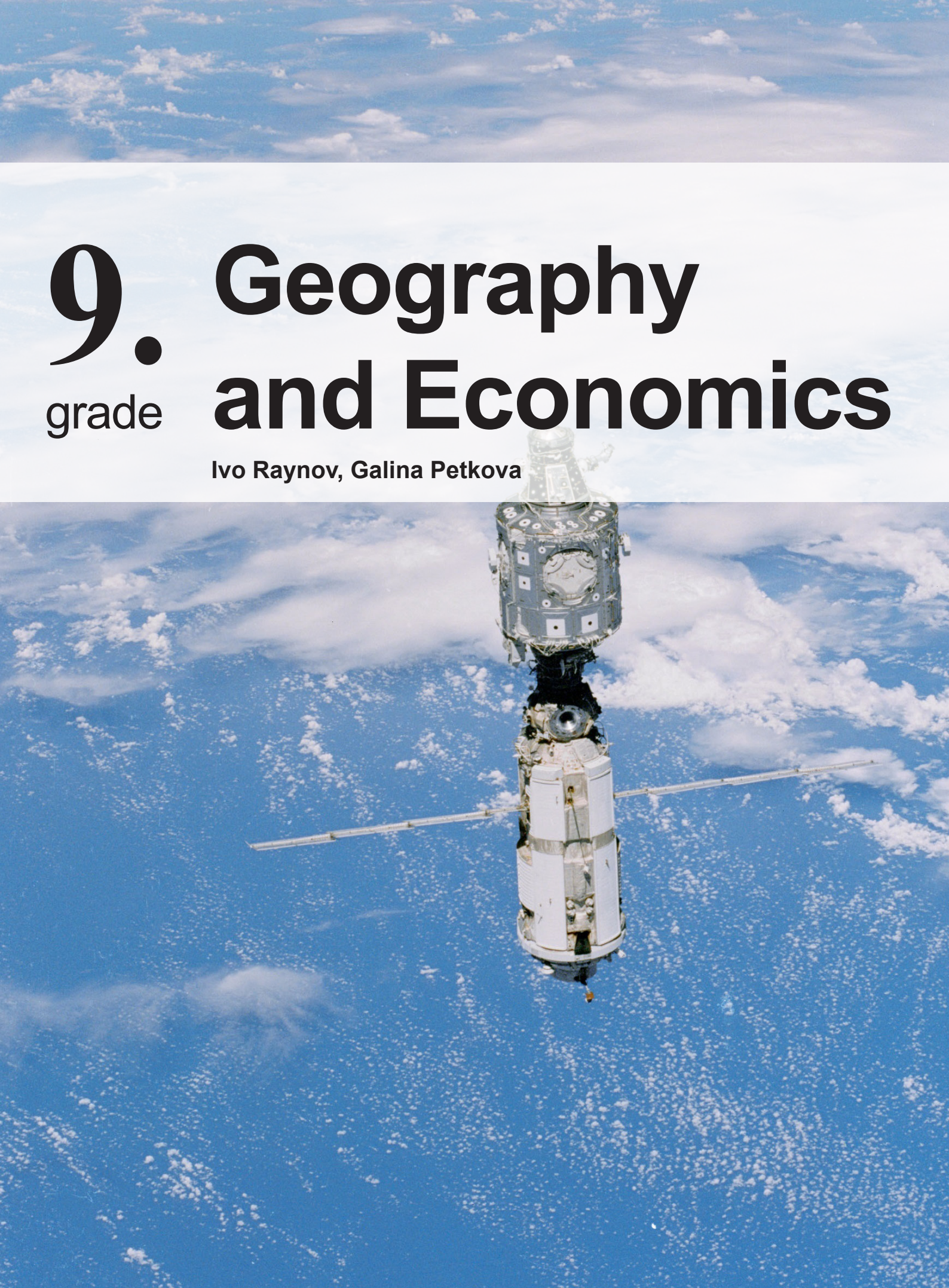
9. grade Geography and Economics

Ivo Raynov, Galina Petkova



МИНИСТЕРСТВО НА ОБРАЗОВАНИЕТО И НАУКАТА

НАЦИОНАЛНА ПРОГРАМА
„Разработване на учебни помагала и на методически ръководства,
оценяване и одобряване на проекти на учебни помагала
за подпомагане на обучението, организирано в чужбина,
на проекти на учебници и на проекти на учебни комплекти“

МОДУЛ
„Разработване на учебни помагала за обучение
по общообразователни предмети на чужд език“

9. клас География и икономика на английски език

Учебно помагало

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CONTENTS

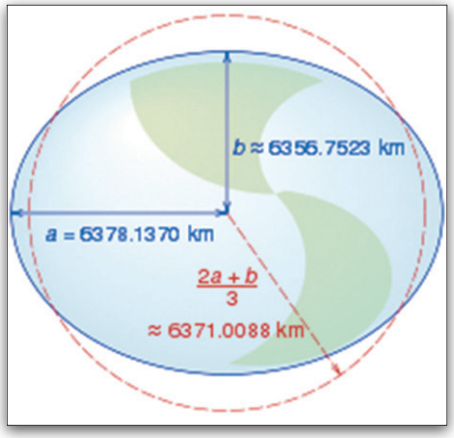
1.1. SHAPE AND SIZE OF THE EARTH

BASIC TERMS: ellipsoid; geoid

BASIC TERMS

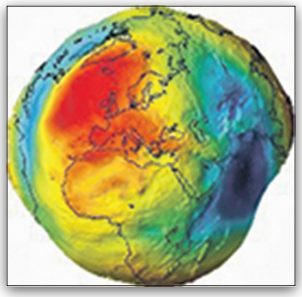
1. Shape of the Earth

Three different models are used to determine the shape of the Earth. Ancient Greek scientists and philosophers considered the Earth to be a sphere. All points on the surface were considered to be equally distant from its centre. Therefore, in this model, the Earth has the same radius with a length of 6371 km.



In the 17th century, it was concluded that the Earth was not an ideal sphere. Scientists found that the reason for this is the different speed of rotation, the reason for the bulge around the equator and the flattening of the poles. It is due to the greater centrifugal force around the equator. This shape of the Earth is called an ellipsoid. It has a longer equatorial radius.

Geoid is a model of the Earth that comes closest to its true form. The geoid shows the influence of gravity or the force that attracts all objects to its centre. Thanks to gravity, the Earth retains the atmosphere and hydrosphere.



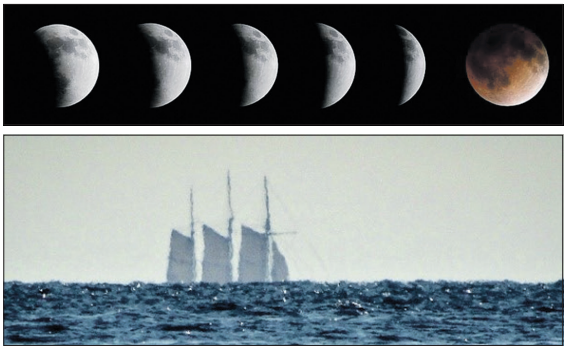
The surface of the geoid is uneven due to gravity being unevenly distributed because the mass and density of the Earth are different in different places. See More about the three forms in the video

2. Evidence of the shape of the Earth

The spherical shape of the Earth is confirmed by a number of pieces of evidence. When we approach the land from the sea, at first we see only the highest parts of the land. If we move around the Earth, the stars change their position in the sky. The earth casts a round shadow on the moon. The most convincing evidence is the photos taken by spaceships. The spherical shape of the Earth is the reason for the different angle at which the sun's rays fall. Therefore, the equator is the warmest, and the poles - the coldest. The decrease in the sunshine and the temperature from the equator to the poles is the reason for the emergence and existence of natural areas.

TRAINING SECTION

Task 1. Comment on the photos. What evidence for the shape of the Earth is shown?



Task 2. Use the video as a source of information and record the ten proofs of the shape of the Earth.

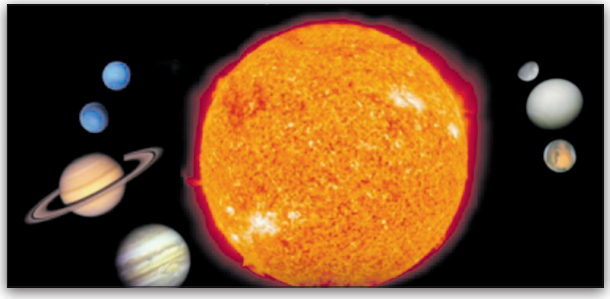
1……..2……

3……..4……

5……..6……

7……..8……

9……..10……..



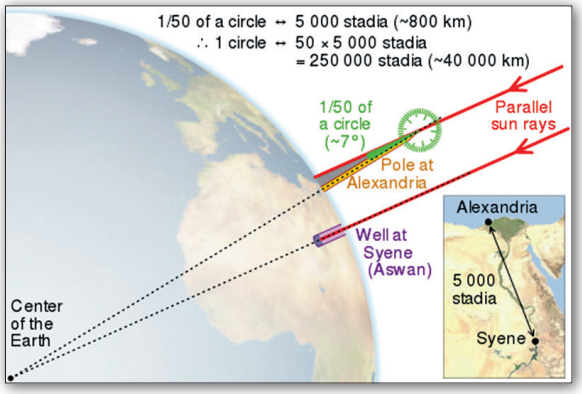
Task 3. Watch the video and answer the questions:

Who is Eratosthenes?

What did he measure?

……

What is the difference between his method and accurate modern measurements?



Task 4. Sylvester is a sixth grader from the Congo. He lives in a small village near the equator. Every morning the boy walks 12 kilometres to get to the nearest school in the city of Macau. After classes he travels the same distance to go home. The school year for Sylvester lasts 170 days. **In which school grade will Silestre have travelled a distance between school and home equal to the circumference of the equator?**

……

……

Task 5. Assume what natural changes would occur if:

A. the circumference of the Earth was twice as large. ……..

B. the equatorial and polar radius were equally long. ……

1.2. EARTH MOVEMENTS

BASIC TERMS

local time; time zones; international date line; rotation; revolution; equinox; solstice

The Earth revolves around its axis and orbits the sun.
These movements have a huge impact on the Earth's nature.

1. Movement of the Earth around its axis

Movement of the Earth around its axis. The earth makes a complete rotation around its axis in 23 hours 56 m. 04 s. or approximately 24 hours. The change of day with night is the most important consequence of the rotation of the Earth around its axis. During the day, the heated part of the Earth absorbs more solar radiation and warms up. At night, the unheated part radiates some heat and cools. The alternation of day and night for 24 hours does not allow the Earth to heat or cool excessively. As a consequence of the rotation of the Earth, all points located on one meridian have the same time. It's called local time. To overcome the inconvenience of different local time, time zones have been introduced for each meridian, in which all points have the same time. The earth is divided into 24 time zones, each of which covers 15 ° E. In places, the zones are defined according to state or administrative boundaries. The time in each time zone is determined by the time in the zone through which the prime (Greenwich) meridian passes. The new days begin in the time zone through which the 180 ° meridian passes. It is accepted as a line for changing the date. If we cross it from east to west, we add one day. When we cross this meridian from west to east we subtract one day.

2. Movement of the Earth around the Sun

The civil (calendar) year is 365 days. The leap year is 366 days. The Earth's distance from the Sun varies over the year.

On June 21st or 22nd The North Pole is inclined to the Sun by 23°30′. This position is called summer solstice and is defined as the beginning of the summer and the longest day in the Northern Hemisphere, but contrariwise in the Southern Hemisphere.

On September 22nd or 23rd neither pole is tilted toward the Sun. This position is called the autumnal equinox and is defined as the beginning of the autumn in the Northern Hemisphere. On the date of the autumnal equinox the length of the day and night is equal.

On December 21st or 22nd The South Pole is inclined to the Sun by 23°30′. This position is called winter solstice and is defined as the beginning of the winter and the shortest day in the Northern Hemisphere, but contrariwise in the Southern Hemisphere.

On March 20th or 21st neither pole is tilted toward the Sun. This position is called vernal equinox and is defined as the beginning of the spring in the Northern Hemisphere, but contrariwise in the Southern Hemisphere. On the date of the vernal equinox the length of the day and night is equal, regardless of latitude.

TRAINING SECTION

Task 1. Watch this video and complete the text:

All spinning objects have an imaginary line, called ……. on which they spin. The Earth too has an axis which passes through …… and …… The axis of the Earth is slightly …… It is at an angle of 23.5 degrees. The spinning of the Earth on its axis is called ……. The Earth rotates from …… to…….. While the Earth rotates round its axis, only half of its surface faces the Sun. This half receives light and experiences…… The opposite side in darkness experiences ……..

Task 2. Read the text

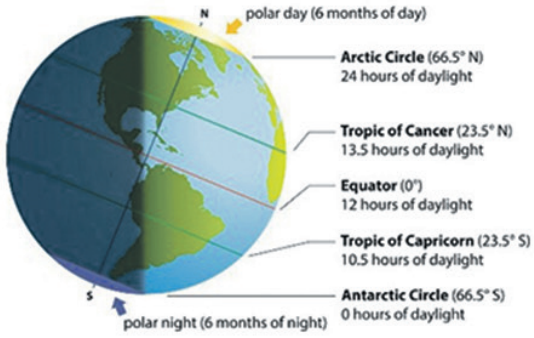
Can you imagine going to sleep late at night with the sun shining in the in the sky? People who live near the Arctic or Antarctic circles experience this every summer, when cam receive up to 24 hours of sunlight a day. For locations like Tromso in Norway, it means up to two months of constant daylight each summer. People living near the Earth's poles often use the long daylight hours to work on outdoor projects in preparation for winter when they can receive 24 hours of darkness a day.

Explain. What are the reasons for the 24-hour daylight?.....
.....

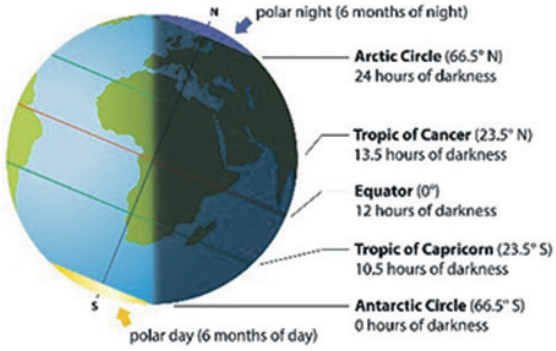
Predict. How people's lives might be affected by the midnight sun .....
.....

Task 3. Examine the images. Analyse the movement of the Earth around the Sun (fig.3) and guess which of the listed capitals receives the largest amount of solar radiation during the year - Stockholm, Rabat, Buenos Aires, Santiago, Canberra, Jakarta. You can use your phones to find the exact location of the cities.

summer solstice (June 21)



winter solstice (December 21)



Task 4. The speed of rotation of the Earth around the axis is 465 m / s at the equator. Where is this speed the lowest and why? Predict the consequences for life on Earth if this speed is twice as slow

……

……

2.1. GEOSPHERE STRUCTURE OF THE EARTH SYSTEM

BASIC TERMS

geosphere; natural risk; earthquake; flood; hurricane

1. The Earth as a system

The Earth is a system of interconnected parts. The largest of these are the geospheres - the various layers and shells that make up our planet. The geospheres are supplied with energy from the Sun and the Earth's interior. Solar energy affects the processes in the atmosphere, hydrosphere, biosphere. The energy from the Earth's interior creates volcanoes, earthquakes, mountains.

Geospheres have different composition, range and properties. The interior of the Earth is made up of three different parts. The Earth's core is at the centre of the Earth. The Earth's mantle is formed above it. The top layer is called the Earth's crust. Complete task1.

2. Basic characteristics of the geospheres

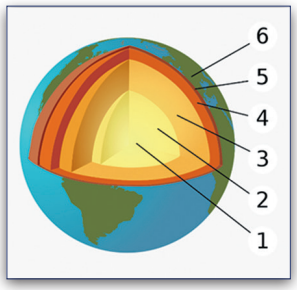
The **atmosphere** is the Earth's air envelope and consists of gases, water vapour and hard particles. The hydrosphere is the water shell of the Earth and includes the oceans and seas, land waters, glaciers. Water participates in a constant cycle, changing from liquid to solid and gaseous state. The **lithosphere** includes the Earth's crust and the uppermost part of the Earth's mantle or solid shell. It extends into the surface waters of the oceans and the part of the atmosphere closest to the Earth.

The **pedosphere** is composed of soils of different thickness and fertility. The **biosphere** includes living organisms. The density of matter is the main reason for the location of the geospheres. During the formation of the Earth, the heavier substances sank to the centre and formed the Earth's core. The lighter ones floated up to form the Earth's crust. Volcanic gases created the atmosphere, and precipitation falling from it formed the hydrosphere. The Earth is evolving as a whole complex of interacting geospheres. This interaction is accompanied by the exchange of energy and substances. Therefore, change in one geosphere leads to change in other geospheres.

2. Natural risks

Some of the processes that take place in the geospheres are considered dangerous natural phenomena. Such are earthquakes, volcanic eruptions, landslides, hurricanes, floods. Once they cause destruction or casualties, they turn into disasters. A natural risk is the probability that a dangerous natural phenomenon will turn into a disaster.

TRAINING SECTION



Task 1. Watch the video and name the parts of Earth's interior.

Task 2. Using interactive map of natural hazards, analyse the prevalence of natural hazards. Identify the areas with the most frequent earthquakes, volcanic eruptions and hurricanes. Which continents are most at risk from these risks?

……

Task 3. Match the natural risks with the geospheres in which they form.

HYDROSPHERE	EARTHQUAKE
LITHOSPHERE	HURRICANE
ATMOSPHERE	MELTING OF GLACIER
BIOSPHERE	EPIDEMIOLOGICAL DISEASE

Task 4. The table presents statistical information on major natural disasters in the XX and XXI century. Identify the natural disaster with the highest frequency and the most vulnerable areas on the planet.

Year	Number of victims	Disaster	Country	Year	Number of victims	Disaster	Country
1020	273 000	earthquake	China	1971	100 000	flood	Vietnam
1931	4 000 000	flood	China	1990	70 000	earthquake	Iran
1935	60 000	earthquake	Pakistan	1991	178 000	hurricane	Bangladesh
1948	110 000	earthquake	Turkmenistan	2003	70 000	heatwave	Europe
1956	830 000	earthquake	China	2004	227 000	tsunami	Indonesia
1970	500 000	hurricane	Bangladesh	2008	138 000	hurricane	Myanmar
1970	70 000	earthquake	Peru	2010	316 000	earthquake	Haiti

……

2.2. ATMOSPHERE - COMPOSITION AND CONSTRUCTION

BASIC TERMS

troposphere; stratosphere; mesosphere; thermosphere; ionosphere; exosphere

1. Composition of the atmosphere

Atmospheric air is a mixture of gases, water vapour and solid particles. The gases are of constant concentration, and the amount of water vapour and particulate matter varies. Nitrogen and oxygen make up 99% of the air volume. Nitrogen comes from volcanic eruptions and decomposition of dead organisms, and oxygen - from photosynthesis in plants. Water vapour enters through the water cycle, and its amount depends on the latitude and the altitude. Carbon dioxide and ozone are low in concentration, but are essential for natural processes. Carbon dioxide is released from various human activities. Solid particles enter the atmosphere as dust, ash or salt from the oceans. This composition of the atmosphere is of great importance for the maintenance of biodiversity, the distribution of solar radiation, atmospheric weather and climatic phenomena.

2. Structure of the atmosphere

The atmosphere consists of five different layers - troposphere, stratosphere, mesosphere, thermosphere, exosphere. The upper mesosphere and the entire thermosphere are defined as the ionosphere. The main layers are separated by transitional layers called "pauses" (e.g. tropopause, etc.). The troposphere is the lowest layer of the atmosphere. It extends to a height of 17 km, and its thickness is greater above the equator and smaller above the poles. The stratosphere is located above the troposphere and reaches a height of 50 km above the Earth's surface. The mesosphere is the third layer, whose height reaches 80 km above the Earth. It is the coldest atmospheric layer. The thermosphere is the thickest layer. The temperature in it exceeds 1200 ° C. This layer overlaps with the ionosphere which contains ions - electrically charged particles of solar energy and cosmic rays. The exosphere is the outermost layer, which gradually merges with space. The air is very thin.

3. Human activity and the atmosphere

Human activity has a strong impact on the atmosphere. Industrial activity increases the amount of carbon dioxide and helps to enhance the greenhouse effect. Some pollutants deplete the ozone layer. Polluted air above the earth's surface can form smog, typical of large cities and industrial centers.

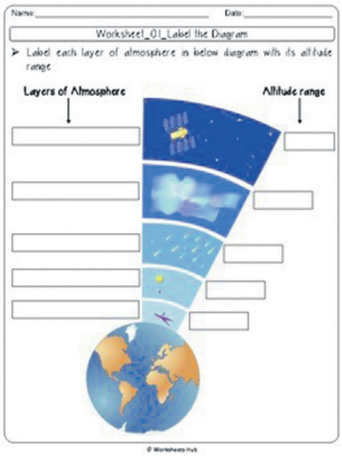
TRAINING SECTION

Task 1. Watch the video and fill the table.

Constituent	Significance
nitrogen	
oxygen	
ozone	
water vipers	
dust particles	

Task 2. Watch the video and fill the blanks.

We humans live in …… and nearly all weather occurs in this layer. The ……. layer is found in the stratosphere. It absorbs the harmful …… radiation. ……. is the coldest layer of the Earth. Most meteors ……in the mesosphere. The …… absorbs high energy …….. rays and …… radiation. The …… reflects ……waves, allowing us to receive short waves of radio broadcasts.



Task 3. Define the general theme in the cartoons from fig. 5. Discuss the reasons, the current state and the trends that are presented through the language of art.

2.3. HEAT REGIME OF THE ATMOSPHERE

BASIC TERMS

radiation from the earth's surface; radiation balance; vertical temperature gradient; isotherms, albedo

1. Solar radiation

The sun emits energy that is transferred through electromagnetic waves. Part of the light emitted by the Sun is visible to the human eye in purple, blue, green, yellow, orange and red. The ultraviolet and infrared rays are invisible to us. A small amount of solar energy reaches the earth's surface directly as direct radiation. The atmospheric gases and aerosols scatter solar radiation and part of it also reaches the earth's surface. The total amount of direct and scattered radiation that the Earth receives is called total radiation. It represents about 43% of the total amount of radiation emitted by the Sun. However, the amount of total radiation depends on the latitude - it is more between the tropics and the equator and the least around the poles. The earth's surface returns radiation to the atmosphere. It is called reflected radiation and depends on the reflectivity of the objects. Another part of the radiation is absorbed by the earth's surface, warming the earth. The heated earth's surface emits long-wave radiation and warms the air. The difference between the radiation absorbed and the radiation emitted is called the radiation balance. It is positive when the absorbed radiation is more and negative when the amount of emitted radiation is greater. Part of the emitted heat remains in the atmosphere under the influence of the so-called greenhouse gases - carbon dioxide, water vapour. It additionally warms the earth's surface, creating a greenhouse effect.

2. Temperature of the air

The degree of heating of air is measured by its temperature. It depends on the latitude, because the amount of solar radiation decreases from the equator to the poles. It is affected by the altitude, because the air is diluted in height. Usually the temperature decreases by 0.6 ° C for every 100 m of altitude. This decrease is called the vertical temperature gradient. The land heats up faster, but the water cools down more slowly. This fact explains the different temperature levels above land and near water basins. Temperatures in coastal areas can also be affected by stronger ocean currents.

Air temperature is measured with stationary thermometers or continuously recording equipment. The temperature distribution is presented on specialised maps. Isotherms are drawn on them, i.e. lines connecting all points with the same temperature. These maps show the places with higher and lower temperatures.

TRAINING SECTION

Task 1. During the summer months the roofs of the houses and the road surfaces are heated to temperatures higher than 60 ° C. Can you explain this fact using the data in the table above?

.....

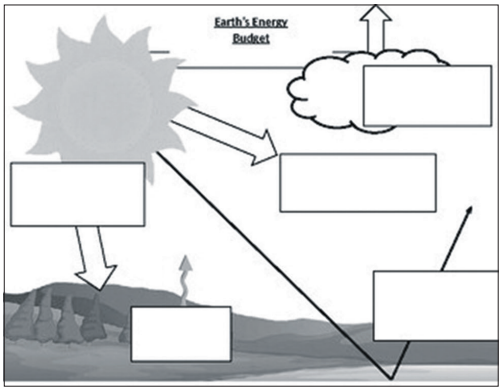
.....

TRAINING SECTION

Task 2. Watch the video and fill in the table for reflection abilities of objects.

Surface	Albedo %	Surface	Albedo %
	85-90%		10-20%
	30-50%		5-10%

Task 3. Put the numbers in the boxes.



1. Direct radiation 2. Absorbed radiation 3. Reflected radiation 4. Diffused radiation 5. Terrestrial radiation

Task 4. Taking into account the value of the temperature gradient, calculate the air temperature in Pirin hut (1640 m above sea level), Banderitsa hut (1810 m above sea level) and Bezbog hut (2236 m above sea level). if the temperature in Bansko (925 m above sea level) is 11 ° C

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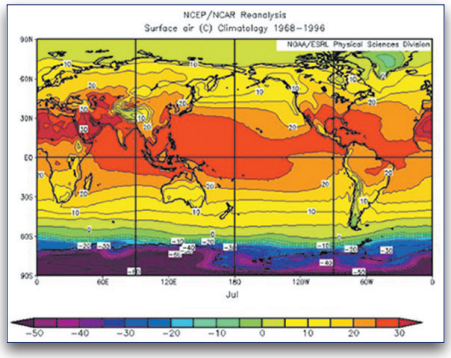
Task 5. Examine the isothermal map of the world. Indicate two countries for each of the following isotherms (the 10 ° C, 20 ° C and 30 ° C isotherms) which pass through these countries.



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Task 6. Read the text, find the location of the cities on the map and explain the differences in their climatic characteristics.

The Norwegian city of Bergen is located at a latitude of 60 ° 39 '. The average annual temperature is 7.7 ° C. During the coldest winter nights, temperatures stay just below 0 ° C. On the other hand, the summer is not hot at all, and the average maximum temperatures for July and August are 17-18 ° C. The Russian city of Kazan is located a little further south and has a latitude of 55.8 ° C. The climate here is much colder. The average annual temperature is 4.6 ° C. The winter is frosty, the average night temperatures for the coldest months are - 13 ° C. At the same time, the summer is warmer as the average maximum temperature for the warmest month, July, reaches 25.5 ° C.

2.4. EVAPORATION, HUMIDITY AND PRECIPITATION

BASIC TERMS

relative humidity; absolute humidity; evaporation; condensation; condensation level ; cumulus - nimbus clouds; stratus- nimbus clouds; isochiettes

1. Evaporation

Heating of air is the main cause of water evaporation. This is the process by which water is converted into water vapour. Evaporation depends on air temperature. As the temperature rises, evaporation also increases. Another important factor is the amount of water. Evaporation is the greatest over the oceans and the least over deserts, despite the high temperature.

2. Humidity

The term humidity refers to the amount of water vapour in the air. The amount of water vapour that enters the air increases with increasing temperature. When it reaches its maximum capacity at a certain temperature, the air becomes saturated because it cannot absorb more steam. The air cools with height. As the saturated air cools, water vapour liquefies. This process is called condensation, and its consequence is the formation of clouds that contain water droplets and ice crystals. The height at which water vapour liquefies is called the condensation level.

3. Clouds and precipitation

Clouds are different types. According to the height they can be high, medium, low, and according to the shape cirrus, stratus, cumulus and nimbus. Precipitation is caused by nimbostratus and cumulonimbus clouds.

Clouds participate in the water cycle by returning evaporated water vapour to land in the form of precipitation. Different types of precipitation are known. Depending on the place of formation, precipitation is vertical and horizontal. Rain, snow, hail, sleet are defined as high precipitation. Frost and dew are horizontal types of precipitation as they form on the earth's surface as a result of water vapour condensation. According to the physical state, they are liquid and solid. Most precipitation falls on ocean coasts and mountain slopes, which impede the movement of moist air masses.

Their geographical distribution is presented on specialised maps, where places with the same precipitation are connected by lines called isochioetas.

Precipitation is closely related to some phenomena that are considered unfavorable from an economic point of view. Such are the droughts and excessive rainfall that cause floods. Hail and frost often cause economic damage.

TRAINING SECTION

Task 1. Read the text and write down two similarities and two differences concerning fog and clouds.

Fog is the smallest drop of water or ice crystals that accumulates in the form of a cloud above the earth's surface and reduces visibility. The different types of fog are classified according to the forming factors and are divided into cooling and evaporation mists. Cooling mists in turn include radiation and advection mist. Radiation fog is formed due to the cooling of the earth's surface after sunset. Therefore, the radiation mist appears at night and dissolves shortly after dawn. Advection mist occurs when, in the process of moving air masses, moisture from the air passes through cold surfaces. This type of fog is usually found over the sea.

	similarities	differences
cloud		
fog		

Task 2. Examine the table. Explain why some cities receive large amounts of rainfall and others significantly less.

