THE MINISTRY OF HIGHER AND SECONDARY SPECIAL EDUCATION OF THE REPUBLIC OF UZBEKISTAN

SAMARKAND STATE INSTITUTE OF FOREIGN LANGUAGES

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TOPICS FOR DEVELOPING SPEAKING SKILLS

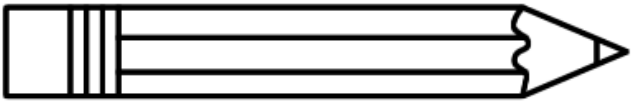
SAMARKAND - 2015

Книга представляет собой сборник текстов познавательного характера с новейшими изобретениями нашего века и прошлого века для чтения. После каждого текста представлены комментарии и перевод трудных слов и выражений, а также упражнения, направленные на проверку понимания текста, отработку лексики и грамматических конструкций развитие устной речи. Пособие адресовано студентам 1, 2 курсов Самаркандского Института Иностранных языков Переводческого факультета, также учащимся лицеев, широкому кругу лиц, изучающих английский язык самостоятельно.

UNIT 1
INVENTIONS HELP US
COMMUNICATE WITH ONE ANOTHER

1.1 Pencil

It is a slender rod of a solid marking substance, such as graphite, enclosed in a cylinder of wood, metal, or plastic; used as an implement for writing, drawing, or marking.



Invention of the Pencil. In 1565 the German-Swiss naturalist Conrad Gesner first described a writing instrument in which graphite, then thought to be a type of lead, was inserted into a wooden holder. Gesner was the first to describe graphite as a separate mineral, and in 1779 the Swedish chemist Carl Wilhelm Scheele showed it to be a form of carbon. The name graphite is from the Greek graphein, "to write." The modern lead pencil became possible when an unusually pure deposit of graphite was discovered in 1564 in Borrowdale, Cumberland, England. The pure graphite was sawn into sheets and then cut into square rods. The graphite rods were inserted into hand-carved wooden holders, forming pencils. They were called lead pencils by mistake – at the time, the newly-discovered graphite was called black lead – it looked and acted like lead, and it was not known at the time that graphite consisted of carbon and not lead. The English had a monopoly on the production of pencils since no other pure graphite mines were known and no one had yet found a way to make graphite sticks.

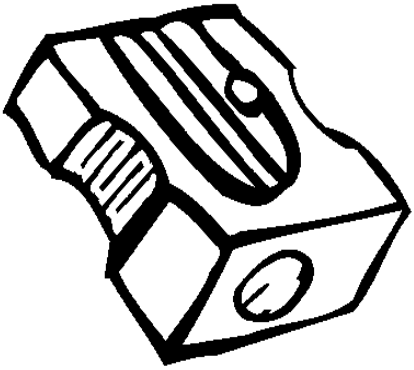
The Germans manufactured graphite sticks (made from powdered graphite), but they were impractical. The breakthrough in pencil technology came when French chemist Nicolas Conte developed and patented the process used to make pencils in 1795. He used a mixture of clay and graphite that was fired before it was put in a wooden case. The pencils he made were cylindrical with a slot. The square lead was glued into the slot and a thin strip of wood was used to

fill the rest of the slot. Conte's method of kiln firing powdered graphite and clay allowed pencils to be made to any hardness or softness by varying the ratio of graphite to clay.

The more graphite used, the "softer," or darker, is the mark made. Some pencil manufacturers use the letter "H" to indicate a hard pencil. Likewise, a pencil maker might use the letter "B" to designate the blackness of the pencil's mark. Pencil makers also use combinations of letters – a pencil marked "HB" is hard and black; a pencil marked "HH" is very hard, and a pencil marked "HHBBB" is very hard and really, really black! In 1812 the American William Monroe invented a process still used today by which the graphite-clay mixture could be encased between two pieces of cedar wood.

In 1861, Eberhard Faber built the first pencil factory in the United States in New York City.

The mechanical pencil, patented in 1877, consists of a cylindrical piece of pencil lead inserted into a metal or plastic barrel against a movable rod that can be adjusted by a screwing motion to expose part of the lead. The basic design of the mechanical pencil changed little until a modification of a mechanical drafting pencil was introduced in 1976. Originally marketed as a trade tool for engineers, drafters, and artists, the thin-lead mechanical pencil is now used by the general population.



Pencil sharpener

A **pencil sharpener** is a device for sharpening a pencil‘s point by shaving one end. Pencil sharpeners are available in both electric and hand-powered forms. It was John Lee Love of Fall River, MA who designed the "Love Sharpener". Love's invention was the very simple, portable pencil sharpener. The pencil is put into the opening of the sharpener and rotated by hand, and the shavings stay inside the sharpener. A blade inside the

sharpener shaves the wood of the pencil, thus sharpening the tip. Such sharpeners can be bare or they are enclosed in a container to collect the shavings. A mechanical pencil sharpener is hand-powered. Love's sharpener was patented on November 23, 1897 (U.S.)

Words
Materials
Carbon –углерод- углерод
cedar -кедр- кедр
clay – глина- гил
graphite- графит- графит
lead -свинец- қўрғошин
plastics - пластмасса- пластмасса
wood - дерево - ёғоч

Qualities of materials
Hardness - твердость - каттиқлик
Softness – мягкость -юмщоқлик

Elements of pencil design
cylinder-shaped tool инструмент цилиндрической формы - цилиндр шаклидаги асбоб
stick - палочка - ёғоч , таёк
wooden holders-деревянная ручка, держатель - ёғоч ушлагич
pencil lead- грифель карандаша –қалам графити
pencil's point кончик карандаша–қалам учи

Auxiliaries
blade - лезвие- тиғ
device - прибор, устройство - асбоб, ускуна
electric pencil sharpener - электрическая точилка для карандашей - электр ток орқали қалам чиқаргич
pencil sharpener - точилка для карандаша - қалам чиқаргич

Processes
cut (cut, cut) - резать - кесмоқ
enclose - вкладывать, вставлять - жойлаштирмоқ
fire - поджигать - оловда куйдирмоқ

glue - клеить – елимламоқ
insert - вставлять - ўрнатмоқ
kiln - обжигать (в печи) – куйдирмоқ (печда)
power - приводить в действие – харакатга келтиртирмоқ
rotate - вращать(ся) - айлантирмоқ
saw (sawed, sawn) - пилить -арраламоқ

Exercises

1. COMPREHENSION

Complete the table using information from the text

Who?	**When?**	**What?**	**What for?**	**Where?**
	1565 1795 1812 1861 1877 1897			

2. WRITING

a. Write a few paragraphs (one or three) about the inventions you have read about. Use the table above as a support.
b. Answer (in written) the question: "How could we live without a pencil?"
c. Write the process of making a pencil?

3. DISCUSSION

1. Describe (orally) a pencil that you wish someone could invent for you.
2. If you think you could do it yourself say how.
3. Speak about advantages and disadvantages of a pencil?

1.2 Morse code

Morse code is a system of representing letters, numbers and punctuation marks by means of a code signal sent intermittently. It was developed by Samuel Morse.

Samuel F.B. Morse. Although he is remembered as the inventor of the telegraph, Samuel Morse's first career was as an artist. From 1810 through the 1830s he studied and taught painting in Europe and the United States. On a trip from Europe, Morse met U.S. scientist Charles Thomas Jackson, who had been studying electricity and the electromagnet in Paris. Morse became interested in the idea that electricity could facilitate human communication. Upon his return he broke from painting to work on developing an electric telegraph. European inventors were attempting similar projects, but Morse was the one who, in May 1844, successfully transmitted the first telegraph message–"What hath God wrought"–from Washington to Baltimore.

Morse code is a method for transmitting information, using standardized sequences of short and long marks or pulses – commonly known as "dots" and "dashes" – for the letters, numerals and special characters of a message. Originally created for Samuel Morse's electric telegraph in the mid-1830s, it was also extensively used for early radio communication beginning in the 1890s. However, with the development of more advanced communications technologies, the widespread use of Morse code is now largely obsolete, apart from emergency use and other specialized purposes, including navigational radio beacons, and by CW (continuous wave) amateur radio operators. Morse code is the only digital modulation mode designed to be easily read by humans without a computer, making it appropriate for sending automated digital data in voice channels, as well as making it ideal for emergency signaling, such as by way of improvised energy sources that can be easily "keyed" such as by supplying and removing electric power (e.g. by switching a breaker on and off).

