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Учебно-методическая пособие по разделу

«The planet Earth»

предмет «Профессиональный иностранный язык»

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Предисловие

Данная разработка по разделу «The planet Earth» разработана преподавателем английского языка Ибатулиной Д.Ж. для студентов по специальности 0701000 «Геологическая съемка, поиски и разведка месторождений полезных ископаемых» и всем геологическим специальностям.

Данная разработка по одному из девяти изучаемых разделов. Данный раздел «The planet Earth» является одним из наиболее объемных и состоит из 10 основных текстов. К каждому тексту разработаны фонетические упражнения, лексический минимум, текстовый материал, а также комплекс упражнений, которые помогают закрепить необходимый лексический минимум.

Цель разработки - способствовать достижению необходимых навыков осознанного употребления основных геологических терминов, используемых в профессиональной сфере, а также предоставить учащимся возможность совершенствовать свои знания путем выполнения разнообразных упражнений.

МЕТОДИЧЕСКИЕ РЕКОМЕНДАЦИИ

Прежде чем приступить к работе с данным учебно-методическим пособием, необходимо внимательно ознакомиться с методическими рекомендациями. Начиная работу с пособием, ознакомьтесь с его структурой. Это поможет вам быстро ориентироваться в текстовом материале и практических упражнениях пособия.

Каждая тема рассчитана на два часа (1 урок)

Студенты должны строго следовать инструкциям в каждом уроке.

Как правило, каждая новая тема начинается с фонетического и лексического материала, который необходимо тщательно проработать прежде, чем приступать к чтению текста и практическим упражнениям. Лексический (словарный) минимум является обязательным - вы должны выучить его в полном объеме.

При выполнении работы не пропускайте устных упражнений. Они помогут вам лучше выучить и закрепить новые слова. Проработав лексический материал и выполнив предтекстовые упражнения, приступайте к чтению текстов. Чтение текста является самым важным аспектом работы. Не пользуйтесь посторонней помощью при переводе текста, выполняйте его самостоятельно. При чтении и переводе текста можете воспользоваться словарем. Лишь проработав лексический и текстовый материал, следует приступать к выполнению упражнений.

Все упражнения, предусматривающие письменное выполнение должны быть записаны, если на уроке недостаточно времени для письменного заполнения, это должно быть выполнено в качестве домашнего задания. Ни одно задание не должно остаться незаполненным.

Если в задании предлагается просмотреть видеоролик, вы должны внимательно просмотреть его дважды и выполнить задания, предусмотренные учителем.

Если урок предусматривает контрольную работу, необходимо повторить теоретический материал перед ее выполнением. Выполнять контрольную работу можно дома или на уроке, в зависимости от установки учителя.

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Planet Earth

SOLAR SYSTEM. OUTER PLANETS

1. Read aloud the following words:

asteroid ['æst(ə)rɔɪd], meteoroid ['mi:tɪə,rɔɪd], comet ['kɒmɪt], god [gɒd], interior [ɪn'tɪəriə], hydrogen ['haɪdrədʒən], altitude ['æltɪt(j)u:d], satellite ['sæt(ə)laɪt], debris ['deɪbri:], revolving [rɪ'vɒlvɪŋ], visible ['vɪzəbl], unique [ju'neɪk], giant ['dʒaɪənt], dwarf [dwɔ:f], orbit ['ɔ:bit], methane ['mi:θeɪn], nitrogen ['naɪtrədʒən], minor ['maɪnə]

2. Read aloud the names of the planets with the teacher because some of them are difficult to pronounce.

Mercury	['mɜ:kjəri]	Меркурий
Venus	['vi:nəs]	Венера
Earth	[ɜ:θ]	Земля
Mars	[mɑ:z]	Марс
Jupiter	['dʒu:pɪtə]	Юпитер
Saturn	['sætən]	Сатурн
Uranus	['juər(ə)nəs]	Уран
Neptune	['neptju:n]	Нептун
Pluto	['plu:təu]	Плутон

3. Read the following words and try to remember them:

asteroid	астероид
meteoroid	метеороид, метеорное тело
terrestrial planets	планеты земной группы
interior	внутренняя часть; внутренний
hydrogen	водород
altitude	высота; высота над уровнем моря
to revolve	вращать; вращаться
satellite	спутник
to rotate	вращать; вращаться
dwarf planet	карликовая планета
nitrogen	азот
to evolve	развиваться
methane	метан

4. Guess and match word phrases with their Russian equivalents:

1. solar system	a. твёрдая поверхность
2. outer planets	b. Бог земледелия
3. terrestrial planets	c. естественный спутники
4. solid surface	d. невооружённый глаз
5. asteroid belt	e. внешние, космические планеты
6. natural satellites	f. вытянутая орбита
7. ring system	g. земные планеты
8. god of agriculture	h. малая планета
9. rocky debris	i. солнечная система
10. naked eye	j. система колец
11. minor planet	k. пояс астероидов
12. eccentric orbits	l. обломки пород

5. 1. Read the first part of the text and translate it into Russian:

Solar system. Outer planets

Our solar system consists of one star, a family of nine planets, at least 58 moons, thousands of asteroids, and billions of meteoroids and comets. The planets are divided into two groups — the inner planets and the outer planets. The inner planets are the closest to the Sun and are composed mostly of rocky materials. The inner or terrestrial planets are Mercury, Venus, Earth and Mars. The outer planets are much larger than the inner planets and composed mostly of gas, and have no solid surfaces. While the inner planets have few or no moons, the outer planets have dozens each. The inner and outer planets are separated by the asteroid belt. The outer planets are the Jupiter, Saturn, Uranus, and Neptune.



5.2. Watch the video “Planets in our solar system” and complete the second part of the text.

Jupiter is the _____ and largest planet of the _____ and is named after the roman god Jupiter. It is the fifth planet out from the Sun. Jupiter is 317 times the _____ of Earth. Jupiter’s interior is made of rock, metal, and hydrogen compounds. The outer _____ of Jupiter is divided in several _____ and different altitudes. Jupiter has around 67 _____ revolving around it. These are _____ satellites of Jupiter. Jupiter has a thin ring system.

Saturn is the sixth planet from the Sun. Saturn is the flattest planet. Saturn is named after the roman god of _____. Saturn has the most extensive rings in the solar system. The _____ around the Saturn are mostly composed of the ice _____ and some rocky _____ and some dust. Saturn has around 62 moons _____ around it.

Uranus is the seventh planet from the Sun. Uranus is similar to Neptune and is named after the Greek god of sky Ouranos. It has around _____ natural _____ revolving around it. Uranus is _____. It looks _____ - _____ in color because the atmosphere of Uranus is very _____ and cloudy. It’s not visible to the naked eye, and became the first planet discovered with the use of a telescope. It is the only planet to rotate on its side.

Neptune is the eighth planet from the Sun and is the most distant planet from the Sun. Neptune is light-blue in color because it is the _____ of our planets. Neptune is the _____ of all planets. It was named after the _____ god of the sea. Neptune is the smallest of the ice giants.

Pluto was _____ the 9th planet. Pluto is named after the Greek god of the underworld. Discovered in 1930, Pluto is the second closest dwarf planet to the Sun and was at one point classified as the ninth planet. Starting in 1977 with the discovery of the minor planet [Chiron](#), numerous icy objects similar to Pluto with eccentric orbits were found.

Pluto and the satellites in the outer solar system are composed mostly of ice. Some are so cold that they have methane ice or nitrogen ice at their surface.

All of the planetary bodies in the solar system are important in the study of Earth because their composition, surface features, and outer characteristics show how planetary bodies in our solar system evolved.

6. True/false

1. Our solar system consists of one star and a family of nine planets.
2. The planets are divided into two groups — the inner planets and the outer planets.
3. The outer planets are the closest to the Sun and are composed mostly of rocky materials.
4. The outer planets are the Jupiter, Saturn, Venus and Mercury.
5. The inner and outer planets are separated by the asteroid belt.
6. Jupiter is the smallest planet of the solar system.
7. The rings around the Saturn are mostly composed of the ice particles and some rocky debris and some dust.
8. Saturn became the first planet discovered with the use of a telescope.
9. Neptune was named after the Roman god of the agriculture.
10. Pluto is the second closest dwarf planet to the Sun and was at one point classified as the ninth planet.

7. Answer the questions:

1. What does our solar system consists of?
2. Name the terrestrial planets.
3. Name the outer planets.
4. What is the largest planet in the Solar System?
5. What is the farthest planet in the solar system from the Sun named after the Roman god of the sea?
6. What was the first planet discovered with the use of a telescope?
7. What is the sixth planet from the Sun?
8. What are the rings around the Saturn mostly composed of?
9. How many natural satellites does Uranus have?
10. Why is Uranus unique among outer planets?
11. What planetary body was discovered in 1930?