City	precipitation mm	City	precipitation mm
New York	1269 mm	Tokyo	1529 mm
Buenos Aires	1236 mm	Budapest	593 mm
Beijing	577 mm	Salt Lake City	453 mm

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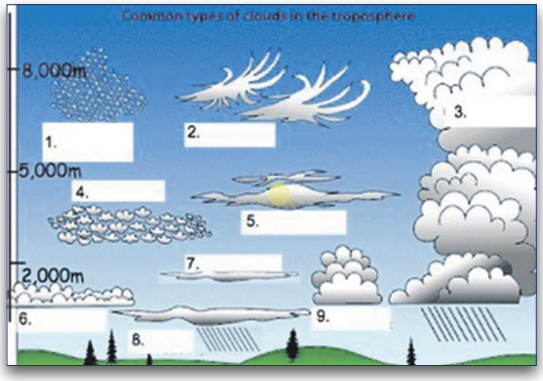

Task 3. Watch next video and fill the number of the different kinds of clouds:

Cirrus_____

Cirrocumulus_____

Altostratus_____

Altocumulus_____

Nimbostratus_____

Stratocumulus_____

Stratus_____

Cumulus_____

Cumulonimbus_____

2.5. GENERAL ATMOSPHERIC CIRCULATION. CYCLONES AND ANTICYCLONES

BASIC TERMS

air masses; atmospheric front; cyclone; anticyclone; trade winds; monsoons

1. Air masses and atmospheric fronts

Weather has a strong influence on each of our activities. By weather we understand the current state of the atmosphere of a place. It is strongly influenced by air masses. They are large volumes of air with a certain temperature and humidity. These properties depend on where the air masses form. They can be equatorial, tropical, temperate and polar. Depending on the temperature they are hot and cold, and depending on the moisture content - dry and humid. When hot and cold air masses meet, an imaginary dividing line called a front is formed between them. A cold front is formed when a cold mass reaches warm air. In the warm front, warm air catches up and displaces the cold air.

2. Cyclones and anticyclones

Cyclones are low-pressure air vortices in the centre. Cyclones in temperate latitudes have a hot and cold sector and fronts that separate them. They bring rainy weather. In the tropics, tropical cyclones, called hurricanes or typhoons, form. They move at high speed, carry storms and torrential rains and often cause economic and domestic damage. Anticyclones are huge air formations with high pressure in the center. The weather in the anticyclone is sunny and without precipitation.

3. Global atmospheric circulation

The weight that atmospheric air exerts on the earth's surface is called atmospheric pressure. It depends primarily on the temperature. Cold air is heavy and causes high pressure. Warm air is light and causes low atmospheric pressure. The global distribution of the atmospheric pressure is the cause of the general atmospheric circulation. At the equator and in the temperate latitudes the pressure is low. It is high above the poles and the tropics. Thus, three circulation zones are formed with constant air movement and formation of zonal winds. Trade winds blow between the tropics and the equator. There is no wind around the equator. The zone of westerly winds is in the temperate latitudes, where the circulation is driven by cyclones and anticyclones. Polar winds blow from the poles to temperate latitudes. The monsoons are also zonal winds.

TRAINING SECTION

Task 1. Some of the largest deserts in the world such as the Sahara, the Kalahari, the Arabian Desert and the Chihuahua are located around the tropics. Consider whether it is logical to link the existence of these deserts to the general atmospheric circulation. Justify your answers.

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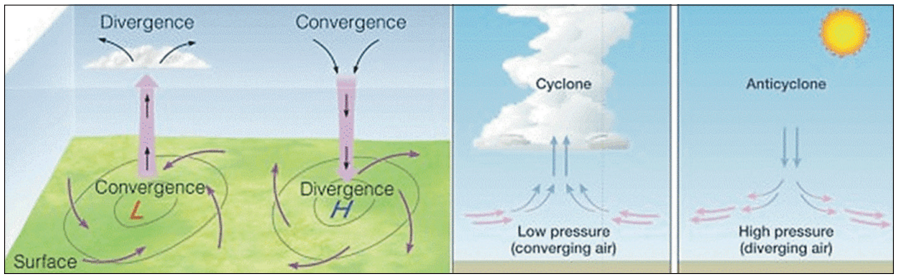
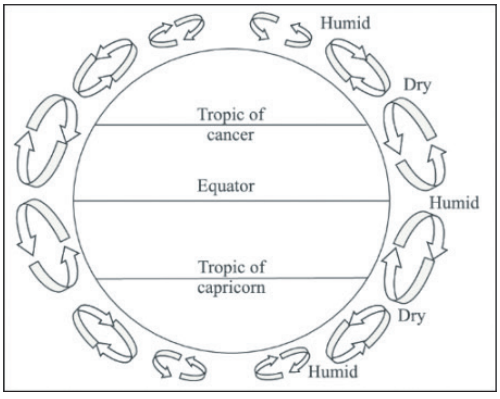
TRAINING SECTION

Task 2. Look at the picture and fill in the table with the differences between a cyclone and an anticyclone.



	Pressure	Vertical movement	Horizontal movement	Weather
Cyclone				
Anticyclone				

Task 3. Look at the animation and mark the winds from the general atmospheric circulation. Write down the reasons that cause pressure differences between the equator, the tropics, temperate latitudes, and the poles.



Reasons

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Task 4. Read the text describing one of the scenes from the movie "Forest Gump" (1994, directed by Robert Zemekis) and answer the questions:

• Which of the zonal winds is associated with the climate described by Forrest Gump?

……

• The action takes place in the summer and prolonged rain floods the entire territory of Vietnam. What are the reasons?.....

The good thing about Vietnam was that there was always a place to go and something to do. One day it started raining and it did not stop for four months. We saw every kind of rain there is. Drizzle and soaking rain and torrential and dense rain. Rain that flew in sideways, and sometimes the rain seemed to come straight up from underneath. It rained even at night. One day, as we were hiking as usual, it was as if someone had stopped the rain and the sun rose. "Forest Gump"

2.6. CLIMATE-FORMING FACTORS. CLIMATE ZONES AND AREAS

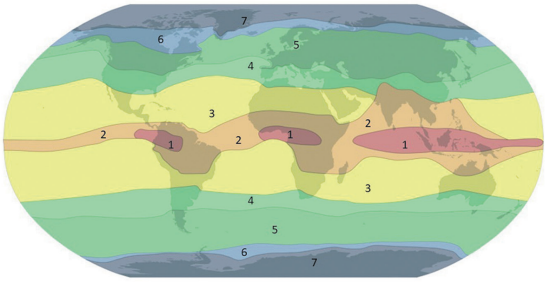
BASIC TERMS

climate change

1. Factors of the climate

Climate is the long-term weather regime of a place. It is formed under the influence of several groups of factors. Radiation factors are of paramount importance. The temperature distribution is a direct consequence of the amount of solar radiation between the equator and the poles. The influence of the circulating factors is expressed by the prevailing winds and the oceanic and continental air masses carried by them. Cyclones and anticyclones redistribute heat and moisture. Among the geographical factors, the underlying surface is the most important. Proximity to the oceans and seas determines the more humid and mild oceanic climate. Warm currents further contribute to a mild climate, and cold currents change it to a drier and harsher one. Inland, the climate is colder in winter, hotter in summer and with less rainfall. These are typical features of the continental climate. The relief is also included in the geographical factors. The plains and lowlands allow air masses to penetrate while the mountains stop them. As altitude increases, temperatures decrease and precipitation increases. As you already know, more precipitation falls on the mountain slopes which meet the air masses.

2. Climate zones



1.Equatorial 2.Subequatorial 3.Tropical 4.Subtropical 5. Temperate 6.Subpolar 7.Polar

Climate zones are extensive strips with a uniform climate. They alternate from the equator to the north and south poles. The main climatic zones are equatorial, tropical, temperate and polar. The transition zones are subequatorial, subtropical and subpolar. Air masses are leading in the naming of zones. The transition zones are dominated by air masses in the neighboring zones - colder in winter and warmer in summer. Tropical, subtropical and temperate climates can be of oceanic and continental type. For example, the subtropical zone is characterised by the monsoon climate along the east coast of Asia and the Mediterranean in southern Europe. The high mountains are characterised by a mountainous climatic area. Its lower limit is higher in the zones near the equator. Information on climate zones and areas is presented through climatograms, climate maps or tables.

3. Climate changes

The climate is changing under the influence of natural processes and human activity. Deforestation and the release of gases into the atmosphere increase the greenhouse effect. This leads to rising temperatures, melting glaciers and rising ocean levels. Most scientists agree that if we reduce energy consumption, we will achieve better control over global warming.

TRAINING SECTION

Task 1. Fill in the table using the interactive map and the data for selected stations:

Climate zone Station	Station	Annual temperature	Months with maximum and minimum of temperature	Annual precipitation	Months with maximum and minimum of precipitation
equatorial					
subequatorial					
tropical					
subpolar					
polar					

Task 2. Look at the photos and recognize the seasons. Explain the reasons for climate differences. What factor determines these climatic contrasts?

India

India

Kenya

Kenya

Task 3. The Russian polar station Vostok is one of the most isolated scientific stations in Antarctica. The average annual temperature is -55.2 ° C, the annual rainfall is only 22 mm. The city of Sabha is located in Libya. The average annual temperature is about 23 ° C, the annual rainfall is only 9 mm. Scarce rainfall is indicative of desert conditions, although Sabha is in the tropics and Vostok is in the polar climate zone. What is the reason for the extremely low rainfall in both stations? ……..

Task 4. The Swedish teenager and eco-activist Greta Tumberg is known for her calls for urgent efforts to tackle climate change. Discuss Tumberg's words at the World Economic Forum in Davos, Switzerland.

"We call upon the world's leaders to stop investing in the fossil fuel economy. We don't have time to wait any longer."

2.7. HYDROSPHERE. WORLD OCEAN

BASIC TERMS

Solubility; heat capacity; salinity

1. Hydrosphere

The hydrosphere is the water shell of the Earth. A huge part of the water is concentrated in the oceans (97.2%) and glaciers (2.15%). Less than 1% of the water is usable.

2. Water properties

Water has several unique properties.

Water dissolves minerals from rocks. Therefore, it contains dissolved minerals, which are carried by water currents.

At a temperature between 0 ° C and 100 ° C, water exists in a liquid state. Water has the ability to absorb and retain a large amount of heat. The property is called heat capacity and is of great importance for warming the air above the water.

When the water freezes, it increases in volume by about 9%. In winter, due to its lower density, the ice remains on the surface of the water which begins to freeze from top to bottom. This feature is of great importance for the survival of organisms.

3. The World Ocean. Properties of ocean water

The world's oceans cover 71% of the Earth's surface. The Pacific Ocean is the largest and deepest, followed by the Atlantic. The Arctic Ocean is the smallest. Temperature and salinity are the most important properties of ocean water. The temperature of the ocean depends on latitude, seasons, temperature of currents. The water freezes at a temperature of -1.9 ° C. The average annual temperature of ocean water is 17.5 ° C.

The water is heated by the sun, so the temperature decreases from the equator to the poles. At the equator the water temperature is 27-30 ° C, and at the poles 0-2 ° C. Much of the accumulated heat is used to heat the air and evaporate. Thus the Earth is protected from overheating during the day and cooling during the night. Winters over the oceans are milder and summers are not as hot. The great evaporation over the oceans leads to the formation of humid air masses and precipitation.

Salinity means the amount of salts dissolved in water. It is measured in ppm. Water contains different types of salts, the highest being the concentration of sodium chloride. It also contains gases known from the atmosphere - nitrogen, hydrogen, oxygen, carbon dioxide. Salinity depends on precipitation and evaporation. Therefore, salinity is the highest around the tropics. At the equator, salinity is lower due to heavy and frequent rainfall. Salinity is the lowest at the poles. The concentration of salts is lower along the coasts, where large rivers flow into the oceans.

Two thirds of the world's population live on the coasts of the oceans, which has greatly affected the way of life. Salt and various minerals are extracted from the water - manganese, magnesium, copper, nickel, cobalt.

Ocean water pollution is a major problem. It threatens the lives of many organisms that are valuable for people's livelihood.

TRAINING SECTION

Task 1. Watch the video and discuss the main problems related to water use.

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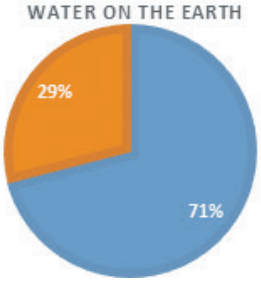
Task 2. Watch the video and label the parts of the diagrams.



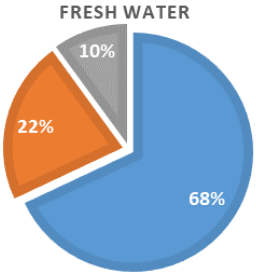
71% .....

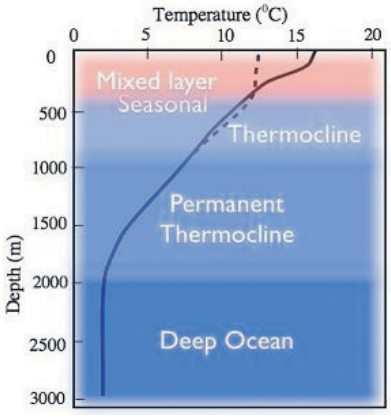
68% .....

22% .....

29% .....

10% .....





Task 3. Examine the diagram. Describe and explain the changes in temperature at depth.

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Task 4. After studying the given information and taking into account the location of the seas on the map of the world, fill in the column for salinity using the given suggestions. 34.5 ‰, 8 ‰, 41 ‰, 18 ‰

Sea	Location	Depth	Salinity
The Red Sea	12° N и 27° N	3039 m	
The Baltic Sea	54° N и 65° N	470 m	
The Coral Sea	10° S и 20° S	9147 m	
The Black Sea	40° N и 46° N	2245 m	

2.8. OCEAN AND SEA WATER MOVEMENTS

BASIC TERMS

wave elements; force of attraction; centrifugal force; tidal force

The water in the world's oceans is in constant motion due to three different movements: ***waves, currents, tides.***

1. Waves

Waves are oscillating movements of water particles from the ocean surface. They are formed by wind or earthquakes. The highest point of a wave is called the crest, and the lowest - the base. The distance between the crest and the base is the height of the wave. The wavelength is the distance between two adjacent crests or bases. In wind waves, the energy received from the wind is transmitted to the water particles which perform circular motions. In hurricane winds, the height of the wave can reach 20 m. In earthquakes, very high waves called tsunamis are formed. Towards the shore their height can exceed 30 m. Therefore, these waves carry great destructive force. The wave moves in a horizontal direction as the water particles transmit their vibrations to each other. In shallow water, the wave slows down, the crest accelerates and the wave breaks on the shore. The place where this happens is called the surf.

2. Tides

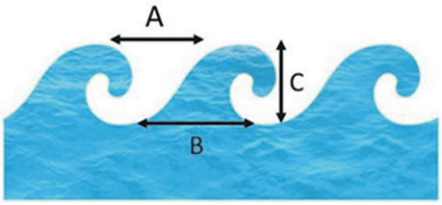
Tides are oscillating movements that change the level of the ocean. During high tide, the level rises and water floods the land. At low tide, the water recedes because the level drops. Each tide lasts 6 hours, 13 minutes, so within 24 hours and 50 minutes two tides alternate. The reasons for the tides are the gravitational force of the Moon and the Sun and the centrifugal force of the Earth. The moon is significantly closer to the Earth than the Sun and therefore has a much more powerful tidal force. A high tide forms in the oceans on the side of the Earth close to the moon. At the same time, a tide forms on the opposite side of the Earth, where the centrifugal force is more powerful. When the Moon and the Sun are in line with the Earth, their attractive forces unite and the highest tidal wave occurs. Tidal waves are important for shipping, and their energy can be used to produce electricity.

3. Currents

Currents are translational movements of ocean water. Wind is the cause of the formation of surface currents, and the density of water is the cause of deep currents. Currents are diverted along the continents and under the influence of the deflecting force from the rotation of the Earth. Wind currents are formed under the influence of trade winds, monsoons and westerly winds. Compensation currents return water from large latitudes to the equator. Due to differences in water temperature, currents can be hot and cold ones. Warm currents (Brazil, Mozambique, Eastern Australia, etc.) cause rainfall and warming on the eastern shores of the continents.

Cold currents (Peruvian, Bengal, etc.) are the cause of the dry climate on the west coasts. Currents are important for shipping and fishing, as the places where cold currents mix with ocean water have the greatest fish wealth. Currents sometimes have an adverse effect, causing drought, heat or flooding.

TRAINING SECTION



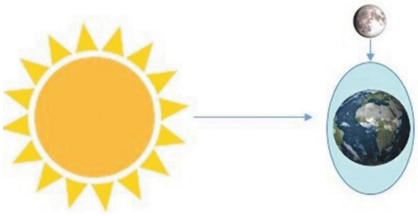
Task 1. Label the elements of the wave:

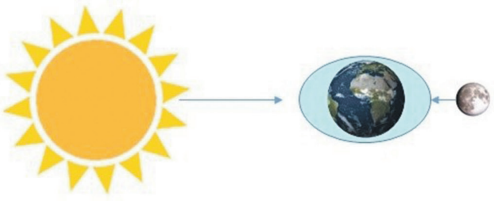
A……

B……...……...

C……...……...

Task 2. Spring tide is a term used for the highest tidal wave, neap tide is the term for the lowest tidal wave. Fill in the blanks and explain the choice.





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Task 3. During a tide, the famous wave called Pororok enters the Amazon River. Its height is several meters and in recent years it has become a desirable attraction for surfers. An Italian thrill-seeker arrived in the city of Makapa late in the evening and learned that the last tide was at 18.34. The surfer calculated the hours of the two tides for the next day and decided to ride the wave during the second one.

What time will the second wave be?

……

……

Task 4. Examine the map of ocean currents. Do you find a connection between them and the Namib Deserts on the west coast of Africa and the Atacama Coast on the west coast of South America? Justify your assumption.

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2.9. SURFACE WATERS. GROUNDWATER. LAKES AND SWAMPS. GLACIERS

BASIC TERMS

tectonic lakes; groundwaters; artesian waters; glaciers

1. Groundwater

Inland waters include groundwater, lakes, swamps, glaciers and rivers. Groundwater is formed in the upper part of the earth's crust from the infiltration of rainwater or river water into the permeable rocks (gravel, sand). Groundwater moves along the slope of the rock layer until it reaches the earth's surface and forms springs. Groundwater is divided into unconfined, artesian, mineral and karst. Unconfined water lies shallow above the first impermeable layer. They are most often formed near rivers and at the foot of mountains. Artesian (pressure) waters lie deeper, between two impermeable layers. Due to the pressure created, they come to the surface like fountains. Carbonate rocks, such as limestone and marble, are easily destroyed by rainwater. In the formed cavities, waters called karst waters are collected. Mineral waters contain dissolved minerals. They can be hot, warm and cool.

2. Lakes and swamps

The lakes are formed in relief depressions called lake basins. Lakes from which rivers flow are called open lakes. Closed lakes are the lakes that do not give rise to rivers. Based on their origin, there are several types of lakes. Tectonic lakes are formed by sinking of the earth's crust and the rupture of layers. Such are the Caspian Sea and Lake Baikal. Volcanic lakes occupy the craters of dormant volcanoes. Glacier lakes are formed by molten water in depressions left by the glacier. Such are Lake Ladoga, the lakes in the Alps. Karst lakes are formed in limestone and marble. Coastal lakes are lagoons (bays separated from the sea / ocean) and firths (flooded estuaries). The coastal lakes are salty and the other types are freshwater. Swamps are shallow pools overgrown with vegetation and are formed in places with an excessively humid climate or shallow groundwater. Most swamps are formed in the taiga (boreal forest), the tundra and along large rivers such as the Amazon, the Congo, the Mississippi, the Ganges.

3. GLACIERS

Glaciers form in the high parts of the mountains and near the poles of the continents, where more snow falls in winter than melts in summer. They are formed above the so-called snow line. The glacier is fed by the precipitation at the top. The snow thickens and turns to ice. The glacier moves under its weight. The ice mass melts at the bottom, where the glacier descends below the snow line. It varies in latitude and altitude. Glaciers can be mountainous and continental. Mountain glaciers occupy the high parts of the mountains, where moving along the slope they form new forms of relief such as river valleys. The largest mountain glaciers are in the Himalayas. Continental glaciers cover Antarctica and Greenland. They reach a thickness of 3 km and are 96% of all glaciers on Earth.

4. Significance

Inland waters are an important element of the water cycle. Groundwater is used for water supply and irrigation. Mineral and thermomineral waters have healing properties. They are also used in the heating of buildings and greenhouses. The lakes are used for shipping, fishing, water supply, electricity generation and salt production. Glaciers create a specific natural habitat for living organisms.

TRAINING SECTION

Task 1. In the past, when there was no central water supply, wells were dug in most rural yards. In your opinion, what type of groundwater was used in these wells?

……

Task 2. Identify the type of lakes shown.

Baikal, Russia

……

Glenrock, Australia

……

Geneva, Switzerland

……

Cenote, Mexico

……

Task 2. Fill in the missing words and answer the questions.

Lake Pomorie is a coastal lake, separated from the sea by natural sandy hair. The lake is ……..., as the depth does not exceed 1.4 m. Due to the great ……..……., which reaches 70-80 ‰, the lake is used for salt extraction.

•Why is the salinity of the lagoon three times higher than that of the Black Sea? ……

……

•What other characteristic of Lake Pomorie facilitates salt production? .....

.....

Latitude	Height of the snow line		Latitude	Height of the snow line	
	North	South		North	South
0-10°	4675 m	4700 m	40-50°	3170 m	1700 m
10-20°	5475 m	5780 m	50-60°	2500 m	890 m
20-30°	5250 m	5300 m	60-70°	1150 m	0 m
30-40°	4900 m	3200 m	70-80°	790 m	0 m

Task 3. Explain the change in the height of the snow line. Comment on the differences between the southern and northern hemispheres.

2.10. SURFACE WATER. RIVERS

BASIC TERMS

water discharge; river outflow; river system; river regime

1. Rivers

Rivers are formed by the confluence of streams and streams formed by rain or meltwater flowing down mountain slopes. Due to the influence of the relief and the steepness of the slope, mountain rivers are fast and cut into deep river valleys. Plain rivers flow slowly into wide but shallow valleys. The climate affects the amount of water and river regime during the year. The deepest rivers are typical of areas with heavy rainfall.

2. River system

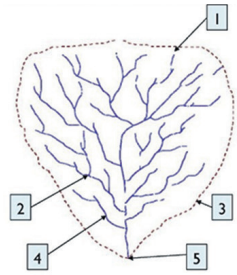
The river system includes the main river and its tributaries (the rivers that flow into it). A catchment area is the entire territory from which the river system collects its waters. The watershed is the border between two catchment basins and it passes along hills in the relief. Each river flows in a river bed, with the speed being the lowest at the bottom, where there is friction with the banks. The vertical section of the river is called the cross section. The volume of water that passes through this cross section per unit time is called water discharge and is measured in cubic metres for second. The water discharge varies according to the profile of the river and the seasons. The amount of water that a river carries to a certain body of water each year is called river flow (runoff). It is measured in cubic metres or cubic kilometres. The distribution of river flow during the year is an important indicator of the river regime. This distribution depends mostly on the climate. The annual river outflow of the Amazon River is the largest.

3. River regime

River feeding is determined by the source from which the river originates. When most of the water comes from underground sources, the feeding is called underground. Rain feeding is typical of rivers in the equatorial and tropical regions. The rivers in the areas with cold climate have snow or glacial feeding. There are rivers that have mixed feeding due to the predominance of different sources in different seasons. The river regime is manifested not only by the change of the water discharge but also by the change of the temperature, the feeding, the chemical composition of the water. Usually the river regime is expressed by the periods of high river level - high water, and low level - low water. Depending on the climatic features and the type of feeding, the rivers are characterised by high water during different seasons.

TRAINING SECTION

Task 1. Match the number on the map to these 5 river features:



Watershed ……..……

Tributary ……..……

Source ……..……..……

Confluence ……..……

Mouth ……..……..……

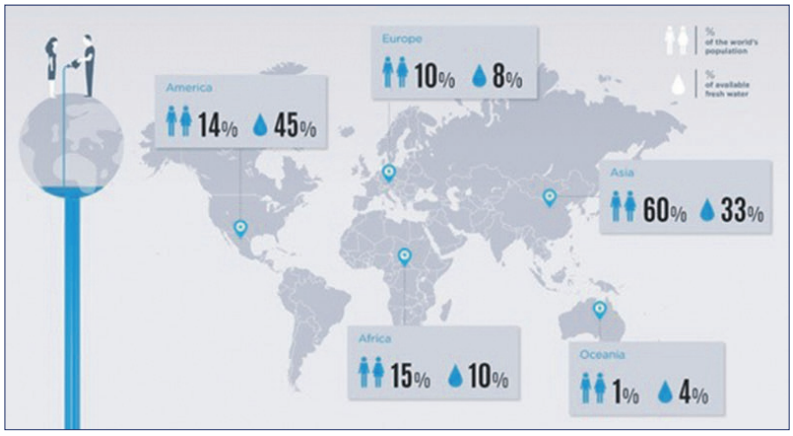
Task 2. Study the hydrograms of the rivers Lena, Ganges, Niger Volga. Take into account the geographical location and climate of the territories through which they flow. Suggest a type of feeding for each of the rivers.

Lena ……...… Ganges ……..

Niger ……..…… Volga …….....…….....

Task 3. Discuss the message of the cartoon using the following guidelines:

1. Identify the main topic.
2. Describe the meaning of each of the symbols you recognise (e.g hourglass, desert, etc.)
3. What stereotypes (models) of human behavior are depicted and by what means of expression.
4. Determine the emotional impact of the cartoon on yourself.
5. Express your personal (and team) position on the problem portrayed through the power of fine art.



Task 4. Put a title to the image. Comment on the territorial differences.

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2.11. LITHOSPHERE. COMPOSITION OF THE EARTH'S CRUST. PLATE TECTONICS

BASIC TERMS

Asthenosphere; effusive and intrusive rocks; lithosphere plates; middle ocean ridges; ocean trenches; island arcs

1. Inner structure of the Earth

Earthquakes produce seismic waves that travel at different speeds depending on the density of the earth's interior through which they pass. Through these waves the density of each layer is calculated and information about the internal structure of the Earth can be obtained.

In the internal structure of the Earth, we can distinguish the Earth's crust, mantle and core, which have different composition and physical properties. The Earth's crust is the thinnest layer. At depth, the temperature rises and at the lower limit of the Earth's crust it is about 400 ° C. Several chemical elements are involved in the composition of the Earth's crust. Complete Task 1. There are two types of crust. The continental type, which makes up the continents of the Earth, is thicker (30-70 km), but with a lower density. It consists of two superimposed layers - basalt and granite. The oceanic type of crust forms the bottoms of large bodies of water. It is thinner (5-8 km), but with a higher density. It consists of a basalt layer and a sedimentary layer. The mantle is located between the Earth's crust and the Earth's core and its mass is about 2/3 of the total mass of the Earth. We define the upper solid part of the Earth's mantle and the Earth's crust as the lithosphere. It is divided into several lithosphere plates.

The asthenosphere is located in the upper part of the mantle below the lithosphere. The temperature in this layer reaches 1600 ° C, due to which the substances in the asthenosphere are in a plastic state. The slow movement of substances in the asthenosphere is the reason for the displacement of the lithosphere plates located on it. The lower mantle, which reaches the core, is about 650 km below the Earth's surface. It is made of iron, magnesium and silicon, and its temperature rises with depth.

The core is between the lower mantle and the center of the Earth. It represents about 1/3 of the total mass of the Earth. The outer core, which is composed mostly of iron, is in a liquid state. The inner core is solid and consists of iron and nickel. It is characterized by the highest density in the internal structure and the highest temperature - about 5000 ° C.

2. Composition of the Earth's crust

The Earth's crust is made up of three types of rocks, different in the way of formation, composition, structure. Magmatic rocks are formed when the magma solidifies. They are intrusive when the magma is solidified in the Earth's crust (the most common type is granite) and effusive - when the magma solidifies on or near the Earth's surface (such as basalt). Sedimentary rocks are formed by the deposition of previously destroyed rocks or chemical elements in water bodies. The precipitated materials are called sediments and are compacted under the pressure of the upper layers until they harden.

Sands and limestones are examples of sedimentary rocks. Metamorphic are the rocks that are transformed into the Earth's crust under the influence of high pressure and high temperature. They are altered magmatic or sedimentary rocks. For example, granite is transformed into gneiss, limestone into marble, and sandstones into quartzite.

3. Plate tectonics

For the first time at the beginning of the last century, the German scientist Alfred Wegener suggested that millions of years ago the continents were part of a common supercontinent called Pangea. In later geological history, Pangea split into two continents, Gondwana and Laurasia, which subsequently disintegrated into the modern continents. Wegener developed a theory of the drift or navigation of continents on the rocks of the ocean floor. The scientist failed to convince his colleagues because he could not find an explanation for the movement of the continents. It was not until the middle of the century that differences in the oceanic and continental types of the Earth's crust were discovered as well as evidence of the movement of lithosphere (tectonic) plates. The theory of tectonics of plates moving on the plastic asthenosphere appears.

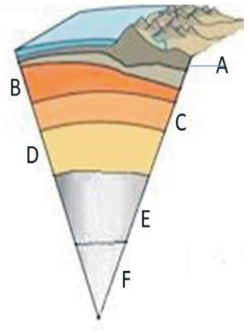
The Earth's crust is made up of tectonic plates of different sizes. They differ in composition and speed. The plates move due to the uneven distribution of heat energy inside the Earth. The so-called convective cells that raise and lower substances and move lithosphere plates are formed in the earth's mantle.

