

Иностранные языки для профессии
Английский язык для автомехаников
English for Car mechanics

Учебно-методическое пособие по английскому языку



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Рецензенты:

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Государственное бюджетное профессиональное образовательное учреждение Иркутской области Иркутский техникум машиностроения им. Н.П. Трапезникова, 2021. – 52 с.

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Предназначено для аудиторной и домашней работы студентов, обучающихся по направлениям подготовки 23.02.03 Техническое обслуживание и ремонт автомобильного транспорта, 23.01.17 Мастер по ремонту и обслуживанию автомобилей, 23.01.03 Автомеханик с целью развития навыков чтения, перевода и устной речи. Включает в себя тексты, упражнения и задания, двуязычный словарь профессиональных терминов. Содержащийся материал позволяет учащимся также расширить свой профессиональный кругозор, осознать ценность иностранного языка как средства познания и общения в профессиональной деятельности.

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The history of the automobile

Task 1. Read and translate the text.

The birth of the car as we know it today occurred over a period of years. Man's first journey on the road of mechanized transport began with the invention of the wheel in 4000 BC. In the early 1760s the first steam-driven tractor was built by a French Captain, Nicolas Jacob Cugnot. In 1807 François Isaac de Rivaz designed the first internal combustion engine (двигатель внутреннего сгорания). This was used by him to develop the world's first vehicle to run on such an engine, one that used a mixture of hydrogen and oxygen to generate energy.

In 1860, Jean Joseph Etienne Lenoir patented the first successful two-stroke (двухтактный) gas-driven engine. In 1862 he built an experimental vehicle driven by a liquid-fuel version of his gas-engine, which ran at a speed of 3 km/hour.

The next major step forward occurred in 1885 after the four-stroke engine had been devised. In 1885, Karl Benz designed and built the world's first tricycle to be powered by an internal combustion engine.

In the meanwhile, unknown to him, Gottlieb Daimler was in the process of creating the world's first four-wheel horseless carriage. This car, which was more like the cars on our roads today, first saw the light of the day in 1886.

Task 2. Arrange the following events in the order they took place in the history:

1. the first internal combustion engine was designed,

2. the first steam-driven tractor was built,
3. the world's first four-wheel horseless carriage was created,
4. the first two-stroke gas-driven engine was patented,
5. the wheel was invented,
6. the four-stroke engine was devised.

Task 3. Complete the sentences according to the text.

1. The invention of the wheel took place in
2. The first steam-driven tractor was built by
3. The first internal combustion engine was designed by
4. In 1860 ... was patented.
5. In 1862 an experimental vehicle was built, which ran ... of 3 km/hour.
6. In 1886 ... first saw the light of the day.

Types of cars

vehicle ['vi:ɪkl] – транспортное средство

automobile ['ɔ:təməbi:l] – автомобиль (AmEn)

car ['kɑ:] – автомобиль, машина

	<p>Estate ɪ'steɪt универсал</p>
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	<p>Convertible [kən'vɜ:təbl] – кабриолет</p>
	<p>Four wheel drive [,fɔ:wi:l'draɪv] автомобиль повышенной проходимости</p>
	<p>Limousine ['liməzi:n] лимузин</p>
	<p>Lorry / truck – грузовик</p>
	<p>Pickup ['pɪkʌp] / pickup truck – пикап</p>
	<p>Saloon [sə'lu:n] / sedan ['sɪdæn] – седан</p>

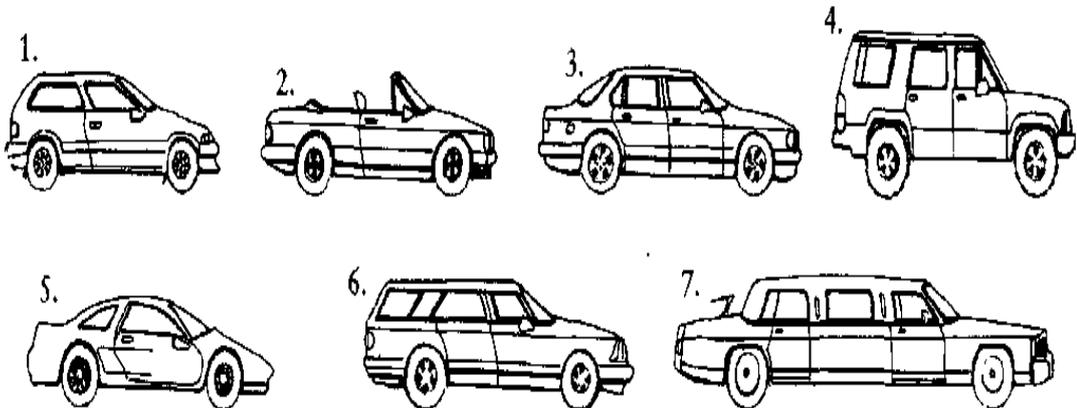
	<p>Racing car – гоночный автомобиль</p>
	<p>Sports car – спортивный автомобиль</p>
	<p>Hatchback- хэтчбэк</p>

Task 2 .Match the types of cars with the pictures.

1 Different types of car

Match the words with the pictures:

saloon estate hatchback convertible off-road sports car limousine



Cars are either automatic or manual. Off-road cars are also called four-by-fours.