8. Give the English for:

1. состоять из	
2. земные планеты	
3. в основном из газа	
4. несколько поясов	
5. естественные спутники	
6. вращающиеся вокруг планеты	
7. с использованием телескопа	
8. единственная планета	
9. похожий на	
10. голубовато-зеленый по цвету	
11. самая плотная из планет	
12. карликовая планета	
13. на своей поверхности	
14. состав	

9. Give the Russian for:

1. thousands of asteroids	
2. separated by the asteroid belt	
3. hydrogen compounds	

4. revolving around it	
5. ice particles	
6. visible to the naked eye	
7. the most distant planet	
8. numerous objects	
9. minor planet	
10. eccentric orbits	
11. nitrogen ice	
12. planetary bodies	

10. Match synonyms, translate them into native language:

1. to consists of	a. small
2. inner planets	b. internal, inner
3. solid	c. to rotate, to spin
4. interior	d. terrestrial planets
5. different	e. like
6. to revolve	f. to be composed of
7. similar to	g. far
8. distant	h. various
9. minor	i. hard, rigid, firm

TERRESTRIAL PLANETS

1. Read aloud the following words:

orbit ['ɔ:bit], path [pɑ:θ], crater ['kreɪtə], earthquake ['z:θkweɪk], gravity ['grævɪtɪ], proximity [prək'sɪmətɪ], goddess ['gɒdes], diameter [daɪ'æmɪtə], velocity [vɪ'lɒsətɪ], axis ['æksɪs], backwards ['bækwɔ:dz], clockwise ['klɒkwaɪz], dioxide [daɪ'ɒksaɪd], pressure ['preʃə], Venusian [vɪ'nju:ziən], sulfuric [sʌl'fjuəri:k], present ['prez(ə)nt], entire [ɪn'taɪə], liquid ['lɪkwɪd], average ['æv(ə)rɪdʒ], canyon ['kænjən], polar ['pəʊlə]

2. Read the following words and try to remember them:

revolving planet	вращающаяся планета
cliff	утёс; (отвесная) скала
solar wind	солнечный ветер
a stream of ions	поток ионов
earthquake	землетрясение
AU (astronomical unit)	астрономическая единица
orbital period	периодобращения, орбитальный период
gravity	гравитация, сила тяжести
density	плотность
escape velocity	вторая космическая скорость
axis	ось
clockwise	по часовой стрелке
counter-clockwise	против часовой стрелки
carbon dioxide	углекислый газ; диоксид углерода
pressure	давление
greenhouse effect	парниковый эффект
sulfuric acid	серная кислота
to prevent	предотвращать; препятствовать
stuff	материал; вещество
polar cap	полярная шапка

4. Guess and match word phrases with their Russian equivalents:

1. a curved path	a. близость, близкое расположение
2. craters and cliffs	b. вся поверхность
3. proximity	c. сходный диаметр
4. the brightest star	d. вращаться против часовой стрелки
5. similar diameter	e. самая яркая звезда
6. to rotate backwards	f. средняя температура
7. entire surface	g. естественные спутники
8. natural satellites	h. криволинейная траектория
9. Roman god of war	i. вращаться в обратном направлении
10. to rotate counter-clockwise	j. кратеры и утесы
11. average temperature	k. северное полушарие
12. northern hemisphere	l. римский бог войны

5. Watch the video and complete the text with necessary words. Then read the text and translate it into Russian:

Terrestrial planets

The Sun is the center of our solar system and all the planets revolve around the Sun in orbits. Orbit is a curved path of an object around a point in space. Orbit means moving around.

Mercury is the smallest of all planets and lifeless. Mercury is very hot as it is the closest planet to the Sun. Mercury takes only 88 days to revolve around the Sun, which makes it the fastest revolving planet around the Sun. It has many craters and cliffs. Daytime temps 425° . Nighttime temps -170° . Mercury is so close to the sun, the solar winds blew the atmosphere away. Solar wind is a stream of ions and particles that shoot out of the Sun.

Mercury is like our Moon. Both are geologically and meteorologically dead. When we say _____ dead we mean there is no geologic activity: no _____, no earthquakes. When we say meteorologically dead we mean no meteorological _____: no wind, no _____, no nothing. Mercury's _____ from the Sun is 0.39 AU or a little less than half the distance between the Earth and Sun. Mercury's _____ period is 3 months. Its mass is about 5% of Earth's mass. Because of its small mass it has very little _____. Mercury has no atmosphere because of low gravity and _____ to the Sun.

Venus is the second planet from the Sun. It is named after the roman goddess of love and beauty. Venus is called the morning and evening star. The reason for this is that the Venus is visible in the morning and evening as the brightest star from Earth.

Venus is closest in size to Earth. Venus and Earth share _____ diameters, masses, _____ and escape velocities. Venus is 0.72 Au from the Sun. Venus's orbital period is 0.62 Earth years or about 225 days. Venus rotates once on its axis every 243 days.

Venus rotates so slowly that one Venus day is longer than one Venus year. Venus rotates backwards. Venus rotates clockwise. The Earth and just about every other planet in Solar system rotates counter-clockwise. Venus's atmosphere is made up of 96% of carbon dioxide. Average atmosphere pressure ground levels 90 bars (90 times Earth's pressure). CO_2 atmosphere makes it the hottest planet, 450° . Intense pressure from air does not let probes work. Exploration has shown Venus is dotted with _____. Because of the runaway _____ effect, Venusian atmosphere forms into thick clouds made up of carbon dioxide and sulfuric acid.

Our planet **Earth** is the third closest planet to the Sun. It is blue in color as there is a lot of water present on the surface of Earth. Water constitutes about 70% of the entire surface of our planet. Unlike Earth, Moon is not a planet. It is a natural satellite of Earth and it revolves around the Earth. Satellite is a smaller body which rotates around another rotating body. Earth is the only planet which has animals, trees and human beings.

Mars is farther from the sun than Earth. Mars was named after the Roman god of war because its color is red. It's red because there is iron _____ in its soil. The distance between Mars and the Sun is about 1.5 AU. Mars orbits the Sun once every 1.9 years or once every year and 11 months. The atmosphere of Mars is very thin, with a pressure of 1/100th that of the Earth. The low pressure prevents the _____ of liquid water. The atmosphere of Mars is about 95% of carbon dioxide, 3% of nitrogen and 2% of other stuff. An _____ temperature on Mars is -10⁰ F. The surface of Mars is mostly big dunes of orange sand. Like Earth, there are mountains and valleys. In the _____ hemisphere of Mars, there are really big canyons. The largest _____ on northern Mars is Olympus Mons. Mars also has polar caps. Mars has two moons: Phobos and Deimos. The moons seem to be asteroids that Mars has captured with its gravity.

6. True/false

1. The Sun is the center of our solar system and all the planets revolve around the Sun in orbits.
2. Mercury is the fastest revolving planet around the Sun.
3. When we say meteorologically dead we mean there is no geologic activity: no volcanoes, no earthquakes.
4. When we say geologically dead we mean no meteorological activity: no wind, no rain, no nothing.
5. Venus is the third planet from the Sun.
6. Venus is named after the roman goddess of love and beauty.
7. Venus's orbital period is 0.62 Earth years or about 235 days.
8. Venus rotates counter-clockwise.
9. Our planet earth is blue in color as there is a lot of water present on the surface of Earth.
10. Mars is red because there is iron oxide in its soil.
11. The high pressure of Mars prevents the formation of liquid water.

7. Answer the questions:

1. What is orbit?
2. What is the smallest of all planets and lifeless?
3. Why is Mercury very hot?
4. How many days does Mercury take to revolve around the Sun?
5. What is solar wind?
6. Why does Mercury have no atmosphere?
7. Why is Venus called the morning and evening star?
8. How are Venus and Earth similar?
9. What is satellite?
10. What does the atmosphere of Mars consist of?
11. What two moons does Mars have?

