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|  | 130-131 | **8.1 Джордж Стивенсон Джеймс Ватт**  **Famous People of Science and Engineering.** | **2** | Комбинированный урок (практикум) | Введение и освоение лексического материала по теме Выполнение тренировочных упражнений Работа с текстами: « Джордж Стивенсон», « Джеймс Ватт» | **1** |
|  | 132-133 | **8.2 Lomonosov M.V.**  **Mendeleev D. I.** | **2** | Урок закрепления знаний и формирования умений и навыков (деловая игра) | Работа с текстами: «Известный русский учёный М.В. Ломоносов**»,** «Д.И. Менделеев - известный русский учёный- химик» | **2** |
|  | 134-135 | **8.3 Presentations about famous scientists.** | **2** | Комбинированный урок (практикум) | Презентации | **2** |
|  | 136 | **8.4 The test** | **1** | [Урок применения знаний и умений](http://docs.google.com/Doc?id=dgfz5kf6_695thhzqhj) | **Итоговый** | **3** |
|  |  | **Самостоятельная работа студентов:**   1. Презентация об известном учёном. | **3** |  |  |  |
| **Раздел 9** |  | **Automation and Robotics** |  |  |  |  |
|  | 137-138 | **9.1 Automation and Robotics** | **2** | Комбинированный урок (практикум) | Введение и освоение лексического материала по теме  Выполнение лексических упражнений Чтение текста с общим охватом содержания; Выполнение заданий;  Техника чтения. | **1** |

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| Урок № 130-131  Тема: Д. Ватт, Д. Стивенсон , знаменитые ученые и инженеры.  **James Watt - The Instrument Maker Who Created the First Modern Steam Engine**  [James Watt](https://interestingengineering.com/james-watt-father-of-the-modern-steam-engine) is another of the worlds most important inventors. He improved upon the Newcomen Steam Engine to produce the first modern steam engine.  Despite his clear inventiveness, Watt was always plagued with poor health throughout his life. As a child, this would mean he was home taught for some time by his mother.  James learned to write, became proficient at arithmetic and geometry in his childhood. He also learned the craft of instrument making.  Watt was a fast learner and this skill allowed him to graduate from apprentice to master craftsman very quickly. After apprenticing in London, he returned to Glasgow, Scotland, to open his own shop in **1757.**  His now famous steam engine came about after he repaired a model of the Newcomen Steam Engine in **1764.**He quickly realized the machine's inefficiency and worked tirelessly to improve upon it.  His solution was a separate condenser that he unveiled to the world in May of **1765**. For his contributions to the world, he was elected as a fellow of the Royal Society of London in **1785**.  **15. George Stephenson: The Minor Who Became the 'Father of Railways'**  [George Stephenson](https://www.britannica.com/biography/George-Stephenson) or the "Father of Railways" was an English engineer and inventor who would revolutionize travel forever. He would single-handedly establish the world's first public inter-city railway line and built the first railroad locomotive.  His life can be considered the very definition of rags to riches. He was born into a low-income family and became a self-made engineer who literally changed the world.  George was the son of a mechanic who operated a Newcomen atmospheric-steam engine at a coal mine in Newcastle upon Tyne. His family's financial situation required him to start working at a very young age as a brakesman.  Because of this, he had no formal education and by the age of 19, he found himself operating a Newcomen engine of his own. News from the Napoleonic wars would inspire him to learn to read and write, which he did by taking night school.  When he married, he made some extra income by repairing shoes, fixing clocks and cutting clothes.  He would quickly become very familiar with steam engine technology and was soon promoted to the chief mechanic at the Killington colliery.  Stephenson would soon build on his knowledge of steam engines to design and build his very own locomotive, the Rocket. He would also devise the four feet eight-and-a-half inches gauge railway that would become the world standard.  He also devised a form of miners' safety lamp to help prevent explosions in mines.  Двигатели  Text Engines  Words to be learnt:  to run – приводить в движение  powerful –мощный  change – превращать, изменение heat – тепло, нагревать  motion – движение  to be like – быть похожим fuel – топливо  different – различный  to push – толкать  a piston – поршень  back and forth – назад и вперед to revolve – вращаться pressure – давление  to make (+ другой глагол) - заставлять It is… that… - именно  Read and translate the text:  The great machines that make things which we use every day are run by powerful engines.  