The plates interact along the boundaries that separate them. There are three movements of the plates relative to each other. *Divergent boundaries*. When two plates are separated, a gap is formed, through which magma is poured and a new type of Earth's crust is formed. In this way the Middle Ocean Ridges were created, which form a continuous chain along the bottom of all oceans. *Convergent boundaries*. When ocean and continental plates collide, the denser one sinks under the lighter one. Part of the sunken plate melts and magma is poured on the surface. Deep ocean trenches are formed, and on the periphery of the continental plate the rocks are torn, magma is introduced and chain mountains are folded. In the event of colliding of two oceanic plates, island arcs are formed by volcanic islands that surround the deep ocean depressions. High chain mountains are also formed when two continental plates collide.

The horizontal sliding of two plates causes friction between them and earthquakes.

TRAINING SECTION

Task 1. Label the picture with the layers of the Earth's internal structure.



A……..
B……..
C……..
D……..
E……..
F……..

2.12. ENDOGENIC RELIEF-FORMING PROCESSES

BASIC TERMS

relief - forming processes; anticline; syncline; horst; graben

1. Tectonic movements and structures

The formation of relief is a result of the interaction of endogenous (internal) and exogenous (external) earth forces. Endogenous processes are caused by the internal energy of the Earth, and the movements of the Earth's crust, volcanoes and earthquakes are manifested. They form the large landforms of the ocean floor and continents. The movements of the Earth's crust are called tectonic movements, and there are three types of them. **Oscillatory movements** are slow but long-lasting (thousands or millions of years) rising and falling of the earth's crust. The folding and fault movements are fast and cause the layers in the Earth's crust to rupture.

Folding is caused by the pressure experienced by the layers when the plates collide. The rocks bend, but do not tear. A convex fold called the anticline or a concave fold, the syncline, forms.

In **fault** processes, rock blocks move relative to each other and a crack called a fault is formed between them. The rock layers are torn, and depending on the movement of the blocks (horizontal, vertical or at an angle) fault structures are formed. A horst is a raised block between two sunken rock blocks. A grab is a sunken block between two raised rock blocks. The blocks are separated by faults. Faults are typical of the boundaries of lithosphere plates.

2. Volcanoes

Volcanoes occur when magma reaches the earth's surface through cracks in the earth's crust. The fast-moving lava reaches far from the crater and forms a shield volcano with slight slopes. Dense and slow-moving lava solidifies near the crater, forming a cone with steep slopes. Volcanoes are active (often erupting), dormant (rarely erupting) and extinct.

3. Earthquakes

Earthquakes are caused by sudden movements of the earth's surface, caused by the movement of rock blocks along the faults in the earth's crust. The place where the earthquake occurs is called the hypocenter, and the point above it on the earth's surface - the epicenter. The energy from the hypocenter is propagated by seismic waves. They are recorded with a seismograph and are used to determine the strength of the earthquake. Two scales are used to measure the strength of earthquakes. The degree of destruction is assessed on the scale of intensity, popular as the Medvedev - Sponheuer and Karnik scale. It has twelve degrees. The released energy is estimated on the Richter magnitude scale. Each subsequent degree shows a tenfold increase in the strength of the earthquake. Almost all active earthquakes and volcanoes are located on the boundaries of the lithosphere plates.

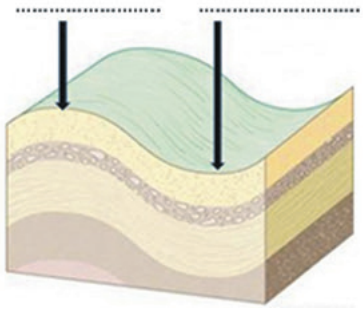
Earthquakes are the cause of large-scale destruction and many casualties. Therefore, it is important to follow a few basic rules in the event of an earthquake. In the rooms we should be away from windows and falling objects, and outside - away from buildings. It is important to hide under something (such as under a table or door frame) that will protect us from falling objects.

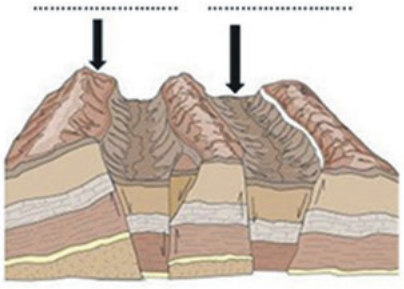
TRAINING SECTION

Task 1. Fill in the table for tectonic movements.

Tectonic movements	Speed	Direction of movement	Shapes
Oscillating			
Faults			
Folds			

Task 2. Identify and label the geological structures:





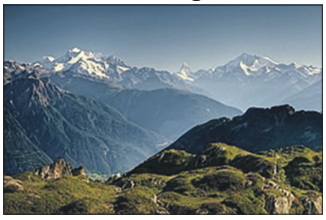
Task 3. Look at the photos. By which endogenous process were the mountains formed? Guess which lithosphere plates were involved in their formation.

The Carpathians

……..

……..

The Alps



…….....

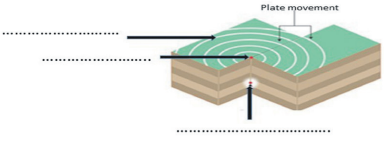
…….....

The Pyrenees

……..…

……..…....

Task 4. Identify and label the elements of an earthquake:



2.13. EXOGENIC RELIEF-FORMING PROCESSES

BASIC TERMS

weathering; erosion; exaration; abrasion; karst process; aeolian process

Exogenous processes are associated with external earth forces. They destroy or change the forms formed by endogenous processes. As a result, interesting rock shapes are formed. They depend on the peculiarities of the climate, as the energy for their activity comes from the Sun.

1. Rock weathering

Rock weathering is an exogenous process in which mechanical or chemical transformation of rocks occurs. Physical weathering dominates in areas with dry or cold climates. It occurs when large temperature amplitudes cause periodic expansion and contraction of the rocks and thus gradually destroy them. Another reason is the freezing and thawing of water in rock crevices. Frozen water increases its volume and causes the rocks to collapse. During physical weathering, rocks break down into large pieces of rock, gravel or sand. During chemical weathering, the chemical composition of the rocks changes. This is how rock salt and gypsum were formed. As the roots of the trees grow in the rock crevices, they also cause the rocks to break down, which is called biological weathering. This type of weathering also includes rock damage caused by organic acids released by plants and animals. Under the influence of their weight, the weathered materials descend on the slopes of the mountains or places with sloping relief. Rockslides are formed when earth masses and rock fragments move along the slope and accumulate at the foot of the mountain and landslides, when the earth masses slide on a wet rock base. Rockslides and landslides are natural risks as they can bury roads, buildings and even entire villages.

2. Erosion

Erosion is the destructive and accumulative activity of running water. It depends on the inclination of the slope and the speed of the running water. At a large slope the water destroys the rocks, and at a small slope it accumulates the destroyed materials. Accumulated materials are called alluvium. Water from falling precipitation or rapidly melting snow forms temporary streams that cause erosion on bare slopes with soft rocks. In this way rock pyramids are formed. In the upper reaches of the rivers, the speed of the water is high enough to destroy and transport the rock fragments. Erosion makes riverbeds deep and forms waterfalls, gorges and canyons. The gorges are river valleys with steep slopes and narrow bottoms. They are formed where the river cuts into a rising mountain. The canyons are deep river valleys with step-shaped slopes. They are formed when rivers cut into plateaus built of horizontal or slightly folded layers. In the middle reaches, the rivers move more slowly and widen their valleys. When encountering barriers, river waters wind round the obstacle, forming bends called meanders. Erosion forms steps in the valleys called river terraces. In the lower reaches, river waters move very slowly, accumulating various materials in the alluvial lowlands. Rivers flow into seas or oceans through deltas and estuaries.

TRAINING SECTION

Task 1. Match the letter code of each factor to the corresponding type of weathering:
A. high daytime and low nighttime temperatures **B.** plants growing in the rocks
C. oxidation of rocks **D.** freezing of water
Physical weathering …… Chemical weathering …… Biological weathering…….

Task 2. Taking into account the factors from the first task, make an assumption about the type of weathering dominant:

A. In the tropics, where wide diurnal temperature amplitudes are reported ……..

B. In humid and warm subtropical regions ……

C. In mountainous areas where night temperatures are often negative ……

Task 3. The photos show sculptural ornaments that have suffered serious damage for about a century. What type of weathering do you associate the changes with? Can we also blame humans for this result?

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……..
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……...
……

Task 4. Watch the video and read the two information messages. Answer the questions.

"Heavy rains have triggered a major landslide in China's Sichuan province. More than 40 houses in the village of Sinmo have been buried. 140 people are considered dead or missing. "BTV, June 24, 2017

"A landslide, 800 meters wide, swept away 8 houses on Cape Kraknese in northern Norway. There were no casualties because the people were evacuated. Experts determine seismic activity as the main cause". Dir.bg, June 4, 2020.

• What are the main reasons for the activation of the landslides? ……...
.....
• Why are landslides dangerous natural processes?.....

Task 5. Write down the shapes of the relief. Underline those that were formed by destructive erosion.

The Iskar River crosses the Stara Planina chain and forms the longest…….. in Bulgaria.
…… .. of the Colorado River is formed in the horizontal sedimentary layers of the plateau of the same name.
……. is a curve of a river, called by the ancient Greeks after the river Meandres.
Canaima National Park in Venezuela became famous for the tallest…… Angel.

3. The karst process

The karst process is caused by the susceptibility of carbonate rocks, especially limestone, to dissolution by the carbonic acid contained in surface waters. The karst process leads to the formation of specific shapes on or below the earth's surface. Karst precipices or large holes form on the surface, and rivers or temporary streams penetrate through them. Caves with the characteristic stalactites, stalagmites and stalactons are formed underground.

4. Exaration

It is the result of the movement of the glacier, which leads to the creation of new destructive and accumulative forms. Traces of continental glaciers have remained in northern Europe and North America. Melted waters have formed lakes (the Great Lakes and the lakes in Finland), and the deposited materials have formed hilly sandy valleys and moraine banks. Mountain glaciers, located in already existing river valleys, form depressions called cirques. The materials destroyed by the glacial tongue are transferred and accumulated in new forms - moraines. After the glacier melts, alpine lakes are formed in the cirques. In place of the glacial tongue there is a wide valley with steep slopes, called a trough valley.

TRAINING SECTION

Task 1. At the initiative of the UN, 17-th June is the world day to combat desertification and drought. Discuss what causes deserts to expand and what the consequences will be for humanity.

5. Abrasion

Sea and ocean water also create destructive and accumulative forms. The destructive activity of waves is called abrasion. Strong volcanic rocks are difficult to destroy and rocky shores form in them. Cliffs form in the hard rocks. The waves pierce a niche in the cliff, and a rock arch in the peninsulas. When levelling the destroyed shores, abrasion terraces are formed. Sea water destroys or dissolves relatively easily the weak rocks in which it forms caves. The water carries the destroyed rocks, gravel and sand. When the sand accumulates, sandy beaches or sandy strips are formed in the sea, called sandy hairs. They block the bay and form lagoons.

6. The relief-forming activity of the wind

The relief-forming activity of the wind is typical of areas with a dry climate. Due to the scarce rainfall and high temperatures, no vegetation develops, and the bare rocks are exposed to intense physical weathering. The destroyed rock material is further destroyed by the wind. The wind destroys, transports and accumulates weathered materials. This activity of the wind is called aeolian. The destructive activity of the wind is a slow process. The destruction is caused by the sand particles carried by the wind. Rock mushrooms are popular aeolian forms. Dunes are accumulative forms of wind activity. They are sandy hills with a star shape (when the wind blows from different directions) and a crescent shape (when the wind blows from one direction). They are called barchans. Due to the wind, the dunes always move.

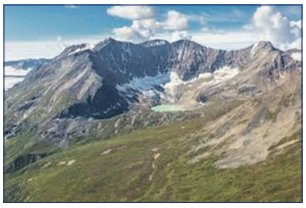
TRAINING SECTION

Task 2. Use arrows to draw logical connections:

abrasion	caves	cold climate
carbonic rocks	glacial erosion	cliff
cirque	coastal relief	karst

Task 3. Label the pictures with the names of the landforms. Describe their formation:

hanging valley

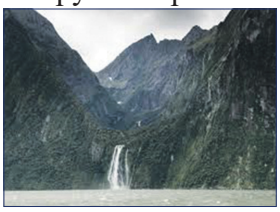


……

moraines

……

pyramid peak

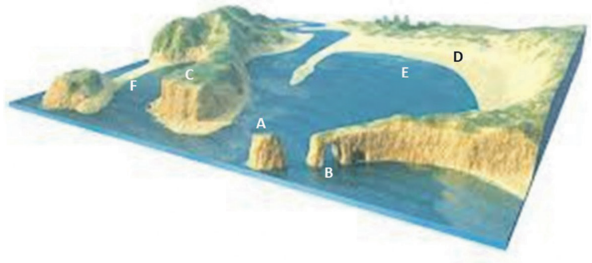


……

cirque

……

Task 4. Watch the video and label the landforms of abrasion:



A……

B……

C……

D……

E……

F……

……

……

……

Task 5. Compose a text, using the following words: stalactite, carbonic rocks, caves, dissolution, stalagmite, limestone, water, chemical activity.

Task 6. Both images show aeolian forms. Explain the difference in their formation.

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2.14. PEDOSPHERE. BIOSPHERE

BASIC TERMS

zonal soils; azonal soils; tundra soils; podzolic soils;

1. Soils

The soil consists of destroyed rock particles, organic matter, water and air. It has the property of fertility, which depends on the content of humus.

Soil is a product of the interaction between the geospheres. Rocks determine the composition and properties of soils. The thickness of the soil layer depends on the relief and the inclination of the slope. The climate controls the rate of soil formation. In warm and humid climates, the decomposition of organic matter is accelerated. Water carries or dissolves various materials and thus determines the chemical composition of the soil. Plants and animals are a supplier of organic substances that are processed by soil organisms.

The rock particles provide the minerals, which in turn represent 45% of the soil. Depending on the size of the rock fragments, soils can be categorised as clay, sandy or stony soils. Humus, which is formed by the decomposition of organic matter, is of utmost importance, although it makes up only 5% of the soil. Gaps or pores in the soil determine the permeability of soils and their water holding capacity. In addition to water, the pores can be filled with air. The soil structure is divided into horizons, different in colour, thickness, composition and properties. The uppermost horizon, denoted by the letter A, contains humus. The second horizon B contains less humus and clay materials. The third horizon C is composed of large pieces of rock.

Further down is the weathered rock base. The location and thickness of the layers determine the soil profile.

Soil types are divided into zonal and azonal. The zonal types are influenced by climate and vegetation and are arranged from the equator to the poles. Zonal soils are distributed in the mountains depending on the altitude and the changes of climate and vegetation. Azonal soils occur in different climatic zones and are formed due to specifics in the chemical composition of rocks or the composition of groundwater and surface water. Saline, swampy and alluvial-meadow soils are azonal. With their different fertility and composition, the soils favour the cultivation of different crops.

Zonal soils	Azonal soils
Lateritic, red brown, red and gray desert, chernozems, podzols, tundra soils	Rendzina, alluvial and swamp

2. Biosphere

The biosphere, in which living organisms are distributed, covers the upper part of the earth's crust, the hydrosphere, the pedosphere and the lower part of the atmosphere. Living organisms (plants, animals, microorganisms, fungi) in a given place form the local biodiversity. In combination with the environment they inhabit, they form an ecosystem. The distribution of ecosystems depends on light, heat and moisture; in water basins it also depends on the depth and chemical composition of water. In the ecosystems there are processes of creating living matter and decomposition of dead organisms.

Green plants supply nutrients from the soil and through photosynthesis transform solar energy into food for other living organisms.
Microorganisms decompose the remains of dead plants and animals and provide nutrients to the soil. Biomass is the total weight of organisms per unit area. Biomass is the largest at the equator and the most scarce at the poles.
The pedosphere and biosphere are strongly influenced by humans. Soils are subject to erosion, pollution and depletion. Human activity changes the habitats of plants and animals. This leads to a reduction in biodiversity and extinction of species. Therefore, endangered species are protected in nature parks, reserves and protected areas.

TRAINING SECTION

Task 1. Look at the soil map in the atlas. Group the soil types in the table.
lateritic soils, chernozems soils, brown forest soils, red-brown soil, desert soils, tundra soils, cinnamon soils, tundra soils

Climate	Type of soils	Climate	Type of soils
Equatorial		Sub-tropical	
Sub-equatorial		Temperate	
Tropical		Sub-polar	

Task 2. Write down the letter code of the factors with the strongest influence on the formation of the soil type:
A. Vegetation B. Climate C. Rocks D. Waters E. Terrain
Laterite soils are common in humid equatorial, tropical and subtropical forests. They are formed when there is excess moisture. They owe their red color to the iron oxides in the rocks. ……
Chernozem soils are formed on loess and in the presence of steppe vegetation. ……
Brown forest soils are found in the cooler deciduous belt over 700 m above sea level. ……
Alluvial-meadow soils occupy river terraces, river valleys and estuaries of many rivers. ……

Task 3. Watch the video and discuss the biodiversity problem.

Task 4. Look at the signs and describe the bans in a national park.

Task 5. For each of the components write two ways of interaction between soil and vegetation. Follow the direction of the arrows.

2.15. NATURAL COMPONENTS AND NATURAL COMPLEXES. NATURAL BIOMES

BASIC TERMS

natural components; complete and incomplete natural complex

1. Natural components

Natural components are atmospheric air, water, rocks, soil, plants and animals. They make up the different geospheres. The natural components are interconnected and they influence each other.

2. Natural complex

The natural components interacting in a given place form a natural complex. Surface and groundwater runoff, atmospheric circulation and migration of organisms connect natural complexes. Therefore, the change in one affects the other complexes. Natural complexes include all natural components. Incomplete ones lack one or more components and are found in deserts, polar regions and high mountains. Large complexes are composed of smaller ones. The natural biomes which include natural zones are the most common example.

The geographical envelope is the largest natural complex. All geospheres interact in it and natural processes are influenced by solar and terrestrial energy. The geographic envelope includes the earth's crust, the hydrosphere, the pedosphere, the biosphere and the lower atmosphere. In it there is a constant transformation of the substances, which are in the three aggregate states.

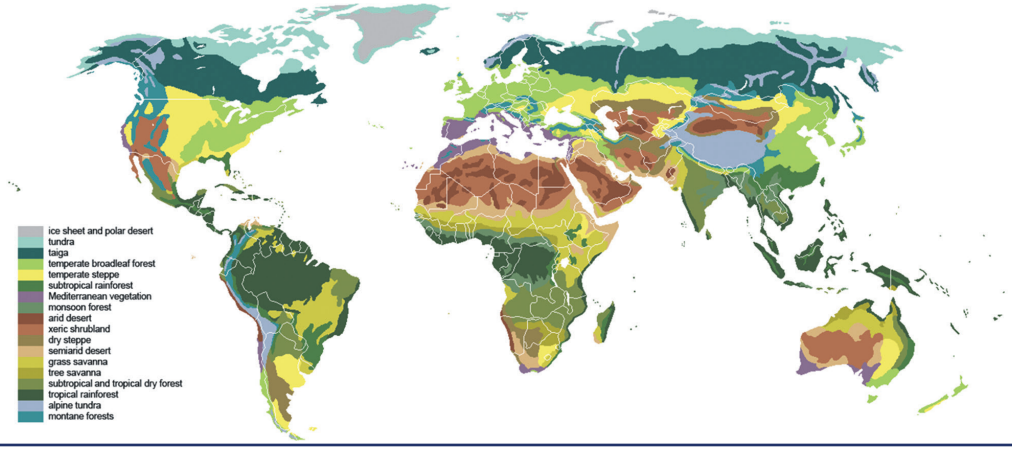
3. Geographcal envelope

Geographcal envelope is dominated by two regularities - zonality and azonality. The change in natural components in latitude, longitude or altitude is called zonality. It is horizontal and vertical. The horizontal one is latitudinal and it traces the changes of the natural components from the equator to the poles. Meridional zonality is the result of the climatic differences in the coastal territories and the interior of the continents. Vertical zonality is the result of climate change from the foothills to the mountain tops. The natural changes occurring with increasing depth are defined as depth zonality. Azonality is a violation of zonal changes due to the movements of the earth's crust, the composition of rocks, groundwater and other factors. Integrity is another natural pattern due to the constant exchange of substances and energy in the geographical envelope. It reflects the interaction between the components. Some natural processes in the geographical envelope are subject to rhythmicity. It determines the diurnal, seasonal or annual recurrence of natural processes.

4. Biomes

Biomes are large parts of the land with similar natural components. They are the largest natural complexes and bear the name of the predominant vegetation. They are not evenly distributed across continents due to the relationship between land and oceans, heat and humidity, ocean currents, mountain ranges. The biomes are located between one hot, two temperate and two cold zones.

The main biomes are equatorial rain forest, tropical rain forest, savannah, evergreen Mediterranean forest and shrubs, steps, deciduous broad-leaf forest taiga, tundra, arctic deserts.

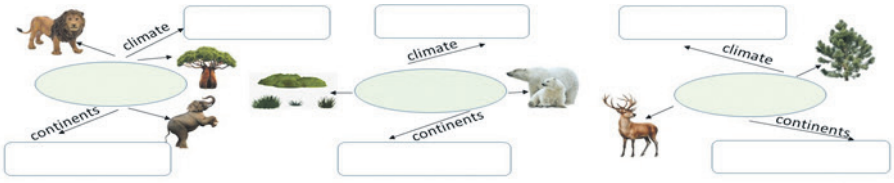


TRAINING SECTION

Zones	Biomes
Hot	
Temperate	
Cold	

Task 1. Use the map from application 3 (страница 80) and write down the biomes.

Task 2. Identify the biomes. Fill in the type of climate and its distribution.



Task 3. Write three words characterising the given biomes

Step

Desert

Tropical forest

Task 4. Arrange the listed geographical concepts so that there is correspondence between the two columns.

Correlation terms: zonality; azonality; rhythmicity; completeness

…… tropical belt, chernozem soils, tundra

…… tides, days and nights, seasons

…… water cycle, geographical envelope, carbon cycle

…… oasis, cave, alluvial-meadow soils

2.16. NATURAL RESOURCE POTENTIAL OF THE EARTH

BASIC TERMS

natural conditions; natural resources; natural resource potential

1. Natural conditions

Natural conditions are properties of natural components that affect people's life and economic activity. They are a prerequisite for the development of the economy, but do not participate directly in the activities. Natural conditions are useful for some activities, but may hinder the development of others.

2. Natural resources

Natural resources are substances, bodies, organisms that are used in the economy to create material goods. Sometimes natural components can be a condition, and in other circumstances they can be a resource. For example, rivers may be a condition for navigation, but it is a resource for electricity generation. With the development of science and technology, more and more natural conditions are becoming resources. For example, nitrogen from the air has not been used for commercial purposes for thousands of years, but in the past century it became a resource for the production of nitrogen fertilizers.

3. Kinds of natural resources

Natural resources are *energy, mineral, climate, water, land* and *biological resources.* Depending on the exhaustion and the ability to renew, these resources are divided into exhaustible and inexhaustible. Solar energy, geothermal energy, tidal energy and wind energy are inexhaustible resources.

Their quantity is unlimited. Exhaustive resources can be renewable and non-renewable. Some resources, although limited, have the ability to be replenished. Water resources are renewed through the water cycle. Soil resources are renewed through soil-forming processes. Plants and animals are regenerated by reproduction. However, if use exceeds recovery, these resources may be depleted. Minerals, whose quantities are limited, are non-renewable and exhaustible resources.

The distribution of natural resources is uneven. The largest countries - USA, Russia, China, India, Brazil, Canada, Australia, have the largest variety and deposits. Other countries also have large deposits, but only of one particular type. There are countries that are extremely poor in natural resources. A typical example is Japan, which imports about 90% of its resources. Large amounts of natural resources are difficult to utilise because they are located in areas with unfavorable natural conditions - Alaska, Siberia, the Amazon, the Congo River Basin, high mountains.

Energy resources include exhaustible and renewable energy sources. Fossil fuels are used the most (68% of the energy produced). Coal is primarily an energy resource, but is also used in the metallurgy and chemical industries. Oil is also an energy source and a valuable raw material for the chemical industry. Natural gas is generally found in oil fields, but there are also separate fields. It is a high-calorie and environmentally friendly source of energy. Uranium is a raw material for nuclear energy. Its use poses serious environmental risks.

The countries with large and high-water rivers in Asia, North and South America have the largest hydropower resources. The importance of exhaustible and renewable energy sources is growing - solar, wind, geothermal, tidal energy, biofuels. The global trends are aimed at the gradual replacement of traditional fuels with inexhaustible and renewable sources.

Mineral resources include ore and non-ore minerals. Ores are raw materials for the production of metals in metallurgy. Iron, manganese and chromium ores are used in ferrous metallurgy, and bauxite, copper, lead-zinc and tin ores are used in non-ferrous metallurgy. Phosphorites and potassium salt, which are raw materials for chemical production, are more important than non-metallic minerals.

Some of the characteristics of the climate (solar radiation, temperature, wind, precipitation) find application in economy, and this is the reason why they are called *climatic resources.* They are important for agriculture, tourism, electricity generation.

Water is a natural resource with wide application - irrigation, transport, fishing, tourism. Brazil, Russia, USA, Canada, China have the largest water resources. At the same time, more than 1/10 of the world's population suffers from a shortage of fresh water. The growing consumption of fish is the reason for the rapid decline of fish stocks in the world.

Of the *land resources*, arable land is the most valuable. Calculations show that about 1/5 of the land can be used for agriculture, and about 13 million square kilometers of it are arable land.

Plants and animals are *biological resources.* Forests, whose wood is used for pulp, paper, furniture, are the most important resources. Only 10 countries own over 60% of the world's forests.

To the north of the equator, forests form the vast belt of taiga, located mainly in Russia, the Scandinavian countries, the United States and Canada, and to the south, forests are concentrated in the equatorial, subequatorial and humid tropics, with Brazil and the Democratic Republic of the Congo being particularly rich.

4. Natural resource potential

All natural resources on a given territory form its natural resource potential. The larger the territory, the richer its natural resource potential. Before proceeding with the use of resources, they are researched and evaluated. The research determines the needs for the resource, the quantity, the quality, the extraction technology and the economic benefit. It is important to know the reserves of mineral resources and wood, the area of agricultural land. The benefit is determined by the metal content in the ores, the calorific value of the coal, the content of impurities, the fertility of the soils. The costs necessary for the utilisation of a certain resource will depend on this. The economic benefit also takes into account the costs that must be incurred for the construction of environmental facilities, as the extraction of certain resources contributes to environmental pollution.

TRAINING SECTION

Task 1. Watch the video and comment on the problem.

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2.17. GLOBAL PROBLEMS OF HUMANITY

BASIC TERMS

global problems; alternative energy sources

1. Essence

We are facing problems that affect all of humanity. The depletion of natural resources and the deterioration of the environment can affect each of us. That is why we consider the problems of raw materials, energy and the environment to be global problems. The raw materials and energy problem is a result of the growing and inefficient use of energy resources and various raw materials. The environmental problem is related to the constant deterioration of the environment caused by many economic activities.

2. Resource and energy problem

The rapid pace of population growth is among the leading causes of global problems, because the need for resources, some of which are limited, is also growing. The large number of people, especially in underdeveloped countries, portends hunger and poverty for their population. The increased use of natural resources threatens non-renewable resources with depletion and exceeds the regeneration of renewable ones. The use of alternative energy sources is imperative. Geothermal, solar, tidal energy are inexhaustible and do not pollute the environment. The inefficient use of fossil resources hinders their full use and causes a large part of them to be returned as waste.

3. Envoronmental problem

By disposing of waste and developing polluting activities, we contribute to the deterioration of the environment. Atmospheric air pollution is the biggest problem. It is caused by burning fuels and releasing chemicals into the air. Carbon dioxide accumulates, which enhances the greenhouse effect, increases the chlorine and floral pollutants that deplete ozone, or radioactive substances that threaten human health. Nearly a quarter of the world's population suffers from drinking water shortages due to excessive water use or pollution. In many cases, the pollution is so serious that the water cannot self-purify and its use must be stopped. The world's oceans are polluted by waste or oil spills. The accumulation of pollutants in marine and ocean organisms is also a real threat to human health. In a similar way, pollutants that enter the soil accumulate in the cultivated agricultural crops and become dangerous or unfit for human consumption. Contamination, depletion or soil damage reduce arable land. Forests are cut down in order to provide arable land, which leads to deterioration of the planet's biodiversity and the oxygen in the atmosphere. It also affects groundwater reserves and increases drought in more and more areas.

4. Sustainable development

Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. The solution to the ecological and raw material - energy problems is possible with the adoption of the principle of sustainable development by all countries - that is, using natural resources responsibly without depriving the next generations of their benefits.

TRAINING SECTION

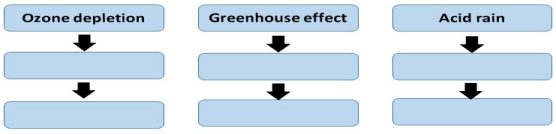
Task 1. Calculate how long the reserves of the listed resources will last if the rates of their extraction are maintained.

Resource	Reserves	Annual production	Availability in years
Petroleum	1 688 trillion barrels	34 billion barrels	
Iron ore	1,5 billion tons	229 million tons	
Copper ore	680 million tons	20 million tons	

Task 2. Describe the causes of the problems in the photos:

…… …… ……

Task 3. Write down two consequences for each problem.



