**МИНИСТЕРСТВО ОБРАЗОВАНИЯ И НАУКИ РОССИЙСКОЙ ФЕДЕРАЦИИ**

**Федеральное государственное автономное образовательное учреждение высшего образования**

**«Национальный исследовательский ядерный университет «МИФИ»**

**Саровский физико-технический институт - филиал НИЯУ МИФИ**

**ГУМАНИТАРНЫЙ ФАКУЛЬТЕТ**

**Кафедра иностранных языков**

**Митянина Н.В.**

**Сборник текстов для студентов технических специальностей**

(Учебно-методическое пособие)

УТВЕРЖДЕНО:

Заседанием кафедры ИЯ

Протокол №\_2\_от «24 октября» 2019 г

Зав. кафедрой ИЯ

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Научно-методическим советом СарФТИ  
 А.П.Скрыпник

Саров 2019

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Саров, СарФТИ НИЯУ МИФИ, 2019.

Данное пособие предназначено для аудиторного и внеаудиторного чтения при изучении английского языка студентами 1-2 курсов технических специальностей и направлено на расширение словарного запаса, развитие навыков речевой деятельности, а также подготовку к работе с оригинальной литературой. Тексты пособия насыщены разнообразным грамматическим материалом. Каждый текст сопровождается вопросами контроля понимания содержания текста, а также глоссарием на изучение активной лексики.

Рецензент: Тимофеев А.В.

**TEXT 1**

**MARIE CURIE**

Marie Curie was a Polish-born physicist and chemist and one of the most famous scientists of her time. Together with her husband Pierre, she was awarded the Nobel Prize in 1903, and she went on to win another in 1911.

Marie Skłodowska was born in Warsaw, Poland, in a family of teachers who believed strongly in education. She moved to Paris to continue her studies and there met Pierre Curie, Professor in the School of Physics, who became both her husband and colleague in the field of radioactivity. The Curies worked together investigating radioactivity, building on the work of the German physicist Roentgen and the French physicist Becquerel. In July 1898, the Curies announced the discovery of a new chemical element, polonium. At the end of the year, they announced the discovery of another, radium. Marie also documented the properties of the radioactive elements and their compounds. Radioactive compounds became important as sources of radiation in both scientific experiments and in the field of medicine, where they are used to treat tumors. The Curies, along with Becquerel, were awarded the Nobel Prize for Physics in 1903.

Pierre's life was cut short in 1906 when he was knocked down and killed by a carriage. Marie took over his teaching post, becoming the first woman to teach at the Sorbonne, and devoted herself to continuing the work that they had begun together. She received a second Nobel Prize for Chemistry, in 1911. She became the first person ever to be awarded two Nobel Prizes.

The Curie's research was crucial in the development of x-rays in surgery. During World War One Curie helped to equip ambulances with x-ray equipment, which she herself drove to the front lines. The International Red Cross made her head of its radiological service and she held training courses for medical orderlies and doctors in the new techniques.

Despite her success, Marie continued to face great opposition from male scientists in France, and she never received significant financial benefits from her work. By the late 1920s her health was beginning to deteriorate. Curie died in Savoy, France, after a short illness, on July 4, 1934.

The Curies' eldest daughter Irene was herself a scientist and winner of the Nobel Prize for Chemistry.

* **Answer the questions**
* Where was Maria Skladowska born?
* What did the Curies discover?
* In what year were the Curies awarded the Nobel Prize for Physics?
* Marie was widowed in 1906, wasn’t she?
* What Nobel Prize did Maria received in 1911?
* Why were radioactive compounds important in medicine?
* Did the Curie’s research in the development of x-rays play a significant role during the World War I? Why?
* Did Maria have a great number of difficulties in her work?
* When and where did Maria die?
* Was the Curies’ daughter a scientist?
* **Glossary**
* Curies [´kjʊərɪ] - Кюри
* Becquerel [`bekərel] - Беккерель
* to be awarded – удостаиваться
* to build on the work of smb – основываться на чьей-либо работе
* crucial [´kruːʃ(ə)l] – решающий
* to equip – оборудовать
* to devote yourself – посвящать себя
* to investigate - исследовать
* surgery [´səːdʒərɪ] – хирургия
* a medical orderly  - санитар
* to deteriorate [dɪ´tɪərɪəˏreɪt] – ухудшаться
* radium [´reɪdɪəm] – радий
* polonium [pəl´əʊnɪəm] – полоний

**TEXT 2**

**CARL FRIEDRICH GAUSS**

Carl Friedrich Gauss was born on April 30, 1777 in the city of Brunswick, Germany. He is sometimes referred to as the "Prince of Mathematicians" and the "greatest mathematician since antiquity". He has had a remarkable influence in many fields of mathematics and science and is ranked as one of history's most influential mathematicians.

Gauss was a child prodigy. There are many anecdotes concerning his precocity as a child, and he made his first ground-breaking mathematical discoveries while still a teenager. At just three years old, he corrected an error in his father payroll calculations, and he was looking after his father’s accounts on a regular basis by the age of 5. At the age of 7, he is reported to have amazed his teachers by summing the integers from 1 to 100 almost instantly. By the age of 12, he was already attending gymnasium and criticizing Euclid’s geometry.

Although his family was poor and working class, Gauss' intellectual abilities attracted the attention of the Duke of Brunswick, who sent him to the Collegium Carolinum at 15, and then to the prestigious University of Göttingen (which he attended from 1795 to 1798). It was as a teenager attending university that Gauss discovered (or independently rediscovered) several important theorems.

At 15, Gauss was the first to find any kind of a pattern in the occurrence of prime numbers, a problem which had exercised the minds of the best mathematicians since ancient times. Although the occurrence of prime numbers appeared to be almost completely random, Gauss approached the problem from a different angle by graphing the incidence of primes as the numbers increased. He noticed a rough pattern or trend: as the numbers increased by 10, the probability of prime numbers occurring reduced by a factor of about 2 (e.g. there is a 1 in 4 chance of getting a prime in the number from 1 to 100, a 1 in 6 chance of a prime in the numbers from 1 to 1,000, a 1 in 8 chance from 1 to 10,000, 1 in 10 from 1 to 100,000, etc). However, he was quite aware that his method merely yielded an approximation and, as he could not definitively prove his findings, and kept them secret until much later in life.

In Gauss’s annus mirabilis of 1796, at just 19 years of age, he constructed a hitherto unknown regular seventeen-sided figure using only a ruler and compass, a major advance in this field since the time of [Greek](https://www.storyofmathematics.com/greek.html) mathematics, formulated his prime number theorem on the distribution of prime numbers among the integers, and proved that every positive integer is representable as a sum of at most three triangular numbers.