8. Give the English for:

1. геологическая деятельность	
2. расстояние между	
3. утренняя звезда	
4. одинаковая плотность	
5. вращаться слишком медленно	
6. вращаться против часовой стрелки	
7. углекислый газ	
8. составлять около	
9. азот	
10. горы и долины	
11. большие каньоны	
12. парниковый эффект	

9. Give the Russian for:

1. to revolve around the Sun	
2. lifeless	
3. a stream of ions	
4. geologically and meteorologically dead	
5. orbital period	
6. very little gravity	
7. sulfuric acid	
8. natural satellite	
9. rotating body	
10. farther from the sun	
11. the formation of liquid water	
12. captured with its gravity	

THE PLANET EARTH**1. Read aloud the following words:**

perspective [pə'spektɪv], bright [braɪt], allow [ə'lau], evaporate [ɪ'væp(ə)reɪt], cycle ['saɪkl], exactly [ɪg'zæktli], nitrogen ['naɪtrədʒən], ozone ['əʊzəʊn], magnetic [mæg'netɪk], internal [ɪn'tɜːn(ə)l], lithosphere ['lɪθə'sfiə], continent ['kɒntɪnənt], dynamic [daɪ'næmɪk], circulation [ˌsɜːkjə'leɪʃ(ə)n]

2. Read the following words and try to remember them:

to exist	существовать
temperature ranges	температурные пределы (области)
evaporate	испаряться
freeze	замерзать
ozone layer	озоновый слой
harmful rays	вредные лучи
in contrast to	в противоположность
rigid outer layer	твердый внешний слой
plate	плита
internal heat	внутреннее тепло
to cause	заставлять
mountain belt	горный пояс
modify	изменять

3. Guess and match word phrases with their Russian equivalents:

1. from a planetary perspective	a. правильное расстояние от солнца
2. mottled with bright clouds	b. вращаться вокруг солнца
3. a right distance from the sun	c. среди других планет
4. to revolve around the Sun	d. как треснувшая скорлупа
5. among the planets	e. с планетарной точки зрения
6. rotates on its axis	f. движущиеся плиты
7. a thin nitrogen atmosphere	g. магнитное поле
8. magnetic field	h. тонкая атмосфера азота
9. moving plates	i. окутанная светлыми облаками
10. like a cracked eggshell	j. вращаться вокруг своей оси

4. Read the following text and translate it into Russian:

The planet Earth

From a planetary perspective, Earth is a small blue planet mottled with bright clouds. It is just a right distance from the sun for temperature ranges to allow water to exist as a liquid, a solid and a gas. If Earth were closer the sun, our oceans would evaporate; if it were farther from the sun, the oceans would freeze solid. But there is plenty of water on Earth, and it is water, more than anything else, that makes Earth unique among the planets of the solar system. Heated by the sun, water moves on Earth in great cycles from the huge oceans, to the atmosphere, over the landscape in river systems and back to the oceans.

Earth is almost a sphere. Its shape can be described as an oblate spheroid. The Earth is one of the planets in solar system and takes exactly 365.25 days to revolve around the Sun. The Earth does not take 24 hours to rotate around its axis. It is actually 23 hours 56 minutes and 4 seconds. Just like Earth every planet rotates on its axis and revolves around the Sun having different length of day and year. Earth has a thin nitrogen atmosphere. The Earth's atmosphere extends out to 10,000 kms. The planet has a lot of liquid water. Ozone layer and magnetic field protect planet from harmful rays.

In contrast to Mercury, Mars, and the Moon, Earth continued to change as a result of its internal heat. As a result of its internal heat, Earth's rigid outer layer (the lithosphere) is broken into huge fragments, or plates, like a cracked eggshell, and there is enough internal heat to cause the plates to move. The moving plates created ocean basins and continents. Earth's crust was deformed into mountain belts, and volcanic activity modified its surface. Earth thus remained a dynamic planet, continually changing as a result of its internal heat and the circulation of its surface water.

5. Give the Russian equivalents of the following expressions:

1. heated by the sun	
2. mottled with	
3. to allow water to exist	
4. a liquid, a solid and a gas	
5. rigid outer layer	
6. mountain belts	
7. the circulation of water	
8. in great cycles	
9. a cracked eggshell	
10. in contrast to	
11. internal heat	

6. Give the English equivalents of the following phrases:

1. правильное расстояние от солнца	
2. твердый внешний слой	
3. окутанная светлыми облаками	
4. испаряться	
5. движущиеся плиты	
6. позволять воде существовать	
7. озоновый слой	
8. своя внутренняя теплота	
9. магнитное поле	
10. вулканическая деятельность	

7. Choose the necessary word:

земные планеты - terrestrial planets, close planets, outer planets, inner planets

развиваться - to develop, to evaluate, to evolve, to increase

твердая поверхность - rocky surface, flat surface, solid surface, icy surface

испаряться - to freeze, to evaporate, to melt, to crack

8. True/ false

1. From a planetary perspective, Earth is a small blue planet mottled with bright clouds.
2. If Earth were closer the sun, our oceans would freeze solid.
3. If Earth were farther from the sun, the oceans would evaporate.
4. Our Earth is unique among the planets of the solar system.
5. The Earth takes exactly 335.25 days to revolve around the Sun.
6. The Earth rotates around its own axis in 12 hours or in one day.
7. Earth has a thin nitrogen atmosphere.
8. Earth's crust was deformed into mountain belts, and volcanic activity modified its surface.

9. Answer the following questions:

1. What is Earth?
2. How can water exist on Earth?
3. What makes Earth unique among the planets of the solar system?
4. Why does Earth change in contrast to Mercury, Mars, and the Moon?
5. What protects our planet from harmful rays?
6. What did the moving plates create?
7. Why is Earth a dynamic planet?

10. Find antonyms to the following words in the text:

1. small, tiny	
2. dull	
3. wrong	
4. liquid	
5. far	
6. thick	
7. external	

EARTH COMPARED WITH OTHER TERRESTRIAL PLANETS

1. Read aloud the following words:

among [ə'mʌŋ], hydrosphere ['haɪdrəʊsfɪə], origin ['ɔrɪdʒɪn], extremely [ɪks'tri:mli], analogy [ə'nælədʒɪ], roughly ['rʌfli], giant ['dʒaɪənt], majestic [mə'dʒestɪk], vary ['veəri], striking ['straɪkɪŋ], creature ['kri:tʃə]

2. Read the following words and try to remember them:

to retain	удерживать, сохранять
temperature ranges	температурные пределы (области)
roughly	грубо, резко
to exaggerate	преувеличивать
to convey	сообщать, перевозить
equator	экватор
a grain of silt	крупинка ила
mute	невидимый
small speck	пятнышко, крапинка
crater-marked surfaces	кратерные поверхности
giant extinct volcanoes	огромные потухшие вулканы
distinct	отличительный
to gravitate	тяготеть, притягиваться
scientific viewpoint	научная точка зрения

3. Guess and match word phrases with their Russian equivalents:

1. move counterclockwise	a. внутренние планеты
2. revolving	b. крупинка песка
3. liquid, solid and gas	c. огромные каньоны
4. terrestrial planets	d. состоять из
5. a grain of sand	e. спутник
6. huge canyons	f. двигаться против часовой стрелки
7. outer planets	g. жидкость, твердое тело, газ
8. satellite	h. вращающийся
9. to be composed of	i. происхождение и развитие
10. origin and development	j. внешние планеты

4. Read the following text and translate it into Russian:

Earth compared with other terrestrial planets

Earth is unique among the terrestrial planets (Mercury, Venus, Earth, the Moon, and Mars) because of its size and distance from the sun. It is large enough to develop and retain an atmosphere and a hydrosphere. Temperature ranges are such that water can exist on its surface as liquid, solid, and gas. Water more than anything else makes the planet Earth unique.

The solar system is Earth's cosmic home, the place of its origin and development. All of the planets in the solar system were created at the same time and from the same general material. They move counterclockwise around the Sun. The orbits are extremely large compared with the planets' sizes. A simple analogy might help convey the size and structure of the solar system. If the Sun were the size of an orange, Earth would be roughly the size of a grain of sand orbiting 9 m (30 ft) away. Jupiter would be the size of a pea revolving at a distance of 60 m (200 ft) away. Pluto would be like a grain of silt at a distance of 10 city blocks away. The nearest star would be the size of another orange more than 1600 km (1000 mi) away.

The planets and their moons are no longer mute astronomical bodies - small specks viewed in a telescope. But today, they are new worlds as real as our own. The inner planets include the Moon and Mercury, with their crater-marked surfaces; Venus, with its atmosphere of carbon dioxide and an Earth-like surface with volcanoes; Earth with cool blue seas and multicolored lands; and Mars, with long-dry river beds, huge canyons and giant extinct volcanoes. The outer planets are the gas giants, with majestic rings and dozens of satellites composed mostly of ice. Indeed, ice is the most common rock in the outer solar system.

The inner or terrestrial planets are distinct because they are composed of heavy rock material that gravitated toward the sun - material with melting points high enough to become solid in an environment of high temperature. Although these planetary bodies are roughly of the same general size, mass, and composition, they vary widely in ways that are striking from a scientific viewpoint and important to us as living creatures.

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

1. the solar system	
2. to move counterclockwise	
3. retain an atmosphere and a hydrosphere	
4. planetary bodies	
5. the terrestrial planets	
6. mute astronomical bodies	
7. intricate web of life	
8. to exist on its surface	
9. the place of its origin and development	
10. a scientific viewpoint	
11. convey the size	

6. Give English equivalents of the following words and expressions:

1. температурные пределы (области)	
2. крупинка ила	
3. огромные потухшие вулканы	
4. сильно преувеличены	
5. научная точка зрения	
6. кратерные поверхности	
7. крупинка песка	
8. внешние планеты	
9. двигаться против часовой стрелки	
10. огромные каньоны	

7. Match the halves to make up word combinations from the text:

1. terrestrial	a. an atmosphere and a hydrosphere
2. distance	b. astronomical bodies
3. retain	c. counterclockwise
4. place of its	d. volcanoes
5. move	e. specks
6. structure of	f. viewpoint
7. mute	g. surfaces
8. small	h. mostly of ice
9. viewed in	i. points
10. crater-marked	j. from the sun
11. giant extinct	k. a telescope
12. majestic	l. the solar system
13. composed	m. planets
14. melting	n. rings
15. a scientific	o. origin and development

8. Answer the following questions:

1. What is the uniqueness of Earth?
2. How many forms can water obtain on our planet?
3. When were all of the planets in the solar system created?
4. How do these planets move around the Sun?
5. What are the planets and their moons?
6. What inner planets have you learnt after reading this text?
7. How can you characterize the outer planets?
8. What are the inner planets composed of?
9. Do the inner planets vary?
10. Why is Earth so different from its neighbors?