Morse code can be transmitted in a number of ways: originally as electrical pulses along a telegraph wire, but also as an audio tone, as a radio signal with short and long pulses or tones, or as a mechanical or visual signal (e.g. a flashing light) using devices like an Aldis lamp or a heliograph. Because Morse code is transmitted using just two states – on and off – it was an early form of a digital code. International Morse code is composed of six elements:

1. short mark, dot or “dit” (·)

2. longer mark, dash or “dah” (–)

3. intra-character gap (between the dots and dashes within a character)

4. short gap (between letters)

5. medium gap (between words)

6. long gap (between sentences)

However, the variable length of the Morse characters made it hard to adapt to automated communication, so it was largely replaced by more regular formats.

What is called Morse code today actually differs somewhat from what was originally developed by Alfred Vail in collaboration with Morse. In 1848 a refinement of the code sequences, including changes to eleven of the letters, was developed in Germany and eventually adopted as the worldwide standard as “International Morse”.

Words

Telegraph message *terminology*

Arbitrary signal - условный сигнал – шартли белги

CW (continuous wave) – незатухающая волна - давомий тўлқин

digital communication – цифровая связь – рақамли алоқа

dit - дит (десятичная единица информации) - 10лик бирликдаги маьлумот

dot - точка (условный знак в азбуке Морзе) - нуқта

emergency use - использование в случае аварии – халокат холатида фойдаланиш

letter - буква - харф

modulation mode - режим модуляции - модуляция усули

Morse code - азбука Морзе – морзе алифбоси

number - цифра - сон, рақам

obsolete code - устарелый, вышедший из употребления код – фойдаланишдан чиқиб кетган код

punctuation mark – знак пунктуации - пунктуация белгиси

radio beacon - радиомаяк - радиомояк

sequencesof “dots” and “dashes” - последовательность точек и тире – нуқта ва чизиқ кетма - кетлиги

1. COMPREHENSION

Present the main points of the text in your language . Don't forget to show – when, how and where Morse code was invented and whether it is used now.

2. WRITING

Write a paragraph in English describing the life of Samuel Morse and his first telegraph message.

Write about means of modern messaging

3. DISCUSSION.

If you think the invention of Morse code affects our lives today, say how. If it doesn't, say why.

1.3 Ballpoint pen

A **pen** is a writing instrument which applies ink to some surface. Pens may be categorized by the kind of tip on them. The main modern types are:

• ballpoint pens
• fountain pens
• marker pens

Ballpoints, fountain pens and gel pens are sometimes *erasable*: their ink may be erased.

There are two basic types of the ballpoint pen: disposable and refillable.

Ballpoint pens date from the late 19th century. Commercial models appeared in 1895, but the first satisfactory model was patented by Laslo Biro, a Hungarian living in Argentina. His ball-point pen, commonly called the "biro," became popular in Great Britain during the late 1930s, and by the mid-1940s pens of this type were widely used throughout much of the world. The writing tip of a ballpoint pen consists of a metal ball, housed in a socket, that rotates freely and rolls quick-drying ink onto the writing surface. The ball is constantly bathed

in ink from a reservoir, one end of which is open and attached to the writing tip.

The word used for ballpoint pens in Argentina is *birome* because Laslo Biro lived there for many years; also, *biro* can be used to refer to a ballpoint pen in British English. It was originally invented for the British RAF (Royal Air Force), as problems occurred with fountain pens due to the low air pressure aboard planes in flight. Ballpoint pens are still widely referred to as a **biro** in many countries, notably several European countries, the UK, Australia and New Zealand. Argentina's Inventor's Day is celebrated on Biro's birthday.

Soft-tip pens that use points made of porous materials became commercially available during the 1960s. In such pens a synthetic polymer of controlled porosity transfers ink from the reservoir to the writing surface. These fiber-tipped pens can be used for lettering and drawing as well as for writing and may be employed on surfaces such as plastic and glass.

Words

Types of pens, their elements and components

Ballpoint pen – шариковая ручка – шарикли ручка

fountain pen – перьевая авторучка – авторучка

marker pen – маркер – маркер

tip - кончик –уч

socket - гнездо, углубление – коса, чаноқ

biro 1) «Байро» (фирменное название шариковых ручек компании «БайроБик» [BiroBic]) по имени изобретателя; 2) шариковая ручка (*разг.*) – байро

Qualities

erasable - стираемый –ўчириб бўладиган

1. COMPREHENSION

Complete the table using information from the text

Who?	When?	What?	What for?	Where?
	19th century **Late 1930s** **1960s**			

2. WRITING

a. Write a few paragraphs (one or three) about the inventions you have read about. Use the table above as a support.

b. Answer (in written) the question: "How could we live without a pen?"

c. Write about the advantages of pens in our life

3. DISCUSSION

a. Describe (orally) a pen that you wish someone could invent for you.

b. If you think you could do it yourself say how.

1.4 Typewriter

A typewriter is *a mechanical, electromechanical, or electronic device* with a set of "keys" that, when pressed, cause characters to be printed on a document, usually paper.

A typewriter has a keyboard, with keys for each of the characters in its font. The method by which the typewriter actually marks the paper now varies as greatly as types of computer printers do, but until the end of the 20th century was by the impact of a metal (or, later, metallized plastic) type element against an "inked" ribbon which caused ink to be deposited on the paper. Carbon paper was sometimes inserted between multiple pieces of paper, so the impact also caused duplicate characters to be printed on each layer of paper. The invention of various kinds of machines was attempted in the 19th century. Most were large and

cumbersome, some resembling pianos in size and shape. All were much slower to use than handwriting. Finally, in 1867, the American inventor Christopher Latham Sholes read an article in the journal Scientific American describing a new British-invented machine and was inspired to construct what became the first practical typewriter. His second model, patented in 1868, wrote at a speed far exceeding that of a pen. It was a crude machine, but Sholes added many improvements in the next few years, and in 1873 he signed a contract with E. Remington and Sons, gunsmiths, N.Y., for manufacture. The first typewriters were placed on the market in 1874, and the machine was soon renamed the Remington. Among its original features that were still standard in machines built a century later were the cylinder, with its line-spacing and carriage-return mechanism; the escapement, which causes the letter spacing by carriage movement; the arrangement of the type bars so as to strike the paper at a common centre; the actuation of the type bars by means of key levers and connecting wires; printing through an inked ribbon; and the positions of the different characters on the keyboard, which conform almost exactly to the arrangement that is now universal. Mark Twain purchased a Remington and became the first author to submit a typewritten book manuscript.

The first typewriter had no shift-key mechanism–it wrote capital letters only. The problem of printing both capitals and small letters without increasing the number of keys was solved by placing two types, a capital and lowercase of the same letter, on each bar, in combination with a cylinder-shifting mechanism. The first shift-key typewriter–the Remington Model 2–appeared on the market in 1878.

Although still popular with a few writers and in less developed countries, the typewriter has largely been replaced by the word processor application on a personal computer.

Words

Typewriter design and its operation.

arrangement - расположение - жойлаштириш

carbon paper - копировальная бумага - нусха кучириш коғози

carriage - каретка –каретка

carriage return mechanism – механизм возврата каретки – кареткани қайтарувчи қурилма

character - знак - белги

duplicate - дубликат - нусха
escapement - спуск каретки на позицию, равную одному знаку – силжитиш
font - шрифт - шрифт
handwriting - почерк - кўлёзма
impact - удар - зарба
keylever - клавишный рычаг - клавиатурали ричаг
keyboard - клавиатура - клавиатура
layer - слой -қатлам
linespacing - межстрочный интервал - катор ўртасидаги оралиқ
ribbon - лента -лента
shape - форма - шакл
shift-key - клавиша в пишущей машинке для смены регистра - регистрни алмаштирувчи клавиатура
size - размер – ўлчам
typebars - литерный рычаг - босма ричаг
wordprocessor - текстовой процессор - матн процессори

Processes related to the operation of a typewriter
insert - вставлять - кўймок жойлаштирмоқ
manufacture - производить - ишлаб чиқариш
mark - отмечать, ставить метку - белгиламоқ
press - нажимать - босмоқ
rename – переименовать – кайта номламоқ
strike - ударять - урмоқ
print - печатать – босиб чиқармоқ

Exercises
1. COMPREHENSION
Complete the table using information from the text

Who?	When?	Where?	Peculiar features	What for?
The “Sholes & Gidden” Type-writer	1868		The cylinder, with its line-spacing	
The Remington Model 2	1874		A carriage-return mechanism	
			The arrangement of the typebars	To cause the letter spacing by carriage movement;
			The escapement	
			The actuation of the typebars	
			Printing through an inked ribbon	
			The positions of the different characters	To conform almost exactly to the arrangement that is now universal
			Cylinder-shifting mechanism	

2. WRITING

a. Write a paragraph about the design of the typewriter and about changes in the design. Use the table above as a support.

