolute number of people continues to increase - by about 1 billion every 13 years. As population and demand for 4) _____ resources continue to grow environmental limits will become increasingly apparent. Slowing population 5) _____ would help improve living standards.

TEXT WORK

1. Read and translate the text «Population and the Environment».

2. Complete the last paragraph with the following words:

natural	living	necessary	growth	population
---------	--------	-----------	--------	------------

3. Match English and Russian equivalents:

1) threat	a) рост
2) shortage	b) поверхность
3) impact	c) действие

4) surface	d) недостаток
5) link	e) уровень
6) loss	f) загрязнитель
7) growth	g) влияние
8) pollutant	h) угроза
9) level	i) связь
10) action	j) потеря

4. Match the words and their definitions:

1) waste	a) the process of getting coal or metal ores from underground
2) extinction	b) presence of abnormally high concentrations of harmful substances in the environment
3) pollution	c) number of people living in a country or town
4) mining	d) unwanted materials, substances, or parts that are left after you use something
5) population	e) the situation when an animal (plant) no longer exist

5. Find the synonyms of the following words in the text:

1) deficit, 2) kind, 3) world, 4) vegetation, 5) resident

6. Find an odd word:

1) to change, to conserve, to transform, to converse

2) impact, access, effect ,influence

3) damage, injury, harm, reparation

4) to decrease, to deplete, to increase, to rise

5) to exploit, to misuse, to use, to deplete

7. Say if the following statements are true or false:

1) When people move from country side to the city they often find that their lives become more attractive.

2) A very small proportion of population consumes the majority of the world's resources.

3) About three-quarters of all current population growth is rural.

4) Two of every three species are estimated to be in decline.

8. Answer the question:

What part of all current population on the earth lives in cities?

1) While the population growth has slowed, the absolute number of people continues to increase – by about 1 billion every 13 years.

2) Millions of people move from country side to the city.

3) About three-quarters of all current population growth is urban.

4) A very small proportion of the population lives in cities.

9. What is the main idea of the text? Choose the right answer:

1) The extinction of plant and animal species has been caused by humanity's gross misuse of the earth's resources.

2) There is link between population growth and the environmental impact.

3) We live in the period of greatest extinction of plant and animal species.

4) The larger the city the greater its impact on the environment.

WORD-BUILDING

10. Complete the table with the derivatives:

Verb	Noun	Adjective
<i>act</i>	<i>activity</i>	<i>active</i>
	population	
exploit		
	usage	
		permissible
improve		
	wastage	

11. Use the appropriate form of the word. See the table above:

1) Endangered animals are under the threat of extinction because of human_____ (to act).

2) Less population growth would help _____living standards (to improve).

3) There are many places in the world where people live without _____and without paying for it (to permit).

4) Waste is _____ material or substance (to use).

5) City _____ in most countries continues to grow (to populate).

GRAMMAR FOCUS

12. Write «be» in the right form (see Grammar Review, Unit 1):

1) Pollution (to be) worldwide problem.

2) It (to be) dangerous to drink polluted water.

3) Now different kinds of trees, many of the animals, birds, and fish (to be) in serious danger.

4) Currently, there (to be) 19 megacities in the world.

5) There (to be) a lot of dinosaurs on the earth 65 million years ago.

SPEAKING PRACTICE

Discuss the problem. The impact of human activity on the environment has changed greatly and can threaten the live on the Earth.

Case study. Most of our world's problems today result from the fact that the world is controlled by huge corporations. Could people driven by need to make profits for their companies think about long-running consequences of their activities? Is there a sound economic reason for business to worry about environment?

Activity. Can you think of three examples of pollution near place you live? Take photos and describe them.

Task for discussion. Analyze the facts about cities and answer the question. What ecological problems are connected to the population growth?

Facts about cities

- In cities of the developing world, one out of every four households lives in poverty.

- 40 per cent of African urban households and 25 per cent of Latin American urban households are living below locally defined poverty lines.
- Fewer than 35 per cent of cities in the developing world have their wastewater treated.
- Between one-third and one-half of the solid wastes generated within most cities in low and middle income countries are not collected.
- 49 per cent of the world's cities have established urban environmental plans
- 60 per cent of the world's cities involve civil society in a formal participatory process prior to the implementation of major public projects.
- Buses and minibuses are the most common (used by most people) mode of transport in cities; cars are the second most common and walking the third.
- 5.8 per cent of children in cities of the developing world die before reaching the age of five years.
- Some 75 per cent of the world's countries have constitutions or national laws that promote the full and progressive realization of the right to adequate housing.
- One out of every four countries in the developing world has constitutions or national laws which prevent women from owning land and/or taking mortgages in their own names.
- 29 per cent of cities in the developing world have areas considered as inaccessible or dangerous to the police.

DO YOU KNOW?

Products with these labels are typically hazardous waste when disposed.

Match the pictures with their names.



A Corrosive

B Poison

C Dangerous for the environment

D Acute toxicity

E Non-flammable gas

F Flammable

G Health hazard

H Explosive

UNIT 2 ENVIRONMENTAL PROTECTION



Figure 2.1 Smog in Tokyo

Scientific and technological progress of the twenty-first century resulted in widespread mechanization, automated lines, computerized management, spaceships, atomic power stations, pipelines, new roads and highways.

But the price for more rapid industrial development is very high: natural resources are exhausted, the ecological balance of the planet is disturbed; some species of flora and fauna disappear; city and industry waters, chemicals and fertilizers are endangering lakes, rivers and ponds. Big cities have a problem with air pollution: the “Killer Smog” caused some 3500-4000 deaths in London in December, 1952. Progress can be blamed for all these environmental problems.

In recent years the pollution 1)... have received great publicity. The Environmental movement associated with no political 2)... has gained the most widespread trust and support. Environmental 3)... stress that the problem is caused by industrial pollution. Long-established environmental groups warn that acid 4)... threaten many forests. Many people started to realize that to keep air and water 5)..., strict pollution 6)... is necessary.

TEXTWORK

1. Read and translate the text «Environmental protection».

2. Complete the last paragraph with the following words:

party	control	activities	rains	problems	clean
-------	---------	------------	-------	----------	-------

3. Match English and Russian equivalents:

1) management	a) доверие
2) species	b) загрязнение
3) fertilizers	c) кислота
4) pollution	d) общественный резонанс
5) publicity	e) управление
6) trust	f) удобрения

7) acid	g) поддержка
8) support	h) виды

4. Match the words and their definitions:

1) waters	a) substances or mixtures that are added to the soil to supply nutrients
2) chemicals	b) available facilities or sources of land
3) species	c) chemical substances
4) resources	d) liquid waste products
5) fertilizers	e) a group of living animals consisting of similar individuals

5. Find the synonyms of the following words in the text:

1) original, 2) ecological, 3) manufactured, 4) fast

6. Find an odd word:

1) road, way, station, line

2) preservation, contamination, pollution, defilement

3) support, help, sustenance, problem

4) actions, trust, movements, activities

5) party, group, alliance, control

7. Say if the following statements are true or false:

1) Scientific and technological progress of the twenty-first century resulted in widespread mechanization.

2) Scientific progress is good for our ecology.

3) Thanks to technological progress the ecological balance is disturbed.

4) There is good ecological situation in big cities.

5) Natural resources of our planet are exhausted.

8. Answer the question:

What is the main ecological problem of big cities?

- a) water pollution
- b) air pollution
- c) deforestation
- d) destruction of ozone layer

9. What is the main idea of the text? Choose the right answer:

- 1) Technological progress is very important for population development.
- 2) Pollution is one the major environmental problems.
- 3) Rapid industrial development.
- 4) Pollution has the great publicity.
- 5) Many people joined different environmental groups.

WORD-BUILDING

10. Complete the table with the derivatives:

Verb	Noun	Adjective
<i>environ</i>	<i>environment</i>	<i>environmental</i>
manage		
	exhaustion	
		fertilizable
realize		
	movement	
		controllable

11. Use the appropriate form of the word. See the table above:

- 1) Another reason of such high level of air pollution in large cities is because of car _____ fumes from very intensive transport (to exhaust).
- 2) The seas are filled with poison: industrial and nuclear waste, chemical _____ and pesticides (to fertilize).
- 3) There are many consequences of damaging the _____ (to environ).
- 4) Dangerous industrial objects are _____ to special zones (to move).

5) Wastes _____ are working together to minimize the amount of waste that needs to be treated, land filled or incinerated (to manage).

GRAMMAR FOCUS

12. Complete the sentences with the appropriate degree of comparison (see Grammar Review, Unit 2):

1. _____ environmental problem is pollution (serious).
2. Storage of polluted wastes near settlements is _____ (dangerous).
3. This is _____ environmental movement in the world (widespread).
4. Many people realize that to keep air and water clean is _____ than to live in the polluted atmosphere (good).
5. To protect our environment is _____ for all people on the planet (necessary).

SPEAKING PRACTICE

Discuss the problem. City and industry waters, chemicals and fertilizers are endangering lakes, rivers and ponds.

Activity. Propose the ways of solving the problem of air pollution.

DISCUSSION

What do you think? Decide if you think the following ideas:

- a) will happen in the next 50 years?
- b) could happen?
- c) won't happen?

Mark the sentences a, b or c.

- 1) Most cars will be electric.
- 2) Nuclear Energy will end.
- 3) Alternative energy will be more important than oil.
- 4) You will recycle all your bags, cans and paper.
- 5) Almost all the rainforests will disappear.
- 6) People will continue to sunbathe.
- 7) The climate will get worse.
- 8) The next generation will care more about the environment than the present.

9) In elections “Green Issues” will become more important than any other.

10) People will destroy the earth.

Where will you place these ideas on the line of certainty?

Think about which expression of certainty you can use to express your opinion.

e.g. I’m certain that most cars will be electric.

UNIT 3

ECOLOGICAL PROBLEMS

Environmental problems can be found in all areas of the world, and they affect land, water, air and people.

Factories, power stations and cars release poisonous chemicals into the air (figure 3.1). The wind carries the gases high into the sky. There they come together with water in the air and form acid rain, acid fog and acid snow. The polluted rain damages plant and animal life, water sources and has a harmful effect on human health.



Figure 3.1 Steam and smoke rise from a power plant and motor vehicles

Much of our energy supply comes from environmentally unfriendly energy sources (coal, oil, natural gas, or radioactive elements). The undesirable effects of pollution both from burning fossil fuels (as well as their depleted resources) and from nuclear waste by-products encourage using renewable energy sources (solar, wind, geothermal power, hydropower and so on) (figure 3.2).



Figure 3.2 Clean and renewable energy sources

There is less and less wilderness in the world. An increasing human population is taking up ever more land for agriculture and urban areas causing threat to biodiversity as well.

In the last 50 years we have lost 300,000 species. One of four mammal species and one in eight bird species face a high risk of extinction in the near future.

The amount of water in the world is limited. Water covers about two-thirds of the Earth's surface. But most is too salty for use. Water shortage is one of the most worrying problems for the new millennium. Today, one person in five across the world has no access to safe drinking water.

Water in seas, rivers and lakes are polluted by wastes and toxic chemicals. Sea animals, fish and birds are killed by oil spills (figure 3.3).



Figure 3.3 Oil spills lead to sea animal kills

The global warming induced by 1) _____ gases (largely by burning 2) _____) leads to the climate change. The area covered by sea ice is 3) _____. The ice at the North and South Pole can 4) _____ causing serious floods in many parts of the world and turning other parts into deserts. Some scientists think that there is a definite link 5) _____ the global warming and the hurricanes, the number of which has 6) _____ increased recently (figure 3.4).

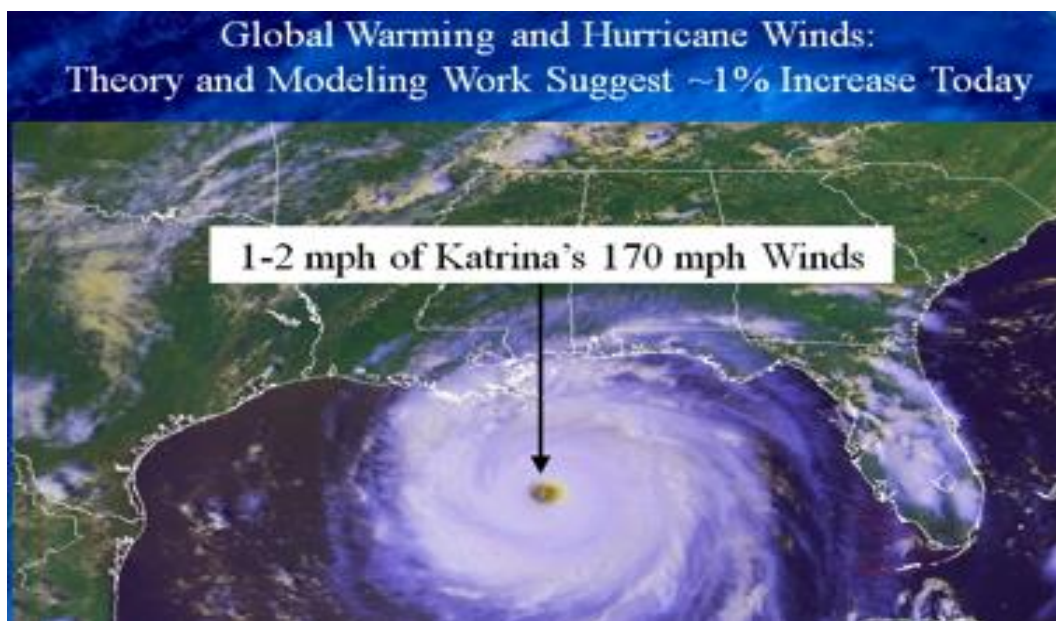


Figure 3.4 Manmade global warming has caused hurricanes to be stronger

TEXT WORK

1. Read and translate the text «Ecological problems».
2. Complete the last paragraph with the following words:

between considerably greenhouse decreasing melt fuels

3. Match English and Russian equivalents:

1) acid	a) ядовитый
2) biodiversity	b) отходы
3) to damage	с) загрязняющий, экологически неблагоприятный
4) environmentally unfriendly	d) загрязнение
5) extinction	e) биоразнообразие
6) poisonous	f) вид(ы)
7) pollution	g) кислота
8) renewable	h) наносить ущерб (вред)
9) species	i) вымирание, исчезновение
10) waste	j) возобновляемый

4. Match the words and their definitions:

1) access	a) any combustible organic material as oil or coal, derived from the remains of former life
2) by-product	b) to make something happen, usually something bad
3) to cause	c) relating to towns and cities
4) fossil fuel	d) something additional produced in the process of making something else
5) urban	e) the right or opportunity to have or use something

5. Find the synonyms of the following words in the text:

1) unwanted, 2) side effect, 3) disappearance, 4) etc., 5) to stimulate

6. Find an odd word:

- 1) health, disease, illness, sickness
- 2) shortage, deficit, excess, lack
- 3) impact, access, effect, influence
- 4) to damage, to benefit, to harm, to injure
- 5) harmful, safe, dangerous, hazardous

7. Say if the following statements are true or false:

1) We are running out of drinking water.

2) Although more than 70% of the world's surface is covered by water, salty water is relatively rare.

3) Hydropower is one of the alternative energy sources which could remove any need for massive development of fossil fuels or nuclear power.

4) We live in the period of a great extinction of plant and animal species.

8. Answer the question:

What are the main sources of acid rain?

1) renewable energy sources

2) oil spills

3) industry and transport

4) salty water

9. What is the main idea of the text? Choose the right answer:

1) The most urgent environmental problem in the world is the shortage of clean water.

2) Ecological problems can be found in all areas of the world, and they affect land, water, air and people.

3) Acid rain is caused by burning of fossil fuel in industry and in transport.

4) The most urgent environmental problem in the world is water pollution.

WORD-BUILDING

10. Complete the table with the derivatives:

Verb	Noun	Adjective
<i>produce</i>	<i>production</i>	<i>productive</i>
		definite
	usage	
deplete		
		considerable
poison		
		formative

11. Use the appropriate form of the word. See the table above:

- 1) Farm waste often contains _____ chemicals (to poison).
- 2) Many ecologists _____ that the disappearance of particular living species constitutes the main ecological and social problem of the day (to consider).
- 3) The intense usage of water resources has led to deterioration of their quality and to their _____ (to deplete).
- 4) You can change waste into something _____ (to use).
- 5) Temperature inversions are particularly suited to the _____ of layers of smoke and industrial haze (to form).

GRAMMAR FOCUS

12. Translate the following word combinations into Russian (See Grammar Review, Unit 3):

mammal species, power station, energy supply, acid rain, oil spill, plant life, sea animals.







SPEAKING PRACTICE

What in your view are 4 major industrially created dangers facing the environment? Choose them from the list below and rank in accordance with their importance. Explain your choice.

- deforestation
- nuclear wastes
- industrial wastes
- nuclear reactors
- industrial emissions
- oil spills
- greenhouse effect
- consumption of non-renewable energy
- carbon monoxide fumes from vehicles
- stock pile of chemical weapons

DO YOU KNOW?

The World Energy Council has identified six sources of energy to pursue as alternatives to non-renewable fossil fuels. Match the pictures with the energy sources names and their definitions:

	<i>Solar</i>	energy from big and small dams
	<i>Wind</i>	energy from plant and animal residue
	<i>Geothermal</i>	energy from the sun's rays
	<i>Modern biomass</i>	energy from seawater movement and temperature changes
	<i>Ocean/Tidal</i>	energy from heat inside the earth
	<i>Hydropower</i>	energy from moving air

THE ENVIRONMENTAL QUIZ

Look at the quiz and answer the questions. Use texts 1-6.

1. What are CFCs and how do they affect the environment?
2. What alternative forms of energy do you know?
3. What is the Ozone Layer? What does it do? What is happening to it?
4. How are forests good for the environment? What is happening to them?
5. What is a hybrid car? How does it help the environment?
6. What is acid rain?
7. What is recycling? How does it help the environment?
8. What is the Greenhouse Effect?

Text1 Global Warming

Scientists say the temperature of the earth could rise by 3°C over the next 50 years. This may cause drought in some parts of the world, and floods in others, as ice at the North and South poles begins to melt and sea levels rise. Global warming is caused by the greenhouse effect. Normally, heat from the sun warms the earth and then escapes back into space. But carbon dioxide and other gases in the atmosphere trap the sun's heat, and this is slowly making the earth warmer.

Text 2 The Ozone Layer

The Ozone layer is a layer of gas high above the surface of the earth that helps to protect it from the sun's ultraviolet radiation, which can damage our skins and cause cancer. Scientists have recently discovered holes in the Ozone Layer, caused by substances called CFCs (chlorofluorocarbons). CFCs are used in refrigerators, aerosol cans and in the manufacture of some plastic products. Some companies now make aerosols that do not contain CFCs, and these are often marked "Ozone Friendly"

Text 3 Deforestation

Rainforests help to control global warming because they absorb carbon dioxide. In recent years, large areas have been destroyed, as the trees are cut down for wood or burned to clear the land for farming. The burning releases large amounts of carbon dioxide into the atmosphere. Many rainforests grow on poor soils, and when they are cut down or burned, the soil is washed away in the tropical rains, so that the area

may turn to desert. Many plant and animal species that live there could become extinct.

Text 4 Pollution

Factories, power stations and motor vehicles pump large quantities of carbon dioxide and other gases into the air. This is a major cause of the greenhouse effect. A lot of petrol contains lead, which is very poisonous and can cause brain damage in children. Most cars use unleaded petrol today and hybrid cars use batteries and petrol to use less petrol. Some poisonous gases dissolve in water in the atmosphere and then fall to the earth as acid rain. Acid rain also damages trees and buildings, and can kill fish in lakes and rivers.

Rivers can also be polluted by industrial waste from factories and chemical fertilizers and pesticides used by farmers.

Text 5 Alternative Energy

Most of the energy we use today comes from coal, oil and gas. But these will not last for ever, and burning them is slowly harming the atmosphere. We need to look for other ways of supplying energy. Solar Power is a way of using the sun's energy as heat or to make electricity. We can also use wind-power by building modern windmills that spin in the wind. There are several types of water-power: river water in mountainous areas can be used to generate hydroelectric power, and we can also create electricity from sea water flowing in and out with the tides.

Text 6 Recycling

Recycling is the processing of used objects and materials so that they can be used again. About 60% of rubbish from homes and factories contain materials that could be recycled. Recycling saves energy and raw materials, and also reduces damage to the countryside. Glass, paper and aluminium cans can all be recycled very easily. Many towns have special bins for bottles and cans where people can leave their empty bottles and cans for recycling. A lot of paper bags, writing paper and greeting cards are now produced on recycled paper

UNIT 4

ANIMAL ECOLOGY

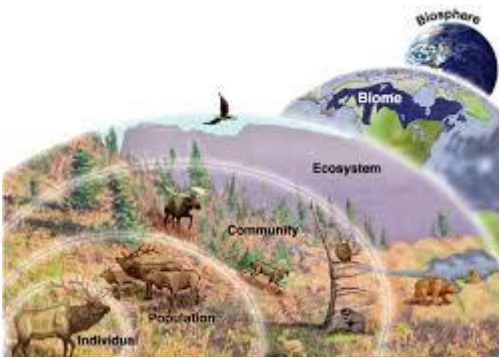


Figure 4.1 The levels of ecological organization

A habitat is any place where a particular animal or plant species lives. Examples of a habitat include a lake, a desert or forest or even a drop of water. Habitats of similar climate and vegetation are called biomes. In different parts of the world, the same biome may contain different species, but will contain similar life forms. For example, trees are the dominant forms of the

rainforest, no matter where the rainforest is located.

Animals which live within the same species group and occupy an area at the same time are part of a population. All members of the same population have certain traits in common. Populations of different plants and animals interact with each other, and together, these populations form communities. Plants and animals in a particular ecological community, or biome must be adapted to the same living conditions so they can all survive in the same biome.

Many populations can live in the same area because each species fills a specific role in the community. This role is called a niche. What an animal eats, and where it eats are also a part of its niche. Giraffes can live in the same area as gazelles because they eat different plants and don't compete with each other. Dung beetles bury the feces of these animals and lay their eggs in it.



Figure 4.2 Interactions and relationships in an ecosystem

The hatching grubs feed on the feces. The buried feces also fertilize plants, which in turn the gazelle and giraffe feed. Each plant and animal has its own niche in the ecological community, and is important in some way to the survival of the other.

Living organisms are usually 1) _____ as consumers (animals), producers (plants), or decomposers (fungi), depending on how they get their food. Consumers are, 2) _____ herbivores, carnivores, or omnivores. Herbivores are called primary consumers because they 3) _____ directly on producers. Carnivores feed on other 4) _____. Omnivores eat 5) _____ plants and animals. Some carnivores, such as bears, foxes, cats or dogs, will at times eat plants. Herbivores will sometimes eat small insects or 6) _____ as well.

TEXT WORK

1. Read and translate the following text «Animal ecology».

2. Complete the last paragraph with the following words:

grubs	classified	either
feed	consumers	both

3. Match English and Russian equivalents:

1) habitat	a) редуценты
2) species	b) популяция
3) survival	c) сообщество
4) population	d) всеядные
5) community	e) выживание
6) carnivores	f) консументы
7) herbivores	g) среда обитания
8) omnivores	h) вид
9) consumers	i) плотоядные
10) decomposers	j) травоядные

4. Match the words and their definitions:

1) biome	a) a body of fresh or salt water of considerable size, surrounded by land.
2) rainforest	b) the role or function of an organism or species in an ecosystem
3) niche	c) an insect that flies around in search of manure deposits, or pats, from herbivores like cows and elephants
4) lake	d) a dense forest found in tropical areas of heavy rainfall
5) dung beetle	e) a large ecological region in which different communities of plants, animals and soil organisms inhabit.

5. Find the synonyms of the following words in the text:

1) biome, 2) to eat, 3) to manure, 4) plants, 5) kind

6. Find an odd word:

1) to contain, to include, to adapt, to comprise

2) different, diverse, various, relative

3) carnivores, omnivores, insects, herbivores

4) to compete, to fight, to lose, to rival

5) giraffe, gazelle, beetle, bear

7. Say if the following statements are true or false:

1) The natural world is filled with plants and animals, each with their own special job or niche.

2) Herbivores are animals that live upon carnivores.

3) Dung beetles play very important role in the nature because they recycle waste material and accelerate circulation of the nutrients in the food chains.