Although he made contributions in almost all fields of mathematics, number theory was always Gauss’ favourite area, and he asserted that “mathematics is the queen of the sciences, and the theory of numbers is the queen of mathematics”. An example of how Gauss revolutionized number theory can be seen in his work with complex numbers (combinations of real and imaginary numbers).

At the age of just 22, he proved what is now known as the Fundamental Theorem of Algebra (although it was not really about algebra). The theorem states that every non-constant single-variable polynomial over the complex numbers has at least one root (although his initial proof was not rigorous, he improved on it later in life). What it also showed was that the field of complex numbers is algebraically "closed" (unlike real numbers, where the solution to a polynomial with real co-efficients can yield a solution in the complex number field).

Then, in 1801, at 24 years of age, he published his book “Disquisitiones Arithmeticae”, which is regarded today as one of the most influential mathematics books ever written, and which laid the foundations for modern number theory. Among many other things, the book contained a clear presentation of Gauss’ method of modular arithmetic, and the first proof of the law of quadratic reciprocity (first conjectured by [Euler](https://www.storyofmathematics.com/18th_euler.html) and Legendre).

For much of his life, Gauss also retained a strong interest in theoretical astrononomy, and he held the post of Director of the astronomical observatory in Göttingen for many years. When the planetoid Ceres was in the process of being identified in the late 17th Century, Gauss made a prediction of its position which varied greatly from the predictions of most other astronomers of the time. But, when Ceres was finally discovered in 1801, it was almost exactly where Gauss had predicted. Although he did not explain his methods at the time, this was one of the first applications of the least squares approximation method, usually attributed to Gauss, although also claimed by the Frenchman Legendre. Gauss claimed to have done the logarithmic calculations in his head.

As Gauss’ fame spread, though, and he became known throughout Europe as the go-to man for complex mathematical questions, his character deteriorated and he became increasingly arrogant, bitter, dismissive and unpleasant, rather than just shy. There are many stories of the way in which Gauss had dismissed the ideas of young mathematicians or, in some cases, claimed them as his own.

He also made this first systematic study of modular arithmetic - using integer division and the modulus - which now has applications in number theory, abstract algebra, computer science, cryptography, and even in visual and musical art.

While engaged on a rather banal surveying job for the Royal House of Hanover in the years after 1818, Gauss was also looking into the shape of the Earth, and starting to speculate on revolutionary ideas like shape of space itself. This led him to question one of the central tenets of the whole of mathematics, Euclidean geometry, which was clearly premised on a flat, and not a curved, universe. He later claimed to have considered a non-Euclidean geometry (in which [Euclid](https://www.storyofmathematics.com/hellenistic_euclid.html)'s parallel axiom, for example, does not apply), which was internally consistent and free of contradiction, as early as 1800. Unwilling to court controversy, however, Gauss decided not to pursue or publish any of his avant-garde ideas in this area, leaving the field open to [Bolyai and Lobachevsky](https://www.storyofmathematics.com/19th_bolyai.html), although he is still considered by some to be a pioneer of non-Euclidean geometry.

Gauss’ achievements were not limited to pure mathematics, however. During his surveying years, he invented the heliotrope, an instrument that uses a mirror to reflect sunlight over great distances to mark positions in a land survey. In later years, he collaborated with Wilhelm Weber on measurements of the Earth's magnetic field, and invented the first electric telegraph. In recognition of his contributions to the theory of electromagnetism, the international unit of magnetic induction is known as the gauss.

* **Answer the questions**
* When and where was Carl Friedrich Gauss born?
* Why is he referred to as the “Prince of Mathematicians”?
* Gauss was the first to find any kind of a pattern in the occurrence of prime numbers, wasn’t he?
* What is a favourite area of Gauss?
* What theory is the queen of mathematics?
* What does the Fundamental Theorem of Algebra state?
* What book is regarded today as one of the most influential mathematics books ever written?
* Gauss held the post of Director of the astronomical observatory in Göttingen for many years, didn’t he?
* What instrument did Gauss invent?
* What unit is known as the gauss?
* **Glossary**
* influential [ˏɪnflʊ´enʃ(ə)l] – влиятельный
* remarkable [rɪ´mɑːkəb(ə)l]  – удивительный
* a child prodigidy – вундеркинд, талантливый и не по возрасту развитой ребёнок
* precocity [prɪˈkɒsɪtɪ] – раннее развитие
* ground-breaking – новаторский, инновационный
* payroll calculations – начисление зарплаты
* to amaze – удивлять, поражать
* to look after – следить, присматривать
* integer – целое число
* instantly [`ɪnstəntlɪ]  – мгновенно, моментально
* to attend gymnasium – посещать гимназию
* important – важный
* occurrence [ə´kʌrəns] – явление, расположение
* a prime number – простое число
* graphing – вычерчивание диаграммы
* incidence [´ɪnsɪd(ə)ns] – распределение, распространение
* to be aware – осознавать
* merely [´mɪəlɪ] – просто
* annus mirabilis [ˌænəsmɪˈrɑːb(ə)lɪs] – судьбоносный год, знаменательный год
* hitherto [ˌhɪðəˈtuː] – до настоящего времени, до сих пор
* regular seventeen-sided figure – правильный семнадцатиугольник
* ruler – линейка
* compass – циркуль
* triangular number [traɪ´æŋgjʊlə(r)] – треугольное число
* to assert [ə´səːt] – заявлять
* complex number – сложное число
* non-constant single-variable polynomial – непостоянный многочлен от одной переменной
* root – корень
* rigorous [´rɪgərəs] – точный, неукоснительный
* to improve on – усовершенствовать
* to retain a strong interest – сохранять/поддерживать большой интерес
* planetoid Ceres [`sɪ(ə)riːz] – астероид Церера
* exactly  [ɪg´zæktlɪ] – точно
* to deteriorate [dɪ´tɪərɪəˏreɪt] – ухудшаться, портиться
* go-to – ключевой, компетентный
* arrogant [´ærəgənt] – высокомерный
* bitter – резкий
* dismissive [dɪs´mɪsɪv] – пренебрежительный
* modular arithmetic [ə`rɪθmətɪk] - модульная арифметика (арифметические операции над абсолютными значениями чисел)
* engaged [ɪn´geɪdʒ] – занятый
* premised on – основан на
* heliotrope [´hiːlɪəˏtrəʊp]– гелиотроп

**TEXT 3**

**NIKOLAY LOBACHEVSKY**

**Nikolay Ivanovich Lobachevsky was born in 1792 in** [Nizhny Novgorod](https://www.britannica.com/place/Nizhny-Novgorod). He was a Russian mathematician, a founder of non-Euclidean geometry, the figure of university education and public enlightenment.

