

UNIT 1

SCIENTISTS AND INVENTORS

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STEP 1

TEXT A. HENRY FORD

PRE-TEXT EXERCISES

I. Translate the following international words and word combinations:

automobile, fact, a complex machine, the result of combination of technologies, revolutionize, model, company, popular, principle, an industrial production line, million.

II. While translating the text pay attention to the semantics of the following words:

- credit* – 1. кредит 2. залік 3. віддавати належне
- operate* – 1. діяти, працювати, приводити в рух 2. оперувати 3. керувати (машиною)
- well* – 1. добре 2. колодязь 3. джерело
- meet* – 1. зустрічати 2. відповідати (вимогам, потребам)
- solution* – 1. розчин 2. розв'язання, рішення (проблеми)
- belt* – 1. ремінь 2. стрічка 3. ланцюг

III. Translate the following pairs of words paying attention to the negative semantics of the prefixes *in-*, *un-*: expensive – inexpensive, to be able – to be unable.

IV. Read and memorize:

- invent** – винаходити
- develop** – 1. розробляти 2. створювати
- assembly line** – складальний конвеєр
- cost** – надати докази, підтвердити
- reliable** – надійний, міцний
- demand** – 1. вимога 2. попит 3. потреба
- move** – рухатися
- division** – 1. поділ, розподіл 2. підрозділ, відділ
- responsible** – відповідальний
- savings** – заощадження, економія

V. Read and translate the text:

HENRY FORD

Most people credit Henry Ford with inventing the automobile. The fact is he didn't — such a complex machine is the result of a combination of technologies developed by many people over time. He did, however, invent the assembly line, which revolutionized the way we make cars, and how much they cost.

In 1908 Ford's company began selling his famous Model T for \$850 each (**Fig.1**):

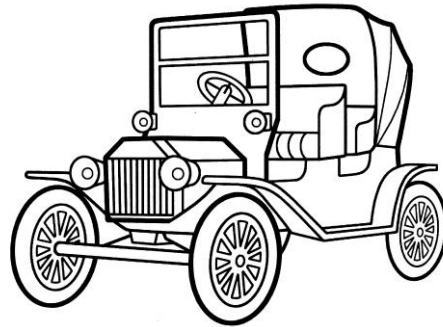


Fig. 1. The world-known Model T

The Model T was inexpensive for its day, and proved to be reliable and easy to operate. It quickly became very popular; and soon Ford found he was unable to meet the enormous demand for his cars.

Ford's solution was to invent a moving industrial production line. By installing a moving belt in his factory, employees would be able to build cars one piece at a time, instead of one car at a time. This principle, called the "division of labour", allowed workers to focus on doing one thing very well, rather than being responsible for a number of tasks.

Ford found his new system of producing cars quick and efficient; so efficient that it considerably lowered the cost of assembling the cars. He decided to pass these savings along to his customers, and in 1915 dropped the price of the Model T to \$290. That year he sold 1 million cars.

TEXT-BASED ASSIGNMENTS

LEXICAL EXERCISES

I. Find the English contextual equivalents for the word “автомобіль”.

II. Match the two columns:

- | A | B |
|---------------|------------------|
| 1. to sell | a) автомобіль |
| 2. to prove | b) коштувати |
| 3. solution | c) продавати |
| 4. to install | d) надати докази |
| 5. price | e) надійний |
| 6. a car | f) великий |
| 7. to cost | g) рішення |
| 8. reliable | h) встановити |
| 9. enormous | j) працівники |
| 10. workers | i) ціна |

III. Find the contextual synonyms for the following words and word combinations:

a vehicle, to produce cars, to start selling a well-known Model T, a plant, workers, to reduce the cost, clients.

IV. Find the antonyms:

A	B
1. complex	a) cheap
2. to sell	b) employees
3. expensive	c) simple
4. easy	d) to buy
5. quickly	e) to raise
6. unable	f) difficult
7. employers	g) slowly
8. to drop	h) able

V. Answer the questions:

1. What did Henry Ford invent?
2. When did Ford's company begin selling his famous Model T?
3. What was the price of the famous Model T in 1908?
4. How much did the Model T cost in 1915?
5. How many cars were sold in 1915?

VI. Complete the following sentences:

1. Most people credit Henry Ford with... . 2. In 1908... . 3. Ford's solution was... . 4. By installing a moving belt... . 5. Ford found his new system... .

VII. Translate the following sentences into English:

1. Генрі Форд винайшов складальний конвеєр. 2. Складальний конвеєр став наріжним каменем в автомобільній промисловості. 3. У 1908 році почався продаж автомобілів моделі Т. 4. Оскільки автомобілі моделі Т були не дуже дорогими, але надійними, вони набули великої популярності. 5. У 1915 році компанія Форда здійснила продаж 1 млн. автомобілів.

GRAMMAR EXERCISES

(Grammar Revision: Іменник. Категорія числа)

VIII. Give the plural of the following nouns:

automobile, technology, company, car, solution, employee, belt, worker, task, system, customer, man, method, century, branch, bridge, idea, research, ocean, science, programme, way, heart, soul.

