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OF TECHNOLOGY
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Целью пособия является формирование у студентов коммуникативной языковой компетенции в рамках нижеприведенных тем, которая реализуется в различных видах речевой деятельности, как устной, так и письменной. Учебное пособие включает 3 раздела: “Science and Scientists” (“Наука и ученые”), “Inventors and Inventions” (“Изобретатели и изобретения”), “Information Technology” (“Информационные технологии”).

Организация материала внутри каждого раздела предусматривает формирование речевых умений от первичных навыков употребления лексических единиц по данной теме до упражнений, подготавливающих студентов к диалогической или монологической речи. Учебное пособие является комплексным и коммуникативно-ориентированным, способствует развитию умений и навыков во всех видах речевой деятельности.

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MODULE I. SCIENCE AND TECHNOLOGY

UNIT 1. SCIENCE AND GREAT SCIENTISTS

TEXT 1. WHY IS SCIENCE IMPORTANT?

Vocabulary

gravity ['grævɪtɪ] – гравитация, сила тяжести

gain [geɪn] – получать, выручить, приобретать

injure ['ɪndʒə] – ранить, повредить, травмировать

existence [ɪg'zɪstəns] – существование, жизнь, бытие

X-rays – рентгеновские лучи

landline, dial-up ['daɪəl ʌp] phone – наземная линия связи, стационарный телефон

reheat [ri:'hi:t] – подогревать, разогревать

bone [bəʊn] – кость

push [pʊʃ] – толкать

collaboration [kə'læbə'reɪʃn] – сотрудничество

cancer zappers – уничтожители рака

prosthetic limbs [prəʊ'sθetɪk lɪm] – протезирование конечностей

brain [breɪn] – мозг

blanket ['blæŋkɪt] – одеяло

thumbs up [θʌmz ʌp] – одобрить что-л.

thumbs down [θʌmz daʊn] – не одобрить что-л.

weakness ['wi:knis] – слабость, разбитость, бессилие

aid [eɪd] – помощь, поддержка

confirm [kən'fɜ:m] – подтверждать

deny [di'naɪ] – отрицать, отвергать

realize ['rɪəlaɪz] – осознавать

gain insight ['ɪnsaɪt] – получить представление

impact ['ɪmpækt] – влияние, воздействие

convince [kən'vɪns] – убедить

1. Before you read:

1. Can people live without scientific discoveries? Why/why not?
2. What spheres of our life does science contribute to?
3. How does science improve our life?
4. What scientific branches are the most important?

2. Complete each sentence with a word from the list:

Branches of Science

astronomy	biology	chemistry	computer science	geology
mathematics	meteorology	physics	physiology	earth science

1. The scientific study of matter and energy and the relationships between them, including the study of forces, heat, light, sound, electricity and the structure of atoms is _____.

2. The scientific study of the structure of substances, how they react when combined or in contact with one another is _____.

3. The scientific study of the life and structure of plants and animals is _____.

4. The scientific study of the sun, moon, stars, planets, etc. is _____.

5. A science that involves studying the earth or part of it is _____.

6. _____ is the scientific study of the physical structure of the earth, including the origin and history of the rocks and soil of which the earth is made.

7. The scientific study of the normal functions of living things is _____.

8. The science of numbers and shapes which includes arithmetic, algebra, geometry and trigonometry _____.

9. The study of computers and how they can be used is called _____.

10. _____ the scientific study of the earth's atmosphere and its changes, used especially in predicting what the weather will be like.

3. Match the list of the verbs with their definitions:

1. do experiments	a) to produce or design something that has not existed before
2. study	b) to gather and measure information on targeted variables, which then enables to answer relevant questions and evaluate outcomes
3. discover	c) to see or notice somebody/something
4. make theories	
5. hypothesize	
6. invent	

7. collect data	d) to do a scientific test in order to study what happens and to gain new knowledge
8. make predictions	e) to study a subject, especially in order to discover new facts or information about it
9. do research	f) to suggest a way of explaining something when you do not definitely know about it
10. observe	g) to learn or gain knowledge, either from books or by examining things in the world
11. prove	h) to say that something will happen in the future
12. solve problems	i) make an educated guess
	j) to find somebody/something that was hidden or that you did not expect to find
	k) to find a way of dealing with a problem or difficult situation
	l) to use facts, evidence, etc. to show that something is true

4. Draw lines to join the scientists and inventors with their work:

- | | |
|------------------------------|--|
| 1) Daniel Gabriel Fahrenheit | a) electricity; |
| 2) Sir Isaac Newton | b) an original design of the aircraft with rocket engine; |
| 3) Alessandro Volta | c) heat and cold; |
| 4) Nicolas Copernicus | d) the first in the world atomic-powered vessel; |
| 5) Mykola Kybalchych | e) the Earth going round the Sun; |
| 6) Petro Kapitsa | f) rockets and spacecraft, the first automatic interplanet station "Zond"; |
| 7) Anatoly Oleksandrov | g) the law of gravitation; |
| 8) Serhiy Koroliov | h) the theory of super powerful magnetic fields; |

5. Look at the following international words, read them and guess their meanings:

- | | |
|------------------------|-----------------------------|
| proton ['prəʊtɒn] | electricity [ɪlek'trɪsɪtɪ] |
| neutron ['nju:trɒn] | mathematician [mæθɪmə'tɪʃn] |
| theory ['θiəri] | programmer ['prəʊgræmə] |
| radiation [reɪdɪ'eɪʃn] | chemist ['kemɪst] |
| quantum ['kwɒntəm] | geologist [dʒɪ'ɒlədʒɪst] |
| decade ['dekeɪd] | spherical ['sferɪkəl] |

6. Read the text:

WHY IS SCIENCE IMPORTANT?

It increases our fundamental knowledge.

This is knowledge in how our universe works. Fundamental knowledge is important because it shows us how protons and neutrons are made. It shows us if our theories of gravity are right. It helps us understand how waves of light (or radiation) interact with our bodies.

Often the fundamental knowledge we gain from science doesn't have immediate applications.

It takes decades, if not centuries to put that fundamental knowledge into action. But once we have the knowledge and create the applications, it is hard to imagine life without it. Can you imagine a world where we did not know about the existence of x-rays, and could not look at broken bones on a doctor's screen to help heal the injured.

It creates new technology.

Can you imagine your life without the phone? Not the phone in your pocket, but just a regular landline, dial-up phone?

Can you imagine your life without electricity? You would be cooking your food over fires, keeping warm with layers of blankets, or walking from place to place. You certainly wouldn't be reheating dinner in your microwave.

From self-driving cars to Martian rovers, nano-sized cancer zappers, prosthetic limbs, light controlled brains, even quantum computing – there is no shortage of places that science is going towards today.

We need good brains in the labs running new experiments and people who are capable of problem solving and collaboration.

Even now there is a scientist in the lab cooking up a new technology that you won't be able to imagine life without in just a few decades.

It creates new applications we haven't even dreamed up.

It might seem crazy to think of a world without the Internet, yet just a few decades ago it didn't even exist. The Internet, as we know it, really started to take form in the 1970s, as scientists tried to transmit messages from one computer to another. Each computer, however, had to be connected to each other. If you wanted to talk to ten people this way, you would need ten computers to do so.

Imagine your lives now if scientists did not push to improve this new technology.

Now you can talk to millions of people with just one single computer.

After years more of progress in training computers to talk to each other and developing the framework for a network the world was given the Internet. In fact, the Internet has grown so much from all of the development that scientists have put into that now you can find the Internet in space.

It allows us to share ideas.

People in the same field, and at the same level of study, as another scientist read their papers, look at their experiments, investigate their results, and give it a thumbs up or a thumbs down. This process opens the door to find weaknesses in experiments, and can often highlight areas that collaboration can occur.

Science is a team sport. Every discovery is aided by thousands of experiments, and hundreds of scientists working to confirm or deny the discovery. Each of the scientists contributes to the ideas and is a part of a collaborative process. A process that joins mathematicians with computer programmers, chemists or geologists...

Science is a language that crosses borders, traverses languages, and brings together cultures.

It helps us understand our world.

There was a time when we thought the world was flat. Can you imagine planning your trips in a flat world? From understanding gravity to the spherical shape of the Earth to climate change, science helps us understand, and interact with the world around us.

As we move from understanding the basic laws of physics, to realizing that even the basic laws are far more complex than we had ever imagined, we gain more insight in how we can better solve problems in our world.

So I hope if you are asking yourself – Is science important? You are now completely convinced that yes, it is important in our lives and impacts our lives in millions of ways every day!

DEVELOPING ACADEMIC VOCABULARY

7. The following words are all from the text above. Find them in the text:

discovery investigate important collaboration impact

8. For each word, read the sentence it occurs in and answer the questions:

a) Is the word positive, negative or neutral?

- b) Is it a noun, adjective, adverb or verb?
- c) Can you think of a word with a similar meaning (synonym) and one with an opposite meaning (antonym)?

READING COMPREHENSION

9. Answer the questions:

1. In what ways does science increase our fundamental knowledge?
2. How much time do people need to put fundamental knowledge into action?
3. What can we do using electricity?
4. Can you name any examples that prove scientific progress?
5. When and why did the Internet start?
6. What facts prove that the Internet has grown so much?
7. How can weaknesses in experiments be found?
8. Why is science a team sport?
9. How does science help us understand our world?
10. Did the text persuade you that by means of science we can better solve many of the world's problems?

10. Complete the sentences:

1. Fundamental knowledge is important
2. ...it is hard to imagine life without it.
3. ...there is no shortage of places that science is going towards today.
4. Even now there is a scientist in the lab...
5. The Internet, as we know it, really started...
6. Imagine your lives now if scientists ...
7. This process opens the door to find weaknesses in experiments...
8. Every discovery is aided by thousands of experiments...
9. Science is a language that crosses borders...
10. From understanding gravity to the spherical shape of the Earth to climate change...
11. You are now completely convinced that...

11. Translate the words and word combinations into Russian:

To put into action, the existence of x-rays, broken bones, layers of blankets, nano-sized cancer zappers, prosthetic limbs, to run new experiments, in just a few decades, give it a thumbs up or a thumbs down, to confirm or deny the discovery, to cross borders, to gain more insight, to be completely convinced, to impact our lives.

12. Give the English equivalents of the following words and word combinations:

Световые волны, создавать приложения, лечить раненых, стационарный телефон, сотрудничество, квантовый компьютер, быть способным решить проблемы, дефицит, разработка концепции, выделить области, содействовать, присоединиться к команде профессионалов, объединять культуры, сферическая форма, взаимодействовать с окружающим миром, понимать основные законы.

13. Make your own sentences with the words and phrases:

To take decades, immediate applications, without electricity, self-driving cars, brains, to transmit messages.

14. Explain the meaning of the following words and phrases in English:

Universe, to interact, applications, blanket, collaboration, crazy, to improve, to contribute.

15. Translate into English:

1. Сегодня мы видим, что наука оказывает огромное влияние на социальные, производственные и политические аспекты нашей жизни.

2. Развитие науки расширило познание человека об окружающем мире.

3. Современная экспериментальная наука зародилась около 400 лет назад.

4. Человек научился использовать энергию огня и воды.

5. В наши дни человек использует термоядерную энергию.

6. Наука создала новые атомные технологии.

7. Благодаря развитию электроники во времена Второй мировой войны появились радары и электронные вычислительные машины.

8. Не проходит и дня без появления нового электронного устройства.

9. Новые суперкомпьютеры решают задачи во многих отраслях промышленности, науки и культуры.

10. Они широко используются в подводной навигации и современной медицине.

11. Сейчас многое делается для создания искусственного интеллекта.

12. Наука и техника достигли большого прогресса в космических исследованиях.

16. Make a plan of the text.

17. Prepare a short summary of the text using the following expressions:

To take decades, self-driving cars, quantum computing, problem solving and collaboration, training computers, weaknesses in experiments, to cross borders, to interact with the world around us.

18. Complete each sentence with a word from the list below:

Meteor comet observatory galaxy equator microscope
artificial satellite telescope rocket solar system atom

1. Any of vast number of star systems held together by gravitational attraction is _____.

2. A man -made device orbiting around the earth, moon or another planet transmitting to earth scientific information or used for communication is _____.

3. A very small meteoroid that has entered the earth atmosphere is _____.

4. Any vehicle propelled by a rocket engine, especially one used to carry a warhead, spacecraft etc. is _____.

5. The smallest particle of a chemical element that can exist is _____.

6. A special building with a telescope or other equipment that scientists use to watch the stars, the weather, etc. is _____.

7. The sun and all the planets that move around it is called _____.

8. An instrument used in scientific study for making very small things look larger so that you can examine them carefully is _____.