4) The ecological niche describes how populations of different animals depend on each other.

5) Ecosystems have lots of different living organisms that compete with each other.

8. Answer the question:

How do plants and animals live in the biome?

- 1) The plant and animal species that live in each biome have special adaptations that help them survive the conditions of that biome.
- 2) Animals need food and shelter. They may eat plants, or eat animals that eat plants.
- 3) The species of plants and animals in a savanna depends upon the geographic location of the biome.
- 4) The species of plants and animals have to compete with each other.

9. What is the main idea of the text? Choose the right answer:

- 1) A healthy ecosystem has lots of species diversity and is less likely to be seriously damaged by human interaction, natural disasters and climate changes.
- 2) The variety of habitats provided by each biome supports the biodiversity of animal and plant species.
- 3) Every species has a niche in its ecosystem that helps keep the system healthy.
- 4) Fire control has become a problem in many ecosystems, as many plant species require fire to set seed and fire helps to keep other unwanted plant species from taking over.

WORD-BUILDING

10. Complete the table with the derivatives:

Verb	Noun	Adjective
<i>adapt</i>	<i>adaptation</i>	<i>adaptive</i>
differ		
		interactive
compete		
	dependence	
survive		
		dominant

11. Use the appropriate form of the word. See the table above:

1) Those animals and plants that live in permanently cold areas however, need special _____ which allow them to survive in their harsh environment (to adapt).

2) Animals and plants are _____ in getting their food by the way they feed (to differ).

3) Plants _____ for light, space, water and nutrients from the soil (to compete).

4) Why are animals _____ on plants for survival (to depend).

5) Lack of water creates a _____ problem for all desert organisms, animals and plants alike (to survive).

GRAMMAR FOCUS

12. Put the verbs in Present, Past or Future Simple. (See Grammar Review, Unit 4):

1) Lots of different living organisms _____ with each other in an ecosystem (to interact).

2) If the plants die, animals that depend on them _____ (to die).

3) How _____ termites _____ trees survive in savanna in 1980 (to help)?

4) The variety of habitats provided by each biome _____ the biodiversity of animal and plant species (to support).

5) Giraffes _____ in the same area as gazelles because they ate different plants and didn't compete with each other (to live).

6) What _____ if the Amazon rainforest disappears (to happen)?

7) How _____ plants and animals _____ in the desert (to survive)?

8) The important characteristics of a habitat _____ climate, the availability of food, water and other resources, and other factors, such as weather (to include).

9) Ancient Egyptians _____ a lot of the dung beetle, also known as the scarab beetle (to think).

10) Carnivores are animals that _____ plants, small insects or grubs, they consume herbivores or other carnivores (not to eat).

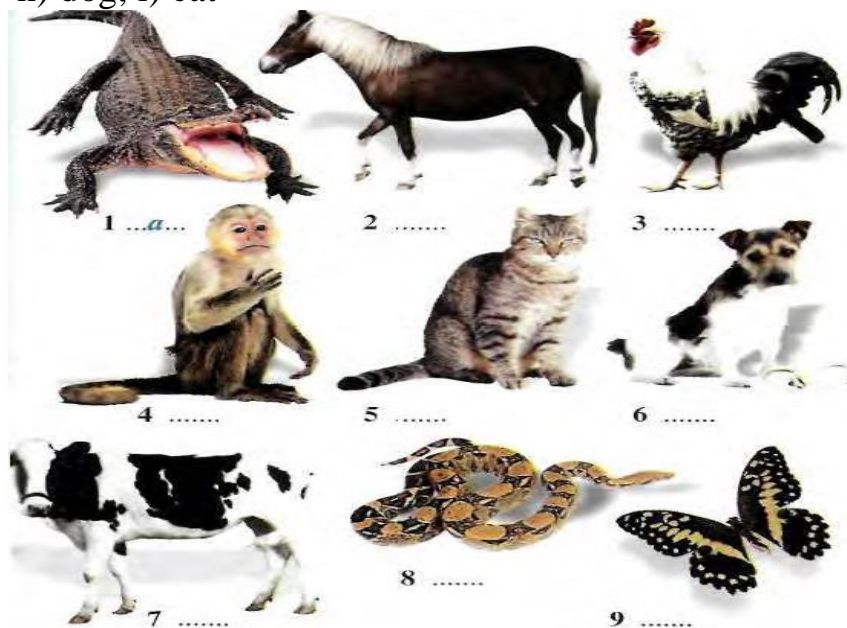
SPEAKING PRACTICE

1. *Fill in the table with the names of animals from the list: alligator, bear, giraffe, monkey, sheep, wolf, lion, tiger, zebra, antelope, camel, deer, cat, monkey, mouse, cheetah, donkey, fox, tortoise, rabbit, hedgehog, elephant, horse, mink, dog, leopard, pig, rat, opossum, squirrel, shark, whale.*

HERBIVORES	CARNIVORES	OMNIVORES

2. a) *Match the names of the animals to the pictures. Close your books and say the names of as many animals as you can remember:*

- b) crocodile, b) butterfly, c) monkey, d) horse, e) rooster, f) snake, g) cow, h) dog, i) cat



b) Which of these animals are reptiles/mammals/insects/birds?

Example: Crocodiles are reptiles.

3. Project Work. Russia is the home to a great variety of different species of wild animals. Speak about the populations of animals living in various biomes of our country. Your presentation should include:

- the classification name of your animal as well as a picture of your animal (amphibians, reptiles, birds, mammals, fish)
- description of your animal (physical characteristics of your animal)
- key features of animal habitat (Where does the animal live? What adaptations have they made to their environments? How do they travel? Migrate or Hibernate?)
- the types of consumers (herbivorous, carnivorous, omnivorous) and their dietary preferences
- conditions in which the animals have to survive (How does your animal protect itself)
- unique or different characteristics (Born alive or eggs? How Many? What are the young called? Warm or cold blooded? What is unusual about your animal?)
- personal statement (what did you like or dislike about this animal?)

4. Species Diversity Quiz

1. Biomes are ___ characterized by certain types of plants and animal communities.

- a) taiga
- b) coniferous forests
- c) geographic areas
- d) savannas

2. The variety of life forms found on Earth is called:

- a) an ecosystem
- b) species diversity
- c) population dynamics

3. One out of every five animal species is:

- a) a type of fish
- b) a type of bird
- c) a type of beetle

4. What are decomposers?

- a) significant oxygen producers through photosynthesis
- b) organisms that feed on wastes and dead organic matter
- c) major producers of food for oceanic and fresh water communities

5. Scientists think that:

- a) there could still be millions of unidentified species
- b) they have identified most of the species on Earth
- c) all of the unidentified species on Earth will be found in the rainforest

6. All life on Earth falls into one of five categories:

- a) insects, birds, plants, bacteria and animals
- b) monera, protists, fungi, plants, and animals
- c) plants, animals, viruses, bacteria, and insects

7. Scientists have given all organisms a two word

- a) Latin name
- b) Greek name
- c) English name

UNIT 5

PLANT ECOLOGY

Plants are tremendously important to all life on the earth. They are the foundation of food chains in almost every ecosystem. Plants also play a major role in the environment by influencing climate and producing life giving oxygen.

Plants are remarkably adaptive organisms inhabiting such diverse environments as tropics and tundra, desert and ocean, lake, mountains and marsh. Yet each species has an optimal habitat. There can be many reasons why a plant flourishes in one plot and not in another. For example, because of the differences in a slope or because of the sheltering effect of a large tree plots just a few feet apart can receive different amounts of water and light.

The same conditions of a slope or shelter can also be responsible for differences in temperature and wind velocity. Soil composition has a profound effect on plants. While many plants thrive in rich loam, only some specialized types can survive in sand or in compacted clay, and fewer still can find a foothold on rocky ledges. Each type of soil has a different capacity for retaining moisture, and each contains varying amounts of nutrients to give to the plant.



Figure 5.1 Branching cinquefoil. Plants thrive on dry, wind-swept and fine-grained ridges on calcareous substrates but also found in cliffs, screes, and on silty terraces and flats close to the coasts

Human 1) _____ plays an important part in determining plant 2) _____ and diversity. If an area is maintained as a park, or if it is farmed, then humans have played a large part in 3) _____, fertilizing, and cultivating the plants. If an area is 4) _____ traveled, paved, littered, exposed to a source of 5) _____, or clear-cut, then humans have played quite a different role.

TEXT WORK

1. Read and translate the text «Plant ecology».

2. Complete the last paragraph with the following words:

planting	pollution	heavily	activity	abundance
----------	-----------	---------	----------	-----------

3. Match English and Russian equivalents:

1) flourish	a) загрязнение
2) composition	b) скорость
3) moisture	с) обрабатывать (землю)
4) maintain	d) опора
5) foothold	e) содержать
6) nutrients	f) вымостить
7) to farm	g) питательные вещества

8) pollution	h) влажность
9) to pave	i) расти
10) velocity	j) состав

4. Match the words and their definitions:

1) marsh	a) a fine-grained soil that combines one or more clay minerals with traces of metal oxides and organic matter.
2) lake	b) a type of wetland dominated by herbaceous than woody plant species
3) clay	c) an area of land usually in a largely natural state for the enjoyment of the public having facilities for rest and recreation
4) park	d) rich, friable soil containing a relatively equal mixture of sand and silt and a somewhat smaller proportion of clay
5) loam	e) a body of fresh or salt water of considerable size surrounded by land

5. Find the synonyms of the following words in the text:

1) significant, 2) thrive, 3) man, 4) humidity, 5) contamination

6. Find an odd word:

1) to include, to increase, to comprise, to contain

2) to grow, to cultivate, to plant, to raise

3) sand, wind, clay, loam

4) important, tiny, great, significant

5) lake, ocean, desert, lake

7. Say if the following statements are true or false:

1) Plants inhabit different biomes such as tropics and tundra, desert and ocean, mountains and marsh.

2) Animals play an important part in determining plant diversity.

3) Types of soil are different for surviving of plants.

4) Plants provide nitrogen and oxygen.

5) The factors why plants are more abundant in some areas than in others include temperature, light, soil, rainfall, wind and human activity.

8. Answer the question:

Why are plants important to all life on the earth?

1) Plants serve as an important source of most medicines and drugs.

2) Plants are the basis of all food chains providing animals directly or indirectly with their food and also supply oxygen for all living things.

3) Plants compete with other plants for space, water, light and nutrients.

4) Much of human nutrition depends on plants, either directly or indirectly.

9. What is the main idea of the text? Choose the right answer:

1) Human and animal activity influence biodiversity of plants.

2) The main factors influencing the number and kinds of plants are temperature, light, soil, rainfall and wind.

3) Plants are the foundation of life on the earth and their growth depends on such factors as temperature, light, soil, rainfall, wind and human activity.

4) Plants are vital to all life on the earth as they provide oxygen, shelter, clothing, food, and medicine for other living organisms.

WORD-BUILDING

10. Complete the table with the derivatives:

Verb	Noun	Adjective
<i>vary</i>	<i>variety</i>	<i>various</i>
determine		
		responsible
	fertilizer	
		specific
	production	
compose		

11. Use the appropriate form of the word. See the table above:

- 1) The Imperial Valley is one the world's most _____ agricultural regions in the world (to produce).
- 2) Where are the greatest _____ of plants and animals on Earth (to vary)?
- 3) Private ownership sector is _____ of an estimated 2.2 million farms, 900 000 restaurants, and more than 400,000 registered food manufacturing, processing, and storage facilities (to compose).
- 4) Most _____ that are commonly used in agriculture contain the three basic plant nutrients: nitrogen, phosphorus, and potassium (to fertilize).
- 5) _____ habitat requirements are necessary for surviving of such plants (to specify).

GRAMMAR FOCUS

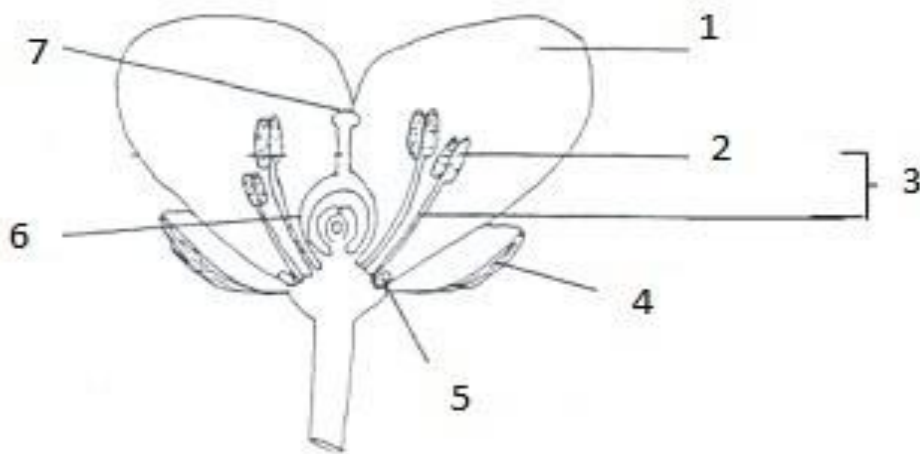
12. Put the verbs in Present, Past, Future Simple or Present, Past, Future Continuous) (See Grammar Review, Unit 5):

- 1) I'm sorry, I can't hear what flowers you _____ at the moment (to plant).
- 2) How long _____ you _____ to stay in tropics (to be going)?
- 3) Plants _____ an important role in human life (to play).
- 4) You should call your credit card company to let them know when, where and how long you _____ next time (to travel).
- 5) Each type of soil _____ varying amounts of nutrients in 2003 (contain).
- 6) Andy _____ the violin the whole day yesterday (to play).
- 7) How _____ they _____ in such severe conditions (to thrive)?
- 8) Because of the difference in humidity the soil _____ different amounts of water and light (to receive).
- 9) What are you doing? – I _____ you a bouquet of red roses for your birthday (to give)?
- 10) The plant _____ a great variety of dairy products during next year (to produce).

SPEAKING PRACTICE

1. Study the names of the main parts of a flower, then label them:

SEPAL S	protect the developing flower, before it opens
PETAL S	usually brightly coloured to attract insects
NECTAR IES	produce nectar, which attracts insects
STAMEN S	the male parts of the flower
ANTHER S	the top parts of the stamens, they produce the pollen
STIGMA	part of the flower on which pollen grains are deposited
OVARY	the female part of the plant, which contains the ovules



2. a) Plants are the backbone of all life on Earth and an essential resource for human well-being. Just think about how your everyday life depends on plants. Complete the sentences with suitable words.



1.



2.



3.



4.



5.



6.

A. Everything we eat comes directly or indirectly from plants. Throughout human history, approximately 7,000 different plant species have been used as _____by people.

B. Of course, aside from humans' myriad uses, plants make up the backbone of all_____. Other species of fish and wildlife also depend on plants for food and shelter.

C. Plants are a great source of _____even for life threatening diseases. One-quarter of all prescription drugs come directly from or are derivatives of plants. Additionally, four out of five people around the world today rely on plants for primary health care.

D. Plants help maintain gaseous balance in the _____. Oxygen is brought to you by plants as a byproduct of photosynthesis.

E. Plants regulate the _____cycle: they help distribute and purify the planet's water. They also help move water from the soil to the atmosphere through a process called transpiration.

F. Plants are the largest providers of textile and fabric material. These materials are used for making cloth and bedding which is required by humans. The plant material like cotton, jute etc. contribute to manufacture yarn and there by_____.

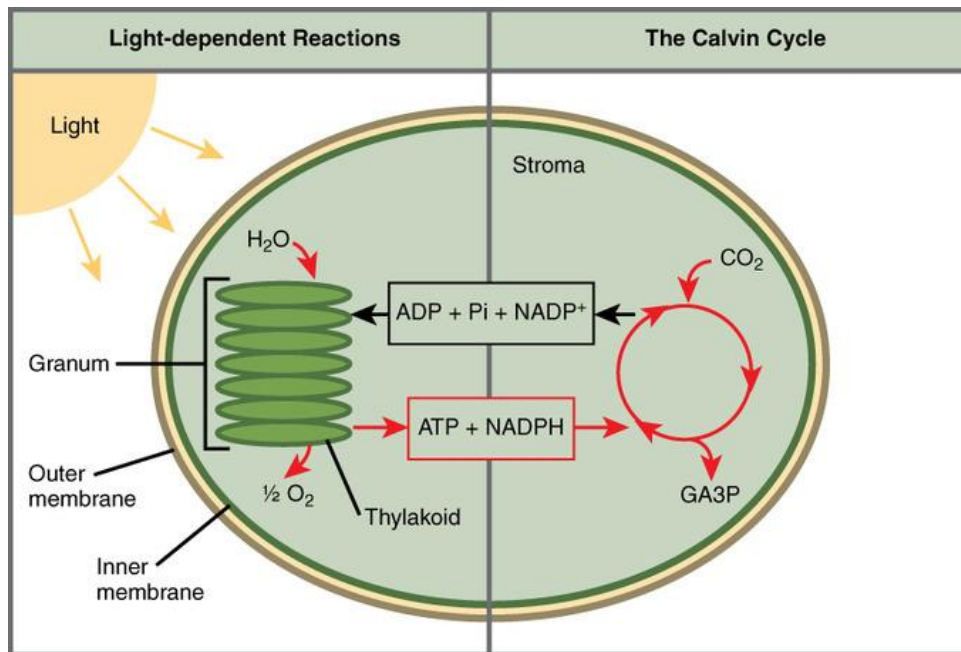
b) Then, match the pictures with information about the role of plants on Earth.

c) Speak about importance of plants in our life.

2. a) Study the information about the process of photosynthesis in plants:

Light-dependent and light-independent reactions are two successive reactions that occur during photosynthesis. Just as the name implies, light-dependent reactions require sunlight. In the light-dependent reactions, energy from sunlight is absorbed by chlorophyll and converted into stored chemical energy, in the form of the electron carrier molecule NADPH (nicotinamide adenine dinucleotide phosphate) and the energy currency molecule ATP (adenosine triphosphate). The light-dependent

reactions take place in the thylakoid membranes in the granum (stack of thylakoids), within the chloroplast.



b) Arrange the following stages of photosynthesis in the correct order:

1. The calvin cycle converts $3CO_2$ molecules from the atmosphere to glucose
2. Sunlight hits the second pigment molecule allowing the enzymes to convert ADP to ATP and $NADP^+$ gets converted to $NADPH$
3. The electrons move down to enzymes
4. The ATP and $NADPH$ is used by the calvin cycle as a power source for converting carbon dioxide from the atmosphere into simple sugar glucose.
5. Light hits the pigment in the membrane of thylakoid, splitting the H_2O into O_2
6. CO_2 and H_2O enter the leaf

c) Talk about the process of photosynthesis in plants, using the plan above.

UNIT 6

LAND CATEGORIES OF THE RUSSIAN FEDERATION



Figure 6.1 Agricultural lands

Land account (LA) is a system for registering the actual state and use of land. Land can be registered by administrative units, land categories, land quality, and land tenants.

LA indicates all changes in land use at the moment of observation and records them in the land cadastre.

Under Article 7 of the Land Code of the Russian Federation, all land in the country is divided into seven land categories:

1. Agricultural lands (figure 6.1);
2. Settlement lands;
3. Lands of industry, power industry, transport, communications, radio broadcasting, television, informatics and other activities;
4. Specially protected territories;
5. Lands of forest fund;
6. Lands of water fund;
7. Reserve lands.

The category of land must be indicated in:

1) reports of federal executive authorities, reports of executive authorities of constituent entities of Russia and reports of local authorities on providing plots of land;

2) contracts where the plots of land are the subject thereof;

3) documents of the state land cadastre;

4) documents on state registration of rights;

5) other documents in the cases established by federal acts and acts of constituent entities of Russia.

Land classified under a particular 1) _____ may be used only for its designated 2) _____. Depending on the ownership of the land, the 3) _____ to transfer land from one category to another is vested either in the Russian Government, executive authorities of Russian constituent entities, or in municipalities. Agricultural 4) _____ may be transferred from one category to another only by the executive 5) _____ of Russian constituent 6) _____.

TEXTWORK

1. Read and translate the text “Land categories of the Russian Federation”.

2. Complete the last paragraph with the following words:

land	purpose	authorities	entity	right	category
------	---------	-------------	--------	-------	----------

3. Match English and Russian equivalents:

1) account	a) кодекс
2) state	b) субъект
3) tenant	c) резерв
4) code	d) поселение
5) settlement	e) владелец
6) reserve	f) состояние
7) ownership	g) владение
8) entity	h) оценка

4. Match the words and their definitions:

1. land	a) the part of the earth's surface that is not covered by water
2. unit	b) a class or division of things having particular characteristics
3. fund	c) a person or organization having power or control in a particular sphere
4. category	d) a part of land
5. authorities	e) a large stock or supply of smth

5. Find the synonyms of the following words in the text:

1) governmental, 2) preserved, 3) farming, 4) real, 5) special

6. Find an odd word:

1) land, law, ground, soil

2) owner, inhabitant, government, tenant

3) code, settlement, community, colony

4) manufacture, agriculture, industry, production

5) region, municipality, council, administration

7. Say if the following statements are true or false:

1) Land account (LA) is a programme for registering the actual state and use of land.

2) Land is registered by administrative units, land categories, land quality, and land tenants.

3) Under Article 17 of the Land Code of the Russian Federation, all land in the country is divided into eight land categories.

4) LA indicates all changes in land use at the moment of observation.

5) LA records the changes in the registry.

8. Answer the question:

What is Land Account?

a) Land Account is a land category.

- b) Land Account is a document of the state land cadastre.
- c) Land Account is a record of changes in the state land cadastre.
- d) Land Account is a system for land registration.

9. What is the main idea of the text? Choose the right answer:

- 1. All changes in land use are taken into consideration in the land cadastre.
- 2. Article 7 is the most important in the Land Code.
- 3. 7 land categories in the Land Code, documents and the rights to transfer them.
- 4. Documents and reports of the executive authorities.
- 5. Land ownership.

WORD-BUILDING

10. Complete the table with the derivatives:

Verb	Noun	Adjective
use	user	usable
		executive
	protection	
	communication	
administer		
designate		
		governmental

11. Use the appropriate form of the word. See the table above:

- 1) The _____ constituent entities of the Russian Federation have the right to transfer lands from one category to another (to execute).
- 2) Specially_____ territories have scientific, cultural and economic value for the country (to protect).
- 3) This land is _____ for agricultural use (to designate).
- 4) The land category is indicated in the _____ documents (to govern).
- 5) Land is registered by_____ units and other land categories (to administer).

GRAMMAR FOCUS

12. Complete the sentences with the appropriate Modal Verbs (see Grammar Review, Unit 6):

- 1) Land_____ be divided into 7 categories.
- 2) The transfer of lands_____ be implemented only by executive authorities.
- 3) You _____ find all changes in land use in these reports.
- 4) Each land plot _____ be transferred from one category to another.
- 5) Agricultural lands _____ be located far from settlements.

SPEAKING PRACTICE

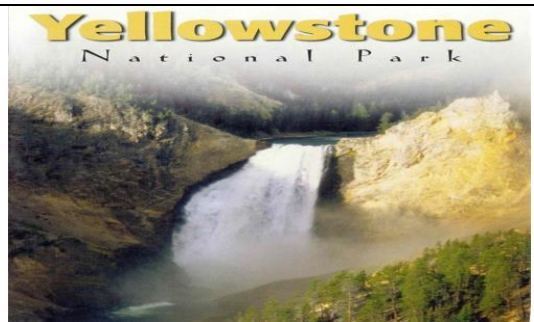
Discuss the problem. Reserve lands are used not for their designated purpose.

Activity. You should transfer the land from one category into another. What documents should be prepared for it?