IX. Choose the correct form of the noun:

1. Henry Ford invented the assembly (line/lines). 2. Most people credit Henry Ford with inventing the (automobile/automobiles). 3. In 1915 Henry Ford sold 1 million (car/cars) 4. His (company/companies) began selling famous model T. 5. This (principle/principles) allowed (worker/workers) to focus on doing one thing very well.

X. Complete the following sentences using nouns in the singular or in the plural form:

1. In 1908 Ford's company began selling 2. A new system lowered the cost of assembling 3. This complex machine is the result of new 4. The workers were responsible for a number of 5. Henry Ford revolutionized the way we make

CONVERSATIONAL PRACTICE

XI. Fill in the table summarizing the information of the text and discuss in pair:

Ford's inventions	Model T			A moving industrial production line	
What was new	...	easy to operate	...	a moving belt	...
The result				The cost of assembling the cars was lowered	

XII. Give arguments for the following statements:

1. The Model T was the most popular car in early 20's.
2. The "Division of labour" was an advance step.
3. The Model T was the best selling car in early 20's.

WRITTEN PRACTICE

XIII. Write down about Ford's inventions:

- a) the Model T
- b) a moving industrial production line.

TEXT B. UKRAINIAN NAMES IN THE WORLD SCIENCE

Ukraine is rich in talented people, men of genius, devoted the heart and soul to their native land.

Yuri Kotermak, named Drohobych after his native land, a well-known astronomer, philosopher and medicus, Rector of Bologna University in the 15th century, was one of the first to pave the way into the world science.

Volodymyr Vernadsky was the first in our country to introduce the spectral method for the solution of geochemical problems. He developed his special study in the composition of the Earth's crust, the ocean and atmosphere. Volodymyr Vernadsky was the founder of modern doctrine on the biosphere.

Yuri Kondratyuk (Oleksandr Shargey) suggested the idea of creating a base round the Moon and not on the Earth to ensure the rocket starts for the Moon. Kondratyuk's idea was later realized in the Appollo flight programme many years after his death.

Very near cosmic research stands another branch of scientific investigation – aviation and its affiliated domain – hydronavigation. Most famous names here are Fedir Tereshchenko who constructed a monoplane with parameters surpassing the existing models (as far back as 1913) and Dmytro Hryhorovych who constructed a seaplane (airplane rising from and alighting on water) for the first time in aerial navigation.

Yevhen Paton was the first to apply electro-welding in the bridge-construction. Under his guidance a welded bridge was built across the Dnipro river in Kyiv. It is now known as the Paton Bridge. It is 1.5 km long.

The above mentioned names are only a few stars in the constellation of genius representing Ukrainian science in the world.

EXERCISES

I. Write out the names of professions (specialties) mentioned in the text and memorize them.

II. Comprehension questions:

1. What talents is Ukraine rich in?
2. Did the Ukrainian scientists play a great role in the development of world science and technique?
3. Who represents the science of Ukraine in cosmic research?

III. Divide the text into logical parts and entitle them.

IV. Fill in the table using the information from the text:

Name	Contribution
<i>Dmytro Hryhorovych</i>	
<i>Yuri Kondratyuk</i>	
<i>Yuri Kotermak</i>	
<i>Yevhen Paton</i>	
<i>Fedir Tereshchenko</i>	
<i>Volodymyr Vernadsky</i>	

V. Suggest some other famous Ukrainians to speak about their contribution to the world science.

STEP 2

TEXT A. THE PIONEERS

PRE-TEXT EXERCISES

I. Translate the following international words:

business, partner, gas, design, motor, company, form, unique, innovation, vibration, disks, aerodynamics, consultant, industry.

II. Translate the following words paying attention to their semantics:

- a) *original* – 1. первинний 2. оригінал
- b) *light* – 1. світло 2. легкий

III. Taking into account the semantics of the suffix “-less” (“відсутність якості”) translate the following words:

horseless, vibrationless.

IV. Give your understanding of the following terms:

a pioneer, engineering, innovation.

V. Read and memorize:

1. **stroke** – такт, хід
2. **engine** – двигун
3. **petrol** – бензин, очищена нафта
4. **carriage** – екіпаж
5. **influence** – вплив
6. **wheel** – колесо
7. **ahead** – попереду
8. **accept** – приймати

9. **shaft** – вал, вісь

10. **lubrication** – змащування

VI. Read and translate the text:

THE PIONEERS

Karl Benz (1844–1929), the son of a railway engine-driver, studied engineering at the Karlsruhe Polytechnic. After various jobs he set up business with successive partners in a very small way making two-stroke gas engines of his own design in 1880. Although he is entitled to be called “the inventor of the petrol car” he was reluctant to depart from his original design of a belt-driven horseless carriage which sold well in 1890s. Other designers were called in, and after 1902 Benz had little influence on the development of the motor car.