After the death of his father, Nikolai Lobachevsky with his mother and brothers moved to Kazan. In 1802, he entered the school, and in 1807 - the [Kazan University](https://www.prlib.ru/en/history/619730). In 1811 Lobachevsky received a Master's degree in physics and mathematics with honors and stayed at the university. In 1822 he became a professor.

In Kazan University Lobachevsky, along with mathematical disciplines, lectured on astronomy, expanding and deepening their content. Together with his student, M. V. Lyapunov he participated in an expedition to Penza to observe a total solar eclipse in July 1842. He also conducted astronomical observations as well as improved the methods of their treatment.

In 1827 Nikolai was appointed rector of Kazan University. In this role, he led an intensive scientific research and teaching. Lobachevsky was in charge of the university library, was the curator of the museum, initiated the publication and edited "Scientific notes of the Kazan University". In 1833-1837 on his initiative at the university was built a new observatory, one of the best at the time, which was launched in 1838, a year earlier than the [Pulkovo](https://www.prlib.ru/en/history/619472) one.

The main achievement of Lobachevsky was the creation of a new geometric system - the so-called non-Euclidean geometry or the geometry of Lobachevsky, described in his work "About the fundamentals of geometry" (1829). Nikolai was the first to try to use the data of astronomical observations (parallaxes of stars) to determine the properties of space and time, and to decide which of the two geometries - the classical Euclidean or the one created by him - corresponds to real conditions in the physical space. Lobachevsky presented his work at a meeting of the Physics and Mathematics, the Kazan University. The essay he proposed was called "A summary of the fundamentals of geometry with a strict proof of the theorem of parallel lines."

Among the published works of the scientist on geometry are: "On the fundamentals of geometry" (1829-1830), "Imaginary geometry" (1835), "The application of imaginary geometry to certain integrals" (1836), "New fundamentals of geometry with complete theory of parallel lines" (1835 - 1838), "Geometric studies on the theory of parallel lines" (1840).

Lobachevsky’s discovery was not recognized by his contemporaries, but later made a revolution in the notion about the nature of space. European scientists learned about the work of Lobachevsky only in 1840, and in 1842 he was elected a corresponding member of the Göttingen Royal Society as "one of the great mathematicians of the Russian state."

Nikolai is the author of a number of fundamental works in the field of algebra ("Algebra or calculus finites." 1834 and others) and mathematical analysis ("On the disappearance of trigonometric lines." 1834, "On the convergence of infinite series." 1841, "On the meaning of some definite integrals." 1852, etc.). In the field of analysis Lobachevsky obtained new results in the theory of trigonometric series. He also discovered one of the most convenient methods of approximate solutions of equations (the method of Lobachevsky).

Mathematician Nikolai Ivanovich Lobachevsky died in 1856 in Kazan.

Lobachevsky’s geometry found a wide recognition on his 100th birthday – there was established an international award (1895), and a monument to the scientist was set up in 1896 in Kazan.

* **Answer the questions**
* In what year did Nikolay Lobachevsky receive a Master’s degree?
* Where did he build a new observatory?
* Why did Lobachevsky try to use the data of astronomical observations?
* What disciplines did Lobachevsky lecture on?
* In 1827 Nikolai was appointed rector of Kazan University, wasn’t he?
* What is the main achievement of Nikolay Lobachevsky?
* What works did Lobachevsky publish on geometry?
* Was his discovery recognized by his contemporaries?
* What results did Lobachevsky obtain in the field of analysis?
* In what year did Lobachevsky’s geometry find a wide recognition?
* **Glossary**
* enlightenment [ɪn´laɪtənmənt] – просвещение
* a total solar eclipse – полное солнечное затмение
* treatment – исследование
* to appoint – назначать
* to be in charge (of) – руководить, управлять
* parallax [´pærəˏlæks] – параллакс, смещение

**TEXT 4**

**MICHAEL FARADAY**

Michael Faraday was a British chemist and physicist who contributed significantly to the study of electromagnetism and electrochemistry.

Michael Faraday was born in 1791 in south London. His family was not well off and Faraday received only a basic formal education. When he was 14, he was apprenticed to a local bookbinder and during the next seven years, educated himself by reading books on a wide range of scientific subjects. In 1812, Faraday attended four lectures given by the chemist Humphry Davy at the Royal Institution. Faraday subsequently wrote to Davy asking for a job as his assistant. Davy turned him down but in 1813 appointed him to the job of chemical assistant at the Royal Institution.

A year later, Faraday was invited to accompany Davy and his wife on an 18 month European tour, taking in France, Switzerland, Italy and Belgium and meeting many influential scientists. On their return in 1815, Faraday continued to work at the Royal Institution, helping with experiments for Davy and other scientists. In 1821 he published his work on electromagnetic rotation (the principle behind the electric motor). He was able to carry out little further research in the 1820s, busy as he was with other projects. In 1826, he founded the Royal Institution's Friday Evening Discourses and in the same year the Christmas Lectures, both of which continue to this day. He himself gave many lectures, establishing his reputation as the outstanding scientific lecturer of his time.

In 1831, Faraday discovered electromagnetic induction, the principle behind the electric transformer and generator. This discovery was crucial in allowing electricity to be transformed from a curiosity into a powerful new technology. During the remainder of the decade he worked on developing his ideas about electricity. He was partly responsible for coining many familiar words including 'electrode', 'cathode' and 'ion'. Faraday's scientific knowledge was harnessed for practical use through various official appointments, including scientific adviser to Trinity House (1836-1865) and Professor of Chemistry at the Royal Military Academy in Woolwich (1830-1851).

However, in the early 1840s, Faraday's health began to deteriorate and he did less research. He died in 1867 at Hampton Court, where he had been given official lodgings in recognition of his contribution to science. He gave his name to the 'farad', originally describing a unit of electrical charge but later a unit of electrical capacitance.

* **Answer the questions**
* Michael Faraday was a German scientist, wasn’t he?
* Who appointed Faraday to the job of chemical assistant at the Royal Institution?
* What work did he publish in 1821?
* What did Faraday found in 1826?
* Why did he receive only a basic formal education?
* What words did Faraday coin?
* Why was his discovery of electromagnetic induction crucial?
* He was an outstanding lecturer of his time, wasn’t he?
* Why did he do less research in the early 1840s?
* What is the farad?
* **Glossary**
* well off – состоятельный, зажиточный
* to apprentice [ə´prentɪs]  – отдавать в учение
* bookbinder [`bʊkˏbaɪndə] – переплетчик
* subsequently [`sʌbsɪkwəntlɪ] – впоследствии, затем
* to turn down – отказывать
* a scientific adviser – научный советник
* to coin – создавать новые слова, выражения
* responsible – ответственный
* capacitance [kəˈpæsɪt(ə)n(t)s] – емкостное сопротивление

**TEXT 5**

**HEINRICH HERTZ**

German physicist Heinrich Hertz discovered radio waves, a milestone widely seen as confirmation of [James Clerk Maxwell’s](https://nationalmaglab.org/education/magnet-academy/history-of-electricity-magnetism/pioneers/james-clerk-maxwell)electromagnetic theory and which paved the way for numerous advances in communication technology.