Task 4. Give ideas how each of us can help sustainable development with activities in our everyday life.

……
……
……

Task 5. What problems does each of the achievements of science solve?

An electric car ……..
Artificial fibers ……
An E-book …….....

Task 6. Read the text. Make suggestions on how each of us can contribute to slowing the process of depletion of valuable resources.

Use of metal in smartphones

Overall, about 40 percent of a smartphone is made of metal. In fact, the smartphone contains at least 70 elements of the stable and non-radioactive elements in the periodic table. A typical smartphone has about 0.034 grams of gold, 0.034 grams of silver, 0.015 grams of palladium and about 0.001 grams of platinum. Smartphones with metal frames have an average of about 25 grams of aluminum. All of these metals play different roles in the functioning of a smartphone - neodymium, terbium and dysprosium, for example, are three rare metals that are used to provide phones with vibration force. The latter two are also used to provide colours on a touch screen. Source: investor.bg

3.1. POLITICAL ORGANISATION OF SOCIETY. POLITICAL MAP OF THE WORLD

BASIC TERMS

natural-geographical position, politico-geographical position, economic-geographical position; inland country; President; presidential republic, parliamentary republic, parliamentary monarchy; highly developed countries; developing countries

1. Formation of the modern political map of the world

From antiquity to the present day, the formation of the political map of the world has gone through several periods (stages):

• Antiquity and the emergence of the first countries - Ancient Egypt, Ancient Greece, Carthage, Rome.

• Middle Ages (V-XV century) - the emergence and flourishing of Byzantium, Bulgaria, the Roman Empire, the Principality of Moscow and others.

• New Times: the XV-XX centuries - characterised by colonisation of the newly discovered lands as a result of the Great Geographical Discoveries, and after the Second World War – the rapid collapse of the world colonial system and the emergence of many independent states.

• Modern (XX-XXI century), which is associated with the collapse of communism and the collapse of the former socialist republics, the formation of independent states and state unions.

Today there are over 260 countries in the world, incl. unrecognised and dependent territories. The last significant changes in the political map of Europe and the Balkans occurred after 1989. The newest country on the political map of the world is the Republic of South Sudan (2011).

2. Political systems in the world

Today there are two political systems - totalitarianism and democracy. The totalitarian system is a form of government with centralised power, in which there is state control over the political, social and cultural life. It is linked to one-party rule. Examples of such countries are the DPRK, Vietnam, Cuba. The democratic system is based on equality before the law, guaranteed freedoms and separation of powers. Public administration is carried out by representatives elected by the people.

3. Characteristics of the state and authorities

The state is a basic form of political organisation of society. Each country has a specific territory, which includes part of the land, the airspace above it, the earth's interior and inland and territorial waters. The state territory is sovereign and is determined by the state borders, which are inviolable. Depending on their territory, countries can be large, medium, small.

Each country has its own symbols and official language (one or more). The state is governed by the executive, the legislature and the judiciary. The legislature (parliament) passes, supplements, amends and repeals laws. The judiciary is independent and responsible for the proper enforcement of the laws and the security of citizens.

4. Classification of the countries by particular characteristics

The countries differ in geographical location, territory, natural resources, historical destiny, form of government, state structure, degree of economic development. Some of them are used as grouping characteristics.

The geographical location reflects the spatial relationship and interrelationships of a given territory in relation to other objects located outside it. Several main types of geographical location are defined for each country:

• absolute geographical position - determined by the geographical coordinates of the end points of the country;

• natural geographical position - the location of the country in relation to other natural sites (island, peninsular, coastal, inland).

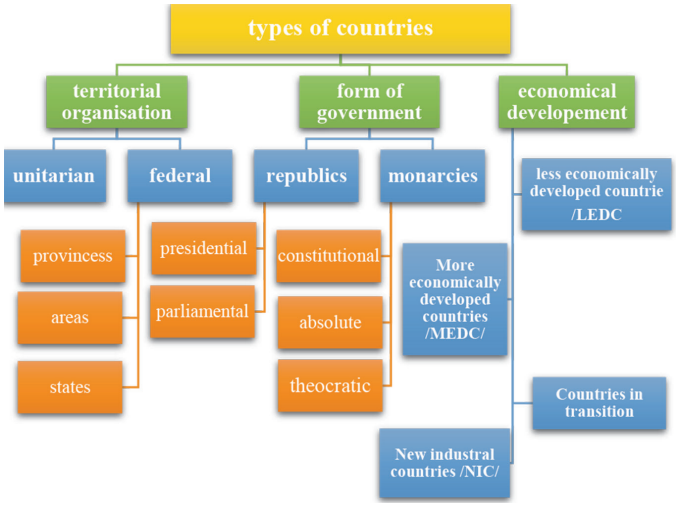
On the modern political map there are 44 inland countries (Serbia, Hungary, Bolivia, Kazakhstan, Mali);

• politico-geographical position - reflects the country's attitude towards neighboring countries, organizations, conflicts, disputes;

• economic-geographical position - shows the attitude of the state towards objects outside it which are important for its economy.

Federal countries include relatively independent territorial units (provinces, regions, states). The United States, Brazil and others are presidential republics. In the parliamentary republics (Bulgaria, Italy) the president has only representative functions. Examples of modern constitutional monarchies are Morocco, Kuwait, Jordan, Great Britain, Spain, Belgium; of absolute monarchies - Oman, UAE, the Vatican. In cases where the monarch is also the head of the church and has unlimited power (the Vatican, Saudi Arabia), the monarchy is theocratic.

Task 1. Watch the video, discuss in teams and present at least three arguments that prove the differences between an absolute and a constitutional.



Task 2 Describe at least three specific changes to the political map of Europe and the Balkans since 1989.

1. .....
2. .....
3. .....

3.2. NUMBER, DISTRIBUTION AND MOVEMENT OF THE WORLD'S POPULATION

BASIC TERMS

population density; natural movement; birth rate; death rate, mechanical movement; demographic crisis; demographic explosion; demographic policy

1. Population

The number of the population is a quantitative indicator that reflects the changes of the population in a certain place and in the world. The population has been constantly growing since antiquity to the present day. In 2020, the world's population is 7.8 billion.

2. Population distribution

The population is unevenly distributed across continents and countries. In the places with better natural (sea and ocean coasts, low relief, large rivers, suitable climate) and economic conditions (high incomes, enough jobs) more population is concentrated. Desert, polar, mountainous, poor and backward areas are sparsely populated or without permanent resident population. The population density indicator reflects the number of people per 1 sq. km.

3. The movement of the population

The movement of the population shows the changes in the number of the population. Depending on the demographic processes against which it is determined, there are natural and mechanical movements of the population.

3.1. The natural movement of the population is associated with the processes of birth and death. The birth rate is the number of births per year per 1,000 population, and the death rate is the number of deaths per year per 1,000 population. Both processes depend on the age composition of the population, economic conditions, cultural differences. The natural increase is the difference between births and deaths. Birth rates, mortality rates and natural increase are measured in per mille/per 1000 (‰). An important indicator for the economic development of a country is infant mortality (the number of deaths up to 1 year of age compared to the number of live births).

3.2. The mechanical movement (migrations) reflects the movement of the population on the territory. The difference between relocation (emigration) and settlement (immigration) is referred to as mechanical growth. The mechanical growth is positive when the settlers in a given area are more than the settlers and negative when the settlers exceed the settlers. The main reasons for migration are economic or political.

4. Demographic explosion and demographic crisis

The population explosion is the rapid growth of the population due to high birth rates and high natural growth.

The demographic crisis is the result of an aging population and a declining population due to negative natural growth.

5. Demographic policy

Various economic, social and educational measures are taken to overcome the consequences of the demographic crisis and the demographic explosion. Their combination is called demographic policy and is aimed at stimulating or limiting the birth rate.

TRAINING SECTION

Task 1. Using the map in the atlas, determine the areas with the highest density of population in the world.

.....

Task 2. Examine the map (fig 1). Draw conclusions about the nationality of migrants and the countries that have accepted the most of them.

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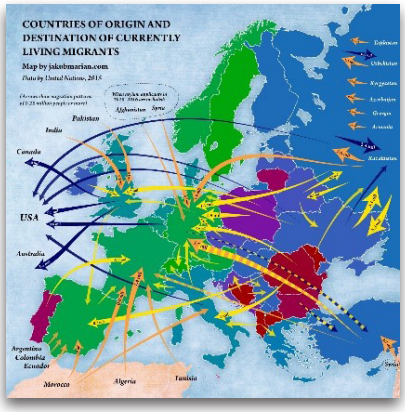


Figure 1

Task 3. Investigate the natural growth statistics on 'The world factbook' site. Draw conclusions about the natural population growth in Hungary, Saudi Arabia, Colombia and Canada. Justify economic and geographical reasons for the differences.

.....

.....

.....

Task 5. Take a look at the population density map posted on the worldometers website. Select six countries with high and low population density and group them in a table

.....

.....

.....

.....

Task.4. Give examples of at least three countries that are in:

a demographic crisis –

.....,.....,

.....

a demographic explosion –

....., ..., ...

.....List the demographic issues that these countries need to address.

....., ...,

Task 6. Look at the cartoon (Fig.2). Describe the depicted problem and possible solutions.

Figure 2

3.3. WORLD POPULATION STRUCTURE

BASIC TERMS

population structure; age-sex (population) pyramid

1. The structure of the population

The structure of the population shows the grouping of people by certain characteristics (sex, age, education, religion, language, employment) and is an important factor for the development of modern economy.

2. Types of population structures:

2.1. Sex structure - it shows the ratio between men and women at a certain time in a certain place. The sex structure is not the same in different countries and it depends on many factors. Today, the world is dominated by men over women in a ratio of 101 to 100; in developed countries women predominate, and in most countries in Asia and Africa - men.

2.2. Age structure - reflects the ratio between the number of people in different age groups. Based on the ability of the population to reproduce, three generations are distinguished: children (up to 14 years old), parents (up to 49 years old) and grandparents (over 50 years old). On the basis of work opportunities, there are people of under working age (under 15), working age and over working age (over 65). Countries with a low share of the under working age population and a higher share of the over working age population are characterized by the so-called aging of the population.

Sex and age structure are directly related to the natural and mechanical movement of the population. They are represented graphically by an age-sex pyramid, and every graphic image like this is a source of information about the state of certain demographic indicators at a specific time and place.

2.3. The religious structure expresses the ratio of people according to the professed religion. There are world religions (Christianity, Islam and Buddhism), national religions (Hinduism, Confucianism, Judaism, etc.) and local (traditional) beliefs. Of the world religions, Christianity dominates (Europe, North and South America), followed by Islam (mainly in the Middle East, Central and Southeast Asia, North Africa, Southeast Europe). The earliest formed religion, ranking third in distribution, is Buddhism (South and Southeast Asia).

2.4. The language structure reflects the ratio between people based on the languages spoken. Due to the significant diversity of languages, they form language families and language groups. About half of the world's population belongs to the Indo-European language family, and its most common language groups are Romance (Spanish), German (English) and Slavic (Russian).

2.5. The structure based on employment (professional structure) is an important indicator of the economic development of a country and shows the distribution of workers in different economic activities. In developed countries, the largest share of employees is found in the service sector, and in developing countries - in mining. People who work are called economically active population.

TRAINING SECTION

Note: The reading and analysis of a gender-age pyramid presupposes the observance of the following rules:

1. Determine the shape of the pyramid - regular, stationary, irregular. Explain why the pyramid has such a shape.
2. Determine the ratio between the sexes and between the three age groups (children, parents, grandparents).
3. Formulate conclusions whether or not the population of the country is aging? Why?
4. Determine whether there are enough people of working age in the country.
5. Predict future changes in the distribution of the population by age groups. Suggest how the trends will affect the development of the country.

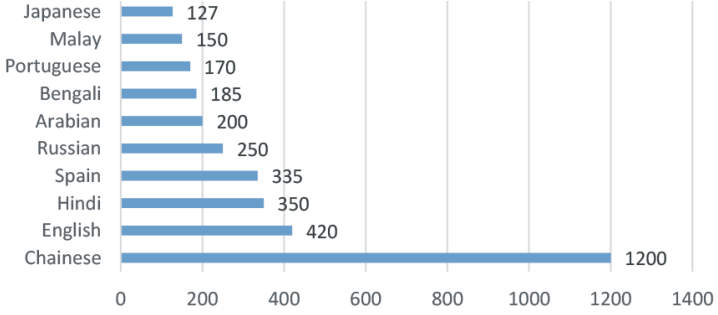
Task 1. Indicate the reasons for the differences in the gender and age structures of developed and developing countries. ……

Task 2. Recognise religions by images (Fig. 4). Indicate on the map at least two countries in which each of them is distributed




…… …… …… ……

Task 3. Determine the language families to which the languages shown in the diagram (Fig. 5) belong.



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3.4. SETTLEMENTS AND URBANIZATION

BASIC TERMS

suburbanisation; pseudo-urbanisation; agglomeration; megalopolis

1. The settlements

The settlements are an expression of the material and spiritual culture of their inhabitants and reflect the natural and socio-economic conditions during different historical periods

2. Factors

A lot of factors and to varying degrees affect the formation and development of settlements - natural (relief, water, minerals, climate, soils), socio-economic (development of economic sectors), historical-political, cultural, ethno-demographic (natural movement, ethnic structure, migrations).

3. Classification of settlements

The main settlement forms are villages and towns. They are most often classified according to their geographical location (European, African, Asian) and the population in them (large, medium, small). Cities are also classified according to the functions they perform - industrial, commercial, transport, administrative, educational and others. On this basis, there are single-function, dual-function and multifunctional cities (capitals and other multimillion cities). Depending on the planning and the way of construction, the cities can have radial-concentric (Paris), rectangular (Mexico City) or star-shaped planning (Sofia).

The term ‘urbanisation’ comes from the Latin word ‘urbs’ and means ‘urban’ (way of life). Urbanisation is a process of increasing the size, number and importance of cities, associated with the increase in the share of the urban population and the spread of urban lifestyle. It is most strongly influenced by the economic and technological development, as well as migration. Urbanisation is a long process associated with several historical periods: the origin and development of cities in antiquity; the industrial revolution in the eighteenth century; the emergence of the first agglomerations (large continuous urban area, resulting from the merger of cities and smaller settlements around them into one territory); moving of people out of the cities in order to live in better conditions; and a modern stage, associated with the development of digital communications and the existing connectivity between settlements. It is estimated that in 2050, 75% of the world’s population will live in cities.

The process by which the periphery of the agglomeration develops at a higher rate than its central parts (emigration of the population to the suburbs) is called suburbanisation.

The spontaneous growth of cities without the typical features of an urban lifestyle (usually in developing countries) is called pseudo-urbanisation.

The growth of agglomerations leads to the formation of the so-called megalopolis – an area which is substantial in territory and highly urbanised (usually with a population of over 25 million), consisting of the merger of several agglomerations, large cities and their suburbs. The megalopolises bear the name of the two extreme cities between which they are located. The largest metropolis in the world is Bos-Vash (between Boston and Washington). Other major megalopolises are Chipits (Chicago - Pittsburgh), San San (San Francisco - San Diego) in the United States, Tokaido (Tokyo and Osaka) in Japan and the Rhine - Main in Germany.

TRAINING SECTION

Task 1. Explain the influence of various factors on the emergence and development of settlements.

.....

Task 2. Read the text and identify which type of urbanisation it refers to. Identify specific countries where large groups of people live in slums.

Among the important aspects of this process is the emergence of bidonvilles - the so-called "slum urbanisation". Among the most common mechanisms of this type of urbanisation is characterised by the settlement in the cities of low-skilled workers who start low-paid work that does not require advanced training. Over time, their families also settle with them, which ultimately leads to a lack of lifestyle changes. The number of inhabitants of the slums is constantly growing: from 650 million in 1990 up to 900 million in 2020. The worst situation remains in sub-Saharan Africa, where nearly 200 million people live in slums, making up more than 60% of the urban population. Report of UN Habitat

Task 3. What problems are typical of megacities? Would you live there? Justify your choice.

.....

Task 4. Fill in the missing information in Table 2. Give examples other than those in the text on the classification of settlements (item 3).

Table 2. Classification of cities by selected features

indicator	types	examples
Geographical location		
	- small (up to 50 000 p..) - medium (50 -100 000.p.) - big (100 - 500 000 p.) - very big (more than 500 000 p..) - mega cities (more than 10 000 000 p.)	
Functions		
Planning and construction		

3.5. WORLD ECONOMY

BASIC TERMS

sectors; economic branches; scientific and technical factor, demographic factor, GDP; GNP

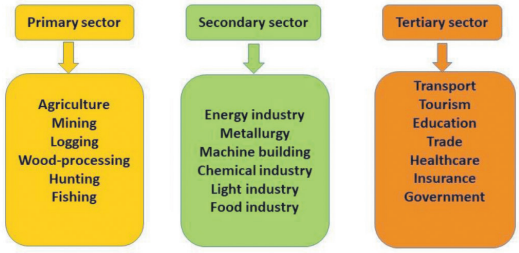
1. Essence

The formation of the economy is a long and complex process, the result of the social division of labour. The totality of all activities related to the extraction and processing of raw materials and to the production of goods and services on the territory of a country forms its national economy. The system of national economies of all countries forms the world economy. It includes all economic sectors, branches and sub-branches.

2. Sectoral and territorial structure of the world economy

Industries comprise production and activities developed on the basis of similar products, raw materials, services and technologies. Industries are grouped into three sectors - primary (extracting), secondary (processing) and tertiary (services).

The distribution of economic activities in a given territory form the territorial structure of the economy. The different territories produce goods and services for which they have the best conditions.



3. Factors for the development of the world economy

The economy develops under the influence of several groups of factors.

3.1. Natural geographical factors include geographical location, territory, natural conditions and resources that affect the development and territorial location of economic activities.

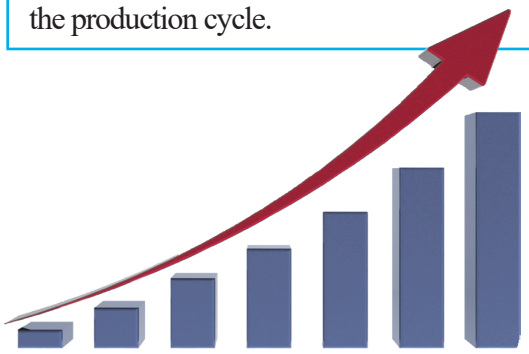
3.2. Socio-economic factors. The most important ones are raw materials, the level of consumption and markets, transport, scientific and technological progress (STP), the international division of labour. STP is related to the implementation of the achievements of science, technology and technology in production. Foreign economic relations, the economic and social policy of the state, the infrastructure, energy security, etc. also have an impact.

3.3. The demographic factors are related to the characteristics of the population as a producer and consumer of goods and services - number, gender, age, educational and professional structure, labour resources and others.

3.4. The environmental factor influences the change of the environment, often leading to modernisation, closure or relocation of polluting industries.

4. Principles and mechanisms of the market economy

The world economy is developing as a market type, as the market plays a major regulatory role. It provides free movement of goods, capital and labour resources. The market economy is characterised by predominant private property, entrepreneurship and competition. The production and prices of goods and services are determined on the principle of supply and demand. Part of the realised profit is invested in the production cycle.



5. Basic economic indicators

For the development of the economy, natural indicators are used: they quantify the economic activity (number, t, m3, etc.), and value indicators (in monetary value, most often in $ US or euro).

Gross domestic product (GDP) is the monetary expression of goods and services produced in 1 year on the territory of the country and includes both national and foreign investments. GDP is an indicator of the degree of economic development of the country.

Gross national product (GNP) shows the value of goods and services produced for 1 year through national investment in the country and abroad.

In order to make a comparison between the economic development of the countries in the world, the indicators GDP / capita and GNP / capita are used.

TRAINING SECTION

Task 1. Write the factor that determines the geographical facts in each of the sentences.

The largest ferrous metal plant in Japan is located in the port city of Muroran. (.....)

Russia is one of the largest suppliers of natural gas in the world. (.. …… ..)

In recent decades, the Korean company has established itself as one of the largest manufacturers of mobile phones. (……)

A Swedish fashion company recently moved three of its factories to Ethiopia. (……)

Task 2. Read the text and highlight the features that define the country's economy as centralised.

The DPRK's economy is planned and isolated. It focuses on heavy industry and agriculture. Almost all production is directed to the local market. Industrial enterprises are state-owned. The cooperatives, which are controlled by the state, are the owners of the agricultural lands. Private property is prohibited. Prices are controlled by the state. There is no competition.

Task 3. Arrange numerical indices from 1 to 8 so that you get the rule for the characteristic of an economic branch.

(__) Essence
(__) Territorial structure
(__) Features
(__) Problems
(__) Meaning
(__) Development trends
(__) Factors for development
(__) Branch structure

3.6. PRIMARY SECTOR. AGRICULTURE - GENERAL CHARACTERISTICS

BASIC TERMS

Agricultural innovations; extensive agriculture; intensive agriculture, food problem

1. Essence, significance and factors for the development of the primary sector

The primary sector unites all activities for procurement of raw materials from nature (extractive industries of the economy). The secondary processing industries depend on it. The structure of the sector includes agriculture, mining, logging, hunting, fishing, salt extraction and bottling of mineral water.

Minerals are exhaustible non-renewable natural resources. Their intensive extraction in combination with the growing population and increased consumption lead to the emergence of the raw material and energy problem.

Logging (coniferous and deciduous wood) influences the development of the woodworking, furniture and pulp and paper industries. Reducing the area occupied by forests (deforestation) is one of the global environmental problems.

Hunting is typical of countries with less developed economies. It includes hunting mammals, large and small predators, birds, etc. It provides hides, meat and other products that are used as valuable raw materials for the development of industries in the secondary sector, and is the basis for the development of hunting tourism. Fishing provides seafood and raw materials for the food industry.

It includes catching fish, mussels, crabs and more. It is performed mainly in the shelf area. It is important to deal with the food problem. Scientists estimate that fish consumption worldwide is doubling faster than the population. The world's oceans are also a source of salt, and until the nineteenth century - of iodine (iodine-containing algae).

The main branch of the primary sector is agriculture.

2. Agriculture - general characteristics

This sector includes the cultivation of agricultural land, the cultivation of plants and animals and the provision of raw materials for the light and food industries - grain, meat, milk, fruit and vegetables, hides, etc. The sector includes two sub-sectors - crop production and animal husbandry. Agriculture is a leading sector in the economy of underdeveloped countries. In highly developed countries, it forms an insignificant share of GDP. Modern agricultural production is relied on to solve the food problem. Agriculture provides employment for a significant number of low-skilled labour, i.e. it has social functions.

3. Features and factors for the development of agriculture

Land is the main means of production. Its fertility determines the sectoral and territorial structure of agricultural sub-sectors. Agriculture is difficult to predict and manage because living organisms (plants and animals) are the subject of labour. Another feature is that part of the final production is set aside for reproduction. Agriculture has a clear seasonality.

The development of agriculture is influenced by two main groups of factors - natural and socio-economic. Of the natural ones, the relief, the climate, the waters and the soils play the biggest role. The leading socio-economic factors are land ownership, the market of agricultural products, the location of processing enterprises, transport and others. The demographic and environmental factors are also important.

The efficiency of agricultural production depends on the agricultural innovations- activities to increase yields. These include: mechanisation (cultivation with various types of machinery), chemicalisation (use of fertilizers and plant protection products), irrigation and drainage of arable land through the construction of irrigation systems, canals, etc., selection (improvement of plant varieties and animal breeds).

Based on the activities carried out and the implementation of the achievements of STP, there are two ways of agricultural development - extensive and intensive. Extensive agriculture is a primitive type of agriculture in which the volume / quantity of agricultural production increases by increasing the area of arable land or the number of animals, as well as the number of people employed in it. It is typical of developing countries. In intensive agriculture, the production increases through the application of scientific achievements and agricultural innovations, which increases the average yields and productivity of animals. This type of agriculture is typical of developed countries.

TRAINING SECTION

Task 1. Explain the influence of demographic and environmental factors on the development of primary sectors. Support your claims with examples.

……..

Task 2. Minerals are processed into various products which are important for everyday life and the economy. Give at least one example of products produced from the listed resources.
ores of ferrous and non - ferrous metals …… oil ……
coal ……... kaolin ……..

Task 3. Look for information and make a list of five countries where the food problem is most pronounced.
Give suggestions for solving it.
…….

3.7. CROP FARMING AND LIVESTOCK BREEDING

BASIC TERMS

agricultural sub-branches; agricultural crops; organic farming

1. Plant farming

Crop production is a leading sub-branch of agriculture and includes land cultivation and food production for the population. It is a raw material base for the development of livestock breeding and industry. Its branch and territorial structure is determined by soil and climatic conditions. Arable land is a major factor in the development of the sub-branch. Crop production has a strong seasonality.

The cultivated crops are grouped into cereals, industrial, fruit, vegetables, vineyards, etc. Cereals occupy half of the arable land. Wheat, rice and corn have the largest share in world production. More than ½ of the world wheat production is concentrated in China, India, Russia, the United States and France. Rice is mostly grown along major rivers in Asia (90%). The main producers are China, India, Indonesia and others. Along with wheat, rice has a key role to play in solving the food problem. Corn is a major fodder crop. The largest producers are the USA, China, Brazil and others.

Growing industrial crops is more labour-intensive, but it provides raw materials for the industry. Industrial crops are divided into: fiber (cotton, flax, hemp), oil (sunflower, canola, peanuts, sesame, olive), essential oil (oil rose, mint, lavender), sugar (sugar cane and sugar beet), tonic (tea, coffee, cocoa) crops.

The vine is one of the oldest cultural perennials. Vegetable production and fruit growing are widespread.

2. Animal husbandry

Animal husbandry is the second most important agricultural sub-branch. It provides food and raw materials for industry (milk, meat, eggs, hides, wool, down, etc.). It is highly dependent on the fodder base, and the seasonality is weak. The type of livestock determines several main areas:

Cattle breeding provides milk, meat and hides. Pig breeding occupies the largest share (over 1/3) of meat production. Sheep breeding provides meat, milk and wool. Poultry breeding provides meat, eggs and down. Chickens, geese, ducks, etc. are raised. China, the United States and Indonesia produce more than one-third of the poultry meat worldwide. Sericulture provides the raw material for silk production.

The main trend in the development of modern agriculture is organic farming.

TRAINING SECTION

Task 1. List the industries that are developing on the basis of raw materials from plant farming. Give examples of specific productions.

……..

Task 2. Under each of the images write the technical crops from which the product is made. Give an example of a leading country in the production of the respective culture.




…… …… …… ……

…… …… …… ……

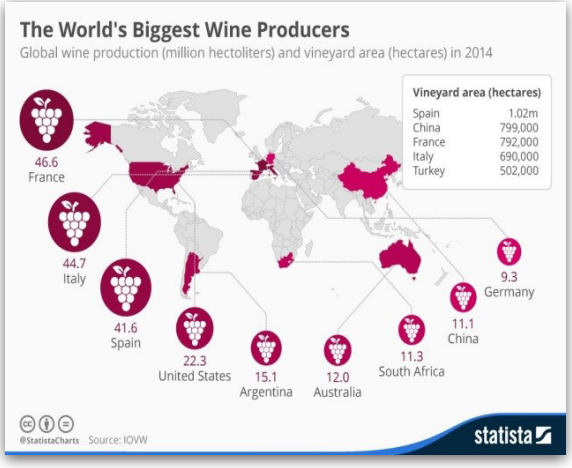
Task 3. Describe the differences in the importance of agriculture for the economies of developed and developing countries.

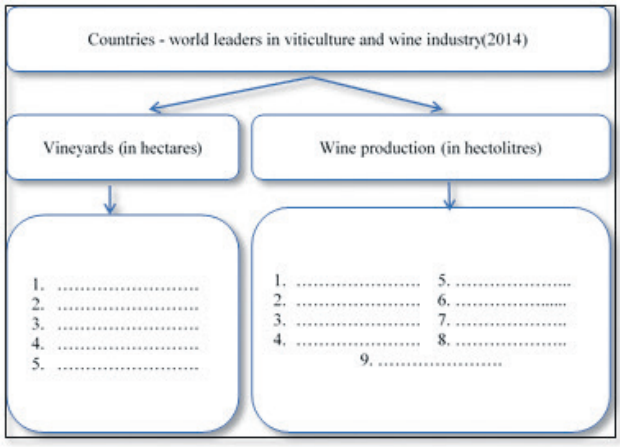
……

Task 4. What are the reasons why the United States and China are among the world's largest producers in both crop and livestock production?

……

Task 5. Use the thematic map as a source of information and fill in the diagram. Explain the reasons for the lack of correspondence between grape growing and wine production. Look for more up-to-date data and determine if trends are continuing.





3.8. SECONDARY SECTOR

BASIC TERMS

Industry, specialisation

1. Essence, significance and factors for development

The secondary sector includes the industrial branches and construction. Industry processes raw materials extracted from the primary sector and provides energy, metals, machinery, etc., necessary for the operation of other economic sectors. Industry satisfies people's needs (food, beverages, clothing, medicines, household goods) and provides them with employment - about ¼ of those employed in the economy.

The socio-economic, demographic and environmental factors are important for the development and territorial location of the industrial branches. Industry can develop in two main ways: extensive - production increases by increasing the volume of production capacity, processed raw materials and the number of employees, and intensive - by implementing the achievements of UTP, rational use of raw materials and increasing labour productivity.