Frederick William Lanchester (1868–1946), the son of an architect, made Britain's first four-wheeled petrol car of wholly native design in 1895 with the help of his brother George. A small company was formed and the production began in 1899. Lanchester's designs were always unique and ahead of their time; he was responsible for many innovations which became accepted some years later. Those include a vibrationless, fully balanced engine; splined shafts; full-pressure lubrication; lightweight pistons; disk brakes and more. "Doctor Fred" was also a pioneer authority and writer on aerodynamics, and for many years Consultant Engineer to the Daimler Co.

Henry Ford is usually credited with "inventing" mass-production, yet the idea originated many years earlier in the Connecticut clock trade and was developed in America's small-arms industry.

TEXT-BASED ASSIGNMENTS

LEXICAL EXERCISES

I. Compile as many words as you can of the letters of the word “pioneers”.

II. Say what words belong to the group of terms:

engine, after, engineering, successive, way, petrol, two-stroke, son, wheel, later, vibrationless, shaft, lubrication, piston, brakes, time.

III. Give a list of the professions mentioned in the text.

IV. Translate the following word combinations:

a railway engine driver, two-stroke gas engines, a belt-driven horseless carriage, first four-wheeled petrol car, full pressure lubrication, light weight pistons, to invent mass-production, the America's small-arms industry.

V. Derive verbs from the following nouns:

an inventor, a carriage, development, production, lubrication.

VI. Supply definitions:

1. An inventor is a person who
2. An architect is a person who
3. A railway engine-driver is a person who

VII. Complete the following sentences:

1. Karl Benz's brother was 2. Karl Benz studied 3. Karl Benz is entitled to be called
4. F. W. Lanchester made Britain's first 5. Lanchester's designs were 6. Lanchester's innovations were

VIII. Answer the questions:

1. When did K. Benz make a two-stroke engine of his own design?
2. What is Karl Benz entitled to be called?
3. What did F. W. Lanchester make in 1895?
4. What were Lanchester's innovations?
5. What was F.W. Lanchester called?

IX. Fill in the table using the information of the text:

Inventor	Country	Field	Invention

X. Translate the following sentences into English:

1. Карл Бенц – це німецький винахідник, син водія паровозу. 2. У 1880 році з'явилися двотактові двигуни, що працювали на газі, конструктором яких був Карл Бенц 3. Карла Бенца вважають винахідником автомобіля, що працює використовуючи бензин. 4. Ф. В. Ленчестер – це англійський винахідник, син архітектора. 5. Ленчестер збудував перший британський автомобіль, який мав 4 колеса та працював на бензині. 6. Проекти та задуми Ленчестера були завжди унікальними та прогресивними. 7. На рахунку Ленчестера наступні інновації: дискові гальма; поршні, які мають невелику вагу; повністю збалансований двигун.

GRAMMAR EXERCISES

(Grammar Revision: Іменник. Категорія відмінку)

XI. Translate the following word combinations paying attention to the Possessive Case:

Henry Ford's invention, Britain's first four-wheeled petrol car, Lanchester's designs, engineer's project, the entire world's fuel resources, Mendeleev's Periodic Law, Benz's two-stroke gas engines.

XII. Replace the following of-phrases by the nouns in the Possessive Case:

Model: The design of an engineer. – An engineer's design.

The son of a driver, the engine of Karl Benz, the son of an architect, the design of a sculptor, the car of Henry Ford, the son of a teacher, the creative effort of Mendeleev, the professor of the University, the degree of master, the project of an engineer, the prominent works of Mendeleev.

XIII. Translate the following sentences using the Possessive Case:

1. Перший автомобіль Бенца був великим досягненням. 2. Проекти Ленчестера завжди були унікальними. 3. У 1859 році Д. Менделєєв отримав ступінь магістра. 4. Періодична система Менделєєва зробила переворот в науці. 5. Проекти цього інженера були дуже важливими під час розробки двотактових двигунів.

CONVERSATIONAL PRACTICE**XIV. Ask your friend about pioneers in the world of science.****XV. Read the joke and comment on it:**

Tommy – "Madge, what's 'necessitas', masculine or feminine?"

Madge – "Why, feminine, of course."

Tommy – "Why?"

Madge – Why, she was the mother of invention”.

WRITTEN PRACTICE

XVI. What person can we name a pioneer? Write down your arguments and examples.

TEXT B. MAIN STAGES IN THE DEVELOPMENT OF THE AUTOMOBILE CONSTRUCTION

In special literature the history of the automobile construction is usually divided into 3 periods.

The first period (before the World War I) is called “inventive”. The main task was the creation of new automobiles and experience accumulation. The second period is an engineering one – up to 40s of the 20th century. At that time the basis for the automobile theory and calculations was suggested. Comfortable and high-speed automobiles came in use. It was the period when the mass production of automobiles started. The third period is referred to as the designing period. It deals with the problems of automobiles’ meeting environmental demands, comfort and safety of the driver and passenger.

