

The Earth and Its People

1

The Solar System

Our solar system is a very small part of the Universe. The solar system consists of the sun, nine planets and their moons, small planets called asteroids and comets.

The sun is a star. It is very hot. Heat waves radiate from the sun in all directions.

All planets move around the sun. Their orbits are not circular. They are oval or elliptical. This is why the distance from a planet to the sun changes in the course of the year.

The planets of the solar system are smaller than the stars. They revolve around the sun. The planets reflect the sun's light. This is why they shine. All the planets except Mercury and Venus have one or more moons.

The Earth has only one moon, called the Moon. The Moon is smaller than any of the nine planets. It is a small, cold body without air, water or life. Like the planets it shines by reflecting the sun's light.

Between the orbits of Mars and Jupiter there is a group of small planets called asteroids. They move around the sun.

Comets are also small bodies. Each comet consists of a head and a tail. Some comets belong to the solar system. Some of them like Halley's comet come back to the solar system at regular intervals.

1. Give Russian equivalents of the following words and expressions:

to be a very small part of ..., to consist of ..., to be called ..., to radiate from ..., to move around ..., to be circular (oval), to be hot, this is why, to change, to be smaller than ..., to reflect light, to shine by reflecting the sun's light, except, without smth., like smth., a head, a tail, to belong to ..., to come back to..., at regular intervals.

2. Pay attention to the following synonyms:

to move around ...= to revolve around..

3. Make your own sentences or connected text using the words and collocations given above.

2

The Living Planet

Like other planets the Earth moves around the sun. But the Earth is different from all the other planets in our solar system. It is well known that life exists only on the Earth.

But life does not exist everywhere on the Earth. The surface of our planet in which organisms can live is called "the biosphere".

The biosphere includes all the places where life exists: sea, sky and land. The soil on which plants grow and the oxygen we breathe are produced by living things.

The biosphere extends vertically to a height of 10.000m (ten thousand metres). above the surface of the earth. In the opposite direction it extends to 5.000m (five thousand metres) below the surface of the sea. It extends to several hundred metres below the land surface.

The biosphere depends on the sun's energy directly or indirectly. Energy is important to all living things: microorganisms, complex plants or complex animals.

1. Give Russian equivalents of the following words and expressions:

like/unlike smth., to be different from ..., it is well known that..., to exist, a surface of..., to include smth., to exist, (plants) grow, to breathe, to be produced by ..., to extend to a height of ..., above the surface of ..., below the surface of ..., to depend on ..., directly/indirectly, to be important to ..., complex (organisms).

2. Make your own sentences or connected text using the words and collocations given above.

3

Continents

The world has seven continents. Some, such as Europe and Asia, contain many countries. Others such as North America have fewer countries. A continent is a large land area, one of the main sections of the earth's surface. The continents are Asia, Africa, North America, South America, Antarctica, Europe and Australia. Most of the earth's land surface is in the northern hemisphere. However, only about one third of the earth's surface is land; the rest is covered by water. In the northern hemisphere about two fifths is land; in the southern hemisphere only about one fifth is land-covered.

Continents have many natural features which often cross country boundaries. These include many rivers and mountain ranges. Some continents have continental islands.

A continental island is an island off the coast of a continent which still is part of that continent. For example, Japan is a group of continental islands belonging to Asia. Newfoundland is a continental island which is part of North America.

The continents are separated from one another by oceans and seas. The Mediterranean Sea, for example, lies between Europe and Africa. The longest land boundary between continents is along the Ural Mountains which separate Europe from Asia. Asia is the largest of the continents in both area and population.

1. Give Russian equivalents of the following words and expressions:

such as..., to contain smth., one of the main..., land surface, however, the rest, to cover (to be covered by ...), to have natural features, to cross boundaries, land/sea boundary, to include smth., for example, to be part of smth., to separate (to be separated from ... by...), a boundary between smth.

2. Pay attention to the following synonyms: to lie = to be situated

3. Make your own sentences or connected text using the words and collocations given above.

4

Mapping the world

The Earth is round. It is a sphere, like a ball, but it is slightly flattened at the North and South Poles. This is the result of the fact that the Earth spins fast. Even the equator is not an exact circle, it is slightly oval.