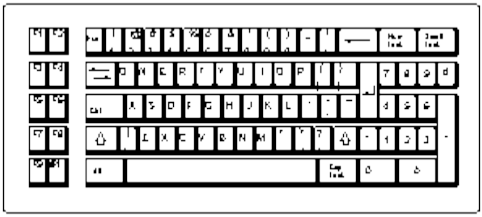
b. Answer (in written) the question: “What kind of a typewriter do you prefer?”

c. Write advantages and disadvantages of a typewriter?

3. DISCUSSION

a. If you think you could invent the new type of typewriter what would it be?
b. Why are the keys on the keyboard of a typewriter arranged the way they are?
c. Do you think the invention of a typewriter affects our lives today?

1.5 Computer keyboard



The invention of the modern computer keyboard began with the invention of the typewriter.
A few key technological developments created the transition of the typewriter into the computer keyboard. The teletype machine, introduced in the 1930s, combined the technology of the typewriter (used as an input and a printing device) with the telegraph. Elsewhere, punched card systems were combined with typewriters to create what was called keypunches. Keypunches were the basis of early adding machines and IBM was selling over one million dollars worth of adding machines in 1931.
Early computer keyboards were first adapted from the punch card and teletype technologies. In 1946, the Eniac computer used a punched card reader as its input and output device. In 1948, the Binac computer used an electromechanically controlled typewriter to both input data directly onto magnetic tape (for feeding the computer data) and to print results. The emerging electric typewriter further improved the technological marriage between the typewriter and the computer.
Earlier computer keyboards had been based either on teletype machines or keypunches. There were many electromechanical steps in transmitting data between the keyboard and the computer that slowed things down. With VDT (*Video Display Terminal*) technology and electric keyboards, the keyboard's keys could now send electronic impulses directly to the computer and save time. By the late '70s and early '80s, all computers used electronic keyboards and VDTs. Nevertheless, the layout of the computer keyboard still owes its origin

to the inventor of the first typewriter, Christopher Latham Sholes who also invented the QWERTY layout.

Words

Keyboard design

QWERTY стандартная клавиатура с буквами Q-W-E-R-T-Y вверх нем ряду.(Определяет для английского языка стандартное расположение клавиш на клавиатуре.)

Punch card - перфокарта - перфокарта

Keypunch – клавишный перфоратор – клавтшли перфоратор

Keyboard - клавиатура - клавиатура

Types of computerized machinery

Teletype – телетайп - телетайп

ENIAC, Electronic Numerical Integrator and Calculator - **электронный** цифровой интегратор и калькулятор

BINAC (BINaryAutomatic) computer - сдвоенный автоматизированный компьютер

MULTICS MULTiplexed Information and ComputingSystem - информационно-вычислительная система с мультиплексированием каналов передачи данных

Exercises

1. COMPREHENSION

a. Arrange the following inventions in chronological order:

Computer keyboard, typewriter, teletype machine, keypunch, adding machine, punched card, VDT, electronic keyboard,

b. Fill in the blanks in the table.

Time	Invention	Specific features
	Teletype machine IBM adding machine Eniac computer Binac computer Electric typewriter	

2. WRITING

a. Describe the history of the keyboard. Use “Comprehension” section as a support.

b. Describe the operations you should use when working with the modern keyboard.

c. Write down advantages and disadvantages of having a modern keyboard

3. DISCUSSION

Discuss the problem of improving the design of the modern keyboard.

1.6 Telephone

Telephone is an instrument that is designed for the simultaneous transmission and reception of the human voice. Inexpensive, simple to operate, and offering its user a personal type of communication that cannot be obtained through the written word, the telephone has become the most widely used telecommunications device. Hundreds of millions of telephone sets are in use throughout the world.

The word telephone, from the Greek roots tele, "far," and phone, "sound," was applied as early as the late 17th century; in modern usage it refers solely to electrical devices derived from the inventions of Alexander Graham Bell**.**

Alexander Graham Bell. Bell was born in 1847, in Edinburgh and educated at the universities of Edinburgh and London. He immigrated to Canada in 1870 and to the United States in 1871. In the U.S. he began teaching deaf-mutes, publicizing the system called visible speech. The system, which was developed by his father, the Scottish educator Alexander Melville Bell (1819-1905), shows how the lips, tongue, and throat are used in the articulation of sound. In 1872 Bell founded a school for deaf-mutes in Boston. The school subsequently became part of Boston University, where Bell was appointed professor of vocal physiology. He became a naturalized U.S. citizen in 1882.

Since the age of 18, Bell had been working on the idea of transmitting speech electrically. While Alexander Graham Bell was experimenting with telegraph instruments in the early 1870s, he realized it might be possible to transmit the human voice over a wire by using electricity. By March 1876 he made a transmission, but the sound was very faint. He improved his results over the next few months when he transmitted sound clearly between Cambridge and Salem, Massachusetts. It functioned as both a transmitter and a receiver and others.

1896 Telephone (Swedish)

The U.S. patent granted to Bell in March 1876 for the development of a device to transmit speech sounds over electric wires is often said to be the most valuable ever issued. The general concepts involved in the invention of the telephone–of speech sounds as a complex of vibrations in air that is transferrable to solid bodies and of the convertibility of those vibrations to electrical impulses in conducting metals–had by then been understood for decades. Bell was but one of a number of workers racing to pull them together into a practical instrument for the transmission of speech.

Within 20 years of the Bell patent, the telephone instrument, as modified by Thomas Watson, Emil Berliner, Thomas Edison, and others, acquired a form that has not changed fundamentally in a century. Since the invention of the transistor in 1947, metal wiring and other heavy hardware have been replaced by lightweight and compact micro circuitry. Advances in electronics have improved the performance of the basic design, and they also have allowed the introduction of a number of "smart" features such as automatic redialing, call-number identification, and analog-to-digital conversion for transmission over digital circuits. Such advances supplement, but do not replace, the basic telephone design. As it has since the early years of telephone communication, the telephone instrument comprises the following functional components: a power source, a switch hook, a dialer, a ringer, a transmitter, a receiver, and an anti-side tone circuit.

Words

Telephone devices and operational features

(telephone) set - (телефонный) аппарат - (телефон) қурилмаси

analog-to-digital conversion - преобразование аналоговой формы в цифровую – аналог шаклни рақамли шаклга ўзгартириш

anti-sidetone circuit - характеристика местного эффекта – маҳаллий эффект ҳусусияти

call-number identification - определение номеров входящих звонков – кирувчи қўнғироқлар рақамини аниқлаш

dialer - номеронабиратель – рақам тергич

hardware - аппаратное обеспечение

microcircuitry - микросхемы - микросхема

receiver - телефонная трубка - телефон трубкаси

reception - прием (звонка) - (қўнғироқни) қабул қилиш

redialing - повторный набор номера –рақамни қайта териш

ringer - звонок - қўнғироқ

switchhook - рычажный переключатель телефона - ричагли телефон ўзгартиргич

transmission - передача - узатиш

transmitter - микрофон - микрофон

wire - провод - сим

Processes

operate - управлять, контролировать - бошқармоқ, назорат қилмоқ

pull - тянуть, натягивать – тортмоқ, чўзмоқ

transmit - передавать -узатмоқ

apply - применять - қўлламоқ

Qualities

faint - слабый, нечеткий – кучсиз, ноаниқ

transferrable - передаваемый – жўнатиб бўладиган

Exercises

1. COMPREHENSION

Complete the table using information from the text.

What?	**Who?**	**What?**	**Features and characteristics**	**Where?**
1876 +> 20 years 1947				

2. WRITING

a. Write a few paragraphs (one or three) about the inventions you have read about. Use the table above as a support.

b. Answer (in written) the question: "What kind of telephone do you use at home?"

c. Write down about advantages and disadvantages of a mobile phone

3. DISCUSSION

a. Describe (orally) a telephone that you wish someone could invent for you.

b. If you think you could invent a new type of a telephone yourself say how.