9. _____ is an imaginary line around the earth at an equal distance from the North and South Poles.

10. _____ is a mass of ice and dust that moves around the sun and looks like a bright star with a tail.

11. A piece of equipment like a tube in shape, containing lenses, that you look through to make objects that are far away appear larger and nearer _____.

19. Complete the passage with words from the list:

correct discover evolution experiments incorrect journal
laboratory repeat support telescope test theory undermine
works

How Science Works

The aim of science is to _____ new facts about the world. Scientists discover new facts by making observations, or by doing _____. For example, astronomers might discover new facts by making observations through a _____, and chemists might discover new facts by doing experiments in a _____.

An idea that explains why something is true, or how something happens, is called a scientific _____. For example, Charles Darwin developed the theory of _____ to explain how all the different species of plants and animals appeared over time. Scientists then designed experiments, and made observations, in order to _____ his theory.

The results of an experiment might support a theory, or they might _____ it. If scientists keep getting results that undermine a theory, they should accept that it is _____. But if they keep getting results that _____ a theory, they should accept that it is correct. After thousands of experiments and observations that support the theory of evolution, for example, it is now accepted as being _____.

Scientists who find new evidence that supports or undermines a theory should publish their results in a respected scientific _____. The evidence will only be accepted as valid if other scientists can _____ the observation or experiment and get the same results. This is how science _____.

LISTENING

20. Watch the video “Our Science”

<https://www.youtube.com/watch?v=55hlnlVuTpk>

a) Find out the answers to the following questions:

1. What is the name of the laboratory that is spoken about?
2. What does it deal with?
3. What is its greatest strength?

b) Watch the video again and complete the abstract with missing words and phrases:

A national Lab is always thinking about (1) that we have and how we come about solving those challenges. Science here at Los Alamos is definitely not a one person-venture. The (2)..... at Los Alamos allows for experts in all fields of science to come together to solve big problems. Problems that are too big for one person working in isolation to solve. There is a lot of really good science here for a variety of global security,

national security interests because this is what needs to be done. We like to leverage our (3)..... to inform our national security work and at same time that national security work bolsters our science capability. And because of that we are able to work on new (4)..... and different science that can't be done anywhere else. Science is the ultimate exploration for knowledge. It's the way that we understand how the world around us works. Science is (5)....., asking questions, developing solutions, so that we can actually have answers to mankind's biggest and most pressing problems. The ability to work on complex problems and help solve them in the national interest is one of the most (6)..... things a scientist could ask for. Our science is what prepares us to face the uncertainties of tomorrow. It allows us to (7)..... that are right now only in people's dreams.

SPEAKING

21. Discuss the questions:

1. Are you interested in science?
2. Is science useful for our society?
3. What science subject did you like the most in school? Why?
4. Do you think science classes are important?
5. Do you watch scientific TV programs? What is your favourite? Why?
6. What do you find most interesting about science?
7. Is there anything that you do not like about science?
8. What is the main difference between religion and science? Do you agree that science can be a sort of spiritual belief?
9. Do you think that one day science will find a way to make people live forever? If so, do you think that would be a good or a bad thing?
10. Do you think scientific discoveries can have some positive and negative effects at the same time?
11. Is your future profession related to science?

22. Prepare dialogues using questions from ex. 21.

23. Express your opinion saying if you agree or disagree with the quotes below. Justify your point of view.

“The science of today is the technology of tomorrow”. – Edward Teller.

“Science never solves a problem without creating ten more”. – George Bernard Show.

“Scientists have become the bearers of the torch of discovery in our quest for knowledge”. – Stephen Hawking.

TEXT 2. ALBERT EINSTEIN

Vocabulary

pillar ['pɪlə] – основополагающий элемент
throughout [θruː'au̯t] – повсюду, на всем протяжении, в течение
harsh [hɑːʃ] – суровый, жесткий
regimented ['redʒɪməntɪd] – регламентированный
fellow applicant – коллега-заявитель
accept [ək'sept] – принимать
outstanding [aʊt'stændɪŋ] – выдающийся
tiny particles ['taɪnɪ 'pɑːtɪklz] – крошечные частицы
jig [dʒɪg] – танцевать
solar cells – солнечные элементы
ground-breaking – новаторский подход
artificially [ɑːtɪ'fɪʃəlɪ] – искусственно
decision [dɪ'sɪʒən] – решение
advanced Study [əd'vɑːnst 'stʌdɪ] – углубленное изучение
internal bleeding [ɪn'tɜːnl 'bliːdɪŋ] – внутреннее кровотечение
cause [kɔːz] – причина
rupture ['rʌptʃə] – разрыв
abdominal aortic aneurysm [æb'dɒmɪnl eɪ'ɔːtɪk 'ænjʊrɪz(ə)m] – аневризма брюшной аорты
refuse ['refjuːs] – отказаться
surgery ['sɜːdʒəri] – хирургическое вмешательство
artificially [ɑːtɪ'fɪʃəlɪ] – искусственно

1. Match the famous people and scientists with their discoveries:

- | | |
|---------------------------|--|
| 1. Christopher Columbus | a) Australia |
| 2. James Cook | b) X-Rays |
| 3. Vasco da Gama | c) the Theory of relativity |
| 4. Albert Einstein | d) liquid crystals |
| 5. Alexander Fleming | e) nuclear magnetic resonance |
| 6. Wilhelm Conrad Rontgen | f) America |
| 7. Roy Plunkett | g) Periodic table of chemical elements |
| 8. Friedrich Reinitzer | h) penicillin |
| 9. Isidor Rabi | i) Teflon |
| 10. Dmitriy Mendeleev | j) the sea route to India |

2. Complete each sentence with a word from the list:

thermodynamics acoustics astrophysics geophysics mechanics

Branches of Physics

theoretical quantum particle physics optics nuclear physics

1. The scientific study of sight and the properties of light, as well as its behaviour is called_____.

2. The scientific study of the properties and behaviour of sound is called_____.

3. A branch of physical science which considers the effect of forces upon the motion or upon the conditions of material bodies is called_____.

4. The branch of science that investigates the behaviour of particles at the atomic and subatomic level is called_____.

5. The area of physics which deals with the nucleus of atoms and its energy is called_____.

6. The scientific study of the physical and chemical structure of galaxies, stars, planets, etc. is called_____.

7. The science that deals with the relations between heat and other forms of energy is called_____.

8. A branch of physics that employs mathematical models and abstractions of physical objects and systems to rationalize, explain and predict natural phenomena is called_____.

9. The scientific study of the physics of the earth, including its atmosphere, climate, gravity and magnetic fields is called_____.

10. The scientific study of very small pieces of matter that are parts of an atom such as electrons, protons, and neutrons is called_____.

3. Look at the following international words, read them and guess their meanings:

Albert Einstein ['ælbət 'aɪnstam]
equivalence [ɪ'kwɪvələns]
formula ['fɔ:mjələ]
mathematics [mæθɪ'mætɪks]
mathematician [mæθɪmə'tɪʃn]
calculus ['kælkjələs]
geography [dʒɪ'ɒgrəfi]
prestigious [pre'stɪdʒəs]
academy [ə'kædəmi]
polytechnic [pɒli'teknɪk]
brilliant ['brɪljənt]
relativity [relə'tɪvɪti]

Photoelectric Effect
[fəʊtəʊɪ'lektrɪk ɪ'fekt]
atom ['ætəm]
molecules ['mɒlɪkjʊ:l]
phenomenon [fɪ'nɒmɪnən]
Universe ['ju:nɪvɜ:s]
pacifist ['pæsɪfɪst]
glamorous ['glæməərəs]
quantum theory ['kwɒntəm 'θɪəri]
emigrate ['emɪɡreɪt]
isolated ['aɪsəleɪtɪd]
colleague ['kɒli:g]

4. Before you read:

1. What famous Nobel prize winners do you know? What did they get their prize for?
2. Can you name any famous mathematicians and physicists?
3. What do you know about Albert Einstein?

5. Read the text.

ALBERT EINSTEIN

Albert Einstein was a German-born theoretical physicist. He developed the general theory of relativity, one of the two pillars of modern physics (alongside quantum mechanics).

Einstein is best known in popular culture for his mass–energy equivalence formula $E = mc^2$ has been called the most famous formula in the world.

Albert Einstein did not fail at mathematics in school. In fact, he actually excelled at mathematics throughout his schooling and even considered becoming a mathematician for a time.

At the age of 7, he started school in Munich. At the age of 9, he entered the Luitpold-Gymnasium. By the age of 12 he was studying calculus. Now this was very advanced, because the students would normally study calculus when they were 15 years old. He was very good at the sciences. But, because the 19th-century German education system was very harsh and

regimented, he didn't really develop his non-mathematical skills (such as history, languages, music and geography).

In 1895, he sat the entrance examinations to get into the prestigious Federal Polytechnic School (or Academy) in Zurich, Switzerland. He was 16, two years younger than his fellow applicants. He did outstandingly well in physics and mathematics, but failed the non-science subjects, doing especially badly in French – so he was not accepted.

So the next year, he finally started studying at the Federal Polytechnic in Zurich. Also in 1896, when he was only 16 years old, he wrote a brilliant essay that led directly to his later work in relativity.

In 1905, Einstein had the biggest year of his life. He wrote five groundbreaking papers that “forever changed Man’s view of the Universe”.

One paper, of course, dealt with Relativity – what happens to objects as they move relative to other objects. Another paper proved that atoms and molecules had to exist, based on the fact that you could see tiny particles jiggling around when you looked at a drop of water through a microscope. A third paper looked at a strange property of light. Plants and solar cells do the Photoelectric Effect, when they turn light into electricity. His paper explained the phenomenon.

Einstein did not win the 1921 Nobel Prize in Physics for his work on Relativity but it was the unglamorous Photoelectric Effect that got him the Nobel Prize.

Being a pacifist and a Jew, in December 1932, a month before Adolf Hitler became chancellor of Germany, Einstein made the decision to emigrate to the United States. There he took a position at the newly founded Institute for Advanced Study in Princeton, New Jersey. He would never again enter the country of his birth.

During the last years of his life, he tried to find a unified field theory. The theory would incorporate all the laws of the universe, and those of physics, into a single framework. In the process, Einstein became increasingly isolated from many of his colleagues, who were focused mainly on the quantum theory.

Throughout his life, Einstein published hundreds of books and articles. He published more than 300 scientific papers and 150 non-scientific ones. Einstein's intellectual achievements and originality have made the word "Einstein" synonymous with "genius".

On 17 April 1955, Einstein experienced internal bleeding caused by the rupture of an abdominal aortic aneurysm. Einstein refused surgery, saying, "I want to go when I want. It is tasteless to prolong life artificially. I have

done my share; it is time to go. I will do it elegantly." He died in Princeton Hospital early the next morning at the age of 76, having continued to work until near the end.

DEVELOPING ACADEMIC VOCABULARY

6. The following words are all from the text above. Find them in the text:

to develop achievement tiny unglamorous to continue

7. For each word, read the sentence it occurs in and answer the questions:

- a) Is the word positive, negative or neutral?
- b) Is it a noun, adjective, adverb or verb?
- c) Can you think of a word with a similar meaning (synonym) and one with an opposite meaning (antonym)?

READING COMPREHENSION

8. Answer the questions:

1. What subject was Einstein especially good at?
2. Why couldn't Einstein develop his non-mathematical skills?
3. What educational institution did he enter in 1896?
4. Why was 1905 the biggest year of his life?
5. What did he get his Nobel Prize for?
6. Why did Einstein emigrate to the United States?
7. Why did Einstein become isolated from many of his colleagues?
8. What has made the word "Einstein" synonymous with "genius"?
9. Why did Einstein refuse surgery before his death?
10. Where did he die?

9. Complete the sentences:

1. He developed the general theory of relativity,...
2. Now this was very advanced, when they were 15 years old.
3. Also in 1896, ..., he wrote a brilliant essay that ...
4. He wrote, that "forever changed Man's view of the Universe".
5. Another paper proved that atoms and molecules had to exist...
6. Plants and solar cells do the Photoelectric Effect...
7. Being a pacifist and a Jew, in December 1932,...
8. ...he tried to find a unified field theory.
9. In the process, ..., who were focused mainly on the quantum theory.

10. He published more than ...

11. On 17 April 1955, Einstein experienced internal bleeding...

10. Translate the words and word combinations into Russian:

To contribute, physicist, to investigate, natural phenomena, to be admitted, influential, versatile, Neutral laws, contributor, development, notable, learning disability, in various fields.

11. Give the English equivalents of the following words and word combinations:

Преуспеть в математике, изучать исчисления, вступительные экзамены, новаторские работы, объяснить явление, единая теория поля, единая концепция, быть сконцентрированным на чем-либо, искусственно продлить жизнь, достижения.