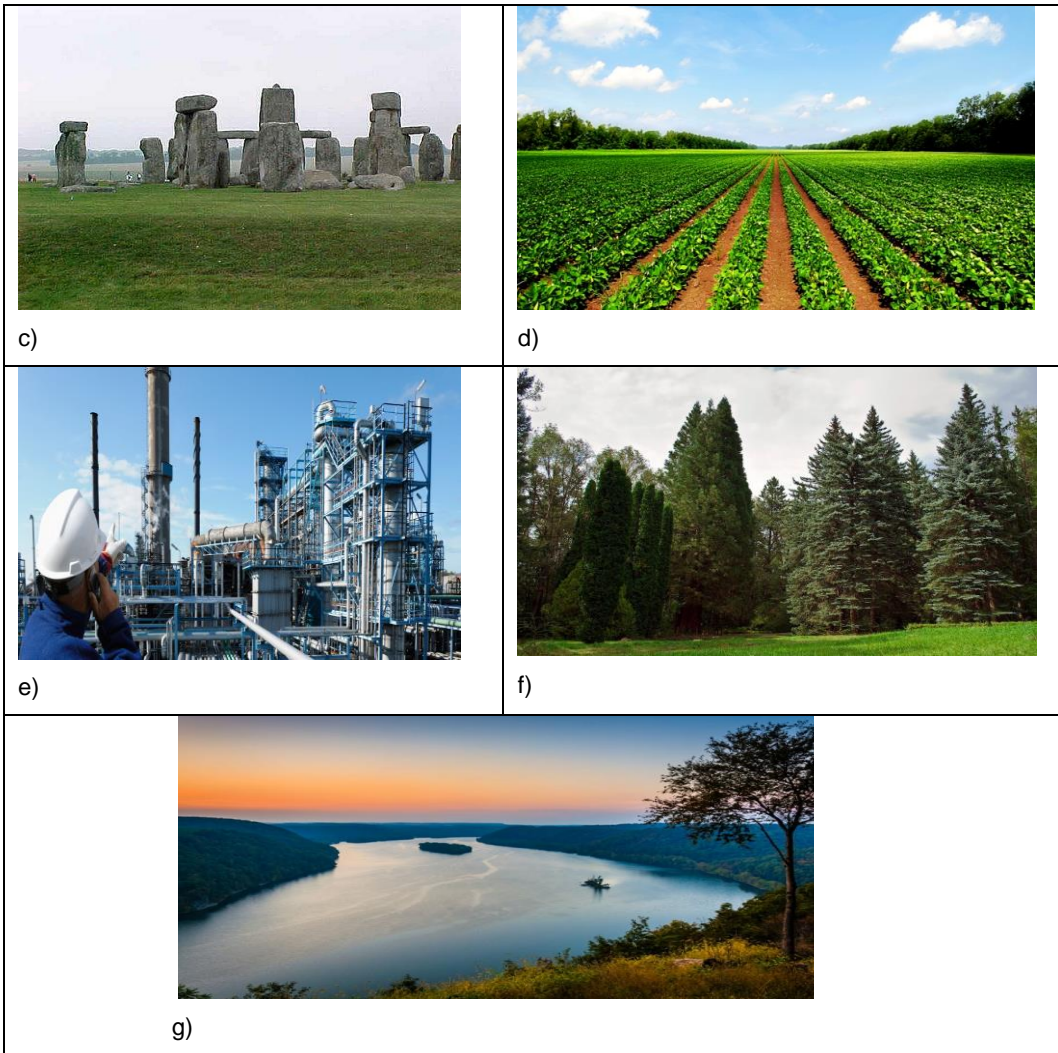
Match land categories to the pictures. Explain: 1. Agricultural lands; 2. Settlement lands; 3. Lands of industry, power industry, transport, communications, radio broadcasting, television, informatics and other activities; 4. Specially protected territories; 5. Lands of forest fund; 6. Lands of water fund; 7. Reserve lands.



a)



b)



UNIT 7

SURVEYING

Surveying is the method of determining accurately points and lines of direction on the earth's surface and preparing from them maps or plans. Boundaries, areas, elevations, construction lines, and geographical or artificial

features are determined by the measurement of horizontal and vertical distances and angles.

Hydrographic surveying deals with seas, oceans and coast lines, is recorded on charts, and marks such features as bottom contours, channels, buoys, and shoals. Land surveying



Figure 7.1 Surveying is being carried out on the construction site

includes both geodetic surveying and plane surveying.

Geodetic surveying is used for large areas and takes into account the curvature of the earth's surface. Plane surveying deals with areas sufficiently small that the earth's curvature is negligible and can be disregarded. Plane surveying dates from ancient times and was highly developed in Egypt. It played an important role in American history in marking boundaries for settlements. Surveying was a profession of distinction – both Washington and Jefferson worked for a time as surveyors. Branches of surveying are named according to their purpose, e.g., topographic surveying, used to determine relief, route surveying, mine surveying, construction surveying (figure 7.1); or according to the method used, e.g., transit surveying, plane-table surveying, and photogrammetric surveying (securing data by photographs).

It is clear that surveying has progressed rapidly in recent years. Increased development and the need for precise land divisions, as well as the role of mapping for military requirements have led to many improvements in instrumentation and methods.

The advances in air, space and ground based surveying 1) _____ are in part 2) _____ the great increase in computer 3) _____ and storage capacity that we have seen over recent years. We can now collect and 4) _____ vast amounts of data on the measurement of the earth and use this to build new 5) _____, monitor natural resources and help 6) _____ new planning and policy guidelines.

TEXT WORK

1. Read and translate the text “Surveying”.

2. Complete the last paragraph with the following words:

techniques	store	develop	processing	structures	due to
------------	-------	---------	------------	------------	--------

3. Match English and Russian equivalents:

1) mine surveying	a) измерять
-------------------	-------------

2) shoal	b) кривизна
3) surveying	с) отмель
4) transit surveying	d) незначительный
5) curvature	e) изыскательные работы
6) plane table surveying	f) регистрировать
7) record	g) маркшейдерская съемка
8) negligible	h) мензурная съемка
9) measure	i) землемер
10) surveyor	j) тахеометрическая съемка

4. Match the words and their definitions:

1) plane surveying	a) a part of something that you notice because it seems important, interesting, or typical
2) feature	b) the outside or top layer of something
3) measurement	c) official instructions about the best way to do something (especially difficult or dangerous)
4) surface	d) type of surveying in which the details of the terrain are obtained and where the horizontal plane is generally sufficient
5) guidelines	e) the act of determining the length, height etc of something

5. Find the synonyms of the following words in the text:

1) pay attention to, 2) ignore, 3) start from, 4) handle, 5) get

6. Find an odd word:

- 1) contour line, angle, boundary, border
- 2) map, chart, route, plan
- 3) accurately, precisely, exactly, attentively
- 4) goal, idea, purpose, objective
- 5) determine, define, distinguish, identify

7. Say if the following statements are true or false:

- 1) Surveying determines various features by measuring distances and angles.
- 2) Surveying types are named according to the site of surveying.
- 3) Geodetic surveying and plane surveying are identical.
- 4) Progress in surveying has taken place due to the need to mark boundaries for areas, settlements, countries.
- 5) Information technology has little impact on the development of surveying methods.

8. Answer the question:

What is the purpose of hydrographic surveying?

- 1) to make measurements of sea level
- 2) to mark boundaries of water bodies
- 3) to examine everything connected with water bodies and their lines, and record all the features on the charts
- 4) to estimate the depth of water bodies

9. What the main idea of the text? Choose the right answer:

- 1) The text describes the types of surveying.
- 2) The text presents a timeline of surveying development.
- 3) The text provides information about the methods and types used in surveying.
- 4) The text explains the role of surveying in different areas of human activities.

WORD-BUILDING

10. Complete the table with the derivatives:

verb	noun	adjective
<i>construct</i>	<i>construction</i>	<i>constructive</i>

	development	
improve		
		measureable
	determination	
cooperate		
		storable

11. Use the appropriate form of the word. See the table above:

- 1) The GPS data can ___ the situation on the roads (to improve).
- 2) The ___ capacity of the laptop is really small (to store).
- 3) Global geodesy is responsible for the _____ of the size of Earth (to measure).
- 4) Geographical features _____ by measurement are plotted on the map (to determine).
- 5) Scientists are _____ a new way of measuring the sea floor contour (to develop).

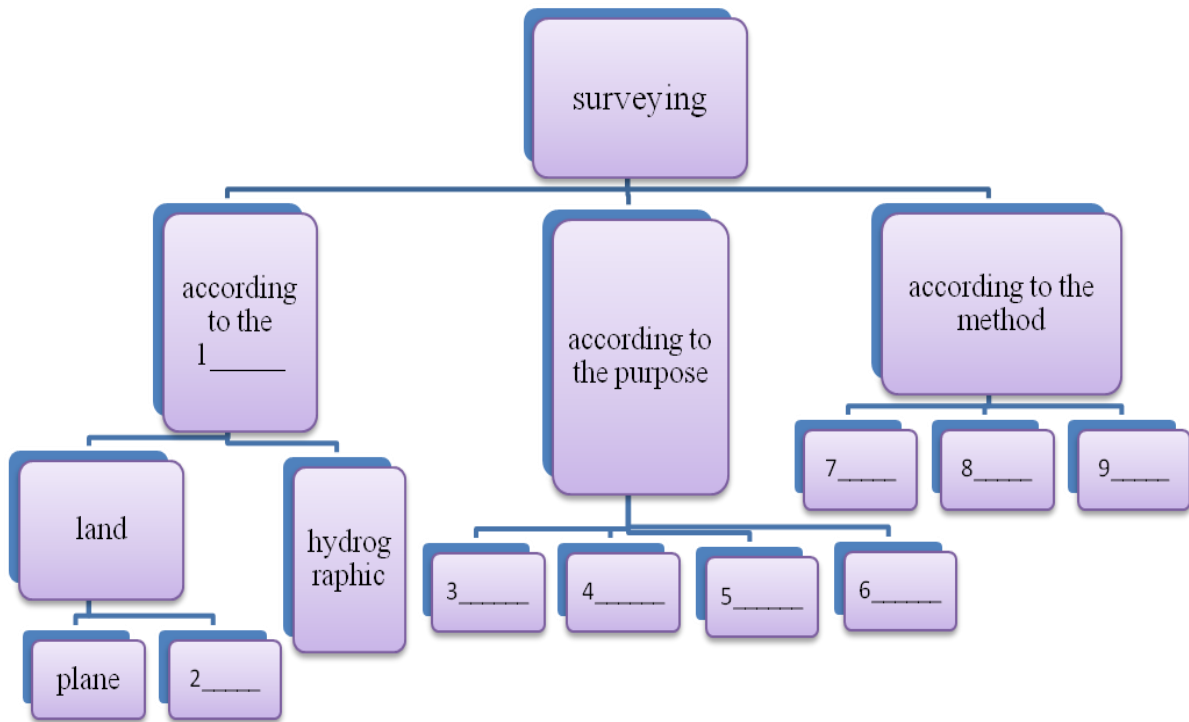
GRAMMAR FOCUS

12. Put the verbs in the correct tense (Present Perfect, Past Simple, Present Simple) (see Grammar review, Unit 7):

- 1) According to the classical definition, geodesy ___ (be) the science of the measurement and mapping of the earth's surface.
- 2) This definition _____ (retain) its validity to this day; it _____ (include) the determination of the earth's external gravity field, as well as the surface of the ocean floor.
- 3) A recent survey _____ (show) that over 80 % of drivers use GPS systems to find their location on the road.
- 4) There _____ (be) close cooperation between global geodesy, geodetic surveying and plane surveying.

5) The oldest records indicate that the science of surveying _____ (begin) in Egypt. Later, European countries _____ (need) to accurately map their land and its boundaries, often for military purposes.

13. Use the text information to complete the chart about the types of surveying:



route, transit, mine, topographic, geodetic, photogrammetric, construction, plane-table, area.

SPEAKING PRACTICE

Brainstorming. Working as a surveyor.

1) What qualities are necessary to become a surveyor? Together with your teacher write a list of necessary qualities. Provide explanation for each point. For example: *A surveyor has to be very thorough, not to make mistakes in the process of measuring.*

2) What are advantages and disadvantages of working as a surveyor? In two groups discuss and make up lists of advantages and disadvantages.

Project work. Passport of a surveying instrument.

There are a lot of different instruments used in surveying, for instance a theodolite, a leveling instrument, a rod, a surveyor's tape, a plane-table, a total station. Choose one of the measuring devices and compile a passport for it. You should include the following information about the instrument:

- name,
- types,
- picture,
- basic features, functions,
- types of surveying it is used in,
- general arrangement,
- advantages,
- disadvantages,
- average price.

When you are ready with the passport, give a presentation of it in class.

Activity. Conducting a survey.

Every student must choose one of the questions that interests her / him. Try to choose different questions. Stand up, and ask all the other students your question. Make a note of their answers. Prepare a report. Use prompts below.

Most Some Quite a few A few Few	prefer leather jackets, jeans, and black t-shirts
All About half	of us wear yoga or sweat pants, comfortable shoes, and well-worn shirts
Only one	of us wears company shirts with logos and t-shirts from trade shows
Everybody	prefers dress shirts, ties, and

Nearly everybody	khakis
Hardly anybody	
Nobody	

Which Engineer Are You? EE Personality Quiz

Suzanne Deffree -April 10, 2014

We care what type of engineer you are. All engineers are awesome in our book. However, through this fun 10 question quiz you'll see which of these well-known engineers your personality most closely aligns with.

Grab a pen and paper to keep track of your choices, have fun, and look for a few extra opportunities at the end of the answer section.

1. What best describes your wardrobe?

- A) Company shirts with logos and t-shirts from trade shows
- B) Dress shirts, ties, and khakis
- C) Multiples of the same outfit; I don't waste time on deciding on attire
- D) Leather jackets, jeans, and black t-shirts
- E) Yoga or sweat pants, comfortable shoes, and well-worn shirts that I've had since college

2. What's on your book shelf?

- A) Surviving Stress at Work
- B) How to Make Friends and Influence People
- C) Hitchhiker's Guide to the Galaxy
- D) All my saved copies of Make Magazine and EDN, of course
- E) The Talent Code: Greatness Isn't Born. It's Grown.

3. What's on your TED Talk playlist?

- A) George Smoot: The design of the universe
- B) Susan Cain: The power of introverts
- C) Note-taking, doodles and sketches from TED2014

D) Catherine Bracy: Why good hackers make good citizens

E) Aimee Mullins: The opportunity of adversity

4. Your favorite productivity device for designing is a:

A) Trusty scope

B) Reliable desktop with double monitor

C) Grid notebook or nearby napkin, whatever is available for a quick doodle

D) Smartphone

E) Tablet

5. When you take a week off of work, you:

A) Go camping to enjoy the stars in peace and quiet

B) Think that's a great time to clean out the garage

C) Say, why would you take a week off of work?

D) Rock climb, windsurf, go whitewater rafting – anything new and exciting

E) Volunteer for a FIRST or other STEM (science, technology, engineering, and math) initiative to help inspire others

6. What keeps you awake at night?

A) Unstable systems forced upon my designs by poor management decisions

B) Questioning why the marketing department doesn't understand the product or basic physics, for that matter

C) Who sleeps at night? Waste of time.

D) All my social media accounts; Gotta keep my "friends" updated

E) Planning my career path beyond my current position

7. Who's your favorite superhero?

A) Spock ... he's a superhero, right?

B) The Hulk, but more for the Bruce Banner side, though.

C) Dr. Who because time travel is not impossible!

D) Billionaire inventor, philanthropist, overall awesome Iron Man. He's da man.

E) Wonder Woman, a princess turned defender and warrior

8. What's *not* on your workbench?

- A) Awards for all my great designs
- B) Photos of me with my huge gang of friends
- C) Empty space
- D) I don't have a workbench. The world is my workbench.
- E) Trinkets. I use the space for work, not fun.

9. What do you have on you at all times?

- A) Well, my boss is always on me for faster, smaller, cheaper.
- B) A smartphone full of so many apps it would make a boy scout look unprepared
- C) Random parts from something I tore down and improved
- D) Duct tape
- E) An inspirational quote or symbol tattoo

10. If you weren't an engineer, you'd be:

- A) In the military
- B) An accountant
- C) Huh? What? There is no other career than engineering for me.
- D) A mechanic for high-end and hybrid vehicles
- E) The cool high school science teacher kids want to hang out with after class

***If you answered ...* Mostly A: You're a Scotty!**

Just as Captain Kirk often made unreasonable demands on Mr. Scott, you, too, face demands from others who perhaps think engineering is easier than it is. It can make for a very stressful work environment when you have to repeatedly explain to your boss that you're "giving 'er all she's got!" Yet, somehow, you always come through and the Enterprise (of your company) is saved, once again. You may not get the credit you deserve or the prestige of a James T, but you know that your work and diligence are necessary to go where no man has gone before ... in this day and age that could mean embedded systems and not space travel.

Mostly B: You're a Dilbert!

A bit socially awkward and fashion prohibited, you may find yourself feeling

out of place in situations where extroverts shine. As someone who leans more toward an introvert, you'd rather be alone with your thoughts at your workbench than in a bar making small talk – and that's OK, by the way. You're smarter than your manager and the entire marketing department put together, which can cause some friction for you on the job. In fact, they may sometimes wonder if you're going to snap. Try not to pity these silly people. Instead, celebrate their accomplishments, like finding their way back to the office after lunch or managing to reset their voicemail. And revel in the fact that, yeah, you may not be the life of the party, but what you're doing with your life is far more important.

Mostly C: You're a Tesla!

Genius comes in all shapes and sizes and, if you're like Tesla, with some quirks as well. You can sometimes be too focused on the details and obsessed with an idea that it's hard to move on when the idea been proven implausible. But implausible does not mean impossible, and your imagination drives you forward. You think patents are a nuisance and could care less about marketing an idea because, if it's great, it will sell itself, right? Be cautious of the Edisons out there ready to manipulate your designs for their own gains and of working your life away.

Mostly D: You're a MacGyver!

You are the rare breed of engineer who has their accomplishments and intelligence celebrated by lesser, non-engineers. You're like the superhero they call when their world comes crashing down – ie, their smartphone won't accept their password, the DVR is too complicated, their car won't start, or they have to figure out a tip on a restaurant check. Kids and adults alike think you're cool because you make robots out of found parts and you can fix whatever they broke with some duct tape and a few AA batteries. This can lead to a bit of an inflated ego for you but also can bring about a full social life. People may mistakenly refer to you as a "hacker" or "science guy" because they don't actually know what an engineer does, but you don't dwell on that. Keep

rejoicing in their love and admiration, and remember that not every engineer is so lucky to be appreciated.

Mostly E: You're a Grace Hopper!

You're a pioneer and a fighter. When someone tells you that you can't do something for an idiotic reason, you calmly continue on to prove them wrong. Like the many Grace Hoppers of history who refused to be held down, you take the negativity of others and use it to make your design case stronger, letting the discouragement roll off your back like water on a duck. Your work's credit is often given to someone else. You don't get angry; you find ways to spread the learning and may compensate by mentoring others – what a wonderful way to pay it forward. Persevering onward, always pioneering new avenues, the world needs you as does the next generation of engineers, not just for your smarts but your tenacity and determination not to fail.

UNIT 8

LANDSCAPE ARCHITECTURE



Landscape is an important attraction of ecotourism destinations. Landscape is all the natural features such as fields, hills, forests, and water that separate one part of the earth from another part. Usually a landscape is that portion of land or territory that the eye can comprehend, including all its natural characteristics.

Landscape architecture is both the art and profession of landscape design, in which topographical, horticultural, and other elements are arranged to suit human use. Landscape architecture developed as a profession only in the mid-1800s. The term “landscape architecture” was first used in 1858 by Frederick Law Olmsted

and Calvert Vaux (figure 8.1). At that time they were designing and constructing New York's Central Park (figure 8.2).

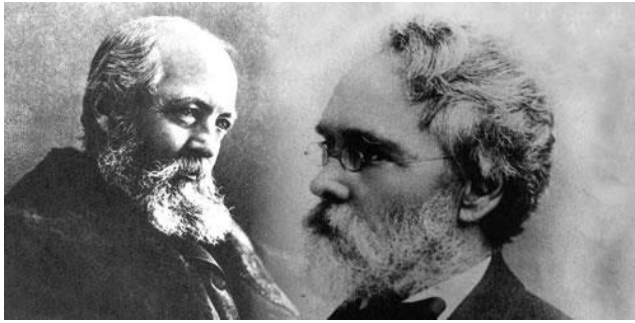


Figure 8.1 Frederick Law Olmsted
and Calvert Vaux



Figure 8.2 Central Park
in New York

Olmsted and Vaux 1) _____ the term, but they did not originate the art. Americans had landscapes to suit various needs, particularly in streetscapes, garden designs, and park construction. Colonial Americans 2) _____ heavily from European landscape 3) _____, particularly in creating classical, 4) _____ gardens, with straight paths and square beds of formal plantings. Regional differences developed early. For example the southern climate and plantation culture encouraged the development of large gardens and formal design. George Washington's Mount Vernon gardens 5) _____ the grand gardens of the late 1700s. The University of Virginia and the grounds of Monticello remind us of Thomas Jefferson, who built them with an eye to both attractiveness and efficiency.

TEXT WORK

1. Read and translate the text "Landscape architecture".

2. Complete the last paragraph with the following words:

design	created	rectilinear	borrowed	represent
--------	---------	-------------	----------	-----------

3. Match English and Russian equivalents:

1) landscape	a) топографический
2) destination	b) охватывать
3) to comprehend	c) городской пейзаж
4) topographical	d) клумба
5) horticultural	e) удовлетворять требованиям
6) to suit	f) место / пункт назначения
7) to originate	g) садовый
8) streetscape	h) прямолинейный
9) rectilinear	i) ландшафт
10) bed	j) создавать

4. Match the words and their definitions:

1) architecture	a) place of interest
2) ecotourism	b) planned space, usually outdoors, set aside for the display, cultivation, and enjoyment of plants and other forms of nature
3) attraction	c) form of tourism involving visiting fragile, pristine, and relatively undisturbed natural areas
4) landscape design	d) independent profession and a design and art tradition, practiced by landscape designers, combining nature and culture
5) garden	e) both the process and the product of planning, designing, and constructing buildings and other physical structures

5. Find the synonyms of the following words in the text:

1) wood, 2) feature, 3) ground, 4) beauty, 5) scenery

6. Find an odd word:

1) feature, field, forest, hill

2) landscape, garden, scenery, nature

- 3) park, streetscape, alley, garden
- 4) construct, build, make, break
- 5) develop, borrow, modernize, cultivate

7. Say if the following statements are true or false:

- 1) Landscape is not very important for tourists.
- 2) Landscape is a combination of natural and man-made features.
- 3) Frederick Law Olmsted and Calvert Vaux created the term “landscape architecture” in 1858.
- 4) Classical, rectilinear gardens have been borrowed from European landscape design.
- 5) The northern climate and plantation culture encouraged the development of small gardens and informal design.

8. Answer the question:

What are the main features of classical, rectilinear gardens?

- 1) The main features of classical, rectilinear gardens are straight paths and round beds of formal plantings.
- 2) The main features of classical, rectilinear gardens are wide paths and square beds of formal plantings.
- 3) The main features of classical, rectilinear gardens are straight paths and square beds of informal plantings.
- 4) The main features of classical, rectilinear gardens are straight paths and square beds of formal plantings.

9. What is the main idea of the text? Choose the right answer:

- 1) Landscape is important for tourism.
- 2) Landscape architecture is both the art and profession of landscape design. It developed in the mid-1800s.
- 3) History of the term “landscape architecture” and development of landscape design in different countries.
- 4) Thomas Jefferson built the University of Virginia and the grounds of Monticello.

WORD-BUILDING

10. Complete the table with the derivatives:

Verb	Noun	Adjective
<i>use</i>	<i>usage</i>	<i>useful</i>
	attraction	
		comprehensive
design		
	construction	
		creative
develop		

11. Use the appropriate form of the word. See the table above:

- 1) Ecotourism _____ a lot of people all over the world (to attract).
- 2) Climate is important for the _____ of landscape architecture (to develop).
- 3) Frederick Law Olmsted and Calvert Vaux _____ New York's Central Park in the XIX century (to construct).
- 4) European landscape _____ (to design) is famous for the _____ (to create) of classical gardens.

GRAMMAR FOCUS

12. Make up sentences. Put the verb in Passive Voice (see Grammar Review, Unit 8):

- 1) The term "landscape architecture" / introduce / in 1858. (Past Indefinite)
The term "landscape architecture" was introduced in 1858.
- 2) Landscape / define / by all the natural features. (Present Indefinite)
- 3) Landscape architecture / develop / in future. (Future Indefinite)
- 4) New York's Central Park / design / by Olmsted and Vaux. (Present Perfect)
- 5) A lot of new houses / build / in Ufa / now. (Present Continuous)

6) Classical, rectilinear gardens / borrow / from European landscape.
(Present Perfect)

7) The University of Virginia / build / by Thomas Jefferson / in the XVIII century. (Past Indefinite)

8) The development of large gardens and formal design / encourage / by southern climate and plantation culture. (Present Perfect)

9) Landscape design / pay / much attention to. (Present Indefinite)

10) When Josh came to Ufa the Opera and Ballet Theatre / reconstruct (Past Continuous).