Engines are machines for changing heat into motion. They make something move or move themselves. Your body is an engine. The food you eat gives heat. As you run and jump, you move and work. In this way you are like an engine.  All engines burn some kind of fuel. There are different kinds of engines. In some engines a piston pushes back and forth. In some engines a rotor revolves round and round. In some engines no parts move. A change in pressure inside the engines makes them go.  Answer the questions:  1. What do powerful engines do?  2. What do engines change heat into?  3. Why is your body like an engine?  4. What do all engines burn?  5. What do pistons do in engines?  Translate into English:  1. Мощные двигатели приводят в движение большие станки.  2. Двигатели превращают тепло в движение.  3. Все двигатели сжигают топливо.  4. Существуют различные двигатели.  5. Некоторые двигатели имеют поршни или роторы. |

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| Урок № 132-133  Тема: Ломоносов М. В. , Менделеев В. И.  **The autobiography of M.V. Lomonosov.**             M.V. Lomonosov was born in 19(8-old style)11.1711 in the village of Denisovka and he died in 15(4).11.1765 in St. Petersburg. He is a Russian poet, scientist and grammarian who is often considered the first great Russian linguistic reformer. He also made substantial contributions to the natural sciences, reorganized the St. Petersburg Imperial Academy of Sciences, established in Moscow the University that today bears his name, and created the first coloured glass mosaics in Russia.           Lomonosov was the son of a poor fisherman. In December 1730 he left his native village, penniless and on foot, for Moscow. In order to be admitted to the Slavonic-Greek-Latin Academy he had to conceal his humble origin. He was able to study the eight-year course in five years and during this time he taught himself Greek and read the philosophical works of antiquity. In 1736 he became a student at the St. Petersburg Academy. Seven months later he left for Germany to study at the University of Marburg.           In 1739, in Freiberg, Lomonosov studied firsthand the technologies of mining, metallurgy and glassmaking. In July 1741 Lomonosov returned to St. Petersburg Academy. Appointed a professor by the Academy in 1745, he translated Christian Wolf`s «Studies in Experimental Philosophy» in Russian and wrote, in Latin «Cause of Heat and Cold», «Elastic Force of Air» and the «Theory of Electricity».          In 1760 Lomonosov inserted in the «Reflections of the Solidity and Fluidity of Bodies» the universal law of Nature – that is the law of conservation of matter and energy. In 1755 he drew up the plans for the development of Moscow State University and was appointed a councilor by the Academy.          Despite the honours that came to him, he continued to lead a simple and industrious life. He left his house and the laboratory erected in his garden only to go to the Academy. His prestige was considerable in Russia, and his scientific works and his role in the Academy were known abroad. He was a member of the Royal Swedish Academy of Sciences and of that of Bologna. He died in 1765 and was buried with great ceremony.  On 17 February 1869, Russian chemist Dmitri Mendeleev jotted down the symbols for the chemical elements, putting them in order according to their atomic weights and inventing [the periodic table](https://www.newscientist.com/term/the-periodic-table/). He wrote down the sequence in such a way that they ended up grouped on the page according to known regularities or ‘periodicities’ of behaviour. It was perhaps the greatest breakthrough in the history of chemistry.  Mendeleev’s ideas, which built on the earlier work of French chemist [Antoine Lavoisier](https://www.newscientist.com/people/antoine-lavoisier/) in the previous century, totally changed the way chemists viewed their discipline. Now each chemical element had its number and fixed position in the table, and from this it became possible to predict its behaviour: how it would react with other elements, what kind of compounds it would form, and what sort of physical properties it would have.  