Task 3. Match the following types of cars with the definitions

Electric car

Limousine

Sports car

Estate

A convertible

Salon

Hatchback

- 1) a passenger car that can be driven with or without a roof in place.
- 2) a large luxurious often chauffeur-driven sedan that usually has a glass partition separating the driver's seat from the passenger compartment.
- 3) a car with a door across the full width at the back end that opens upwards to provide easy access for loading.
- 4) a car having a closed body and a closed boot separated from the part in which the driver and passengers sit.
- 5) a car with a long body, a door at the rear, and space behind the back seats.
- 6) a low-built car designed for performance at high speeds,
- 7) often having a roof that can be folded back

Task . Find cars which fit the descriptions.

Which car(s)...

1. has /have lots of room for passengers ?
2. is/ are good for driving n bad roads ?
3. is/ are not suitable for large families?
4. is/ are perfect for hot, sunny weather?
5. has/ have low fuel consumption?
6. is/ are ideal for small parking spaces?
7. has/ have only one passenger seat ?
8. is / are good for transporting things?

Parts of a car. The Exterior

Bonnet ['bɒnɪt] / hood – капот

Bumper – бампер

Headlights – фары

Wing mirror – зеркало

Exhaust pipe – выхлопная труба

Tire – шина

Wheel ['wi:l] – колесо

Windscreen – лобовое стекло

Wiper – стеклоочиститель

Wing /fender – крыло

Roof – крыша

Sunroof – люк

Indicator – поворотники

Sill – порог

Wheel arch – колесная арка

Wheel trim – колесный колпак

Patrol cap – крышка бензобака

Logo – логотип

Door – дверь

Number plate – номерной знак

Rear bumper – задний бампер

Rear window – заднее стекло

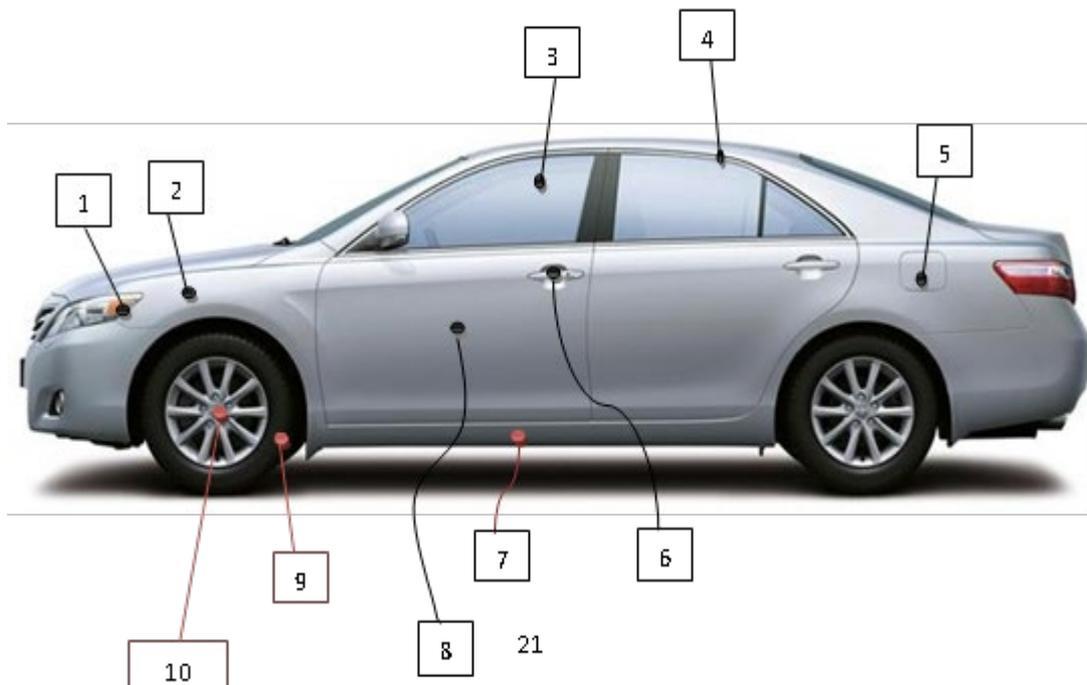
Door handle – дверная ручка

Badge – значок

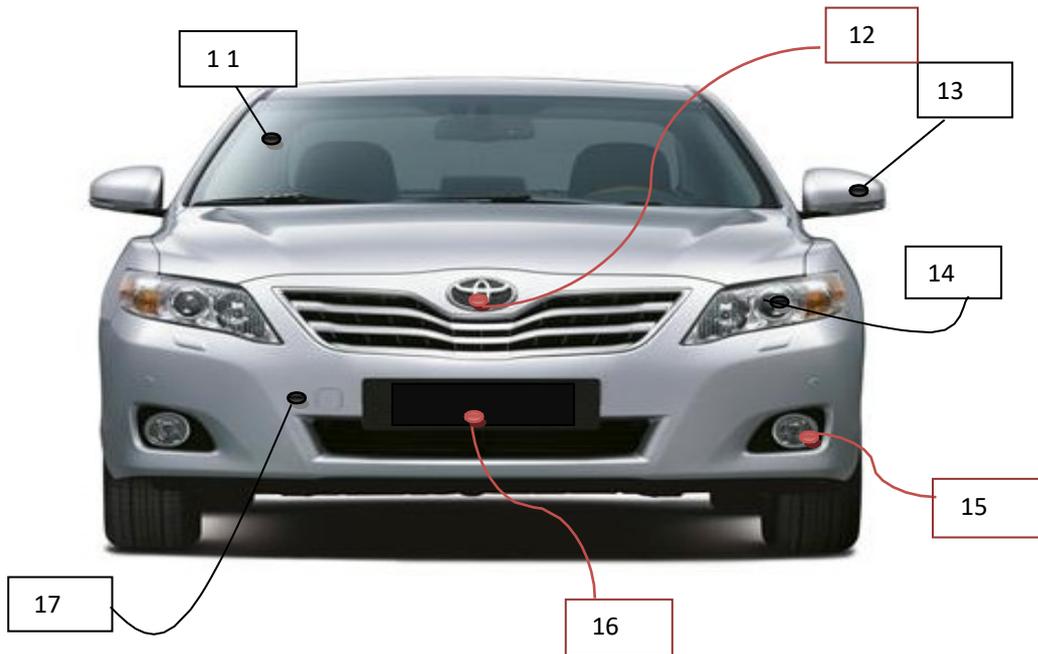
Side window – боковое стекло

Aerial – антенна

Task 1. Label the parts of the car



Label the parts of the car



Task 2. Complete the sentences

1. Put your suitcase into the
3. You use to remove water or snow from the windscreen.
4. Switch theon when it's getting dark.
5. This is the front part of a car which covers the engine.....
6. This is a pipe at the back of a car through which waste gas releases.
7. There are four of them in a car.....
8. This is a part of a roof that can be opened.....
9. This is the window in front of a car.....
10. These are the lights on a car that show in which direction it is turning.
11. This is an official sign on the front and back of the car with numbers and letters.

Task 3. Match the words from the two boxes to find the exterior car parts.

1	<input type="checkbox"/>	head	6	<input type="checkbox"/>	petrol
2	<input type="checkbox"/>	rear	7	<input type="checkbox"/>	windscreen
3	<input type="checkbox"/>	exhaust	8	<input type="checkbox"/>	wing
4	<input type="checkbox"/>	wheel	9	<input type="checkbox"/>	door
5	<input type="checkbox"/>	front	10	<input type="checkbox"/>	number

a	wipers	f	cap
b	lights	g	mirror
c	plate	h	handle
d	trim	i	lights
e	bumper	j	pipe

Parts of a car. The Interior.