1.7 WORLD WIDE WEB

Tim Berners-Lee invented the World Wide Web. His first version of the Web was a program named "Enquire". At the time, Berners-Lee was working at the European Particle Physics Laboratory located in Geneva, Switzerland. He invented the system as a way of sharing scientific data (and other information) around the world, using the Internet, a world-wide network of computers, and hypertext documents. He wrote the language HTML (HyperText Mark-up Language), the basic language for the Web, and devised URL's (universal resource locators) to designate the location of each web page. HTTP (HyperText Transfer Protocol) was his set of rules for linking to pages on the Web. After he wrote the first browser in 1990, the World Wide Web was up and going. Its growth was (and still is) phenomenal,

and has changed the world, making information more accessible than ever before in history. Berners-Lee is now a Principal Research Scientist at the Laboratory for Computer Science at the MIT (Massachusetts Institute of Technology, in Cambridge, Massachusett, USA) and the Director of the W3 Consortium. which develops and maintains these and other standards that enable computers on the Web to effectively store and communicate different forms of information

At its core, the Web is made up of three standards:

1. the *Uniform Resource Identifier* (URI), which is a universal system for used for referring to resources (such as documents and images on the Internet) such as Web pages;

2. the *HyperText Transfer Protocol* (HTTP), which specifies how the browser and server communicate with each other; HyperText Transfer Protocol (HTTP) is the method used to transfer or convey information on the World Wide Web;

3. the*HyperText Markup Language* (HTML), used to define the structure and content of hypertext documents. 'HyperText Markup Language' (HTML) is a markup language designed for the creation of web pages with hypertext and other information to be displayed in a web browser.

The World Wide Web is the combination of four basic ideas:

• **Hypertext**, that is the ability, in a computer environment, to move from one part of a document to another or from one document to another through internal connections among these documents;

• **Resource identifiers**, that is the ability, on a computer network, to locate a particular resource (computer, document or other resource) on the network through a unique identifier;

• the **client-server** model of computing, in which client software or a client computer makes requests of server software or a server computer that provides the client with resources or services, such as data or files; and

• **Markup language**, in which characters or codes embedded in text indicate to a computer how to print or display the text, e.g. as in italics or bold type or font.

On the World Wide Web, a client program called a web browser retrieves information resources, such as web pages and other computer files, from web servers using their network addresses and displays them, typically on a computer monitor, using a markup language that

determines the details of the display. The act of following hyperlinks is often called *"browsing"* the Web. Web pages are often arranged in collections of related material called "websites." The **World Wide Web Consortium** (**W3C**) is an international consortium where member organizations, a full-time staff, and the public, work together to develop standards for the World Wide Web. W3C's mission is: *"To lead the World Wide Web to its full potential by developing protocols and guidelines that ensure long-term growth for the Web"*.

Internet

The **Internet**, or simply the **Net**, is the publicly accessible worldwide system of interconnected computer networks that transmit data by packet switching using a standardized Internet Protocol (IP). It is made up of thousands of smaller commercial, academic, domestic, and government networks. It carries various information and services, such as electronic mail, online chat, and the interlinked Web pages and other documents of the World Wide Web.

From its creation in 1983 it grew rapidly beyond its largely academic origin into an increasingly commercial and popular medium. By the mid-1990s the Internet connected millions of computers throughout the world. Many commercial computer network and data services also provided at least indirect connection to the Internet.

Contrary to some common usage, the Internet and the World Wide Web are not synonymous: the Internet is a collection of interconnected *computer networks*, linked by copper wires, fiber-optic cables, etc.; the Web is a collection of interconnected *documents*, linked by hyperlinks and URLs, and is accessible using the Internet.

Terms

WWW (WorldWideWeb) всемирная паутина – глобальное информационное пространство, основанное на физической инфраструктуре сети Интернет и протоколе передачи данных HTTP

HTML (*англ.* **H**yper**t**ext**M**arkup**L**anguage) - язык разметки гипертекста -

HTTP (*англ.* **H**yperText**T**ransfer**P**rotocol) - «протокол передачи гипертекста» -

URI (*англ*. **U**niform**R**esource**I**dentifier) - единообразный идентификатор ресурса -
URL (*англ*. **U**niform**R**esource**L**ocator) - единообразный локатор (определитель местонахождения) ресурса. -
Web browser - браузер - браузер
Consortium - консорциум - консорциум

Exercises

1. COMPREHENSION

Complete the table using information from the text

What	Full name	Function
WWW	World Wide Web	To give users access to a array of documents that are connected to each other by means of hypertext of hyper media links

What	Full name	Function
HT RI ML Internet	Hypertext Resource identifiers Markup language System of Interconnected computer networks	

2. WRITING

a. Write a paragraph describing the difference between the WWW and the Internet.

b. Write the translation of the paragraph in which the four main concepts of the WWW are presented.

c. Write an essay. Why do we need the internet?

3. DISCUSSION

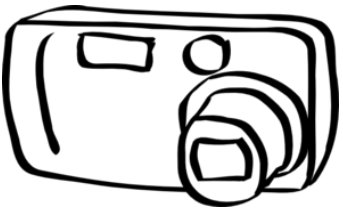
Say when and how you use WWW and Internet.

1.8 Practice

1. You have read about some inventions that help us communicate with one another. What other inventions with the same function do you remember? Try to describe them in written form.
2. Give an oral description of the most useful (in your opinion) invention of this group.

UNIT 2
INVENTIONS ENTERTAIN US

2.1 Camera



As is known, camera is a device (in photography) for recording an image of an object on a light-sensitive surface; it is essentially a light-tight box with an aperture to admit light focused onto a sensitized film or plate. Though there are many types of cameras, all include five indispensable components: (1) the camera box, which holds and protects the sensitive film from all light except that entering through the lens; (2) film, on which the image is recorded, a light-sensitive strip usually wound on a spool, either manually or automatically, as successive pictures are taken; (3) the light control, consisting of an aperture or diaphragm and a shutter, both often adjustable; (4) the lens, which focuses the light rays from the subject onto the film, creating the image, and which is usually adjustable by moving forward or back, changing the focus; and (5) the viewing system, which may be separate from the lens system (usually above it) or may operate through it by means of a mirror. Today's cameras all derive from the 16th-century *camera obscura.* The first camera that was small and portable enough to be practical for photography was built by Johann Zahn in 1685, though it would be almost 150 years before technology caught up to the point where this was possible. The earliest form of this device was a darkened room with a tiny hole in one wall. Light entered the room through this hole and projected an upside-down image of the subject onto the opposite wall. Early photographic cameras were essentially similar to Zahn's model, though usually with the addition of sliding boxes for focusing. Before each exposure a sensitized plate would be inserted in front of the viewing screen to record the image. Over the course of three centuries the camera obscura evolved into a handheld box with a lens replacing the pinhole and an angled mirror at the back. The mirror reflected an image onto a ground-glass viewing screen on the top of the box. The inventors of photography in the early 19th

century adapted the camera obscura by adding a device for holding sensitized plates in the back of the box. The first permanent photograph was made in 1826 by Joseph NicéphoreNiépce using a sliding wooden box camera made by Charles and Vincent Chevalier in Paris.

Jacques Daguerre‘s popular daguerreotype process utilized copper plates, while the process invented by William Fox Talbot recorded images on paper This kind of camera, with some improvements, was used throughout the 19th century. One notable enhancement for the box, pleated leather sides called bellows, allowed the photographer to easily adjust the distance between the lens and the plane of focus. Professional photographers still use a similar camera today, a large-format camera known as the view camera In the 1880s the invention of more sensitive emulsions and better lenses led to the development of lens *shutters,* devices that could limit the time of exposure to a fraction of a second. At first the shutter was simply a blind dropped in front of the lens by the force of gravity, or by a spring. Later designs featured a set of blades just behind the optical lens.

In 1888 George Eastman introduced the first Kodak camera, which used a cylindrical shutter that the photographer turned by pulling a string on the front of the camera. It made photography available to amateurs for the first time and created a snapshot craze at the turn of the 20th century.. In 1884 Eastman patented the first film in roll form to prove practicable; in 1888 he perfected the Kodak camera, the first camera designed specifically for roll film. The Kodak was one of the earliest handheld cameras.

In 1925 the Leitz Company in Germany introduced the Leica, one of the first cameras to use 35-millimeter film, a small-sized film initially designed for motion pictures. Because of its compactness and economy, the Leica and other 35-millimeter cameras became popular with both amateur and professional photographers.