Born in Hamburg on February 22, 1857, Hertz was the eldest of five children. In his youth Heinrich displayed an interest in building things, and as a teenager he constructed a spectroscope and a galvanometer that were so well designed that Hertz used them throughout his college years. Initially Hertz planned a career in engineering, but after a year of employment at the public works office in Frankfurt, a summer of classes at the Polytechnic in Dresden, a year of military service in Berlin, and a brief stint in the engineering department at the University of Munich, he finally decided to pursue the subject that most deeply interested him: science.

Throughout his life Hertz read works on science and carried out experiments as a hobby. But once he decided that science was to be his career, he applied himself to these tasks with even greater enthusiasm. In 1877 he studied various scientific treatises and he gained some laboratory experience by working with Gustav von Jolly. Subsequently he enrolled at the University of Berlin, where he was privileged to study under the great German physicist Hermann von Helmholtz. With Helmholtz’s encouragement, Hertz resolved to compete for a research prize to be awarded to the student best able to determine whether or not electricity moved with inertia. Hertz began a series of experiments into the matter, and this mode of learning seemed to suit him.

In August of 1879, Hertz won the prize for his evidence demonstrating that electricity had no inertia. Another prize problem was soon proposed by Helmholtz, who wanted students to attempt to prove which of the theories of electromagnetic phenomena then circulating was correct. Interestingly, Hertz did not choose to compete for this prize, but years later would be the first person to successfully provide the kind of definitive evidence that Helmholtz sought. At the time, Hertz instead embarked on a study of induction produced by rotating spheres. His work in this area helped him earn his doctorate degree ahead of schedule, in 1880, magna cum laude.

Hertz’s first academic post was as lecturer of theoretical physics at the University of Kiel, but due to his dissatisfaction there he accepted a position at the Karlsruhe Polytechnic in 1885. It was at Karlsruhe, where he remained until he received an appointment as physics professor at the University of Bonn in 1889, that Hertz carried out his most important work. In 1886, Hertz began experimenting with sparks emitted across a gap in a short metal loop attached to an induction coil. He soon built a similar apparatus, but without the induction coil, to act as a detector. When the induction coil connected to the first loop (the transmitter) produced a high voltage discharge, a spark jumped across the gap, sending out a signal that Hertz detected as a weaker spark across the gap in the receiving apparatus, which he placed nearby. To determine the nature of the signals that he was able to transmit and receive, Hertz developed a number of innovative experiments.

By measuring side sparks that formed around the primary spark and varying the position of the detector, Hertz was able to determine that the signal exhibited a wave pattern, and to ascertain its wavelength. Then, by using a rotating mirror, he found the frequency of the invisible waves, which enabled him to calculate their velocity. Amazingly, the waves were moving at the speed of light. Thus, it appeared to Hertz that he had discovered a previously unknown form of electromagnetic radiation, and in the process confirmed James Clerk Maxwell’s theory of electromagnetism. To further prove that this was indeed the case, Hertz continued his experiments exploring the behavior of the invisible waves. He discovered that they traveled in straight lines and could be focused, diffracted, refracted and polarized. Hertz announced his initial discovery in late 1887 in his treatise **"On Electromagnetic Effects Produced by Electrical Disturbances in Insulators”**, which he sent to the Berlin Academy. He later published additional details following the series of experiments he carried out in 1888. For a time the waves he discovered were commonly referred to as **Hertzian waves**, but today they are known as [radio](https://nationalmaglab.org/education/magnet-academy/history-of-electricity-magnetism/pioneers/heinrich-hertz) waves.

In addition to his radio wave breakthrough, Hertz is notable for the discovery of the **photoelectric effect**, which occurred while he was investigating electromagnetic waves. Because of some difficulty in detecting the small spark produced in his receiving apparatus, Hertz sometimes placed the receiver in a dark case. This, he found, affected the maximum length of the spark, which was smaller than when he did not use the case. With further research into the phenomenon, Hertz discovered that the spark produced was stronger if it was exposed to ultraviolet light. Though he did not attempt to explain this fact, others, including [J.J. Thomson](https://nationalmaglab.org/education/magnet-academy/history-of-electricity-magnetism/pioneers/joseph-john-thomson) and Albert Einstein, would soon realize its importance. The phenomenon of electrons being released from a material when it absorbs radiant energy, which was the cause of the stronger sparks observed by Hertz when ultraviolet radiation was used, would come to be known as the photoelectric effect.

After 1889, when Hertz was teaching at the University of Bonn, he studied electrical discharges in rarefied gases and spent a significant amount of time composing his **Principles of Mechanics**. Unfortunately, he never saw the work published due to his premature death associated with blood poisoning on New Year’s Day 1894. Only 37 years old at the time, Hertz also never lived to see the tremendous impact the discovery of radio waves would have on the world in the 20th century.

* **Answer the questions**
* What did Heinrich Hertz discover?
* What apparatus did Hertz construct as a teenager ?
* Did he want to be a scientist?
* What was his hobby?
* What helped Hertz to earn his doctorate degree?
* What experiments did he carry out in 1886?
* Why did he develop a number of experiments?
* What are **Hertzian waves?**
* When did he study electrical discharges in rarefied gases?
* Why wasn’t his work “Principles of Mechanics” published?
* **Glossary**
* to display – показывать, демонстрировать
* employment  [ɪm´plɔɪmənt] – работа
* military service – военная служба
* to pursue [pə´sjuː] – преследовать, добиваться
* to carry out – выполнять
* treatise [´triːtɪs] – трактат, научный труд
* to gain experience – приобретать опыт
* encouragement [ɪn´kʌrɪdʒmənt] – поддержка
* to enroll – поступать
* evidence [´evɪd(ə)ns] – доказательство
* to attempt – пытаться
* to embark (on) – начинать, приступать
* magna cum laude – с отличием (о дипломе, аттестате)
* an induction coil – индукционная катушка
* loop – петля, металлическое кольцо
* spark – искра
* to ascertain [ˏæsə´teɪn]  – устанавливать
* velocity – скорость
* to confirm [kən´fəːm] – подтверждать
* to diffract – рассеивать
* to refract – преломлять
* notable for – известный за
* radiant energy [´reɪdɪənt – радиационная энергия/излучаемая энергия
* premature death – преждевременная смерть
* impact – воздействие, влияние

**TEXT 6**

**ALESSANDRO VOLTA**

Alessandro Volta was born in 1745 in Italy. He was an Italian physicist whose [invention](https://www.britannica.com/technology/invention-technology) of the electric [battery](https://www.britannica.com/technology/battery-electronics) provided the first source of continuous [current](https://www.britannica.com/science/electric-current).