Imagine that you are looking at our planet from space. You can easily recognise the shapes of the oceans and continents. However, mapping the earth presents a problem to map-makers. They need to draw an accurate picture of its *round* surface on a *flat* piece of paper. Systems of projection are invented to solve the problem.

One way is to use a number of imaginary lines that divide the world into sections. The lines are called latitude and longitude. These lines form a grid, making it easier to see distances between places, and to find where one place is in relation to another.

The lines of latitude go around the earth from east to west. They are measured according to their angle from the very centre of the earth.

They are parallel to the Equator which is at 0° (0 degrees). This is the line that is most often close to the sun. The North and South Poles are at 90°. These are the points that are most often far from the sun. All the other places on earth can be measured in degrees north or south of the Equator. They are all between 0° and 90°.

Lines of longitude (meridians) run from the North Pole to the South Pole. They are measured in degrees east or west of Greenwich in England.

The problem with map projections is that they cannot show the earth accurately; this is only possible on a globe. For example, in Mercator's map projection the world is seen as a rectangle: the lines of longitude (meridians) are

parallel rather than meeting at the Poles, the lines of latitude intersect the meridians at right angles. This means that places near the Poles, such as Greenland, seem much larger. Many map projections show eastern Russia on the right and Alaska on the left of the map. It is also possible to show Australia at the centre.

1. Give Russian equivalents of the following words and expressions:

to be round, slightly, it is the result of the fact that..., to spin, to imagine, to look at ..., to recognise, the shape of ..., to map the earth, to present a problem to ..., to solve a problem, to draw an accurate picture, to invent smth., one way is ..., a number of ..., to make smth.easier, to use, to divide into ..., to form a grid, to find a place, to be in relation to..., to be called, to measure (to be measured) in degrees, according to..., an angle, to be at ... degrees, to be between ... and ..., the problem is ..., to show the earth, it is possible, to be seen as..., to intersect at right angles.

2. Pay attention to the following synonyms:

to go = to run (*lines go around = lines run around/from... to...*).

3. Make your own sentences or connected text using the words and collocations given above.

5

The structure of the earth

The earth is one of the nine planets in the solar system which revolve around the sun. The earth is solid and rocky and it is 150 million km from the sun. The nearest body in space to the earth is the moon. It is 384 000 km from the earth.

Scientists believe that 4,500 million years ago the earth's surface was covered by molten rock. This is rock which is so hot that it melts. As the rock cooled and hardened, the heavier materials sank towards the centre of the earth, while the lighter materials stayed near the surface. The rock released steam which condensed and became the seas.

The earth is still cooling very slowly. It has three main layers -- the core, the mantle and the crust. The crust is made up of several rigid but slowly moving plates on which the continents sit. Scientists believe that there was originally only one large land mass. Gradually this split up and the continents drifted to where they are today. The continents split up because at the edges of the plates new material came up from the earth's mantle and forced the plates apart. The main mountain ranges in the world are found where the plates met.

Today the continents are still moving apart and together (continental drift). It is also possible for the continents to move up and down (isostasy).

1. Give Russian equivalents of the following words and expressions:

solid, the nearest body, to be ... km from ..., space, scientists believe that..., to cool, to harden, to sink, heavy/light material, to release smth., to move slowly, to have layers, to be made up of ..., rigid plates, to split up, at the edge of ..., to come up from..., to be found, to meet (plates meet), today, to move up and down.

2. Pay attention to the following synonyms:

to drift = to move (*continents drift = continents move*).

3. Make your own sentences or connected text using the words and collocations given above.

6

Earthquakes and volcanoes

Earthquakes and volcanic eruptions often happen at the edges of the plates in the earth's crust. When one plate moves against another, a violent shaking of the ground may occur. This is an earthquake.

Like the waves which spread out from the centre when you throw a stone into a pond, the vibrations of an earthquake spread out from a centre called the focus. The surface of the earth above the focus is the epicentre. If an earthquake is very strong it can cause landslides and floods.