Soon, Mendeleev was predicting the properties of three elements – gallium, scandium and germanium – that had not then been discovered. So convinced was he of the soundness of his periodic law that he left gaps for these elements in his table. Within twenty years, all three had been found, and their properties confirmed his predictions almost exactly.  Mendeleev himself was surprised by how fast his ideas were confirmed. In a prestigious Faraday Lecture to the Royal Institution in London in 1889, he admitted that he had not expected to live long enough ‘to mention their discovery to the Chemical Society of Great Britain as a confirmation of the exactitude and generality of the periodic law’. As news of his remarkable accomplishment began to spread, Mendeleev became something of a hero, and interest in the periodic table soared.  In all, Mendeleev predicted 10 new elements, of which all but two turned out to exist. He later proposed that the positions of some pairs of adjacent elements be reversed to make their properties fit into the periodic pattern. He suggested swapping cobalt with nickel and argon with potassium, which he believed had been wrongly placed because their true atomic weights were different from the values chemists had determined. It took until 1913, some six years after Mendeleev had died, to clear up this ambiguity. By then chemists had gained a much better understanding of the atom, and in that year the physicist Henry Moseley, working in Manchester, showed that the position of an element in the table is governed not by its atomic weight but by its atomic number.   |  |  | | --- | --- | | **Вопросы, заданные учащимся на английском языке** | **Перевод вопросов на русский язык** | | 1. What did D. I. Mendeleev discover? | Что открыл Д.И.Менделеев? | | 2. Is it a period or a group?  Li – Be – B – C – N – O – F - Ne | Это период или группа? | | 3. Is it a long or short period?  Li – Be – B – C – N – O – F - Ne | Это большой или малый период? | | 4. Is it a period or a group?  Be – Mg – Ca – Sr – Ba - Ra | Это период или группа? | | 5. Do metal properties in a group increase or decrease? | Металлические свойства в группах увеличиваются или уменьшаются? | | 6. Is sodium a metal or a non-metal? | Натрий – это металл или неметалл? | | 7. Is sulphur a metal or a non-metal? | Сера – металл или неметалл? | | 8. Do metal properties in a period increase or decrease? | Металлические свойства в периодах уменьшаются или увеличиваются? | | 9. How does a radius of an element`s atom change in groups? | Как изменяется радиус атома элемента в пределах группы? | | 10. How does a radius of an element`s atom change in periods? | Как изменяется радиус атома элемента в пределах периода? | | 11. What is the structure of the atom? | Как устроен атом? | | 12. Does an atom have any charge? | Имеет ли атом заряд? | | 13. What is the charge of an atom”s nucleous? | Какой заряд имеет ядро в атоме? | | 14. What is the charge of an electron ? | Какой заряд имеет электрон? | | 15. What does the  atomic number of an element signify? | Что показывает порядковый номер элемента? | | 16. What does the period number signify? | Что показывает номер периода? | | 17. What does the group number signify? | Что показывает номер группы? | | 18. Is it a main group or a transition element sub–group? | Это главная или побочная подгруппа? | | 19. How many electrons are there in the outer shell of a potassium’s atom? | Сколько электронов на внешнем уровне атома натрия? | | 20. How many electrons are there in the outer shell of a nitrogen’s atom? | Сколько электронов на внешнем уровне атома азота? | | 21. How many electrons does a barium atom have? | 1. Сколько электронов в атоме бария? | | 22. How many electrons does a magnesium atom have? | Сколько электронов в атоме магния? | | 23. How many periods are there in the periodic system? | Сколько периодов в периодической системе? | | 24. How many groups are there in the periodic system ? | Сколько групп в периодической системе? | | 25. Who did discover the periodic system? | Кто автор периодической системы? | |