Words

Camera components and design

a. Nouns

Aperture - отверстие - тешик

bellows – мех фотоаппарата – фотоаппарат босқони

blind - шторка - пардача

camera obscura – камера обскура («темнаякомната») – қоронғида олувчи камера

daguerreotype - дагерротип - дагерротип

diaphragm - диафрагма - диафрагма

film - пленка - тасма

Image - образ; изображение; отражение – кўриниш, тасвир

lens - линза, оптическое стекло; лупа; объектив - линза

plate - пластина - пластина

recording - регистрация, запись (чего-л. куда-л.) – рўйхатга қўйиш, ёзиб олиш

shutter - затвор фотообъектива – фотообъектив очиб –ёпувчи механизми

spool - шпулька, катушка; бобина - найча

surface - поверхность - юза

b. Adjectives

light-tight - светонепроницаемый – нур ўтказмайдиган

light-sensitive - светочувствительный – нурга таьсирчан

Exercises

1. COMPREHENSION

Complete the table using information from the text

When?	Who?	What?	Features and characteristics
1685 1826 1888 1925	T he Leitz Company	The Leica camera	The first cameras to use a small-sized film (35-millimeter)

2. WRITING

a. Write a paragraph, describing camera obscura. Translate your paragraph into Russian

b. Write a paragraph giving the comparison of the camera obscura and the modern camera. Use the first paragraph of the text “Camera” as a support.

c. Write down adjectives which can describe the word “camera”

3. DISCUSSION

a. Name all the steps in the development of the camera in photography during the 19th and 20th centuries.

b. Speak on the functions of the components of any modern camera.

2.2 Saxophone

The saxophone or sax is a conical instrument of the wind family, usually made of brass and played with a single-reed mouthpiece like the clarinet.

The saxophone was created in the early 1840s by Adolph Sax, a Belgian-born instrument-maker and clarinetist working in Paris, and was first officially revealed to the public in the patent of 1846. He drew up plans for 14 different types of saxophones, but they were not all realized.

It is likely that Sax’s intent was to invent an entirely new instrument which suited his desires both tonally and technically and possessed a new level of flexibility. This would explain why he chose to name the instrument the “voice of Sax.” In short, Sax intended to harness the finesse of a woodwind with the power of a brass instrument. The saxophone is most commonly associated with popular music, big band music, and jazz, but it was originally intended as both an orchestral and military band instrument.

Construction. The saxophone combines in its construction the single reed and mouthpiece of the clarinet, a metal body, and a widened version of the

conical bore of the oboe. The body contains openings, covered by keys, which can be opened or closed in groups by means of finger plates, operated by the fingers of either hand. Most saxophones are curved at the end and resemble the bass clarinet; a few, such as the soprano saxophone, are straight and resemble the standard clarinet. The most common saxophones are the soprano, the alto, the tenor, and the baritone. The tone quality ranges from soft, flutelike, and mellow to brassy and metallic. There is some debate amongst players as to whether the curve affects the tone or not.

Materials. Nearly all saxophones are made from brass. After completing the instrument, manufacturers usually apply either a coating of clear or colored lacquer, or plating of silver or gold, over the bare brass. The lacquer or plating serves to protect the brass from corrosion, to enhance sound quality, and/or to give the saxophone an interesting visual appearance.

Other materials have been tried with varying degrees of success. Prior to 1960, some instruments were plated with nickel as a cheaper alternative to silver; prior to 1930, it was common for instruments to be sold with a bare brass finish (without lacquer or plating).

Words

Musical instruments and music variations

bandmusic - оркестровая музыка – оркестр мусиқаси

bass - бас, басовый - бас

brass instrument - медный духовой инструмент – мисдан ясалган пуфлаб чалинадиган асбоб

clarinet - кларнет - кларнет

flute - флейта -

jazz - джаз - джаз

oboe - гобой - гобой

wind instrument – духовой инструмент - пуфлаб чалинадиган асбоб

Elements of saxophone construction

bell - раструб (в частности у духовых музыкальных инструментов), расширение - занг

body - корпус – асосий қисм

bore - отверстие - тешик

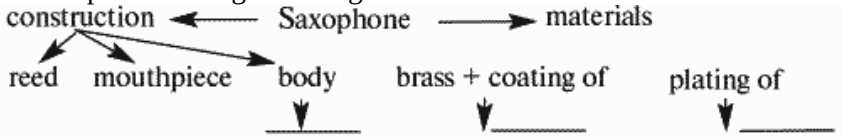
fingerplate - наборный диск, пластина - пластина
keys - клапаны, клавиатура - клавиш
mouthpiece - мундштук - мундштук
opening - отверстие -тирқиш
reed - язычок в музыкальных инструментах (в фаготе, гобое, саксофоне) - тилча
Materials
gold - золото -олтин
lacquer - лак -лок
Nickel - никель –никель
silver - серебро -кумуш
Quality of the musical instrument
appearance - внешний вид – ташқи кўриниш
brassy - металлический (о звуке) – метал
finesse - тонкость, изящество – нозиклик
flexibility - гибкость, переналаживаемость - эгилувчанлик
level - уровень - даража
mellow - мягкий, неторопливый - юмшоқ
tone - звук, тон - товуш
Processess
create - создавать -яратмоқ
curve - изгибать -эгмоқ
enhance - усиливать, улучшать - кучайтирмоқ
protect - защищать, предохранять - ҳимояламоқ
realize - осуществлять, выполнять – амалга оширмоқ
reveal - открывать; показывать - очмоқ
Verbs with abstract positive meaning
desire - желать - хоҳламоқ
enhance - усиливать, улучшать -кучайтирмоқ
intend - намереваться - кўзламоқ
possess - обладать –эгалик қилмоқ
resemble - напоминать -ўхшамоқ
suit - подходить, соответствовать – мос келмоқ

EXERCISES
1. COMPREHENSION

a. Complete the table using information from the text.

When?	Who?	What?	Distinguishing features and characteristics of the saxophone
1846		Saxophone	

b. Complete the diagram using information from the text.



2. WRITING

Write a summary of the text using the table and the diagram above as a support.
The main points of your summary should include history of the invention of the saxophone and the elements of its construction.

3. DISCUSSION

Answer the following questions:

a. What kind of music is the saxophone associated with?
b. What kind of music was the saxophone originally intended for?
c. Why did Sax name the instrument “the voice of Sax”?
d. What qualities did Sax try to harness in his instrument?

2.3 Microphone

A microphone, sometimes referred to as a mike or mic, is an acoustic to electric transducer that converts sound into an electrical signal. Microphones are used in many applications such as telephones, tape recorders, hearing aids, motion picture production, live and recorded audio engineering, in radio and television roadcasting and in

computers for recording voice and numerous other computer applications.

Invention. The word “microphone” (Greek *mikros* “small” and *phone* “sound”) originally referred to a mechanical hearing aid for small sounds.Invention of a practical microphone was crucial to the early development of the telephone system.

Emile Berliner. Born in Hanover, Germany, Emile Berliner immigrated to the United States of America in 1870, where he established himself in Washington, D.C. After some time working in a livery stable, he became interested in the new audio technology of the telephone and phonograph, and invented an improved telephone transmitter acquired by the Bell Telephone Company, one of the first types of microphone. Berliner worked for Bell Telephone in Boston from 1877 to 1883, when he returned to Washington and established himself as a private researcher. Emile Berliner (1851–1929) is best known for developing the disc record gramophone (phonograph in American English) invented the first microphone on March 4, 1877, but the first commercially practical microphone was the carbon microphone invented in October, 1876 by Thomas Edison. Carbon microphones found use as early telephone repeaters, making long distance phone calls possible in the era before vacuum tubes. Many early developments in microphone design took place at Bell Laboratories.

All microphones capture sound waves with a thin, flexible diaphragm (or ribbon in the case of ribbon microphones). The vibrations of this element are then converted by various methods into an electrical signal that is an analog of the original sound. Most microphones in use today use electromagnetic generation (dynamic microphones), capacitance change (condenser microphones) or piezoelectric generation to produce the signal from mechanical vibration.

Laser microphones

A laser microphone is an exotic application of laser technology. It consists of a laser beam that must be reflected off a glass window or another rigid surface that vibrates in sympathy with nearby sounds.

This device essentially turns any vibrating surface near the source of sound into a microphone. It does this by measuring the

distance between itself and the surface extremely accurately; the tiny fluctuations in this distance become the electrical signal of the sounds picked up. Laser microphones are new, very rare and expensive, and are most commonly portrayed in the movies as spying devices.