2. Sectoral and territorial structure

Historically, the industrial branches are divided into old (metallurgy, shipbuilding, textile and food industries), new (automotive, chemical, electrical) and the newest (aircraft and rocketry, electronics, microelectronics, etc.) industries. In recent years, the fastest development has been the production of computer devices, means of communication, office equipment.

The industrial branches are form two large groups - heavy and light industry. The heavy industries produce capital goods. The light and food industries produce consumer goods and meet the personal needs of the population. The food industry, together with agriculture, is relied on to solve the food problem.

The territorial structure of industry is expressed in the production specialisation by regions and countries.

A typical characteristic of construction, as an independent branch of the secondary sector, is the decisive role of consumption and relative independence from the raw material factor. It can be residential, industrial, commercial, etc.

The main problems of the secondary sector are related to resource depletion and environmental pollution. The current trends in the development of the sector are determined by new technologies and modernisation, integration and cooperation, the growing role of transnational corporations (TNCs).

TRAINING SECTION

Task 1. List the industries of the secondary sector. Provide at least three pieces of evidence for their relationship to the primary sector

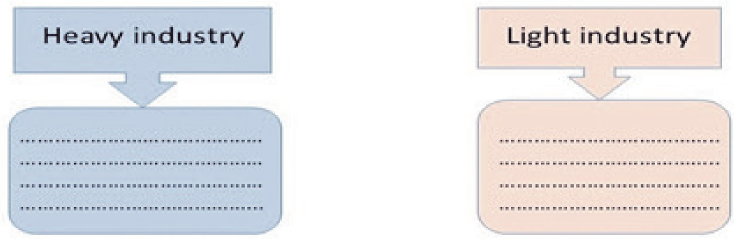
……………………………

……………………………

……………………………

……………………………

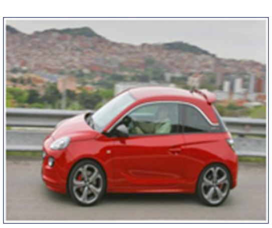
Task 2. Group the branches in the diagram:
Metallurgy, textile industry, food industry, chemical industry, machine building, power generation, shoes industry, fashion industry

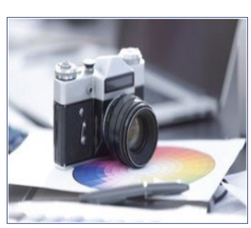


Task 3. Circle the letter of the statement that does NOT apply to the construction:
(a) operates in conjunction with the building materials industry
(b) a separate branch of the secondary sector
c) extracts materials and raw materials for construction
d) part of the employees are highly qualified

Task 4. After each sentence, write down the factor which it refers to.
Complementary words: transport, raw materials, demographic, markets, science
They influence through the demand and supply of industrial goods. (…………………………)
Their presence is of great importance for the production of metals and chemicals. (…………)
Makes a connection between production and markets. (…………………..)
A particularly important factor for the production sectors, that employ seasonal workers. (……… ....)
Helps to quickly implement technologies. (………………………)

Task 5. The territorial structure of industry is determined by the local conditions, economic policy and traditions in different regions and countries. The images show world-famous products. Write the names of the countries you associate them with.





……………………………… ……………………………… ……………………………… ………………………

Task 6. Discuss the main problems of the secondary sector. Express your personal position on the need to address them and suggest reasonable options.

3.9. ENERGY INDUSTRY

BASIC TERMS

energy balance, energy efficiency, power plant, alternative energy sources

1. Essence, meaning, characteristics

The energy industry is a defining sector of the world economy. No production can develop without energy.

The energy industry combines several activities - extraction of energy sources, production of electricity and its transmission to consumers. It also includes activities related to the processing and storage of radioactive waste and the neutralisation of environmental pollutants. Energy production is constantly increasing due to the growing consumption both in the economy and in the home. The development of the energy industry is influenced by natural, socio-economic, scientific-technical and environmental factors.

An important feature of the energy industry is that its products cannot be stored and the moments of production and consumption coincide. Electrical energy is easily transformed into mechanical, light or heat energy. The supply of electricity to consumers requires built power transmission facilities. The electricity transmission networks of the countries on the continents are connected in a common energy system. When it is impossible to produce and deliver the required amount of energy, an energy crisis occurs. Energy production provides employment for a highly skilled workforce.

2. Sectoral and territorial structure

The main (traditional) energy sources are fossil fuels - coal, oil, natural gas. They are exhaustible non-renewable resources and their extraction pollutes the environment. Increasingly, alternative energy sources are being used - tidal energy, solar, wind, geothermal and bioenergy. They are renewable or inexhaustible and their use for energy production does not pollute the environment.

The main production of electricity is carried out in Thermoelectric power plants -TPPs (from fossil fuels), Hydroelectric power plants -HPPs (highly dependent on hydropower resources) and Nuclear power plants NPPs. Complete task 4

The energy balance is the difference between the produced and consumed electricity. It can be positive (it allows the export of electricity) or negative (it requires import or an increase in energy efficiency). Energy efficiency is a system of energy saving measures in the production, transmission, distribution and final consumption of electricity, as well as the replacement of traditional energy sources with alternative ones.

TRAINING SECTION

Task 1. The energy industry is a combination of four different activities. Write them, arranged in a logical sequence.

..... - .....

..... - ..... -

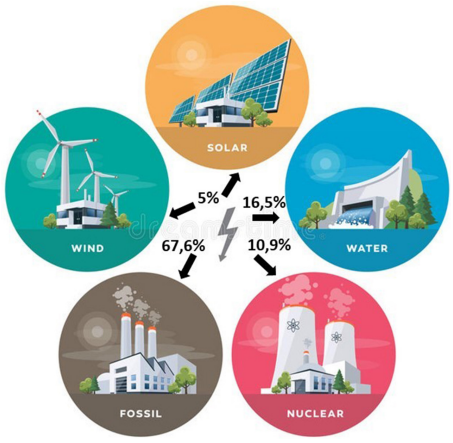
.....

Task 2. Write down the names of the countries that have the most nuclear power plants. Explain the reasons for the development of nuclear energy in these countries

.....

.....

Task 3. Arrange the different types of power plants according to their share in world electricity production source: World energy statistics 2017



1……..

2……..

3……..

4……..

Task 4. Defend with arguments the claim that energy is a structural sector for the world and for national economies ……

Task 5. Analyze trends in coal and oil production. Mark on the map with a symbol of your choice five leading countries in the extraction of the two sources. Make a legend and give a title.
Legend:

3.10. METALLURGY, MECHANICAL ENGINEERING AND CHEMICAL INDUSTRY

BASIC TERMS

specialisation, cooperation, high-tech sectors

Metallurgy, mechanical engineering and the chemical industry are important structural sectors of the secondary sector.

A. Metallurgy

1. Essence, significance, development factors and features

Metallurgy is an industry that processes ores and provides raw materials (metals) for the development of metalworking, machine building and construction. It includes ore mining and their processing and manufacturing. The share of metallurgy in the economy is declining due to the increasing use of metal substitutes. Metallurgy is an industry that heavily pollutes the environment.

The development of the industry is influenced by the reserves and the territorial location of the ore minerals, the labor resources, the transport, the STP. The peculiarity of production is that it requires large amounts of raw materials, water, energy, capital. In recent decades, there has been a trend of concentrating production in developing countries, close to raw materials and cheap labour.

2. Sectoral and territorial structure

Metallurgy includes two subsectors - ferrous and non-ferrous metallurgy.

Ferrous metallurgy covers the extraction and processing of ferrous metal ores (iron, manganese, chromium ores) and the production of cast iron, steel, rolled products. Enterprises that include the full production cycle are called plants.

Their territorial location is close to the source of raw materials or to ports.

Non-ferrous metallurgy covers the extraction and processing (enrichment) of non-ferrous metal ores (bauxite, copper ore, lead-zinc ores, etc.) and the production of non-ferrous metals - aluminum, copper, lead, gold, silver, etc. The production process requires large amounts of energy and water and therefore the plants are located near hydropower plants and coal basins.

B. Mechanical engineering

1. Essence, significance, development factors and characteristics

Mechanical engineering is an industry that produces machinery, equipment, products for the economy and household articles. It accounts for a significant share in the sectoral structure of industry. Through it, the industrialisation of the countries and the advent of STP into people's lives become possible. It provides employment and has a large share in the countries' exports. The processes of specialisation (division of the production of components and their manufacturing in independent enterprises) and cooperation (combining of the specialised enterprises in the production of the final product) are typical of machine building.

The development of mechanical engineering depends on socio-economic factors, supply of raw materials, transport infrastructure.

2. Sectoral and territorial structure

Mechanical engineering is characterized by a complex industry structure. Transport engineering provides about 1/3 of the industry's output. The leading sub-sector is the automotive industry (China, USA, Japan, Germany, etc.). Other sub-sectors are shipbuilding (about 90% of production falls on Japan, China, the Republic of Korea), production of locomotives and wagons (USA, Russia, Germany, France, etc.), agricultural machinery (Russia, USA, Germany). High-tech industries such as aircraft (USA, France), rocketry, electrical and electronic engineering (countries of East and Southeast Asia) are developing rapidly and increasing their share in production.

Machine-building enterprises are built close to the labor force.

C. Chemical industry

1. Essence, significance, development factors and features

The chemical industry uses a rich raw material base (organic and inorganic raw materials) and produces new materials (substitutes for natural ones), semi-finished products and household items.

It takes second place after mechanical engineering in the branch structure of industry. The chemical industry is one of the polluters of the environment.

Among the leading factors are raw materials, STP, consumption, transport and others. The chemical industry is characterized by a number of features - many products are obtained from one raw material or one product is obtained from several raw materials, the production is organized in plants and requires a lot of water, electricity, highly qualified specialists.

2. Sectoral and territorial structure

The branch structure of the chemical industry is complex and includes a large number of sub-branches, united in two groups - inorganic and organic synthesis. The territorial location depends on the raw materials and consumption.

The inorganic synthesis produces mineral fertilizers, acids, bases, salts and more. The leading manufacturers are USA, Canada, Russia, China, India.

The organic synthesis (about 70% of the total chemical production) covers petrochemistry (USA, Russia, the Gulf countries) and the production of plastics, fibers and rubber; production of paints, varnishes, soaps, detergents; the pharmaceutical industry (USA, Germany, Switzerland, France, etc.) and the cosmetics and perfumery industry (France, Italy).

TRAINING SECTION

Task 1. Write down the numerical indices so as to form correct pairs of "groups of countries - metal production".

1. Aluminum	China, Australia, USA (… ..)
2. Lead	Chile, Peru, China (… ..)
3. Copper	China, Russia, Canada, India (… ..)

3.11. LIGHT AND FOOD INDUSTRY

BASIC TERMS

household goods, traditional production, production cycle

The light and food industries are widespread. They provide employment to the population (mostly women), participate in exports and are characterized by a rapid return on investment. The main factors for development are raw materials, markets, labour resources and transport. The food industry contributes to solving the food problem.

A. Light industry

1. Essence

The light industry comprises sub-branches that process raw materials from agriculture, the chemical industry, some non-metallic minerals and produce consumer goods.

2. Sectoral and territorial structure

The light industry includes: textile, knitwear, garment industry, leather and fur, footwear, carpet, as well as glass, porcelain and earthenware, printing industry and production of jewellery.

The textile industry has the largest share of the production. It is the oldest industry to switch to factory production. The production consists of several stages, which allows specialisation and cooperation - processing of raw materials, production of yarn, production of fabrics (textiles), finishing (dyeing). The highest share (¾ of the production) is in the cotton textile industry, and the wool and silk textile industries are sub-sectors with traditions. The garment industry completes the production cycle.

Sectoral and territorial structure of the textile industry:

Branches	Main producing countries
Cotton textile industry	EU, Chana, India, Brazil, Egypt, Turkey, Russia
Woolen textile industry	France, Great Britain, USA, Australia, New Zeeland, Chana, Argentina
Silk textile industry	Cana, Japan, South Korea, India, France, Italy
Linen textile industry	Belgium, The Netherlands, Germany, the Baltic states, Belorussia, Poland, Canada, USA, China, Russia, France, Italy, the Philippines, countries of Southeast and Central Asia
Jute textile industry	Pakistan, India, China, Bangladesh, the Philippines, Afghanistan

Carpet weaving is traditional for the countries of Central Asia, Turkey, Iran. The leather and fur industry is highly developed in the USA, Brazil, India, China. Among the largest shoe manufacturers are Italy, Greece, Spain, the Czech Republic.

B. Food industry

1. Essence

The food industry processes raw materials from agriculture, produces food, beverages, tobacco products and more. in order to provide food for the population.

2. Sectoral and territorial structure

The food industry has a complex structure - it includes over 20 sub-branches. Businesses are ubiquitous. Some of the production facilities are located near the raw materials, and others - near the markets and consumption.

Sectoral and territorial structure of the food industry (table):

The bakery, dairy, meat and canning industries are developed everywhere.

Sub-branches	Main producing countries
milling industry	USA, Argentina, Canada, EU countries
oil industry	sunflower oil in Russia, Ukraine, France, Bulgaria; olive oil in Spain, Greece, Italy
sugar industry	Germany, Poland, Slovakia (sugar beet); Brazil, Cuba, Southeast Asian countries (from sugar cane)
wine production	The Mediterranean countries, Bulgaria, Hungary, Romania, Georgia, Moldova
brewing	Germany, the Czech Republic, Denmark, Belgium
meat industry	China, USA, EU countries (pork); China, USA, Brazil (poultry meat); USA, Argentina, Brazil (beef); Australia and New Zealand (sheep and lamb).

TRAINING SECTION

Task 1. Identify the factors that underlie the described characteristics and trends.

Toll manufacturing is a popular manufacturing practice in the garment industry. World-famous companies hire companies in Eastern Europe and Asia to sew under their brand. Thus, they achieve a lower price, mainly due to the lower cost of labour.

(……)

With the advent of man-made fibers, the geography of the textile industry is changing rapidly, as it has become possible for fabric production to develop in resource-poor countries as well. (…… .....

....)

Due to the short shelf life of fruit and vegetables, the canning industry is close to

(…….....)

Enterprises that include all stages of textile production are called

(…….....)

Task 2. Underline the 'country-production' pairs for which the specialization is determined by the raw material factor.

India - cotton textiles; France - fashionable clothes; China - silk textiles; Germany - sportswear; New Zealand - wool textiles; Switzerland - chocolate products; Argentina - milling industry; Belgium - beer; Cuba - sugar production; Poland - shoes; Italy - wine.

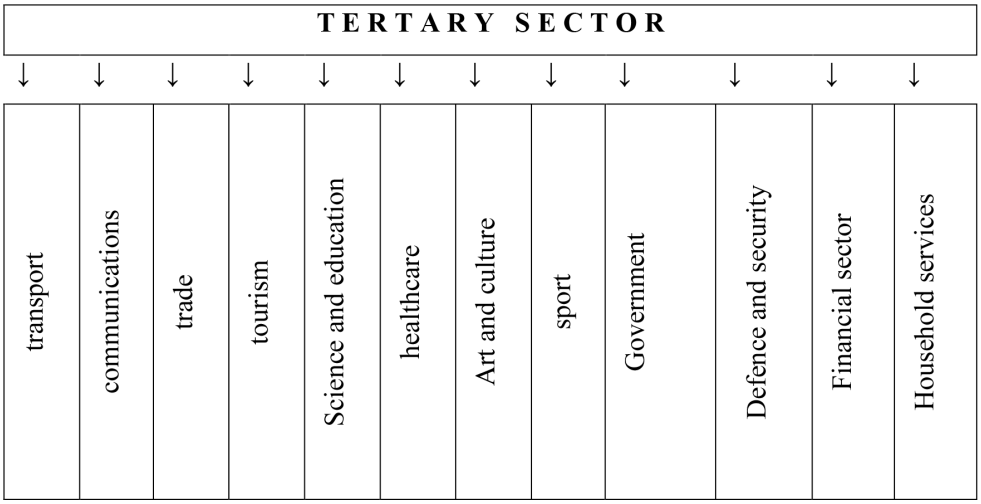
3.12. TERTIARY SECTOR. TRANSPORT

BASIC TERMS

transport system; transport infrastructure

The tertiary sector is a set of industries and activities of an intangible nature that meet the direct or indirect needs of the population. This is the sector that serves and connects the other sectors of the economy. It involves a large number of labour resources and is most dependent on STP. The share of the sector in GDP is an indicator of the level of development of the economy.

The tertiary sector has a complex sectoral structure.



Transport

1. Essence, significance, features, factors of development

Transport is a branch that transports passengers and goods over different distances. Transport is carried out through transport infrastructure - transport network (all roads) and facilities through which the transport is carried out).

The connection of the different types of transport in a given territory forms a transport system.

Transport is of great economic and social importance. Specific indicators such as tonne-kilometers and passenger-kilometers are used to measure the work performed. The development of transport is influenced by natural, socio-economic and environmental factors (transport is one of the main polluters of the environment).

2. Sectoral and territorial structure

Depending on the environment in which it is developed and the means of transport used, we can distinguish: land (rail, road, pipeline), water (sea, river) and air transport.

Rail transport is the most widely used transport for medium and long distances. It is characterized by security, accuracy and low transportation costs. Germany and Belgium have the densest railway networks. There are countries without rail transport - Nepal, Cyprus, Malta, Iceland, Libya, Chad. A trend in its development is the construction of electrified and high-speed lines.

Road transport is most popular for short and medium distances. Its advantages are comfort, speed and maneuverability. The trends are related to the construction of highways, as well as increasing the safety and quality of cars.

Pipeline transport is used to transport liquid and gaseous cargoes (oil, natural gas). It is cheap, environmentally friendly and does not take up arable land.

Maritime transport ranks first in the volume of long-distance transport of goods at a low price. River transport develops depending on the availability of inland waterways.

Air transport is preferred for the transport of passengers and perishable goods over long distances. It is of great importance for countries with large territories.

TRAINING SECTION

Task 1. Write three examples of tertiary industries that provide services related to meeting the spiritual needs of society:

1……..,2……3. ……..

Task 2. Determine the type of transport to which the characteristics apply by writing the correct letter.

A. Automobile B. Railway C. River D; Marine D. Air

It is used for long-distance transport at a relatively low price (…..)

Fast and maneuverable transport, preferred by passengers (….)

Used to transport people and goods by water inland (…..)

Expensive transport, suitable for fast transfer of people between continents and countries (…)

Most suitable for transporting bulky and heavy loads between continents (…,)

Task 3. For each of the listed river ports in Europe, determine the country in which it is located and the river

on which it is built according to the attached model.

London - Great Britain – the River Thames

Liege ……..- …….

Duisburg - …… - ……

Belgrade - ……..- …….

Vienna - …….. - ……

Seville - ……..- ……

Bratislava - …… - …… …

3.13. FOREIGN ECONOMIC RELATIONS. TRADE AND TOURISM

BASIC TERMS

energy balance, energy efficiency, power plant, alternative energy sources

1. Foreign economic relations

Foreign economic relations are a set of forms of trade-economic, scientific-technical, informational, monetary-financial and credit cooperation between the countries of the world. They are the result of the international division of labour and are crucial for the unification of national economies into a world economy.

Foreign trade and international tourism are among the main forms of foreign economic relations.

2. Trade

Trade is an exchange of goods and services, the result of the specialisation of the countries. It is internal and external (import and export). The difference between imports and exports is called the trade balance, which can be positive or negative.

The main importance of trade is the realisation of manufactured goods and services. The leading factors for its development are socio-economic.

The main share of the world exports is occupied by the products of the secondary sector (developed countries), trade in natural resources and agricultural products (developing countries). Trade in services is also developing rapidly. In the territorial structure of foreign trade there are three leading regions - Western Europe, North America and East Asia.

3. Tourism

Tourism includes activities related to the travel of the population for recreation, cultural enrichment, entertainment, etc. It is of great importance for the development of settlements, infrastructure, job creation and has an impact on international cooperation, cultural and trade exchange. The main factor for the development of tourism is the availability of tourist resources. They are natural and anthropogenic objects and phenomena that can meet different needs of the population. Transport and accommodation are important factors.

Tourism is domestic and international (active and passive). Its branch structure is becoming more complicated. There is a tendency to search for alternative forms of tourism. International tourist visits are constantly growing. In recent years, there has been a slowdown in the pace of tourist visits to the European region and an increase in the flow of tourists to Asia, Australia and Oceania. The fastest growing tourist market is China.

Tourism is one of the industries most affected by the constraints associated with the COVID-19 coronavirus pandemic.

TRAINING SECTION

Task 1. Visit the NSI website, look at foreign trade statistics and write down the five largest trade partners of Bulgaria

1……

2……

3……

4……..……...

5……

Task 2. In surveys, tourists point out that the most common reasons for dissatisfaction are the low level of service, overdevelopment, polluted nature, outdated accommodation, lack of entertainment, danger to the safety of tourists, poor road infrastructure.

Underline three of them that would STOP you from visiting a country.

Task 3. Identify and write down the tourist region to which the text refers.

This is the smallest tourist region in the world. It includes Iran, Iraq, Lebanon, Syria, Palestine, Jordan, Kuwait, Qatar, Saudi Arabia, Yemen, Oman, ie. countries of Southwest Asia. The region also includes Egypt and Libya, which, although African countries, are associated with the processes in the region and have its peculiarities. It has valuable natural and especially cultural-historical and religious landmarks. Unlike most of the other tourist regions in the world, recreational tourism is not decisive for the Middle East region. Egypt and Jordan rely on cultural tourism, the UAE - on leisure and shopping tourism, Saudi Arabia - on religious tourism.

("Management and quality" International conference)

Task 4. Recognize and write under each image the type of tourist resource it presents:

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3.14. WORLD AND REGIONAL ORGANISATIONS

BASIC TERMS

UN, EU, European Parliament, European Commission, Council of the European Union, European Court of Justice, NATO

Global and regional organisations (over 300) are a form of international cooperation.

1. World organizations

The United Nations (UN), based in New York, is the largest international organisation. The UN's goal is to guarantee peace and solve international problems of an economic, social, cultural and humanitarian nature. All sovereign and internationally recognised states are members of the organisation. Its main bodies are the General Assembly, the Security Council, the International Court of Justice (The Hague), the Economic and Social Council. There are 16 specialised organisations within the UN:

The Food and Agriculture Organization (FAO), based in Rome, is a specialised organization in the field of agriculture and food policy. Its main tasks are to fight hunger, increase the productivity of agriculture, fishing and forestry, and support the food programs of the Member States (over 190 countries).

UNESCO is based in Paris (over 190 countries). Its main tasks are the development of international cooperation in the field of science, education, culture and communications, as well as the fight against illiteracy and the protection of the world's cultural and natural heritage.

The World Trade Organization (WTO), based in Geneva, resolves controversial trade issues.

The World Health Organization (WHO), based in Geneva, is the coordinating body for international health care.

2. Regional organizations

The European Union is a regional political and economic union of 27 European countries. It is the successor to the European Economic Community, established in 1958. Since 1993, it has been transformed into the European Union. Its main principles are free movement of goods, services, labour and capital. The Union has a single currency - the euro. The European Union is one of the three centres of the world economy with one of the largest internal markets in the world. Its governing bodies are:

The European Parliament, the legislature, consists of members directly elected every 5 years, according to the quota for the participation of individual countries. It meets every month in Strasbourg.

Council of the European Union - the supreme political body with legislative functions. It consists of the prime ministers of the member states (Council of Ministers) and meets every six months in the country holding the presidency during that period. The headquarters are in Brussels.

European Commission - supreme executive body meeting in Brussels. It consists of "commissioners" (1 from each country), independent of the governments of the countries, each of whom is responsible for a given sector.

The European Court of Justice, based in Luxembourg - ensures compliance with European law - resolves disputes between member states, between institutions, individuals and legal entities.

The North Atlantic Treaty Organisation (NATO) is a military-political alliance based in Brussels. The main goal of the organization is to ensure the safety of member countries by carrying out peacekeeping missions in different parts of the world. NATO has 29 member states from Europe and North America.

There are other international organizations whose goal is stability in the economic, social and cultural development of their countries: the European Free Trade Association (EFTA), the African Union, the Organization of American States (OAS), the Association of Southeast Asian Nations (ASEAN).), Organisation of the Petroleum Exporting Countries (OPEC).

TRAINING SECTION

Task 1. Visit the EU website and answer the questions.
Make a chronology of EU enlargement:
Which are the founding countries in 1957, in which year and which countries joined?

……

How many EU member states are there as of July 1, 2020?

……

Which are the candidate and potential candidate countries for EU accession?

.....

Since when has the euro been the single currency of EU countries?

.....

How many countries make up the Eurozone?

.....

Which countries are outside it?

.....

Task 2. Which are the 3 countries united by the name BENELUX?
1……
2……
3……

Task 3. Find out which organisations Bulgaria is a member of and when it joined them? Comment on how its membership in them affects the development of the country.

.....
.....
.....
.....

Task 4. The leading UN bodies and organisations make important decisions. Look for an example of a solution of global importance and write it against each of the organisations.

UNESCO ……...
FAO ……
UNICEF ……...
WHO ……
International Court of Justice……...…….....

4. Regional Geography

Regional geography is a part of geography that focuses on "regionalisation", i.e. the separation into individual regions. They differ from each other in geographical, cultural, economic and other features. In the regional geography of the world, the term "regional state" is defined, which stands for a country or countries that are the core region and have great natural, demographic and economic potential. Geographically, six world regions can be distinguished - Europe, Asia, North America, South America, Africa, Australia and Oceania. As a rule, the world regions and the countries in them are characterised by the same algorithm. The same indicators are used in their characterisation.

4.1. EUROPEAN REGION

BASIC TERMS

region; Council of Europe

1. Geographical location

The region covers the continent of Europe and the Asian part of Russia. To the north and west, the shores of the European region are washed by the waters of the Arctic and Atlantic Oceans. To the south and southeast, the Mediterranean Sea separates Europe from Africa. The European and Asian regions are connected by land. The border runs along the eastern foot of the Ural Mountains.

2. Natural environment

The region has a variety of natural resources. The plains and lowlands predominate, which favours the development of most economic activities. Its highest mountains rise in its southern parts (the Alps, the Caucasus, Altai, the Carpathians, etc.). The region has several climate zones. Among the most important minerals are oil, natural gas, coal, iron ore. Large navigable rivers (the Volga, the Danube, the Rhine, the Ob, the Yenisei, etc.) flow in the region. Almost half of the territory is covered with forests.

3. Population

The population of the region's (740 million people) is unevenly distributed and ranks third after Asia and Africa. The natural increase is low and in the eastern part it is negative. Its average age is the highest compared to other regions. The region is affected by a demographic crisis, which is why a demographic policy is being pursued to stimulate the birth rate.

The largest language family in the region is that of the Indo-European languages. Most of the believers are Christians (Catholics, Orthodox, Protestants). The share of Muslims is small.

The form of government is dominated by the republics, and the structure of government is dominated by unitary states. 12 of the states are monarchies. The largest international organisations are the Council of Europe and the European Union. The Council of Europe includes 47 countries and deals with the protection of human rights. The largest military-political organisation is NATO, in which 27 European countries participate. The European Union is a political and economic organization that includes 27 countries.

4. Economy

The region generates more than ¼ of the world's GDP. The natural resources of the region are very diverse, but are depleted due to their intensive use. This requires the import of a number of raw materials. The most important socio-economic factors are political, demographic and economic. The uneven development of the region is the reason for large differences between rich and poor countries. In terms of arable land, the region ranks 2-nd after Asia. Agriculture (Germany, Italy, France, etc.), logging (Russia), fishing and aquaculture are the most developed primary sectors of economy. The secondary sector is represented by metallurgy, mechanical engineering, energy, textile and food industries (Germany, Great Britain, France, Italy, Spain, Sweden, Russia). Tourism is the most represented branch in the tertiary sector (France, Italy, Spain, etc.). The continent has the densest transport network in the world. The most important trading partners are the United States and the Asian countries.

5. Specific problems

Some of the typical problems of the region are an aging population, international terrorism, refugee flows, illegal migrants, poverty and unemployment.

TRAINING SECTION

Task 1. Examine the statistics from the interactive map and give examples of European countries according to the following criteria:

Higher positive natural growth	
Low positive natural growth	
Negative natural growth	
Smaller share of the population aged 65 and over	
Large share of the population aged 65 and over	

Task 2. Taking into account the data from the previous task, make an assumption about the problems that the countries will face.

……

Task 3. Present each country in up to 30 words and in no more than four sentences. In the presentation you should indicate the most important resource, the most important economic specialisation, the most interesting cultural characteristics and the most remarkable tourist site.

Austria, Poland, Denmark, Ireland, Croatia, Portugal

Task 4. Visit the site and check your knowledge of the countries and capitals in Europe.

4.2. ASIA REGION

BASIC TERMS

ASEAN

Geographical location. Asia is the largest continent and region on Earth. It is located east of the Greenwich meridian. It is bordered on the north by the Arctic Ocean, on the east by the Pacific Ocean, and on the south by the Indian Ocean. To the west there is access to the Red Sea, the Mediterranean, the Sea of Marmara and the Black Sea.

Natural environment. In Asia, all types of relief are widespread - the Great Plains of China, the Mesopotamian and Indo-Gangetic Plain, high mountains (the Himalayas, the Pamir Mountains, etc.), deserts (Gobi). The great rivers - the Yangtze, the Yellow River, the Ganges, the Indus, the Tigris and the Euphrates are used for transport, irrigation and electricity. The climate is diverse - from equatorial to temperate. The region has extremely diverse and large reserves of minerals - oil, natural gas, coal, ores of ferrous and non-ferrous metals and various types of non-metallic minerals. Earthquakes, tsunamis, volcanic eruptions, typhoons, floods, droughts are dangerous natural phenomena.