Accelerator – педаль газа

Sun visor- солнезащитный козырек

Air vent- вентилятор

Steering wheel- руль

Airbag- подушка безопасности

Seat belt- ремень безопасности

Brake pedal- педаль тормоза

Rear-view mirror- зеркало зад. вида

Car seat- сиденье

Ignition- зажигание

Clutch pedal- сцепление

Hands-free telephone-
беспроводная гарнитура

Cup holder- подстаканник

Handbrake - ручной тормоз

Dashboard - приборная панель

Glove compartment- бардачок

Door handle- дверная ручка

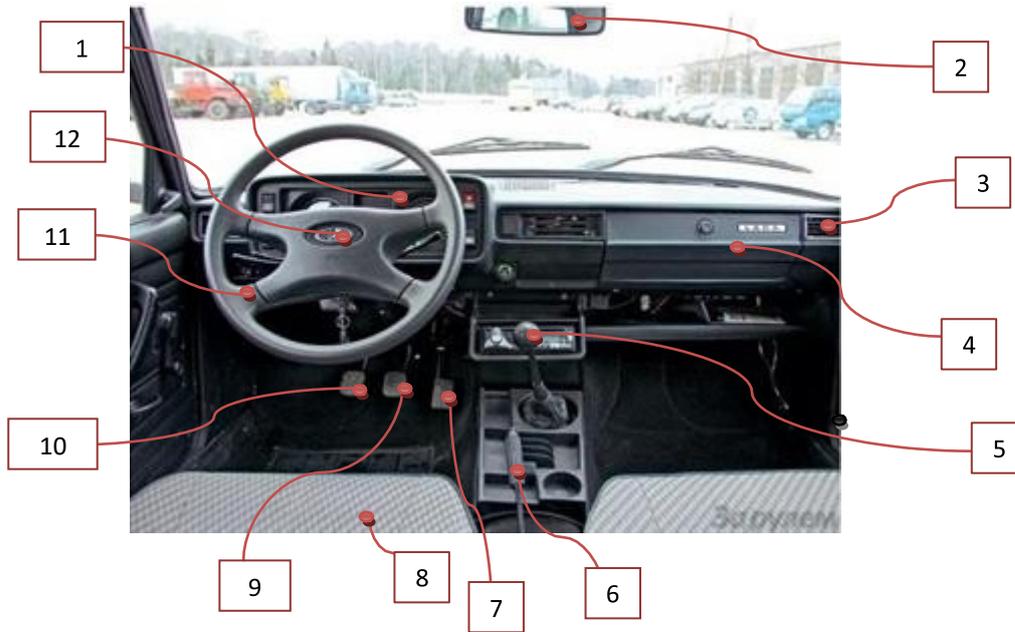
Gearstick - рычаг коробки передач

Door tray - дверной карман

Horn- гудок

Task 1. Label the parts of the car

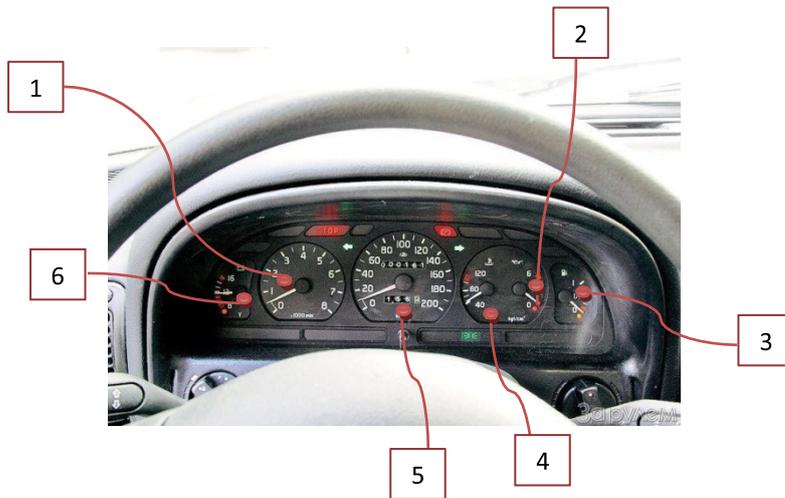
●steering wheel ●real-view mirror ●handbrake ●car seat ●brake pedal ● glove compartment ●horn ●dashboard ●gear stick ●air vent ● clutch pedal ●accelerator.



Task 2. Complete the sentences.

1. This is the object in a car that makes a loud warning noise.
2. Look into the when you want to see what is behind you.
3. A wheel that you turn to control the car.
4. The pedal you press to change gear or shift
5. The pedal you press with your foot to make the car move faster
6. The pedal you press to stop the car
7. In the event of a collision, the..... stops the driver of the car from hitting his or her chest on the steering wheel.
8. The part of a car that contains some of the controls used for driving and the devices for measuring speed and distance.
9. Remember to fasten your in the back too.
10. A is a component of an automobile located on the interior just above the windshield .

Task 3. Match the numbers with the names of the instruments.



engine oil pressure gauge • rev counter • coolant temperature gauge • fuel gauge • speedometer • voltmeter

Which instrument:

- 1) shows you how the fast car is travelling ?
- 2) warns you if the engine lubrication system gets too hot ?
- 3) shows that you are indicating to turn left or right ?
- 4) shows you how often the engine is turning over ?
- 5) shows you how much petrol you have in the tank ?
- 6) indicates the voltage of the car's electrical system?

Task 4. Read and translate the text

The **dashboard** is also called **dash** or **instrument panel**. It is a control panel placed in front of the driver, housing instrumentation and controls for operation of the vehicle.

On the dashboard we can find the steering wheel and the instrument cluster.

The instrument cluster contains gauges such as a revcounter, a speedometer , an odometer and fuel gauge. There are also indicators such as gearshift position, seat belt warning light, parking-brake-engagement warning light and an engine-

malfunction light. The indicators for low fuel, low oil pressure, low tire pressure and faults in the airbag (SRS) system are also placed there. Some vehicles also have systems like heating and ventilation controls and vents, lighting controls, audio equipment and automotive navigation systems also included on the dashboard, different styles and different designs.