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| Урок № 134-135  Тема: Знаменитые ученые  Timeline of the Scientific Revolution  • c1600 – Galileo Galilei discovers the principle of inertia, building the stage for a rational view of motion.  • 1600 – William Gilbert finds that Earth has magnetic poles and acts like a huge magnet.  • 1600 – Galileo Galilei discovers that projectiles move with a parabolic trajectory.  • 1608 – Hans Lippershey invents the refracting telescope, which Galileo Galilei soon puts to use.  • 1609 – Galileo Galilei observes Jupiter’s four largest moons, disproving church dogma that all movement in the universe is centered on Earth.  • 1609 – Johannes Kepler publishes his first two laws of planetary motion showing that planets move in elliptical orbits around the sun.  • 1610 – John Napier publishes tables of logarithms, showing how they can be used to accelerate calculations.  • 1619 – Kepler publishes his third law of planetary motion relating the time taken for a planet to orbit the sun with its distance from the sun.    • 1621 – Willebrord Snell discovers the laws of light refraction.  • 1628 – Kepler publishes his planetary tables, the calculations for which would have taken years without Napier’s logarithms.  • 1629 – Niccolò Cabeo finds there are two types of electric charge and notes both attractive and repulsive forces acting.  • 1632 – William Oughtred invents the slide rule. With the combined power of logarithms and slide rules, calculation speeds explode.  • 1632 – Galileo Galilei finds that the laws of motion are the same in all inertial reference frames.  • 1637 – Rene Descartes invents the Cartesian coordinate system – i.e. the x-y axis for graphs, allowing changes in quantities with time to be plotted.  • 1645 – Blaise Pascal invents the adding machine.  • 1652 – Thomas Bartholin discovers the human lymphatic system.  • 1654 – Blaise Pascal and Pierre de Fermat invent the mathematics of probability and statistics.  • 1656 – Christiaan Huygens discovers Saturn’s rings after building a new telescope – the world’s best.  • 1657 – Pierre de Fermat uses the principle of least time in optics.  • 1658 – Jan Swammerdam discovers the red blood cell.    • c1660 – Otto von Guericke builds a rotating sphere from which sparks fly. Static electricity can now be generated. He demonstrates electrostatic repulsion.  • c1660 – Robert Hooke discovers that the extension of a spring or elastic material is directly proportional to the applied force.  • 1661 – Robert Boyle writes The Skeptical Chymist, with his manifesto for the science of chemistry, explaining the roles of elements and compounds, and telling scientists they must carefully observe, record and report scientific data.  • 1662 – Robert Boyle publishes his law of pressure and volume in gases.  • 1663 – James Gregory publishes his design for the world’s first reflecting telescope.  • 1664 – Robert Hooke uses a microscope to observe the cellular basis of life.  • 1665 – Isaac Newton invents calculus – the mathematics of change – without which we could not understand the modern world. He keeps it secret, using it to develop theories which he eventually publishes in 1687.  • 1666 – Isaac Newton discovers that light is made up of all of the colors of the rainbow, which are refracted by different amounts in a glass prism.  • 1667 – Isaac Newton builds the world’s first reflecting telescope.  • 1668 – John Wallis discovers the principle of conservation of momentum – one of the foundations of modern physics.  • 1669 – Hennig Brand becomes the first identifiable person to discover and isolate a new chemical element – phosphorus.    • 1674 – Antony van Leeuwenhoek discovers microorganisms.  • 1675 – Robert Boyle shows that electric repulsion and attraction act in a vacuum.  • 1676 – Ole Christensen Roemer measures the speed of light for the first time.  • 1676 – Christiann Huygens finds light can be refracted and diffracted and should be considered to be a wave-like phenomenon.  • 1684 – Gottfried Leibniz publishes his calculus, which he discovered independently of Isaac Newton. He has been working on calculus for the past decade.  • 1687 – Isaac Newton publishes one of the most important scientific books ever: Philosophiae Naturalis Principia Mathematica, revolutionizing physics and our understanding of gravity and motion.  This was a momentous century in which science moved from a state of knowledge that was in many ways little more advanced than third century BC Greece to a much more advanced, sophisticated position, paving the way for the industrial revolution in the 1700s, and many more famous scientists.  Probably the greatest advantages that Renaissance scientists had over their ancient Greek predecessors were:  • the invention of the movable type printing press in 1450 by Johannes Gutenberg. (Bi Sheng invented movable type printing much earlier, in about 1040 AD in China, but this does not appear to have influenced the Renaissance.)  • Leonardo Fibonacci brought the Hindu-Arabic number system to Europe in 1202 AD.  The Greek number system was primitive, making calculations cumbersome, and confining most Greek mathematical achievements to geometry. European scientists were using the Roman system, which was little better.  The familiar Hindu-Arabic system of 0,1,2,3,4,5,6,7,8,9… brought with it ease of calculation and the recognition that zero was a number in its own right. Mathematical rules for the correct use of zero were first written in 628 AD in Brahmagupta’s book Brahmasputha Siddhanta. This book also highlighted the use of negative numbers in, for example, solutions of quadratic equations.  Following the huge scientific advances of the 1600s, we have continued to take enormous strides in scientific knowledge, carrying us to where we are today. |

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| Урок № 136  Контрольная работа  I вариант  Часть A  Выберите один правильный ответ (каждый правильный ответ оценивается 1 баллом, максимальное количество баллов - 15).  Задание 1. В каком из слов звук, передаваемый буквой «о», произносится иначе, чем в остальных:  a) phone b) know с) sorry d) zero e) no f) home g) go  Задание 2. Выберите правильный артикль:  Yury Gagarin was ... first cosmonaut.  a) a b) the  Задание 3. Укажите предложение, в котором окончание «s» является показателем притяжательного падежа:  a) My mother's sister is my aunt.  b) My brother gets up at 7 o'clock.  Задание 4. Выберите правильный вариант образования степени сравнения прилагательного: She is the ... beautiful girl in our class.  a) more b) most c) much  Задание 5. Укажите предложение, в котором числительное является порядковым:  a) There are 300 pages in the book.  b) He was born on the 5th of May.  c) Room 6 is empty.  Задание 6. Выберите правильную форму глагола to be: What ... your name?  a) am b) is c) are  Задание 7. Выберите правильную форму глагола to have: We ... English three times a week.  a) have b) has c) had  Задание 8. Выберите правильный модальный глагол:  ... I open the window? It's too hot.    a) can b) may c) must d) should  Задание 9. Укажите слово, выпадающее из данного смыслового ряда:  a) father b) mother c) daughter d) son e) secretary f) uncle g) sister  Задание 10. Выберите правильный вспомогательный глагол:  ... I help you?  a) shall b) will  Задание 11. Выберите правильную форму глагола:  She ... at the school near our house.  a) work b) works c) worked  Задание 12. Укажите, в каком предложении глагол употреблен в Present Indefinite:  a) She has bought a new pair of shoes.  b) She will buy brown shoes tomorrow.  c) She bought that pair of shoes last month.  d) She buys a pair of shoes every year.  e) Look! She is buying shoes right now.  Задание 13. Определите, на какой из вопросов данное утверждение является ответом: She sang wonderfully at the concert.  a) When did she sing? c) What did she sing?  b) Where did she sing? d) Why did she sing?  Задание 14. Выберите правильный предлог:  Go ... the room and have dinner.  a) out of b) into c) from  Задание 15. Выберите нужное местоимение:  There are ... books on the shelf.  a) some b) any c) no  Часть B  Задание 1. Соотнесите слова, противоположные по значению (5 баллов):  1) wet 2) fast 3) free 4) fat 5) new  a) dry b) busy d) thin e) old f) slow  Задание 2. Закончите предложения, выбрав нужный вариант указания времени (5 баллов):  1. She plays tennis ... . a) at this moment.  2. She is playing tennis ... . b) last month.    3. She has ... played tennis. c) every Monday.  4. She played tennis ... . d) next week.  5. She will play tennis ... . e) just.  Часть C  Задание: Переведите текст (5б)  Great Britain  The United Kingdom of Great Britain and Northern Ireland is situated on the British Isles. It consists of four parts: England, Wales, Scotland and Northern Ireland. England, Wales and Scotland occupy the territory of Great Britain and Northern Ireland is situated in the northern part of Ireland. The territory of the United Kingdom is about 244000 square kilometers. The population is over 56 million people. The capital of the United Kingdom is London. The surface of the United Kingdom varies greatly. The northern and western parts of the country are mountainous and are called the Highlands. All the rest is a vast plain which is called the Lowlands.  II вариант  Часть A  Выберите один правильный ответ (каждый правильный ответ оценивается 1 баллом, максимальное количество баллов - 15).  