12. Make your own sentences with the words and phrases from ex. 11.

13. Explain the meaning of the following words and phrases in English:

Development, to contribute, to investigate, achievement, to be admitted, disability, theory.

14. Translate into English:

1. Когда Эйнштейн родился 14 марта 1879 года, его голова была большой и уродливой.

2. Родители Эйнштейна думали, что он, возможно, умственно отсталый, потому что не говорил до четырех лет.

3. У Эйнштейна была очень плохая память.

4. Он не мог вспомнить даты и даже свой собственный номер телефона.

5. Вскоре после смерти первого президента Израиля Хаима Вейцмана Эйнштейна попросили стать вторым президентом.

6. Он отказался, заявив, что в свои 73 года он слишком стар для этого.

7. Кроме того Эйнштейн считал, что ему не хватает “природных способностей и опыта, чтобы правильно обращаться с людьми.”

8. Согласно бракоразводному соглашению Эйнштейн отказался от всех будущих Нобелевских премий в том случае, если он их получит.

9. Деньги были переданы в фонд его сыновей.

10. Его жена могла пользоваться процентами с этих денег, но не имела доступа к капиталу.

LISTENING

15. You are going to watch the video “Scientists Who Changed The World” https://www.youtube.com/watch?v=s_YidTB6Beg

a) Watch the first part of the video about Galileo Galilei and answer the questions:

1. What education did Galileo get?
2. When did he first gain his fame?
3. What Galileo’s discovery confirmed Copernicus’s idea that celestial bodies rotate each other?
4. Why did he earn the ire of the Catholic Church?
5. Which events in Galileo’s life are associated with the following dates:
1564 – _____,
1609 – _____,
1642 – _____?

b) Watch the second part of the video about Isaac Newton and answer the questions:

1. What family was Newton from?
2. Why did Newton have to leave Cambridge and return home?
3. What made Newton very popular?
4. How did he spend his final years?
5. Which events in Newton’s life are associated with the following dates:
1642 – _____,
1665 – _____,
1671 – _____,
1703 – _____?

c) Watch the last part of the video about Thomas Edison. What did you learn about him?

WRITING

16. To what extent do you agree or disagree with this statement?

“Scientists contribute more to society, so science students should get more support”.

17. Give reasons for your answer and include any relevant examples from your own knowledge or experience.

SPEAKING

18. Prepare a dialogue about Einstein’s life using questions from ex. 8.

19. Make a plan of the text.

20. Prepare a short summary of the text using the following expressions:

To excell at mathematics, German education system, ground-breaking papers, the Photoelectric Effect, Nobel Prize in Physics, to emigrate to the US, quantum theory, to refuse surgery.

21. Search the Internet if necessary and discuss the questions:

1. Who are some famous scientists with unusually low GPAs?
2. Were there any Physicists/Mathematicians who didn't excel in college but later became great?
3. What are some famous mathematicians who were not child prodigies?
4. Are there any great scientists who failed in examinations in their School or University but later went on being a world renowned personality?
5. Who are some mathematicians and scientists who did not attend elite colleges or a prestigious university?
6. Which famous scientists were late bloomers?
7. Is there a physicist/astronomer who was a bad student in terms of marks and struggled through studies but made significant scientific impacts later?
8. Who are some physicists who started off being very bad at physics and found themselves struggling to cope with their education?
9. Are there any famous/successful mathematicians who came to maths late in life?
10. Are there any “delayed prodigies” in physics/maths? Are there instances where people have made discoveries/done important work in these

“sciences for younger men” after starting their journey in these fields later in life?

11. Do you think imagination is essential for scientists? Why/Why not?

ROLEPLAY

22. Invite several famous scientists to your TV studio. Interview them about their lives, education and scientific achievements. Think of possible questions.

UNIT 2. INVENTIONS AND GREAT INVENTORS.

TEXT 1. HOW AND WHY DO PEOPLE INVENT THINGS?

Vocabulary

necessity [nɪ'sesɪtɪ] – необходимость

succeed [sək'si:d] – преуспевать

recognize ['rekəɡnaɪz] – распознавать

especially [ɪs'peʃəli] – особенно

breakthrough ['breɪkθru:] – прорыв

mystery ['mɪstəri] – тайна

entrepreneur [ɒntrəprə'nɜ:] – предприниматель

value ['vælju:] – ценность

persistence [pə'sɪstəns] – упорство

determination [dɪtɜ:'mɪneɪʃn] – решительность, целеустремленность

indisputably [ɪn'dɪspju:təblɪ] – бесспорно

double-up [dʌbl ʌp] – двойной, удваивать

advantageous [ædvən'teɪdʒəs] – выгодный

inventive [ɪn'ventɪv] – изобретательный

laurel ['lɒrəl] – лавр, лавровый венок

rest on laurels – почивать на лаврах, останавливаться на достигнутом

1. You are given the list of some modern inventions which are used in everyday life. Work in pairs and guess what these things are used for. You have to use –ing form. For example: A mixer/ is for / to mix food.
---- A mixer is for mixing food.

A mower		to wake up people
A camera		to cook food
A telephone		to do calculations
A typewriter	is for	to tell the time
A calculator		to cut and collect the grass
A talking alarm clock		to type information
A dishwasher		to wash dishes
A microwave oven		to take photographs
		to receive and make calls

2. Study Appendix 1 “Inventions Around Us,” p. 76. Match the words with the pictures.

3. Match the inventions with the years when they took place.

- | | |
|------------------------------------|---------|
| 1) telephone | a) 1824 |
| 2) CD | b) 1852 |
| 3) writing for the blind (Braille) | c) 1876 |
| 4) computer mouse | d) 1963 |
| 5) airship | e) 1985 |

4. Match the words with the scientists or inventors and comments to their quotations. (For a harder quiz, cover the names.)

- | | | |
|--|--------------------------|---|
| 1) "You can have any colour you want as long as it's black". | a) Alexander Graham Bell | a) He had found a way to measure the weight of something that floats. |
| 2) "Watson, come here. I want you". | b) Archimedes | b) He was talking about cars. |
| 3) "Eureka! I've found it!" | c) George Eastman | c) He was talking about a camera. |
| 4) "But it does move". | d) Henry Ford | d) This was the first telephone message. |
| 5) "You press the button, we do the rest". | e) Galileo | e) He was talking about the Earth going round the Sun. |

5. Match the inventions with the inventors.

- | | |
|--------------------------|---------------------|
| 1) Robert Fulton | a) a telephone |
| 2) Samuel Morse | b) a sewing machine |
| 3) Alexander Graham Bell | c) a light bulb |
| 4) Isaac Singer | d) a steamboat |

- | | |
|---|------------------------|
| 5) George Eastman | e) Kodak camera |
| 6) Thomas Edison | f) the Morse code |
| 7) Thomas Moore | g) a television system |
| 8) John Logie Baird | h) a microwave oven |
| 9) Henry W. Seeley | i) a refrigerator |
| 10) Percy LeBaron Spencer | j) a motorcycle |
| 11) Gottlieb Daimler | k) a electric iron |
| 12) Charles Rolls, Henry Royce | l) a dishwasher |
| 13) Henry Ford | m) an electric motor |
| 14) Michael Faraday | n) a car |
| 15) Mrs. Josephine Garis (W.A.) Cochran | o) a car assembly line |

6. Before you read:

1. Why do people invent things?
2. Can you name the most important inventions of all the time?
3. Would you like to invent something useful for humanity?

7. Look at the following international words, read them and guess their meanings:

gadget ['gædʒɪt]	idea [aɪ'diə]
radio ['reɪdiəʊ]	calculator ['kælkjʊleɪtə]
commercialize [kə'mɜːʃəlaɪz]	magnetron ['mæɡnɪtrɒn]
generate ['dʒenəreɪt]	radar ['reɪdɑː]
social ['səʊʃəl]	microwave ['maɪkrəweɪv]
theoretical [θɪə'retɪkəl]	corporation [kɔːpə'reɪʃn]
mechanical [mɪ'kænɪkəl]	laboratory [lə'bɒrətɪrɪ]
technological [tek'nɒ'lɒdʒɪkəl]	machine [mə'ʃɪːn]
electric [ɪ'lektrɪk]	virtually ['vɜːʃʊəli]

8. Read the text:

HOW AND WHY DO PEOPLE INVENT THINGS?

According to the well-known saying, "necessity is the mother of invention"; in other words, people invent things because society has difficult problems that need solving. Inventions succeed when they do useful jobs that people recognize need doing. But the reasons inventions appear in the first place often have little or nothing to do with "necessity," especially in the modern age when virtually every need we have is satisfied by any

number of existing gadgets and machines. Where, then, do inventions come from and why do people invent them?

Scientific breakthroughs

Some inventions appear because of scientific breakthroughs. DNA fingerprinting is one good example. It only became possible after the mid-20th century when scientists understood what DNA was and how it worked. The same is true of many other inventions. Marconi's technological development of radio followed on directly from the scientific work done by Hertz, J. C. Maxwell, M. Faraday, and numerous other scientists who fathomed out the mysteries of electricity and magnetism during the 19th century. Generally, scientists are more interested in advancing human knowledge than in commercializing their discoveries. Some time after determined entrepreneurs like Marconi or Edison recognized the wider, social value of an idea—and turn theoretical science into practical technology.

Trial and error

But it would be very wrong to suggest that inventions always follow on from scientific discoveries (often abstract, impractical theories). Many of the world's greatest inventors lacked any scientific training and perfected their ideas through trial and error. Thomas Edison, one of the most prolific inventors of all time had little or no scientific training and owed much of his success to persistence and determination (when he came to develop his electric light, he tested no fewer than 6000 different materials to find the perfect filament).

Can you think of any things invented by trial and error?



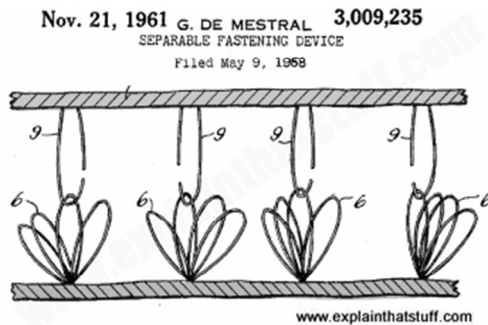
Inventions that evolve

Some inventions are never really invented at all—they have no single inventor. You can comb your way through thousands of years of history,

from the abacus to the iPhone, and find not a single person who could indisputably be credited as the sole inventor of the computer. That's because computers are inventions that have evolved over time. Mechanical calculators based on levers and gears gave way to electronic calculators in the early decades of the 20th century. As newer, smaller electronic components were developed, computers became smaller too. Now, many of us own cellphones that double-up as pocket computers, but there's no single person we can thank for it.

Can you name any inventions that evolve?

Accidental inventions



Some inventions happen through pure luck. When Percy Spencer was experimenting with a device called a magnetron, which turns electricity into microwave radiation for radar detectors, he noticed that a chocolate bar in his pocket had started to melt. He realized the microwave radiation was generating heat that was cooking and melting the food. That gave him the idea for the microwave oven. Teflon®, the super-slippery nonstick coating, and VELCRO®, the brilliant two-part clothing fastener, and numerous other inventions, were chance discoveries produced by accidents or mistakes.

Do you know any accidental inventions?



Advantageous inventions

From IBM and Sony to Goodyear and AT&T, many of the world's biggest, best-known corporations have been built on the back of a single great invention. But a modern company can't survive and thrive on one great idea alone. That's why so many companies have huge research and development laboratories where inspired scientists and engineers are constantly trying to come up with better ideas than the ones on which their original success was founded. Companies that rest on their laurels will be put out of business by their inventive competitors. This kind of corporate invention—companies trying to out-invent themselves and one another—is very much the way the world works now.

What advantageous inventions can you name?

DEVELOPING ACADEMIC VOCABULARY

9. The following words are all from the text above. Find them in the text:

breakthrough indisputably success persistence especially

10. For each word, read the sentence it occurs in and answer the questions:

- a) Is the word positive, negative or neutral?
- b) Is it a noun, adjective, adverb or verb?
- c) Can you think of a word with a similar meaning (synonym) and one with an opposite meaning (antonym)?

READING COMPREHENTION

11. Answer the questions:

1. What are the main reasons inventions appear?
2. Can you name any inventions that appear due to scientific breakthroughs?
3. How did many of the world's greatest inventors perfect their ideas?
4. What is Thomas Edison famous for?
5. Which inventions are being constantly evolved?
6. What allowed computers to become smaller?
7. Can you name any accidental inventions?
8. How did they appear?
9. What companies have been built on the back of a single great invention?