THE MAJOR STRUCTURAL UNITS OF EARTH. THE CORE. THE MANTLE**1. Read aloud the following words:**

crust [krʌst], segregate ['segrɪgeɪt], mantle ['mæntl], core [kɔ:], lithosphere ['lɪθəˌsfɪə], asthenosphere [əs'thi:nəˌsfɪə], mesosphere ['mezəˌsfɪə], depth [depθ], temperature ['temp(ə)rətʃə], radiation [ˌreɪdɪ'eɪʃ(ə)n], thickness ['θɪknəs], approximately [ə'prɒksɪmətlɪ], olivine ['ɒlɪvi:n], pyroxene ['paɪrɒksi:n], peridotite [ˌpɛrɪ'dəʊtaɪt], silicon ['sɪlɪkən], magnesium [mæg'ni:ziəm], oxygen ['ɒksɪdʒən], calcium ['kælsiəm], aluminium [ˌæljə'mɪniəm], Croatian [krəʊ'eɪʃən], Mohorovičić [ˌməʊhə'rəʊvɪtʃɪtʃ]

2. Read the following words and try to remember them:

differentiated planet	отличительная планета
to segregate	отделяться, отделять
to concentrate	концентрироваться, сосредоточиваться, собираться
mantle	мантия
asthenosphere	астеносфера
core	ядро
to constitute	составлять
indirect evidence	косвенное доказательство
to indicate	показывать, указывать
immense	безмерный, очень большой, огромный
surrounding	окружающий
great bulk	огромная масса
approximately	приблизительно
volcanic eruption	извержение вулкана
brittle	хрупкий
molten	расплавленный, жидкий
earthquake	землетрясение
to be subjected to	подвергаться чему-л
silicon	кремний
magnesium	магний
calcium	кальций
Mohorovičić Discontinuity	граница Мохоровичича

3. Guess and match word phrases with their Russian equivalents:

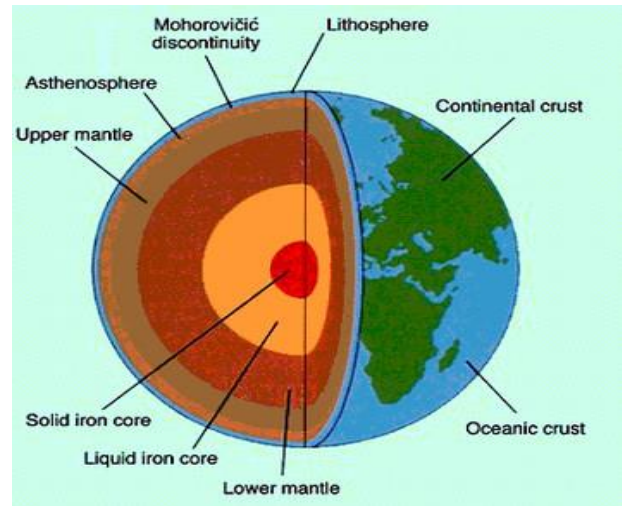
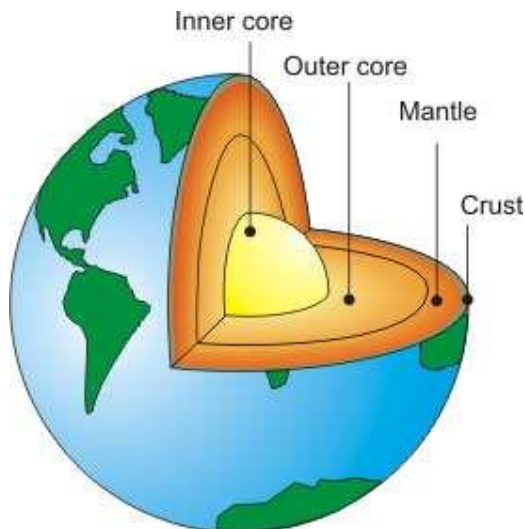
1. constituent materials	a. оливин и пироксен
2. lithosphere and asthenosphere	b. солнечная радиация
3. physical properties	c. двигатель, мотор
4. to increase with depth	d. создавать магнитное поле
5. solid inner core	e. составные материалы
6. engine room	f. содержать железо, кальций и алюминий
7. to create magnetic field	g. увеличиваться с глубиной
8. liquid outer core	h. физические свойства
9. to protect the planet	i. достаточно хрупкий
10. solar radiation	j. хорватский сейсмолог
11. olivine and pyroxene	k. твердое внутреннее ядро
12. brittle enough	l. защищать планету
13. to contain some iron, calcium and aluminium	m. жидкое внешнее ядро
14. Croatian seismologist	n. литосфера и астеносфера

4. Read the following text and translate it into Russian:

The core. The mantle

Earth is a differentiated planet—that is, its constituent materials are separated and segregated into layers according to density. The denser materials are concentrated near the center, the less dense near the surface. The internal layers are recognized on the basis of (a) composition and (b) physical properties. Compositional layers are crust, mantle, and core. Layers based on physical properties are lithosphere, asthenosphere, mesosphere, and core.

Layers Based on Composition



The Core. The *core* of Earth is a central mass about 7000 km in diameter. Its density increases with depth but averages about 10.78g/cm^3 . It constitutes only 16% of Earth's volume but accounts for 32% of Earth's mass. Indirect evidence indicates that the core is mostly iron. The core temperature is believed to be an incredible $5000\text{--}6000^\circ\text{C}$. It is divided into a solid inner core and a liquid outer core.

The inner core is in the centre and is the hottest part of the Earth. It is solid and made up of iron and nickel with temperatures of up to $5,500^\circ\text{C}$. With its immense heat energy, the inner core is like the engine room of the Earth.

The outer core is the layer surrounding the inner core. The outer core is also made up of iron and nickel, but it's quite different because it is a liquid. This is because there is much less pressure on this layer than the one below it. The temperature of the outer core ranges from 4400°C in the outer regions to 6100°C near the inner core. The outer core creates the Earth's magnetic field. It's a huge magnet in the center of the planet. The magnetic field protects our planet from space, solar winds and solar radiation.

The Mantle. The Earth's mantle is the thickest layer of the planet and accounts for about 84% of the Earth's volume and 67% of its mass. It lies between the crust and the core. It has a thickness of approximately 2,900 km. The mantle begins at the boundary known as the Mohorovicic discontinuity and extends down to the core-mantle boundary, which is also called the Gutenberg discontinuity. The Mohorovičić Discontinuity was discovered in 1909 by Andrija Mohorovičić, a Croatian seismologist.

The mantle is composed of iron and magnesium silicate rock, fragments of which have been brought to the surface by volcanic eruptions. The mantle is divided into two different zones: the upper mantle and the lower mantle. The upper mantle has olivine and pyroxene, compounds with silicon dioxide, and a substance called peridotite. Rocks in the upper mantle are cool and brittle, while rocks in the lower mantle are hot and soft (but not molten). Rocks in the upper mantle are brittle enough to break under stress and produce earthquakes. However, rocks in the lower mantle are soft and flow when subjected to forces instead of breaking. The lower mantle is more solid than the upper mantle. The lower mantle is probably composed mainly of silicon, magnesium, and oxygen. It probably also contains some iron, calcium, and aluminium.

5. True/false

1. Compositional layers are crust, mantle, and mesosphere.
2. Layers based on physical properties are thermosphere, asthenosphere, mesosphere.
3. The core of Earth is a central mass about 7000 km in diameter.
4. The inner core is in the centre and is the coldest part of the Earth.
5. The outer core is solid and made up of iron and nickel.
6. The temperature of the outer core ranges from 4400°C in the outer regions to 6100°C near the inner core.
7. The inner core creates the Earth's magnetic field.

6. Answer the questions:

1. What kind of planet is Earth? Why?
2. Where are the denser materials concentrated?
3. Where are the less denser materials?
4. What are compositional layers?
5. Name the layers based on physical properties.
6. What parts is the core divided into?
7. What is the inner core made up of?
8. How is the outer different from the inner core?
9. What does the outer core create?
10. What layer surrounds or covers the core?
11. How much % of the bulk of Earth does this zone constitute?
12. What is the mantle composed of?
13. What is the difference between upper mantle and lower mantle?
14. How is the boundary between the crust and the mantle called?
15. Who and when was it discovered?