Volta became a professor of [physics](https://www.britannica.com/science/physics-science) at the Royal School of Como in 1774. In 1775 his interest in [electricity](https://www.britannica.com/science/electricity) led him to improve the [electrophorus](https://www.britannica.com/technology/electrophorus), a device used to generate static electricity. He discovered and isolated [methane](https://www.britannica.com/science/methane) gas in 1776. Three years later he was appointed to the chair of physics at the University of Pavia.

In 1791 Volta’s friend [Luigi Galvani](https://www.britannica.com/biography/Luigi-Galvani) announced that the contact of two different [metals](https://www.britannica.com/science/metal-chemistry) with the [muscle](https://www.britannica.com/science/muscle) of a [frog](https://www.britannica.com/animal/frog) resulted in the generation of an electric current. Galvani interpreted that as a new form of electricity found in living tissue, which he called “animal electricity.” Volta felt that the frog merely conducted a current that flowed between the two metals, which he called “metallic electricity.” He began experimenting in 1792 with metals alone. (He would detect the weak flow of electricity between disks of different metals by placing them on his tongue.) Volta found that animal tissue was not needed to produce a current. That provoked much controversy between the animal-electricity adherents and the metallic-electricity advocates, but, with his announcement of the first electric battery in 1800, victory was assured for Volta.

Known as the [voltaic pile](https://www.britannica.com/technology/voltaic-pile) or the voltaic column, Volta’s battery consisted of alternating disks of [zinc](https://www.britannica.com/science/zinc) and [silver](https://www.britannica.com/science/silver) (or [copper](https://www.britannica.com/science/copper) and [pewter](https://www.britannica.com/technology/pewter)) separated by paper or cloth soaked either in [salt water](https://www.britannica.com/science/seawater) or [sodium](https://www.britannica.com/science/sodium) hydroxide. A simple and reliable source of electric current that did not need to be recharged like the [Leyden jar](https://www.britannica.com/technology/Leyden-jar), his invention quickly led to a new wave of electrical experiments. Within six weeks of Volta’s announcement, English scientists [William Nicholson](https://www.britannica.com/biography/William-Nicholson-English-chemist-and-inventor) and Anthony Carlisle used a voltaic pile to decompose [water](https://www.britannica.com/science/water) into [hydrogen](https://www.britannica.com/science/hydrogen) and [oxygen](https://www.britannica.com/science/oxygen), thus discovering [electrolysis](https://www.britannica.com/science/electrolysis) (how an electric current leads to a [chemical reaction](https://www.britannica.com/science/chemical-reaction)) and creating the field of [electrochemistry](https://www.britannica.com/science/electrochemistry).

In 1801 in Paris Volta gave a demonstration of his battery’s generation of electric current before [Napoleon](https://www.britannica.com/biography/Napoleon-I), who made Volta a [count](https://www.britannica.com/topic/count) and a senator of the kingdom of [Lombardy](https://www.britannica.com/place/Lombardy). The Austrian emperor [Francis I](https://www.britannica.com/biography/Francis-II-Holy-Roman-emperor) made him a director of the philosophical faculty at the [University of Padua](https://www.britannica.com/topic/University-of-Padua) in 1815.

In 1819, at the age of 74, Volta decided it was time to hang up his capacitors, his voltaic piles, his electrophorus, and his administrative work at the university. He retired to a country house close to his home town of Como, where he could spend more time with his wife, Maria Teresa. They had three sons, Zanino, Faminio and Luigi.

Volta lived in Como until his death, aged 82, on March 5, 1827.

The [volt](https://www.britannica.com/science/volt-unit-of-measurement), a unit of the [electromotive force](https://www.britannica.com/science/electromotive-force) that drives current, was named in his honour in 1881.

* **Answer the questions**
* What did Alessandro invent?
* Where was he born?
* When was he appointed to the chair of physics at the University of Pavia?
* What did Luigi Galvani announce in 1791?
* What is the voltaic pile?
* How did William Nicholson and Anthony Carlisle use a voltaic pile?
* Who made Volta a count and a senator of the kingdom of Lombardy?
* When did Volta decide to hang up his capacitors, his voltaic piles, his electrophorus, and his administrative work at the university?
* Where did he live until his death?
* What is the volt?
* **Glossary**
* [electrophorus](https://www.britannica.com/technology/electrophorus) [ɪlek`trɒfərəs] – электрофор
* to announce – заявить
* animal electricity – животное электричество
* animal tissue [´tɪʃuː ] – животная ткань
* to provoke – вызывать
* adherent [əd´hɪərənt]  – приверженец, сторонник
* controversy [´kɒntrəˏvəːsɪ] – спор, разногласие
* to assure [ə´ʃʊə(r)] – обеспечивать
* a [voltaic pile](https://www.britannica.com/technology/voltaic-pile) – гальваническая батарея, вольтов столб
* zinc [zɪŋk] – цинк
* silver – серебро
* [copper](https://www.britannica.com/science/copper) [´kɒpə(r)] – медь
* [pewter](https://www.britannica.com/technology/pewter) [´pjuːtə(r)] – сплав олова со свинцом
* to separate – разделять, отделять
* to result in – приводить к
* to soak [səʊk] – смачивать, замачивать
* [sodium](https://www.britannica.com/science/sodium) hydroxide [´səʊdɪəm haɪ´drɒksaɪd] – гидроокись натрия, едкий натр
* [Leyden jar](https://www.britannica.com/technology/Leyden-jar) [`laɪdn`ʤɑː] – лейденская банка
* to decompose – разложить, разлагать на составные части
* count - граф

**TEXT 7**

**ALBERT EINSTEIN**

Albert Einstein was born in 1879 in Ulm, Germany. He was the first child born to Hermann and Pauline Einstein. Though he attended school as a young boy, he also received instruction at home on Judaism and violin. By the age of 12 he had taught himself geometry. At the age of 16 he failed an exam in order to qualify to train as an electrical engineer. He decided to develop a new plan for his future. Einstein decided to study math and [physics](https://starchild.gsfc.nasa.gov/docs/StarChild/glossary_level2/glossary_text.html#physics) so he could become a teacher. Einstein thought he would be good at this because he could think mathematically and abstractly while lacking imagination and practicality.