Words
Concepts related to sound devices
Capacitance - (*эл.*) емкость -ҳажм
Electromagnetic generation – электромагнитное генерирование – электромагнит генерация
flexible diaphragm - гибкая диафрагма -эгилувчан диафрагма
gramophone - граммофон - граммофон
original sound - первоначальный звук – дастлабки товуш
phonogragh - фонограф - фонограф
piezoelectric generation – пьезоэлектрическая генерация - пьезоэлектрик генерация
ribbon - ленточка - тасма
sound wave - звуковая волна –товуш тўлқини
Vibration - вибрация - тебраниш
Convert - превращать - айлантирмоқ
transmitter - передатчик –тўлқин узатгич

Exercises
1. COMPREHENSION
Complete the table using information from the text.

When?	Who?	What?	Operation principle	Application areas
1876 1877		Carbon microphone		

2. WRITING
a. Write a summary of the text, using the table above as a support.
b. Write down about (what we could do) how we could live if we hadn't a microphone?

3. DISCUSSION

Which devices could not operate without a microphone? Why?

2.4 Audio storage processes

(Wire recording, magnetic tape recording, compact discs)

Wire recording is a type of analogue audio storage in which the recording is made onto thin steel or stainless steel wire. The first wire recorder was the Valdemar Poulsen Telegraphone of the late 1890s, and wire recorders for dictation and telephone recording were made almost continuously by various companies through the 1920s and 1930s. They were most famously introduced as consumer technologies after World War II.

Valdemar Poulsen (1869–1942) was a Danish engineer. In 1899, he developed a magnetic wire recorder.The magnetic recording was demonstrated in principle as early as 1898 by Valdemar Poulsen in his telegraphone. Magnetic wire recording, and its successor, magnetic tape recording, involve the use of a magnetizable medium which moves past a recording head. An electrical signal, which is analogous to the sound that is to be recorded, is fed to the recording head, inducing a pattern of magnetization similar to the signal. A playback head (which may be the same as the recording head) can then pick up the changes in the magnetic field from the tape and convert them into an electrical signal.

Wire recording's most widespread use was in the 1940s and early 1950s. Consumer wire recorders were marketed for home entertainment or as an inexpensive substitute for commercial office dictation recorders. However, the introduction of consumer magnetic tape recorders around 1948 quickly drove wire recorders from the market.

Some wire recorders were also used by the military in aircraft beginning in the early 1940s, mainly for recording radio converstations between crewmen or with ground stations. In this capacity, wire recorders survived somewhat later, being manufactured for this purpose through the 1950s and remaining in use somewhat later than that. There were also wire recorders made to record data in satellites and other unmanned spacecraft of the 1950s to perhaps the 1970s.

Compact Disc (CD) CD is a molded plastic disc containing digital data that is scanned by a laser beam for the reproduction of recorded sound and other information. Since its commercial introduction in 1982, the audio CD has almost completely replaced the phonograph disc for high-fidelity recorded music. Coinvented by

Philips Corporations. and Sony Corporation in 1980, the compact disc has expanded beyond audio recordings into other storage-and-distribution uses, notably for computers (CD-ROM) and entertainment systems (videodisc).

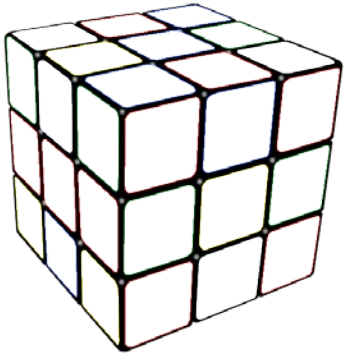
намагниченность
medium – носитель (*информации*), записи –ахборот воситалари
playback head – воспроизводящая головка – айтиш каллачаси
recording head – записывающая головка – ёзув каллачаси
recording – запись – ёзув
stainless steel wire – проволока из нержавеющей стали –зангламас пўлатли сим
store information – хранить информацию – маьлумотни сақлаш
tape – магнитофонная лента –магнитофон лентаси
telegraphone – телеграфон (аппарат для записи по телефону речи и последующего ее воспроизведения) – телеграфон
wire recorder – проволочный магнитофон; устройство для записи на проволоку – симли магнитофон
wire recording – запись на магнитную проволоку – магнитли симга ёзмоқ

Exercises
1. COMPREHENSION
Arrange the following sentences in the proper order and translate them into Russian:
1. A pattern of magnetization similar to the signal induced.
2. An electrical signal, which is analogous to the sound that is to be recorded, is fed to the recording head.
3. A playback head picks up the changes in the magnetic field and converts them into an electrical signal.
4. Amagnetizable medium moves past a recording head.
2. WRITING
Write the summary of the text according to the following plan:
1. The pattern of wire recording.
2. The history of wire recording.
3. The inventor.
4. Present-day technologies.

3. DISCUSSION

Could you live without wire recording now? If your answer is – “yes”, name the devices that have replaced it. Ifyouransweris – “no”, say “why”.

2.5 Rubik’s Cube



Rubik’s Cube in solved state

Rubik’s Cube is a mechanical puzzle invented in 1974 by the Hungarian sculptor and professor of architecture Ernő Rubik. Rubik studied sculpture at the Technical University in Budapest and architecture at the Academy of Applied Arts and Design, also in Budapest. While a professor of design at the academy, he pursued his hobby of building geometric models. One of these was a prototype of his cube, made of 27 wooden blocks; it took Rubik a month to solve the problem of the cube. It proved a useful tool for teaching algebraic group theory.

It is a plastic cube which comes in four different versions: the 2×2×2 (“Pocket Cube”), the 3×3×3, the 4×4×4 (“Rubik’s Revenge”), and the 5×5×5 (“Professor’s Cube”). The 3×3×3 version has nine square faces on each side, for a total area of fifty-four faces, and occupies the volume of twenty-seven unit cubes. Typically, the faces of the cube are covered by stickers in six colors, one for each side of the cube. When the cube is twisted out of its original arrangement, the player must then return it to the original configuration. When the puzzle is solved, each side of the cube is a solid color. The original 3×3×3 version recently celebrated its twenty-fifth anniversary in America with a special edition cube with shiny stickers.

Originally known as the Magic Cube, it was remanufactured and renamed Rubik’s Cube in 1980 and released in May of that year. It is

said to be the world's biggest selling toy, with some three hundred million Rubik's Cubes and imitations sold worldwide. It won the BATR and won the Toy of the Year award in 1980 and again in 1981.

The British Association of Toy Retailers (BATR) is an association that represents their members to the United Kingdom government and the European Commission. It promotes the role of the toy retailer and the value of toys to the consumer. It represents about 75% of the toy trade.

Words

arrangement – расположение – жойлашиш
face – поверхность, лицевая сторона, лицевая поверхность – устки томон
occupy – занимать (*пространство*) – эгалламоқ
original – первоначальный – дастлабки
solidcolor – цветной фон – рангли фон
twist – крутить; закручивать – қайирмоқ
version – версия; вариант – вариант

Exercises

1. COMPREHENSION AND WRITING

a. Summarize information of the text in Russian. Pay special attention to the following points:
history, design and popularity of the Rubik's Cube.

b. How does Rubic's Cube affect to the studies of schoolchildren/adults?

2. DISCUSSION

a. Discuss and compare different versions of the Cube. Say what qualities of the Cube attract you.

b. What kind of toy to be invented would you like? Describe your favourite toy.

2.6 Practice

1. You have read about some inventions that entertain us. What other inventions with the same function do you remember? Try to describe them in written form.

2. Give an oral description of the most “joyful “ (in your opinion) invention of this group.
3.Practiserearrange the Rubic’s Cube. Set the time if you practice in group.

UNIT 3
INVENTIONS MAKE OUR LIVES EASIER AND SAFER

3.1 Safety lamp

Safety lamp is a lighting device used in places, such as mines, in which there is danger from the explosion of flammable gas or dust. In the late 18th century a demand arose in England for a miner’s lamp that would not ignite the gas methane (firedamp), a common hazard of English coal mines. W. Reid Clanny, an Irish physician, invented a lamp about 1813 in which the oil-fuelled flame was separated from the atmosphere by water seals; it required continual pumping for operation. In 1815 the English engineer George Stephenson invented a lamp that kept explosive gases out by pressure of the flame’s exhaust and held the flame in by drawing in air at high speed. In 1815 Sir Humphry Davy invented the lamp that bears his name. Davy used a two-layer metal gauze chimney to surround and confine the flame and to conduct the heat of the flame away. Electric hand and cap lamps were introduced in mines in the early 1900s and by the middle of the 20th century were used almost exclusively in mines. A safety device in the electric lamps shuts off the current if a bulb is broken. Double-filament bulbs may be used, so the light can remain on when a filament fails. The flame of a safety lamp elongates in the presence of firedamp, but electric lamps give no warning of noxious gases or lack of oxygen. Consequently, a flame safety lamp must be kept burning within easy view of the workers, or frequent inspections must be made, using a flame lamp or other form of warning device.