SPEAKING PRACTICE

Project. Speak about a famous architect. Find the information about his / her biography, work, etc. What made him / her famous?

Team work. Design the university campus. Think of objects, facilities, style, etc. Try to make it functional and attractive. Introduce your project.

SPEAKING PRACTICE

Group work. Many cities are known around the world for their architecture. Work in small groups and develop an architectural tour. Tell your group mates the stories behind the buildings, iconic skyscrapers, elegant hotels or the legendary houses. Role-play your tour to the group.

What's the Best Public Outdoor Space in Your Area? What do you think is the best public outdoor space in your community? Why? Think of a building, park, garden, monument, etc. that might be interesting to the visitors. Introduce it to the class using the plan bellow.

WHAT is it?

WHERE is it situated?

WHO is the designer / architect?

WHEN was it built?

WHAT makes it special?

WHY do people want to see it?

UNIT 9

NATIONAL PARKS

The establishment of national parks in the United States represented one of the first national efforts to protect wild nature. Establishing Yellowstone National Park was viewed as «a pleasuring ground» for people and not as an area intended only to safeguard communities of plants and animals (figure 9.1). It was not until the formation of the U.S. National Park Service in 1916 that the concept of managing parks so as to maintain their natural qualities was accepted. Nevertheless, the practice of killing predatory animals as «undesirable» elements of wild nature continued in U.S. national parks into the 1930s and lasted in some African national parks as late as the 1960s.



Figure 9.1 Yellowstone National Park, USA

Unlike a strict nature reserve, a national park may be made available for various purposes but usually only for those forms of recreational use that do not create great changes in or require significant modifications of the natural environment (figure 9.2). National parks are usually selected on the basis of their unique qualities, outstanding natural beauty, unusual geologic formations, or remarkable array of wild animal or plant life. They may also be selected, however, to protect areas of anthropological or historical importance along with the natural or artificially modified landscapes that surround them.



Figure 9.2 Outdoor recreation at Olympic National Park, Washington, USA

National parks in England may protect cultural as well as natural landscapes, in that some may be dedicated to the preservation of traditional forms of land use that are disappearing elsewhere. Some national parks, such as in Peru, protect ethnic groups along with their limiting and gathering grounds.

A national park 1) _____ according to the nations and people involved. The 2) _____ of an area as a national park is everywhere a highly 3) _____ form of land use, in which all incompatible 4) _____ are prohibited. Hunting, 5) _____, mining, commercial fishing, agriculture, and

livestock grazing are excluded from most such parks, as are urban and industrial uses not directly related to 6) _____ .

TEXT WORK

1. Read and translate the text “National parks”.

2. Complete the last paragraph with the following words:

activities	dedication	recreation	logging	varies	restrictive
------------	------------	------------	---------	--------	-------------

3. Match English and Russian equivalents:

1) to create	a) защищать
2) gathering ground	b) сохранение
3) land use	c) хищный
4) plant life	d) заповедник
5) predatory	e) рекреационный
6) preservation	f) создавать
7) to protect	g) дикий
8) recreational	h) землепользование
9) reserve	i) растительный мир, фауна
10) wild	j) водосбор, бассейн

4. Match the words and their definitions:

1) artificially	a) keeping something in the same state, stopping something from changing or rotting
2) national park	b) a special area where the wildlife is protected
3) nature reserve	c) a large area preserved in its natural state and declared by the national government to be public property
4) preservation	f) to protect something from harm or damage
5) to safeguard	g) not real or not made of natural things

5. Find the synonyms of the following words in the text:

1) human, 2) attempt, 3) to vanish, 4) though, 5) normally

6. Find an odd word:

- 1) various, similar, different, miscellaneous
- 2) to exploit, to misuse, to use, to utilize
- 3) to conserve, to change, to transform, to modify
- 4) common, unique, rare, one-and-only
- 5) man-made, artificial, natural, synthetic

7. Say if the following statements are true or false:

- 1) Yellowstone National Park was intended only to safeguard communities of plants and animals.
- 2) Proper management of national parks permits to protect lands.
- 3) Killing predatory animals in African national parks is no longer applied.
- 4) The concept of managing parks was accepted by U.S. National Park Service so as to maintain their natural qualities.

8. Answer the question:

What are the criteria for selecting national parks?

- 1) One of the criteria for selecting national parks is a convenience for doing research.
- 2) One of the criteria for selecting national parks is outstanding people living there.
- 3) One of the criteria for selecting national parks is their unique flora and fauna.
- 4) One of the criteria for selecting national parks is their remarkable architecture.

9. What is the main idea of the text? Choose the right answer:

- 1) National parks are created for recreation.
- 2) Some national parks in England protect both cultural and natural landscapes.
- 3) Different nations have various types of national parks.
- 4) Some national parks protect ethnic groups along with their hunting and gathering grounds.

WORD-BUILDING

10. Complete the table with the derivatives:

Verb	Noun	Adjective
<i>preserve</i>	<i>preservation</i>	<i>preservative</i>
restrict		
		formative
represent		
	establishment	
signify		

11. Use the appropriate form of the word. See the table above:

- 1) National parks are _____ to protect wild nature (to establish).
- 2) Kapova Cave is of great _____ as a complex nature monument (to signify).
- 3) The region faces _____ on the use of water for irrigating crops (to restrict).
- 4) Russian zapovednik _____ the highest degree of environmental protection for the assigned areas that are strictly protected (to represent).
- 5) The state nature reserves and national parks _____ the basis of a network of specially protected nature areas of Russia (to form).

GRAMMAR FOCUS

12. State the function of the Infinitive in the following sentences (see Grammar Review, Unit 9):

- 1) Our intention is to safeguard the wildlife.
- 2) Proper management of national parks allows to protect lands.
- 3) The total territory of this strictly protected nature area can increase twice.
- 4) There are enough places to boast of tasty honey in the Republic of Bashkortostan.
- 5) National Park Authorities have a duty to conserve these landscapes.
- 6) To establish a nature reserve is very important for wild nature.
- 7) This agency's purpose is to preserve natural beauty for observation, appreciation and study.
- 8) They work hard to conduct studies of wildlife migrations.
- 9) To resolve various ecological problems research in zapovedniks is conducted throughout the year.
- 10) The reserve «Shulgan-Tash» was established to conserve the wild bee population.

SPEAKING PRACTICE

Project. The International Union for Conservation of Nature (IUCN) has developed six protected area management categories:

Ia. Strict Nature Reserve

Ib Wilderness Area

II National Park

III Natural Monument

IV Habitat/Species Management

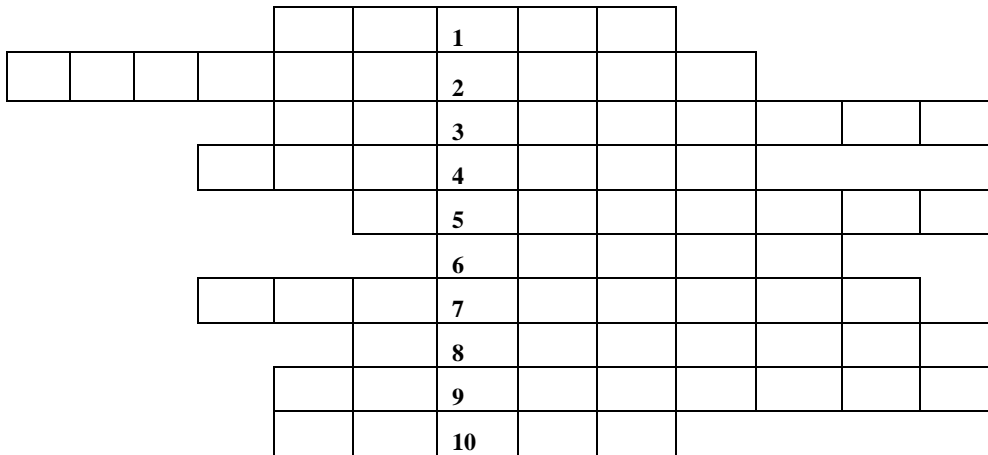
V Protected Landscape/Seascape

VI Protected Area with sustainable use of natural resources

Make a report on one of the protected area category given above.

**DO YOU KNOW?
CROSSWORD PUZZLE**

National Parks



1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	----

1. Asian country besides India and China that approaches park creation from a religious standpoint.
2. National Park in Nepal that is home to Mount Everest.
3. Zapovednik located on the east coast of Russia's Kamchatka Peninsula.
4. The country where Lake District National Park is situated.
5. The largest National Park in the US located in Wyoming, Montana and Idaho.
6. The country where Parque Nacional Torres del Paine is located.
7. The location of Kakadu National Park situated.
8. What are African National Parks famous for?
9. This US President declared the Grand Canyon a National Monument in 1908.
10. The first national park in Canada.

UNIT 10

FORESTS

The evolution of civilization is closely connected with forests. Forests of one sort or another have existed for something like 300 million years, humans for perhaps one million. We have been both destroyers and creators of forests. Today, after several thousand years of forest use, eighty per cent of the pre-agricultural era forest remains, covering about one-third of the earth's surface. Given the explosive growth of population during the past century, this gives each individual three-quarters of a hectare of forest land.

There is enormous diversity in the world's forests. No two hectares are identical. There are broad types of forests, however, each type determined by the varied influences of geography and climate. Tropical forests occupy a large area along the Equator. Variations in these forests are caused by the amount of **rainfall**, which declines as the distance from the Equator increases. Tropical rain forests run along the Equator, too. Their most notable characteristic is the wide diversity of species they contain.



Figure 10.1 Tropical forest

Farther from the Equator are the tropical seasonal forests, where rainfall is less continuous and comes at regular, annual intervals. There are far fewer tree species, mainly a mixture of deciduous and evergreens growing to heights of thirty meters or less. As the distance from the Equator increases, and rainfall declines, the tropical seasonal forests (figure 10.1) become dry savannah forests (figure 10.2). Most forests of this type are found in Africa. As rain levels drop even further, the savannah forests give way to dry, shrub woodlands consisting mostly of hardy bushes and shrubs.



Figure 10.2 Savannah forest

In the Northern Hemisphere, at the greatest distance from the 1) _____, lie the boreal coniferous 2) _____. In this region there is a short, intense growing season, offset by long cold 3) _____ during which tree growth ceases. There are relatively few 4) _____ species, almost all coniferous. There are large areas of land covered with a single species, in part due to the frequency of intense 5) _____ which sweep through these forests.

TEXT WORK

1. Read and translate the text "Forests".

2. Complete the last paragraph with the following words:

tree	fires	forests	Equator	winters
------	-------	---------	---------	---------

3. Match English and Russian equivalents:

1. destroy	a. увеличить
2. remain	b. определять
3. diversity	c. существовать
4. influence	d. уровень
5. determine	e. поверхность
6. surface	f. связывать
7. connect	g. оставлять
8. level	h. влияние
9. exist	i. разнообразие
10. increase	j. разрушать

4. Match the words and their definitions:

1) forest	a) a woody plant smaller than a tree, usually divided into separate stems near the ground
2) tree	b) a dense evergreen forest which grows in tropical and temperate areas of high humidity
3) shrub	c) plants which shed their leaves annually
4) deciduous	d) a very tall plant that has branches and leaves, and lives for many years
5) rainforest	e) a large area of land that is covered with trees

5. Find the synonyms of the following words in the text:

1) wood, 2) variety, 3) precipitation, 4) huge, 5) to stop

6. Find an odd word:

- 1) remain, carry on, continue, go on
- 2) decline, deterioration, determine, degeneration
- 3) period, interval, break, pause
- 4) evolution, achievement, progress, development
- 5) intense, strong, weak, powerful.

7. Say if the following statements are true or false:

- 1) Mankind history is older than forest history.
- 2) Almost half of the felled timber is used for fuel.
- 3) Most dry savannah forests are located in Africa.
- 4) Conifers are characterized by their needle – shaped leaves.
- 5) Fires often destroy forests.

8. Answer the question:

What are the types of forests determined by?

- 1) They are determined by the amount of sunlight.
- 2) They are determined by different geography and climate.
- 3) They are determined by a wide diversity of species they contain.
- 4) They are determined by sorts of trees growing in them.

9. What is the main idea of the text? Choose the right answer:

- 1) Recreational uses of forests.
- 2) The diversity of forests all over the world.
- 3) Laws and regulations regarding the felling of timber.
- 4) The management of forested land.

WORD-BUILDING

10. Complete the table with the derivatives:

Verb	Noun	Adjective
<i>destroy</i>	<i>destroyer</i>	<i>destroyable</i>
vary		
	usage	

widen		
		different
grow		
		existent

11. Use the appropriate form of the word. See the table above:

- 1) Russia possesses such a _____ of useful tree species. (to vary)
- 2) Trees show a _____ diversity of growth forms. (to widen)
- 3) Different kinds of forests _____ from each other. (to differ)
- 4) The people of rainforests _____ plants to make medicines. (to use)
- 5) Some trees _____ to heights of thirty meters. (to grow)

GRAMMAR FOCUS

12. Choose the correct Participle (see Grammar Review, Unit10):

- 1) Temperate forests are (locating, located) almost entirely in the Northern Hemisphere.
- 2) Coniferous forests, (including, included) redwood, red cedar and hemlock, can be found in the North America.
- 3) Today, all over the world, people use medicines (making, made) from rainforests plants.
- 4) People have already (cut, cutting) much of rainforest to plant coffee and sugar.
- 5) (Mixed, mixing) forests contain both coniferous and deciduous trees.

SPEAKING PRACTICE

Discuss the problem: Rainforests are the richest places on the Earth. Say why do you agree or don't agree. During the discussing make up a table with the opposite arguments.

agree	disagree

Group Work.

1) Make 2 groups and speak on the topic:

The first group: «Coniferous forest»

The second group: «Deciduous forest»

2) Use the plan:

1. Temperature

2. Precipitation

3. Location

4. Vegetation

3) Prepare a presentation and present it to the whole group.

4) Make up 5 questions to the opposite group.

5) You may use the information given below or other sources (the Internet, etc.) if you need.

Description of temperate deciduous forests

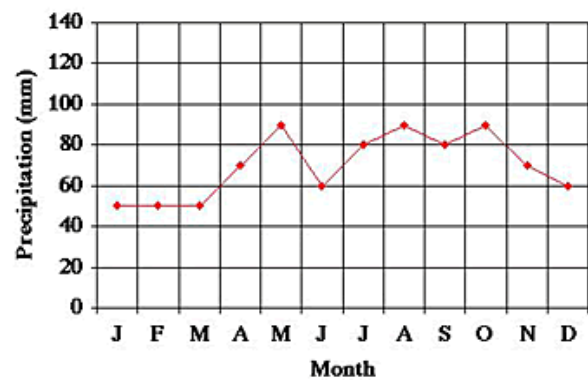
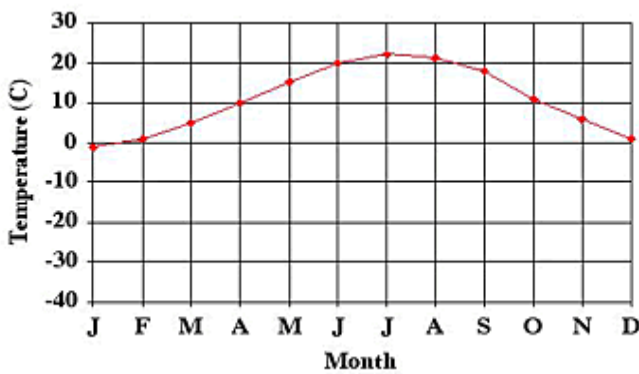
Temperate deciduous forests are located in the mid-latitude areas which means that they are found between the polar regions and the tropics. The deciduous forest regions are exposed to warm and cold air masses, which cause this area to have four seasons. During the fall, trees change color and then lose their leaves. This is in preparation for the winter season. Because it gets so cold, the trees have adapted to the winter by going into a period of dormancy or sleep. They also have thick bark to protect them from the cold weather. Trees flower and grow during the spring and summer growing season. Many different kinds of trees, shrubs, and herbs grow in deciduous forests.



Figure 10.3 *Temperate deciduous forest*
(Staunton, Virginia, United States)

Most of the trees are broadleaf trees such as oak, maple, beech, hickory and chestnut. There are also several different kinds of plants like mountain laurel, azaleas and mosses that live on the shady forest floor where only small amounts of sunlight get through.

Temperate Deciduous Forest



Description of coniferous forests

Between the tundra to the north and the deciduous forest to the south lies the large area of coniferous forest. One type of coniferous forest, the northern boreal forest, is found in 50° to 60°N latitudes. Another type, temperate coniferous forests, grows in lower latitudes of North America, Europe, and Asia, in the high elevations of mountains. Coniferous forests consist mostly of conifers, trees that grow needles instead of leaves, and cones instead of flowers. Conifers tend to be evergreen, that is, they bear needles all year long. These adaptations help conifers survive in areas that are very cold or dry. Some of the more common conifers are spruces, pines, and firs. The amount of precipitation

depends on the forest location. In the northern boreal forests, the winters are long, cold and dry, while the short summers are moderately warm and moist. In the lower latitudes, precipitation is more evenly distributed throughout the year.

Coniferous Forest

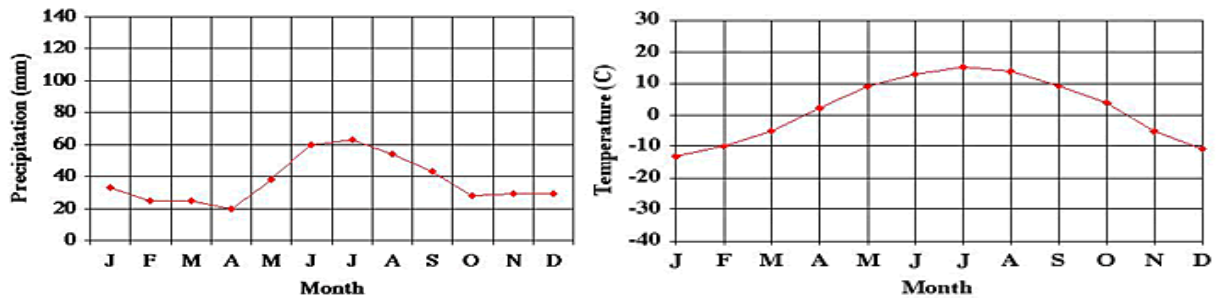


Figure 10.4 Coniferous forest (Beaverlode, Alberga, Canada)

Give the Russian equivalents for the proverbs.

A tree is known by its fruits.

An apple a day keeps the doctor away.

Great oaks from little acorns grow.

He that would eat the fruit must climb the tree.

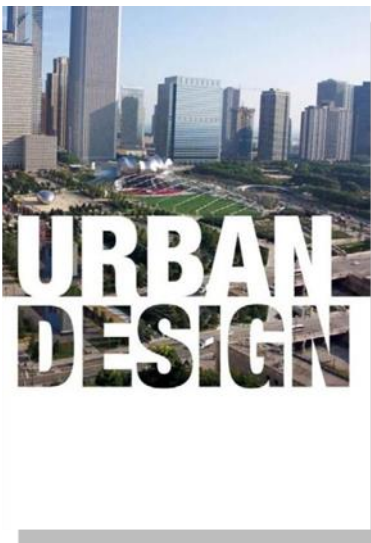
Put not your hand between the bark and the tree.

Just as the twig is bent, the tree is inclined.

UNIT 11

URBAN DESIGN

Urban design is the process of designing and shaping cities, towns and villages. Whereas architecture focuses on individual buildings, urban design addresses the larger scale of groups of buildings, streets and public spaces, neighborhoods and districts, and entire cities. Its goal is to make urban areas functional, attractive, and sustainable.



Urban design is an inter-disciplinary subject that unites all the built environment professions. It includes urban planning, landscape architecture, architecture, civil and municipal engineering. It is common for professionals in all these disciplines to practice in urban design. In more recent times different branches of urban design have emerged such as strategic urban design, landscape urbanism, water-sensitive urban design, and sustainable urbanism.

Urban design demands a good understanding of a wide range of subjects from physical geography, through to social science, real estate development, urban economics, political economy and social theory.

Urban design theory 1)_____ primarily with the 2)_____ and management of 3)_____ space, and the way public places are experienced and 4)_____. Public space includes the totality of spaces used freely on a day-to-day basis by the general public, such as 5)_____, plazas, parks and public infrastructure.

TEXT WORK

1. Read and translate the text “Urban design”.

2. Complete the last paragraph with the following words:

streets

design

used

deals

public

3. Match English and Russian equivalents:

1) urban design	a) Промышленное и гражданское строительство
2) shaping	b) Планировка
3) to focus on	c) Ставить в центр внимания
4) scale	d) рациональный
5) neighborhood	e) масштаб
6) sustainable	f) градостроительное проектирование
7) civil and municipal engineering	g) окрестности
8) water-sensitive urban design	h) градостроительное проектирование с учётом управления водными ресурсами и ландшафтного планирования
9) social science	i) строительство
10) real estate development	j) общественные науки

4. Match the words and their definitions:

1) urban planning	a) social space that is generally open and accessible to people;
2) plaza	b) academic discipline concerned with society and the relationships among individuals within a society;
3) neighborhood	c) geographically localised community within a larger city, town, suburb or rural area;
4) social science	d) open urban public space, such as a city square;
5) public space	e) technical and political process concerned with the use of land and design of the urban environment.

5. Find the synonyms of the following words in the text:

- 1) suburbs, 2) good-looking, 3) appear, 4) plan, 5) social

6. Find an odd word:

- 1) municipal, private, urban, city
- 2) city, town, village, neighborhood
- 3) space, neighborhood, block, district
- 4) plaza, apartment, park, garden
- 5) sustainable, rational, unpractical, efficient

7. Say if the following statements are true or false:

- 1) The goal of urban design is attractiveness of urban areas.
- 2) Urban design focuses on individual buildings.
- 3) Public space includes streets, plazas, parks and public infrastructure.
- 4) Urban design is a very complicated subject.
- 5) Professionals in urban planning, landscape architecture, architecture, civil and municipal engineering don't usually practice in urban design.

8. Answer the question:

What is the main idea of urban design?

- 1) Urban design is the process of designing and management of hotels, motels and hostels.
- 2) Urban design deals with planning and shaping cities and villages.
- 3) Urban design deals primarily with the design and management of individual space.
- 4) Urban design is the process of management of public space.

9. What is the main idea of the text? Choose the right answer:

- 1) Urban design deals with designing, shaping and management of public space.
- 2) Urban design is an inter-disciplinary subject.
- 3) Strategic urban design, landscape urbanism, water-sensitive urban design, and sustainable urbanism are different branches of urban design.
- 4) Theoretical and practical issues of urban design.

WORD-BUILDING

10. Complete the table with the derivatives:

Verb	Noun	Adjective
<i>demand</i>	<i>demander</i>	<i>demanding</i>
		manageable
	builder	
functionate		
	sustainability	
environ		
		plannable

11. Use the appropriate form of the word. See the table above:

- 1) Urban design focuses on groups of _____, streets, public spaces, and entire cities (to build).
- 2) Urban _____ is a part of urban design (to plan).
- 3) Urban design theory deals primarily with the design and _____ of public space (to manage).
- 4) Urban design makes urban areas attractive, _____ (to sustain) and _____ (to function).

GRAMMAR FOCUS

12. Open the brackets using Gerund (see Grammar Review, Unit 11):

- 1) (*To design*) a new city needs much time, knowledge and efforts.
- 2) Urban design is the process of (*to plan*) and (*to build*) cities.
- 3) We'll started another project after (*to finish*) this one.
- 4) The architect was busy (*to make*) a plan of a new city park.
- 5) After (*to pass*) Real estate development, Mary will take a course of Urban economics.
- 6) I like (*to visit*) public spaces.

7) (*To focus*) on streets, public spaces and cities, urban design makes urban areas functional and attractive.

8) (*To travel*) is very interesting.

9) Tom did not speak of (**to visit**) this museum.