In 1896 he renounced his German citizenship. He was not a citizen of any country until 1901 when he became a citizen of Switzerland. In 1900 he graduated as a teacher of math and physics. His teachers did not think very highly of him though so he had difficulty being recommended for a job at a university. In 1901 he took a job as a temporary high school teacher and married Mileva Maritsch. The couple had two sons prior to divorcing. Einstein later married his cousin Elsa Einstein. From 1902 through 1909, Einstein worked in a patent office in Bern, Switzerland. While working in the patent office he published many papers on theoretical physics. He earned a Ph.D. in 1905.

In 1905 Einstein wrote a paper on what is now known as the special theory of relativity. This paper contained two hypotheses. The first stated that the laws of physics had to have the same form in any frame of reference. The second hypothesis stated that the speed of light was a constant. Later that year Einstein also showed how [mass](https://starchild.gsfc.nasa.gov/docs/StarChild/glossary_level2/glossary_text.html#mass) and [energy](https://starchild.gsfc.nasa.gov/docs/StarChild/glossary_level2/glossary_text.html#energy) were equivalent. Following an impressive few years of work, Einstein became a lecturer at the University of Bern. In 1909 he finally got a post at a university when he became a faculty member at the University of Zurich. In 1911 Einstein taught at Carl-Ferdinand University in Prague. The following year he returned to Germany to continue his work. In 1916 Einstein published his general theory of relativity. This theory linked [gravitation](https://starchild.gsfc.nasa.gov/docs/StarChild/glossary_level2/glossary_text.html#gravity), acceleration and the four dimensional space-time. With this theory he was able to account for the variations in the [orbital](https://starchild.gsfc.nasa.gov/docs/StarChild/glossary_level2/glossary_text.html#orbit) motions of the planets. He also predicted that starlight in the vicinity of a massive object such as the Sun could be bent. This was confirmed in 1919 during a [solar eclipse](https://starchild.gsfc.nasa.gov/docs/StarChild/glossary_level2/glossary_text.html" \l "solar_eclipse). This further increased the adulation with which the press viewed Einstein. He won the Nobel Prize for Physics in 1921 for his work on the photoelectric effect. This work proposed that light be considered as consisting of particles called photons. Einstein further proposed that the energy the photon contains is proportional to the frequency of the radiation.

Einstein was not only a scientist, but also a social activist and a humanitarian. He spoke out against the German involvement in World War I. In 1920 a demonstration interrupted a lecture given by Einstein in Berlin. There was also growing criticism of his work by certain Germans. Einstein felt the disruptions and criticisms were occurring because he was Jewish. Einstein traveled the world lecturing and raising funds for a planned Hebrew University in Jerusalem. His hectic lifestyle led to a physical collapse in 1928. By 1930 he was once again travelling the world, especially the United States. On one of these visits, he was offered a post with the Institute for Advanced Study near Princeton University. Einstein accepted, believing that he would spend seven months of the year in Munich and five months of the year in the United States. In December of 1932 he left for the United States. A month after his departure the Nazis assumed control of Germany. Einstein never returned to Germany. In 1935 Einstein was granted permanent residency in the United States and became a citizen in 1940. In 1944 he handwrote his 1905 theory on relativity and allowed it to be auctioned. It sold for six million dollars, which he donated to the effort to win World War II. The work resides in the Library of Congress in Washington, D.C. By 1949 Einstein was in failing health. His health was so bad that when offered the presidency of Israel in 1952 he had to decline it. In 1955, one week prior to his death, he agreed to have his name appear on a manifesto calling for the end to nuclear weapons. He died in April of 1955 in Princeton, New Jersey. Einstein was cremated and his ashes were spread at an undisclosed location.

* **Answer the questions**
* Why did Albert Einstein decide to study math and physics?
* Was he a citizen of Germany in 1901?
* When did he write the special theory of relativity?
* How many hypotheses did this theory have? What did they state?
* When did Einstein win the Nobel Prize for Physics?
* Was Einstein only a scientist?
* Did he approve of the German involvement in World War I?
* Why he was criticized by certain Germans?
* Why did Einstein leave Germany?
* Where he was buried?
* **Glossary**
* to fail an exam – провалиться на экзамене
* in order to – для того, чтобы
* electrical engineer – инженер-электрик
* lacking – лишенный чего-либо, не имеющий
* to renounce [rɪ`naʊns] – отказываться
* citizenship [`sɪtɪz(ə)nʃɪp] – гражданство
* temporary [´tempərərɪ] – временный
* prior to [`praɪətʊ – до, прежде
* to divorce [dɪ´vɔːs] – разводиться
* patent office [`peɪt(ə)nt|ˏɒfɪs] – бюро патентов
* Ph.D. (Doctor of Philosophy) – доктор философии
* a frame of reference – система отсчета, система координат
* constant – постоянный, неизменный
* a faculty member – преподаватель (в вузе)
* to link – соединять, связывать
* space-time – пространство-время
* variation  [ˏveərɪ´eɪʃ(ə)n] – изменение
* vicinity [vɪ´sɪnɪtɪ]  – близость, соседство
* solar eclipse – солнечное затмение
* frequency  [´friːkwənsɪ] – частота
* humanitarian – гуманист
* to speak out against – высказываться против, выступать против
* involvement  [ɪn´vɒlvmənt]  – участие
* hectic – бурный, беспокойный
* to handwrite – писать от руки
* to auction [´ɔːkʃ(ə)n] – продавать с аукциона
* to donate – жертвовать
* effort [´efət] – попытка, усилие
* to reside in – находиться
* – неизвестный

**TEXT 8**

**ISAAC NEWTON**

Isaac Newton was born in 1643 in [Lincolnshire](https://www.britainexpress.com/counties/lincs/index.htm). His father, also named Isaac, died before he was born. Isaac's mother Hannah remarried when Isaac was only two years old, and he was left in the care of his grandmother.

He was educated at Grantham Free Grammar School, where he showed no aptitude for study. His mother removed him from school and gave him the task of managing her estate, but at this he also proved unfortunately inept.

He was allowed to return to school, and he must have improved his study habits, for his mother was persuaded to allow him to enter university at [Trinity College, Cambridge](https://www.britainexpress.com/counties/cambridgeshire/az/cambridge/trinity-college.htm).

Newton intended to study law, but his taste quickly turned to mathematics. He received his bachelor's degree in the spring of 1665, but then an outbreak of the plague forced the university to close, and Newton returned to his Lincolnshire home.

It was during this time of retreat that the famous incident of a falling apple gave Newton the first glimmerings of the ideas he later developed into his study of gravitational forces.

In the two years he spent in inadvertent exile from Cambridge, Newton made extraordinary strides in mathematics, creating the basis of modern calculus. He wrote *De Methodis Serierum et Fluxionum* in 1671, though it was not published during his lifetime.   
  