Volcanoes are openings in the earth's crust out of which molten rock (called lava), rocks, ashes, dust and gases come from the inside of the earth. The lava, rocks and ashes sometimes form a mountain shaped like a cone. Sometimes the lava comes up through long cracks and flows over large areas to make a flat area called a plateau. Many volcanoes do not erupt for long periods. These are called dormant volcanoes. In volcanic regions there are also many geysers which produce steam and hot water.

Earthquakes and volcanic eruptions occur mainly in certain areas of the earth. These areas are often at the edges of the plates on the earth's crust. For example, the largest belt is called the 'Fiery Girdle' and goes around the shores of the Pacific Ocean. A second belt follows the ridge in the middle of the Atlantic. A third belt runs from the Mediterranean to the Himalayas.

1. Give Russian equivalents of the following words and expressions:

to happen, at the edge of ..., to move against smth., to occur, to spread out (waves spread out from...), to throw smth into..., strong earthquake, to cause smth., an opening, the inside of smth., to come up, to be shaped like ... (to have a shape of...), to flow, a flat area, for a long period, to produce smth., to follow smth., in the middle of....

2. Pay attention to the following synonyms:

to happen = to occur (*eruptions, earthquakes happen=eruptions, earthquakes occur*);

to form = to make (to form *a mountain, a flat area, a plateau, a cone* = to make *a mountain, a flat area, a plateau, a cone*);

to produce = to release (*geysers produce steam and hot water = geysers release steam and hot water*).

3. Make your own sentences or connected text using the words and collocations given above.

7

Rocks and minerals

Three kinds of rock make up the crust of the earth. These are called igneous rocks, sedimentary rocks and metamorphic rocks. Igneous rocks are formed when hot, molten material, which has come up from the inside of the earth, hardens. There are two types of igneous rock volcanic and intrusive. Volcanic rocks have cooled and hardened on the surface. Basalt is a common volcanic rock. The second type -- intrusive rock -- forms when molten rock does not reach the earth's surface and hardens under-ground. Granite is an important intrusive igneous rock.

Most of the earth's surface is now made up of sedimentary rocks. But at one time all rocks were igneous rocks. Gradually water, wind and ice wore away the rocks on the surface. Over a long period of time the materials which had been worn away -- they are called sediments -- collected in the oceans. This collection took many million years and is still going on. As the sediments pressed together they formed new kinds of rock.

Metamorphic rocks are the third type of rock in the earth's crust. 'Metamorphic' means that the rocks have been changed -- by heat, pressure or by having their chemical structure altered. For example, heat can change limestone into marble.

A rock is a collection of particles of various minerals. For example, the rock granite is composed of several minerals. There are over 2,000 different minerals, each one has its own chemical formula, but most rocks consist of about 12 minerals.

1. Give Russian equivalents of the following words and expressions:

to make up (rocks make up the crust), to form/to be formed, to harden, a type of ..., the first/the second/the third type, common (a common rock), to reach smth., at one time, gradually, to wear away/to be worn away, over a long period of time, to collect/to be collected, to take time, to go on, to press, new kinds of..., to mean (a word

means that...), to change ... into ..., to be changed by..., a particle, various minerals, to be composed of..., several minerals, to have chemical formula, to consist of

2. Pay attention to the following synonyms:

to change chemically = to alter;

to wear away = to break up (*rocks, material*);

to consist = to be composed of ... (*a rock consists of minerals = a rock is composed of minerals*).

3. Make your own sentences or connected text using the words and collocations given above.

8

How the landscape is formed

The earth's landscape is formed by processes called weathering and erosion which begin as soon as the land forms. Weathering and erosion mean that the land is worn away by changes in temperature or by wind, water or ice.

In cold areas such as mountain tops, rainwater collects in the cracks in rocks. When it freezes the water expands and makes the rock break up. In hot deserts, the surfaces of rocks expand during the day and contract at night when the temperature falls. This change gradually weakens the rock and makes the outer layers destroy. Tree roots and burrowing animals also make rocks split apart.

Water can alter the minerals in some rocks. For example, water dissolves chalk and limestone rocks to make limestone caves.

A river is one of the main agents of erosion. As a river flows down, it gathers more and more material such as stones and sediment and deposits it in the lowland areas. This is how river deltas are formed. A glacier, which is a river of ice, destroys more of the earth's surface than a river. Much of the earth's surface was shaped by glaciers in the past, and the same process continues in cold mountain regions and around the poles.