Words
Danger and safety
Bulb – электрическая лампа, лампочка – электрик лампа
Chimney – труба (*дымовая или вытяжная*); дымоход –мўри
elongate – растягивать(ся); удлинять(ся) –узайтирмоқ, чўзмоқ
explosion – взрыв –портлаш
filament lamp – лампа накаливания – қизиганда ёруғлик чиқарадиган лампа
Fire damp – рудничный газ – рудали газ
flammable gas – горючий газ –ёнувчи газ –
gauze – металлическая сетка, проволочная ткань –дока
headpiece – шлем, каска – шлем
miner'slamp – шахтёрская лампа –кончилик лампаси
Noxious – вредный, ядовитый – зарарли

Exercises
1. COMPREHENSION AND WRITING
Translate the text into your language then give the summary of the text (in writing).
What safety lamp would you invent if you were a scientist?

2. DISCUSSION
Using information of the text answer the following question:
Why did all the inventions of a safety lamp take place in England?

3.2 Fire extinguisher

Definition. A fire extinguisher is an active fire protection device to put out fires, often in emergency situations. Fire extinguishers consist of pressurized containers of chemicals that, when discharged, can put out fires.

History. The first version of the modern fire extinguisher was invented in the United Kingdom by Captain George William Manby in 1816, consisting of a copper vessel

of 3 gallons (13.6 litres) of pearl ash (potassium carbonate) solution under compressed air pressure.

The late 19th century saw the invention of the Soda-Acid extinguisher where a cylinder contained 1 or 2 gallons of water that had sodium bicarbonate mixed in it. Suspended in the cylinder was a vial containing concentrated sulfuric acid. The vial of acid was broken by one of two means depending on the type of extinguisher. One means involved the use of a plunger that broke the acid vial, while the second involved the release of a lead bung that held the vial closed. Once the acid was mixed with the bicarbonate solution, carbon dioxide gas would be expelled and this would in turn pressurize the water. The pressurized water was forced from the canister through a nozzle.

Around 1912 Pyrene

Pyrene – «Пайрин» (фирменное название огнетушителей и противопожарного оборудования компании «Брент кемикалз интернэшнл» [Brent Chemicals International]). Pioneered the carbon tetrachloride or CTC extinguisher, where the liquid was expelled from a brass or chrome container by hand pump onto a fire. The CTC vaporized and extinguished the flames by chemical reaction.

This extinguisher was popular in motor vehicles for the next 60 years. The vapour and combustion by-products were highly toxic and deaths did occur from using these extinguishers in confined spaces.

Words

Substances taking part in the reactions of a extinguisher

Acid – кислота – кислота

Ash – зола, пепел – кул

carbon dioxide – углекислота, углекислый газ – углекислота

carbone tetrachloride – тетрахлорид углерода –углерод тетрахлориди

pearl – жемчуг, перламутр – марварид

potassium carbonate – карбонаткалия – калий карбонат

sodium bicarbonate – гидрокарбонатнатрия –натрий гидрокарбонат

sulfuric acid –серная кислота –олтингугурт кислотаси
Tetrachloride – тетра хлорид (четырёх хлористое соединение) – тетра хлорид
Elements of an extinguisher operation and design
bung – пробка, затычка, втулка –пўкак, пробка
by-product – побочный продукт –иккинчи даражали маҳсулот
confined space – замкнутое пространство –туташ бўшлиқ
pressurised container – сосуд, находящийся под давлением – босим остидаги идиш
soda-acid fire extinguisher – щёлочно-кислотный огнетушитель – олов ўчиргич
solution – раствор –эритма
vapour – пар – буғ
vial – бутылочка, пузырек – шиша

Exercises
1. COMPREHENSION
Look through the text and list all the obligatory features of any fire extinguisher.
Illustrate your list by the example of the text.

2. WRITING
Sum up information of the text (in writing).
Write the process of working of a tire extinguisher
3. DISCUSSION
Try to describe the extinguisher you saw not long ago. Use the fragment “Definition” as a support.

3.3 **Traffic light**

Definition. A traffic light, traffic signal, or stop light is a signaling device positioned at a road intersection, pedestrian crossing, or other location in order to indicate when it is safe to drive, ride, or walk using a universal color code.

History. On 10 December 1868, the first traffic lights were installed outside the British Houses of Parliament in London. They resembled railway signals of the time, with semaphore arms and red and green gas lamps for night use. The gas lantern was turned with a lever at its base so that the appropriate light faced traffic. Unfortunately, it exploded on 2 January 1869, injuring the policeman who was operating it.

The modern electric traffic light is an American invention. As early as 1912 in Salt Lake City, Utah, policeman Lester Wire set up the first red-green electric traffic lights. On 5 August 1914, the American Traffic Signal Company installed a traffic signal system on the corner of 105th Street and Euclid Avenue in Cleveland, Ohio.It had two colors, red and green, and a buzzer to provide a warning for color changes. The first four-way, three-color traffic light was created by police officer William Potts in Detroit in 1920. In 1923, Garrett Morgan (an African Americ inventor) patented a traffic signal device, although it did not directly impact the evolution of the modern traffic light Morgan later had his technology patented in England and Canada as well.

The Morgan traffic signal was a T-shaped pole unit that featured three hand-cranked positions: Stop, Go and an all-directional stop position. This third position halted traffic in all directions to allow pedestrians to cross streets more safely.

The first interconnected traffic signal system was installed in Salt Lake City in 1917, with six connected intersections controlled simultaneously from a manual switch. Automatic control of interconnected traffic lights was introduced March 1922 in Houston, Texas. The first automatic experimental traffic lights in England were deployed in Wolverhampton in 1927.

Technology. In the mid 1990s, cost-effective traffic light lamps using light-emitting diodes (LEDs)

A light-emitting diode (LED) is a semiconductor device that emits incoherent narrow-spectrum light when electrically biased in the forward direction. This effect is a form of electroluminescence. were developed; prior to this date traffic lights were designed using incandescent

The incandescent light bulb or incandescent lamp is a source of artificial light that works by incandescence. An electric current passes through a thin filament, heating it and causing it to emit light or halogen light bulbs.

One invention that addressed the problem of short lamp life was the halogen lamp, also called the tungsten-halogen lamp, the quartz-halogen lamp or the quartz-iodine lamp, wherein a tungsten filament is sealed into a small envelope filled with a halogen gas such as iodine or bromine.

Unlike the incandescent-based lamps, which use a single large bulb, the LED-based lamps consist of an array of LED elements, arranged in various patterns. When viewed from a distance, the array appears as a continuous light source (unless closely examined).

LED-based lamps have numerous advantages over incandescent lamps; among them are:

• Much greater energy efficiency.

• Brighter illumination with better contrast even in direct sunlight.

• Much faster switching, etc.

Words

Traffic control systems and signals

buzzer - гудок; сирена – овоз, сирена

halogen lamp - галогенная лампа - галоген лампа

incandescent lamp – лампа накаливания - қизиганда ёруғлик чиқарадиган лампа

lantern - фонарь - фонар

LED (LightEmittingDiode) - свето[излучающий] диод, светодиод, светодиодный индикатор малопотребляющий электронный прибор, излучающий свет при прохождении через него электрического тока - светодиод

lever - рычаг - дастак

manual switch - ручной переключатель –қўлли ўзгартиргич

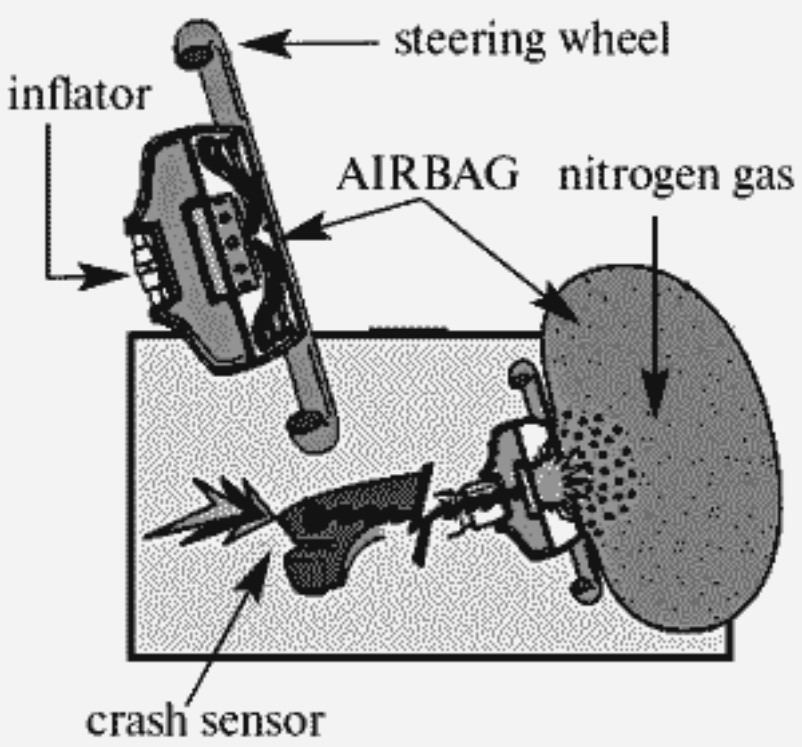
semaphore arm – крыло семафора –семафор қаноти
trafficlight - светофор - светофор
warning - сигнал, система предупреждения – огоҳлантириш