 When Cambridge reopened, Newton became a Fellow of Trinity College. His fresh ideas began to circulate among the leading mathematicians of the day. He also delved into astronomy and optics.   
  
 He was one of the first to argue that white light is actually composed of many different colours, and he constructed one of the first reflecting telescopes. He donated one of his telescopes to the Royal Society in 1672, and was named a full fellow of the society. Unfortunately, Newton quarreled with several of the leading scientists of the time, and was reluctant to publish his experiments and philosophies.   
  
 It was only under the urging of astronomer Edmund Halley (he of Halley's Comet fame) that Newton was persuaded to publish his ideas on physics and astronomy, *Philosophiae naturalis principia mathematica* (1687). In this work he first laid out his law of universal gravitation. The book provoked a storm of scientific argument and admiration.   
  
 Shortly after this he was elected to Parliament as a representative of the university. In 1693 Newton suffered a nervous breakdown, and a few years later he became Master of the Royal Mint. He was elected president of the Royal Society in 1703, a position he held until his death. In 1705 he became the first scientist to be knighted for his work.   
  
 Newton remained suspicious of his fellow scientists, and protective of his ideas and his reputation. His final years were given over to a distasteful conflict with Liebniz, disputing who had invented calculus. He went so far as to appoint a supposedly impartial committee of the Royal Society to decide the issue, however, it seems clear that he himself wrote the committee's report in his own favour.   
  
 Isaac Newton died on March 31, 1727, in London, and he was buried in Westminster Abbey.

* **Answer the questions**
* Why did Newton’s mother remove him from school?
* What did he intend to study?
* What gave Newton the first glimmerings of the ideas?
* Was his work “De Methodis Serierum et Fluxionum” published during his lifetime?
* What telescope did he construct?
* Where did Newton lay out his law of universal gravitation?
* When was he elected president of the Royal Society?
* Why was he knighted?
* Why did he have conflicts with Liebniz?
* Where did he die?
* **Glossary**
* aptitude (for)  [´æptɪˏtjuːd]  – склонность к
* estate – поместье, имение
* to prove - доказывать
* inept [ɪ´nept]  – неумелый, неспособный
* to persuade [pə´sweɪd] – убеждать
* to intend – намереваться, хотеть, собираться
* an outbreak of the plague – вспышка чумы
* to force – заставлять, принуждать
* glimmering [`glɪm(ə)rɪŋ] – проблеск
* inadvertent [ˏɪnəd´vəːt(ə)nt]  – непреднамеренный
* strides – успехи
* to delve  [delv] – погружаться, углубляться в изучение
* reflecting telescope – телескоп-рефлектор, отражательный телескоп
* to quarrel [´kwɒr(ə)l] – спорить, ссориться
* to be reluctant [rɪ´lʌkt(ə)nt] – быть вынужденным, проявлять нежелание
* to provoke – вызывать , провоцировать
* a nervous breakdown – нервное расстройство
* admiration [ˏædmɪ´reɪʃ(ə)n] – восхищение, восторг
* to knight – [naɪt]  возводить в рыцарское достоинство
* suspicious [sə´spɪʃəs] – вызывающий подозрения
* a distasteful conflict  [dɪs´teɪstfʊl kən´flɪkt] – неприятный конфликт
* in smb’s favour [´feɪvə(r)] – в чью-либо пользу

**TEXT 9**

**NIKOLA TESLA**

Nikola Tesla was one of the greatest and most enigmatic scientists who played a key role in the development of electromagnetism and other scientific discoveries of his time. Despite his breathtaking number of patents and discoveries, his achievements were often underplayed during his lifetime.

Nikola Tesla was born in 1856 in Smiljan, Croatia, then part of the Austro-Hungarian Empire. Tesla was a bright student and in 1875 went to the Austrian Polytechnic in Graz. However, he left to gain employment in Marburg in Slovenia. Evidence of his difficult temperament sometimes manifested and after an estrangement from his family, he suffered a nervous breakdown. He later enrolled in the Charles Ferdinand University in Prague, but again he left before completing his degree.

In 1880, he moved to Budapest where he worked for a telegraph company. During this time, he became acquainted with twin turbines and helped develop a device that provided amplification for when using the telephone.

In 1882, he moved to Paris, where he worked for the Continental Edison Company. Here he improved various devices used by the Edison company. He also conceived the induction motor and devices that used rotating magnetic fields.

With a strong letter of recommendation, Tesla went to the United States in 1884 to work for the Edison Machine Works company. Here he became one of the chief engineers and designers. Tesla was given a task to improve the electrical system of direct current generators. Аfter completing his task, Tesla received no reward. This was one of several factors that led to a deep rivalry between Tesla and [Thomas Edison](https://www.biographyonline.net/scientists/thomas-edison.html). This deep rivalry was also seen as a reason why neither Tesla or Edison was awarded a Nobel prize for their electrical discoveries.

In 1886, Tesla formed his own company, but it wasn’t a success. In 1887, Tesla worked on a form of X-Rays. He was able to photograph the bones in his hand; he also became aware of the side-effects of using radiation. However, much of his research was later lost in a fire at a New York warehouse.

In 1891, Tesla became an American citizen. This was also a period of great advances in electrical knowledge. Tesla demonstrated the potential for wireless energy transfer and the capacity for AC power generation. As early as 1892, Nikola Tesla created a basic design for radio. On November 8, 1898 he patented a radio controlled robot-boat.  Tesla used this boat which was controlled by radio waves  in the Electrical Exhibition in 1898, Madison Square Garden.

In 1899, Tesla moved to Colorado Springs where he had the space to develop high voltage experiments. This included a variety of radio and electrical transmission experiments. Tesla began planning the Wardenclyffe Tower facility.

In 1904, the US patent office reversed his earlier patent for the radio, giving it instead to [G. Marconi](https://www.biographyonline.net/scientists/guglielmo-marconi-biography.html). This infuriated Tesla who felt he was the rightful inventor. He began a long, expensive and ultimately unsuccessful attempt to fight the decision. Marconi went on to win the Nobel Prize for physics in 1909.

Nikola Tesla also displayed fluorescent lamps and single node bulbs. Tesla was in many ways an eccentric and genius. His discoveries and inventions were unprecedented.

Outside of science, he had many artistic and literary friends; in later life he became friendly with [Mark Twain](https://www.biographyonline.net/writers/mark-twain.html), inviting him to his laboratory. He also took an interest in poetry, literature and modern Vedic thought.

Tesla was famous for working hard and throwing himself into his work. He ate alone and rarely slept, sleeping as little as two hours a day.  He remained unmarried and claimed that his chastity was helpful to his scientific abilities. In later years, he became a vegetarian, living on only milk, bread, honey, and vegetable juices.