On the most modern cars, the top of a dashboard contain vents for the heating and air conditioning system which can be switched in any direction you need, towards the passenger's side or to the ceiling. There are also speakers for an audio system or surround system.

A glove compartment is commonly located on the passenger's side. There may also be an ashtray and a cigarette lighter which can provide a power outlet for other low-voltage appliances.

Answer the following questions:

1. Where is situated the gearstick?
2. What are the "hazard lights"?
3. When do we use the satellite navigation system (GPS)?
4. What is the rev counter?

Task 5. Complete the table.

● tyre pressure steering wheel ●real-view mirror ●handbrake ●car seat ●brake pedal ● glove compartment ●horn ●air vent ● clutch pedal ●accelerator ●indicator ●door ●headlights ● clutch ●sunroof ●bonnet ●fuel level				
open/close	adjust	Switch on/ off	check	press

Changing a tire



jack – домкрат

parking brake – парк. тормоз

tighten- затягивать

hub cap – колесный колпак

lug nut – гайки

spare tire – запасное колесо

loosen – ослабить

lift - поднимать

Task 1. Put these steps for changing a tire in the right order.

- a) Lower the car to the ground fully and remove the jack.
- b) Apply the parking brake and put car into "Park" position.
- c) Tighten the nuts by your hand and the wrench.
- d) Lower the car using the jack.
- e) Place the jack under the frame near the tire that is going to be changed.
- f) Remove the hub cap and loosen the nuts by turning them counterclockwise with a wrench.
- g) Find a flat, stable and safe place to change your tire.
- h) Pump or crank the jack to lift the tire off the ground.
- i) Raise the jack until it lifts and supports the car
- j) Remove the tire and place the flat tire under the vehicle as a safety precaution.
- k) Place the spare tire on the hub properly and put on the lug nuts.
- l) Tighten the nuts as much as possible.

- m) Finish tightening the nuts and replace the hubcap.
- n) Put the old tire in your trunk and take it
- o) Remove the nuts completely.
- p) Place a heavy object such as rock, concrete, spare wheel in front of the front and back tires.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Task 2. Match the words (1-5) with definitions (A-E).

1- Jack

2- Wrench

3- Spare tire

4- Tighten

5- Nut

A- a metal cap used to attach a wheel to a car

B- a car device for raising heavy objects off the ground especially vehicles like cars and trucks

C- to turn something so that it moves closer to another object

D- also known as a spanner, a tool for holding and turning objects

E- an extra tire kept for emergencies

Task 3. Fill in the blanks with the correct words and phrases with the words.

wrench tire loosen block crank

1 John used the to take off the hubcap.

2 to lift the car, the jack.

3 a is made of rubber.

4 the lug nuts before you jack up the car.

5 the tires so the car won't roll.

Components of the Automobile

Task 1. Find Russian equivalents in the second column for English terms in the first column.