7. Insert the necessary word:

1. This zone constitutes the great _____ of Earth.
2. The mantle is composed of _____ and magnesium silicate rock.
3. The density of core _____ with depth but averages about 10.78g/cm^3 .
4. The outer core is also made up of iron and nickel, but it's quite different because it is _____.
5. The magnetic field _____ our planet from space, _____ winds and solar radiation.
6. The lower mantle is probably composed mainly of _____, magnesium, and oxygen.
7. The Mohorovičić Discontinuity was _____ in 1909 by Andrija Mohorovičić, a Croatian seismologist

8. Give the English for:

1. разделенный на слои	
2. внутренние слои	
3. мантия и ядро	
4. увеличиваться с глубиной	
5. косвенные доказательства	
6. жидкое внешнее ядро	
7. состоять из железа и никеля	
8. приблизительно 2900 км	

9. Give the Russian for:

1. solid inner core	
2. immense heat energy	
3. quite different	
4. much less pressure	
5. huge magnet in the center	
6. solar radiation	
7. substance	
8. cool and brittle	
9. probably also contains	
10. between the crust and the mantle	

THE CRUST

1. Read aloud the following words:

outermost ['autəməʊst], amount [ə'maʊnt], planetary ['plænɪt(ə)rɪ], relatively ['relatɪvli], differentiate [ˌdɪf(ə)'ren(t)ʃieɪt], designate ['deziɡneɪt], discontinuity [ˌdɪsˌkɒntɪ'nju:əti], distinctly [dɪ'stɪŋktli], beneath [br'ni:θ], basalt ['bæsɔ:lt]

2. Read the following words and try to remember them:

outermost layer	самый внешний слой, самый дальний от середины, от центра; крайний
low density	низкая плотность
relatively easily	относительно легко
differentiated planet	отличительная планета
liquid	жидкость, жидкий
interior	внутренняя часть
obsolete	ненужный
enveloping	обволакивая
to acquire	приобретать
to designate	обозначать, указывать
seismic wave velocity	скорость сейсмических волн
to herald	предсказывать, предвещать
distinctly different	совершенно другой
sediment	осадок
dense volcanic rocks	плотная вулканическая порода

3. Read the following text and translate it into Russian:

The Crust

The outermost layer of the Earth is called the **crust**. The crust is rich in oxygen, silicon and aluminium, with lesser amounts of other elements like iron. Owing to its low density (2.5 to 3.5 gm/cm³), the crust is able to float on the denser mantle. The Earth's crust, as with many planetary crusts, is brittle and breaks relatively easily.

Geologists use the term "crust" in reference to the outermost layer of the differentiated planet that is Earth. Once Earth was thought to be completely molten in its early stages; as it cooled, a hard crust formed, enveloping the still liquid interior. Though this concept has been obsolete for nearly a century, the term "crust" is still popular. However, it has acquired another generally accepted meaning. Today the term designates the outer layer of Earth, extending from the solid surface down to the first major discontinuity in seismic wave velocity in the lithosphere. It heralds a compositional, but not a structural, change. Moreover, the crust of the continents is distinctly different from the crust beneath the ocean basins. The continental crust is much thicker (as much as 50 km thick) and is composed of relatively light "granitic" rock that includes the oldest rock of the crust. Continental crust is made up of volcanic lava flows, huge granite blocks, and sediments laid down in shallow water or continental seas.

By contrast, the oceanic crust is only about 8 km thick and is composed of dark, dense volcanic rocks (basalt) with densities much greater than that of granite. The oceanic crust is young and relatively non-deformed by folding.

4. True/false

1. The inner layer of the Earth is called the crust.
2. The crust is rich in hydrogen and silicon, with lesser amounts of other elements like iron.
3. The Earth's crust, as with many planetary crusts, is brittle and breaks relatively easily.

4. Today the term designates the outer layer of Earth, extending from the solid surface down to the first major discontinuity in seismic wave velocity in the lithosphere.
5. The crust of the continents is similar to the crust beneath the ocean basins.
6. The continental crust is much thinner than the oceanic crust.
7. The oceanic crust is young and relatively non-deformed by folding.

5. Answer the questions:

1. What do geologists mean using the term "crust"?
2. What was Earth thought to be?
3. What does the term "crust" designate today?
4. What crust is much thicker?
5. What is the continental crust composed of?
6. What is the oceanic crust composed of?
7. What crust is young and relatively non-deformed by folding?

6. Give the Russian equivalents of the following words:

1. constituent materials	
2. envelope	
3. physical properties	
4. the differentiated planet	
5. completely molten	
6. concept	
7. term	
8. to designate	
9. oceanic crust	
10. shallow water	

7. Give the English equivalents of the following words:

1. отличительный	
2. термин	
3. понятие	
4. в ранние периоды	
5. приобретать другое значение	
6. скорость	
7. относительно легкий	
8. состоит из	
9. недеформированный	
10. важное значение	

8. Give synonyms of the given words:

1. differentiated	
2. outermost	
3. to acquire	
4. internal	
5. to designate	
6. velocity	
7. amount	
8. owing to	
9. brittle	
10. to herald	

9. Guess the definitions

1. The part of Earth in the middle of our planet.	
2. The outermost solid shell of Earth.	
3. A colourless gas that exists in large quantities in the air	
4. The speed at which something moves in a particular direction.	
5. The rigid outer part of the earth, consisting of the crust and upper mantle.	
6. A very large area of land that consists of several countries.	
7. A very hard, granular, crystalline, igneous rock consisting mainly of quartz, mica, and feldspar.	

INTERNAL LAYERS BASED ON PHYSICAL PROPERTIES

1. Read aloud the following words:

asthenosphere [əs'ti:nə,ʃiə], decade ['dekeɪd], major ['meɪdʒə], lithosphere ['liθə,ʃiə], rigid ['rɪdʒɪd], strength [streŋθ], boundary ['baʊnd(ə)rɪ], volcano [vɒl'keɪnəʊ], mesosphere ['mezə,ʃiə], therefore ['ðeəfɔː], distinctly [dɪ'stɪŋktli]

2. Read the following words and try to remember them:

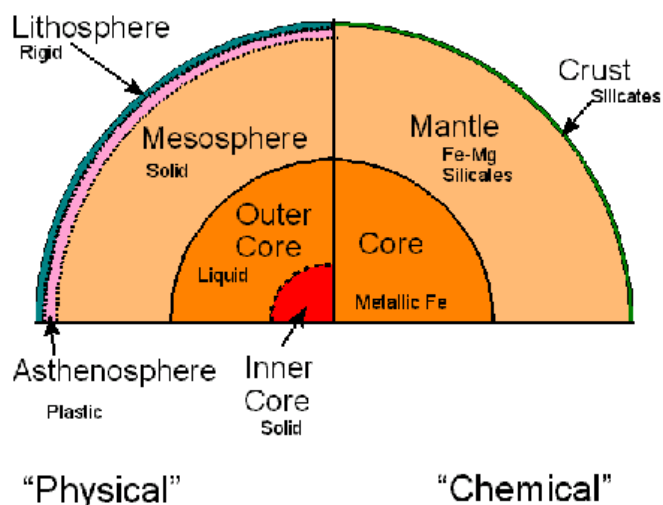
the last few decades	последние несколько десятилетий
to melt	таять, плавиться
strength	сила
boundary	граница
to flow	течь
tar	смола, деготь
distinct	отличительный
correspond to	соответствовать чему-то
to offset	баланси́ровать, компенсировать
to generate	извлекать, производить

3. Guess and match word phrases with their Russian equivalents:

1. a major zone	a. физические свойства пород
2. deformed mantle	b. отличительная область
3. a distinctive zone	c. высокое давление
4. a compositional change	d. самый верхний слой
5. physical properties of the rock	e. вращение Земли
6. uppermost part	f. создавать магнитное поле
7. the zone of earthquakes	g. деформированная мантия
8. continental drift	h. изменение состава
9. high pressure	i. жидкое внешнее ядро
10. liquid outer core	j. важная зона
11. the rotation of Earth	k. дрейф континентов; горизонтальное перемещение континентов
12. to generate magnetic field	l. зона землетрясений

4. Read the following text and translate it into Russian:

Internal layers based on physical properties



Asthenosphere. During the last few decades, it has been recognized that there is a major zone within the upper mantle where temperature and pressure are at just the right balance so that part of the material melts. The rocks lose much of their strength, becoming soft plastic and flowing like warm tar. This zone of easily deformed mantle is called the *asthenosphere* (meaning "weak sphere"). The asthenosphere is a distinctive zone in the upper mantle and is as much as 200 km thick.

Lithosphere. The top of the asthenosphere is about 100km below the surface. Above the asthenosphere the material is solid, strong, and rigid. This layer is called the *lithosphere* ("rock sphere"). The boundary between the lithosphere and the asthenosphere is distinct but does not correspond to a compositional change. The boundary is simply due to a major change in the physical properties of the rock. The lithosphere thus contains the crust and the uppermost part of the mantle. The lithosphere is also the zone of earthquakes, mountain building, volcanoes, and continental drift.

Mesosphere. The rock below the asthenosphere is stronger and more rigid than the asthenosphere because the high pressure at this depth offsets the effect of high temperature. The region between the asthenosphere and the core-mantle boundary is called the *mesosphere*.