10. Why can't companies survive on one great idea and rest on their laurels?

11. What is the way the world works now?

12. Complete the sentences:

1. In other words, people invent things because....

2. DNA became possible after the mid-20th century when....

3. Generally, scientists are more interested in...

4. But it would be very wrong to suggest that inventions always follow...

5. Many of the world's greatest inventors...

6. Some inventions are never really invented at all...

7. Many of us own cellphones that...

8. He realized the microwave radiation was generating heat...

9. Teflon®, ... , and VELCRO®, ... , were chance discoveries produced by accidents or mistakes.

10. A modern company can't survive ...

11. That's why so many companies have huge research and development laboratories...

12. Companies that rest on their laurels...

13. Translate the words and word combinations into Russian:

A scientific breakthrough, to advance human knowledge, to commercialize discoveries, determined entrepreneurs, to perfect ideas through trial and error, a prolific inventor, persistence and determination, to be based on levers and gears, generate heat, discoveries produced by accidents, to survive, to thrive, to rest on their laurels, to come up with better ideas, original success.

14. Give the English equivalents of the following words and word combinations:

Решать проблемы, преуспевать, современная эпоха, удовлетворять потребности, существовать, разгадать тайны, социальные ценности, научные открытия, разрабатывать, идеальная нить накала, бесспорно, происходить по чистой случайности, превращать электричество в микроволновое излучение, скользкий, антипригарное покрытие, застежка для одежды, выгодные изобретения, научно-исследовательские лаборатории, вдохновленные ученые, изобретательные конкуренты.

15. Make your own sentences with the words and phrases:

Society, recognize, existing gadgets, fingerprinting, trial and error, to give the idea for smth.

16. Explain the meaning of the following words and phrases in English:

Microwave oven, original, success, chance, discovery, accident.

17. Give a name to these technical tools:



- | | | |
|----------------|-------------------|------------------|
| a) Credit card | d) Vacuum cleaner | g) Shuttle |
| b) Satellite | e) Robot | h) Brain Scanner |
| c) Smartphone | f) Blender | i) Tablet |

18. Which domain does each tool belong to?

Education	Personal use	Telecommunication
Astronomy	Music	Space
Personal use	Domestic life	Business

19. Match the words from the list to make phrases:

- | | |
|--------------|--------------|
| 1. Remote | a) bomb |
| 2. Telephone | b) piracy |
| 3. Atomic | c) shopping |
| 4. Internet | d) control |
| 5. online | e) addiction |
| 6. DVD | f) directory |

20. Fill in the gaps with a collocation from the list:

- _____ is a large book containing all the phone numbers for a particular area, organization, etc.
- With a _____ we can zap through many channels.

3. The cinema industry is losing money because of _____.
4. North Korea is threatening to use the _____.
5. Now you can purchase goods from home thanks to _____.
6. _____ is a growing epidemic characterized by a compulsive desire to interact online through internet gaming, gambling, social networking or surfing the web.

21. Translate into English:

Что такое патенты и зачем они нам нужны?

1. Подражание может быть «самой искренней формой лести». 2. Но представьте, что Вы потратили годы на разработку великого изобретения и вложили все свои сбережения в его производство. 3. Будете ли Вы «польщены», если кто-то попытается скопировать его и заработать на этом? 4. Вот почему в мире есть патенты. 5. Патент – это юридический документ, в котором подробно описывается, как работает изобретение и что делает его оригинальным. 6. Также патент содержит информацию о том, когда оно было впервые изобретено и кому принадлежат права на него. 7. Общество развивается благодаря продвижению великих идей. 8. Однако чтобы это произошло, люди, которые предлагают эти идеи, должны иметь возможность хоть немного заработать на них. 9. Патенты позволяют изобретателям зарабатывать деньги на своих изобретениях в течение ограниченного периода времени до истечения срока действия прав. 10. Благодаря этому общество выигрывает, потому что идея, лежащая в основе изобретения, становится «общественным достоянием».

LISTENING

TOP 10 INVENTIONS

22. BEFORE YOU WATCH. What, in your opinion, are the most important inventions that have changed the world? Why?

23. WHILE YOU WATCH. Listen to the podcast. What are the top 10 inventions according to the programme? Why are they so crucial?
https://www.youtube.com/watch?v=bNUfZ3_VkuE

24. WHILE YOU WATCH

a) Answer the comprehension questions:

1. When was the paper invented and by whom?

2. What had people used before the compass was invented?
3. What are the implications of the refrigeration invention?
4. Was Guttenberg the inventor of the printing press?
5. What did the plumbing improve? What did it result in?
6. How did the development of medicine launch social change?
7. What had people rely on in travelling before an engine was invented?
8. Which civilization invented a wheel?
9. What inventions that have changed the global communication does the podcast mention?
10. What are honourable mentions?
11. Who is the father of electricity?

25. AFTER YOU WATCH.

b) What invention is it about:

- a) _____ sleep patterns and work habits have changed drastically.
- b) _____ it's impact is truly endless, our world wouldn't look the same.
- c) _____ lowered the price of books and helped spread the information and knowledge to the masses.
- d) _____ made the world smaller.
- e) _____ extended and changed our lives significantly.
- f) _____ spark the industrial revolution.
- g) _____ evolved from holes in the ground to chamber pots and eventually to flush toilets.
- h) _____ kicked off the age of discovery.
- i) _____ can be found in every aspect of our daily life.
- j) _____ makes it possible to prevent food from spoiling.

26. AFTER YOU WATCH

c) Discussion questions:

1. Do you agree with the podcast ideas? Why?
2. What invention would you personally add to the list from the podcast?
3. Which would you remove?
4. What invention is the most crucial for you? Why?

5. Some people claim that modern medicine does more harm than good. Do you agree?
6. What would our world look like without the paper?
7. Are there any drawbacks of the availability of transportation?
8. What impact does the electricity have on your life? What happens when there is power cut?
9. In your opinion, are people nowadays too dependent on technology?
10. How has technology changed human interactions and the way we live?

WRITING

27. Now imagine you are an inventor. Try to describe your new fabulous extraordinary gadget. Include the function, colours, size and prize. Draw the picture of it.

Your invention.

Function -----

Colours -----

Size -----

Prize -----

You can use some ideas from the description below.

My invention.

The Universal Translator is a machine that can translate instantly one spoken language into another. This device will make travel and international business much easier, as well as relationships between people and countries worldwide. It is powered by solar cells that will last a lifetime. Software provided for two hundred languages will be available soon in miniaturized pocket version.

SPEAKING

28. Which of these inventions do you think are the most important? Rank them from 1 (the most important to you) to 10. The whole class will decide later which ones you will be able to survive without.

Television	Internet	Car	Clock	Computer	Map
Photography	Nuclear energy	Solar energy	Electricity	Washing mashine	Microvave
Printing	Paper	Videogames	Cinema	Airplane	Space shuttle

Mirror	Fuel	Sewing mashine	Telephone	WC	Twitter
Penicillin	WhatsApp	Google	Remote control	Credit card	Barcode
Radio	Wheel	Hairdryer	X-ray	MP3-player	Light bulb
Scissors	Batteries	Glasses	Diaper	Post mail	Post-it notes
Magnifying glass	Tablet	Mobile phone	Calculator	Ink	Wikipedia

29. Discuss in class the questions below:

1. What are your top 3 of the most important inventions of all the time?
2. What are the best and the most useful inventions of the mankind in the 20th and 21st centuries?
3. Which invention has had the greatest impact on society in the last 200 years? Why?
4. What are the inventions that make people's everyday life easier?
5. Which modern invention could you not live without? Explain your choice.
6. What inventions would make people's life easier in future? What would you like to see invented in the future? Why?
7. What inventions are dangerous for mankind? Should they never have been invented?
8. What do you think is the worst invention of the mankind? (weapon, atomic energy, cigarettes, television, mobile phones, cars, genetically modified products etc.)

30. STRANGE INVENTIONS. Have you ever heard about any strange inventions? Surf the Internet if necessary and find out about strange or useless inventions the world has ever had.

TEXT 2. GENIUS INSPIRED BY NATURE

Vocabulary

fascinating ['fæsmɪnɪŋ] – очаровательный, увлекательный

sketch [skeɪʃ] – набросок, эскиз, рисунок

credit ['kredit] – приписывать, зачислить

sophisticated [sə'fɪstɪkətɪd] – утонченный, изысканный, сложный, замысловатый

aerial screw ['e(ə)rɪəl skuː] – воздушный винт

ornithopter [ɔːnɪ'θɒptə] – орнитоптер

machine gun [mə'ʃiːn ɡʌn] – пулемет

self-propelled cart – самоходная телега

tank/armored vehicle [tæŋk]/ ['ɑːməd 'viːkl] – танк/бронетранспортер

resemble [rɪ'zembəl] – походить, напоминать

insufficient [ɪnsə'fɪʃnt] – недостаточный, неудовлетворительный

airborne ['eəbɔːn] – воздушный, авиационный

flapping wings – хлопающие крылья

muscle [mʌsl] – мускул, мышца

profound [prə'faʊnd] – глубокий, глубочайший

humanoid ['hjuːmənɔɪd] – гуманоид, инопланетянин, человекоподобное существо

automaton [ɔː'tɒmətən] – автомат

barrel ['bærəl] – цилиндр, барабан

bullet ['bʊlɪt] – пуля, патрон

warfare ['wɔːfeə] – военные действия

battlefield ['bætlfiːld] – поле битвы

come up with the idea – натолкнуться на мысль

breathe [briːð] – дышать

strikingly similar – поразительно похож

goggles [ɡɒɡlz] – очки

predate [priː'deɪt] – предшествовать

spring [sprɪŋ] – пружина

cart [kɑːt] – телега, повозка

equip [ɪ'kwɪp] – оборудовать

intentionally [ɪn'tenʃnəli] – намеренно, умышленно

prevent [pri'vent] – предотвращать

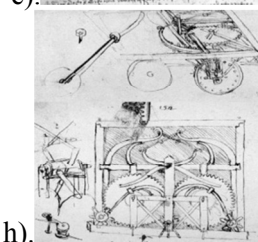
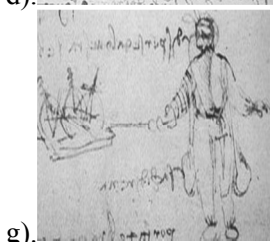
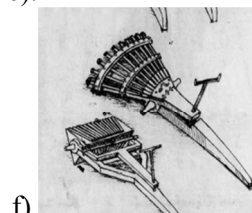
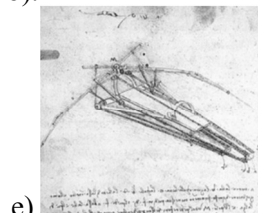
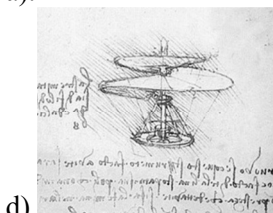
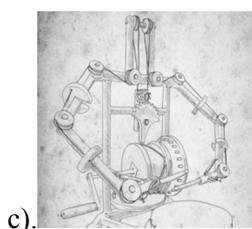
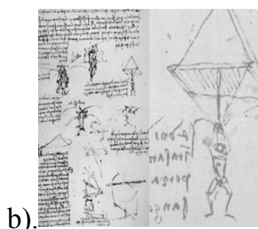
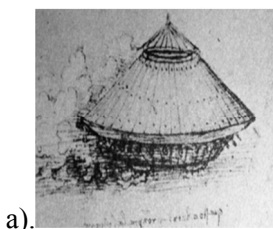
1. Before you read:

1. What do you know about Leonardo da Vinci?
2. Why is Leonardo da Vinci considered to be a genius?
3. Do you know any of his inventions?

2. Match the pictures below with the inventions of Leonardo da Vinci:

1. Parachute
2. Aerial Screw
3. Ornithopter
4. Robots

5. Machine Gun
6. Diving Suit
7. Self-Propelled Cart
8. Tank/Armored Vehicle



<https://www.leonardo-da-vinci.net/inventions/>

3. Look at the following international words, read them and guess their meanings:

parachute ['pærəʃu:t]
 engineer [endʒɪ'nɪə]
 concept ['kɒnsept]
 technology [tek'nɒlədʒɪ]
 Renaissance [rə'neɪsəns]
 machine [mə'ʃi:n]

physiology [fɪzɪ'ɒlədʒɪ]
 aerodynamics [e(ə)rəʊdaɪ'næmɪks]
 fundamental [fʌndə'mentl]
 designed [dɪ'zaɪnd]
 mechanical [mɪ'kænikəl]
 mechanism ['mekənɪzəm]

operate ['ɒpəreɪt]
historian [hɪs'tɔːrɪən]
individual [ɪndɪ'vɪdʒʊəl]

realize ['rɪəlaɪz]
controlled [kən'trəʊld]
era ['ɪərə]

4. Read the text:

GENIUS INSPIRED BY NATURE

Leonardo da Vinci (1452-1519) is famous for creating some of the greatest works of art. Of all time! But besides being a brilliant artist, da Vinci was also a scientist, engineer and inventor. His most fascinating inventions are listed below.