- | | |
|----------------------------------|--------------------------------|
| 1. power plant | a. сцепление |
| 2. chassis | b. силовая передача |
| 3. body | c. главная передача |
| 4. power train | d. колеса |
| 5. running gear | e. система рулевого управления |
| 6. steering system | f. капот |
| 7. brakes | g. полуоси |
| 8. clutch | h. ходовая часть |
| 9. gearbox | i. топливная система |
| 10. propeller shaft | j. стеклоочистители |
| 11. final drive | k. коробка передач |
| 12. rear axle | l. система смазки |
| 13. axle shafts | m. силовая установка |
| 14. frame | n. рама |
| 15. wheels | o. в свою очередь |
| 16. springs | p. тормоза |
| 17. hood | q. рессоры |
| 18. fenders | r. также |
| 19. windshield
wipers | s. шасси |
| 20. fuel system | t. карданный вал |
| 21. cooling system | u. задний мост |
| 22. lubricating system | v. источник энергии |
| 23. in turn | w. система охлаждения |
| 24. as well | x. крылья |
| 25. source of power | y. кузов |

Task 2. Read and translate the text

The automobile is made up of three basic parts: the engine, the chassis and the body..

The engine is the source of power that makes the wheels rotate and the car move. It includes electric, fuel, cooling and lubricating systems. Most automobile engines have six or eight cylinders.

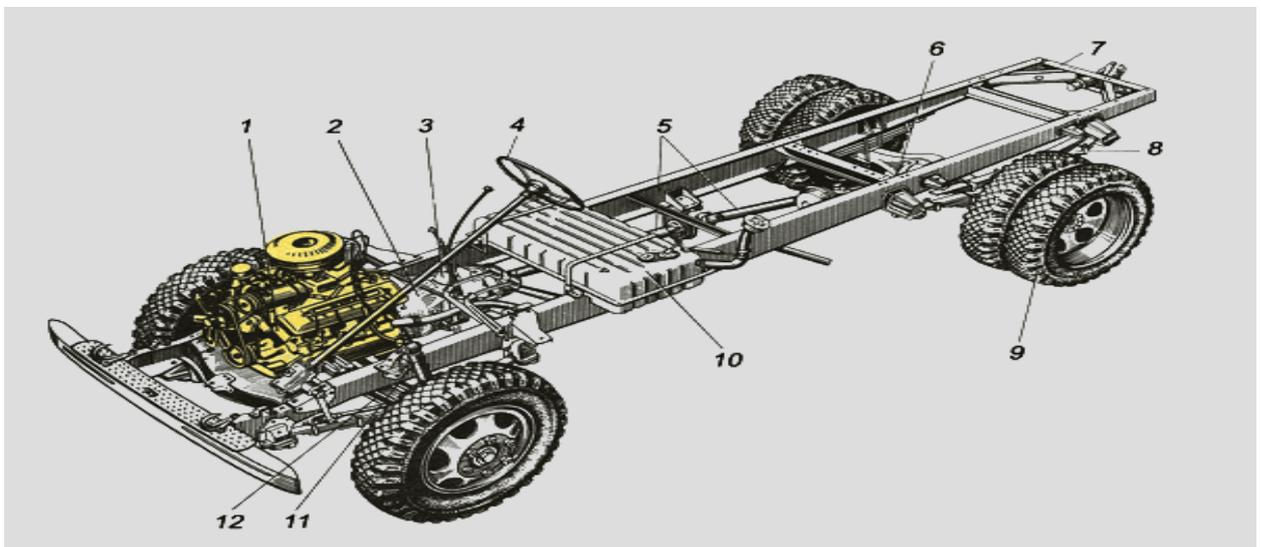
The chassis consists of a power train, frame with axles, wheels and springs. The chassis includes brakes and steering system.

The power train carries the power from the engine to the car wheels and contains the clutch, gearbox, propeller or cardan shaft, differential and the final drive.

The clutch is a friction device connecting (or disconnecting) the engine crankshaft to the gears in the gearbox. It is used for freeing the gearbox from the engine and is controlled by the clutch pedal.

Brakes are important mechanisms of the car. They are used to slow or stop the car. Most braking systems in use today are hydraulic. They are operated by the brake pedal. When the driver pushes down on the brake pedal, they are applied and the car stops.

The body has a hood, fenders and accessories: the heater, stereo tape recorder, windshield wipers, conditioner, speedometer and so on.



1.	2.	3.	4.	5.	6.
7.	8.	9.	10.	11.	12.