The Core. The core of Earth marks a change in both physical properties and composition. It is composed mostly of iron and is therefore distinctly different from the silicate (rocky) material above. On the basis of physical properties, the core has two distinct parts—a solid inner core and a liquid outer core. Inner Core is the central part of the iron-nickel core. The reason that the iron is solid is that the pressure at the center of the earth is significantly higher than the pressure above, while the temperature is only slightly higher. Heat loss from the core and the rotation of Earth probably cause the liquid outer core to circulate, and its circulation generates Earth's magnetic field. Outer core is area of molten metal that surrounds the inner core. Because the earth rotates, the outer core spins around the inner core and that causes the earth's magnetism. It is in liquid state.

5. Give Russian equivalents of the given expressions:

1. based on physical properties	
2. has been recognized	
3. within the upper mantle	
4. temperature and pressure	
5. lose much of their strength	
6. becoming soft plastic and flowing	
7. like warm tar	
8. easily deformed mantle	
9. 100km below the surface	
10. solid, strong, and rigid	

6. Give English equivalents of the following expressions:

1. называется	
2. не соответствовать	
3. основное изменение	
4. физические свойства	
5. благодаря	
6. содержать	
7. высокое давление	
8. на этой глубине	
9. твердое внутреннее ядро	
10. жидкое внешнее ядро	

7. Complete the sentences using the necessary word:

1. The asthenosphere is a distinctive zone in the upper _____.
2. The top of the asthenosphere is about 100km below the _____.
3. The boundary between the lithosphere and the asthenosphere is distinct but does not correspond to a compositional _____.
4. The _____ thus contains the crust and the uppermost part of the mantle.
5. The region between the asthenosphere and the core-mantle boundary is called the _____.
6. The core of Earth marks a change in both physical properties and _____.
7. On the basis of physical properties, the core has two distinct parts—a solid _____ core and a liquid _____ core.

8. Answer the given questions:

1. What is asthenosphere?
2. What part of mantle is it?
3. What is lithosphere?
4. Where is lithosphere
5. What is mesosphere?
6. What is core?
7. What is it composed of?

EARTH'S OUTER LAYERS. ATMOSPHERE**1. Read aloud the following words:**

atmosphere ['ætməsfɪə], biosphere ['baɪəsfɪə], argon ['ɑ:gɒn], spectacular [spek'tækjələ], gaseous ['ɡæsiəs], photosynthesis [ˌfəʊtə'sɪnθəsis], variable ['veəriəbl], absorb [əb'zɔ:b], ultraviolet [ˌʌltrə'vaɪələt], thermosphere ['θɜ:mə,sfɪə], stratosphere ['strætə,sfɪə], mesosphere ['mezə,sfɪə], exosphere ['eksəʊ,sfɪə], meteor ['mi:tɪə], stratopause ['strætə,pəʊz], aurora [ɔ:'rɔ:rə], ionosphere [aɪ'ɒnəsfɪə], collide [kə'laid], helium ['hi:lɪəm]

2. Read the following words and try to remember them:

spectacular	впечатляющий; эффектный
gaseous envelope	газовая оболочка
water vapor	водяной пар
heat retention	тепловая инертность
troposphere	тропосфера
stratosphere	стратосфера
mesosphere	мезосфера
thermosphere	термосфера
exosphere	экзосфера
overlying layer	налегающий слой, лежащий сверху слой

aurora	полярное сияние
ionosphere	ионосфера
to absorb	поглощать
to collide	сталкиваться; соударяться

3. Guess and match word phrases with their Russian equivalents:

1. especially spectacular	1. азот и аргон
2. mixture of gases	2. изменяемое, непостоянное количество
3. nitrogen and argon	3. содержать озоновый слой
4. a variable amount	4. поглощать радиацию
5. to absorb radiation	5. особенно впечатляющий
6. ultraviolet rays	6. водород и гелий
7. to contain the ozone layer	7. смесь газов
8. hydrogen and helium	8. ультрафиолетовые лучи

4. Read the following text and translate it into Russian:

Atmosphere

The outermost layers of Earth are the atmosphere, hydrosphere, and biosphere. Their dynamics are especially spectacular when seen from space. The continent and ocean basins are Earth's major surface features.

Our atmosphere is unique in the solar system. The atmosphere is the thin, gaseous envelope that surrounds Earth. Air is the mixture of gases, the name given to atmosphere used in breathing and photosynthesis. It is composed of 78 % nitrogen, 21% oxygen, 0.93% argon, 0.039% carbon dioxide, and small amounts of other gases. Air also contains a variable amount of water vapor, on average around 1%. All of these gases combine to absorb ultraviolet radiation from the Sun and warm the planet's surface through heat retention.

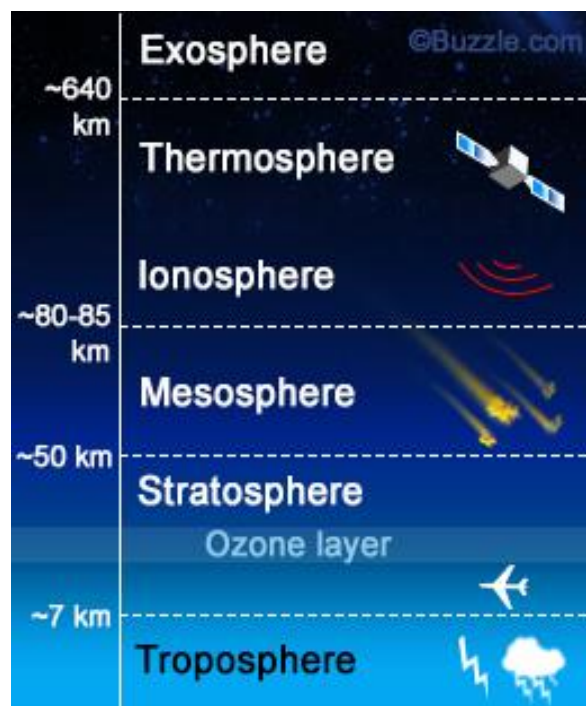
The atmosphere is divided into the following layers: troposphere, stratosphere, mesosphere, thermosphere, exosphere.

The troposphere begins at the surface and extends to between 7 km at the poles and 17 km at the equator, with some variation due to weather. Troposphere is the lowest portion of Earth's atmosphere, there is the air. It contains roughly 80% the mass of the atmosphere. The clouds and fogs appear and the weather is formed.

The overlying layer is the stratosphere, which extends to about 55 km above the surface. Temperatures in this layer drop with a rise in altitude. Many jet aircrafts fly in the stratosphere because it is very stable. The stratosphere is important because it contains the ozone layer. This layer absorbs much of the sun's stronger ultraviolet rays.

The mesosphere is the layer where most meteors or rock fragments burn up upon entering the atmosphere. It extends from the stratopause to 80–85 km. Density of the air is lower in 200 times, and temperature settles. The top of the mesosphere called mesopause is the coldest part of the Earth's atmosphere. The temperature there is as low as -90 degrees C.

The thermosphere is a layer with auroras. Aurora is an interesting phenomenon; it is a polar light in the sky, predominantly seen in the high latitude (Arctic and Antarctic) regions. It is also where the space shuttle orbits. The thermosphere extends up to between 320 and 380 km. There is the highest



temperature in the upper layer that is why this layer is called thermosphere. The temperature here can rise to 1,500 °C. The thermosphere is divided into the ionosphere and exosphere.

The ionosphere contains a high concentration of electrically charged particles (ions); these particles are responsible for reflecting radio signals important to telecommunications.

Exosphere is the outermost layer of Earth's atmosphere. Here the particles are so far apart that they can travel hundreds of km without colliding with one another. The exosphere is mainly composed of hydrogen and helium.

5. True/false

1. The outermost layers of Earth are the crust, mantle and core.
2. The atmosphere is the thin, water envelope that surrounds Earth.
3. The atmosphere is composed of 78 % nitrogen, 21% oxygen, 0.93% argon, 0.039% carbon dioxide, and small amounts of other gases.
4. The atmosphere is divided into three layers: troposphere, thermosphere and exosphere.
5. The troposphere is the lowest portion of Earth's atmosphere, there is the air.
6. The mesosphere is important because it contains the ozone layer.
7. The stratosphere is the layer where most meteors burn up upon entering the atmosphere.
8. The thermosphere extends up to between 320 and 380 km.
9. The thermosphere is divided into the ionosphere and exosphere.
10. The troposphere is mainly composed of hydrogen and helium.

6. Answer the questions:

1. What are the outermost layers of Earth?
2. What is the atmosphere?
3. What is air?
4. What is air composed of?
5. What layers is the atmosphere divided into?
6. Where does the troposphere begin?
7. Why is the stratosphere important?
8. What layer do most meteors burn up entering the atmosphere?
9. What layer has the highest temperature?
10. What layers is the thermosphere divided into?
11. What is aurora?
12. What is the outermost layer of Earth's atmosphere?
13. What does the ionosphere contain?
14. What is the exosphere mainly composed of?