Задание 1. В каком из слов звук, передаваемый буквой «s», произносится иначе, чем в остальных:  a) six; b) miss; с) bus; d) house; e) spoon; f) stair; g) busy.  Задание 2. Выберите правильный артикль:  There is ... book on the table.  a) a b) the  Задание 3. Укажите предложение, в котором окончание «s» является показателем притяжательного падежа:  a) His sister's husband is an engineer.  b) He's got a cat and a dog.  Задание 4. Выберите правильный вариант образования степени сравнения прилагательного: The Volga is longer ... the Thames.  a) as b) than c) more  Задание 5. Укажите предложение, в котором числительное является порядковым:  a) There are 300 pages in the book.  b) He was born in 1980.  c) School year begins on the 1st of September.  Задание 6. Выберите правильную форму глагола to be: I ... in the seventh form.  a) am b) is c) are  Задание 7. Выберите правильную форму глагола to have: My sister ... got three sons.    a) have b) has c) had  Задание 8. Выберите правильный модальный глагол:  Не ... play football very well.  a) can b) may c) must d) should  Задание 9. Укажите слово, выпадающее из данного смыслового ряда:  a) blue b) black c) yellow d) zero e) red f) white g) purple Задание 10. Выберите правильный вспомогательный глагол: They ... come to see us next week.  a) shall b) will  Задание 11. Выберите правильную форму глагола:  They ... their parents every week.  a) visit b) visits c) shall visit  Задание 12. Укажите, в каком предложении глагол употреблен в Present Perfect:  a) She has bought a new pair of shoes.  b) She buys a pair of shoes every year.  c) She bought that pair of shoes last month.  d) She will buy brown shoes tomorrow.  e) Look! She is buying shoes right now.  Задание 13. Определите, на какой из вопросов данное утверждение является ответом: She lost her umbrella.  a) When did she lose her umbrella? c) What did she lose?  b) Where did she lose her umbrella? d) Why did she lose her umbrella?  Задание 14. Выберите правильный предлог:  Let's meet... 6 o'clock.  a) in b) on c) at  Задание 15. Выберите нужное местоимение:  Is there ... milk in the fridge?  a) some b) any c) no  Часть B  Задание 1. Соотнесите слова, противоположные по значению (5 баллов):  1) clean 2) tall 3) wet 4) fast 5) free  a) dry b) busy c) short f) slow g) dirty    Задание 2. Закончите предложения, выбрав нужный вариант указания времени (5 баллов):  1. She plays tennis ... . a) last month.  2. She is playing tennis ... . b) at this moment.  3. She has ... played tennis. c) next week.  4. She played tennis ... . d) every Monday.  5. She will play tennis ... . e) just.  Часть C  Задание: Переведите текст (5 баллов).  London  London is the capital of Great Britain, its political, economic and commercial centre. London is situated on the river Thames. Its population is about 8 million. London is divided into several parts: the City, Westminster, the West End and the East End. They are very different from each other.  The City is the oldest part of London, its financial and business centre. Numerous banks, offices and firms are concentrated here. Few people live in the City but over a million come to work here.  Westminster is the aristocratic official part of London. The West End is the richest and most beautiful part of London. The East End is an industrial part of London. |

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| Урок № 137-138  Тема: Automation and robotics  Text 1. Automation  Read and translate the text.  Automation is the system of manufacture performing certain tasks, previously done by people, by machines only. The sequences of operations are controlled automatically. The most familiar example of a highly automated system is an assembly plant for automobiles or other complex products.  The term automation is also used to describe non-manufacturing systems in which automatic devices can operate independently of human control. Such devices as automatic pilots, automatic telephone equipment and automated control systems are used to perform various operations much faster and better than could be done by people.  Automated manufacturing had several steps in its development. Mechanization was the first step necessary in the development of automation. The simplification of work made it possible to design and build machines that resembled the motions of the worker. These specialized machines were motorized and they had better production efficiency.  