Population. Asia is the most populous continent on Earth. Its territory is home to more than half of the world's population - 4.6 billion. The birth rate and natural increase are high. The largest cities in the world are in Asia - Tokyo, Shanghai, Bangkok, Mumbai, etc.

Chinese and Hindi are spoken by the greatest number of Asians. Hinduism and Islam are practised. Buddhism, Confucianism, Shintoism, Christianity and Judaism are also widespread. The main language families are the Indo-European and the Sino-Tibetan ones.

Economy. There are very rich and very poor countries in the Asian region. Japan, the Republic of Korea, Taiwan, Singapore, Saudi Arabia, Qatar, the UAE, Kuwait, and Oman have the highest living standards. Asia has vast human, material and natural resources. The region is a leader in the production of wheat, rice, pork and poultry, fish and seafood. The countries around the Persian Gulf are the largest exporters of oil and natural gas.

Most countries in the region are republics, and the state system is dominated by unitary states. There are 12 monarchies in the region. The largest international political and economic organization in the Asian region is ASEAN (Association of Southeast Asian Nations). It includes ten countries. Its main goal is to develop economic, political and cultural cooperation in Southeast Asia.

Specific problems. Typical problems for many Asian countries are: poverty, hunger, epidemics, lack of clean drinking water, overpopulation, polluted environment, conflicts between countries, civil wars, terrorism, territorial disputes, natural disasters.

TRAINING SECTION

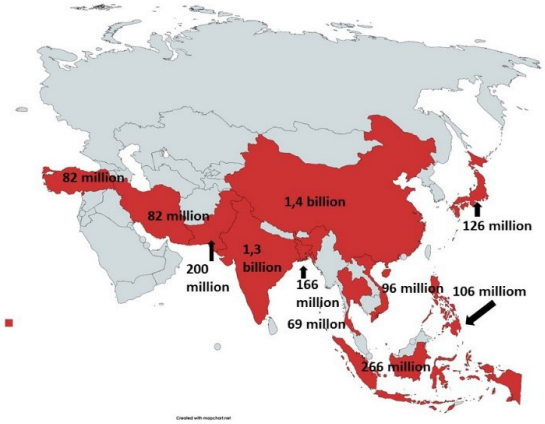
Task 1. Assess the natural resources in Asia and write down the countries in which they are concentrated. Use the following evaluation symbols: ***** - very high potential, *** - medium potential and ** - low potential.

Resource	Assessment	Countries
Energy resources		
Water resources		
Land resources		
Forest resources		

Task 2. Present each country in up to 30 words and in no more than four sentences. In the presentation you should indicate the most important resource, the most important economic specialisation, the most interesting cultural characteristics and the most remarkable tourist site.
Nepal, India, Iran, Pakistan, the Philippines, Kazakhstan, the Republic of Korea, Mongolia

Task 3. Visit the site and test your knowledge of Asian countries and capitals.

Task 4. Asia is home to 11 of the 20 largest countries in the world. Identify them.



1 ……
2 ……
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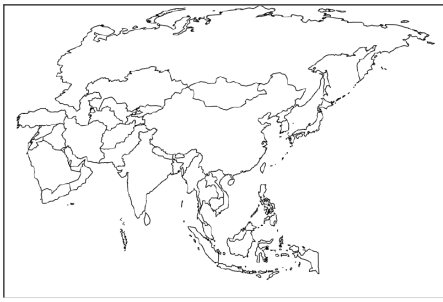
20 ……

Task 5. Write down the names of the countries specialising in the following products. You can select the country only once.



1. petrol …….. 2. Coal ……..……
3. tea …….. 4. Rubber ……..
5. cars …….. 6. TVs ……..
7. phones …….. 8. computers ……
9. rice …….. 10. ships ……

4.3. NORTH AND SOUTH AMERICA

BASIC TERMS

NAFTA

1. North America

Geographical location. The North American region is located entirely in the Western Hemisphere. Its shores are washed by three oceans - the Pacific, the Arctic and the Atlantic. The Canadian archipelago is located in its northernmost part and it is bounded on the east by Greenland - the largest island in the world. To the south, the border with South America passes through the Panama Canal, and the Bering Strait separates North America from Asia.

Natural environment. The Rocky Mountains and the Cordilleras rise in the western part of the region, the Great Plains, the Mississippi Plain and the Appalachians are to the east, and the Mexican Plateau is to the south. All climates are represented in the region. The predominant minerals are iron, nickel, lead-zinc, copper, uranium ore, gold and diamonds. The region is rich in fossil fuels, and it ranks first in coal reserves. North America has large reserves of fresh lake water, which are crucial for agriculture, energy and transportation. The largest rivers are the Mississippi, the Mackenzie, the Columbia, and the Colorado.

Population. The population is 584 million and it is unevenly distributed. It is concentrated around the Great Lakes and along the Atlantic and Pacific coasts. The region has some of the largest urban agglomerations - Mexico City, New York, Los Angeles, Chicago, Toronto, San Francisco, etc .

The indigenous people of the region are Eskimos and Indians, but today the predominant population is that of immigrant descent. The most common languages are English, Spanish and French. Christianity is the dominant religion on the continent. Part of the population professes Judaism, Buddhism, Islam, Hinduism and local religions.

Economy. The region is one of the largest producers of corn, wheat, tropical and subtropical crops, meat and meat products. The industry is highly developed. The most economically developed countries in the region are the United States and Canada. In 1992 an agreement was signed between the United States, Canada and Mexico – the North American Free Trade Agreement (NAFTA), which aims at free trade and investment between the three countries.

Specific problems. This region has strong climatic contrasts - tornadoes, hurricanes, floods, earthquakes, permanent cold or heat. Illegal migration from Mexico to the United States is a huge problem.

2. South America

Geographical location. Most of the region is located in the Southern Hemisphere and is crossed by the Equator, with the Southern Tropical Circle passing through its middle part. It is located between two oceans - the Pacific and the Atlantic

Natural environment. The region is characterised by diverse and contrasting relief. Half of the territory is occupied by plains and lowlands. The Andes rise in the western part. They are difficult to cross and hinder economic activity and connections between the western and eastern parts of the region. The region has large reserves of wood and minerals - oil, natural gas, coal, manganese, uranium ores, bauxite, nitrate, etc.

Population. The population of the continent is 427 million people. The most densely populated areas are along the coastlines and rivers. The majority of the population is mixed and originated from the local (Indians) and immigrants. In most countries, Spanish is the official language, and in Brazil it is Portuguese. Over 90% of believers are Catholics.

Economy. The economy in the region is unevenly developed. The most economically developed countries are Brazil, Argentina, Colombia, Chile, Peru. Of the mining activities, the most highly developed ones are mining of fossil fuels, copper and iron ore, bauxite, silver, coal, etc. The richest country in oil reserves in the region is Venezuela. The main crops are coffee, cocoa, bananas, sugar cane, wheat, cotton, corn, soybeans, citrus fruits. The most developed branches of animal husbandry are cattle breeding and pig breeding. Metallurgy, machine building, automobile construction, aircraft construction are also represented.

Specific problems. Serious environmental problems are created by the destruction of forests and the extraction of minerals. Extremely poor people live in the fast-growing cities which have high unemployment and crime rates. The impact of natural disasters (earthquakes) is also negative.

TRAINING SECTION

Task 1. Using the map from the applications, determine what resources the following South American states have:

Brazil	
Chili	
Venezuela	
Argentina	
Columbia	

Task 2. Identify the tourist attractions and the countries in which they are located:





Task 3. Present each country in up to 30 words and in no more than four sentences. In the presentation you should indicate the most important resource, the most important economic specialisation, the most interesting cultural characteristics and the most remarkable tourist site. Colombia, Peru, Uruguay, USA, Brazil, Canada, Mexico, Argentina, Cuba, Chile

4.4. AFRICA AND AUSTRALIA AND OCEANIA REGIONS

BASIC TERMS

The African Union

1. Africa

Geographical location. The region covers the continent of Africa, the adjacent islands and the Sinai Peninsula. The region is located on both sides of the equator. Both tropical circles pass through it. Its shores are washed by the Mediterranean Sea to the north, by the Indian Ocean to the east, and by the Atlantic Ocean to the west.

Natural environment. Africa is a high continent. The northern and western parts are low, and the eastern and southern parts are mountainous. Africa has the largest desert on Earth - the Sahara. The region is rich in minerals - diamonds, gold, oil, natural gas, etc. The subtropical climate in the extreme northern and southern parts provides the most favourable conditions for living and economic activity.

Population. Africa's population is growing the fastest and is the youngest in the world. The population is 1, 216 billion. Many countries are experiencing a demographic explosion. There are two predominant races - Negroid and European. The population of the region speaks over 800 languages. Christianity and Islam are the most widespread religions, and some tribes practice local religions. The accepted official languages are English, French, Portuguese.

Economy. African countries are among the least developed ones. The region has the poorest population in the world. The mining activities are leading.

Traditionally, rice, corn, oranges, tangerines, olives, grapes, cotton, dates, coffee, cocoa, bananas are grown. Pasture farming is predominant. Oil, natural gas, coal, iron and copper ore are mined. The processing activities are represented by the production of textiles and food products. The main exports are agricultural goods and minerals, and the main imports are machinery, medicines and food. In many countries, health and education are underdeveloped.

The African Union is an international organisation uniting 55 African countries, whose goals are the political and socio-economic integration of the continent, the maintenance of peace and political stability.

Specific problems. Some of the major problems are: poverty, unemployment, hunger, lack of clean drinking water, deadly epidemics, illiteracy of a large part of the population. Africa is the continent with the most conflicts - ethnic, religious and territorial.

2. Australia and Oceania

Geographical location. The region covers the continent of Australia and many islands of Oceania (New Zealand, New Guinea, etc.). The region is the only one that is surrounded only by oceans and seas.

Natural environment. Much of the continent of Australia is occupied by plateaus and flat lands. The relief of most islands is mountainous.

Australia is poor in surface water, but rich in groundwater, fossil fuels, ores, gold, platinum, diamonds and coal. The islands in Oceania are of continental, volcanic and coral origin. The climate is favourable for growing heat-loving crops.

Population. The Australian region has the smallest population (25 million). It is unevenly distributed. The local population includes Aborigines, Maori, Papuans. The most common language is English. The religious composition is dominated by Christians, but there are also believers in other world and local religions.

Economy. The structure of utilised land is dominated by pastures, followed by forests. This determines the essential role of animal husbandry and logging in the region's economy. The small island nations are still largely dependent on fishing and agriculture. The extraction of ores, fossil fuels, precious metals, as well as their processing are based on the rich deposits. All types of transport are developed. In recent decades, the role of tourism has been growing.

Specific problems. Volcanic eruptions and strong earthquakes often occur in Oceania. There are major economic differences between some countries. Ecological problems are emerging as a result of the extractive activities.

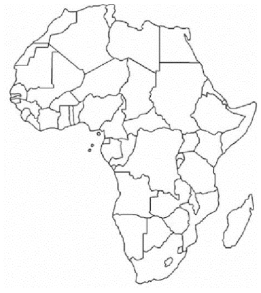
TRAINING SECTION

Task 1. Examine the statistics from the interactive map and give examples of African countries according to the following criteria:

High birth rate	
High natural growth	
Large share of population under 15 years	
Smaller share of the population aged 65 and over	
Short life expectancy	

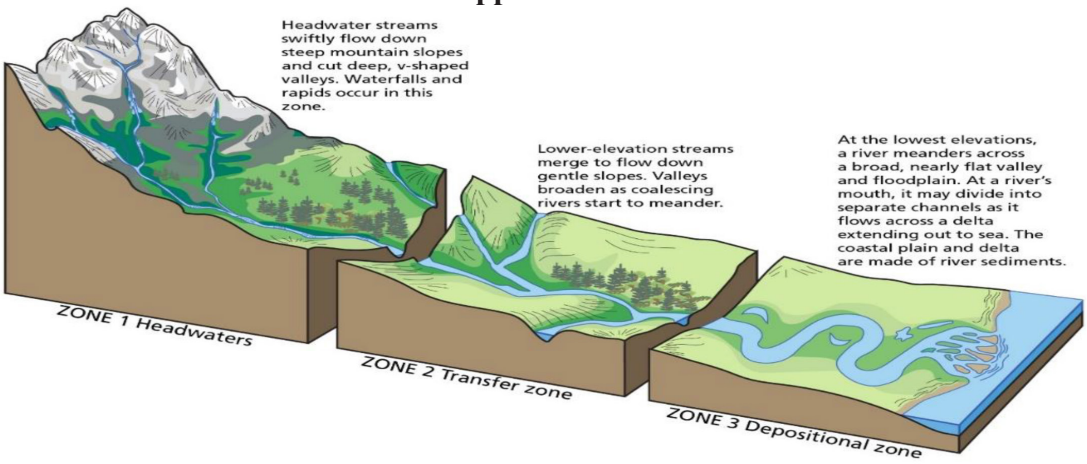
Task 2. Taking into account the data from the previous task, identify the problems African countries are facing.

Task 3. Write down the names of the the countries specialising in the following products. You can select the country only once.

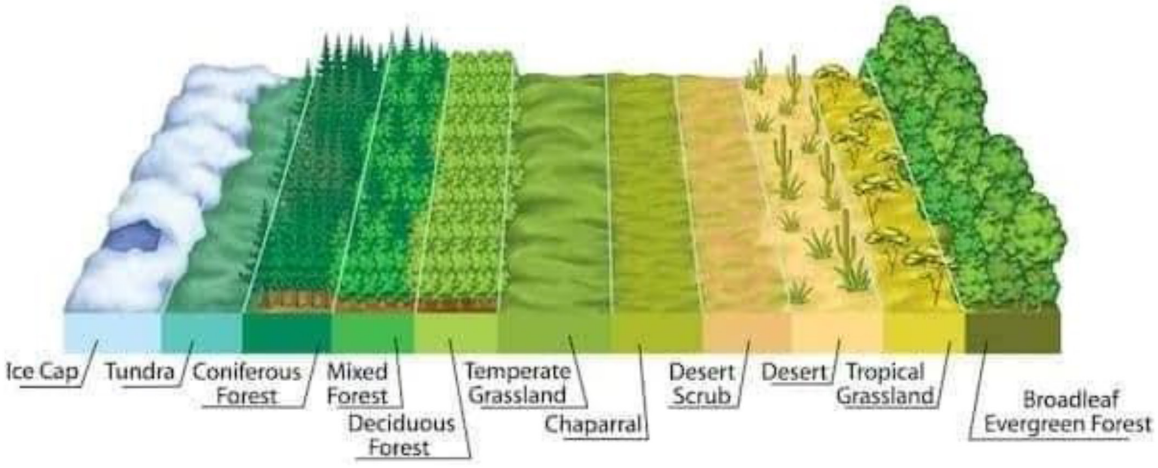


1. petrol…….
2. cotton ……...
3. coffee ……...
4. diamonds ……
5. cocoa ……..
6. gold …….

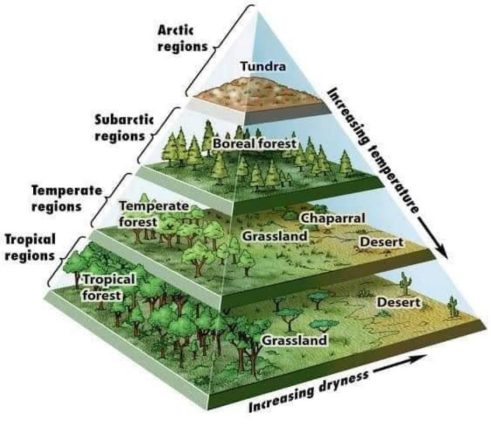
Application 1



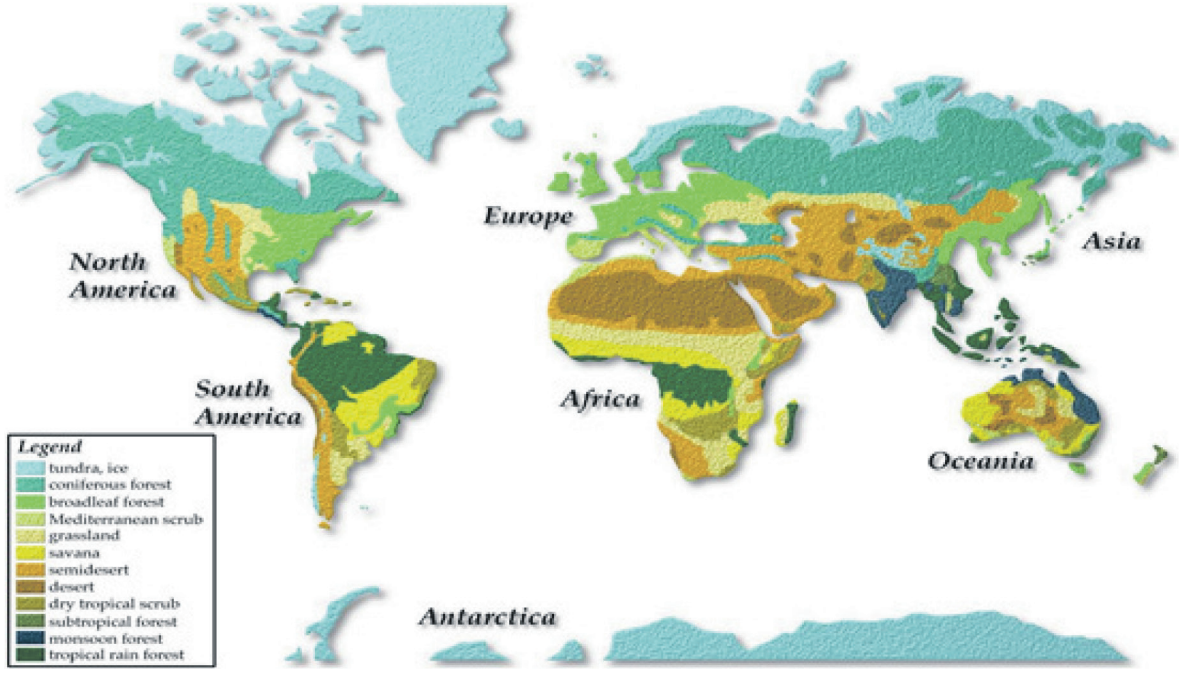
Application 2



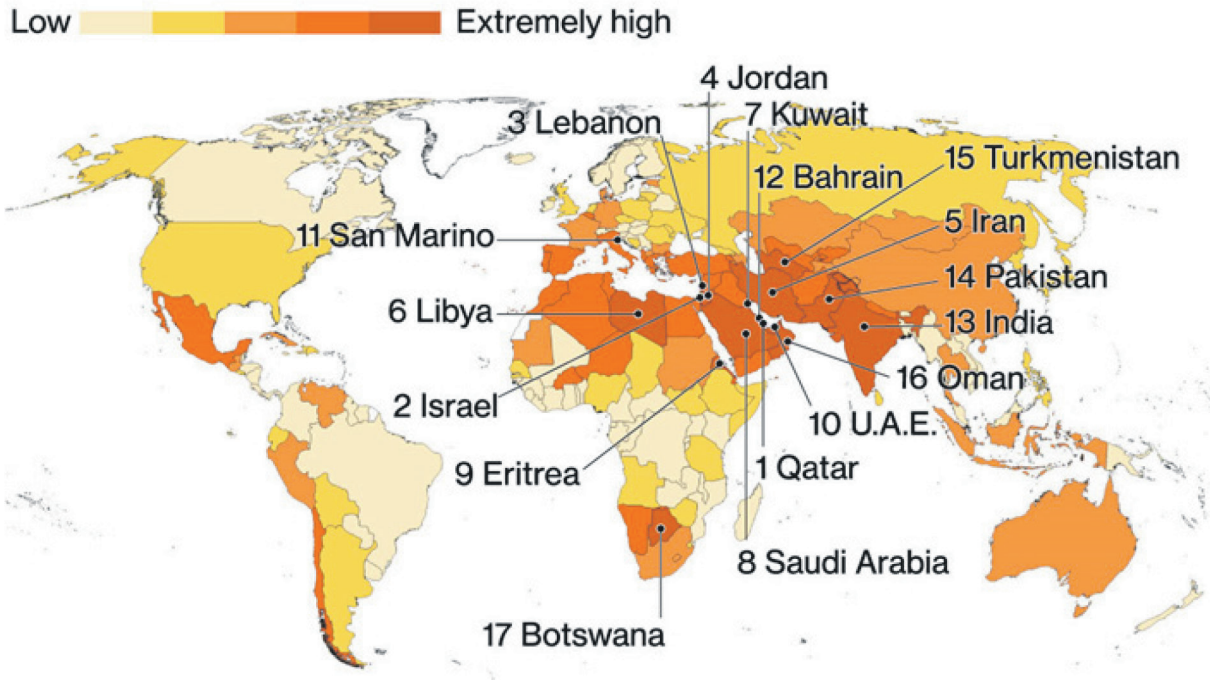
Application 3



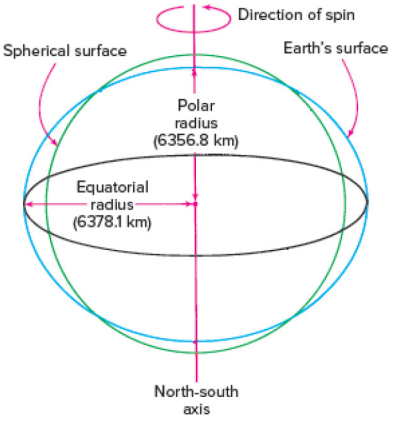
Application 4

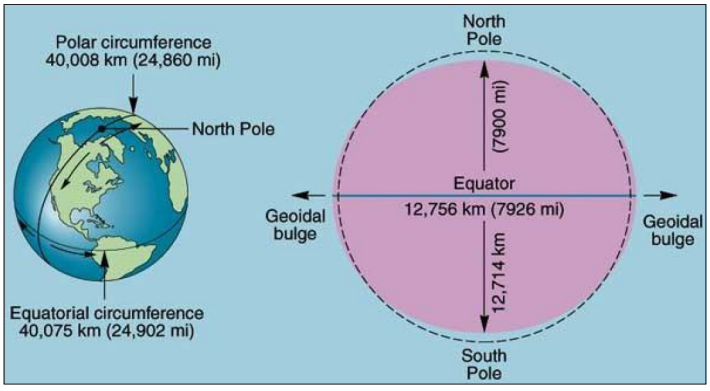


Application 5



Task 1. Calculate and explain the difference in the equatorial and polar radus, the diameter and orbits of the Earth.





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Task 2. Using the map of time zones in the atlas / textbook, determine the time in the indicated cities if it is 4 p.m. in Sofia.

City	longitude	time	City	Longitude	time
Las Vegas	115.1° W		Madrid	3.7° W	
Monterey	100.3° W.		Mumbai	72.9° E.	
Sao Paulo	46.6° W		Yokohama	139.7° E	

Task 3. Watch this video and write a text, using the following words and dates: summer solstice, tropic of Cancer, 22 December, tropic of Capricorn, spring equinox, 23 September, Equator, winter solstice, 22 June, Autum equinox, 21 March

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Task 4. It is known that the Earth's axis is inclined by 23.5 ° to the orbit in which it orbits the Sun. What would the consequences for life on Earth be if this tilt was less than 10 °?

.....

Task 5. The biggest sports competition for 2021 will be the Olympics in Tokyo. The most interesting competitions will be held between 4 p.m. and 6 p.m. local time. Calculate at what local time the live broadcasts will be in Bulgaria, Great Britain, Argentina and Alaska. In which country will it be most inconvenient for sports fans to watch the competitions live?

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Task 1. Read the text and answer the questions:

- Which geospheres were affected by the eruption of Krakatoa volcano?

……

- Find evidence in the text of the interaction between the geospheres

…… ……

- Why is the eruption of the volcano considered one of the greatest disasters in human history?.....

On September 12, 1883, the Krakatoa volcano, located in present-day Indonesia between the islands of Java and Sumatra, erupted catastrophically, releasing 25 cubic kilometers of rocks, ash and other volcanic mass into the atmosphere. The eruption destroyed two-thirds of the island of the same name. 57m tsunami waves hit the shores of Java and Sumatra. As a result of the eruption of the volcano, 165 settlements were destroyed and another 132 suffered serious damage. The human casualties were officially 36,000 and unofficially 120,000, tens of thousands more were injured, many of them in the ensuing tsunami. The eruption is the most powerful in written human history - equal to the explosion of 200 megatons of TNT, or 13,000 times the power of an atomic bomb dropped on Hiroshima. The eruptions that followed in the following years gave birth to a new island called Anak Krakatau (Krakatau's Child). The eruption of 1883 affected virtually the entire globe, as the pillar of ash and dust fired at a height of 80 km dissipated for years, and in 1884 the global temperature dropped by about 1.2 degrees Celsius. Source: dnevnik.bg

Task 2. In the last 20 years, several destructive earthquakes have been registered. Two of them occurred near the continent of Asia. On December 26, 2004, a strong earthquake was registered in the Indian Ocean. Another powerful earthquake had its epicentre in the Pacific Ocean off the coast of Japan. Investigate why these earthquakes are considered to be among the greatest catastrophes of the new millennium.

……

Task 3. Read the text. Describe which atmospheric layers Felix Baumgartner passed through and how the temperature and air density changed during the jump?

Felix Baumgartner became the first man to fly free from a height of over 39 km above the Earth and made the "jump from the edge of space" mission possible. He is also the first person to cross the sound barrier in free fall, reaching a speed of 1,342 km / h, the BBC reported. Felix failed to improve only the record for the longest free fall. According to the data, he fell freely for 4 minutes and 20 seconds, which is close to the previous record. Around 18:30 on 14.10.2012. Baumgartner flew successfully from the desert in Roswell, New Mexico, with a capsule lifted by a special balloon full of helium. In about two and a half hours he reached a record altitude of over 39 km. At 21:04 Bulgarian time, the capsule gateway opened. Baumgartner reported that he was ready to jump and took off at 21:06. Baumgartner's entire jump lasted 9 minutes and 3 seconds. Source: Dariknews 4.10.2012

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Task 4. Read the text and answer the questions:

- What are the reasons for the northern and southern lights?

.....

- Where can they be seen? .....

An aurora (from the Latin word aurora for sunrise) is a natural light display in the sky, particularly in the high-latitude (Arctic and Antarctic) regions; it is caused by the collision of atmospheric atoms with energetic, charged particles coming from space. The charged particles originate in the magnetosphere and solar wind and then are directed by the Earth's magnetic field into the atmosphere. The Earth's magnetic field directs the charged particles to the Earth's magnetic poles—as a result, it is the easiest to see the aurora near the poles. In northern latitudes, the effect is known as the aurora borealis (or the northern lights), named by Pierre Gassendi in 1621 after the Roman goddess of dawn, Aurora, and the Greek name for the north wind, Boreas. The northern lights have had a number of names throughout history: the Greek called the phenomenon the "Dance of the Spirits"; in Europe in the Middle Ages, the auroras were commonly believed to be a sign from God. The aurora borealis' southern counterpart, the aurora australis (or the southern lights), has almost identical features. It changes simultaneously with the northern auroral zone and is visible from high southern latitudes in Antarctica, South America, New Zealand, and Australia.

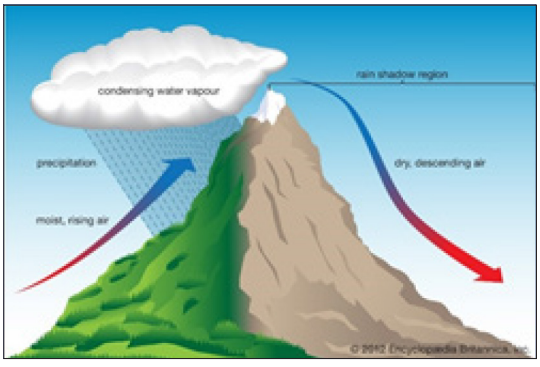
Source: White Trail adventure

Task 5. The table shows the average values of the annual temperature by periods. Compare the values of the beginning of the XX century and the beginning of the XXI century. Do you find a trend? Try to explain the trend. .....

Period	Mean annual temperature	Period	Mean annual temperature	Period	Mean annual temperature
1901-1910	9.6°C	1911-1920	10.1°C	1921-1930	10.5°C
1931-1940	10.3°C	1941-1950	9.7°C	1951-1960	9.9°C
1961-1970	9.7°C	1971-1980	9.7 °C	1981-1990	10.1°C
1991-2000	10.5°C	2001-2010	10.6°C	2011-2019	11.4°C

Task 6. Do you remember which the rainiest place in Europe is? If you have forgotten, read the following text. Then, using the diagram, try to explain Crkvice record.

On the windward slopes of the Dinaric Mountains more precipitation falls - in some parts over 2000 mm per year, and in the area of the Bay of Kotor - up to 5000 mm per year. At Crkvice station, the absolute maximum precipitation in Europe was measured - 5317 mm.



Task 7. Write the names of types of precipitation:¬

……………………………............ 1. The condensed water of the atmosphere, occurring in drops.