But in fact the construction development of the automobile started much earlier the official date – 1886. Everything began with the invention of the wheel – 4,000 B.C. At that time wheels were as a rule sectional as they consisted of 2-3 segments connected by means of plates (**Fig. 2**).

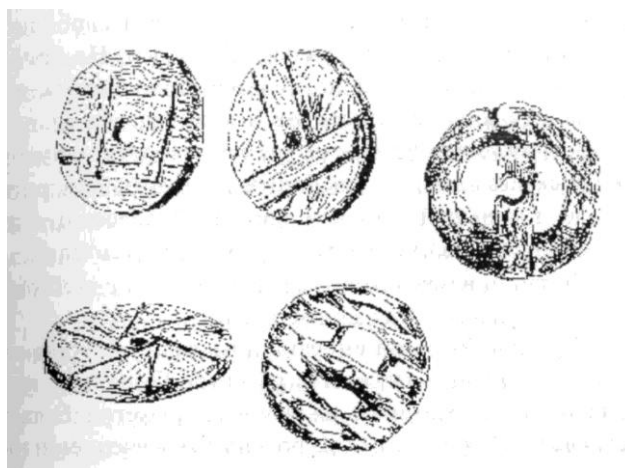


Fig. 2. Different kinds of wheels

The invention of the wheel led to the one-axle araba – a kind of bullock cart. Sometimes they were connected with each other, but they did not have such high cross-country capacity as the one-axle araba did. The time when the bulls were changed by horses chariots appeared. At first they were used on the occasion of holidays, special events, competitions; later they were used for some practical needs: for transporting harvest, goods etc. Chariots of that time were two- and many-seated, two- and four-axle, cheap and expensive. In spite of the variety of chariots they had one thing in common – the principle they work on. It was the principle of the independent wheels rotation of one axle.

Because of the decline of the Roman Empire the development of the unrailed transport was stopped. It had been in oblivion for almost 1,000 years.

The development of the carts restarted in the 15th century: the body of the cart was fastened to the frame bended ends. In 16-17th centuries bodies with leather tent sides as well as glassed bodies with a rigid roof appeared on the roads. A glassed cart was called berlin. In 1791 Ivan Kulibin, a brilliant Russian mechanic, constructed a self-running vehicle. It was designed for journeys in parks. In 1816 Frederick Dreiser constructed a vehicle similar to the future velocipede. Being light and safety” it was referred to as “running”. Its speed was 15 km/h. In 1680 a great scientist Isaac Newton suggested the idea of creating a jet-thrust vehicle. Jet thrust had to be formed by the steam exhausting from the boiler through a narrow nozzle. In 1769 the first operational steam automobile was designed by Nicolas Cugnot. The first omnibus was suggested by William Charch in 1832. Its speed was 16

km/h and it operated from London to Birmingham, contained 50 passengers. It had 4 wheels: 2 – for maneuverability and 2 – for stability. In 1885 Gotlib Daimler got the patent on a four-stroke engine running on gasoline and Karl Benz built a three-wheel vehicle (**Fig. 3**). Gotlib Daimler and Karl Benz are considered to be inventors of the automobile. 1886 is officially declared to be the birth-year of the automobile.

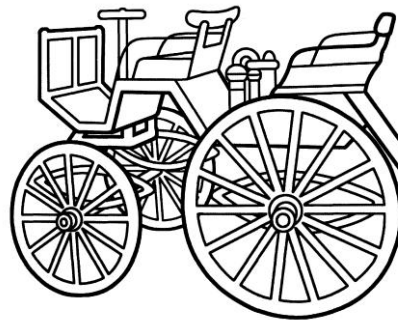


Fig. 3. A three-wheeled vehicle built by Karl Benz

EXERCISES

I. Write down noun-terms and translate them consulting the dictionary.

II. Give all contextual equivalents for the word “транспортний засіб”.

III. Match the two columns:

- | A | B |
|------------|---|
| 1. Kulibin | a) a vehicle similar to the future velocipede |
| 2. Dreiser | b) the first omnibus |
| 3. Newton | c) a four-stroke engine |
| 4. Cugnot | d) a jet-thrust vehicle |
| 5. Cherch | e) a three-wheel vehicle |
| 6. Daimler | f) a self-running vehicle |
| 7. Benz | g) the first operational steam automobile |

IV. Fill in the table:

Year	Invention	Inventor	Country
4000 BC			
1680			
1769			
1791			
1816			
1832			
1885			
1886			