10) He lost his way after (*to take*) the wrong direction.

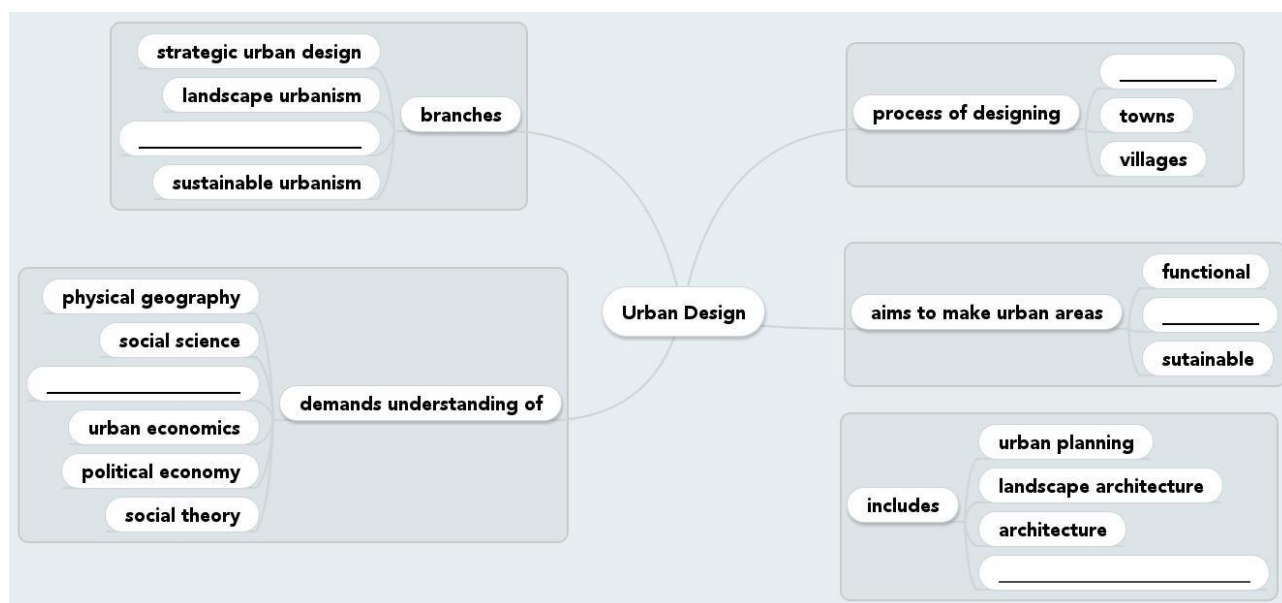
SPEAKING PRACTICE

Discussion. Discuss the landscape design of Ufa. Think of benefits and drawbacks of Ufa design and architecture. Would you like to improve it? What would you change?

Brainstorming. Think of the ideal city. What should it contain?

Complete the mind map with the following words and retell the text.

	Cities	civil and municipal engineering
attractive	real estate development	water sensitive urban design



SPEAKING PRACTICE

Comment on the following proverbs and quotes. Translate them into Russian.

1) If you enter the city of the blind, cover your eyes.

2) The disgrace of the city is the fault of the citizens.

- 3) The city that negotiates is half conquered.
- 4) No urban area will prosper unless it attracts those who can choose to live wherever they wish.
- 5) In a quality city, a person should be able to live their entire life without a car, and not feel deprived.
- 6) Those who buy into the suburbs because they want to be close to nature are going to keep doing so. The point of parks in cities is not to satisfy that urge, but to make better urbanism for those who want real urbanism.
- 7) Urbanism works when it creates a journey as desirable as the destination.

UNIT 12

CONSTRUCTION

Before you actually build a house there a lot of things you must do first. You must have a piece of land on which your house can be built, then you should ask an architect or builder to find out if there are any restrictions on building in the area. A construction drawing of the house shows the size, order of the rooms, where doors and windows are and other details. Then you usually need a building permit to start building your house



The foundation supports your house. Construction workers start digging holes for the footings, which support the walls of the house. They are made by pouring concrete into forms that reach down below the frost line so that the house cannot move when it freezes in winter. The area that is below the ground is called the basement. Many basements have extra rooms that are used for the house's heating or for storage. Not all houses have basements, those in wet regions are often put on stilts.

The frame is the skeleton around which the rest of the house is built. Workers put beams into the foundation that support the outside walls. Slabs are the horizontal parts of the frame that separate the floors. When the frame is finished the walls are raised.

The roof protects the house from rain and sun. Some roofs are flat others are slanted to lead rain and snow down. They are built of different materials, depending on the climate and amount of rainfall.

When the outside of the house is finished you must start working on the interior. Windows, doors have to be built into the frame. Wires must be laid for electricity and power. Plumbers install the pipes through which water flows through. A new house has to be insulated in order to reduce heating costs and to save money. Most houses have central heating system. A furnace, mostly in the basement, warms up the water which then leads through pipes through the whole house. Finally, the walls are painted and the rooms decorated.

In big cities where there is not enough space people often live in
1) _____. Town houses are often found in cities. They have
2) _____ street entrances but often share the same walls. Many suburban residents live in single-family houses with their own yards and gardens. In
3) _____ areas houses usually stand alone, 4) _____ by fields, barns and 5) _____. In some parts of the world people don't always live in the same place. Mobile homes are 6) _____ more and more popular, especially in America.

TEXT WORK

1. Read and translate the text "Construction".

2. Complete the last paragraph with the following words:

separate	surrounded	becoming	huts	apartments	rural
----------	------------	----------	------	------------	-------

3. Match English and Russian equivalents:

1) footing	a) плита
2) building permit	b) балка
3) construction drawing	с) стойка
4) heating costs	d) разрешение на строительство
5) slab	e) электропроводка, провода
6) beam	f) строительный чертеж
7) stilt	g) фундамент
8) electricity wires	h) каркас
9) foundation	i) затраты на отопление
10) frame	j) опора, фундаментный блок

4. Match the words and their definitions:

1) concrete	a) someone whose job is to repair water pipes, sinks, baths
2) to insulate	b) substance made by mixing sand, very small stones, cement and water
3) plumber	c) to change according to what else happens or whether something else changes
4) amount	d) to cover or protect something so that electricity, sound or heat cannot get in or out
5) to depend on	e) quantity of something such as time, money or a substance

5. Find the synonyms of the following words in the text:

1) boiler, 2) limitation, 3) cellar, 4) defend, 5) row house

6. Find an odd word:

- 1) sloping, flat, slanted, angled
- 2) reach down, exceed, get to, arrive
- 3) reduce, increase, decrease, depress
- 4) share, divide, separate, distinguish
- 5) pour, put on, fill in, cast

7. Say if the statements are true or false:

- 1) Before you start building a house you first get a building permit.
- 2) Footings of a house must get to the frost line.
- 3) Slabs are used to separate the floors.
- 4) Wiring, piping and insulating is carried out by plumbers.
- 5) Different types of housing depend on the area a person lives in.

8. Answer the question:

What does the choice of roof material depend on?

- 1) It depends on the builder's personal preference.
- 2) It depends on the climate and amount of rainfall.
- 3) It depends on the builder's financial state.
- 4) It depends on the construction design.

9. What is the main idea of the text? Choose the right answer:

- 1) The text describes different approaches to the construction of a house.
- 2) The text presents all stages connected with building a house.
- 3) The text explains the reason for living in a separate house.
- 4) The text provides an instruction of how to build a house.

10. Match the pictures and types of houses:



a)



b)



c)



d)



e)



f)

- 1 town house – ...
- 2 high-rise apartment – ...
- 3 semidetached cottage – ...
- 4 one-story house – ...
- 5 two-story house – ...
- 6 condominiums – ...

WORD-BUILDING

11. Complete the table with the derivatives:

Verb	Noun	Adjective
<i>admit</i>	<i>admission</i>	<i>admissive</i>
	protection	
		insulative
decorate		
	restriction	
		supportive
permit		

12. Use the appropriate form of the word. See the table above:

- 1) The constructor needed the manager's _____ to have the drawing passed at the meeting (to support).
- 2) They will never _____ you to build a house at the bank of the river (to permit).
- 3) They usually cover the wires with some _____ material (to protect).
- 4) He installed a _____ panel above the door (to decorate).
- 5) The village council has placed _____s on the use of agricultural lands for construction (to restrict).

GRAMMAR FOCUS

13. Put in the correct Participle (see Grammar Review, Unit 12):

- 1) The wall ____ (surround) the house is 5 meters long.
- 2) The house ____ (surround) by the wall is relatively new.
- 3) Can you fetch the drawing ____ (show) the size and order of the rooms.
- 4) The correct position of the boiler is ____ (show) on the drawing.
- 5) The group ____ (lead) by the engineer entered the room.
- 6) The path ____ (lead) to the hut is strewn with sand.

SPEAKING PRACTICE

Brainstorming and discussion. Living in a flat or a private house.

Group A: write down 5 reasons for living in a flat, and think of possible counterarguments.

Group B: write down 5 reasons for living in a private house, and think of possible counterarguments.

In class discuss the reasons for and against. Each of the two groups has to present the ideas and be able to defend them.

Case study. Building a house of your dream.

You have sold your three room flat for 5.5 mln roubles and want to build a house in the suburbs of the city.

In groups of two or three students think of what you have to do to build a house. Your task is to describe all stages of construction including buying a land plot. Don't forget to mention the amount of money you are going to spend at each stage. A 3-D visualization of your future house is welcome.

Activity. Selling your property.

- a) In a group write a real estate advertisement for selling your house / flat.

Mind the following steps:

Opening Statement

Narrative Description of Features

Talk about the primary features of the property, such as:

- Number of Bedrooms/Bathrooms

- Square Footage of the Building
- Size of the Property (typically in acres)
- Location/Neighborhood/Schools
- Garage (if any), Number of Stalls
- Extras, e.g. – Pool, Patio, Yard, Deck, Fireplace, etc.
- Any Recent Updates or Renovations, e.g. – windows, doors,

appliances

- Any Unique Characteristics, e.g. – scenic overlook, basketball court,

lakefront lot

Describe the Property in a Compelling and Inspiring Way

Closing Statement & Call To Action

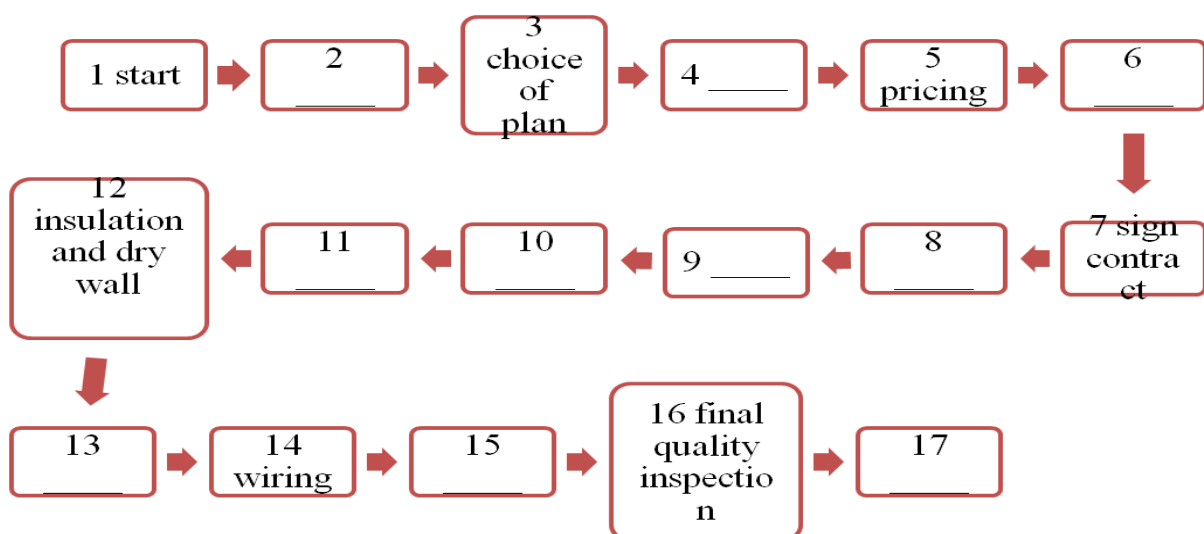
b) In groups of three or four write a list of stages of selling your house / flat. Present your ideas in class.

c) Role-play a conversation between a real estate agent and a potential buyer.

DO YOU KNOW?

Complete the homebuilding process with the missing stages:

flooring, foundation, preliminary plan, development schedule, interior and hardware, wall building, home warming ceremony, final plan, roofing, loan commitment.



SUPPLEMENTARY READING

1. Environmental Protection

Our planet Earth is only a tiny part of the universe, but nowadays it's the only place where we can live. People always polluted their surroundings. But until now pollution was not such a serious problem. People lived in rural areas and did not produce such amount of polluting agents that would cause a dangerous situation in global scale.

With the development of overcrowded industrial highly developed cities, which put huge amounts of pollutants into surrounds, the problem has become more and more dangerous.

In order to understand how air pollution affects our body, we must understand exactly what this pollution is. The pollutants that harm our respiratory system are known as particulates. Particulates are the small solid particles that you can see through rays of sunlight. They are products of incomplete combustion in engines, for example: internal-combustion engines, road dust and wood smoke.

Billions of tons of coal and oil are consumed around the world every year. When these fuels are burnt, they produce smoke and other by-products, which is emitted into the atmosphere. These chemical compounds undergo a series of chemical reactions in the presence of sunlight; as a result we have smog, mixture of fog and smoke. While such pollutants as particulates we can see, other harmful ones are not visible. Among the most dangerous to our health are carbon monoxide, nitrogen oxides, sulfur dioxide and ozone or active oxygen.

Fortunately, it's not too late to solve these problems. We have the time, the money and even the technology to make our planet a better, cleaner and safer place. We can plant trees and create parks for endangered animals.

We can recycle our wastes; persuade enterprises to stop polluting activities, because it is apparent that our careless use of fossil fuels and chemicals is destroying this planet. And it is now more than ever apparent that at the same time we are destroying our bodies and our future.

2. Urbanization and Environment

Urbanization is not in principle destructive to the environment. With proper planning and control, it could enhance and not detract from environmental quality – by relieving in pressure on rural lands, by providing goods and services in quantity and diversity, and by providing new and attractive habitats and ways of life. However, in most areas, governments have neither prepared for have they been able to cope with the mass migration into urban areas. Pollution of air, water and land, concentrated in urban areas, has become universal problems, threatening man's health. Diseases associated with urban living in developing nations have increased greatly despite advances in medicine.

The environmental impact of urbanization is of two major kinds, that external to the city proper and that within the city. Externally the greatest effect of spreading urbanization has been the intensification of pollution, which spreads from the cities outward to have its effects throughout the biosphere. Secondly, the spread of cities and the transportation networks that connect them have affected all of the lands that surround the metropolis and these through which transport corridors pass. Although the external effects of urbanization are impressive, the environment within the city itself directly affects most people.

The problems of urbanization are now far beyond the capacity of city governments to handle. They have become national problems, which require a high degree of international cooperation if they are to be successfully surmounted. The cost of providing even the most minimum, essential environment that will permit a healthy, productive life for the city dwellers of the world must be measured in many hundred thousands of millions of pounds.

3. Oil in the Sea

The sea is full of bacteria, plants and animals which eat waste. It can clean itself if we do not use it as a dump. But if we dump too much waste in the sea, the bacteria, plants and animals cannot recycle it quickly enough and the water gets polluted.

The Mediterranean is one of the most polluted seas in the world. There is land nearly all around it, so the waste has nowhere to go. Many big towns empty their sewers into the sea. It is not safe to swim in parts of the Mediterranean, and many beaches are polluted.

Chemicals from farms and factories get into rivers; and the rivers carry the waste to the sea. The chemicals get into the food chain and poison the fish. Ships dump their waste at sea and pollute the beaches.

The worst kind of sea pollution is an oil spill. Oil is black and dirty and contains toxic chemicals. If you spill oil at sea, it makes an oil slick on top of the water. Air cannot get to the plants and animals under the water. We spill a lot of oil into the sea every year, from ships and from oil refineries. Those oil spills were accidental, but the worst oil pollution in the world was deliberate. In the Gulf War in 1991, oil was spilled deliberately. Oil wells burned and millions of tons of oil went into the sea. There were fifty-kilometer oil slicks. Oil also spilled onto the ground. There were lakes of burning oil everywhere. The oil went down under the ground and polluted the water in underground wells. The pollution was terrible. Electric streetlights burned all day in Kuwait because of the smoke and smog from burning oil. Black and dirty rain fell on the Himalayan mountains, thousands of kilometers away. Many years after the war, people are still trying to clean everything up.

4. Acid Rain

Acid rain is a great problem in many countries in the North. Many foods and drinks - oranges, for example - contain acid, but they do not hurt anybody. Ordinary rain is a little acid, too. But strong acid is dangerous. Car batteries contain acid which can burn your hands and can burn holes in your clothes too. In 1979, the acid rain in West Virginia, USA was as strong as battery acid. Acid rain is not new. We started producing acid rain when we started building a lot of factories and power stations, which burned coal or oil. When you burn these fuels, you produce the gases SO_2 and NO_2 . Britain produces about five million tons of these gases every year. China produces eighteen million tons. The USA produces more than twenty million tons.

The wind carries the gases high into the sky. There they come together with water in the air and make acid rain, acid fog and acid snow. In Canada and northern Europe many millions of trees have died because of acid rain from power stations and factories thousands of kilometers away. Acid rain and acid snow poison rivers and lakes too. Fish and other animals cannot live in acid water. Sweden is a very «clean» country with good Clean Air laws; but thousands of Swedish lakes are dead because of acid rain from other, less clean places. Acid rain is bad for buildings too. The acid eats into the stone. Many of the world's oldest and most beautiful buildings are in danger because of acid rain. We can clean the smoke from factories and power stations, but it is expensive; and many of the countries which produce the most acid rain have no laws to control pollution.

5. Greenhouse Effect

The energy, which drives our weather and climate, comes from the sun. The Earth receives energy, largely in the form that we see as visible light. The atmospheric gases and others do not absorb light in the visible region. Therefore, the visible light from the sun passes through the atmosphere to warm the earth. In turn, the warm earth radiates this energy back toward space as infrared radiation. However, on the way, gases in the atmosphere, which are strong absorbers of infrared waves, absorb some of it, they reradiate some of this energy back toward the earth.

The gases in the atmosphere, which absorb radiated heat, are called the greenhouse gases, and the process is known as greenhouse effect.

Greenhouse gases occur naturally in the atmosphere. The natural greenhouse effect keeps the temperature of the Earth some 30°C warmer than it would be otherwise. Without it the Earth would be too cold to support life. Water vapour is the most important natural greenhouse gas. Its concentration in the atmosphere depends on the Earth's temperature. The main natural greenhouse gases are:

- carbon dioxide (CO₂), which is released when living things breathe, die and decay, and which is absorbed by plants and the animals that feed on them;

- methane (CH_4), which is produced when organic material decays in the absence of air, as in marshes and wetlands, and is destroyed by chemical reactions in the atmosphere;
- nitrous oxide (N_2O), which is given off by vegetation and soils, and eventually breaks down chemically in the stratosphere;
- ozone (O_3), which is generated by the sun's rays in the stratosphere, and by chemical reactions in the lower atmosphere, and destroyed by other natural chemical reactions.

6. Global Warming

While the natural greenhouse effect is essential to life, a problem arises because human activity causes the release of additional greenhouse gases and these releases build up in the atmosphere. The rain forests have ability to slow down the greenhouse effect reducing CO_2 levels in the atmosphere. But forests are being destroyed to make room for things like farms, mines, hydroelectric powers and as a result of forest fires. An increase in greenhouse gas concentration leads to a rise in the greenhouse effect.

Carbon dioxide comes in large quantities from fossil fuels. Methane comes from agriculture, coal mining, natural gas extraction and distribution and from waste disposed of on land. Nitrous oxide is thought to come mainly from farming and from burning fossil fuels. Ozone is produced in the lower atmosphere when nitrogen oxides, mainly from burning fuel, and organic compounds.

All these gases have been increasing in the lower atmosphere over the last 100 years. The trend has increased in recent decades as world population has grown and as less-developed countries have industrialized.

An increase in the greenhouse effect may lead to global warming, disastrous change in the climate. Global warming threatens all of us with future droughts, floods and crop losses, that have the potential for massive human miseries. Changes in climate could dramatically decrease rain falling over enormous areas, turning more the land into desert. Moreover, a rise in the earth's average temperature of only one or

two degrees would probably cause a large amount of ice at the North Pole and South Pole (the polar ice caps) to melt and raise sea levels.

7. Ecosystem

An ecosystem is a complex set of relationships among the living resources, habitats, and residents of an area. What are the major parts of an ecosystem? It includes soil, atmosphere, heat and light from the sun, water and living organisms.

Soil is a critical part of an ecosystem. It provides important nutrients for the plants in an ecosystem. It helps anchor the plants to keep them in place. Soil absorbs and holds water for plants and animals to use and provides a home for lots of living organisms.

The atmosphere provides oxygen and carbon dioxide for the plants and animals in an ecosystem. The atmosphere is also part of the water cycle. Without the complex interactions and elements in the atmosphere, there would be no life at all!

The heat and light from the sun are critical parts of an ecosystem. The sun's heat helps water evaporate and return to the atmosphere where it is cycled back into water. The heat also keeps plants and animals warm. Without light from the sun, there would be no photosynthesis and plants wouldn't have the energy they need to make food.

Without water there would be no life. Water is a large percentage of the cells that make up all living organisms. In fact, you may have heard that humans can go longer without food than they can without water. It's true! Without water all life would die. In addition to being an important part of cells, water is also used by plants to carry and distribute the nutrients they need to survive.

8. Living Things and Ecosystems

Everything in the natural world is connected. An ecosystem is a community of living and non-living things that work together. An ecosystem can be as large as a desert or a lake or as small as a tree or a puddle. If you have a terrarium, that is an artificial ecosystem. The water, water temperature, plants, animals, air, light and soil all work together. If there isn't enough light or water or if the soil doesn't have the

right nutrients, the plants will die. If the plants die, animals that depend on them will die. If the animals that depend on the plants die, any animals that depend on those animals will die. Ecosystems in nature work the same way. All the parts work together to make a balanced system!

A healthy ecosystem has lots of species diversity and is less likely to be seriously damaged by human interaction, natural disasters and climate changes. Every species has a niche in its ecosystem that helps keep the system healthy. By studying and maintaining biodiversity, we help keep our planet healthy.

Ecosystems have lots of different living organisms that interact with each other. The living organisms in an ecosystem can be divided into three categories: producers, consumers and decomposers. They are all important parts of an ecosystem. There are three types of consumers: herbivores are animals that eat plants, carnivores are animals that eat herbivores and sometimes other carnivores and omnivores are animals that eat plants and other animals.

9. Biomes

Biomes are defined as a large geographical area with distinctive plant and animal groups that are adapted to that biome-habitat. Climate and geography determines what type of biome exists in each part of the world. The major biomes include: Rainforest, Tundra, Taiga, Deciduous Temperate forest, Desert, Chaparral, Grassland, Freshwater, and Marine.

The plant and animal species that live in each biome have special adaptations that help them survive the conditions of that biome. Many species are endemic to certain biomes, meaning they only exist in that biome and nowhere else. Some species are able to adapt to a wider variety of climatic and geographic influences.

Many of the species in the biomes depend upon each other; therefore protection of global biodiversity is very important. The variety of habitats provided by each biome supports the biodiversity of animal and plant species. One biome that is threatened is the Grassland biome. This ecosystem is threatened mainly by urbanization, but also from lack of fire. Fire control has become a problem in many

ecosystems, as many plant species require fire to set seed and fire helps to keep other unwanted plant species from taking over. Buffalo have been affected by the loss of the Grassland ecosystem. Though other factors have impacted buffalo populations, conserving habitat is an integral part of protecting biodiversity.

10. The Importance of Plants

For all forms of life, plants form the basic food staples, and this is just one reason why plants are important. They are the major source of oxygen and food on earth since no animal is able to supply the components necessary without plants. The fish we eat consume algae and the cattle we eat as beef feed on grass, so even if you're not a fan of salads, your food source relies on plants.

Plants are used as state and national emblems as well, including state flowers and state trees. Trees from ancient times are famous and are revered. Often, plants prominently figure in literature, religion and mythology.