Verbs
crank - заводить – солмоқ
explode - взрывать(ся) –портла(т)моқ
face - выходить на..., быть обращенным (в определенную сторону) -юзланмоқ
halt - останавливать, задерживать - тўхтатмоқ
install - устанавливать - ўрнатмоқ
resemble - напоминать - ўхшамоқ
Exercises
1. COMPREHENSION
Arrange the following designs of a traffic light in the chronological order:
1. traffic lights using incandescent or halogen light bulbs.
2. the first interconnected traffic signal system
3. traffic light lamps using light-emitting diodes (LEDs),
4. traffic signal system having two colors, red and green, and a buzzer to provide a warning for color changes.
5. traffic lights resembling railway signals of the time with semaphore arms and red and green gas lamps for night use.
6. T-shaped pole unit having three hand-cranked positions: Stop, Go and an all-directional stop position.
7. automatic control of interconnected traffic lights

2. WRITING
Sum up information of the text (in writing). Don't forget to mention: 1) definition, 2) history and 3) design of modern traffic light.
How can you work out airbags in the car?
How does traffic light influence on our lives?

3. DISCUSSION
Speak on advantages and disadvantages of modern traffic lights – from the driver's and the pedestrian's point of view.

3.4 Airbags



Airbags are a type of *automobile safety restraint* like seatbelts.

The air bag system consists of three basic parts-an air bag module, crash sensors and a diagnostic unit. Some systems may also have an on/off switch, which allows the air bag to be deactivated.

The air bag module contains both an inflator unit and the lightweight fabric air bag. The driver air bag module is located in the steering wheel hub, and the passenger air bag module is located in the instrument panel. When fully inflated, the driver air bag is approximately the diameter of a large beach ball. The passenger air bag can be two to three times larger since the distance between the right-front passenger and the instrument panel is much greater than the distance between the driver and the steering wheel.

The crash sensors are located either in the front of the vehicle and/or in the passenger compartment. Vehicles can have one or more crash sensors. The sensors are typically activated by forces generated in significant frontal or near-frontal crashes. Sensors measure deceleration, which is the rate at which the vehicle slows down. Because of this, the vehicle speed at which the sensors activate the air bag varies with the nature of the crash.

The diagnostic unit monitors the readiness of the air bag system. The unit is activated when the vehicle's ignition is turned on. If the unit identifies a problem, a warning light alerts the driver to take the vehicle for examination of the air bag system. Most diagnostic units contain a device that stores enough electrical energy to deploy the air bag if the vehicle's battery is destroyed very early in a crash sequence.

Initially, most vehicles featured a single airbag, mounted in the steering wheel and protecting the driver of the car (who is the most at risk of injury). During the 1990s, airbags for front seat passengers, then separate side impact airbags placed between the door and occupants, became common.

There are two types of airbags: *frontal* and the various types of *side-impact airbags*.

History. The world's first electromechanical automotive air bag system was invented by Allen Breed .His first sensor and safety system was invented and patented in 1968.But it took some time to gain broad acceptance. Breed was still well ahead of the game when, in 1987, he founded Breed Automotive (now Breed Technologies, Inc.) to refine and market his safety systems. However, rudemental patents for airbags go back to the 1950s. There have been airbag-like devices for aeroplanes as early as the 1940s, with the first patents filed in the 1950s.

Ford built an experimental fleet of cars with airbags in 1971. The first example of an airbag in a production car was in 1972 when the 1973 model Oldsmobile Toronado was released.

Airbags became common in the 1980s, with Chrysler and Ford introducing them in the mid-1980s; the former made them standard equipment across its entire line in 1990.

Words

Concepts related to the automobile safety restraint
airbag – пневмоподушка (*система пассивной безопасности автомобиля*) пневматик ёстиқ
beachball - большой надувной мяч для игры на пляж – пляж тўпи
crash - удар - зарба
frontal crash – лобовой удар - олд зарба
module - модуль; блок; узел – модуль, бўлим
restraint - ограничение, ограничитель – чеклов, чеклагич
sensor - датчик - датчик

Processes related to the automobile safety restraint
activate - активизировать; приводить в действие, включать – харакатга келтирмоқ, ёқмоқ
alert - предупреждать - огохлантирмоқ
deactivate - выводить из работы - ўчирмоқ
decelerate - уменьшать скорость - секинлатмоқ
deploy - использовать, употреблять - фойдаланмоқ
identify - опознавать; распознавать - аниқламоқ
inflate - надувать, накачивать – дам бермоқ, шиширмоқ
Measure - измерять -ўлчамоқ

Exercises
1. COMPREHENSION
Fill in the following tables:
a.

	When?	**Airbag's development**
1.	The 1940s	Airbag-like devices for aeroplanes
2.	The 1950s	
3.	1968	
4.	1971	
5.	The 1980s	
6.	1990	

b.

The airbag system		
	Basic parts	**functions**
1.	Air bag module	
2.	Crash sensors	
3.	Diagnostic unit	Monitors the readiness of the airbag system

2. WRITING

Sum up information of the text (in writing). Use the tables above as a support.

3. DISCUSSION

Compare the seat belt and the airbag as a safety device (functions, efficiency, operation).

3.5 Seat belts

Volvo had the first safety belts in 1849. The first U.S. patent for automobile seat beats was issued to Edward J. Claghorn of New York, on February 10, 1885. Claghorn was granted United States Patent for a Safety-Belt for tourists, described in the patent as "designed to be applied to the person, and provided with hooks and other attachments for securing the person to a fixed object."

Swedish inventor, Nils Bohlin Bohlin was recruited in 1958 by Volvo to become its first safety engineer. Bohlin's career in safety engineering covers both the aerospace and automotive industries. A native of Sweden, he is a member of the Automotive Hall of Fame and a1995 recipient of a Gold Medal from the Royal Swedish Academy of Engineering Sciences.

invented the three-point seat belt – not the first but the modern seatbelt – now a standard safety device in most cars. Coming from the aerospace industry, Bohlin had seen stresses that the human body undergoes in high-speed crash situations, and he understood the limitations of restraint devices, particularly those that were uncomfortable and difficult to use.

Following a year of extensive testing and engineering, Bohlin realized that straps across the chest and across the hips restrained people efficiently Nils Bohlin's lap-and-shoulder belt was introduced by Volvo in 1959.

In 1978, Tennessee became the first American State to require child safety seat use.

Belt types

2-Point Seat Belt: *A restraint system with two attachment points. A lap belt.*

3-Point Seat Belt: *A seat belt with both a lap and a shoulder portion, having three attachment points (one shoulder, two hips).*

Words

Elements of seat belt design

attachment - прикрепление, присоединение - бириктириш

attachment point - место присоединения, место крепления – бириктириш нуқтаси

hook - крюк, крючок – илкак

restaint device - приспособление, ограничивающее движение – харакатни чекловчи қурилма

strap - ремень -камар

Partsofthebody

hip - бедро – сон

lap - колени - тизза

shoulder - плечо – елка

chest - грудная клетка – кўкрак қафаси

Exercises

1. COMPREHENSION

Complete the tables using information from the text

a.

	When?	Who?	What?
1. 2. 3. 4.			

b.

Belt types	Attachment points
1. 2.	

2. WRITING

Sum up the text in writing using the tables above as a support.

3. DISCUSSION

Answer the following:

Are you comfortable in modern seat belts?.....Why?

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