The wind is another important agent of erosion. For example, in the deserts, the wind blows sand away and deposits it to make dunes. The sea can both wear land away and build it up. Bays, cliffs and caves result from the sea wearing away the land. Beaches and sand bars are examples of how the sea builds up the land. The action of the wind often builds sand up into ridges called dunes.

1. Give Russian equivalents of the following words and expressions:

as soon as, changes in temperature, to freeze, to expand, to make smth do smth, during the day, at night, temperature falls, to weaken, an outer layer, to alter the minerals, to dissolve rocks, an agent of erosion, to flow (a river flows), to gather material, to destroy a surface, to be shaped by..., in the past, the same process, to continue, to blow smth away, to deposit material, to build up the land, to result from... .

2. Pay attention to the following synonyms:

to break up = to split apart = to destroy (*rocks, layers*);

to collect = to gather (to collect *material, sediments* = to gather *material, sediments*);

to make = to form = to shape (to make *dunes, caves* = to form *a surface, land, landscape, river delt* = to shape *a surface, land, landscape*).

3. Make your own sentences or connected text using the words and collocations given above.

9

The seasons

The earth revolves around the sun which is at the centre of the solar system. This process takes one year. At the same time, the earth spins on its axis once every 24 hours. The earth's rotation produces light and darkness -- day and night.

The revolution of the earth around the sun and the angle at which the earth is tilted causes the seasons. These are spring, summer, autumn and winter. When the North Pole is tilted towards the sun, the northern hemisphere

has its summer and the southern hemisphere has its winter. It is summer in the southern hemisphere when the South Pole is tilted to the sun.

The earth revolves around the sun once every 3652 days. This makes a full year. To make things simpler for ourselves, we count 365 days in a normal year. Every fourth year we add a day. This is a leap year. There are 366 days in a leap year.

Time is measured by the earth's rotation and is linked to lines of longitude. It is always the same time at all the places which are along a meridian. For example, if it is noon in Greenwich, England, then it is also noon in France, Ghana and all the countries through which the 0° line of longitude passes. This line is called the Prime Meridian. Time throughout the world is calculated from this line.

There are 24 time zones in the world each with their own time. The date changes near the 180th meridian. This lies almost completely in the Pacific Ocean and not many people cross it. It is known as the International Date Line.

1. Give Russian equivalents of the following words and expressions:

to take time, at the same time, to cause smth., to be tilted to/towards..., a full year, to make things simpler, to count, to add, to be measured by..., to be linked to ..., to pass (a line passes), to calculate, it is known as..., to cross a meridian.

2. Pay attention to the following synonyms:

to spin = to rotate (*the earth rotates on its axis = the earth spins on its axis*).

3. Make your own sentences or connected text using the words and collocations given above.

10

Weather and climate

The surface of the earth is surrounded by the air which is called the atmosphere. The main gases in the air are nitrogen and oxygen. The gases in the air allow plants, animals and humans to live.

The lowest layer of the atmosphere consists of many masses of air which are always moving. Air masses determine the world's weather. A front develops where two different types of air mass meet. For example, a cold front is where a mass of cold air moves into a warm air area. A warm front is where warm air pushes into a cold air area.

Weather means the day-to-day conditions of the atmosphere -- temperature, air pressure, wind, clouds and humidity. Humidity is the amount of water vapour which the air contains. Climate is like a yearly average or summary of weather conditions. The three main types of climate are tropical, temperate and polar. A tropical climate is very hot and is found around the Equator. Temperate climates are less hot and are found north and south of the tropics. Polar climates are the coldest and are found in the far north and south. The nearness of a place to the sea affects its climate. The sea stores warmth from the sun. This means that places near the sea have even temperatures. Areas far from the sea are hotter in summer and colder in winter. This type of climate is called continental.

Height above the sea also affects climate. For every 300 metres above sea level the temperature falls by about 3°C. This means that mountains like Mount Kilimanjaro in Africa have snow on their peaks even though they are very near the Equator.