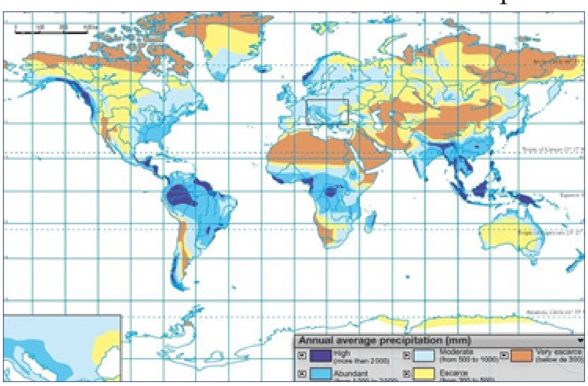
……………………………............ 2. The moisture deposited in the form of water droplets on the surface.

……………………………............ 3. A type of precipitation which falls in the form of small pellets of ice.

……………………………............ 4. A coating of clear ice.

……………………………............ 5. One of the solid forms of precipitation.

Task 8. Use the information on the map and determine the areas with the most precipitation:



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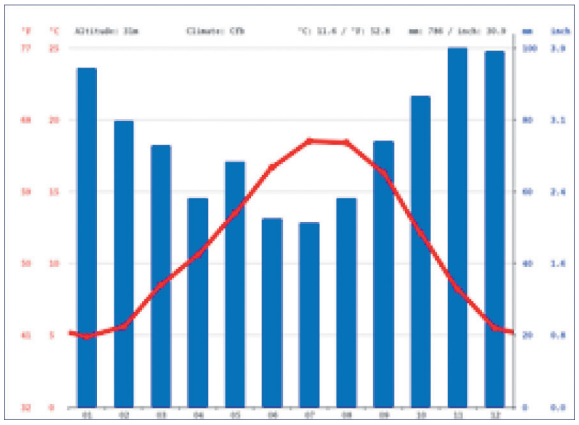
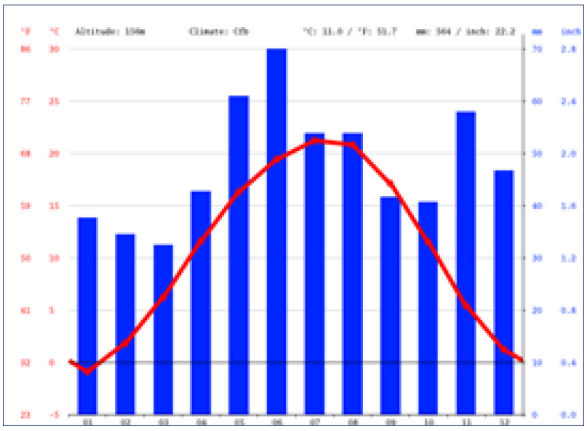
Task 9. Watch next video and fill the blanks.

………………………….. fronts occur when light, warm air meets cold air. The warm air rises gradually over the cold air as they meet. As the warm air rises it ………… and ……….. to form clouds. Rain falls along the front as long periods of drizzle or steady rain. The symbol on a weather map for a warm front is made up of red ………. along a line..

……………………… form when cold air advances towards warm air. The cold air ………………… the warmer air in front of it, forcing the warm air to ……… above it more vigorously than at a warm front. As the warm air rises much faster it may ……….more rapidly and may form large cumulonimbus clouds. Heavy rainfall may result and the air temperature may become noticeably cooler as the cold front passes by. A cold front is symbolised on a weather map by blue ………………along a line.

Task 10. Compare the climatograms of Nantes and Budapest. Where is the winter milder? And where is the hottest summer? Explain the differences found





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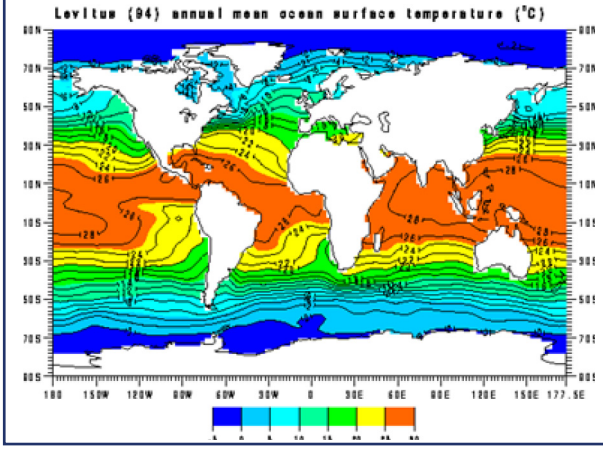
Task 11. Read the characteristics and identify the climate zone:
The climate is hot and humid. Temperatures throughout the year are between 27 ° C and 35 ° C. Precipitation is almost daily and annual quantities exceed 2000 mm. ……
The air temperature is high all year round. Precipitation is seasonal. Winter is dry and summer is wet.……
Winters are mild and summers are hot. The summer season is dry, precipitation falls mainly in winter. …… ..
Winters are cold, often with negative daytime temperatures. Summer is hot. Most precipitation falls in May and June. …… ..

Task 12. Examine the map showing the horizontal temperature distribution. The influence of which factors do you find?



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Task 13. Using the map from the previous task, consider why at the same latitude the water temperatures are higher on the east compared to the west coasts of the continents.

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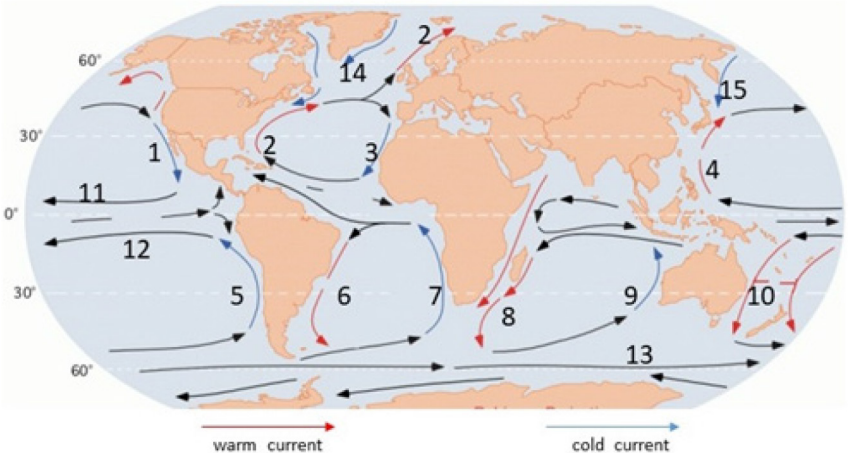
Task 14. Fill in the blanks in the text.

Along the Lesser Antilles, the North Trade Current is divided into a northern part, continuing northwest to the Greater Antilles (the Antilles Current) and a southern part, which enters the Caribbean Sea through the straits of the Lesser Antilles. It then crosses the Yucatan Strait into the Gulf of Mexico, from where it exits the Florida Strait as the Florida Current. In fact, it gives rise to one of the most famous and important currents - ……. This current initially follows the banks of the …… ……. Up to about 40 ° N, under the influence of westerly winds and the deflecting force of Coriolis, it changes its direction to the east and approaches the shores of the continent …… .. The main stream of water passes between the island… ……. and ……. peninsula, as it strongly ……. the climate in the northernmost parts of Europe.

Task 15. Use the map in the atlas and write down the names of the ocean currents:



1……. 2…….
3……. 4…….
5……. 6…….
7……. 8…….
9……. 10…….
11……. 12…….
13……. 14…….
15…….

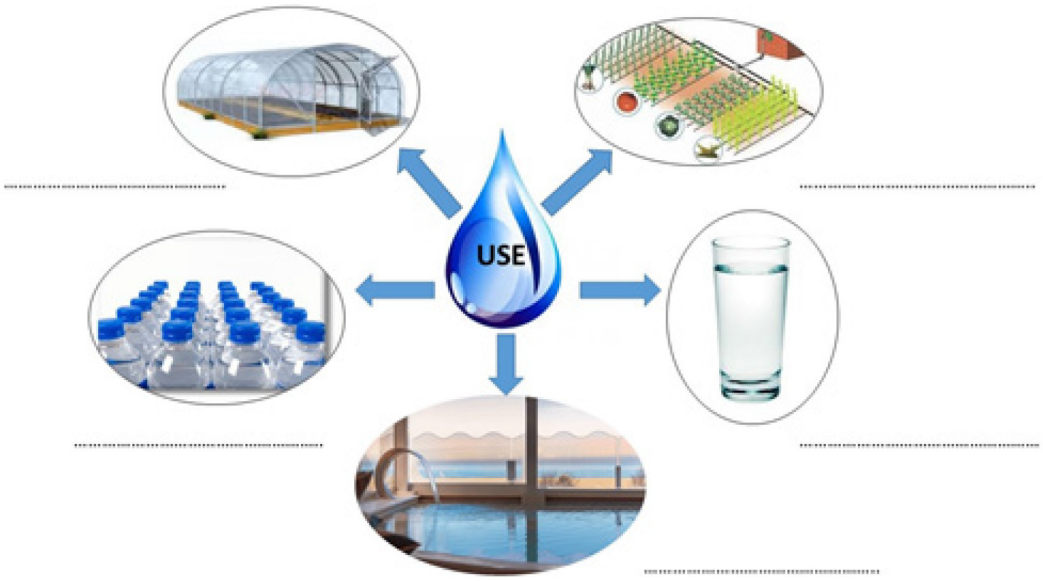
Task 16. Complete sentences using the following phrases:

the terraces of the rivers and the foothills; between impermeable rocks; a resource for spa tourism; limestone and marble

Groundwater ……
Artesian waters ……..
Karst waters ……....
Mineral waters …… ..…

Task 17. Arrange the glaciers according to their altitude starting from the highest one.
1. Furtwängler Glacier in Kilimanjaro 2. Siachen in the Himalayas 3. Aletsch in the Alps 4 . Kebnekaise Glacier in Sweden 5. Thwaites Glacier in Antarctica

Task 18. The diagram shows the possible uses of groundwater. Write them down.



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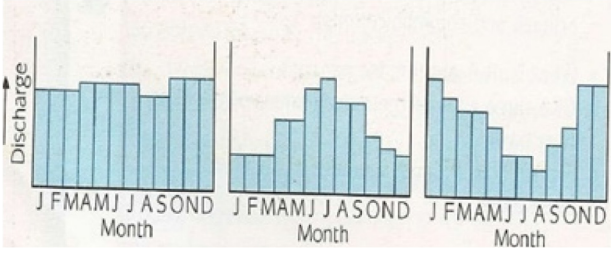
Task 19. Examine the hydrograms. Determine the seasons of high water and low water. Explain the differences in the annual runoff distribution



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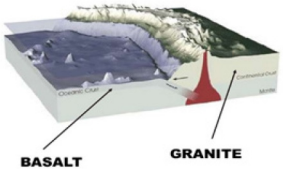
Task 20. Fill the table about oceanic and continental crust



Kind of crust	Rocks	Thickness	Denstry

Task 21. Read the text and answer the questions. What natural causes can lead to a catastrophic flood?

……

How can human activity aggravate a flood situation? ……

What is the damage from a major flood? ……

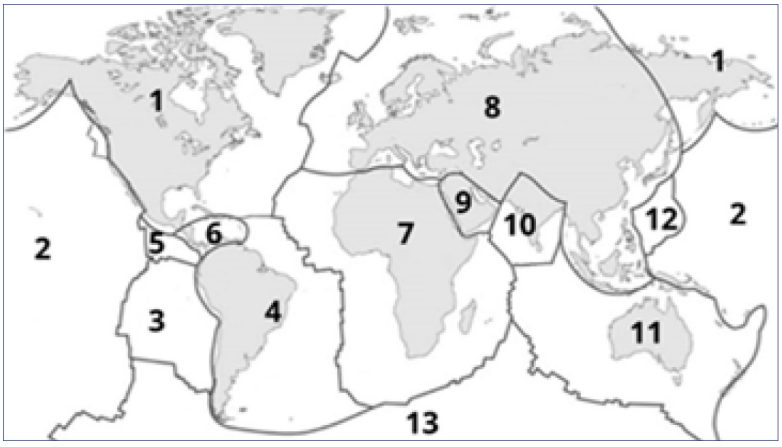
In the summer of 1931, a combination of rapid snowmelt, torrential rains, and cyclonic storms created the most devastating flood in Chinese history. Only in July in Central China rainfall reached levels equal to those normal for a year and a half. By the end of August, the Yellow, Yangtze, and Huai rivers had overflown their banks, sweeping poorly placed dikes, and flooding an area larger than England. Thousands died from drowning, with even more deaths from starvation and rapidly spreading diseases, such as cholera, typhoid and dysentery.

Source: "Radio China abroad"

Task 22. Connect with arrows so that you get the right combination of rocks, a process and an example:

Sedimentary rocks	Solidification of magma above the surface	marble
Igneous rocks/extrusive rocks	Changed at high pressure and temperature	limestone
Metamorphic rocks	Solidification of magma in the crust	Granite
Igneous rocks/Intrusive rocks	Deposited under water	Basalt

Task 23. Name the plates marked with numbers



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10……..

Task 24. Write down the way of formation and the participating plates for each of the circled areas.

A. The Andes .....

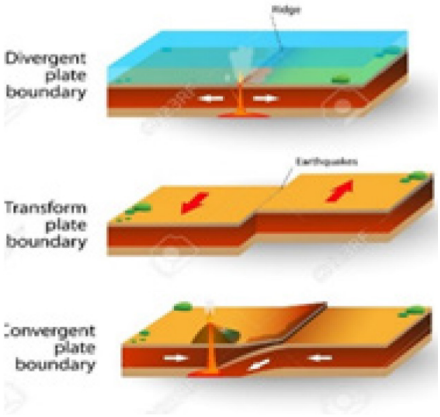
B. The Malay Archipelago .....

C. The Himalayas .....

D. The Japanese Archipelago .....

E. The Mid-oceanic ridge.....

Task 25. Watch the video and describe three types of plate movements.



1) .....

.....

2) .....

.....

3).....

.....

Task 26. Watch the trailer to recall the plot of the film called "San Andreas" (2015, directed by Brad Peyton). What hypothetical catastrophe does the film recreate? Why is California considered threatened by such a disaster?

.....

.....

Task 27. With what interactions and between which plates will you explain the formation of:

A. The Alps	B. The Andes	C. The Mariana Trench

A.....B.....C.....

Task 28. There are 123 active volcanoes in Chile and 112 volcanoes in Japan. Consider the reason why about 1/6 of the world's active volcanoes are located on the territories of these two countries.

.....

.....

Task 29. In 2010, the island nation of Haiti was shaken by an earthquake of magnitude 7 on the Richter scale. In 2011, the strongest earthquake in the history of Japan was registered with a magnitude of 9 on the Richter scale. The epicenter is in the Pacific Ocean, 130 km. from the city of Sendai. 170,000 people died in Haiti. The victims of the Japanese earthquake were 15,000. How much stronger is the Japanese earthquake? Identify the reasons why 10 times more people die in Haiti.

……

……

Task 30. Investigate the economic damage from the eruption of Eyjafjallajökull volcano in 2010.

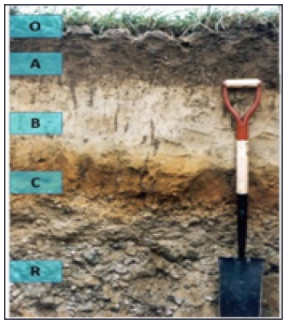
Task 31. Look at Annex 2 and explain why destructive forms of relief predominate in the upper reaches of the river and accumulative forms of relief predominate in the lower reaches.

……

……..

Task 32. At the initiative of the UN, 17-th June is the world day to combat desertification and drought. Discuss what causes deserts to expand and what the consequences will be for humanity.

Task 33. Analyse the picture and determine:



1. The soil layer which is the richest in organic matter ……

……

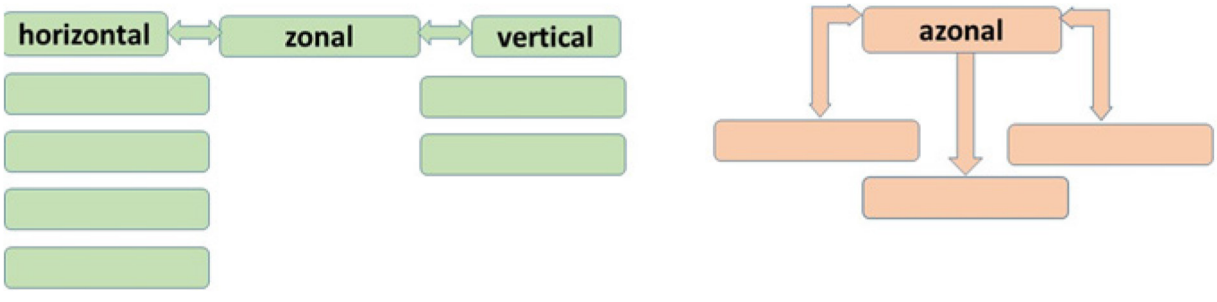
2 The soil layer composed mainly of rock materials. ……

……

3.Explain the distribution of soil materials ……

……

Task 34. Complete the diagram, using the following types of soils: chernozem, alluvial, lateritic, desert soils, tundra soils, brown forest soils, saline soils, swamp soils, mountain-meadow soils



Task 35. Put the letters of the processes that damage the soil in the right places in the text.

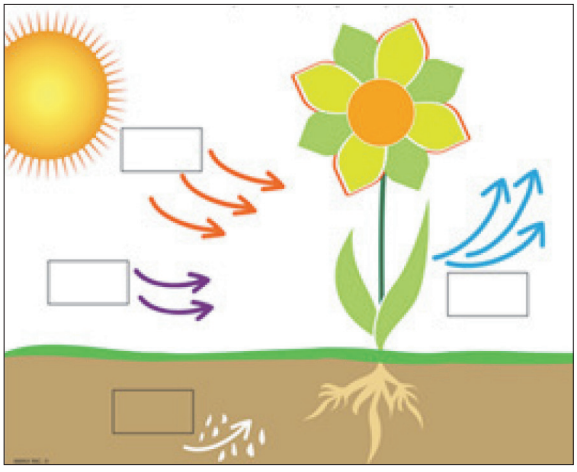
A. erosion B. depletion C. pollution

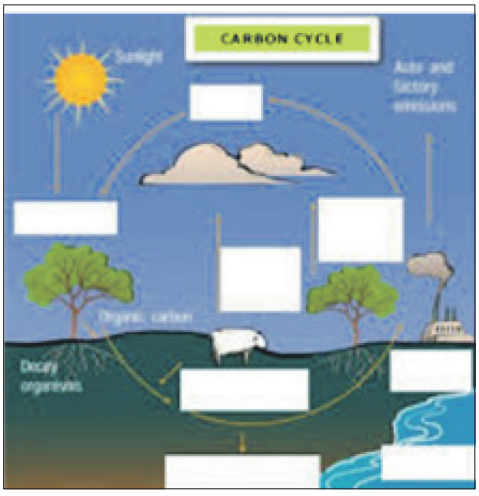
Prolonged cultivation of the same crops leads to a decline in nutrients and…. of soils. Large industrial plants deteriorate the condition of the soils because of the chemical……. However, the biggest problem remains soil……., caused by rains and strong winds.

Task 36. Fill in the blanks with the correct words.

A: 1. sunlight 2. oxygen 3. water 4. carbon dioxide

B: 1. plant respiration 2. animal respiration 3. photosyntesis 4. dead organisms 5. rock respiration 6. fossils and fossil fuel 7. ocean uptakes 8. carbon dioxide cycle





Task 37. Write three changes in other natural components:

…….. …….. ……..

…….. …….. ……..

…….. …….. ……..

Task 38. Make a thematic map of natural areas. Choose a different colour for each of the zones. Give a title and a make a legend.

Task 39. Fill in the table. Write down an example of the application of the natural components included in it as a natural condition and natural resource.

Component	Natural condition	Natural resource
Climate		
Water		
Soils		
Rocks		

Task 40. Using a thematic map of natural resources, write down against each of the countries at least one energy resource of which there are large reserves:

Saudi Arabia	India	Venezuela
Azerbaijan	The USA	Ukraine
Canada	Australia	Russia

Task 41. Identify the energy resource that power plants work with. What do these energy resources have in common?

…….
…….
…….
……....

…….
…….
…….
……....

Task 42. Using the map in the atlas write down four countries rich in:

A. copper ore ……., ……., ……..,
……

B. iron ore ……., ……..……., ……,
……

B. lead-zinc ore ……..., ……., ……,
……

Task 43. The Sudbury Copper Basin in Canada is considered to be one of the richest in the world. The metal content in the ore is 7.8%. Calculate how much copper is extracted from each ton of ore.

……

Task 44. Write down the metal used in each of the products

……. ……. ……. …….

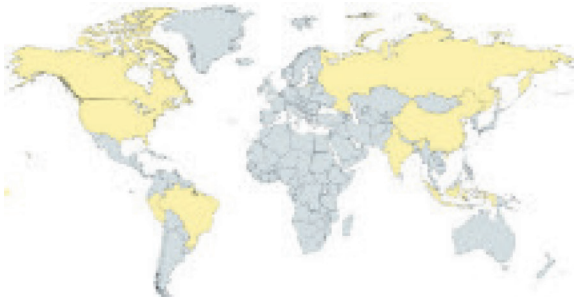
TRAINING SECTION 2. GEOGRAPHY OF NATURE

Task 45. View the table and rank the continents by arable land per capita.

Continent	% of population	% of land	Continent	% of population	% of land
Asia	60%	32%	Europe	10%	26%
N. America	7%	15%	Africa	16%	15%
S. America	6%	9%	Australia	>1%	3%

1……. 2…… 3…….. 4……
5……. 6……

Task 46. Identify the countries with the largest freshwater resources.



……
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……
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……

TRAINING SECTION 3. GEOGRAPHY OF SOCIETY

Task 1. Fill in the respective political system sections of the table with the numerical indices of the listed characteristics:

1. centralised power;
2. equality before the law and freedom;
3. multi-party government;
4. state control;
5. free election of representatives in the government;
6. one-party government;
7. democracy;
8. limited human rights;
9. separation of powers;

Totalitarian political system	Democratic political system

Task 2. Make a diagram reflecting the grouping of countries by indicators of size of the territory and population. Give examples.

Task 3. Determine which group of countries Bulgaria belongs to according to the state system and the form of government. Make a brief description of its natural and economic-geographical position.

……

Task 4. After 1990, three major federal states disintegrated in Europe - the USSR, Czechoslovakia and Yugoslavia. Mark the modern independent states, which are the result of the division of these federations, with numerical indices on the contour map. Make a legend and name the map.

Legend:

Task 5. Fill in the missing terms in the text.

The French newspaper „Le Monde diplomatique“ wrote in its June issue for 2019 about the unprecedented demographic …… .. which hit the countries of Eastern Europe after the collapse of the communist system. Among the main reasons is the devastating combination of three factors: low ……..… .., high …… .. ……. and mass …… .. …… .. It is mostly “golden cadres” that emigrate - specialists and young people. This is completely natural given the pay gap. Is there a way out of the situation? Is it possible to implement a demographic …… ... …… that stimulates the birth rate? Demographers warn that this is difficult because having more children in the family means lowering living standards.

Task 6. Arrange the listed terms so that you get the correct statements.

natural increase; birth rate; population; mortality

Demography is a science that covers issues related to the size, structure and distribution of …….. ……. It studies the processes of births, deaths and migration. ……. ……. reflects how many children are born in one year per 1000 population in a given country. It reflects how many people have died in one year per 1,000 population. The difference between births and deaths is called ……..

Task 7. Read the information about the five phases of economic development of the countries. Comment on birth and death rates during the various phases. Determine whether the statement is confirmed: "The more developed a country is, the lower the birth rate and mortality rate".
Phase 1 – the countries are not well developed yet; food scarcity; agriculture cannot meet the needs of the population; poor health care; poor hygiene; lack of clean drinking water;
Phase 2 – developing agriculture; improvement of medical care; detection and use of penicillin;
Phase 3 – the development from phase 2 continues; the role of women is changing; gender equality; introduction of protective equipment;
Phase 4 – the population is well-provided-for; children are out of focus;
Phase 5 – the birth rate stabilizes and does not decrease.

Task 8. Read the text and determine the type of the demographic problem described. Comment on the reasons for the occurrence and possible policies for its solution.
By 2050, Africa's population could double to 2.4 billion, and in 2100 to 4 billion. These unexpected demographic projections made by the United Nations turn the continent's development prospects upside down, especially when compared to numerical indicators of economic growth. African demographic growth may slow the improvement of local living conditions. This situation is a result of maintaining a high birth rate and, to some extent, a reduction in mortality. The average life expectancy of the continent has increased from 36 in 1950 to 57 nowadays. The African population is justly striving to improve living conditions. Slowing down the pace of demographic growth would only have a beneficial effect on this drive. Investing in education and improving the status of women would provoke a "contraceptive revolution", the beneficial effects of which would extend to many other areas of human health, beyond birth control.

Task 9. Select two of the countries that differ significantly in the demographics presented in Table 1. Explain the reasons for the differences. Look for additional information on the demographic projections by country for a 30-year period. Are the trends continuing?

Table 1. Demographic data for selected countries

Country	Population (thousand people)	Birth rate (thousand people)	Death rate (thousand people)	Natural increase (‰)
Angola	32 866	6 215	1 265	32,6
Pakistan	220 892	29 970	7 338	21,5
Chile	19 116	1 156	567	6,3
Bulgaria	6 948	317	544	-6,4
Germany	83 784	3 896	4 619	-1,7
Finland	5 541	258	268	-0,4

Task 10. Analyze the gender and age pyramids of Sweden and Botswana (Fig. 3) according to the attached instructions. What demographic problem is illustrated in them?

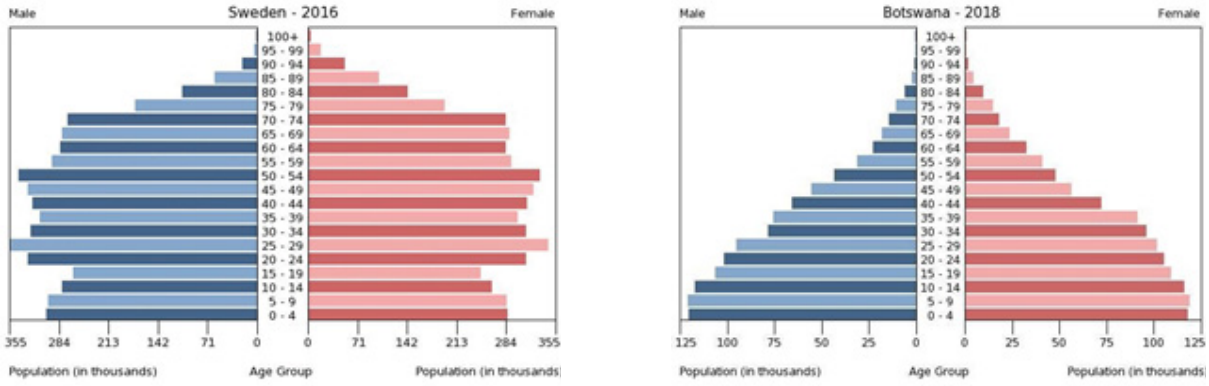


Figure 3. Age-sex pyramids of Sweden and Botswana (according to data for 2016)

……

Task 11. Comment on the relationship between natural population movement and religious structure. Determine how the sex-age structure affects the natural and mechanical movement of the population?

……

Task 12. What is the language spoken by the most people in the world? ……

Task 13. Think as a team about the economic benefits and cultural dangers for Europe because of the rapidly growing number of migrants from Muslim countries. Decide as a team on possible solutions to problems.

Task 14. View the statistics of the city population site and mark the ten largest agglomerations in the world with a symbol of your choice on the contour map. Give a title and make a legend on the map.

Title

Legend:

Task 15. Fill in the gaps in Table 3. Explain the influence of the listed natural geographical factors on the development of selected economic activities

Table 3. Natural geographical factors influencing the development of the economy

Factor	Example (s) of influence on economical activities
relief	
climate	
waters	
soils	

Task 16. Identify the factor that is the link between natural and socio-economic factors. Justify your answer.

……...

Task 17. Fill in the diagram with the numerical indices of the listed industries so that they correspond to the sector to which they refer.

1. food industry
2. construction
3. agriculture
4. transport
5. mechanical engineering
6. tourism
7. energy
8. extraction of minerals
9. education
10. wood processing
11. light industry
12. management and security
13. metallurgy
14. logging
15. healthcare
16. trade
17. hunting and fishing
18. chemical industry

Structure of the economy		
Primary sector	Secondary sectors	Tertiary sectors

Task 18. Write down the industry to which the text refers.
It produces food for the population and provides raw materials for the food and light industry. It belongs to the primary sector of economy.

Answer: .....

Task 19. Circle the letter of the pair of industries that refers to the secondary sector of economy:

A) science, education
B) tourism, banking
C) hunting, fishing
D) construction, wood processing

Task 20. Complete the statement:
The difference between imports and exports of a country is called …… .....

Task 21. Indicate on the map at least three regions of the world that are a major source of timber
……

Task 22. The map (Fig.6) Shows the territorial scope of the taiga (boreal forest), whose coniferous wood is the highest quality raw material for the production of pulp and paper. Given these facts, write down assumptions about at least three countries, leaders in paper production in the world.