Parachute

The invention of the parachute is traditionally credited to Leonardo da Vinci although he wasn't the first to come up with the concept. There is evidence of parachute-like devices being used in China as early as the 11th century. However, Leonardo's parachute was way more sophisticated and in 2000, the British skydiver Adrian Nicholas proved that it works by jumping with a parachute built according to da Vinci's sketches.

Aerial Screw

This is another da Vinci's invention that resembles more to the technology of the 20th and 21st centuries rather than that used during the Renaissance. Indeed, his aerial screw looks strikingly similar to the modern helicopters. And according to Leonardo, it could fly. But it would be impossible to operate it effectively because the muscle power alone is insufficient to keep the machine airborne. Despite that, Leonardo is often credited with inventing the concept of a helicopter.

Ornithopter

Da Vinci came up with plans for a number of flying machines including ornithopters. Inspired by bird flight, Leonardo's ornithopter was to be lifted and operated by flapping wings "powered" by the muscle energy. Man-powered ornithopters are capable of flying but only for a brief period of time and to short distances due to the limitations of human physiology. Nevertheless, his sketches demonstrate a profound understanding of aerodynamics and concepts of flying, many of which turned out to be fundamental for the development of modern aviation.

Robots

What da Vinci built were not robots in the modern sense. He built a self-operating machine called automaton which, however, was capable of moving without human aid/intervention. In the mid-1490s, the renowned

scientist designed the so-called Leonardo's robot or mechanical knight, a humanoid automaton which could sit, stand and move its arms independently.

Machine Gun

Leonardo's machine gun – a 33-barrelled organ – was nothing like the modern machine guns. Rather than firing bullets rapidly from the belt, it was meant to fire bullets from individual guns that were connected in three rows. It was never built or used in warfare but it is notable for introducing the concept of a modern machine gun. The latter found its way to the battlefield only in the 19th century.

Diving Suit

Just like in the case of the parachute, da Vinci wasn't the first to come up with the idea of a suit that allows its wearer to breathe underwater. But again, his design is strikingly similar to the early prototypes of the modern diving suit: it consisted of a (leather) jacket, pants and helmet with inbuilt glass goggles, and a breathing tube that supplied the air from the surface. And most importantly, it predates the early modern diving suits for hundreds of years.

Self-Propelled Cart

Like many other Leonardo's inventions, this one was well ahead of his time. The incredible machine was discovered in his drawings only in the early 20th century. But no one could figure out how it was supposed to work. Only in the late 1990s Professor Carlo Pedretti realized that it isn't directly driven by the springs but by another mechanism that was controlled by the springs. The cart was also shown to be programmable to turn – although only to the right side.

Tank/Armored Vehicle

Tank was first used only during World War I (1914–18) but the concept or the first prototype was developed by Leonardo da Vinci more than 500 years earlier. It was designed to be equipped by a series of guns/cannons and “driven” by the men inside. However, Leonardo's design was impossible to move. Most historians believe that da Vinci intentionally made it nonoperational. Some believe that he didn't want the war machine to be built, while others think that he wanted to prevent the design from falling into the wrong hands.

Da Vinci's mind was well beyond his era. Even today we try to learn more and more about him, simply because he never ceases to amaze us!

Will we have another Da Vinci? Which one of Da Vinci's works do you find the most inspiring?

DEVELOPING ACADEMIC VOCABULARY

5. The following words are all from the text above. Find them in the text:

sophisticated powered limitation device mean

6. For each word, read the sentence it occurs in and answer the questions:

- a) Is the word positive, negative or neutral?
- b) Is it a noun, adjective, adverb or verb?
- c) Can you think of a word with a similar meaning (synonym) and one with an opposite meaning (antonym)?

READING COMPREHENTION

7. Answer the questions:

1. Who proved the fact that da Vinci's parachute works?
2. Could da Vinci's aerial screw fly?
3. Why was it impossible to operate it effectively?
4. What was da Vinci inspired by when he invented the ornithopter?
5. Why are man-powered ornithopters capable of flying but only for a brief period of time and to short distances?
6. How was a self-operating machine called which was built by da Vinci?
7. What could a humanoid da Vinci's automaton do?
8. Was da Vinci's machine gun used in warfare?
9. What did diving suit designed by da Vinci consist of?
10. When was self-propelled cart discovered in the drawings made by Leonardo da Vinci?
11. Why did da Vinci make his tank nonoperational?

8. Complete the sentences:

1. There is evidence of parachute-like devices...
2. The British skydiver Adrian Nicholas proved that it works...
3. This is another da Vinci's invention that resembles more to the technology
4. ..., Leonardo's ornithopter was to be lifted and operated by flapping wings.
5. Nevertheless,, many of which turned out to be fundamental for the development of modern aviation.

6. In the mid-1490s,, a humanoid automaton which could sit, stand and move its arms - independently.

7. Leonardo's machine gun - a 33-barrelled organ - was nothing.....

8., it predates the early modern diving suits for hundreds of years.

9. The cart was also shown- although only to the right side.

10. It was designed.... ..and "driven" by the men inside.

11. Some believe....., while others think that he wanted to prevent the design from falling into the wrong hands.

9. Translate the words and word combinations into Russian:

To be built according to sketches, to look strikingly similar, the muscle power, to keep the machine airborne, to come up with a plan, a profound understanding of aerodynamics, a self-operating machine, a renowned scientist, a mechanical knight, to fire bullets, to be connected in three rows, to breathe underwater, inbuilt glass goggles, to predate the early modern diving suits, to make something intentionally nonoperational.

10. Give the English equivalents of the following words and word combinations:

Блестящий художник, создать концепцию, более сложный, воздушный винт, управлять машиной эффективно, вдохновленный полетом птиц, ограничения физиологии человека, 33-ствольный механизм, использовать в боевых действиях, дыхательная трубка, подавать воздух с поверхности, разработать первый прототип, намеренно сделать что-л. нерабочим, предотвратить, попасть в чужие руки.

11. Make your own sentences with the words and phrases:

The most fascinating inventions, to be listed below, insufficient, to be powered by, to turn out, to find the way, the battlefield.

12. Explain the meaning of the following words and phrases in English:

To allow, to supply, a mechanism, intentionally, era, a drawing, a concept.

13. Translate into English:

1. Термин «человек эпохи Возрождения» пришел из Италии пятнадцатого века.

2. Это человек, обладающий знаниями и навыками в различных областях.

3. Пожалуй, ни один человек не передает идею человека эпохи Возрождения лучше, чем Леонардо да Винчи.

4. Леонардо да Винчи был не только знаменитым художником, но и ученым, архитектором, инженером и изобретателем.

5. Он очень много работал над своими достижениями в области науки и техники.

6. Многие идеи изобретений да Винчи появились задолго до того, как их разработка и реализация стали возможными.

7. Да Винчи как художник, так и изобретатель никогда не боялся выходить за рамки традиционного мышления и «большой мечты».

8. Его изобретения тесно связаны с современной жизнью.

9. Главным препятствием для их реализации был невысокий технический уровень того времени.

10. Да Винчи был известным деятелем своего времени, но настоящая слава пришла к нему спустя много веков после его смерти.

11. Взгляд на некоторые изобретения Леонардо да Винчи помогает нам лучше понять его как целостную личность.

SPEAKING

14. Prepare a dialogue about Da Vinci's inventions. You can use questions from ex.7.

15. Make a plan of the text.

16. Prepare a short summary of the text using the plan and the following expressions:

The most fascinating inventions, Leonardo's parachute, to look strikingly similar to, to keep the machine airborne, to be lifted and operated by flapping wings, profound understanding of aerodynamics, a self-operating machine, to find its way to the battlefield, to predate the early modern diving suits, was controlled by the springs, to make smth. nonoperational.

17. Talk about a famous historical figure that lived over 500 years ago. Use the following questions as a plan:

1. Who is this person?

2. Why is the person famous?

3. How did the person change the world?

3. What is your opinion of the person?

18. Conversation Questions for the Classroom.

1. What famous inventors do you know?

2. What were their inventions?

3. What do you know about the inventions of Leonardo da Vinci?

4. How did the invention of television change people's life?

5. Do you think it is a useful invention?

6. What is the role of television in your life?

7. How often do you watch it?

8. When did you buy or get your first mobile phone?

9. Do you think you can live without your mobile or is it now an important part of your daily life?

10. Are you anxious when the battery is flat or you are out of reach?

11. What do scientists say about the influence of mobile phones on our health?

12. Can you name some inventions you are looking forward to? (human cloning, time traveling, eternal-life-pill, AIDS\cancer vaccine, teleportation)

13. What do you know about cloning?

14. Who invented it?

15. How does it work?

16. Who is Dolly (sheep)?

17. What is your attitude to human cloning?

18. Do you think it should be prohibited?

19. What is good and bad about human cloning?

20. Do you think time machine will ever be invented?

21. Would you like to do some time traveling?

22. What time would you like to visit, what event would you like to witness?

23. Do you think aging is the problem the mankind can not fight?

24. What discoveries and inventions has been made recently to fight aging?

25. Do you believe that the elixir of life will ever be discovered?

26. Would you like to be immortal or would you just prefer to remain young throughout your life and die in the end?

27. What is the use of space exploration?

28. What technologies has space exploration brought to our daily life?

29. Do you believe that one day people will live on the moon and on other planets?
30. Why isn't it possible today?
31. What would you invent if you were a scientist?

ROLEPLAY

19. If you had the time machine, which inventor would you like to meet and interview. Think of any possible questions you would like to ask the person.

MODULE II. INFORMATION TECHNOLOGY

UNIT 1. THE HISTORY OF THE COMPUTER TECHNOLOGY.

TEXT 1. WHERE ARE WE IN THE HISTORY OF THE COMPUTER TECHNOLOGY?

Vocabulary

large-scale [lɑːdʒˈskeɪl] adj. – крупномасштабный

sizeable [ˈsaɪzəbl] adj. – значительный, существенный, крупный

disrupt [dɪsˈrʌpt] v. – нарушать, разрушить, подорвать

remained inaccessible [rɪˈmeɪn ɪnəkˈsesəb(ə)l] – оставаться недоступным

eventually [ɪˈvenʃʊ(ə)li] adv. – в итоге, в конце концов

consolidate [kənˈsɒlɪdɪt] v. – консолидировать, объединять, закрепиться

drastically [ˈdræstɪklɪ] adv. – коренным образом, кардинально

enable [ɪˈneɪbl] v. – давать возможность, активировать, задействовать

bespoke [brɪˈspəʊk] n, adj. – сделанный на заказ, специальный

challenge [ˈtʃælɪndʒ] n. – вызов, проблема, трудность, задача

competition [kəmˈpiːtɪʃn] n. – соревнование, конкурс, конкуренция

tough [tʌf] adj. – жесткий, крепкий, сильный

compatible [kəmˈpætəbl] adj. – совместимый, сочетаемый

unbounded [ʌnˈbaʊndɪd] adj. – неограниченный, безграничный

market share [ˈmɑːkɪt ʃeə] – доля на рынке

connectivity [kənekˈtɪvɪti] n. – связь, соединение, возможность подключения

concomitant [kənˈkɒmɪtənt] adj. – сопутствующий, сопровождающий

cost reduction [kɒst rɪˈdʌkʃn] – снижение затрат, сокращение расходов

on devices [ɒn dɪˈvaɪsɪz] – на устройствах, на приборах

proliferation [prəˈlɪfəˈreɪʃn] – распространение, размножение

be geared towards – быть ориентированным на что-л.

incremental performance – возрастающая производительность

function-specific structures – функциональные структуры

in narrowly focused jobs – на узконаправленных работах

1. Before you read:

- What do you know about the history of computers?
- How have computers changed since the beginning of the computer era?
- What are the most promising directions in IT sphere?

2. Look at the following international words, read them and guess their meanings:

mechanical [mɪ'kænikəl]

vacuum ['vækjuəm]

commercial [kə'mɜːʃəl]

microprocessor [maɪkrə(ʊ)'prəʊsesə]

segment ['segmənt]

Motorola [məʊtə'rəʊlə]

standardized ['stændədaɪzd]

era ['ɪərə]

function [fʌŋkʃn]

design [dɪ'zaɪn]

phenomenon [fɪ'nɒmɪnən]

operating ['ɒpəreɪtɪŋ]

Amazon ['æməzən]

transaction [træn'zækʃn]

generate ['dʒenəreɪt]

incremental [ɪnkrə'mentl]

structure ['strʌktʃə]

specific [spɪ'sɪfɪk]

3. Read the text.

WHERE ARE WE IN THE HISTORY OF THE COMPUTER TECHNOLOGY?