7. Give the English for:

1. особенно впечатляющий	
2. из космоса	
3. тонкая газовая оболочка	
4. водяной пар	
5. радиация от солнца	
6. облака и туман	
7. содержать озоновый слой	
8. поглощать ультрафиолетовые лучи	
9. где сгорают метеоры	
10. плотность воздуха	
11. в основном состоит из	

8. Give the Russian for:

1. unique in the solar system	
2. a variable amount of water vapor	
3. combine to absorb ultraviolet radiation	

4. to warm the planet's surface	
5. at the equator	
6. jet aircrafts	
7. the top of the mesosphere	
8. through heat retention	
9. interesting phenomenon	
10. ionosphere and exosphere	
11. high latitude	
12. electrically charged particles	

9. Give the definitions to the following words:

1. Atmosphere	
2. Air	
3. Troposphere	
4. Stratosphere	
5. Mesosphere	
6. Thermosphere	
7. Aurora	
8. Exosphere	

10. There are several numerals in the text. What information do they refer to?

1) 78	
2) 21	
3) 0.93	
4) 1	
5) 7	
6) 17	
7) 80	
8) 55	
9) 90	
10) 1,500	

HYDROSPHERE

1. Read aloud the following words:

liquid ['likwid], irregularity [ɪˌregjə'lærəti], smooth [smu:ð], glacier ['glæsiə], motion ['məʊʃ(ə)n], evaporate [ɪ'væp(ə)reɪt], precipitate [prɪ'sɪpɪteɪt], erode [ɪ'rəʊd], weathered ['weðəd], circulation [ˌsɜːkjə'leɪʃ(ə)n], evaporation [ɪˌvæp(ə)reɪʃ(ə)n], condensation [ˌkɒnden'seɪʃ(ə)n], precipitation [prɪˌsɪpɪ'teɪʃ(ə)n], collection [kə'leɪʃ(ə)n], vapor ['veɪpə], transpiration [ˌtrɑːnsprɪ'reɪʃ(ə)n], moisture ['mɔɪstʃə], evapotranspiration [ɪˌvæpəʊtrɑːnsprɪ'reɪʃ(ə)n], height [haɪt]

2. Read the following words and try to remember them:

glacier	ледник
irregularity	неравномерность, неправильность
to smooth out	сглаживать
fresh water	пресная вода
to precipitate	выпадать (об осадках)
to erode	разрушать; выветривать; размывать
to transport	переносить
to deposit	откладывать
weathered	выветренный

to modify	изменять
evaporation	испарение
condensation	конденсат (<i>продукт, получающийся при конденсации пара в жидкость</i>)
precipitation	выпадение осадков, осадки
collection	накопление, скопление
transpiration	испарение, транспирация
moisture	влага
evapotranspiration	эвапотранспирация, суммарное испарение (испарение плюс транспирация)
to condense	конденсировать
sleet	дождь со снегом; мокрый снег;

3. Guess and match word phrases with their Russian equivalents:

1. ponds and streams	a. испаряться из океанов
2. available fresh water	b. идеальный шар
3. in constant motion	c. круговорот воды
4. to evaporate from the oceans	d. выпущенный в атмосферу
5. distinctive features	e. доступная пресная вода
6. circulation of the water	f. град
7. the underside of leaves	g. проникать, просачиваться в землю
8. released to the atmosphere	h. изменяя ландшафт земли
9. soak into the earth	i. пруды и ручьи
10. hail and	j. нижняя часть, обратная сторона
11. modifying Earth's landscape	k. отличительные черты
12. perfect sphere	l. в постоянном движении

4. Read the following text and translate it into Russian:

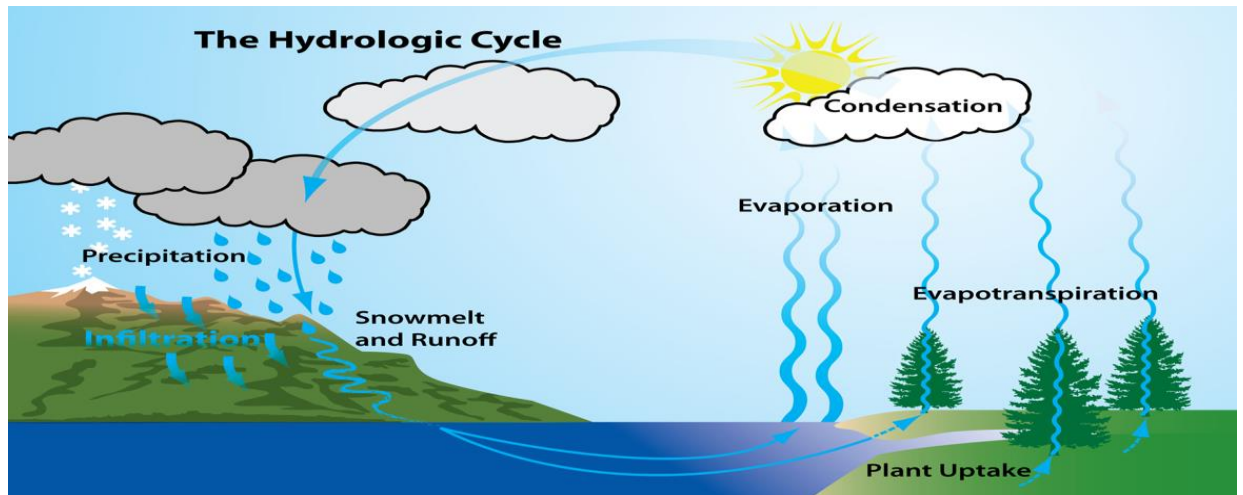
Hydrosphere

The hydrosphere is the liquid water component of the Earth. It includes the oceans, seas, lakes, ponds, rivers and streams. About 98% of this water is in the oceans; 2% is in streams, lakes, groundwater, and glaciers. Approximately 71% of Earth is covered with water. Thus, it is for good reason that Earth has been called "the water planet". It has been estimated that if all the irregularities of Earth's surface were smoothed out to form a perfect sphere, a global ocean would cover Earth to a depth of 2.25 km. The composition of the earth's water supply is 97,5% - salt water, 2,5% - fresh water, 0,01% - available fresh water. And, of the total freshwater, over 68 percent is locked up in ice and glaciers. Another 30 percent of freshwater is in the ground. Yet, rivers and lakes are the sources of most of the water people use everyday.

Water cycle

The hydrosphere is in constant motion; water evaporates from the oceans and moving through the atmosphere, precipitating as rain and snow, and returning to the sea in rivers, glaciers, and groundwater. As water moves over Earth's surface, it erodes, transports, and deposits weathered rock material, constantly modifying Earth's landscape. Many of the distinctive surface features of Earth are due to the hydrosphere.

Water cycle is the circulation of the earth's water, which includes evaporation, condensation, precipitation and collection.



Evaporation is the process when the sun heats up water in rivers or lakes or the ocean and turns it into vapor or steam. The water vapor or steam leaves the river, lake or ocean and goes into the air. Plants have their own type of evaporation which is called transpiration. Transpiration is the process by which moisture is carried through plants from roots to small pores on the underside of leaves, where it changes to vapor and is released to the atmosphere. **Transpiration** is essentially evaporation of water from plant leaves. The sum of evaporation from the land surface plus transpiration from plants is called **evapotranspiration**.

The water in the form of the vapors rising cools down at a certain height and condenses to form clouds. This is called **condensation**.

Precipitation occurs when so much water has condensed that the air cannot hold it anymore. The clouds get heavy and water falls back to the earth in the form of rain, hail, sleet or snow.

Collection. When water falls back to earth as precipitation, it may fall back in the oceans, lakes or rivers or it may end up on land. When it ends up on land, it will either soak into the earth and become part of the “ground water” that plants and animals use to drink or it may run over the soil and collect in the oceans, lakes or rivers where the cycle starts.

Then, again evaporation starts due to the Sun's heat and the cycle happens again.

5. True/false

1. The hydrosphere is the gaseous water component of the Earth.
2. Approximately 51% of Earth is covered with water.
3. 68 percent of fresh water is locked up in ice and glaciers.
4. Evaporation is the process when water in rivers or lakes or the ocean turns into vapor or steam.
5. Plants have their own type of evaporation which is called precipitation.
6. Evapotranspiration is the evaporation from the land surface and transpiration from plants.
7. Condensation is the process when the water in the form of the vapors cools and condenses to form clouds.
8. Precipitation occurs when water collects in the oceans, lakes or rivers.

6. Make sentences paying attention to the word-order.

1. the component The is the liquid hydrosphere water Earth of.

2. freshwater the 30 of is in percent ground.

3. features the due Many of of Earth are to hydrosphere the distinctive surface.

4. in The motion is constant hydrosphere.

5. air river steam The or leaves water vapor the, lake or ocean and into the goes.

6. starts evaporation again Sun's again Then, due to the happens heat the and cycle.