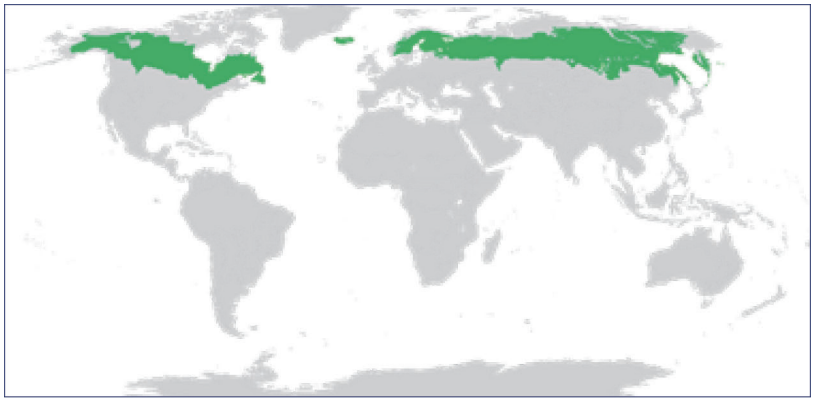


Figure 6. Areas occupied by coniferous forests

1……

2……

3……

Task 23. Analyze the data in Table 4. Explain the reasons for the differences in the indicators for the selected countries.

Table 4. Relative share of employees in agriculture and wheat production in selected countries. **FAO, 2018**

country	employed in agriculture (in %)	average yield of wheat (kg / ha)	country	employed in agriculture (in %)	average yield of wheat (kg / ha)
United Kingdom	1,4	775	Kazakhstan	32,4	123
France	2.8	684	Brasil	20,5	202
Germany	1.0	567	India	56.1	332

Task 24. Support with evidence the importance of natural factors for the development of agriculture ……

Task 25. Read the text and determine the causes of the food problem.

More than 50 million children worldwide under the age of five are severely affected by malnutrition, which causes rapid and dangerous weight loss in children. One in five minors, or 151 million children, suffer from chronic hunger and are threatened by delayed physical and mental development, which could change their future. Natural disasters caused by climate change and poverty are the main factors for malnutrition. In conflict areas such as Yemen, Syria and the DRC, more than half a million children under the age of five are at risk of not surviving malnutrition. Due to the prolonged drought in the Horn of Africa, more than 700,000 children suffer from malnutrition, while in other countries, due to poverty, minors are more likely to die before the age of five.

UNICEF

Task 26. Mark at least three countries leading in the cultivation of cereals and industrial crops on the contour map of the world. Make a legend. Give a title to the map.

Title:

Legend:

Task 27. List and describe the factors that determine the territorial structure of animal husbandry

……

Task 28. There are countries where pig breeding is not developed. Give examples and reveal the reasons for this fact. What is the sub-branch that provides the bulk of meat and milk in these countries?

……

Task 29. Describe in key sentences the advantages and disadvantages of the three main types of power plants.

advantages	type	disadvantages
	HPP	
	TPP	
	NPP	

Task 30. Look at the table for the biggest hydroelectric power plants in the world. Explain the leading role of those countries.

Hydroelectric power plant, country	power (GW)	Hydroelectric power plant, country	power (GW)
Three Gorges, China	22,5	Itaipu, Brazil	14.0
Xiluodu, China	13.8	Guri, Venezuela	10.92
Belo Monte, Brazil	9.39	Tucurui, Brazil	9.37
Grand Coulee, USA	6.8	Xiangiaba, China	6.4
Sayano-Shushenskaya, Russia	6.4	Longtan, China	6.3

Task 31. Read the text. Discuss the gains and losses for Bulgaria from the implementation of the so-called green deal.

The Green Deal, also known as the Green Pact, is a set of policies proposed by the European Commission that should make Europe climate-neutral. By 2050, Europe must reach zero levels of greenhouse gas emissions. The goal will be set in a Climate Act, which will be presented for discussion in March this year. Bulgaria is one of the countries in the EU that will be most seriously affected by the decarbonisation of the economy. The country uses 7% of the coal consumed annually in the EU. A total of 8% of jobs in the EU coal sector are generated in Bulgaria. The transition from coal to alternative technologies is estimated at more than € 20 billion over the next ten years.

(Off news, 17.02.2020)

Task 32. Compare the information from the two cards. Indicate the countries that match and those that differ. Explain the reasons for the similarities and differences.

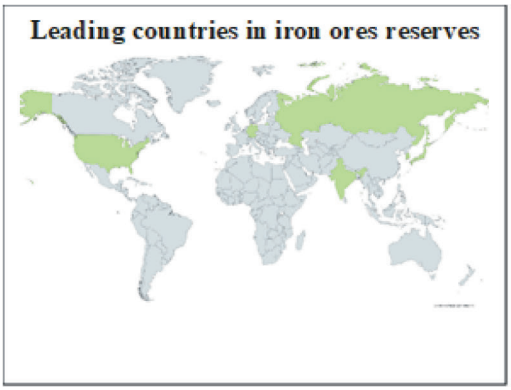


Figure 9

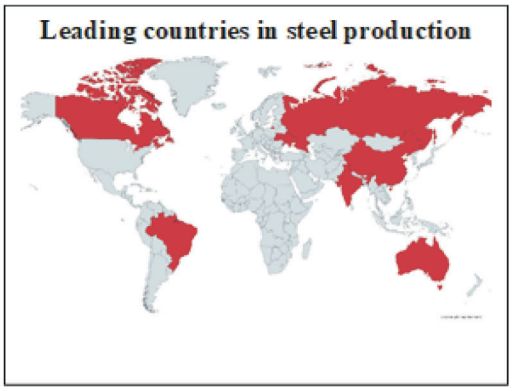


Figure 10

……

Task 33. Recognize the processes characterising the production organization of mechanical engineering and write them in the blanks.

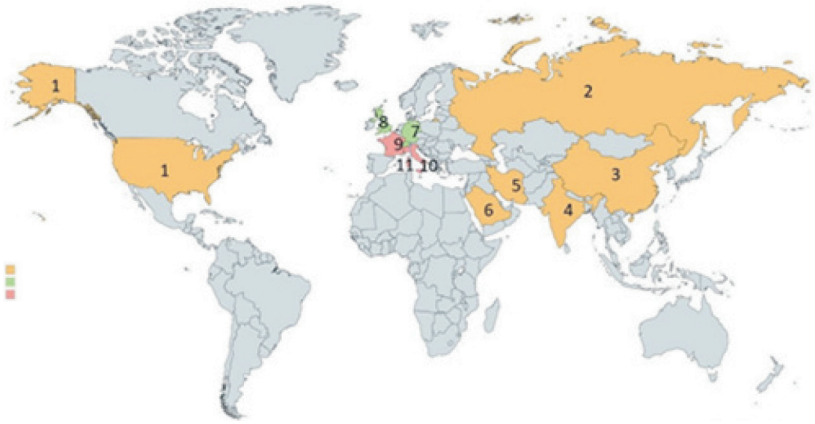
In Bulgaria there are over 50 companies for the production of automotive parts - from seats, springs, windows and rubber seals to parts for air conditioners and engines, microchips and electronics. These parts are used in cars of world brands. (……..)

More and more Chinese companies are focusing on the production of specific types of products. In this way, they manage to implement the latest technologies in a timely manner and achieve world-class quality. (……)

Task 34. Against each of the countries in the table, write the number of the production in which it is leading

China		Japan		The USA	
Republic of Korea		Germany		Russia	

Task 35. Identify and write down the countries that are leaders in the production of petroleum products (1-6), medicines (7-9) and cosmetics (10,11).



1……
2……
3……
4……
5……
6……
7……
8……
9……
10……
11……

Task 36. Fill in the goods, produced by organic and inorganic chemical industry:

Task 37. Discuss the global issues that are addressed in the text.

Friedrich Schmid-Black's "ecological backpack" concept

To make a product, you need raw materials and energy. Take a car, for example. Many raw materials coming from different countries have to be mobilized in nature, extracted, processed, transported and finally transformed into thousands of different components needed to build a vehicle. Similarly, to generate energy, you need to use materials such as steel, copper, oil and sand, even when it comes to solar energy. At each step of this process, which begins in nature and ends in the finished product, waste is generated. I call this "a green backpack." It tends to be 30 times heavier than the product itself. This is a meaningless, immodest phenomenon, which is - from a technical point of view - an unnecessary looting of our planet.

(SCHMIDT-BLEEK Friedrich, Interview "The Heavy Burden of Irrational Resource Utilization", available at *https://ec.europa.eu/environment/ecoap/about-eco-innovation/ friedrich-schmidt-bleek_fr)*

Task 38. Use the model and add the stages and regions in the world related to the production of smartphones.

1. Concept - most often in the United States

2. ……

3. ……

4.……..

Task 39. ***Read the text. Determine under the influence of which factor the durability of food products improves and as a result of the influence of which factors it weakens.***

If you shake your head in disbelief at the sight of milk in a cardboard box stored outside the refrigerated display cases in the store, with a shelf life of half a year, you are simply not right. This does not mean that milk is full of preservatives. In the past, perishable products, such as milk, had to be transported in refrigerated trucks, stored at near-zero temperatures and delivered every day. However, aseptic packaging and new technologies for processing milk at very high temperatures (UHT) (Ultra High Temperature) have revolutionized this field. Thanks to aseptic technologies, it has become possible for perishable products to have extended shelf life and to be stored at room temperature for months.

(UHT technology, Investor.bg)

Task 40. Read the text. What do we call the companies that sell their products in a large number of countries around the world? Discuss the impact of this type of company on global cultural models.

Coca-Cola was invented in Columbus, Georgia, by John Pemberton originally as cocawine, a combination of wine and cocaine. It was initially sold as a headache medicine at five cents a glass in soda machines, which became popular in the United States at the time. After the ban on alcohol in Georgia in 1886, the wine in the recipe was replaced with non-alcoholic syrup. In the first year when the drink was created, sales reached 9 bottles per day, and currently the daily portions of Coca-Cola drinks are estimated at 1.9 billion worldwide. For more than 125 years, Coca-Cola has been refreshing the world. This is the remarkable story of the evolution of the iconic brand and the company that bears its name. From its inception to the present day, Coca-Cola has been a catalyst for social interaction and inspiring innovation. The American brand is recognised worldwide and is sold in over 200 countries.

(The history of Coca Cola, Profit.bg)

.....

Task 41. Take a look at the depicted products. Write the names of the industries that produce them

.....

.....

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.....

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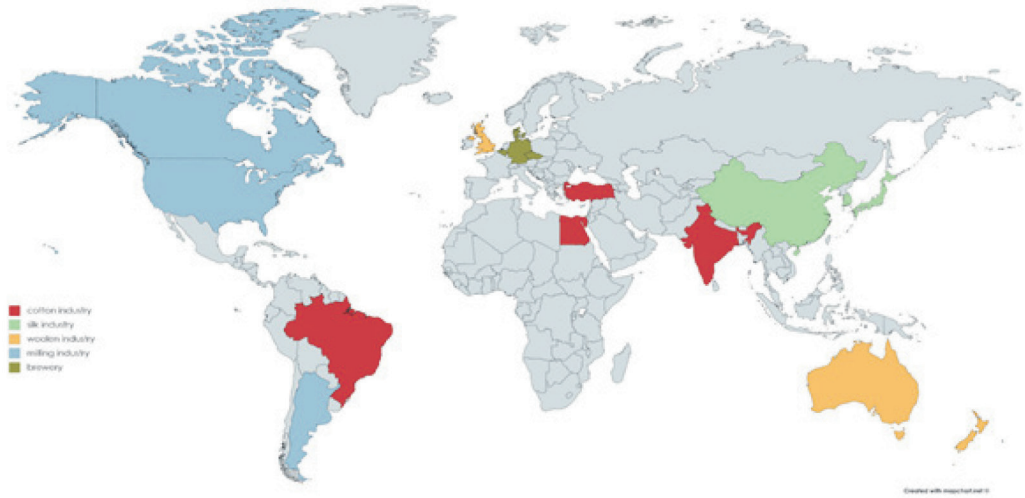
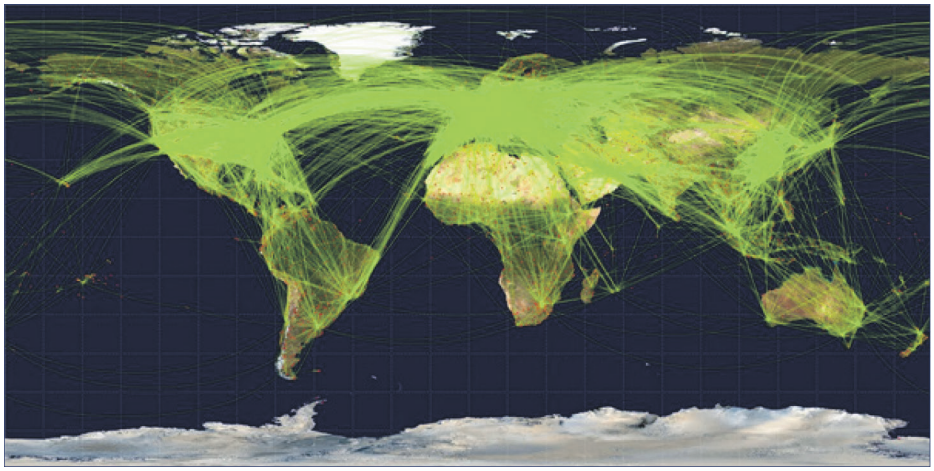
Task 42. The map shows countries leading in certain branches of the light and food industries. Write the relevant countries in the table



Branches	Main producing countries
Milling industry	
Brewery	
Cotton industry	
Woolen industry	
Silk industry	

Task 43. The map shows the busiest airlines. Comment on the differences.



Task 44. The table shows the countries with the longest and highest density of highways. Draw conclusions and explain the differences.

country	length	country	density
China	97 355 km	OAE	510 km/sq.km
USA	75 000 km	Cyprus	345 km/sq.km
Canada	16 900 km	Slovenia	299 km/sq.km
Spain	16 214 km	Bhutan	296 km/sq.km
Germany	12 845 km	Croatia	284 km/sq.km
France	11 392 km	Oman	220 km/sq.km
Brazil	11 000 km	Kuwait	200 km/sq.km
Japan	7 283 km	Greece	184 km/sq.km

Task 45. Enter the roles listed and answer the questions.

• You are planning a family cruise on the Danube. Which port would you prefer to visit and why? ……

• You are planning a cruise on the Mediterranean Sea, for which you have 6 days, and the starting and ending point is the port of Genoa. Which ports in Spain, France, Greece, Malta, Morocco and Algeria would you visit and why? .....……

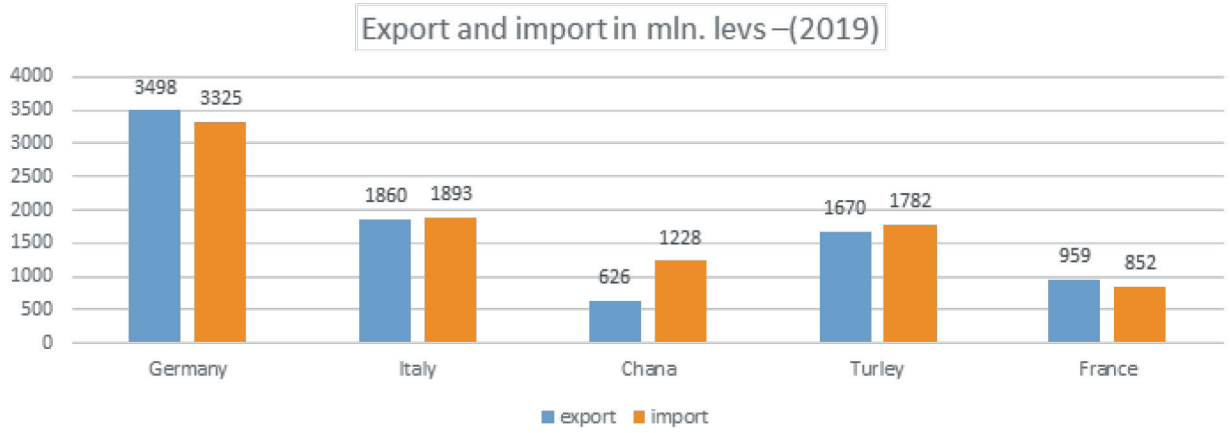
• Take on the role of a Bulgarian bicycle manufacturer. Which transport will you use to deliver parts made in China? …… ..

• You have a chain of petrol stations that you refuel with petroleum products from Romania. What type of transport will you deliver them with? ……

• You have a large flower exchange. You offer mostly Dutch flowers. What type of transport will you deliver them with and why? …… .....

• At home you heat with natural gas. Which type of transport provides you with a constant supply of energy raw materials? …… ...

Task 46. Look at the diagrams and determine the type of trade balance of Bulgaria - positive or negative



Source: The National Statistical Institute

positive		negative	

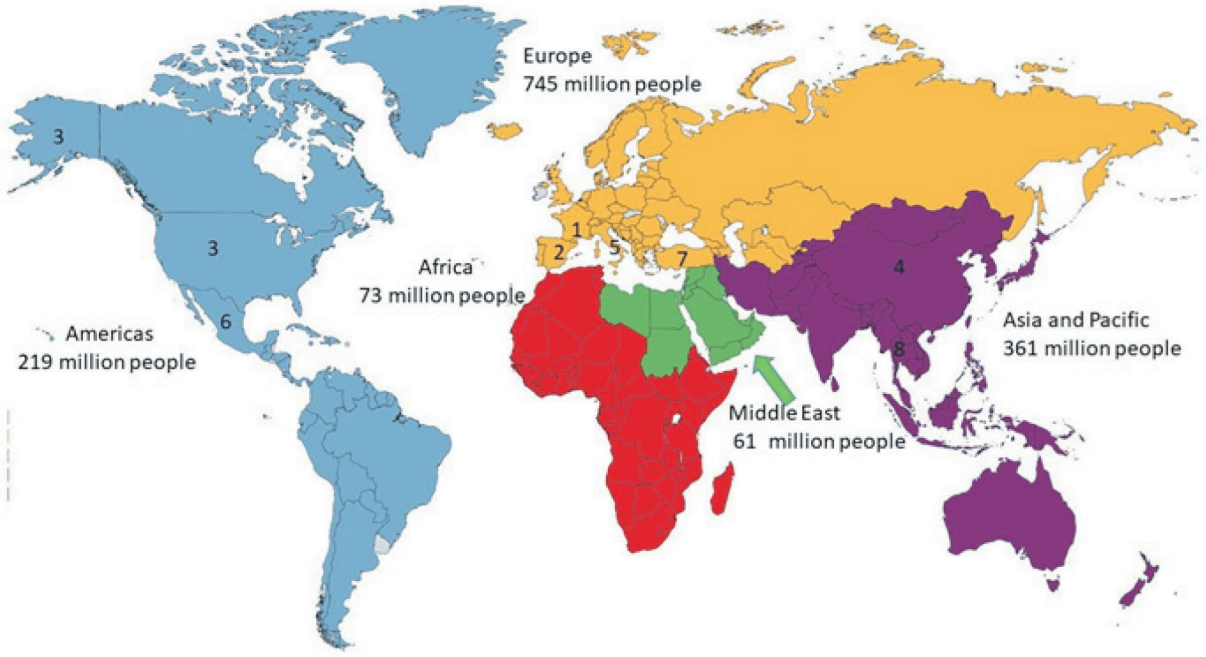
Task 47. Against each type of tourism put the letter code of the factors with the greatest influence on its development.

A. transport, B. climate C. accommodation base G. waters F. state advertising E. labour resources

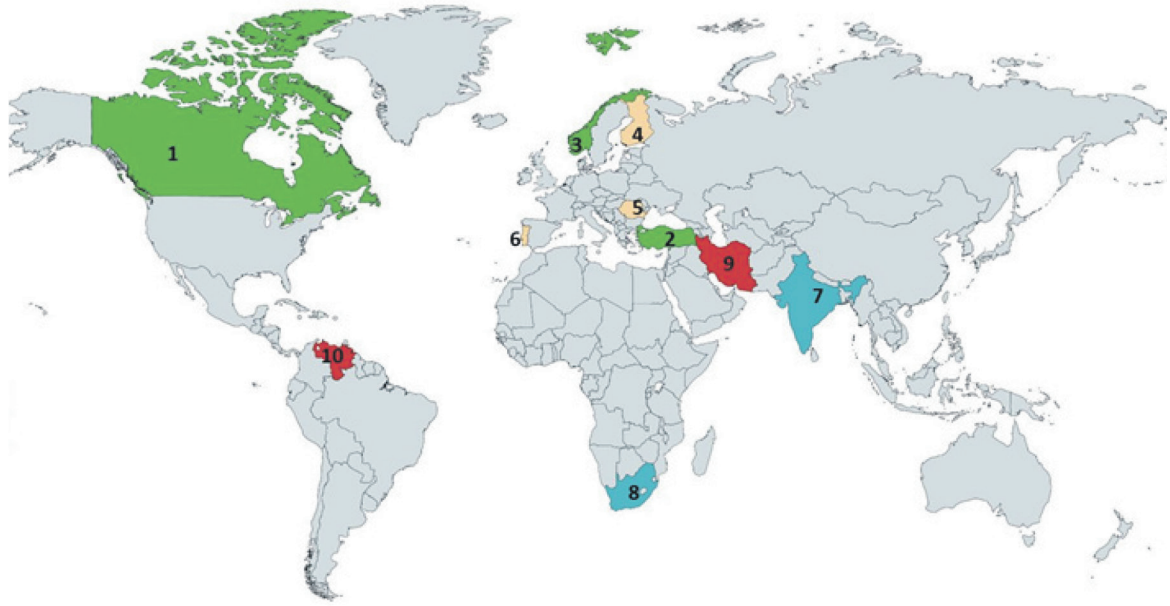
Type of tourism	Letter code	Type of tourism	Letter code
Sea tourism		Rural tourism	
Cultural tourism		Ski tourism	
Recreation		Eco tourism	

Task 48. The map shows the number of tourist visits by tourist regions for 2019 (according to the World Tourism Organisation). The numbers indicate the countries that reported the most visitors. Fill in their names in the table and add the types of tourism they develop.

№ on the map	Country	Number of visitors	Types of tourism
	1.	87 million	
	2.	81 million	
	3	74 million	
	4.	60 million	
	5.	58 million	
	6.	39 million	
	7.	37 million	
	8.	35 million	



Task 49. The map shows countries that are members of four different organisations. Write the names of the countries against each organisation.

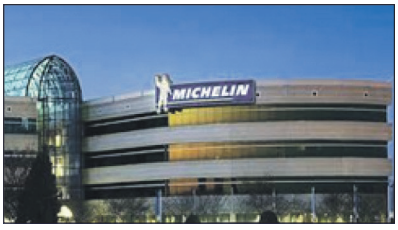


OPEC		NATO	
EU		UN	

Task 1. Identify the countries that specialise in the production of these goods. Write their names and put the numbers on the card. You can select the country only once.

1 . cars……..…….
2. fashion clothes ……..……
3. perfumery ……..……
4. chocolate ……..…….
5. watches ……
6. beer……...
7. beer ……..…….
8. steel ……..…….
9. wine ……..…….
10. paper ……..…….
11. milk ……....…….
12 ships ……..……
13. mobile……..…….

Task 2. Identify the production specialisation and the countries of origin of these companies:



Task 3. Identify the landmarks and the countries:

Task 4. Give one-word answers to each of the questions about the United States:

- What is its place in terms of area among the countries in the world? _____
- Which religion is practised by the majority of the population? _____
- What type of settlements are Chipits, Bosvas and San San? _____
- What is the main agricultural region in the country?

Task 5. In which year and in which country does the most devastating earthquake occur?

GLOSSARY

Absolute humidity – the amount of water vapour present in a unit volume of moist air

Age-sex (population) pyramid – a graph showing the distribution of a population by sex and age

Agglomeration – a large, densely and continuously populated area consisting of a city and its suburbs

Agricultural innovations – new methods for improvement of agriculture

Air mass – a body of air with horizontally uniform levels of temperature, humidity, and pressure

Albedo – reflection coefficient of an object

Anticline – an arched fold or upfold in the strata of the Earth's crust

ASEAN - Association of Southeast Asian Nations, an international organization established in 1967 to accelerate economic growth, social progress, and cultural development and to promote peace and security in Southeast Asia.

Asthenosphere – the soft, heated rock layer, immediately below the rigid lithosphere, allowing the lithospheric plates to move slowly

Azonal soils – soils that have a profile determined predominantly by factors other than local climate and vegetation. Azonal soils include some mountain, alluvial, marine, glacial, windblown, and volcanic soils.

Centrifugal force – an inertial force which tends to pull an object outward when it is in orbit or is rotating around a centre

Climate change – long-term shift in global or regional climate patterns

Cooperation – the action or process of working together to produce something

Demographic crisis – a low birth rate, a relatively high death rate, high life expectancy and ageing of population

Demographic explosion – the rapid increase in the birth rate and natural growth

Demographic policy – system of economic and social measurements aimed to control population change

Economic sectors – a sector is an area of the economy in which businesses share the same or a related product or service

Energy balance - the difference between the produced and consumed electricity.

Energy efficiency – refers to methods of reducing energy consumption by using less energy to attain the same amount of useful output

Equinox – the date at which the sun crosses the equator and day and night are of equal length

Export – send out (goods) for sale in another country

Extensive agriculture – a primitive type of agriculture in which the volume / quantity of agricultural production increases by increasing the area of arable land or the number of animals, as well as the number of people employed in it. It is typical of developing countries

Federal country – the central government shares power with states or provinces

Global circulation of the atmosphere – the worldwide system of winds by which the necessary transport of heat from tropical to polar latitudes is accomplished

Graben - a block of land, downthrown between parallel faults

High – tech sector - using, requiring, or involved in high technology // the high-tech sector can be defined as industries having high concentrations of workers in STEM (Science, Technology, Engineering, and Mathematics) occupations

Horst – an elevated block of rocks between parallel faults

Household goods - equipment, tools, machines, and other things used in a house

Import – bring (goods) into a country

Industry – economic activity concerned with the processing of raw materials and manufacture of goods in factories

Inland country/ landlocked country – a sovereign state that does not have territory connected to an ocean or sea.

Intensive agriculture – the production increases through the application of scientific achievements and agricultural innovations, which also increases the average yields and productivity of animals

Lithospheric plate – a massive, irregularly shaped slab of solid rock, generally composed of both continental and oceanic lithosphere

Local time – the time based on the meridian through a specific place

Mechanical population movement – the number of immigrants minus the number of emigrants

Megalopolis – an interconnected group of urban agglomerations

Monarchy – a form of government with a monarch at the head

NAFTA – The North American Free Trade Agreement (NAFTA) was implemented in order to promote trade between the U.S., Canada, and Mexico. NAFTA's purpose was to encourage economic activity among North America's three major economic powers.

Natural population movement – the difference between the number of live births and deaths during a given time period (usually one year). It can be either positive or negative.

Natural resources – materials or substances occurring in nature which can be exploited for economic gain

Natural risk – the probability that a dangerous natural phenomenon will turn into a disaster

Oceanic trench – a deep or elongated depression in the ocean bed

Organic farming – an agricultural system that uses ecologically based pest controls and biological fertilisers derived largely from animal and plant wastes and nitrogen-fixing cover crops

Population density – number of people per one square kilometer

Population structure – the composition of a population; it shows how the population is divided up between males and females of different age, education, ethnicity, religion, language, etc.

Power plant – a factory where electricity is produced

Production cycle – comprised of all activities related to the conversion of raw materials into finished goods

Pseudo-urbanisation – the condition in which a large city has formed in an area without a functional infrastructure to support it

Raditional balance – the difference between incoming and outgoing radiation at a given point on the Earth's surface

Region – an area, especially part of a country or the world having definable characteristics but not always fixed boundaries; an administrative district of a city or country

Relative humidity – the amount of water vapour present in air expressed as a percentage of the amount needed for saturation at the same temperature

Republic – a state in which supreme power is held by the people or their elected representatives, and which has an elected or nominated president rather than a monarch

River regime - the annual variation of discharge of a river

Salinity – the amount of salts dissolved in water

Solstice – the dates when the sun is furthest from the equator

Solubility - the ability to be dissolved in water

Specialisation – a method of production whereby an entity focuses on the production of a limited scope of goods to gain a greater degree of efficiency

Suburbanisation – the process of suburbanising, of population movement from cities to suburbs

Syncline – a downward, U-shaped fold in the layers of rock in the Earth's surface

The Council of Europe – the continent's leading human rights organisation. It includes 47 member states, 28 of which are members of the European Union. All Council of Europe member states have signed up to the European Convention on Human Rights, a treaty designed to protect human rights, democracy and the rule of law.

Tourism resources – the term describes natural and man-made attractions, infrastructure, services, and the conditions that attract tourists to an area and may contribute to the formulation of a tourism destination

Trade balance – Balance of trade (BOT) is the difference between the value of a country's imports and exports for a given period

Transport infrastructure – refers to the framework that supports the transport. It includes roads, railways, ports, airports and pipelines

Unitarian country – a state which has a single constitution for the entire state, a general system of laws, and a unified system of bodies of state power

Urbanisation – growth in the proportion of a population living in urban areas

USMCA – In September 2018, the United States, Mexico, and Canada reached an agreement to replace NAFTA with the United States–Mexico–Canada Agreement (USMCA), and all three countries had ratified it by March 2020. The USMCA took effect on July 1, 2020, replacing NAFTA.

Vertical temperature gradient – the rate of temperature change in the atmosphere with height

Zonal soils – soils that have a profile determined mainly by the local climate and vegetation

RESOURCES

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Images: Shutterstock, wikipedia

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