Plants also provide animals with shelter, produce clothing material, medicines, paper products, reduce noise levels and wind speed, reduce water runoff and soil erosion. Coal is also produced from plant materials that were once alive.

Cash crops produce income for farmers. Peanut oil comes from peanuts, corn oil comes from corn and olive oil comes from olive. Cash crops also include typical products of agriculture like rice, rye, wheat and corn. Cocoa plants give us chocolate, coffee plants produce coffee and vanilla plants produce vanilla flavoring.

Many beverages and drinks like tea and cola come from plants. Other cash crops include cotton, vegetables, fruit, lumber and rubber from trees. For overall ecology, plants are also important. The roots prevent soil erosion and when plants undergo photosynthesis, they use up carbon dioxide and give off oxygen.

11. Land Use Planning

The land use planning is to meet the future needs of our economy and particularly those of agriculture. It is obvious that scientific and technological progress will not eliminate the vital importance of land. In the decades to come land will be of even more vital importance than ever in satisfying our needs.

The welfare today depends partly upon how well we allocate our land resources among the alternative uses. The land use planners are to act successfully in arriving at the most economic decisions of land uses. The raise of productivity of our land resources is the principal goal of land use planning. The land use planners are to meet unknown advances in the techniques of agricultural production and the various needs of other branches of Russian economy. If the land use planners have full knowledge of land capability they will take thought about best uses of land and how to achieve it.

Land use planning calls for a more broad understanding of numerous factors that influence land uses. The planners have to consider and plan the economic returns. They must know all the factors that influence the proper, sound and wise land uses. They are to understand the response of land as the main factor of farm production to varying input combinations of capital and labour.

The great differences which exist in land productivity result in incomes. Through an objective comparative and economic assessment of land resources land use planners reveal the differences between land parcels.

12. Land Cadastre

The land cadastre consists of four parts: 1. land users' registration; 2. the title of quantity and quality of land resources; 3. soils' qualities assessment; 4. economic evaluation.

The land use planning agencies register the right on land parcels which are given to land users. The new land users are registered when decisions are taken by local authorities. All kinds of land uses must be registered in land-title books.

The land users are given land parcels for certain uses and for different needs. The lands are divided into agricultural and non-agricultural lands. The former are subdivided into pastures, grazing lands, grasslands and so on. The State land- title book is the only document for land registration.

Land evaluation consists of soils' assessment and economic evaluation of land resources. The assessment of soils determines the natural fertility of land resources and land capability for agricultural production.

Land inventory is a systematic survey of land capability of all regions. The boundaries of the survey embrace lands of many millions of square kilometres. Land inventory is also a means to control land users. Land use planners make analyses of uses, particularly the efficiency of agricultural production. The data of the land productivity are quite necessary to determine the rate of taxation and for proper land use management. The land users must know the land capability of all the lands which they operate.

13. European Cadastres

Today's European cadastral/land registration systems are all strongly influenced by the land information concept. In short, the main trends can be expressed in the following terms; multiple uses, automation, geocodes and digitization.

The cadastre and the land registers were each originally designed for one purpose: taxation and security in rights. But almost from the very start, the information provided and the maps produced were found to be very useful for other purposes as well. Only during the recent decades, however, this point has been stressed in the technical design of cadastres and land registers.

Modern society has developed into an information society, which both requires, and has the ability to produce accurate information. However, if the information is to be convenient to handle, it must be linked to identifiable spatial units. The cadastral land unit is one such unit which is a suitable basis for much information- not only concerning the land itself, but also the people living on the land and many of their activities.

This does not, however, mean that cadastre/land register themselves should contain the necessary land information. On the contrary, all experience shows that

both cadastres and land registers should be kept simple, and concentrated only on the data required for their particular purposes. The essential thing is the uniquely defined land unit, which can be used as a key for integrating many different records, thus making available a vast amount of relevant land information.

14. Land Registry

Cadastres were created with the aim of improving the basis for land taxation, and land registers were established to make land transactions more secure. Initially they were independent of each other, but they have become increasingly interrelated, and are used with increasing frequency for purposes other than the original ones. Difficulties arose since the original records were not designed as parts of common information systems.

If land records develop along these lines, the chosen cadastral unit will become important in many connections. If legal land registration, as well as other land records is based on the same unit, the unit will assume considerable legal and practical importance. In most countries with well-developed cadastral/land information systems, subdivision or other changes in the cadastral unit require formal legal proceedings. A conclusion from European experiences is that the land unit tends to become a legal entity protected by law.

A cadastre/land register must cover an entire geographical area in order to provide essential benefits from a public point of view. The rapid rate of change in existing European systems, especially during the last two decades, shows that the design of cadastral/ land registration systems must be future oriented. Less-developed countries must carefully consider and evaluate all experiences which can be obtained from other countries. An example is automation. Today's systems and structures must be planned in such a way that necessary changes are easy to make tomorrow.

15. Types of Surveying

There are several types of surveying.

Land Survey: The primary role of the land surveyor is to find and mark certain locations on the land. For example, they could be interested in surveying the boundary of a certain property or finding the coordinates of a specific point on the earth.

Cadastral Land Surveys: These are related to land surveys and are concerned with establishing, locating, defining or describing the legal boundaries of land parcels, often for the purpose of taxation.

Topographic Surveys: The measurement of land elevation, often with the purpose of creating contour or topographic maps.

Geodetic Surveys: Geodetic surveys locate the position of objects on the earth in relation to each other, taking into account the size, shape and gravity of the earth. These three properties vary depending where on the earth's surface you are and changes need to be taken into account if you wish to survey large areas or long lines. Geodetic surveys also provide very precise coordinates that can be used as the control values for other types of surveying.

Engineering Surveying: Often referred to as construction surveying, engineering surveying involves the geometric design of engineering project, setting out the boundaries of features such as buildings, roads and pipelines.

Deformation Surveying: These surveys are intended to ascertain whether a building or object is moving. The positions of specific points on the area of interest are determined and then re-measured after a certain amount of time.

Hydrographic Surveying: This type of surveying is concerned with the physical features of rivers, lakes and oceans. The surveys equipment is on board a moving vessel with follows pre-determined tracks to ensure the entire area is covered. The data obtained are used to create navigational charts, determine depth and measure tide currents. Hydrographic surveying is also used for underwater construction projects such as the laying of oil pipelines.

16. Earth Rotation Studies

The more information we gather from space, the subtler the questions we can ask about the Earth. For instance, take what might seem a simple question – how fast is the Earth turning?

Einstein is supposed to have said that a theory should be as simple as possible, *but no simpler*. In the case of Earth's rotation, describing its motion as "once every 24 hours" is too simple. Even the answer "23 hours 56 minutes 4.091 seconds" is just a starting point. That number is an average, and every day is a slightly different length by a few microseconds.

How the Earth varies from the average on any given day is not random. There is *information* – what scientists call a *signal* – in that variation. And length-of-day, or LOD, has been carefully measured for many decades as one small part of the field of geodesy.

The length of the day varies when any mass on or in the Earth moves, affecting the state of its angular momentum. Take weather in the atmosphere, for instance. The seasonal changes in the trade winds and monsoons have a well-known effect on the length-of-day over the course of the year.

The tides of the ocean have the long-term effect of slowing the Earth down and speeding up the Moon (which thus moves away from Earth a few centimeters per year). Changes in ocean currents change the length-of-day. Our computer models of ocean circulation are getting good enough, thanks to centimeter-precise measurements of the sea surface, that we can analyze this signal too.

Other factors affecting the LOD data include rises and subsidences of the land surface, the buildup of glaciers, large earthquakes, large-scale pumping of groundwater and construction of reservoirs, and the shape of the ocean's surface in response to air masses above it.

Each of these can be estimated and their signals extracted from the raw data, untangling the many mixed threads of information in the LOD record.

The last level of variation, a slow drift on the decade scale, is related to the motion of liquid iron in the Earth's core. This layer allows the solid inner core to

rotate freely with respect to the outer mantle and crust. Thus every twist and torque exerted by the atmosphere, oceans, Moon, Sun, other planets and the rest of the universe stirs that inner iron ocean, affecting the great dynamo that drives the Earth's magnetic field.

Length-of-day data, then, carries profound information. And without the space program we'd be almost blind to it. Not bad for asking one simple question.

17. Future of Paper Maps

In a world driven by digital communication, information is no longer shared primarily through paper and postage. Books and letters are frequently generated and transmitted through the computer, as are maps. With the rise of Geographic Information System and Global Positioning Systems (GPS), the use of traditional paper maps is on a certain decline.

Paper maps have been created and used since the development of basic geographic principles.

As a result of public reliance on digital navigation systems, traditional cartography jobs are being downsized, and in many cases eliminated.

While digital maps are helpful in getting from "Point A" to "Point B," they lack topographic details and cultural landmarks, among other details. Paper maps show "the big picture", whereas navigation systems only show direct routes and immediate surroundings. These shortages can lead to geographic illiteracy and dissipate our sense of direction.

Electronic navigation systems are advantageous, especially when driving. However, these advantages are limited, and the best navigational tool to use depends on the situation. Paper maps are simple and informative, yet advanced navigational tools such as Google Maps and GPS are useful as well.

Are paper maps in danger of becoming obsolete? Just as e-mail and e-books are convenient and reliable, we have yet to see the death of libraries, bookstores, and the postal service. In reality, this is highly unlikely. These ventures are losing profit to alternatives, but they simply cannot be replaced. GIS and GPS have made data acquisition and road navigation more convenient, but they do not

equate unfolding a map and learning from it. In fact, they would not exist without the contributions of historic scholars. Paper maps and traditional cartography have been rivaled by technology, but they will never be matched.

18. Landscape Architecture and Architects

Landscape architecture is a multi-disciplinary field, including within its fold geography, science, engineering, art horticulture, technology, philosophy, etc. The activities of a landscape architect can range from the creation of public parks and parkways to the site planning for corporate office buildings, from the design of residential estates to the design of civil infrastructure and the management of large wilderness areas or reclamation of degraded landscapes such as mines or landfills. Landscape architects work on all types of structures and external space – large or small, urban or rural, and with “hard”/”soft” materials, hydrology and ecological issues.

Landscape designers design all types of planting and green spaces. Garden designers are concerned with the design of small gardens and outdoor spaces and also with historic garden conservation. Green roof designers design extensive roof gardens for storm water management, sustainable architecture, aesthetics, and habitat creation.

Landscape managers use their knowledge of plants and the natural environment to advise on the long-term care and development of the landscape. They work in horticulture, estate management, forestry, nature conservation and agriculture. Landscape planners are concerned with landscape planning for the location, scenic, ecological and recreational aspects of urban, rural and coastal land use.

The most valuable contribution is often made at the earliest state of a project in generating ideas and bringing creativity to the use of space. The landscape architect can contribute to the overall concept and prepare an initial master plan from which detailed designs can subsequently be prepared.

19. Landscaping Design

Landscaping is an immensely popular art and practice involving improvement of the natural beauty of any given outdoor living environment. It is interesting to find that landscaping as an art dates back to thousands of years ago. This can be evidently witnessed in the ancient Roman homes built from 400 BC to 400 AD which had elaborate courtyards. The magnificent city gardens found in France in the 1600s and 1700s also speak volumes of landscaping as a form of architecture. However landscaping as a profession began in the mid 1800s and Frederick Law Olmstead is credited as the first professional and father of American 'landscape architecture'. It is important to remember that the right *landscaping design* would preserve the features existing as such in the landscape and try to maximize these elements to one's advantage. Done efficiently, *landscaping idea* can offer cost saving by improving the home energy efficiency by cutting down heating and cooling costs.

A landscape design should be aesthetically pleasing and functionally practical. Functionality however takes the upper hand, as the landscape design needs to be safe, convenient and usable. Essential elements of science and art blend to create an aesthetically pleasing extension of indoor and outdoor premises. Color, line, form, texture and scale must be used in good proportion. Landscape design principle should also consider certain pertinent factors like unity, balance, transition, focalization, proportion, rhythm, repetition and above all simplicity. These principles interact to yield a coordinated landscape design.

20. Urban Structure (A)

Urban structure is the arrangement of land use in urban areas. Sociologists, economists, and geographers have developed several models, explaining where different types of people and businesses tend to exist within the urban setting.

There are different models of urban structure:

Grid model is a type of city plan in which streets run at right angles to each other, forming a grid.

Zonal model was the first to explain distribution of social groups within urban areas. According to this model, a city grows outward from a central point in a series of rings. The inner ring represents the central business district. It is surrounded by a second ring which contains industry and poorer-quality housing. The third ring contains housing for the working-class. The fourth ring has newer and larger houses usually occupied by the middle-class. The outer ring represents people who choose to live in residential suburbs.

Sector model proposed that a city develops in sectors instead of rings. Certain areas of a city are more attractive for various activities. As the city grows and these activities flourish and expand outward, they become a sector of the city.

According to *multiple nuclei model*, a city contains more than one center around which activities revolve. Some activities are attracted to particular nodes while others try to avoid them. For example, a university node may attract well-educated residents, pizzerias, and bookstores, whereas an airport may attract hotels and warehouses.

21. Urban Structure (B)

Irregular pattern model is an arrangement of Public space that characterizes the stage of "Transition from village to city" especially in Third World. This urban model is due to lack of planning or construction and illegal without a specific order. This urban model is very suitable for ancient cities, particularly in Africa, South America or Asia and some few places in Europe.

A central business district (CBD) is the commercial and often geographic heart of a city. In North America this part of a city is commonly referred to as "downtown" or "city center". "City centre" is commonly used in Britain and Canada.

Urban open space. In land use planning, urban open space is open space areas for "parks", "green spaces", and other open areas. The landscape of urban open spaces can range from playing fields to highly maintained environments to relatively natural landscapes. They are commonly open to public access, however, urban open spaces may be privately owned. Areas outside of city boundaries, such as state and national parks as well as open space in the countryside, are not considered urban open

space. Streets, piazzas, plazas and urban squares are not always defined as urban open space in land use planning.

22. Road Structure

The arrangement of streets in cities can be further divided into various arrangements throughout the different regions of the world. The structure of the roads themselves is usually representative of the dominant culture of the region. Roads and Streets are used as a Skeleton of the city.

Europe: A ringed weblike structure is typically found in European cities. Medieval European towns were typically constructed around a church or cathedral. Cities founded prior to Christian influence were built around temples and other structures of cultural significance. Roads usually radiate outward from this central nucleus. The very centre of towns can be based on the grid pattern of a Roman Castra. This is the case for Vienna.

North America: A gridlike pattern is common in North American cities, which unlike European Cities, are typically built around a central business district. Early colonial cities such as Boston show a hybrid of the central nucleus structure and the grid structure. In Southwestern cities such as Phoenix, this grid structure is astoundingly apparent in aerial photographs of the urban area.

23. Protected Areas of Russia

The state nature reserves and national parks form the basis of a network of specially protected nature areas of Russia.

Today this network comprises 99 zapovedniks and 33 national parks, accounting for about 2% of the entire area of Russia. Zapovedniks is a Russian traditional form of territorial nature conservation, whereas the practice of the establishment of national parks has been derived from foreign experience. The notion of «zapovednik» goes back to the groves, forests and water bodies protected by the local population since ancient times, as determined by the statutes of monasteries, czar decrees and regulations of village communities. Some of the zapovedniks were

established where previously were the defense lines of certain principalities, on monastery lands and on tzar game grounds.

A developed network of specially protected areas is a guarantee of the preservation of Russia's nature diversity. Under Russian conditions such areas are primarily zapovedniks. They are established where representative samples of nature have been retained, and where there are especially vulnerable nature features, primarily rare species of plants and animals. Russian zapovedniks are fairly representative of the nature ecosystems of different landscape zones of the country and preserve the populations and habitats of virtually all the rare plants and animals listed in the Red Data Book.

The main difference of Russian zapovedniks from specially protected areas of other countries lies in their having research departments and in totality forming a network research institutions of the same type, covering the entire territory of Russia according to a particular system.

24. Bashkortostan Protected Nature Areas

Located at the joint of Europe and Asia, the Republic of Bashkortostan occupies the greater part of Southern Ural. The mountain forests, steppe and tundra here still amaze with their immensity and proud magnificence. More than 600 rivers and 800 lakes trim the beauty of the Republic's nature. Many of them, including the largest – the Ural and the Aghidel – belong to the Caspian Sea basin.

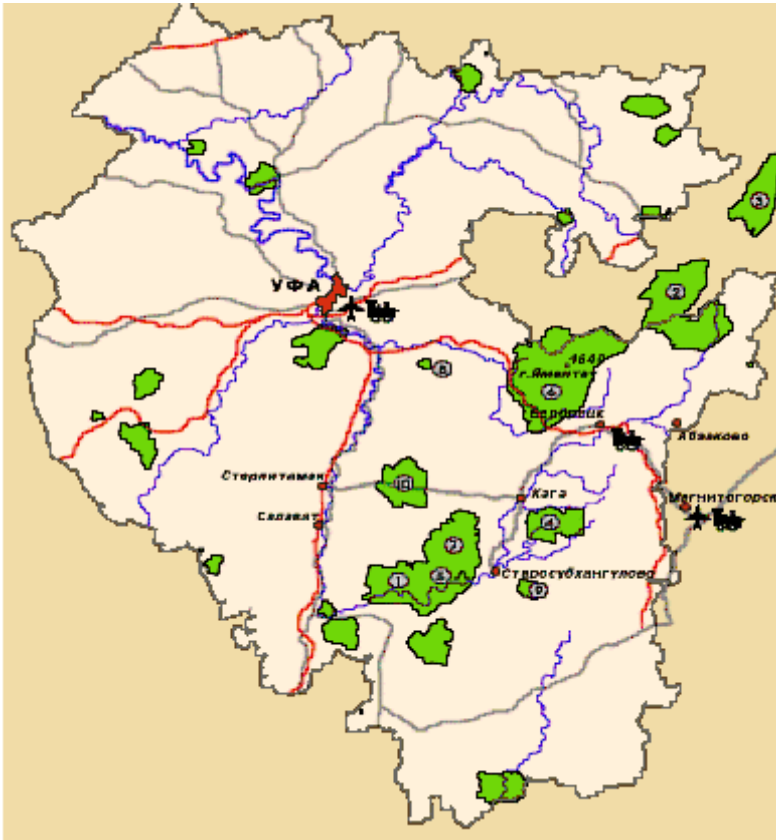


Figure 24.1 Bashkortostan map

Bashkortostan is rich in forests covering over one-third of its area. The predominant species are birch-tree, conifers, lime-tree, oak and maple. Today the Republic of Bashkortostan is on the way to the region's sustainable development, which will contribute to the conservation of the unique and picturesque nature. To date the total territory of strictly protected nature areas in Bashkortostan is 1.700.000 ha

or 12% of the republics territory (figure 24.1). In the nearest future this area is planned to increase twice.

National Parks	Zapovedniks	Natural Reserves
1. Bashkiria	4. Bashkirsky	7. Altyn Solok
2. Zjuratkul	5. Shulgan-Tash	8. Arhangelsky
3. Taganai	6. Yuzhnouralsky	9. Asebar
		10. Ishimbaisky

The renowned Reserve «Shulgan-Tash» is the only protected nature area in the world aimed at the conservation of the indigenous wild bee population. Its territory includes one of the famous karst caves in the world – Kapova Cave (figure 24.2), where Paleolithic rock drawings were found. Kapova Cave is of great significance as a complex nature monument. The cave calls attention with its peculiar structure - numerous grottos and halls, connected with passages at different levels- The total length of available passages is over 2000 m, the surface of the cave walls strikes

imagination with tiff leakages of different shapes and patterns. The underground river flowing out of the cave turns into the Blue Lake at the entrance to the cave.

The cave became a world culture monument owing to well-preserved drawings of Paleolithic people (over 15 thousand years ago). The pictures represent mammoths, rhinoceroses, horses and other animals living here in the ancient times.

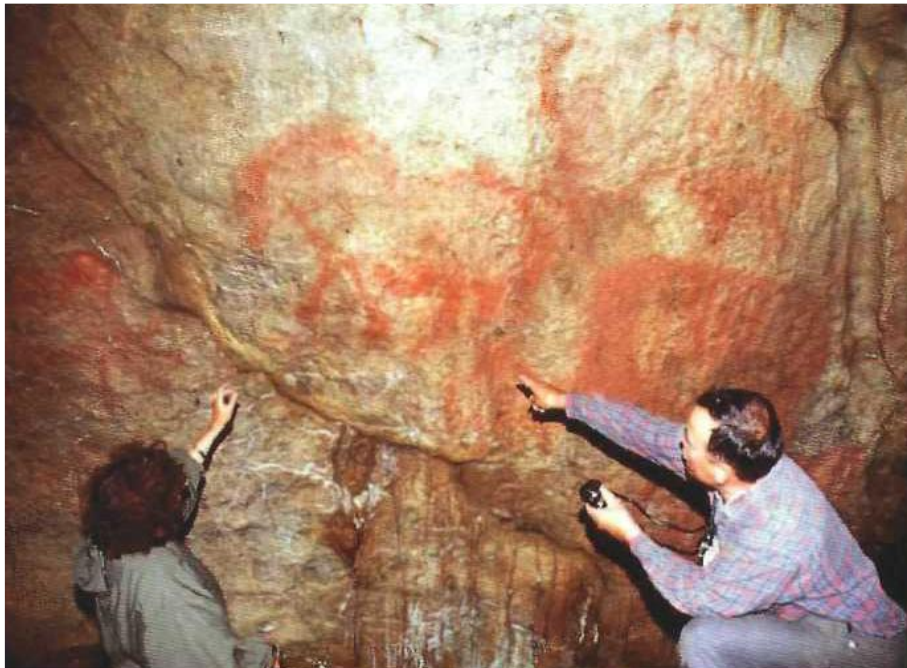


Figure 24.2 Kapova Cave

25. Britain's National Parks

The National Parks in the UK protect some of the most spectacular and valued landscapes in England Scotland and Wales. National Parks in the UK also protect farms, villages and cultural heritage.

Unlike the national parks of North America, the 15 National Parks in the UK are not large, virgin wilderness areas owned by public bodies. They are, in fact, populated places, with much of the land in private ownership, where people who farm the land or settle in the towns and villages take part in preserving Britain's wild and worked landscapes.

National Parks in Britain differ from most European and North American National Parks in that they are not strict reserves, but areas of protected landscape (which may contain some strictly protected areas such as National Nature Reserves).

Not only are there extensive agriculture and forestry, but also sometimes quite large residential areas, tourist resorts and even extractive industry such as quarries – creating conflict in terms of visual blight, noise and industrial traffic. They are essential cultural landscapes, where the interaction between man and nature has, over many centuries, and indeed sometimes millennia, created a distinct countryside, often rich in archaeological and historical features.

National Park Authorities have a duty to conserve and protect these landscapes but also to promote their enjoyment and understanding by the public. Given the rapid increase in car ownership and usage over the last few decades, motorized traffic, in particular tourist traffic, now poses a serious threat to the quality and enjoyment of our National Parks in terms of ever increasing congestion, visual pollution, air pollution, noise, urbanization, danger from fast traffic on narrow roads to both humans and wildlife.

26. Types of Forests

Types of forests are classified differently from one and another depending upon the species developed with the age of forests, soil found in those forests and the density of trees. So forests are divided into following main types:

- Tropical forest
- Sub tropical forest
- Boreal Forest
- Temperate forest
- Seasonal or monsoon forest

Tropical and subtropical forests, also known as rainforests or tropical rainforests, are lavish and ample forests with broadleaf tree. They are mostly found at lowlands near the Equator. These forests are evergreen forests and remain the same throughout the year.

Boreal forests are also known by name Taiga. The word ‘Boreal’ means northern, these forests are occupying about 17% of the land. This type of forest

can be easily found on latitude 50 to 60. Temperature in these forests is usually low, as the canopy allows very low sunlight to penetrate.

Temperate forests can be found on both hemispheres on latitude approximately 25 to 50 in regions of northeastern Asia, North America, western and central Europe and can be categorized as deciduous as well as evergreen. Soil of these forests is fertile and enriched. Trees of these forests can be categorized as broadleaf trees including those which change their foliage every year.