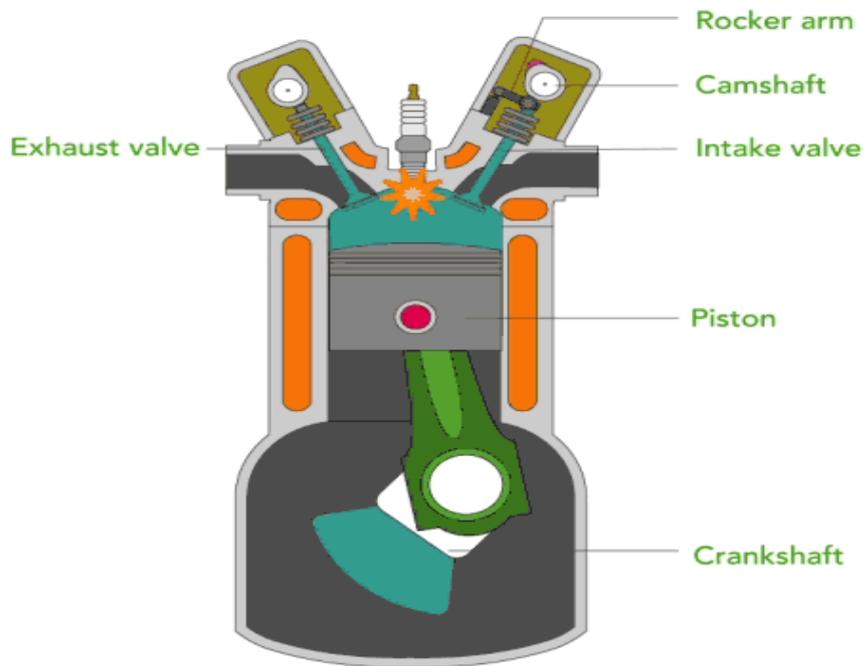
Task 3. Choose the correct answer

1. Mechanism which is used to guide the car in one or the other directions.

a) clutch; b) brakes; c) gearbox; d) steering system.

2. Mechanism which is used to guide the car.
a) clutch; b) brakes; c) gearbox; d) steering system.
3. Mechanism which engages or disengages the engine and the car wheels.
a) clutch; b) brakes; c) gearbox; d) steering system.
4. Mechanism which is used to stop the car.
a) clutch; b) brakes; c) gearbox; d) steering system.
5. Mechanism which is used to change the speed of the car.
a) clutch; b) brakes; c) gearbox; d) accelerator.
6. Device which is designed to measure the speed of the car.
a) heater; b) windscreen; c) speedometer; d) tachometer.
7. The main basic parts of the automobile are ...
a) car wheels, springs and clutch b) the power plant, the chassis and the body
c) the power plant, gearbox and heater
8. The mechanism used for changing the speed is ...
a) clutch b) brakes c) gearbox
9. The power plant or engine includes ...
a) brakes, electric and steering systems
b) electric, fuel, cooling and lubricating systems
10. Most automobile engines have ... cylinders.
a) six or eight b) one or two c) nine or ten
11. The chassis includes ...
a) cooling and lubricating systems b) electric and fuel systems c) brakes and steering system
12. The instrument measuring the speed of the car is ...
a) heater b) lights c) speedometer
13. What is the function of the clutch?
a) changing the speed b) freeing the engine from the gearbox
14. When the driver pushes down on the brake pedal, brakes are applied and the car ...
a) drives b) moves c) stops

The Internal Combustion Engine



Task 1. Read and translate the text

Internal combustion engines ignite fuel to create useful mechanical energy. Most engines have a tank that holds fuel. Fuel pumps from the tank into chambers called cylinders. An engine's cylinders are located between its head and its engine block. Valves control the flow of fuel into and out of the cylinders. Each cylinder contains a piston which can move up and down the cylinder. Piston rings form seals between the pistons and the walls of the cylinders.

When fuel enters a cylinder, the piston rises. This compresses the fuel at the top of the cylinder. When this happens, a spark plug ignites the fuel. The explosion makes the piston shoot down the cylinder. This, in turn, pushes a connecting rod. The connecting rod then turns the crankshaft in the crankcase. The turn of the crankshaft outputs mechanical energy. A sump with lubricating oil keeps the engine parts running smoothly.

Task 2. Mark the following statements as true (T) or false (F).

- 1- The cylinders are set between the engine block and the crankcase.
- 2- Upward movement of the piston compresses fuel in the cylinder.
- 3- Connecting rods connect the pistons to the crankshaft.

Task 3. Match the words or phrases (1-8) with the definitions (A-H).

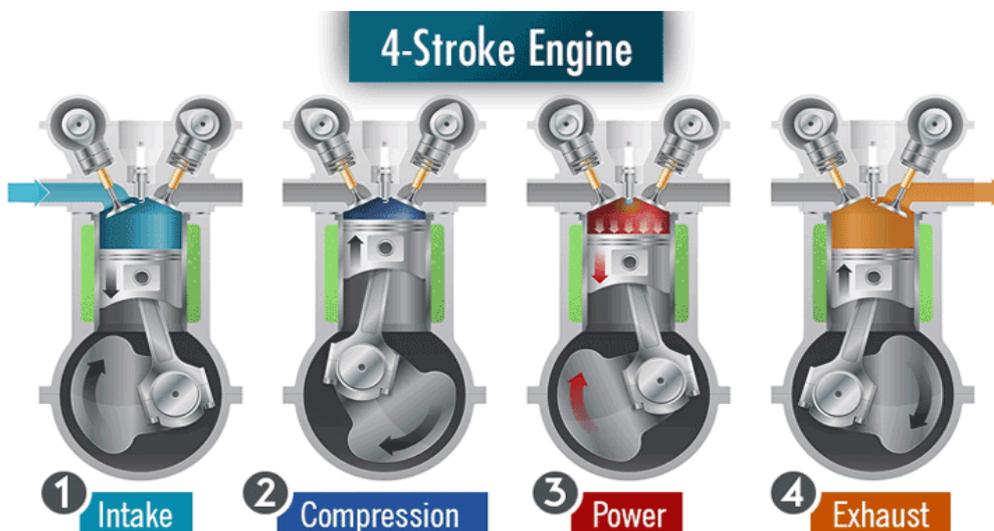
- 1- fuel
- 2- sump
- 3- valve
- 4- cylinder
- 5 - spark plug
- 6 - piston ring
- 7 - engine block
- 8 - connecting rod

- A** a round hole in the engine block that contains a piston
- B** a reservoir that holds oil in the engine
- C** a device that ignites fuel using electricity
- D** the main part of an engine to which other parts are attached
- E** a substance that produces heat or power when burned
- F** a rod that links a piston to a crankshaft
- G** a ring that creates a seal around a piston
- H** a device that opens and closes to control the flow of fluid

Four-stroke engine

Task 1. Read and translate the text

A **four-stroke engine** is a common engine that cycles through four stages. The process works by heating a mixture of fuel and air in a cylinder.