1940's and 1950's: First General-purpose computers

The ENIAC (Electronic Numerical Integrator And Computer) was the first large-scale computer to run at electronic speed without being slowed by any mechanical parts. The ENIAC used a record 18,000 vacuum tubes to run and was rather sizeable, requiring 15-by-9-meters of space.

1950's and 1960's: Transistors

Transistors brought about smaller and more reliable computers that disrupted the more expensive general-purpose computer. Decreased costs and smaller space requirements brought about increased demand for computers. However, the transistor computer remained inaccessible as it was too expensive and large for general households, so demand was still largely driven by firms.

The 1950s to '60s, therefore, marked the start of the modern computer industry which eventually consolidated around IBM.

1970's and 1980's: Microprocessor

Intel introduced the first commercial microprocessor – the Intel 4004 – in 1971. Microprocessors drastically lowered the costs of producing computers, enabling mass production of bespoke CPU systems. The

microprocessor enabled the minicomputer, PC, laptop and eventually the mobile phone, all of which challenged IBM's larger transistor computers.

Due to first mover advantage with the Intel 4004 and 8008, Intel controlled 100 % of the microprocessor market segment in the 1970s. Motorola eventually introduced the 6800 in 1974, which begun the microprocessor 'wars' between Intel and Motorola.

1980's and 1990's: The PC

The introduction of microprocessors brought about greater competition within the hardware layer of computers. The largest hardware manufacturers of this era were Intel, Zilog, Motorola, and MOS Tech. Competition became even tougher when Japanese chips from Hitachi, NEC, Fujitsu, and Toshiba came to market.

The mass production of computers brought about increased demand by users for a common operating system (OS) that ran standardized software. Most customers were drawn to the Windows platform as it had the largest number of compatible applications. As a result, Microsoft's operating system was running on 97% of all computing devices by the late 90s. Therefore, value in creating PCs transitioned up to the software layer, where a new, near unbounded design space was enabled.

2000 to 2010: the Web

The introduction of Linux offered a free, open-source operating system, and the Web (HTTP) enabled a free distribution network. Both Linux and HTTP brought about some key shifts in the computing market. The major is that computing consumption started shifting towards mobile – a phenomenon that was largely missed by Microsoft. By 2012 Microsoft's computing market share had dropped to 20 %, and the Linux-based mobile operating system, Android, controlled 85 % of the mobile computing market.

2010 to today: the Network and the Cloud

As connectivity improved, with concomitant cost reductions in hardware, the running of applications and the storage of user data began moving from on-device to the Cloud. Cloud is now a key focus of many of the tech giants; evidenced through Google, Amazon and Microsoft's competing cloud solutions to users and enterprises. As a result, market consolidation has happened around Facebook, Apple, Amazon, Netflix, and Google (FAANG).

Apple, albeit, is different from other FAANG companies, as it dominated as a result of the rapid proliferation of mobile technology. Apple has locked developers into their platform via the App Store and takes a 30 % fee on any transaction.

Lastly on the hardware front, intense competition continued. However, it has been supposed that the next wave of hardware design will be geared towards application or function-specific structures to generate incremental performance improvements in narrowly focused jobs.

DEVELOPING ACADEMIC VOCABULARY

4. The following words are all from the text above. Find them in the text:

reliable, inaccessible, proliferation, consolidation, enable

5. For each word, read the sentence it occurs in and answer the questions:

- a) Is the word positive, negative or neutral?
- b) Is it a noun, adjective, adverb or verb?
- c) Can you think of a word with a similar meaning (synonym) and one with an opposite meaning (antonym)?

READING COMPREHENSION

6. Answer the questions:

1. How many vacuum tubes did the ENIAC use?
2. How large was this computer?
3. Why did transistors disrupt the more expensive general-purpose computer?
4. Why did transistor computers remain inaccessible?
5. When was the first commercial microprocessor introduced?
6. Why did microprocessors enable mass production of bespoke CPU systems?
7. What appeared due to microprocessors?
8. What were the largest hardware manufacturers in the 1980's and 1990's?
9. Why was a common operating system (OS) running standardized software in increased demand?
10. What was the major key shift in the computing market in the 2000's?
11. What is a key focus of the major tech giants?
12. Why is Apple different from FAANG companies?
13. What will the next wave of hardware design be focused on?

7. Complete the sentences:

1. The ENIAC (Electronic Numerical Integrator And Computer) was the first... .
2. The 1950s to '60s marked the start of
3. Due to first ... , Intel controlled 100% of the microprocessor market segment.
4. Competition became even tougher when... .
5. Most customers were drawn to the Windows platform
6. Microsoft's operating system was running on
7. Computing consumption started shifting towards mobile
8. As connectivity improved, ... , the running of applications and the storage of user data began moving
9. Apple has locked developers into their platform... .
10. It is supposed that the next wave of hardware design... .

8. Give the English equivalents of the following words and word combinations:

Быть достаточно крупным, универсальный компьютер, бытовые потребители, закрепиться за IBM, системы ЦП на заказ, повышенный спрос, обеспечить неограниченное пространство для проектирования, операционная система с открытым исходным кодом, важные перемены на рынке вычислительной техники, сопутствующее снижение затрат, быстрое распространение мобильных технологий, постепенное улучшение производительности, быть ориентированными на что-л.

9. Make your own sentences with the words and phrases:

To run at speed, to mark the start of, to transition up to, unbounded, to drop to, intense competition, to dominate.

10. Explain the meaning of the following words and phrases in English:

To enable, sizeable, drastically, compatible, decreased costs, segment, phenomenon, to improve.

11. Translate into English:

1. Около ста пятидесяти лет назад предприятия полностью отличались от предприятий современной эпохи.
2. В то время люди работали при свечах, выполняя математические вычисления на бумаге.

3. Теперь большая часть цивилизованного мира не знает, что делать без технологий.

4. Трудно поверить, что люди смогут выжить без этих передовых инструментов, которые мы принимаем как должное каждый день.

5. Достижения в области коммуникации в сочетании с развитием ИТ-индустрии позволили людям вести бизнес по всему миру в режиме реального времени.

6. Спектр ИТ охватывает многие профессиональные области, такие как информационные системы управления, компьютерные сети и разработка программного обеспечения.

7. Врачи делают снимки с помощью таких аппаратов, как компьютерная аксиальная томография (CAT) или магнитно-резонансная томография (MRI).

8. Сейчас возможно распечатать трехмерные изображения костей, мышц и органов.

9. С каждым днем появляется все больше новых технологий, и сотрудники, работающие в сфере информационных технологий, должны постоянно переучиваться.

10. Это делает ИТ-отрасль очень требовательной, поскольку она постоянно развивается и совершенствуется.

11. Процесс улучшения – вот что делает этот аспект желанным практически для любого бизнеса.

12. Для всех, кто работает в ИТ-сфере, очень важно всегда быть в курсе всех новых технологий, связанных с их отраслью.

13. Сегодня ИТ – это основа практически любого бизнеса, обеспечивающая его конкурентоспособность и эффективность.

12. Read the text. Fill in the gaps in the sentences numbered 1–6 with the corresponding forms of words printed in capital letters to the right of each sentence.

The Internet – a Blessing or a Curse?

1. We live in the age of information technology and the Internet is a unique _____, which has influenced all areas of our lives. INVENT

2. Yet some people are _____ about the importance of the Web. Is it a blessing or a curse? CERTAIN

3. On the one hand, with the Internet, it is now possible to communicate _____ with people all over the world. EASY

4. In addition, the Internet is very useful, because it makes the world of facts and knowledge _____ to everyone. ACCESS

5. However, a huge amount of information on the Internet is also one of its _____. This diversity makes it difficult to find the type of information you want. WEAK

6. Moreover, the Internet can become _____ for our society, because of cybercriminals. The information wars of the future may be fought on Web sites. DANGER

13. Give the correct form of the words in brackets:

1. Some people are not aware of their computer (addict).
2. Video games are (harm) to the eyes.
3. The NASA is doing (science) research to see if there is life on Mars. NASA Internet Speed is about 13,000 times (fast) than what the current speed you have is.
4. The WiFi is (access) to all rooms in the hotel.
5. The device also can be provided with a screen, base (protect) shield and a remote control unit.
6. Movie piracy is the act of (legal) copying a movie onto another format and distributing it.

14. Do the Computer Vocabulary Quiz:

1. A computer program is a piece of _____.
 - a) hardware
 - b) underwear
 - c) software
2. Devices that are connected to computers, such as printers, scanners and modems, are called _____.
 - a) peripherals
 - b) formats
 - c) apps
3. What do we call a specific computer record containing data or a small program?
 - a) a file
 - b) a format
 - c) an icon

4. What do we call the part of a computer that stores programs and information?

- a) the hotspot
- b) the hard disk
- c) the notebook

5. What do we call a program for exploring the Web and viewing websites?

- a) a driver
- b) a browser
- c) a scanner

6. To open a particular folder, file or app, you just have to click on its

-
- a) pixel
 - b) icon
 - c) font

7. RAM, ROM and cache are different types of _____ that computers can use.

- a) Wi-Fi
- b) file
- c) memory

8. Which allows wireless data communication?

- a) a USB flash drive
- b) a Bluetooth connection
- c) an anti-virus app

9. What do people go to public hotspots for?

- a) Internet access
- b) software bugs
- c) free viruses

10. A computer's _____ is called its heart or "brains" because it's where data is processed.

- a) RAM
- b) USB
- c) CPU

LISTENING

15. a). Watch the video “The Evolution Of The Mouse | Modern World Inventions” <https://youtu.be/arMesDIVmL0?t=10>. Find out the answers to the following questions:

1. What is a constant companion for most of the people who work on computers?
2. What is considered to be the first developer of the mouse?
3. What was the mouse developed for?
4. Who conceived of the first prototype?
5. Why can a computer mouse be soul-sucking and cause the mouse rage syndrome?
6. What was the name of the early mouse's version?
7. Which popularity did it rival?
8. What can we use instead of a mouse for information input and output?
9. What kind of device was supposed to be introduced by Douglas Engelbart as an option to the mouse?
10. How are these dates related to the history of the mouse:
 1952 _____,
 1963 _____,
 1984 _____?

b) Watch the video again and complete the abstract with missing words and phrases:

It's the most essential of all the _____ and it looks the cutest. Yes, the mouse! Did you know that this _____ little thing was originally developed by the _____? Its initial models look like an _____ from faraway space but they resulted in a huge leap in the _____ aspect which they wouldn't deny, won't you? Since then several versions of it has hit the market _____ but the function remains essentially the same making your life much easier than you think it does. However, you might be taking your frustrations out on your mouse _____ against the desk, launching at the wall... Now can you _____ without it? Yes, maybe with the _____ and _____ pads. But remember these are just mere _____ of the mouse.

16. a). Watch the video "What is IT/OT Convergence and Why is it Important?" <https://youtu.be/WTPv3tzXIRg?t=7>. Find out the answers to the following questions:

1. What is IT/OT convergence?
2. What are IT and OT systems used for?
3. What does converging IT and OT enable?
4. What benefits does it provide?
5. What spheres is it mostly used in?

6. What does it enable in the oil and gas industry?
7. What does it enable in the the medical realm?
8. How many main types of IT/OT convergence exist?
9. Can you name them? What do they deal with?

b) Watch the video again and complete the abstract with missing words and phrases:

IT/OT convergence is the integration of information technology (IT) systems with operational technology (OT) systems. IT systems are used for _____ computing; OT systems are for monitoring and controlling _____. The idea of converging IT and OT came with industry 4.0 a small industrial movement to integrate _____, communication and _____. IT/OT convergence intends to close _____ gaps and provide complete news of every operation and how it is performing. Some experts say that IT/OT convergence, but rather required for innovation, but it will take effort and training to _____ it correctly. Dig deeper on IT/OT convergence challenges and training by clicking a link above or in the description below. Converging IT and OT enables more direct control and complete monitoring of complex systems from _____ in the world. With it, workers can do their _____ more _____ and decision making improves as organizations have access to real time data insights. IT/OT convergence brings benefits that separate IT and OT can not provide such as: less siloed IT and OT departments which must share their _____ areas of expertise; reduced development and support costs, in part due to predictive maintenance enabled by IOT devices; faster time to market for converge technology; improved _____ with regulatory standards; improved _____ and visibility into distributed OT; more efficient energy and resource usage and more efficient asset management.

SPEAKING

17. Speak about the Internet in our life. Use the following questions as a plan:

Do computers save time or do they just make us waste more time?