Seasonal or monsoon forests are also known as dry forests. These forests go through two extreme seasons; the season of heavy rainfall and a long season of complete dryness. Forests of this type can be found in Southeast Asia, West and East Africa, eastern Brazil and northern Australia. Trees of these forests include woody vines, orchid and many others like; lianas and herbaceous epiphyte, thick bamboos and tall teak trees.

27. Forests of Russia

In relation to the rest of the world, Russia possesses more than one fifth of the world's forested area. Coniferous volume accounts for 80 per cent of the total. The most widespread genus is larch. Next follow pine, spruce, birch, fir, aspen, oak and beech.

Geographically, our forest resources have an extremely disproportional distribution as to population and conversion facilities. The main softwood reserves are concentrated in the Urals, Siberia, Far East, in Northern European regions of Arkhangelsk and Vologda and in the Komi and Karelian Autonomous Republics.

The taiga occupies two-fifths of European Russia and extends across the Urals to cover much of Siberia. Much of the taiga also has permafrost. This vast zone is made up of coniferous trees, but birch, poplar, aspen, willow and other deciduous trees add to the diversity of the forest in some places. The taiga contains the world's largest coniferous forest, representing about one-third of the world's softwood timber. There are various species of pine in taiga. Larch, a deciduous conifer, becomes dominant throughout the mountains of eastern Siberia. Some regions,

however, have stands of trees that are made exclusively of birch. Throughout the taiga zone, trees are generally small and widely spaced. A mixed forest, containing both conifers and broad-leaved deciduous trees, occupies the central portion of the Great European Plain between Saint Petersburg and the Ukrainian border. The principal broad-leaved species are oak, beech, maple and hornbeam.

28. Britain's Forests

In prehistoric times, Britain was well-covered with trees. But as the population changed and grew, as agriculture developed and the need for timber increased the forest areas gradually disappeared. The grazing of cattle and sheep prevented much natural regeneration of trees. By 1905, after centuries of woodland clearance, Britain had less than 5% tree-cover. This area has now doubled, although two-thirds of our present woodland is coniferous and mainly evergreen. Britain is still one of the least wooded countries in Europe. Today only 6% of the total area remains wooded. Oak, elm, ash and beech are the commonest trees in England, while Scotland has much pine and birch.

But in spite of the two wars the Forestry Commission has now planted 1.5 million acres of trees in the 500 forests of the country. The annual programme in recent years has been 100 million new trees planted each year. Of these, 90 per cent are conifer trees because they are quick growing. The softwood they provide represents practically 90 per cent of timber needs of Britain. The Forestry Commission, with their scientific and financial resources, advises and assists private landowners who have between them 2.5 million acres of woodland.

There is a number of forest schools which train the men who look after Britain's forests. A number of universities have specialist courses which provide a steady flow of men who will occupy various positions both in state and private woodlands.

29. Forestry

It is hard to imagine a resource that provides more benefits for humans than do forests. Food, shelter, tools, and fuels are all products of this natural treasury. The forest is also home to many animals and plants. Its trees help clear the air of pollution while enriching it with oxygen and slow down the sometimes destructive forces of wind and water. Forests are one of the major resources that can be renewed and improved. The science of managing forests is called forestry.

The most modern aspects of the science of forestry are collectively called forest management. Forest management is concerned with the complete life cycle of the trees and the forest, from getting trees off to a better start to making sure trees are harvested in a way that protects the future of the forest.

Forest management usually involves doing the same sorts of things nature does, but in a more planned and organized fashion. Nature plants trees, thins forest stands, and kills trees, but nature's efforts sometimes seem haphazard. Forest managers do these same things with a plan that benefits the forest stand and people, too. Nature lets trees burn or rot. Forest managers or foresters prefer to use the wood.

In recent years foresters have become much more professional. Now a man or woman who wants to practice forestry is expected to have a college degree in forest sciences. Many professional foresters work for the government, but their work is different from that of their predecessors. Professional foresters are usually called on to be forest managers, directing other people in the tree planting, tree improvement, and protection activities they prescribe.

Many foresters find careers in research, working in such areas as tree improvement or insect control. Some researchers work for government agencies, but industry also employs forest scientists. People with less formal training may still find careers as forest rangers, protecting the forests, or in related activities such as harvesting and tree planting.

30. From the History of Human Dwellings

Most of the time of a modern man is spent within the walls of some building. Houses are built for dwelling. Large buildings are constructed for industrial purposes. Theatres, museums, public and scientific institutions are built for cultural activities of the people. The purposes of modern buildings differ widely, but all of them originate from the efforts of primitive men to protect primitive men from stormy weather, wild animals and human enemies.

When the Ice Age had passed, Europe remained very cold, at least in winter, and so the people of the Old Stone Age had to find some warm and dry place to shelter from bad weather. They chose caves, dwelling places that storm and cold could not destroy. On the walls of their caves ancient people painted pictures. Such caves are found in Europe, Asia and Africa. When man began to build a home for himself, caves were imitated in stone structures.

In the days of early civilization, once men had learnt how to build simple houses for their families. At first the difference was mainly in size - the chief or leader had a larger hut or tent than the rest of the people. Much later, when men began to build towns, there grew up a difference between town houses and country houses. The streets in towns were very narrow and there was not much place for building within the town walls, and therefore houses were higher than they were in the country.

In the country ordinary people lived in simple one-storey cottages which did not differ much from the mud and stone huts of an earlier age.

The rich people in the country built huge castles with thick walls and narrow windows. These castles were built not only as dwellings, but also to stand up to enemy attack and to be strong bases in time of war.

31. Concrete

Concrete is a universal material for construction. Different kinds of concrete can be used practically for every building purpose. The raw materials for producing concrete can be found in every part of the world. The main property

that makes concrete so popular is that it can be formed into strong monolithic slabs. Another good quality is its relatively low cost. Besides, concrete is fire- and decay-resistant.

Concrete is produced by combining coarse and fine aggregates, Portland cement, and water. Coarse aggregate is generally gravel or crushed stone, and fine aggregate is sand. Cement, sand, gravel, and water are taken in proportional amounts and mixed. The quality of concrete depends mostly on the quality of the cement used. The process of production consists in pouring the mixed components into forms and holding them there until they harden. The process of hardening generally lasts for about 28 days.

There exist different ways of producing concrete. It can be produced by mixing the ingredients and pouring the mixture into position on the site of building. Concrete can also be produced in a factory, and used as material for manufacturing prefabricated blocks.

Concrete, as any other building material, has not only advantages but also disadvantages. Its main disadvantage is that it has no form of its own. Also, it does not possess useful tensile strength. Because of these qualities in modern times construction concrete is very frequently combined with different metals. Most common of them are iron and steel.

GRAMMAR REVIEW

ГРАММАТИЧЕСКИЙ СПРАВОЧНИК

UNIT 1

Имя числительное

The Numeral

1) **Количественные числительные** по строению подразделяются на **простые, производные** и **составные**:

1. К **простым** относятся числительные от 1 до 12:

1 one	4 <i>four</i>	7 <i>seven</i>	10 <i>ten</i>
2 <i>two</i>	5 <i>five</i>	8 <i>eight</i>	11 eleven
3 <i>three</i>	6 <i>six</i>	9 <i>nine</i>	12 twelve

2. **Производными** являются числительные от 13 до 19. Они образуются при помощи суффикса **-teen** от соответствующих числительных первого десятка: *four* четыре – *fourteen* четырнадцать. Обратите внимание: *13 thirteen*, *15 fifteen*.

К производным относятся также числительные, обозначающие десятки. Они образуются при помощи суффикса **-ty**: *six* шесть – *sixty* шестьдесят; при этом некоторые из них видоизменяются, например: *two* два – *twenty* двадцать, *30* – *thirty*.

3. К **составным** относятся числительные, обозначающие десятки с единицами, начиная со второго десятка. Они пишутся через дефис (черточку). Например: *twenty-one* двадцать один, *forty-seven* сорок семь.

В составных числительных в пределах каждого трех разрядов перед десятками (а если их нет, то перед единицами) ставится союз **and**, например: *3,516,436* – *three million five hundred and sixteen thousand four hundred and thirty-six*.

При обозначении количественных числительных при помощи цифр каждые три разряда (справа налево) отделяются запятой, например: 1,534; 3,580,000:

1,025 – a (one) thousand and twenty-five – (одна) тысяча двадцать пять.

2) Простые и десятичные дроби.

Для цифры ноль 0 в английском языке может использоваться два варианта: **zero** или **oh**.

1. В десятичных дробях ноль – это **zero** или **o**, за ним следует слово **point** (точка) и затем дробь:

0.5 – o point five ноль целых и пять десятых или point five (т.е. ноль целых может не произноситься). Каждая цифра после целой части читается отдельно.

2. В простых дробях числитель выражается количественным числительным, а знаменатель – порядковым: $\frac{3}{8}$ – *three eighths*.

В смешанном числе целое число читается как количественные числительные, а дробь присоединяется при помощи союза **and**:

7 $\frac{2}{3}$ – seven and two thirds.

Глагол «to be»

The Verb “to be”

Глагол «to be» может употребляться в предложении как смысловой, как вспомогательный, как модальный и как глагол-связка. На русский язык переводится – **есть, имеется, является, находится, существует** или же опускается при переводе:

I am a student. – Я студент.

Our hostel is not far from the University. – Наше общежитие находится недалеко от университета.

Глагол «to be» имеет следующие формы:

Present Indefinite	Past Indefinite
--------------------	-----------------

I	am	I	
He		He	
She }	is	She }	was
It		It	
We		We	
You }	are	You }	were
They		They	

Предложение с оборотом **there + to be**

Оборотом *there is/are* начинаются предложения, сообщающие о наличии или существовании (или отсутствии) в определенном месте или отрезке времени лица или предмета (лиц, предметов), еще неизвестного собеседнику.

Предложение начинают оборотом *there is/are*, за которым следует существительное-подлежащее (с относящимися к нему словами), обозначающее название этого предмета или лица. Далее, как правило, следует обстоятельство места или времени.

There + to be + подлежащее + обстоятельство

Это характерный пример построения предложения с обратным порядком расположения главных членов, или инверсией:

There is a chair at the table. – У стола стоит стул.

There were many nice days last month. – В прошлом месяце было много хороших дней.

UNIT 2

Степени сравнения прилагательных

Degrees of Comparison

1) Сравнительная степень односложных прилагательных образуется при помощи прибавления суффикса *-er*. Следует отметить, что некоторые двусложные прилагательные также образуют сравнительную степень по этому правилу.

Положительная степень	Сравнительная степень	Пример
cheap – дешевый	cheaper – дешевле, более дешевый	<i>My car is cheaper than yours. – Моя машина дешевле твоей.</i>
narrow – узкий	narrower – уже, более узкий	<i>Streets of our city are narrower than in Moscow. – Улицы нашего города более узкие, чем в Москве.</i>
easy – легкий	easier – легче	<i>Sometimes it's easier to agree than to argue. – Иногда легче согласиться, чем спорить.</i>

2) Превосходная степень односложных прилагательных образуется при помощи прибавления суффикса *-est* и определенного артикля. Следует отметить, что некоторые двусложные прилагательные также образуют сравнительную степень по этому правилу.

Положительная степень	Превосходная степень	Пример
near – близкий, ближний	the nearest – ближайший, самый близкий	<i>The nearest hospital is five kilometres away from here. – Ближайший госпиталь в пяти километрах отсюда.</i>

Положительная степень	Превосходная степень	Пример
large – большой	the largest – самый большой	<i>I need the largest size of shoes. – Мне нужен самый большой размер туфель.</i>
funny – смешной	the funniest – самый смешной	<i>It was the funniest day in my life. – Это был самый смешной день в моей жизни.</i>

3) Сравнительная степень многосложных прилагательных образуется при помощи слова **more**.

Положительная степень	Сравнительная степень	Пример
modern – современный	more modern – современнее, более современный	<i>Her new flat is more modern than ours. – Ее новая квартира более современная, чем наша.</i>
comfortable – удобный	more comfortable – более удобный, удобнее	<i>Can you find more comfortable place to work? – Вы можете найти более удобное место для работы?</i>
careful – заботливый	more careful – более заботливый, заботливее	<i>John is more careful than Tom. – Джон более заботливый, чем Том.</i>

4) Превосходная степень многосложных прилагательных образуется при помощи слова **most** и определенного артикля **the** перед прилагательным.

Положительная степень	Превосходная степень	Пример
serious – серьезный	the most serious – самый серьезный	<i>This is the most serious event in December. – Это самое серьезное</i>

Положительная степень	Превосходная степень	Пример
		<i>событие декабря.</i>
interesting – интересный	the most interesting – самый интересный	<i>Cosmopolitan is the most interesting magazine for women – Космополитэн. – самый интересный журнал для девушек.</i>
dangerous – опасный	the most dangerous – самый опасный	<i>That my trip was the most dangerous in my life. – То мое путешествие было самым опасным в жизни.</i>

Исключения.

Положительная степень	Сравнительная степень	Превосходная степень
good – хороший	better – лучше, лучший	the best – самый лучший, (наи)лучший
bad – плохой	worse – худший, хуже	the worst – самый плохой, (наи)худший
little – мало	less – меньше	the least – наименьший, малейший
much, many – много	more – больше	the most – наибольший

UNIT 3

Имя существительное

The Noun

Именем существительным называется часть речи, которая обозначает предмет и отвечает на вопросы: кто? что? Например: *an animal, a car*.

В предложении существительное может выполнять любую функцию, т.е. быть любым членом предложения. Чаще всего существительное является подлежащим и дополнением, и в этих функциях оно не вызывает особых затруднений при переводе.

Our students (подлежащее) learn the English language (дополнение) at the University. – Наши **студенты** изучают английский **язык** в университете.

Некоторые трудности могут возникнуть при переводе существительного в функции одного из видов определения. В этом случае оно стоит перед другим существительным и, не соединяясь с ним предлогом, составляет с ним так называемую «цепочку существительных». Чтобы грамотно перевести такую «цепочку», необходимо правильно задать вопрос каждому из существительных. На обычные для существительного вопросы: кто? или что? отвечает только последнее существительное, а к стоящему перед ним следует задать вопрос: какой? какая? какое? или какие? Подобных существительных-определений в «цепочке» может быть несколько.

Например: *The Moscow Region State Farm Horse Exhibition*. Перевод рекомендуется начинать с последнего слова: *Выставка лошадей совхозов Московской области*.

Если между двумя существительными стоит предлог *of*, то «ряд» нарушается. Сравните: *a soil zone* – почвенная зона и *soil of the zone* – почва зоны.

Английское существительное имеет два падежа: общий падеж, не оформленный специальными окончаниями, и притяжательный – 's. Обратите внимание на некоторые особенности образования и употребления притяжательного падежа:

my friend's dog

собака моего друга

my friends' dogs (the dogs of my friends)

собаки моих друзей

Nike's book

книга Ника

Moscow's theatres

театры Москвы

Wells' novel

роман Уэллса

Существительное в английском языке имеет формы числа: единственного (словарная форма) и множественного (словарная форма + «s»):

The student worked in the field. Студент работал в поле.

The students worked in the fields. Студенты работали в полях.

Обратите внимание:

potato – potatoes tomato – tomatoes	leaf – leaves life – lives calf – calves	sheep – sheep deer – deer
country – countries family – families	criterion – criteria crisis – crises analysis – analyses thesis – theses datum – data phenomenon – phenomena	man – men woman – women child – children ox – oxen foot – feet tooth – teeth goose – geese

UNIT 4

Неопределенные времена

Simple Tenses

Времена группы Simple (Indefinite) употребляются для выражения общеизвестных фактов, обычных, регулярно повторяющихся, привычных или постоянных действий в настоящем, прошедшем и будущем без указания на точное протекание действия.

Времена группы Simple (Indefinite) образуются при помощи глагола неопределенной формы с прибавлением окончаний или вспомогательных глаголов в зависимости от того, когда происходит действие, т.е. в настоящем, прошедшем или будущем времени.

Условные обозначения:

V – неопределенная форма глагола.

V+ed (V2) – глагол прошедшего времени (**V2** см. глагол во второй колонке таблицы неправильных глаголов).

Do/does, did— вспомогательные глаголы, которые помогают образовать вопросительные и отрицательные предложения, но не переводятся.

Will / shall – вспомогательные глаголы, которые помогают образовать будущее время.

	Утвердительная форма		Вопросительная форма			Отрицательная форма	
Present Simple	I	V.	Do I V?			I	do not (don't) V.
	He She It	V(s).	Does	he she it	V?	He She It	does not (doesn't) V.
	We You They	V.	Do	we you they	V?	We You They	do not (don't) V.
Past Simple	I	V-ed (V2).	Did	I	V?	I	did not (didn't) V.
	He She It	V-ed (V2).	Did	he she it	V?	He She It	did not (didn't) V.
	We You They	V-ed(V2).	Did	we you they	V?	We You They	did not (didn't) V.
Future Simple	I We	shall/will (I'll) V.	Shall/ Will	I we	V?	I We	shall/will not (shan't) V.
	He She	will ('ll) V.	Will	he she	V?	He She	will not(won't) V.

	It You They			it you they		It You They	
Слова-указатели:	Present Simple	usually, always, often, every day, never					
	Past Simple	last week, yesterday, last month, days ago, the other day, long time ago					
	Future Simple	soon, tomorrow, next Monday, in the future, in a few days, in 2030					
Примеры:	Present Simple	<i>I usually go by foot, but sometimes I take a bus. I don't drink black coffee in the morning. Does he speak English?</i>					
	Past Simple	<i>Yesterday we went to the cinema. When I was young I usually lived in France. When did you go there?</i>					
	Future Simple	<i>He will return to Moscow in a few days. Will you read this book? He won't visit his aunt tomorrow.</i>					

UNIT 5

Продолженные времена

Continuous tenses

Времена группы Continuous (Progressive) употребляются для обозначения действия, происходящего в определенный момент или период времени в настоящем, прошедшем или будущем, которое представлено как процесс. Продолженное время образуется при помощи вспомогательного глагола **to be** в личной форме соответствующего времени и причастия настоящего времени смыслового глагола **V+ing**.

Условные обозначения:

Be – вспомогательный глагол, который указывает, когда происходит то или иное действие (*am, is, are* – в настоящем времени; *was, were* – прошедшем времени; в будущем времени используется *will be*).

V – неопределенная форма глагола.

	Утвердительная форма		Вопросительная форма			Отрицательная форма	
Present	I	am (I'm) V-ing.	Am I V-ing?			I	am not (I'm not) V-ing.
	He She It	is (...s) V-ing.	Is	he she it	V-ing?	He She It	is not (isn't) V-ing.
	We You They	are (...re) V-ing)	Are	we you they	V-ing?	We You They	are not (aren't) V- ing
Past	I	was V-ing.	Was	I	V-ing?	I	was not (wasn't) V-ing.
	He She It	was V-ing	Was	he she it	V-ing?	He She It	was not (wasn't) V-ing.
	We You They	were V-ing	Were	we you they	V-ing?	We You They	were not (weren't) V-ing.
Future	I We	shall/will (I'll) be V-ing.	Shall/ Will	I we	be V-ing?	I We	Shall / will not (shan't / won't) be V-ing.
	He She It You	will (...ll) be V-ing	Will	he she it you	be V-ing?	He She It You	will not (won't) be V-ing.

	They			they		They	
--	------	--	--	------	--	------	--

Слова-указатели:	Present Continuous	now, at present, at the moment, right now, just now
	Past Continuous	at noon, at that moment, at 5 o'clock yesterday, all day (long), all summer, all the time, the whole evening, from five till five, on Monday last week, during the war
	Future Continuous	at noon, at midnight, at 5 o'clock, at 3o'clock tomorrow, all day long, all day tomorrow, all the time, the whole evening, from 5 till 6
Примеры:	Present Continuous	<i>He is reading a book now.</i> <i>Mary, what are you doing?</i> <i>I'm not playing the piano at the moment.</i>
	Past Continuous	<i>Sam was working in the garden all day.</i> <i>I wasn't preparing for my examination at 5 o'clock.</i> <i>Were you sleeping when I called?</i>
	Future Continuous	<i>I'll be waiting for you at 9 o'clock tomorrow.</i> <i>This time next week I won't be lying on the beach or swimming in the sea.</i>

Примечание:

1) Глаголы, обозначающие не действия, а *состояния, чувства, желания, мысли* и некоторые другие, не употребляются в формах Continuous. Вместо них используется времена группы Simple.

to agree	to respect	to prefer	to remember
to believe	to think	to want	to belong
to expect	to understand	to wish	to contain
to forget	to hate	to hear	to include
to know	to like	to see	to taste

Например:

I don't understand what you mean.

Do you hear what he's saying?

2)оборот **to be going** используется выражения намерения совершить действие или уверенности в его совершении в будущем.

Например:

We're going to get married in June.

UNIT 6

Модальные глаголы

Modal Verbs

Модальные глаголы – это глаголы, которые выражают характер (модус) действия. К ним относятся такие глаголы, как can, must, may (might), should, need и некоторые другие.

can	
Форма настоящего времени	can
Форма прошедшего времени	could
Значение	Возможность или способность сделать что-либо. На русский язык, как правило, переводится словами <i>могу, умею.</i>

<p>Случаи употребления с примерами</p>	<p>1. Can указывает на возможность или способность сделать что-либо: <i>My friend can write compositions well. – Мой друг умеет хорошо писать сочинения.</i> <i>Can he persuade us? – Может ли он убедить нас?</i> <i>Those workers can't speak English. – Те рабочие не говорят по-английски (не умеют говорить по-английски).</i></p> <p>2. С помощью глагола can мы указываем на сомнение, удивление, говоря о возможности совершения действия: <i>My sister cannot think so. – Не может быть, чтобы моя сестра подумала так.</i></p>
<p>Особенности глагола</p>	<p>Особенность модального глагола can заключается в том, что в отрицательной форме can пишется слитно с частицей not – <i>cannot</i>.</p>
<p>should</p>	
<p>Форма настоящего времени</p>	<p>should</p>
<p>Форма прошедшего времени</p>	<p>отсутствует</p>
<p>Значение</p>	<p>Данный модальный глагол указывает на моральную обязанность или совет.</p>
<p>Случаи употребления с примерами</p>	<p>1. Совет: <i>Mary should be more polite. – Марии нужно быть более вежливой.</i></p> <p>2. Моральная обязанность: <i>What should I do now? – Что мне сейчас лучше</i></p>

	<i>сделать?</i>
may/might	
Форма настоящего времени	may/might
Форма прошедшего времени	отсутствует
Значение	Этот модальный глагол используется, когда необходимо указать на разрешение. На русский язык переводится словами <i>могу, можешь, может</i> и т.д.
must	
Форма настоящего времени	must
Форма прошедшего времени	отсутствует
Значение	Этот модальный глагол указывает на необходимость сделать что-либо ввиду определенных обстоятельств. Кроме того, <i>must</i> употребляется для предложений, в которых необходимо выразить приказ или совет. При переводе глаголу <i>must</i> соответствуют слова <i>нужно, надо, должен</i> .
Случаи употребления с примерами	<p>1. Обязанность, необходимость, запрет (в отрицательных предложениях):</p> <p><i>You must be here at 5 o'clock. – Вы должны быть здесь в 5 часов.</i></p> <p><i>She mustn't stay here. – Она не должна оставаться здесь.</i></p> <p>2. Предположение:</p>

	<i>Mary must be at the station now. – Мария сейчас, должно быть (вероятно), на станции.</i>
need	
Форма настоящего времени	need
Форма прошедшего времени	отсутствует
Значение	Указывает на необходимость сделать что-либо. На русский язык переводится словами <i>нужно, надо</i> . Как смысловой глагол переводится <i>нуждаться</i> .
Случаи употребления с примерами	1. Необходимость сделать что-либо (need – модальный глагол): <i>Need John invite her? – Нужно ли Джону приглашать ее?</i> 2. Значение нуждаться (need – смысловой глагол): <i>I don't need her help any longer. – Мне больше не нужна ее помощь.</i>

UNIT 7

Совершенные времена

Perfect tenses

Времена группы Perfect употребляются для обозначения действия, которое закончилось к определенному моменту времени или произошло раньше других действий в прошлом, настоящем или будущем и представлено как результат. Совершенное время образуется при помощи вспомогательного глагола *to have* в личной форме соответствующего времени и причастия прошедшего времени смыслового глагола *V3* (см. глагол в третьей колонки таблицы неправильных глаголов) или *V+ed* (для правильных глаголов).