First, **intake stroke**, the inlet valve is opened and the fuel air mixture is drawn in as the piston travels down.

Then the valve is closed and the piston moves up again. This is the next stage, or **compression stroke**. The upward-moving piston compresses the fuel and air. The head gasket and valves on the cylinder head contain the combustion pressure during this stage.

On the **power stroke**, the fuel-and-air mixture ignites. In a gasoline engine, spark plug fires to ignite the fuel

On the **exhaust stroke**, the exhaust valve is opened and the piston travels back up expelling the exhaust gasses through the exhaust valve. At the top of the stroke the exhaust valve is closed. This process is repeated what had been presented is the cycle of operation of one cylinder of a four-stroke engine. Generally engines have two or more cylinders acting in concert with each other to produce the engine power.

Task2. Match a–j with 1–10.

- | | |
|-----------------------|-----------------------------|
| a) four-stroke engine | 1) цилиндр |
| b) cylinder | 2) клапан |
| c) piston | 3) четырёхтактный двигатель |
| d) valve | 4) поршень |
| e) power stroke | 5) масло |
| f) crankshaft | 6) распределительный вал |
| g) oil | 7) ход, такт |
| h) camshaft | 8) рабочий ход двигателя |
| i) stroke | 9) коленчатый вал |
| j) spark plug | 10) свеча зажигания |

Task 3. Match the words from the box with the definitions

**ignite compression stroke piston ring intake valve exhaust
stroke four-stroke engine exhaust valve pressure**

- A) an opening that allows fuel and air to enter the cylinder.
- B) an opening where spent fuel is released
- C) the force produced when something pushes or squeezes
- D) a ring that seals the cylinder to prevent gases from escaping
- E) to make something burn or catch fire
- F) a mechanical device that generates power from four piston movements
- G) the process of releasing spent fuel
- H) the process of compressing fuel and air

Task 4. Mark the following statements as true (T) or false (F).

- 1 - The cylinder head includes the intake and exhaust valves.
- 2 - Air and fuel become highly pressurized during the power stroke.
- 3 - The exhaust stroke is immediately followed by an intake stroke.

Task 5. Read the sentence pair. Choose where the words best fit the blanks.

1 intake valve / intake stroke

- A The engine failed because too much air entered the cylinder during the
- B The ___ ___ was loose so the mechanic replaced it.

2 head gasket / four-stroke engine

- A The is the most common type of car engine.
- B The damaged __ _ caused a fuel leak in the cylinder.

3 power stroke / cylinder head

- A The car did not start because the spark failed during the _ _ _ _
- B Alison added coolant to the ___ ___ to reduce excess heat during ignition.

Metals and materials used in the automobile industry



Task 1. Match the words with their transcriptions and translate them. Learn them by heart

When we think of cars, we think of metal and materials.

- | | |
|---------------------|------------------|
| 1. glass | a) ['rʌbə] |
| 2. plastic | b) [sti:l] |
| 3. steel | c) [wʊd] |
| 4. aluminium | d) ['leðə] |
| 5. metal | e) ['metl] |
| 6. textile | f) [æljʊ'mɪniəm] |
| 7. wood | g) ['plæstɪk] |
| 8. rubber | h) ['tekstajl] |
| 9. leather | i) [glɑ:s] |

Task 2. What car parts are made of what material? Work with a partner to complete the table.

Material	Car part(s)
steel	
wood	
sheet metal	
magnesium	
glass plastic	
rubber	
aluminum	
leather	
leather	

Task 3. Answer the questions.

1/ Body- What is the body made of?

The body is made of metal and aluminum.

2/ Wheels- What are the wheels made of?

The wheels are made of rubber and metal.

3/ Windscreen wiper- What is the windscreen wiper made of?

The windscreen wiper is made of plastic.

4/ Windscreen- What is the windscreen made of?

The windscreen is made of glass.

5/ Headlight- What is the headlight made of?

The headlight is made of glass and plastic.

6/ Steering wheel- What is the steering wheel made of?

The steering wheel is made of wood, leather, metal.

7/ Bonnet- What is the bonnet made of?

The bonnet is made of metal and aluminum.

8/ Tire- What is the tire made of?

The tire is made of rubber.