7. Answer the questions:

1. What is the hydrosphere?
2. Why is the Earth called “the water planet”?
3. What is the composition of the earth’s water supply?
4. What is Water cycle?
5. What does water cycle include?
6. What process is called evaporation?
7. What process is called transpiration?
8. What process involves evaporation from the land surface and transpiration from plants?
9. What is condensation?
10. When does precipitation occur?
11. What process is called collection?

8. Give the English for:

1. было оценено	
2. источник воды	
3. круговорот воды	
4. нагревать воду	
5. превращать воду в пар	
6. на обратной стороне листьев	
7. на определенной высоте	
8. просачиваться в землю	
9. грунтовая вода	
10. собираться в океанах	

9. Give the Russian for:

1. groundwater	
2. covered with water	
3. own type of evaporation	
4. from roots to small pores	
5. hold it anymore	
6. in the form of rain, hail, sleet or snow	
7. become part of the “ground water”	
8. due to the Sun's heat	

10. Translate the given sentences:

1. Около 98% воды содержится в океанах.

2. Почти 71% Земли покрыто водой.

3. Вот почему планету Земля называют «водной планетой».

4. Вода постоянно изменяет ландшафт земли.

5. Многие отличительные поверхностные характеристики Земли только благодаря гидросфере.

11. There are several numerals in the text. What information do they refer to?

11) 98%	
12) 71%	
13) 2.2	
14) 97,5	
15) 2,5	

16) 0,01	
17) 68	
18) 30	

BIOSPHERE

1. Read aloud the following words:

vital ['vaɪt(ə)l], multitude ['mʌltɪt(j)uːd], fungi ['fʌŋɡaɪ], fungus ['fʌŋɡəs], protist ['prəʊtɪst], bacteria [bæk'tɪərɪə], bacterium [bæk'tɪərɪəm], species ['spiːʃiːz], perhaps [pə'hæps], within [wɪ'ðɪn], flora ['flɔːrə], fauna ['fəʊnə], weight [weɪt], either ['aɪðə], biotic [baɪ'ɒtɪk], photosynthesis [ˌfəʊtə'sɪnθəsis], tertiary ['tɜːʃ(ə)rɪ]

2. Read the following words and try to remember them:

multitude	множество; большое число; масса
fungus pl. fungi	гриб; грибок; плесень
protist	протист, одноклеточный организм
Bacterium pl. bacteria	бактерия, микроб, микроорганизм
species pl.	вид; разновидность
biomass	биомасса
to co-exist	сосуществовать
profoundly	глубоко, серьезно, основательно
abundance	биол.; экол. плотность, численность
nutrition	питание
producer	продуцент, производитель
consumer	консумент, потребитель
decomposer	редуцент, декомпозиер, бактерия разложения
tertiary	третичный
herbivore	травоядное животное
carnivore	плотоядное животное
omnivore	всеядное животное

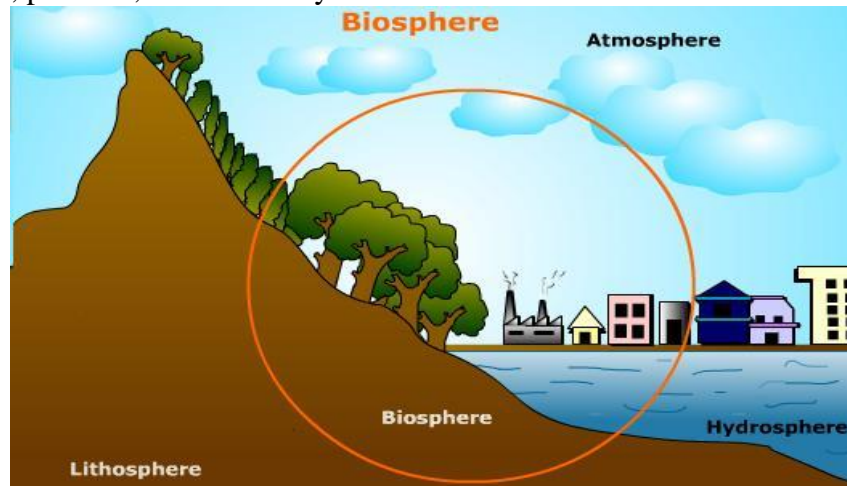
3. Guess and match word phrases with their Russian equivalents:

1. living organisms	a. ограниченная окружающая среда
2. the bottom of atmosphere	b. биотические компоненты
3. upper lithosphere	c. пищевая цепь, цепь питания
4. limited environmental setting	d. нижняя часть атмосферы
5. biotic components	e. питательные вещества для других организмов
6. the distribution of life	f. распределение жизни
7. a simple food chain	g. белка или лось
8. nutrients for other organisms	h. живые организмы
9. a squirrel or an elk	i. разлагающееся вещество
10. decaying matter	j. верхняя литосфера

4. Read the following text and translate it into Russian:

Biosphere is a special Earth cover, where activity of all living organisms and cycle of matter and energy between them is realized actively. It is a «vital cover» of the Earth. It includes the bottom of atmosphere, hydrosphere and upper lithosphere. The biosphere includes life on land and in the oceans - multitudes of plants, animals, fungi, protists, and bacteria. It consists of more than 1.5 million described species and perhaps as many as 3 million more not yet described. Each species lives within

its own limited environmental setting. The main factors controlling the distribution of life on our planet are temperature, pressure, and chemistry.



Living organisms, forming biosphere, are divided into 2 big groups: flora (plants) and fauna (animals). The Earth total weight less than The Earth total mass in many times. Biomass size on the continents is more than in the World Ocean in 800 times. There are green plants on the continents; there are animals in oceans.

Everything either flows or [cycles](#) through an ecosystem, and it happens all the time. An ecosystem consists of a number of organisms which co-exist and come into regular contact with each other. Some of these organisms may have a special relationship which may profoundly influence its distribution and abundance. In a given ecosystem three types of biotic components may be found which are grouped according to their modes of nutrition. They are producers, consumers and decomposers.



Producers are the beginning of a simple food chain. Producers are plants and vegetables. Plants are at the beginning of every food chain that involves the Sun. All energy comes from the Sun and plants are the ones who make food with that energy. They use the process of **photosynthesis**. Plants also make loads of other nutrients for other organisms to eat.

Consumers are the next link in a food chain. There are three levels of consumers: primary, secondary and tertiary consumers. The **primary consumers** are the organisms that eat plants but not animals. They are also called **herbivores**. It might be a squirrel or an elk. The **secondary consumers** eat the primary consumers. A mouse might be a primary consumer and a cat might be the secondary. Secondary consumers are also called **carnivores**. Carnivore means "meat eater." The third level of consumer called the tertiary consumers are consumers that eat the secondary and primary consumers. A tertiary consumer could be a wolf that eats the cat and the mouse. There are also consumers called **omnivores**. Omnivores can either be secondary or tertiary consumers. Humans and bears are considered omnivores: we eat meat, plants, and just about anything.

The last links in the chain are the **decomposers**. Decomposers break down nutrients in the dead "stuff" and return it to the soil. Bacteria and fungi are decomposers. They eat decaying matter - dead plants and animals and in the process they break them down and decompose them. When that happens, they release nutrients and mineral salts back into the soil - which then will be used by plants!

5. True/false

1. Biosphere is a «vital cover» of the Earth.
2. Each species lives within its own limited environmental setting.
3. Biosphere includes the upper atmosphere and bottom of lithosphere.
4. Producers are plants and animals.
5. The primary consumers are called carnivores.
6. Decomposers break down nutrients in the dead "stuff" and return it to the soil.
7. Bacteria and flowers are decomposers.

6. Answer the questions:

1. What does the biosphere include?
2. How many species does it consist of?
3. What are the main factors controlling the distribution of life on our planet?
4. What two big groups are living organisms divided into?
5. What does an ecosystem consists of?
6. What three types of biotic components are there?
7. What three levels of consumers are there?
8. What does carnivore mean?
9. How are the tertiary consumers called?
10. What organisms are referred to decomposers?

7. Give the English for:

1. множество растений	
2. грибки и бактерии	
3. распределение и численность	
4. продуценты и консументы	
5. цепь питания	
6. травоядные животные	
7. плотоядные животные	
8. всеядные животные	
9. либо.... или	
10. разлагать вещество	

8. Give the Russian for:

1. the bottom of atmosphere	
2. described species	
3. main factors	
4. total weight	
5. profoundly influence its distribution	
6. process of photosynthesis	
7. the next link	
8. tertiary consumers	
9. return it to the <u>soil</u>	
10. decaying matter	

9. Insert the necessary word.

1. Each species lives within its own _____ environmental setting.
2. The main factors controlling the distribution of life on our planet are temperature, _____ and chemistry.
3. It consists of more than 1.5 million _____ species.
4. _____ are the beginning of a simple food chain.
5. Plants use the process of _____.
6. There are three levels of consumers: primary, secondary and _____ consumers.
7. The secondary consumers are also called _____.
8. _____ can either be secondary or tertiary consumers.