1. Do you use the Internet?
2. What Internet services do you use?
3. Do you feel any addiction to the Internet?
4. How much do you spend on the Internet a month?
5. How did the Internet influence such things as communication, correspondence, access to information?
6. Do you think that the Internet is the good or the evil?

18. Prepare dialogues using questions from ex. 17.

19. Make a plan of the text.

20. Speak about the history of computer technology. Search the Internet if necessary. Add some more details to the information in the text (ex.3).

UNIT 2. CYBERCRIME AND PREVENTIVE TIPS

TEXT 1. TOP 5 TYPES OF CYBERCRIMES

Vocabulary

phishing scams ['fɪʃɪŋ skæmz] n – фишинг-мошенничество

disseminate [dɪ'semɪneɪt] v – распространять

trending and booming mode – модный и процветающий способ

preventive [prɪ'ventɪv] adj. – профилактический предупредительный

earning ['z:ɪnɪŋ] n – заработок м доход м

illegal [ɪ'li:gəl] adj. – незаконный нелегальный

associate with [ə'səʊʃɪt wɪð] v – ассоциироваться

encompass [ɪn'kʌmpəs] v – охватывать включать

permission [pə'mɪʃn] n – разрешение

malicious [mə'liʃəs] adj. – злонамеренный вредоносный

penetration [penɪ'treɪʃn] n – проникновение, вторжение

trustworthy entity – организация, заслуживающая доверия

pretend [prɪ'tend] v – притворяться делать вид

lead to v – привести к ч.-либо

disrupt [dɪs'rʌpt] v – срывать нарушать

ransomware n – программа-вымогатель, программа-шантажист

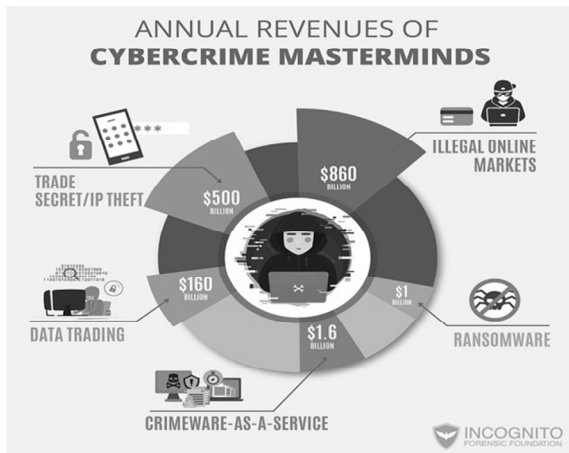
malware ['mælweər] n – вредоносная программа

spyware ['spaɪweər] n – шпионская программа

1. Look at the picture and answer the questions.

1. What is a cybercrime?
2. What types of cybercrime can you see? Can you name any other types of it?
3. What is the income of people who earn money by computer crime?
4. Why do people earn money in this way?

5. Can the problem be solved in our society? In what way?



<https://ifflab.org/top-5-types-of-cybercrimes-tips-for-cybercrime-prevention/>

2. Read the text and choose the most suitable heading from list A-E for each part of the article. There is one extra heading you don't need to use:

TOP 5 TYPES OF CYBERCRIMES

- A. Cybercrimes Are Now a Booming Mode of Income
- B. What is Cybercrime?
- C. Prevention Tips
- D. Types of Cybercrimes
- E. The Rise of the Digital Era

The computer and the Internet have changed the way we go about our routine lives, be it at home or at work.

WhatsApp messages and social media updates have replaced letters and physical gatherings. Boardroom meetings are now conducted through video conferences. Kids prefer learning from apps and laptops than books.

Yes, the Internet has made life simpler and more connected. But, as a result, cybercrimes have also become an unavoidable part of our lives. So much so that a cybercrime is now a trending and booming mode of income for some!

The least we can do it to educate ourselves and others about the different types of cybercrimes so that we may take the necessary preventive steps. Read on to find the list of cybercrimes that one must be wary of!

These statistics are shocking! Did you know that the individual earning of crooks from different types of cybercrimes is 10-15% higher than other traditional crimes? In fact, the highest earnings can go up to \$167000 per month while mid-level earners can make nearly \$75000 per month! Some cyber conmen rake in nearly half a million dollars in a year by simply trafficking embezzled data!

So exactly what is cybercrime? And, how do we classify a crime as a ‘cybercrime’?

Technically, a cybercrime constitutes any illegal or criminal activity involving a computing device and/or the internet. The term ‘cybercrime’ is usually associated with crimes directly involving a computer or the internet. Thus, a cybercrime encompasses any crime in which a computer or information stored in it is the medium, object or target of offense.

Here’s the list of cybercrimes that have at times brought the most prepared of all nations down to their knees.

1. Hacking

Hacking is the act of breaking into a computer without the user’s knowledge or permission. Hackers are usually skilled computer programmers having an outstanding knowledge of computer and programming languages. Malicious hackers are the ones who use their knowledge with the wrong intentions.

There is another form of hacking which is LEGIT. This kind of ethical hacking enables the hacker, also called a penetration tester, to assess the loopholes and vulnerabilities in a network/system.

2. Phishing

Phishing scams involve the use of electronic communication to extract sensitive information such as passwords, usernames, or financial details.

In a phishing scam, fraudsters disguise themselves as a trustworthy entity and contact the victim through a phone call, email, text message or social media. They often pretend to call from a bank, telephone company or internet provider.

Phishing scams often involve tricking the victim into clicking a malicious link that leads to the installation of a malware.

3. Virus Attack

Virus attacks are probably one of the most familiar types of cybercrimes. Viruses are nothing but computer programs that can disrupt the computer system and the files in it either by modifying them or deleting them altogether! Remember that unlike other types of cybercrimes, computer viruses can be easily disseminated through the internet or a removable device such as an infected CD-ROM or USB flash drive.

4. Malware

Almost everyone is familiar with a ‘malware’ after the infamous ‘WannaCry’ ransomware attack on networks across the globe. In the simplest terms, malware = malicious + software. A malware is a software created with the intent of causing damage or gain illegal access to a computer/network. Malware includes everything from viruses and worms to spyware and Trojan Horses.

DEVELOPING ACADEMIC VOCABULARY

3. The following words are all from the text above. Find them in the text:

Sensitive vulnerability installation access disseminate

4. For each word, read the sentence it occurs in and answer the questions:

- a) Is the word positive, negative or neutral?
- b) Is it a noun, adjective, adverb or verb?
- c) Can you think of a word with a similar meaning (synonym) and one with an opposite meaning (antonym)?

READING COMPREHENSION

5. Answer the questions:

1. What are benefits and threats of the Internet?
2. What is a cybercrime?
3. Why are the statistics related to cybercrimes shocking?
4. What is a hacker?
5. What is LEGIT?

6. What do phishing scams involve?
7. How do fraudsters disguise themselves?
8. How can viruses disrupt the computer system?
9. How are viruses disseminated?
10. What is a malware?
11. What does it include?

6. Complete the sentences:

1. WhatsApp messages and social media updates have replaced... .
2. ...is now a trending and booming mode of income for some!
3. The least we can do it to educate ourselves and others... .
4. Did you know that ... higher than other traditional crimes?
5. The term 'cybercrime' is usually associated with... .
6. ...who use their knowledge with the wrong intentions.
7. This kind of ethical hacking enables the hacker,, to assess the loopholes and vulnerabilities in a
8. They often pretend to or internet provider.
9. Computer viruses can be easily disseminated
10. A malware is a software created with the intent

7. Match the phrases with their definitions:

1. Logic Bombs	a) the crime of moving money that has been obtained illegally through banks and other businesses to make it seem as if the money has been obtained legally
2. Cyber Stalking	b) it is the act of stealing information stored on corporate databases, devices, and servers
3. Identity Theft	c) it is a form of net abuse that sends large volumes of email to an address to overflow the mailbox, overwhelm the server where the email address is hosted
4. Cyber Bullying	d) the use of the Internet or other electronic means to harass an individual, group, or organization
5. Online Abuse	e) a piece of code intentionally inserted into a software system that will set off a malicious function when specified conditions are met
6. Cyber Defamation	f) a type of cybercrime in which data is altered as it is entered into a computer system, most often by a data entry clerk or a computer virus
7. Data Diddling	g) any type of harassment that happens on the internet, by means of computers, tablets, mobile phones and other internet-enabled devices

8. Data Theft	h) illegal copying of software, often using the Internet
9. Email Bombing	i) the activity of using the internet to harm or frighten another person, especially by sending them unpleasant messages
10. Electronic Money Laundering	j) the crime of using someone's personal information in order to pretend to be them and to get money or goods in their name
11. Software Piracy	k) it is not a specific criminal offense, misdemeanor or tort, but rather slander conducted via digital media, usually through the Internet

8. Unscramble the word combinations in italics to complete the sentences. All of them refer to cybcrime types given in ex. 7 on the left.

1. Statistics show that millions of people are victims of *tyediint thfte* each year.

2. In the past ten years, *beryc bigunlyl* has become increasingly common among students.

3. Cyberbullying can take various forms, including threats, harassment, cyber-stalking, and *cebyr iaaemdontf*.

4. In 2011, actress Patricia Arquette quit Facebook after alleged *rybee gnkalsti*.

5. Examples of *daat ddgidlni* are counterfeiting documents and exchanging valid computer tapes.

6. *aEmli bmongbi* is, a very common problem related to Spam that could affect our security.

7. A *ioclg mbsbo* explodes either at a set time or when a specific condition is met.

8. Children may feel that *nenoil beasu* intrudes into their life without relief as technology is always "open".

9. There have also been concerns expressed regarding *ncteirlcoe oeynm unnilegdar* and related issues such as tax evasion.

10. VMProtect is a new generation of *ofrsawet cpiray* protection.

11. Users of these services also need to be aware of *tada thetf* or viruses.

9. Give the English equivalents of the following words and word combinations:

Заседание совета директоров, быстро развивающийся способ получения дохода, профилактические меры, торговля похищенными данными, охватывать, поставить на колени, плохие намерения, уязвимость сети, заслуживающая доверия организация, распространять, съемное устройство, причинить ущерб.

10. Make your own sentences with the words and phrases:

An unavoidable part of our lives, to be wary of smth., per month, illegal activity, to be associated with, target, permission.

11. Explain the meaning of the following words and phrases in English:

Routine, gatherings, preventive, statistics, knowledge, enable.

12. Translate into English:

1. Киберпреступность – это любая преступная деятельность, в которой используется компьютер, сетевое устройство или сеть.

2. Многие киберпреступления совершаются с целью получения денег.

3. Некоторые из них совершаются, чтобы вывести из строя компьютерную систему.

4. Для этого достаточно заразить компьютеры ошибками или вредоносными программами.

5. Киберпреступлением может являться распространение незаконной информации, изображений и других материалов.

6. Некоторые киберпреступники действуют скоординированно.

7. Киберпреступники могут использовать личную информацию отдельного лица или корпоративные данные для кражи и перепродажи.

8. В связи с тем, что интернет является неотъемлемой частью нашей жизни, в будущем ожидается рост подобных преступлений.

9. Антивирусное ПО обеспечивает максимальную степень безопасности.

10. Антивирусные программы позволяют проверять, выявлять и устранять опасности до причинения вреда.

TEXT 2. CYBERCRIME PREVENTION TIPS THAT YOU MUST KEEP HANDY

Vocabulary

overview ['əʊvəʃju:] n – обзор

handy tips ['hændɪ tips] – полезные советы

firewall ['faɪəwɔ:l] n – брандмауэр, межсетевой экран

secure [sɪ'kjʊə] adj. – безопасный, надежный

malicious [mə'liʃəs] adj. – злонамеренный, вредоносный

encryption [ɪn'krɪpʃn] n – шифрование, кодирование

sensitive data – конфиденциальные данные

back up, v – копировать

account settings [ə'kaʊnt 'setɪŋz] – настройки аккаунта

cautious ['kɔːʃəs] adj. – осторожный

redundant [rɪ'dʌndənt] adj. – избыточный, излишний

gateway ['geɪtweɪ] n – ворота, доступ

cyber conmen – кибер-мошенники

preliminary [prɪ'limɪnəri] adj. – предварительный, подготовительный

disapprove [dɪsə'pruːv] v – не одобрять, осуждать

provision [prə'vɪʒən] n – зд. положение, условие

treaty ['triːti] n – договор, соглашение

police squad [pə'liːs skwɒd] – наряд полиции

intercept data ['ɪntəsept 'deɪtə] – перехватить данные

felony ['feləni] n – уголовное преступление

bring steady justice – обеспечить устойчивое правосудие

forensic [fə'rensɪk] adj. – судебный, криминалистический

vigilant ['vɪdʒɪlənt] adj. – бдительный

alert [ə'liːt] adj. – начеку, внимательный, аварийный

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НИТО

sophisticated [sə'fɪstɪkeɪtɪd] adj. – изощренный, сложный

nasty ['nɑːsti] adj. – отвратительный, опасный

state-of-the-art – зд. последнее слово техники, современный

assist [ə'sɪst] v – помогать, содействовать

law enforcement agencies [lɔː m'fɔːsmənt 'eɪdʒənsɪz] – правоохрани-
тельные структуры, органы правопорядка

investigation [ɪnvestɪ'geɪʃn] n – расследование, следствие

incident response ['ɪnsɪdənt rɪs'pɒns] – реагирование на инциденты

1. Before you read:

1. What do you think of cybercrime? Is it a real threat to our society?
2. What advice would you give to be protected from this criminal activity?
3. What measures can we take to bring justice?
4. In what way should these criminals be punished?