1. Give Russian equivalents of the following words and expressions:

to surround/to be surrounded by ..., a low layer of ..., to allow to do smth, to determine, the day-to-day conditions of ..., the amount of ..., an average, a summary, to be found, north of .../south of..., far north/south, to affect smth (*height affects climate*), to store smth., even temperatures, above sea level, temperature falls by ... degrees.

2. Pay attention to the following synonyms:

to move into... = to push into... (*cold air moves into warm air = cold air pushes into warm air*);

to develop = to form (*a front develops = a front forms*).

3. Make your own sentences or connected text using the words and collocations given above.

11

The world's vegetation

There are several different plant zones on the earth which are similar to the climate zones. This is because climate has a great effect on which plants can grow in different areas. Temperature, rain and soil are important. Without soil, the earth's surface would have no plants. Soil is very small pieces of rocks and minerals mixed with decayed plants and animals. These decayed materials are called humus. Soils with a lot of humus in them are rich and fertile so that plants and crops grow well in them.

In areas near the Equator, heavy rain washes minerals and humus out of the soil. This means the soil is not good for farming but thick forests grow there because of the heat and heavy rain. Further away from the Equator where it only rains in one half of the year the vegetation is mainly grassland with some trees. This type of region is called savannah and it is found in many parts of Africa.

Areas with temperate climates have great varieties of vegetation. The plants include deciduous forests and, in the north, coniferous forests. A deciduous tree loses its leaves in winter while a coniferous tree is evergreen. This means that it has leaves all the year round.

Between the icy regions around the North Pole and the coniferous forests is an area called the tundra. No trees grow on the tundra but there is some thin vegetation. There is no tundra area around the South Pole.

1. Give Russian equivalents of the following words and expressions:

to be similar to ..., to have a great effect on ..., to grow (*trees, plants, crops, forests grow*), to be important, to mix, to decay (*decayed plants/animals*), a lot of ..., rich and fertile soils, heavy rain, to wash out (*to wash minerals/humus out of the soil*), to be good/not good for..., thick forest, it rains, to have great varieties of ..., to include smth., to lose leaves, evergreen, all the year round, thin/thick vegetation.

2. Make your own sentences or connected text using the words and collocations given above.

12

The world's crops

Many raw materials and kinds of food come from the earth's plants. Since earliest times, people have gathered nuts, berries and plants for food, used bark and tree roots for dyes and medicine, and fibres and leaves for making houses and cloth.

Wood is the most important plant product. People have used it for building, and for making tools, toys and paper. Forests cover almost two thirds of the surface of the earth. There are two main types of forest -- the coniferous forests in the far north and south, and the deciduous forests of the temperate and tropical lands.

The wood from the coniferous forests and tropical forests is used for making paper and furniture. Grass also has many uses. Some people still wear grass skirts and grass is used to make the walls and roofs of houses in many parts of the world. Bamboo is a woody kind of tropical grass. Its stems are used for building, making furniture, tools and the fibres are used in making some kinds of paper and in weaving.

Rubber is another major product obtained from trees. Rubber trees grow naturally in the forests of South America. The great plantations of south-east Asia developed from plants taken from the Amazon basin.

1. Give Russian equivalents of the following words and expressions:

raw materials, kinds of smth., to come from ..., since early times ..., to gather smth., for food, to use smth for .../to be used for..., , to cover (*forests, waters cover the surface*), to have many uses, to wear smth., to obtain smth.

2. Pay attention to the following synonyms:

to make = to produce (*to make tools, paper, toys = to produce tools, paper, toys*).

3. Make your own sentences or connected text using the words and collocations given above.

13

The seas and oceans

There are five oceans in the world -- the Pacific, which is the largest, the Atlantic, the Indian, the Arctic and the Antarctic. They cover almost three quarters of the earth's surface. Land, particularly peninsulas and islands, divides the oceans into seas. The islands of the West Indies, for example, separate the Caribbean Sea from the Sargasso Sea in the North Atlantic Ocean.

The ocean floor is made up of shelves, slopes and deeps. The continental shelf is the shallow part of the oceans around the continents. The ocean floor gradually slopes away from the continental shelf to the ocean deeps. The deeps off the coast of Japan reach down to over 10 300 metres. There are also huge mountain ranges, such as the Mid-Atlantic Ridge, on the ocean floor. These mountains were formed in the same way as mountains on land but they are hidden under water.