Условные обозначения:

have – вспомогательный глагол, который указывает, когда происходит то или иное действие (*have, has* – в настоящем времени; *had* – прошедшем времени; в будущем времени используется *will have*).

V3 (V+ed) – причастие прошедшего времени смыслового глагола.

Вид Время	Perfect Совершенное	
Present Настоящее	I, we, you, they	have V3 (V+ed)
	he, she, it	has V3(V+ed)
Пример:	<i>I have asked</i>	
Past Прошедшее	I, he, she, it, we, you, they	had V3(V+ed)
Пример:	<i>I had asked</i>	
Future Будущее	I, he, she, it, we, you, they	will have V3(V+ed)
Пример:	<i>I shall have asked</i>	

Форма Present Perfect имеет временной акцент "**до настоящего момента**" и употребляется тогда, когда необходимо подчеркнуть, что результат некоего действия, случившегося в прошлом (не важно, непосредственно перед моментом речи или в более отдаленное время), присутствует в настоящий момент, например: *I have lost the key. Я потерял ключ (значит сейчас я без ключа).*

Present Perfect обозначает действие, совершившееся в прошлом, и связанное с настоящим наличием какого-либо результата или последствий. Интерес представляет сам факт совершения действия, а не время действия.

Так как это форма настоящего времени и всегда соотносится с моментом речи, то она не употребляется в тех случаях, когда есть обстоятельства, указывающие на время совершения действия в прошлом.

Past Simple обозначает действие, совершившееся в прошлом, и не связанное с настоящим временем. Интерес представляет время совершения действия, детали и подробности события. Например:

I have received a very important letter. Я получил очень важное письмо.

Yesterday I received a very important letter. Вчера я получил очень важное письмо.

Следует отметить, что в отличие от Present Perfect **Present Simple** используется для выражения обычного, постоянного, типичного действия или характерного признака, свойства подлежащего, а также для передачи общеизвестных фактов и простых истин, имеющих место в настоящем, но не привязанных к моменту речи. Например:

The Earth goes round the Sun. Земля вращается вокруг Солнца.

UNIT 8

Страдательный залог

The Passive Voice

Страдательный залог (Passive Voice) указывает на то, что подлежащее пассивно. Действие направлено на предмет или лицо, выраженное подлежащим. Страдательный залог образуется при помощи вспомогательного глагола **to be** в личной форме соответствующего времени и причастия прошедшего времени смыслового глагола **V3** (см. глагол в третьей колонки таблицы неправильных глаголов) или **V+ed** (для правильных глаголов).

Условные обозначения:

be – вспомогательный глагол, несущий грамматическую нагрузку, т.е. выражающий время, число, лицо всей глагольной формы.

V3 (Ved) – причастие прошедшего времени смыслового глагола (3-я форма или *ed*-форма).

By или **with** – предлоги, соответствующие в русском языке творительному падежу «кем, чем?».

By указывает на того, кто совершает действие, **with** – на то, чем совершено действие:

This book was read (by many students). – *Эту книгу читали (многие студенты).*

The letter is written with a pen. – *Письмо пишут пером.*

Вид Время	Indefinite Неопределенное	Continuous Продолженное	Perfect Совершенное
Present Настоящее	I am V3 (V+ed) he ,she, it is V3 (V+ed) we, you, they are V3 (V+ed)	I am being V3 (V+ed) he, she, it is being V3 (V+ed) we, you, they are being V3 (V+ed)	I, we, you, they have been V3 (V+ed) he, she, it has been V3 (V+ed)
Пример:	<i>I am asked</i>	<i>I am being asked</i>	<i>I have been asked</i>
Past Прошедшее	I, he, she, it was V3 (V+ed) we, you, they were V3 (V+ed)	I, he, she, it was being V3 (V+ed) we, you, they were being V3 (V+ed)	I, he, she, it, we, you, they had been V3 (V+ed)
Пример:	<i>I was asked</i>	<i>I was being asked</i>	<i>I had been asked</i>
Future Будущее	I, we shall be V3 (V+ed)		I, we shall have been V3 (V+ed)

	he, she, it, you, they will be V3 (V+ed)		he, she, it, you, they will have been V3 (V+ed)
Пример:	<i>I shall be asked</i>		<i>I shall have been asked</i>

UNIT 9

Неопределенная форма глагола (инфинитив)

The Infinitive

Признаком инфинитива является частица *to* перед глаголом: *to work* – работать, которая отсутствует после модальных глаголов: *I can __ speak English.*

Как любой глагол инфинитив может обозначать действие-факт, действие-процесс, действие-результат в активном и пассивном залогах.

Формы инфинитива

Группа времен	Активный залог	Пассивный залог
Indefinite (Simple) Инфинитив-факт – выражает действие, происходящее одновременно с действием сказуемого	To do – делать (вообще)	To be done – быть сделанным (вообще)
Continuous (Progressive) Инфинитив-процесс – выражает длительное действие, продолжающееся одновременно с действием сказуемого	To be doing – делать (в определенный момент)	
Perfect Инфинитив-результат – выражает действие, предшествующее действию сказуемого	To have done – (уже) сделать (до какого-либо определенного)	To have been done – (уже) быть сделанным (до какого-либо определенного)

	момента)	момента)
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Функции инфинитива в предложении:

а) Подлежащее (переводится неопределенной формой глагола или существительным в именительном падеже).

To master English is very important. – Овладеть (овладение) английским очень важно.

б) Часть составного сказуемого (переводится неопределенной формой глагола, нередко с союзом **чтобы**).

Their plan was to visit Great Britain. – Их план заключался в посещении Великобритании (в том, чтобы поехать в Великобританию).

He could play football well last year. – В прошлом году он умел (мог) хорошо играть в футбол.

в) Дополнение (переводится неопределенной формой глагола).

He likes to speak with us on this subject. – Ему нравится говорить с нами на эту тему.

г) Обстоятельство цели или следствия (*для того, чтобы; для...*).

They use fertilizers to get higher yields. – Они используют удобрения для того, чтобы получить высокие урожаи. Или: ... для получения высоких урожаев.

To know English better I read many English books. – Для того, чтобы знать английский язык лучше, я читаю много английских книг.

д) Определение:

I have no wish to go there. – У меня нет желания (какого?) идти туда.

Last year he was always the first to come to the University. – В прошлом году он всегда приходил в Университет первым.

Инфинитив, определяющий существительное, часто переводится определительным придаточным предложением с оттенками модальности, что приводит к добавлению слов *надо, должен, следует*.

We spoke about the new club to be built next year. – Мы говорили о новом клубе, который должен быть построен в будущем году.

UNIT 10

Причастие I

The Participle I

В английском языке есть два причастия: Participle I (PI) и Participle II (P II).

Participle I

Причастие I или причастие настоящего времени в действительном залоге имеет простую форму с характерным *ing*-окончанием и в страдательном залоге – сложную форму с *ing*-окончанием, смещенным на вспомогательный глагол.

Формы Participle I

	Active	Passive
Indefinite	working	being worked
Perfect	having worked	having been worked

Причастие выступает в предложении в трех функциях: как часть сказуемого, определение и обстоятельство.

В функции часть сказуемого Participle I входит в состав глагольных форм группы Continuous:

I am reading a book now. – Я читаю книгу.

Participle I в функции определения:

The running boy was very tired. – Бегущий мальчик очень устал.

The boy running at some distance looked tired. Мальчик, бегущий на некотором расстоянии, выглядел усталым.

Participle I в функции обстоятельства:

Driving to work she had an accident. – По дороге на работу она попала в аварию.

UNIT 11

Герундий

Gerund

Герундий – это неличная форма глагола, выражающая название действия и обладающая как свойствами глагола, так и существительного. В русском языке аналогичной формы нет. Поэтому мы переводим герундий при помощи других частей речи: глаголом или существительным.

Герундий образуется так же, как и причастие I: к инфинитиву без частицы *to* прибавляется окончание ***ing***.

Отрицательная форма герундия образуется с помощью частицы ***not*** которая ставится перед герундием.

Герундий употребляется:

1. После предлогов, за которыми следует указание на процесс (как дополнение или обстоятельство):

We use ink for writing. – Мы употребляем чернила для письма (существительное), или *чтобы писать* (глагол).

After finishing the work.. – После того как закончил работу (глагол), или *после окончания работы* (существительное).

2. После глаголов (как дополнение):

а) указывающих на начало, продолжение или конец процесса и на действие или состояние, имеющее место между началом и концом любого процесса.

They started working. – Они начали работу, или: Они начали работать.

They were busy packing. – Они были заняты упаковкой (тем, что упаковывали).

He finished reading his book. – Он кончил читать книгу, или Он кончил чтение книги.

б) указывающих на отношение к процессу, типа глаголов **любить, ненавидеть.**

I like studying. – Я люблю заниматься.

I hate missing my lessons. – Я очень не люблю пропускать уроки.

3. В начале предложения (как подлежащее):

Playing tennis is pleasant. – Играть в теннис приятно.

Doubling the pressure cuts the fermentation time. – Удвоение давления снижает время ферментации.

Конструкция **having + V3** («перфектная инфинитивная форма») показывает, что процесс (действие, обозначенное герундием) совершился или совершится до другого действия (перфект). Переводится дополнительным придаточным предложением.

I did not speak of having read this book. – Я не говорил о том, что (уже) читал эту книгу.

Примечание. Герундий иногда выступает в функции определения следующего за ним существительного, образуя, как правило, устойчивые словосочетания (*boiling point* – точка кипения; *dining room* – столовая; *melting point* – точка плавления), и как смысловая часть составного сказуемого после глагола-связки **to be**:

My favourite occupation is reading books. Мое любимое занятие – чтение книг, или: читать книги.

UNIT 12

Причастие II

Participle II

Причастие II является страдательным причастием (образуемым только от переходных глаголов) и соответствует русскому страдательному причастию прошедшего времени, обозначая законченное действие, выполненное над каким-либо объектом. По своему значению оно выражает результат этого действия (как признак или состояние).

Формы Participle II

Причастие II имеет только одну форму **V3** (для неправильных глаголов) или **V+ed**: *broken cup* – разбитая чашка, *injured man* – пострадавший человек.

Participle II выступает в предложении в трех функциях: как часть сказуемого, определение и обстоятельство.

Participle II в функции часть сказуемого входит в состав глагольных форм группы Perfect и Passive Voice.

I have read this book (Present Perfect). – Я прочитал эту книгу.

The door is locked (Present Indefinite Passive). – Дверь заперта.

Participle II в функции определения:

A broken cup lay on the table. – Разбитая чашка лежала на столе.

A cup broken lay on the table. – Разбитая чашка лежала на столе.

Participle II в функции обстоятельства употребляется часто с союзами *when, while, if, as, though, although*. Переводится на русский язык придаточным предложением:

Though expected on Sunday he only arrived on Monday. – Хотя его ожидали в воскресенье, он приехал только в понедельник.

Таблица неправильных глаголов (Irregular Verbs)

be	was, were	been	БЫТЬ
beat	beat	beaten	БИТЬ
become	became	become	СТАНОВИТЬСЯ
begin	began	begun	НАЧИНАТЬ
bleed	bled	bled	КРОВОТОЧИТЬ

blow	blew	blown	дуть
break	broke	broken	ломать
bring	brought	brought	приносить
build	built	built	строить
burn	burnt	burnt	гореть
buy	bought	bought	покупать
catch	caught	caught	ловить
choose	chose	chosen	выбирать
come	came	come	приходить
cost	cost	cost	стоить
creep	crept	crept	ползать
cut	cut	cut	резать
do	did	done	делать
draw	drew	drawn	рисовать, тащить
dream	dreamt	dreamt	мечтать, дремать
drink	drank	drunk	пить
drive	drove	driven	водить (машину)
eat	ate	eaten	есть
fall	fell	fallen	падать
feed	fed	fed	кормить
feel	felt	felt	чувствовать
fight	fought	fought	бороться
find	found	found	находить
fly	flew	flown	летать
forget	forgot	forgotten	забывать
forgive	forgave	forgiven	прощать
freeze	froze	frozen	замерзать
get	got	got	получать
give	gave	given	давать
go	went	gone	идти
grow	grew	grown	расти
hang	hung	hung	вешать
have	had	had	иметь
hear	heard	heard	слышать
hide	hid	hidden	прятать
hold	held	held	держать
keep	kept	kept	держать (хранить)
know	knew	known	знать
lead	led	led	вести
learn	learnt	learnt	учить

leave	left	left	оставлять
let	let	let	позволять
make	made	made	производить
meet	met	met	встречать
mistake	mistook	mistaken	ошибаться
pay	paid	paid	платить
put	put	put	положить
read	read	read	читать
ride	rode	ridden	ездить верхом
ring	rang	rung	звенеть
rise	rose	risen	подниматься
run	ran	run	бежать
say	said	said	говорить
see	saw	seen	видеть
send	sent	sent	посылать
show	showed	shown	показывать
shut	shut	shut	закрывать
sing	sang	sung	петь
sink	sank	sunk	тонуть
speak	spoke	spoken	говорить
spend	spent	spent	тратить
spread	spread	spread	расстилать
stand	stood	stood	стоять
sting	stung	stung	жалить
swim	swam	swum	плавать
take	took	taken	брать, взять
teach	taught	taught	учить
tell	told	told	рассказывать
think	thought	thought	думать
throw	threw	thrown	бросать
understand	understood	understood	понимать
write	wrote	written	писать

GLOSSARY

Access is the right or opportunity to have or use something.

Acid is one of a class of compounds, generally but not always distinguished by their sour taste, solubility in water, and reddening of vegetable blue or violet colors.

Acid rain is an acid which forms when certain atmospheric gases (primarily carbon dioxide, sulfur dioxide, and nitrogen oxides) come in contact with water in the atmosphere or on the ground and are chemically converted to acidic substances

Air pollution is the existence in the air of substances in concentrations that are determined unacceptable to human health and the environment.

Amount is quantity of something such as time, money or a substance.

Animal is any living thing that can move independently and that has senses for recognizing and reacting to the environment around it.

Architecture is both the process and the product of planning, designing, and constructing buildings and other physical structures.

Artificially means not real or not made of natural things.

Attraction is a place of interest.

Authorities are people or organizations having power or control in a particular sphere.

Beam is a body, with one dimension large compared with the other dimensions, whose function is to carry lateral loads (perpendicular to the large dimension) and bending movements.

Bed is a small plot of cultivated or planted land.

Biodiversity is the variety of plant and animal species in an environment.

Biome is a large ecological region in which different communities of plants, animals and soil organisms inhabit.

By-product is something additional produced in the process of making something else.

Carnivore is a meat eating mammal.

Category is a class or division of things having particular characteristics.

Cause (v) means to make something happen, usually something bad.

Chemical is a chemical substance.

Clay is a fine-grained soil that combines one or more clay minerals with traces of metal oxides and organic matter.

Climate is the long-term regime of the atmospheric conditions typical for a concrete region (territory).

Cloud is a visible mass of liquid droplets suspended in the atmosphere above the Earth's surface.

Code is a complete set of written rules or laws.

Community is an assemblage of interacting populations occupying a given area.

Composition is the way in which something is made up of different parts, things, or members.

Concrete is substance made by mixing sand, very small stones, cement and water.

Coniferous tree is a tree as a pine or a fir that has leaves like needles and produces cones

Conservation is the protection of natural things such animals, plants, forests etc, to prevent them being spoiled or destroyed.

Construction drawing is a graphic representation of the work to be done in the construction of a building.

Curvature is the degree of curving of a line or surface.

Diversity is the fact of including of many different types of things.

Deciduous are plants which shed their leaves annually.

Decomposer is a living thing, chiefly bacteria and fungi that lives by extracting energy from the decaying tissues of dead plants and animals.

Deficit is the property of being an amount by which something is less than expected or required.

Deforestation is cutting down forest trees for commercial purposes or to make arable land.

Depend on means to change according to what else happens or whether something else changes.

Depletion is the consumption of a resource faster than it can be replenished.

Desert is a dry, often sandy region of little rainfall, extreme temperatures and sparse vegetation.

Destination is the ultimate end or purpose for which something is created or a person is destined.

Destructive is causing damage to people or things.

Deterioration is damage caused to an item by physical, chemical or biological means.

Developing country is a poor country that is trying to increase its industry and improve life for its people.

Dung beetle is an insect that flies around in search of manure deposits, or pats, from herbivores like cows and elephants.

Ecology is science dealing with the inter-relationships between living organisms and their environments.

Ecosystem is any natural unit or entity including living and non-living parts that interact to produce a stable system through cyclic exchange of materials.

Ecotourism is a form of tourism involving visiting fragile, pristine, and relatively undisturbed natural areas.

Energy is the power from something such as electricity or oil, which can do work, such as providing light and heat.

Environment is the complex of physical, chemical, and biological factors in which a living organism or community exists.

Evergreen is a tree or a bush that does not lose its leaves in winter.

Extinction is the situation when an animal (plant) no longer exist.

Feature is a part of something that you notice because it seems important, interesting, or typical.

Fertilizer is a substance or mixture that is added to the soil to supply nutrients.

Flood is (high water) rapid and comparatively short – term rise of water level in a river.

Forest is a large area of land that is covered with trees.

Fossil fuel is any combustible organic material as oil or coal, derived from the remains of former life.

Fund a large stock or supply of something.

Garden is a planned space, usually outdoors, set aside for the display, cultivation, and enjoyment of plants and other forms of nature.

Gathering ground is the area within which all surface water flows toward the lowest point of its elevation.

Global warming is overall rising temperatures and attendant consequences as a result of human activity.

Greenhouse effect is the natural process by which the atmosphere traps some of the Sun's energy, warming the Earth enough to support life.

Growth is an increase in the number, size, or importance of something.

Guidelines are official instructions about the best way to do something (especially difficult or dangerous).

Habitat is the locality or region of an animal or plant.

Herbivore is any animal that feeds chiefly on grass and other plants.

Horticulture is the cultivation of a garden.

Impact is the effect or influence that an event, situation, etc. has on someone or something.

Insulate is to cover or protect something so that electricity, sound or heat cannot get in or out.

Lake is a body of fresh or salt water of considerable size, surrounded by land.

Land is the part of the earth's surface that is not covered by water.

Landscape design is an independent profession and a design and art tradition, practiced by landscape designers, combining nature and culture.

Landscape is the aspect of the land characteristic of a particular region.

Loam is rich, friable soil containing a relatively equal mixture of sand and silt and a somewhat smaller proportion of clay.

Loss is harm or damage sustained.

Marsh is a type of wetland dominated by herbaceous than woody plant species.

Measure is a device used for measuring.

Measurement is the act of determining the length, height etc of something

Melt (v) is to change (a solid) to a liquid state especially by the application of heat.

Mining is the process of getting coal or metal ores from underground.

Moisture is wetness caused by water.

National park is a large area preserved in its natural state and declared by the national government to be public property.

Nature reserve is a special area where the wildlife is protected.

Negligible is small or unimportant to be safely disregarded.

Neighborhood is a geographically localized community within a larger city, town, suburb or rural area.

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Niche is the role or function of an organism or species in an ecosystem.

Nutrient is a chemical or food that provides what is needed for plants or animals.

Ocean is a vast body of salt water that covers almost three fourths of the earth's surface.

Oil spill is the escape of oil into the environment.

Omnivore is species that eats both plants and animals as its primary food source.

Originate (v) means to come or bring into being, to create.

Ownership is an exclusive right of possession.

Park is an area of land usually in a largely natural state for the enjoyment of the public having facilities for rest and recreation.

Path is a road or way, especially a narrow trodden track.

Plane surveying is a type of surveying in which the details of the terrain are obtained and where the horizontal plane is generally sufficient.

Plane table is a surveying instrument consisting of a drawing board mounted on adjustable legs, and used in the field for plotting measurements directly.

Plant is a living thing that grows in the earth and has a stem, leaves, and roots.

Plaza is an open urban public space, such as a city square.

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Plot is a small piece or area of ground.

Plumber is someone whose job is to repair water pipes, sinks, baths.

Poison is any substance that causes injury or illness or death of a living organism.

Poisonous is full of or containing poison.

Pollutant is a harmful substance that causes pollution.

Pollution is presence of abnormally high concentrations of harmful substances in the environment.

Population is number of people living in a country or town.

Preservation is keeping something in the same state, stopping something from changing or rotting.

Public space is a social space that is generally open and accessible to people.

Rainfall is the amount of rain that falls on an area in a particular period of time.

Rainforest is a dense evergreen forest which grows in tropical and temperate areas of high humidity.

Record (v) means to register or indicate.

Rectilinear is consisting by a straight line or lines.

Renewable is capable of renewal.

Resource is something such as land, oil, coal, etc., that exists in a country and can be used to increase its wealth.

Safeguard is to protect something from harm or damage.

Sand is the more or less fine debris of rocks, consisting of small, loose grains, often of quartz.

Scale is the ratio of the distance between two points on a map to the real distance between the two corresponding points portrayed.

Settlement is a permanent community where people live.

Shoal is a shallow place in a body of water.

Shortage is a situation in which there is not enough of something that people need or want.

Shrub is a woody plant smaller than a tree, usually divided into separate stems near the ground.

Slab is the part of a reinforced concrete floor, roof, or platform which spans beams, columns, walls, or piers.

Social science an academic discipline concerned with society and the relationships among individuals within a society.

Species is a group of living animals consisting of similar individuals

Standards of living (living standard) the amount of wealth, comfort, and other things that a particular person, group, country, etc has.

Streetscape is a pictorial view of a street.

Surface is the outside or top layer of something.

Surveying is the practice of measuring angles and distances on the ground so that they can be accurately plotted on a map.

Survival is a state of remaining alive.

Tenant is one who holds or possesses property by any kind of right.

Threat is a situation or an activity that could cause harm or danger.

Tree is a very tall plant that has branches and leaves, and lives for many years.

Tundra is noted for its frost-molded landscapes, extremely low temperatures, little precipitation, poor nutrients, and short growing seasons.

Unit is a part of land.

Urban is relating to towns and cities.

Urban planning is a technical and political process concerned with the use of land and design of the urban environment.

Vegetation is the act or process of vegetating.

Waste is unwanted materials, substances, or parts that are left after you use something.

Water is a clear liquid without colour, smell, or taste that falls as rain and that is used for drinking, washing, etc.

Weather is an atmospheric condition at any given time or place.

TOPICS

1. Animals are part of our ecosystem. They play an important role in balancing the environment and provide stability to different natural processes of nature. What factors contribute to the animal extinction?
2. Categories of land owners.
3. Do you think people should recycle newspapers? Why or why not?
4. Do you think there are lessons to learn from nature?
5. Do you usually drink bottled water? Why or Why not?
6. Disposal of rubbish
7. Does your local government make it easy or hard for citizens to recycle?
8. How can we protect the environment and at the same time improve people's standard of living?
9. Industrial wastes
10. If the environment could speak, what would it tell us?
11. If each person would sweep before his own house, would the city soon be clean?
12. If you could choose one alternative energy source to develop which one would you choose? Why?
13. Look at possible organization of the paragraphs and write an essay entitled "Paper maps or digital maps? – Which is better for finding out where you are."
14. Modern trends in landscape architecture.
15. Make notes about advantages and disadvantages of living in a city or a countryside. Write an essay discussing the ideas and giving your own opinion. Use phrases below.
16. Overview information about satellites and write an essay about their role in various spheres of human activity.
17. Photosynthesis, energy and life.
18. Should we make the development of renewable energy sources an economic priority?
19. Some people think that historic buildings should be preserved. Others insist that they should be pulled down. Overview both these arguments and give your own opinion.
20. Urban design is an opportunity to continue telling the story, not just to sum everything up.

21. Use of agricultural lands.
22. What are some things that can be recycled?
23. What are some types of pollution?
24. What are some ways that you can reduce pollution in this country?
25. What can you do to help prevent pollution?
26. What can you do to make this world a better place?
27. Who do you think is more responsible for pollution, individual people or the government? Explain.
28. What is the most important issue facing the environment today?
29. What are some ways energy is wasted?
30. What types of energy are popular in your native country?
31. What is the main problem with renewable energy sources?
32. What can large cities do to improve their air quality?
33. What's happening to forests in the world?
34. What happens when we remove forests?
35. What can we do to protect forests?
35. Why should we recycle?
36. What do you think about keeping animals in zoos? Discuss arguments for and against keeping animals in captivity.

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