2. Read the text:

CYBERCRIME PREVENTION TIPS THAT YOU MUST KEEP HANDY

The above sections gave you an overview of the different types of cybercrimes. The following section shall give you some handy tips for cybercrime prevention.

Use Strong Passwords

Avoid having the same password for different accounts. Always use strong passwords that have a combination of alphabets, numbers and special characters. Avoid writing them down or storing them in a place where they can be easily discovered. It is a good practice to keep changing your password on a regular basis.

Secure Your Computer, Laptops, and Smartphones

Activate the firewall on your computing devices as it offers the first level of cyber defense against malicious attacks. Install an authentic anti-virus and anti-malware software on your computer and smartphone. Also, keep updating it at regular intervals. Install anti-spyware software and regularly update it to protect your computer from malicious spyware.

Protect Sensitive Data

Use encryption for the sensitive files on your computer, laptop or mobile that contain financial or personal details. Ensure that you back up your important files and data at regular intervals and store them in a different location.

Secure Your Social Media Accounts

Can't do without your social media accounts? No worries! But, make sure that all your social media profiles are set to private. Do not keep your mobile or email ID visible to the public. Be cautious of what information/photos you publish online.

Regular System Updates

Do not ignore system updates. Make it a habit to keep your operating system and applications up-to-date. Do turn off auto updates to avoid potential cyber attacks on redundant software/applications.

Secure Your WiFi Network

Remember that an open Wireless network is also a possible gateway for hackers and cyber conmen. It is also possible to launch malware and virus attacks through domestic WiFi networks if they aren't secured

properly. Additionally, you must exercise extra caution when connected to a public hotspot or WiFi. Avoid engaging in financial transactions or exchanging confidential data in such cases.

How Nations Worldwide Are Keeping Cybercrimes at Bay?

In 1996, representatives from Japan, Canada, and the United States came together to draft a preliminary international treaty covering cybercrimes. Some civil groups disapproved of the provisions in the treaty that permitted internet service providers to record consumer transactions. However, the treaty was a success and resulted in the International Convention on Cybercrime in Budapest in 2001.

The International Convention of Cybercrime

Thirty countries, including South Africa, Japan, Canada, and the US signed the Convention. For the first time, it authorized a global cyber police squad to investigate cybercrime cases. They were thus authorized to monitor network communications and record intercepted data across the globe.

Eventually, 2002 witnessed the proposal of protocols covering racist cybercrimes and cyber-terrorism. The United States classifies the unauthorized use of a computer, data theft, and digital fraud as acts of felony. Similarly, several laws have come into action in India too, for bringing steady justice to victims of cybercrimes.

Incognito Forensic Foundation – For the Prevention & Investigation of Cybercrime

Guess you will be more vigilant and alert on online platforms now that you have the list of cybercrimes handy. However, cybercrimes are growing nastier and more sophisticated by the day. Incognito Forensic Foundation (IFF Lab) is a private digital and cyber forensics lab in Bangalore. It houses a state-of-the-art laboratory and assists law enforcement agencies with the investigation of various types of cybercrimes. IFF Lab also assists various public and private organization in cybercrime prevention and incident response.

DEVELOPING ACADEMIC VOCABULARY

3. The following words are all from the text above. Find them in the text:

avoid disapprove enforcement treaty sophisticated

4. For each word, read the sentence it occurs in and answer the questions:

- a) Is the word positive, negative or neutral?
- b) Is it a noun, adjective, adverb or verb?
- c) Can you think of a word with a similar meaning (synonym) and one with an opposite meaning (antonym)?

READING COMPREHENTION

5. Answer the questions:

1. How should you use your passwords to be protected from cybercrime?
2. Is it possible to guarantee security to computer or gadget?
3. How can you hide your sensitive data?
4. How can you protect your social media accounts?
5. Why should you keep your operating system and applications up-to-date?
6. What should you avoid when you are connected to a public hotspot or WiFi?
7. What kind of international treaty were representatives from Japan, Canada, and the United States going to draft in 1996?
8. Was it a success? What did it result in?
9. How many countries signed the International Convention of Cybercrime?
10. What was the attitude of the USA and India to cybercrimes at the beginning of the 21st century?
11. How did these countries react to data theft and digital fraud?
12. What does Incognito Forensic Foundation (IFF Lab) stand for?

6. Complete the sentences:

1. It is a good practice to keep...
2. Install anti-spyware software and regularly update it
3. ... your computer, laptop or mobile that contain financial or personal details.
4. But, make sure that are set to private.
5. potential cyber attacks on redundant software/applications.
6. Additionally, ... connected to a public hotspot or WiFi.
7. In 1996, to draft a preliminary international treaty covering cybercrimes.

8. Thirty countries, including South Africa, the Convention.
9. The United States classifies the unauthorized use of a computer,
10. Incognito Forensic Foundation (IFF Lab) is

7. Translate the words and word combinations into Russian:

Handy tips , felony, defense, malicious attacks, encryption, account settings, redundant, to secure properly, engaging in financial transactions, a preliminary treaty, intercepted data, law enforcement agencies, incident response.

8. Give the English equivalents of the following words and word combinations:

Предотвратить киберпреступление, защитить от вредоносных программ-шпионов, предоставить на всеобщее обозрение, обмениваться конфиденциальными данными, не одобрить положения договора, уполномочить, несанкционированное использование, цифровое мошенничество, отвратительные и изощренные, быть более бдительным, расследование киберпреступлений.

9. Make your own sentences with the words and phrases:

Malicious, disapprove, sensitive data, preliminary, felony, sophisticated.

10. Explain the meaning of the following words and phrases in English:

To avoid, to discover, defense, to make sure, cautious, secure, to engage, to permit.

11. Translate into English:

1. В современном цифровом мире люди обменивают удобство на конфиденциальность.

2. Это означает, что они все больше и больше делятся информацией о себе.

3. Благодаря этому киберпреступники и хакеры без особых усилий зарабатывают сотни миллионов долларов каждый год.

4. Фишинговые электронные письма имитируют сообщения от компании, которой вы доверяете.

5. Фишинговые сообщения обманом заставляют людей отказаться от личной информации или перейти по вредоносной ссылке.

6. Вредоносная ссылка загружает вредоносное ПО.
7. Каждый день совершаются тысячи фишинговых атак.
8. Знание, как обеспечить безопасность и обучение фишингу, помогут вашей компании защититься от фишинговых атак.
9. У вредоносного ПО может быть несколько целей: власть, влияние, деньги, информация.
10. Результат вредоносного ПО – это всегда трудоемкие, часто дорогостоящие усилия по восстановлению.
11. Устанавливайте и постоянно обновляйте высококачественную антивирусную программу.
12. Поддельные веб-сайты обычно распространяются с помощью электронного письма со ссылкой на незаконный веб-сайт.
13. Игнорируйте и удаляйте ссылки на незаконные веб-сайты.

LISTENING

12. a) Watch the video “Fighting Cybercrime”: A New Era of Collaboration https://youtu.be/18_ntwqnA9w. Find out the answers to the following questions:

1. Why should such organizations like Microsoft, government officials, law enforcement, and other companies come together?
2. What was one of the biggest vulnerabilities these organizations had before?
3. In what way is it possible to get the things off the ground when it comes to cybercrime?
4. What company is at the core to solve cybercrime problems?
5. What does success mean?

b) Watch the video again and complete the abstract with missing words and phrases:

The biggest thing about cybercriminals is they are moving very very fast, they are getting more and moremore savvy, moreand if they are gonna get better at what they do it's going to take organizations like Microsoft,, law enforcement, and other companies to in new ways to understand what the are doing,them, prosecute them and really hold them accountable in some new ways. For me it is eye opening story so I think that for me it's a new way of thein the context of the cybercrime discussion focusing on digital forensic

..... One of the biggest vulnerabilities we had before was we weren't talking to each other.wasn't talking among itself and we weren't talking to private industry. And that's why it is so good that we have a good, good outreach, because law enforcement cannot do this ourselves we need to have everybody important.

SPEAKING

13. Discuss the questions about the role of the Internet in our life:

1. How often do you use the Internet and what for?
2. What's the first thing you do when you go online?
3. What type of information do you usually search for?
4. How about music? Do you use the Internet to listen to music?
5. Do you read books or magazines online?
6. How many times a day do you use the Internet?
7. Can you tell me what your favourite website is?
8. Do you use social networks or chats? If yes, then what for?
9. Do you use online dictionaries?
10. Could you live a day without the Internet?
11. How many gadgets do you use in everyday life?
12. What is the most usable gadget for you?
13. Do gadgets take a lot of your time?

14. Speak about advantages and disadvantages of computers and the Internet.

15. Discuss the questions on the topic "Technology in our Life":

1. What do you think when you hear the word "Technology"?
2. You are stranded on a desert island. What would you wish you had with you?
3. How has technology changed the workplace?
4. Has technology had any impact on education? In what way?
5. How has technology changed on medical care?
6. How has technology revolutionized transport?
7. Has technology ever let you down? (=disappointed you by not working properly). What happened?
8. Does technology (or the use thereof) ever get on your nerves?

9. How has technology improved our daily lives? Give examples and explain the advantages of technological advances.

10. Is technological advance always for the better? Can you think of any disadvantages of technology?

11. 'Any sufficiently advanced technology is indistinguishable from magic.' Do you agree? Give some examples.

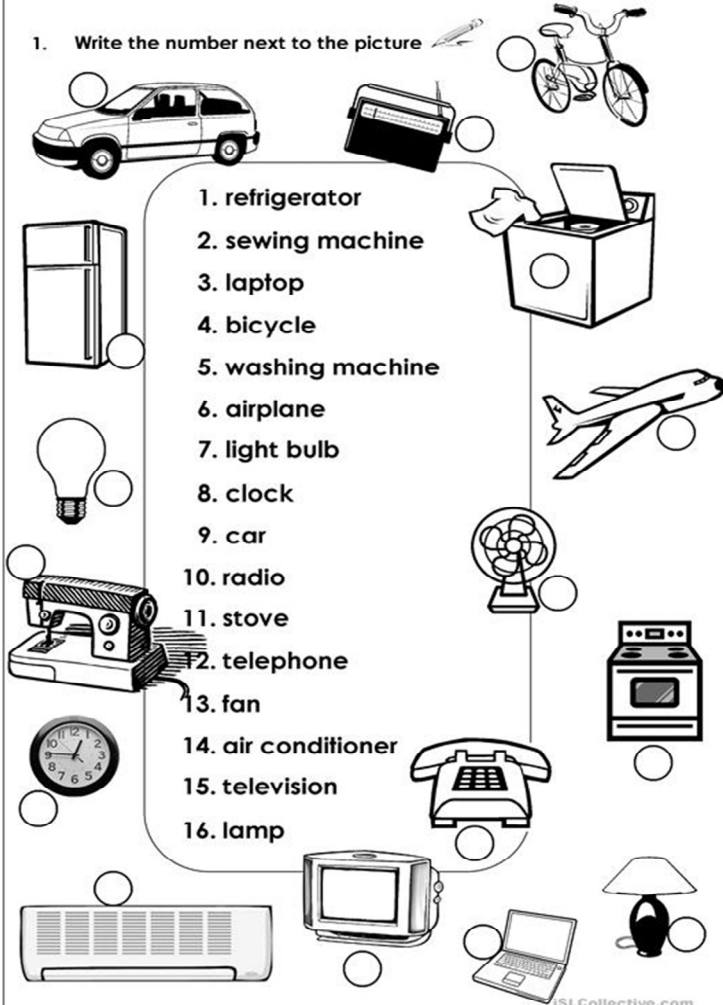
12. What could never be replaced by technology? Explain why not?

13. 'Modern technology owes ecology an apology.' What does this mean? Do you agree?

APPENDIX

Inventions around us

1. Write the number next to the picture



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