Industrial robots, originally designed only to perform simple tasks in environments dangerous to human workers, are now widely used to transfer, manipulate, and position both light and heavy workpieces performing all the functions of a transfer machine.  In the 1920s the automobile industry for the first time used an integrated system of production. This method of production was adopted by most car manufacturers and became known as Detroit automation.  The feedback principle is used in all automatic-control mechanisms when machines have ability to correct themselves. The feedback principle has been used for centuries. An outstanding early example is the flyball governor, invented in 1788 by James Watt to control the speed of the steam engine. The common household thermostat is another example of a feedback device.  Using feedback devices, machines can start, stop, speed up, slow down, count, inspect, test, compare, and measure. These operations are commonly applied to a wide variety of production operations.  Computers have greatly facilitated the use of feedback in manufacturing processes. Computers gave rise to the development of numerically controlled machines. The motions of these machines are controlled by punched paper or magnetic tapes. In numerically controlled machining centres machine tools can perform several different machining operations.  More recently, the introduction of microprocessors and computers have made possible the development of computer-aided design and computer-aided manufacture (CAD and CAM) technologies. When using these systems a designer draws a part and indicates its dimensions with the help of a mouse, light pen, or other input device. After the drawing has been completed the computer automatically gives the instructions that direct a machining centre to machine the part.  Another development using automation are the flexible manufacturing systems (FMS). A computer in FMS can be used to monitor and control the operation of the whole factory.  Automation has also had an influence on the areas of the economy other than manufacturing. Small computers are used in systems called word processors, which are rapidly becoming a standard part of the modern office. They are used to edit texts, to type letters and so on.  Automation in Industry  Many industries are highly automated or use automation technology in some part of their operation. In communications and especially in the telephone industry dialing and transmission are all done automatically. Railways are also controlled by automatic signaling devices, which have sensors that    detect carriages passing a particular point. In this way the movement and location of trains can be monitored.  Not all industries require the same degree of automation. Sales, agriculture, and some service industries are difficult to automate, though agriculture industry may become more mechanized, especially in the processing and packaging of foods.  The automation technology in manufacturing and assembly is widely used in car and other consumer product industries.  Nevertheless, each industry has its own concept of automation that answers its particular production needs.  Words to be learnt:    automation — автоматизация previously — ранее  sequence — последовательность assembly plant — сборочный завод  non-manufacturing —  непроизводственный  device — устройство, прибор resemble — походить  General understanding:  1. How is the term automation defined in the text?    efficiency — эффективность  flyball governor — центробежный регулятор steam engine — паровоз  household thermostat — бытовой термостат facilitate — способствовать  punched — перфорированный aid — помощь  dimension — измерение, размеры    2. What is the most «familiar example» of automation given in the text?  3. What was the first step in the development of automaton?  4. What were the first robots originally designed for?  5. What was the first industry to adopt the new integrated system of production?  6. What is feedback principle?  7. What do the abbreviations CAM and CAD stand for?  8. What is FMS?  9. What industries use automation technologies?  Exercise 7.1. Find the following words and word combinations in the text:    1. автоматические устройства  2. автоматизированное производство  3. выполнять простые задачи  4. как легкие, так и тяжелые детали  5. интегрированная система производства  6. принцип обратной связи  7. механизм может разгоняться и тормозить  8. компьютер автоматически посылает команды  9. высокоавтоматизированная система  10. непроизводственная |