The oceans and seas are always moving because of waves, currents and tides. Waves are made by winds blowing across the surface of the water. Ocean currents can be either cold or warm and they have an important effect on climate. Tides are regular rises and falls of the sea. They happen when the gravity of the moon attracts and pulls the sea water slightly towards it. Tides vary in different parts of the world but they always happen twice in every 24 hours 50 minutes. This is the time it takes for the moon to orbit the earth.

1. Give Russian equivalents of the following words and expressions:

almost, particularly, to divide smth into ..., to separate smth from ..., to be made up of..., deep/shallow, to reach depths, huge mountain ranges, in the same way, to hide/to be hidden, under water, either... or..., to have an effect on climate..., regular rise/fall of..., to attract, to vary, to happen (*tides, rises happen*), twice, in ... hours/minutes/years.

2. Pay attention to the following synonyms:

to orbit = to revolve around... (*the moon orbits the earth= the moon revolves around the earth*).

3. Make your own sentences or connected text using the words and collocations given above.

14

Travel and communications

There are three main kinds of transport -- land, water and air. All these are vital for carrying people, food, raw materials and goods from one place to another. Countries in North America and Western Europe have advanced transport systems. The world's poorer countries do not have such good communications and they often rely on primitive methods for transport.

The earliest way of carrying things about was on the backs of people or animals. Horses, camels, elephants, yaks, llamas, donkeys and mules are useful animals either for carrying goods and people or for working in the fields and pulling carts. One of the best ways to travel across snow and ice in the Arctic regions is on a dog-sledge.

Railways were invented in the nineteenth century in Britain and they soon spread to the rest of the world. A very cheap way of transporting heavy goods is by railways, but today many people and industries use motorways and roads instead.

Another important way of moving products and materials is by sea, rivers and canals. Container ships are easy to load and unload as all the goods are pre-packed. The fastest form of transport is by air. There are now airports all over the world and people who want to travel quickly go by aeroplane. Travelling by air is becoming much more popular, especially with holidaymakers.

1. Give Russian equivalents of the following words and expressions:

to carry *things/people/food/goods*, from one place to another, an advanced system, poor country, to rely on ..., one of the best way..., useful animals, to invent/ to be invented, the rest of the world, cheap/expensive way, instead, to be easy to load/unload, to want, to become popular, especially.

2. Pay attention to the following synonyms:

the way of ... = the form of... (the way of *transporting/moving things is by air* = the form of *transport is by air*);

a transport system = a communication;

to be important = to be vital;

to travel = to go (to travel *by air* = to go *by aeroplane*);

to move = to carry = to transport (*products/materials/goods*).

3. Make your own sentences or connected text using the words and collocations given above.

15

The shrinking globe

Today, the world often seems smaller than it is because people can get from one continent to another in just a few hours. In fact, the time it takes to travel from place to place has become more important than actual distances.

In the middle of the nineteenth century, sailing boats took from one to three months to cross the Atlantic Ocean. Steam ships later completed the same journey in about 10 days. The fastest way to cross the Atlantic now is by supersonic passenger jet. Concorde, for example, takes only three and a half hours to fly from New York to London. This is half the time taken by other aircraft.

The aeroplane has also speeded up postal services throughout the world. Letters can arrive in another country within a few days of being posted. It is also possible to communicate directly with people without travelling. The international telephone system links almost all parts of the world, and faxes and computers enable people to send messages over great distances. This is useful for anyone who has business dealings abroad. Another reason why the world seems quite small is that television pictures, by using satellites, can show events as they actually happen on the other side of the world.

1. Give Russian equivalents of the following words and expressions:

today, to seem smaller than..., to get, to travel, in fact, from place to place, in the middle of a century, later, to complete a journey, three and a half hours, half the time, to speed up services, to arrive, within a few days, it is possible, to communicate directly, to link, to enable smb., to send a message, over great distances, business dealings, abroad, a reason, to show, actually, events happen, on the other side of the world.

2. Make your own sentences or connected text using the words and collocations given above.