V. Analyze the evolution of the automobile according to the following scheme:

wheel → araba → chariot → cart → a steam automobile → a three-wheel vehicle

VI. Speak about the development of a car according to the following scheme (Fig. 4):

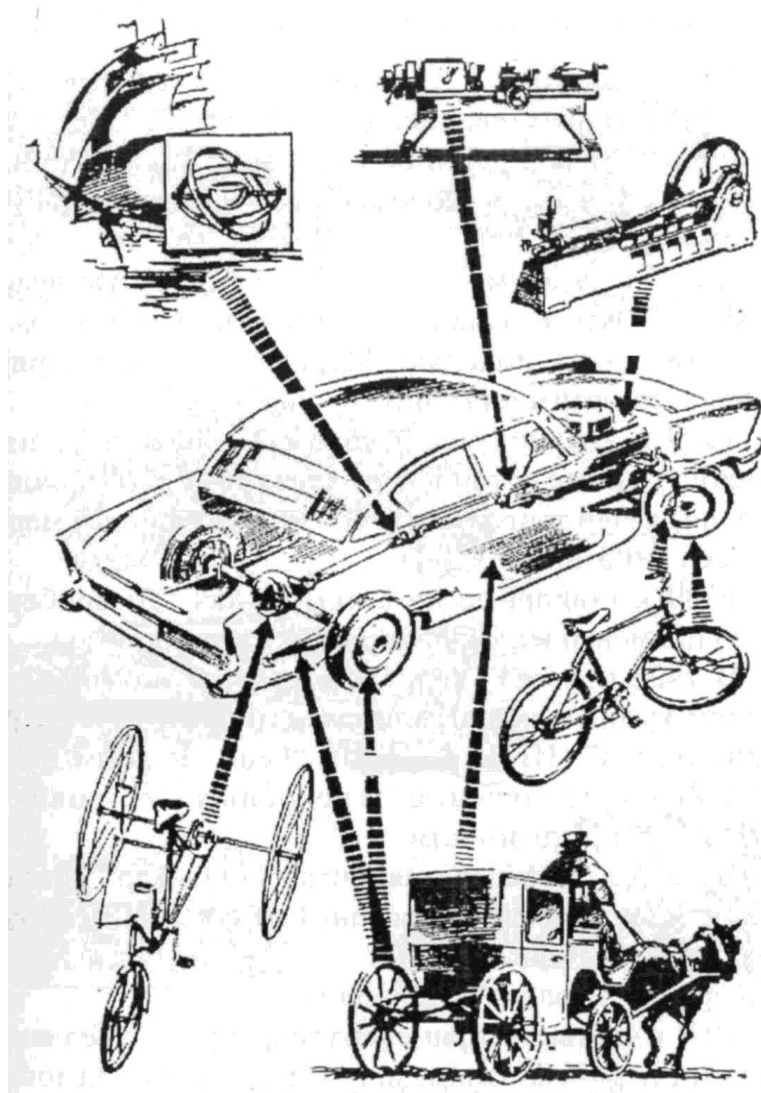
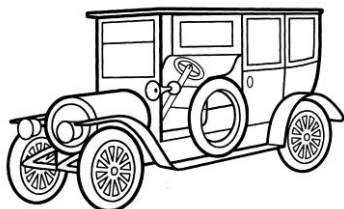


Fig. 4. The development of a car

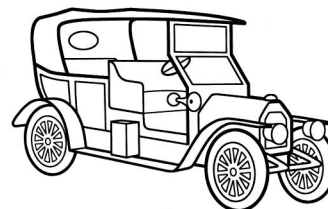
VII. Define what the cars given below (Fig. 5) have in common and what they differ in:



Fiat



Peugeot



Benz

Fig. 5. Cars of early days

STEP 3

TEXT A. INVENTORS OF THE WORLD

PRE-TEXT EXERCISES

I. Translate the following international words and word combinations:

construct, a military engineer, passenger, maximum, minutes, ideas, diesel, an aristocrat and businessman, enthusiast, comfortable, model, technology, a transport revolution.

II. While translating the text pay attention to the semantics of the word “*run*” – 1. бігти 2. працювати.

III. Analyze the word formation of the following words and translate them:

self-propelled, stream-driven, world-famous, out-of-date.

IV. Read and memorize:

1. **change** – зміна, змінюватися
2. **discovery** – винахід, відкриття (наукове)
3. **self-propelled** – самохідний, саморушний
4. **vehicle** – транспортний засіб
5. **steam** – пара
6. **speed** – швидкість
7. **supply** – постачання
8. **combustion** – згоряння
9. **fuel** – паливо
10. **advance** – просуватися вперед

V. Read and translate the text:

INVENTORS OF THE WORLD

Over the centuries a man's way of life was changed by a relatively small number of discoveries and inventions. But changes have come more and more often.

The first self-propelled vehicle was constructed by the French military engineer Cugnot in 1763. He built a steam-driven engine which had three wheels, carried two passengers and ran at maximum speed of four miles. The carriage was a great achievement but it was far from perfect and extremely inefficient. The supply of steam lasted only 15 minutes and the carriage had to stop every 100 yards to make more steam.

Our ideas about travel have changed completely since Gotlib Daimler and Charles Benz built their first petrol engine in 1885.

In 1897 Rudolf Diesel invented a new internal combustion engine. It is known as a diesel and it began a transport revolution in cars, lorries, trains and ships. The main advantage of diesels is that they run on rather cheap fuel.