Tesla passed away on 7 January 1943, in a New York hotel room.  He was 86 years old. After his death, in 1960 the General Conference on Weights and Measures named the SI unit of magnetic field strength the Tesla in his honour.

* **Answer the questions**
* Why did Nikola Tesla suffer a nervous breakdown?
* What device did he develop in 1880?
* What led to a deep rivalry between Tesla and [Thomas Edison](https://www.biographyonline.net/scientists/thomas-edison.html)?
* Why weren’t Nikola Tesla and Thomas Edison awarded a Nobel prize for their electrical discoveries?
* When did Tesla become an American citizen?
* What experiments did Tesla develop in Colorado Springs?
* When did he die?
* What is the Tesla?
* Did he play an important role in the development of electromagnetism and other scientific discoveries of his time?
* Was he interested only in science?
* **Glossary**
* enigmatic [ˏenɪg´mætɪk]  – загадочный, таинственный
* breathtaking [`breθˏteɪkɪŋ]  – поразительный, захватывающий
* to underplay – преуменьшать
* estrangement  [ɪn´geɪdʒmənt] – отдаление, отрыв
* startling [´stɑːtlɪŋ] – поразительный, потрясающий
* to acquaint with [ə´kweɪnt] – знакомить, познакомить с
* rotating magnetic field – вращающееся магнитное поле
* an induction motor – асинхронный элетродвигатель
* to conceive [kən´siːv]  – задумывать, дать начало чему-л.
* a chief engineer – главный инженер
* direct current generator – генератор постоянного тока
* rivalry [´raɪvəlrɪ] – соперничество, конкуренция
* neither…or… - ни…ни…
* become aware  [ə´weə(r) – понимать, осознавать
* side-effect – побочный эффект
* wireless energy transfer – беспроводная передача энергии
* Wardenclyffe Tower – башня Ворденклиф
* a fluorescent lamp  [flʊə´res(ə)nt]  – лампа дневного света
* chastity  [´tʃæstɪtɪ]  – целомудрие,
* to pass away – скончаться
* General Conference on Weights and Measures – Генеральная конференция мер и весов
* SI unit – единица международной системы единиц
* a magnetic field strength – плотность магнитного потока
* in honour [´ɒnə(r)]  – в честь

**TEXT 10**

**THOMAS EDISON**

He was born in 1847, in Milan, Ohio. He was nicknamed “Al” at an early age. At age 11, Edison moved to Michigan where he spent the remainder of his childhood.

Thomas Edison was an American [inventor](https://en.wikipedia.org/wiki/Inventor) and businessman, who has been described as America's greatest inventor. He is credited with developing many devices in fields such as [electric power generation](https://en.wikipedia.org/wiki/Electric_power_generation), [mass communication](https://en.wikipedia.org/wiki/Mass_communication), [sound recording](https://en.wikipedia.org/wiki/Sound_recording), and [motion pictures](https://en.wikipedia.org/wiki/Motion_pictures). These inventions, which include the [phonograph](https://en.wikipedia.org/wiki/Phonograph), the [motion picture camera](https://en.wikipedia.org/wiki/Movie_camera), and the long-lasting, practical electric [light bulb](https://en.wikipedia.org/wiki/Incandescent_light_bulb), had a widespread impact on the modern [industrialized world](https://en.wikipedia.org/wiki/Industrial_society). He was one of the first inventors to apply the principles of [mass production](https://en.wikipedia.org/wiki/Mass_production) and teamwork to the process of invention, working with many researchers and employees. He is often credited with establishing the first industrial [research laboratory](https://en.wikipedia.org/wiki/Research_laboratory).

Thomas Edison struggled in school but learned to love reading and conducting experiments from his mother who taught him at home. At age 15, Edison became a “tramp telegrapher,” sending and receiving messages via Morse code, an electronically conveyed alphabet using different clicks for each letter. Eventually, he worked for the Union Army as a telegrapher. Edison often entertained himself by taking things apart to see how they worked. Soon, he decided to become an inventor.

In 1870, Edison moved to New York City and improved the stock ticker. He soon formed his own company that manufactured the new stock tickers. He also began working on the telegraph and invented a version that could send four messages at once. Meanwhile, Edison married Mary Stillwell, had three children, and moved his family to Menlo Park, New Jersey, where he started his famous laboratory.

In 1877, Edison, with help from “muckers,” individuals from around the world looking to make fortunes in America, invented the phonograph. The phonograph was a machine that recorded and played back sounds. He perfected the phonograph by recording “Mary Had a Little Lamb” on a piece of tin foil! In 1878, Edison invented the light bulb as well as the power grid system, which could generate electricity and deliver it to homes through a network of wires. He subsequently started the Edison Electric Light Company in October of 1878.

In 1884, after he attained great fame and fortune, Mary Stillwell died. Edison remarried 20-year-old Mina Miller in 1886. He had three more children and moved to West Orange, New Jersey. At West Orange, Edison built one of the largest laboratories in the world. He worked extremely hard and registered 1,093 patents. Edison continued to invent or improve products and make significant contributions to X-ray technology, storage batteries, and motion pictures (movies). He also invented the world’s first talking doll. His inventions changed the world forever. They still influence the way we live today. Edison worked until his death on October 18, 1931.

* **Answer the questions**
* What devices did Thomas Edison invent?
* How did he entertain himself?
* What company did he manufacture?
* Where did Edison start his famous laboratory?
* What was a phonograph?
* When did he invent the light bulb and the power grid system?
* When did he start the Edison Electric Light Company?
* How many children did Edison have?
* How many patents did he register?
* Who invented the world’s first talking doll?
* **Glossary**
* to credit (with) [´kredɪt]  – приписывать кому-л. что-л.
* [electric power generation](https://en.wikipedia.org/wiki/Electric_power_generation) – выработка электроэнергии
* [mass communication](https://en.wikipedia.org/wiki/Mass_communication) – средства массовой информации
* motion picture – киноизображение
* long-lasting – с длительным сроком службы
* electric [light bulb](https://en.wikipedia.org/wiki/Incandescent_light_bulb) – электрическая лампа
* widespread [ˈwaɪdspred] – распространенный
* impact (on) – воздействие, влияние
* Morse code – азбука Морзе
* to convey [kən´veɪ]  – передавать
* eventually [ɪ´ventjʊəlɪ] – в конце концов
* a stock ticker – биржевой телеграфный аппарат
* mucker [ˈmʌkə] – приятель
* to perfect – совершенствовать
* foil – фольга
* power grid system – система электроснабжения
* subsequently [`sʌbsɪkwəntlɪ] – впоследствии, затем
* to attain – добиваться
* fame – слава

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