Charles Rolls was a British aristocrat and businessman, who was especially interested in cars. Once he met another enthusiast of cars – Henry Royce, a famous car engineer. They decided to design the most comfortable and reliable car. At the beginning of the 20th century it seemed to be a fantasy. But in 1907 they managed to create the world-famous Rolls-Royce car. It was so comfortable and reliable that one of the models «Silver Ghost» hadn't changed greatly for 20 years since 1907.

Nowadays technology has advanced so quickly that cars are out-of-date only a few years after they were made.

TEXT – BASED ASSIGNMENTS

LEXICAL EXERCISES

I. Choose a word with a similar meaning:

- | | | | |
|----------------|------------------|--------------|-----------------|
| 1. discovery | a) change | b) invention | c) enthusiast |
| 2. to build | a) to invent | b) to seem | c) to construct |
| 3. a car | a) an automobile | b) a tram | c) a train |
| 4. to run on | a) to operate | b) to do | c) to design |
| 5. famous | a) well-known | b) beautiful | c) intelligent |
| 6. comfortable | a) fine | b) funny | c) convenient |
| 7. to create | a) to be | b) to design | c) to work |

II. Find contextual antonyms:

seldom, to ruin, old, expensive, unknown, slowly, up-to-date, minimum, efficient.

III. Translate the word combinations with the key words:

- “**invention**”: inventors and their inventions, discoveries and inventions;
- “**engine**”: a steam engine, first petrol engine, a new internal combustion engine, a steam-driven engine;
- “**car**”: transport revolution in cars, another enthusiast of cars, was especially interested in cars, a famous car engineer, the most comfortable and reliable car.

IV. Answer the questions:

1. Was man’s way of life changed due to discoveries and inventions?
2. Who built the first petrol engine?
3. What did Rudolf Diesel invent?
4. When was the first self-propelled vehicle constructed?
5. Who created the world-famous Rolls-Royce?

V. Correct statements if necessary using the following phrases: *You are wrong, I disagree with you, Your statement is not correct, I do not share your point of view:*

1. Rudolf Diesel invented a petrol engine.
2. Gotlib Daimler and Charles Benz are known for creating “Silver Ghost”.
3. Cugnot is famous for designing an internal combustion engine.
4. Charles Rolls and Henry Royce are responsible for building a steam-driven engine.
5. Over centuries a man’s way of life was changed by discoveries and inventions.

VI. Fill in the table using the information from the text:

Inventors	Nouns	Verbs
1. Cugnot		
2. Charles Rolls Henry Royce		
3. Rudolf Diesel		
4. Gotlib Daimler Charles Benz		

GRAMMAR EXERCISES

(Grammar Revision: Прикметник. Прислівник. Ступені порівняння)

VII. Give degrees of comparison of the following adjectives and adverbs:

small, many, great, completely, new, cheap, famous, comfortable, reliable, quickly, few, extremely, efficient.

VIII. Choose the right word to fill in the blanks: *cheaper, more comfortable and reliable, new, the most comfortable and reliable, the most famous*

1. Rudolf Diesel invented a (...) internal combustion engine. 2. Diesel engines run on (...) fuel. 3. This car was more (...). 4. They decided to design (...) car. 5. At the beginning of the 20th century Charles Rolls and Henry Royce were (...) car engineers.

IX. Give the positive degree of comparison of the following words:

the most expensive, the oldest, the smallest, the greatest, the cheapest.

CONVERSATIONAL PRACTICE

X. Speak on the following topics:

1. The first self-propelled vehicle.
2. The first petrol engine.
3. A new internal combustion engine.
4. The world-famous Rolls-Royce car.

WRITTEN PRACTICE

XI. Fill in the table summarizing the information of the text:

Inventors	Country	Inventions and discoveries
<i>1. Cugnot</i>		
<i>2. Charles Rolls Henry Royce</i>		
<i>3. Rudolf Diesel</i>		
<i>4. Gotlib Daimler Charles Benz</i>		

TEXT B. ISAAC NEWTON

Isaac Newton was born in 1642 in the family of a poor farmer. The boy began his first scientific experiments at school.

While studying at Cambridge University, Newton formulated the binomial theorem. In 1662 Cambridge was closed because of the plague and Newton returned to his native village. For the next two years he devoted himself to scientific experimentation.

Newton's great discovery was the law of decomposition of light. The scientist proved that the white light of the sun is composed of rays of light of all colours of the rainbow. He also discovered the Law of Universal Gravitation which states that "every particle of matter is attracted by every other particle of matter with a force inversely proportional to the square of their distance apart".

Newton applied the principle of gravitation to prove that the power which guides the Moon around the Earth and the planets around the Sun is the force of gravity. Another application of the law of universal gravitation was Newton's exploration of the tides.

Newton was highly honoured by his countrymen and in 1703 he was elected President of the Royal Society. Sir Isaac Newton died in 1727 and was buried in Westminster Abbey.

EXERCISES

I. Divide the text into logical parts and entitle them.

II. Write down all special terms from the text.

III. Write down 5 questions about the text and ask your friend to answer them.

IV. Give your arguments for or against the following statement: "Isaac Newton is one of the greatest scientists of the world".

V. Formulate the Law of Universal Gravitation.

VI. Speak about what I. Newton discovered and formulated.

VII. Fill in the table and speak about the life of I. Newton in short.

Date	Event
<i>1642</i>	
<i>1662</i>	
<i>1703</i>	
<i>1727</i>	

REVISION

I. Compile as many words as you can with the letters of the word "invention".

II. Match the two columns:

- | A | B |
|---------------|---------------|
| 1. to operate | a) згоряння |
| 2. a vehicle | b) пара |
| 3. an engine | c) вал, вісь |
| 4. petrol | d) гальма |
| 5. combustion | e) швидкість |
| 6. to turn | f) змащування |
| 7. a wheel | g) поршень |
| 8. steam | h) двигун |
| 9. speed | i) тиск |
| 10. fuel | j) повертати |
| 11. a stroke | k) працювати |

- | | |
|-----------------|-----------------------|
| 12. a shaft | l) диск |
| 13. pressure | m) паливо |
| 14. piston | n) такт |
| 15. disk | o) бензин |
| 16. brakes | p) колесо |
| 17. lubrication | q) транспортний засіб |

III. Translate the words with the same root:

- a) to invent – an inventor – invention – inventing – invented
- b) to discover – discovery – discovered – discovering
- c) to design – a designer – a design – designed – designing
- d) to drive – a drive – driven
- e) to develop – development – developed – developing

IV. Define what word doesn't belong to the logical group:

- a) to invent – to discover – to run – to develop
- b) to produce – to have – to do – to make
- c) to change – to revolutionize – to be
- d) to work – to operate – to sell – to run on
- e) a car – a vehicle – an automobile – a plane
- f) to design – to construct – to work – to create
- g) a company – industry – a firm – an enterprise

V. Choose the correct definition:

- 1. A useful thing or idea is produced by scientists for the first time. a) discovery
- 2. Knowledge or skill which comes from practice rather than books. b) problem
- 3. A trial or a test which is made usually by scientists to learn something or to prove a scientific idea. c) invention
- 4. Finding something which existed before but was not known to people. It is often a place or a scientific fact. d) experiment
- 5. A difficulty that needs attention or thought. e) experience

VI. Translate the word combinations with the key words and make up sentences of your own:

<p><i>“an inventor”</i> <i>“to invent”</i></p>	<p>an inventor of petrol car, a small number of discoveries and inventions, to invent a new engine, due to inventions, with inventing the automobile, to invent a moving industrial production line</p>
<p><i>“an engine”</i></p>	<p>a railway engine driver, a petrol engine, an internal combustion engine, a steam-driven engine, a fully balanced engine, a two stroke gas engine</p>
<p><i>“a car”</i></p>	<p>a petrol car, a motor car, a transport revolution in cars, to be interested in cars, a car engineer, most comfortable and reliable car, to create the world-famous car</p>
<p><i>“to design”</i> <i>“a design”</i></p>	<p>original design, Lanchester’s designs, to decide to design</p>

VII. Complete the sentences by choosing the correct continuation:

1. Gotlib Daimler and Charles Benz invented ...
 - a) a petrol engine
 - b) an internal combustion engine
 - c) a steam engine
2. The inventor of the petrol car is ...
 - a) Cugnot
 - b) Benz
 - c) Ford
3. Ford's company began selling his famous Model T in ...
 - a) 1915
 - b) 1908
 - c) 1899
4. The first self-propelled vehicle was constructed by a ...
 - a) Frenchman
 - b) Englishman
 - c) German
5. Charles Rolls and Henry Royce managed to create ...
 - a) a steam engine
 - b) Model T
 - c) Silver Ghost

VIII. Supply the definitions:

1. An inventor is a person who
2. A car engineer is a person who
3. A designer is a person who
4. A businessman is a person who
5. An enthusiast is a person who
6. A military engineer is a person who
7. A pioneer is a person who

IX. Fill in the table:

Inventor	Invention, discovery	Year of invention	Country	Date
1.				
2.				
3.				
4.				
5.				

X. Translate the following sentences into English:

1. Перший транспортний засіб, який рухався сам, був збудований французьким військовим інженером. 2. У 1825 році Г. Даймлер та К. Бенц збудували свій перший двигун, який працював на бензині. 3. Р. Дизель винайшов новий двигун внутрішнього згоряння, що мав назву дизельний. 4. Двигун внутрішнього згоряння викликав значні зміни в автомобільній промисловості. 5. Ч. Роллс та Г. Ройс були автомобільними ентузіастами, які вирішили збудувати найкомфортніший та надійніший автомобіль. 6. У 1907 році з'явився всесвітньо відомий автомобіль марки Роллс-Ройс. 7. Одна з моделей Роллс-Ройсу «Сріблястий Привід» була настільки комфортною та надійною, що практично не змінювалась впродовж 20 років. 8. У

1908 році компанія Форда почала продаж відомої моделі Т, яка коштувала 850\$. 9. Карл Бенц відомий як винахідник та автор двотактового двигуна, який працював, використовуючи газ.

XI. Give arguments for the following statements:

1. After 1902 Benz had little influence on the development of the motor car.
2. F.W. Lanchester is responsible for many innovations.
3. The Model T was the best-selling car.
4. Henry Ford revolutionized the way of making cars.
5. One of the models (“Silver Ghost”) hadn’t changed greatly for 20 years since 1907.
6. A carriage suggested by Cugnot was a great achievement.
7. An internal combustion engine began a transport revolution.

XII. Speak about the evolution of the world's first car – Benz (Fig. 6):

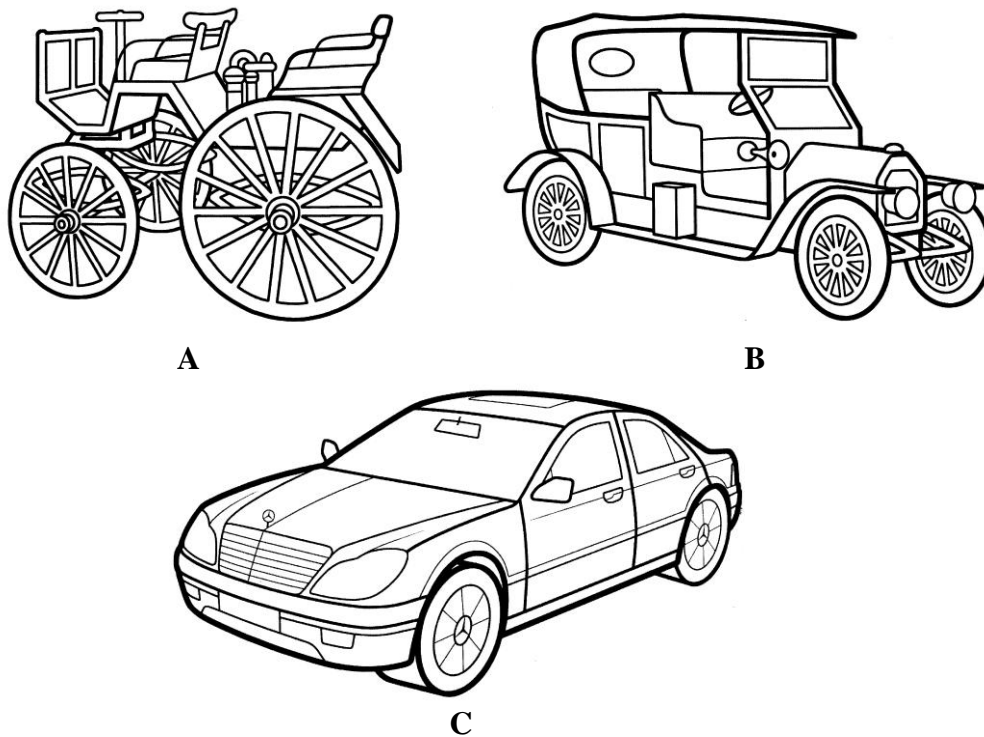


Fig. 6. The evolution of the world's first car – Benz

XIII. Speak about the inventors and their inventions using the following table:

Inventors	Nouns	Verbs
1	2	3
<i>Henry Ford</i>	an assembly line model T a moving belt division of labour	to invent to sell to be reliable to be easy to operate to be very popular to drop the price
<i>Karl Benz</i>	two-stroke gas engines a petrol car a belt-driven horseless carriage	to make to be sold

1	2	3
<i>Frederick William Lanchester</i>	a four wheeled petrol car a fully balanced engine splined shafts full-pressure lubrication light-weight pistons disk brakes	to make to be unique to be ahead of time to be responsible for
<i>Gotlib Daimler Charles Benz</i>	a petrol engine	to build
<i>Rudolf Diesel</i>	an internal combustion engine cheap fuel	to invent to run on
<i>Charles Rolls Henry Royce</i>	the most comfortable and reliable car the world-famous Rolls-Royce a model "Silver Ghost"	to design to create to change greatly
<i>Cugnot</i>	first self-propelled vehicle a steam-driven engine three wheels maximum speed	to build to construct to carry to run

XIV. Prepare a piece of information about the famous inventors of:

- Germany
- Great Britain
- USA
- France

XV. Prove that many Ukrainian scientists have contributed to the solution of many fundamental problems.

XVI. Discuss the following situation:

A film studio is going to make a documentary film about the greatest inventions of mankind. You are invited to the studio as an expert to decide what inventions should be included in the film. You are supposed to speak about one invention only. Present information on the invention you consider to be one of the greatest in the automotive industry. Follow the suggested plan:

- the name of inventor;
- the country this invention was made in;
- what the thing was made for;
- how it is used now;
- how it influenced our life;
- why you are sure that it should be included in the film.