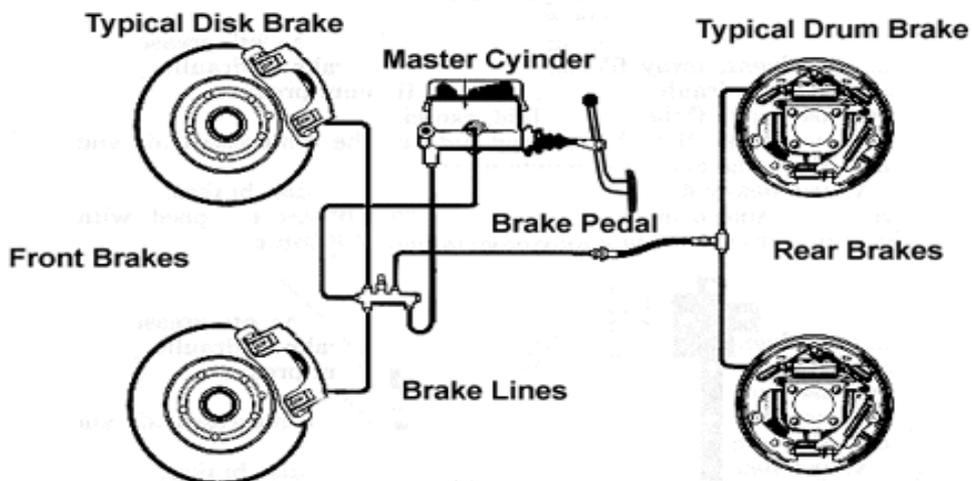
9/ The number plate- What is the number plate made of?
The number plate is made of metal

Task 4. Complete the sentences about materials and their properties with the following words:

shatterproof	light	corrosion-resistant	durable	elastic
natural		rigid	malleable	

1. Wood is very often used in interiors because it looks...and warm.
2. Aluminum and magnesium are important in car manufacturing because they are...and therefore good for weight-saving.
3. Rubber should be able to withstand great temperature differences while staying... In other words, it shouldn't become brittle.
4. Windscreens are made of special... glass to protect drivers in accidents.
5. Fabrics used in cars need to be... and not look old too quickly.
6. Steel is used for load-bearing parts because it is...
7. Sheet metal is used for large car parts because it is...and dent-resistant.
8. Aluminum is ideal for bumpers and other body parts because it is...

Brake System



brakes – тормоза

disc brakes – дисковые тормоза

drum brakes – тормоза барабанного типа

master cylinder - главный тормозной цилиндр

Task 1. Read and translate the text

Brakes are used to slow or stop the car where it is necessary. It is one of the most important mechanisms of the car as upon its proper performance the safety of passengers depends. Car brakes can be divided into two types, namely: drum brakes and disc brakes. The drum type may be either a band brake or a shoe brake. Depending on their functions, the automobile has foot brakes and hand brakes (parking brakes). According to their mode of operation, the brakes are classified as: mechanical brakes, hydraulic brakes, airbrakes, electric brakes. Brakes are controlled by the brake pedal.

Most braking systems in use today are hydraulic. This system consists of a master cylinder mounted on the car frame and wheel cylinders. When the driver pushes down on the brake pedal, it forces the piston to move in the master cylinder and brake fluid is delivered from it to the wheel cylinders. The piston movement causes brake shoes to move and the brakes are applied (the brake shoes are pressed against the brake drums). The air brake uses compressed air to apply the braking force to the brake shoes. Electric brakes use electromagnets to provide the braking effort against the brake shoes.

Formerly brakes were applied only to the two rear wheels, but now all cars are equipped with all-wheels brakes. Today many improvements are being made in brakes.

Task 2. Match the words (1-9) with the definitions (A-I).

- | | |
|---------------------|-------------------|
| 1 _ brake pedal | 6 _ power brakes |
| 2 _ disc brake | 7 _ brake pad |
| 3 _ drum brake | 8 _ parking brake |
| 4 _ brake shoe | 9 _ caliper |
| 5 _ master cylinder | |

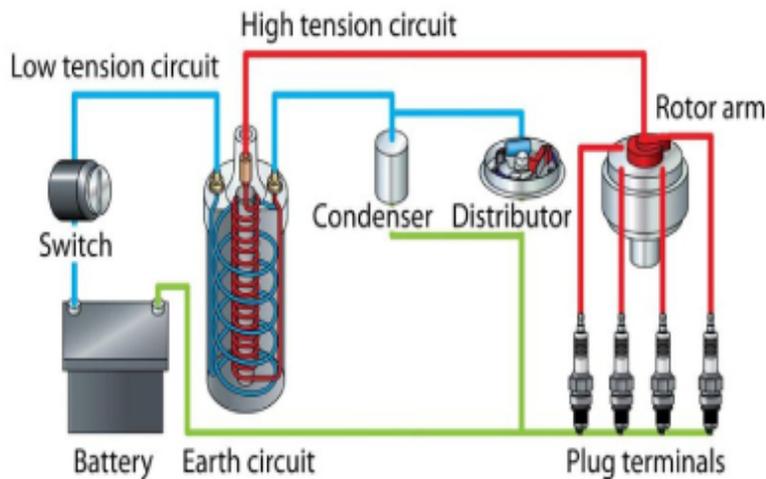
- A a thin block used to apply friction to a disc
- B a lever drivers press to slow a car
- C a piece of metal forced against a brake drum
- D a brake system using a brake booster

- E a brake that uses pads and discs to stop a car
- F a brake that is separate from the main system
- G a brake ha uses brake shoes to stop a car
- H a contain brake fluid
- I a device a aids brake pads

Task.3. Match two parts of sentences.

- | | |
|---------------------------------|--|
| 1. Brakes are used for... | a. disc brakes and drum brakes |
| 2. Brakes are one of ... | b. the driver pushes down on the pedal |
| 3. Brakes may be of 2 types:... | c. the brake pedal |
| 4. Brakes are applied by | d. stopping the car |
| 5. Brakes are applied when | e. the most important mechanism of the car |

Ignition systems



spark plug – свеча зажигания

steering column - рулевая колонка

ignite – зажигать

combustion chamber - камера сгорания

coil - катушка

starter motor - пусковой двигатель

Task 1. Read and translate the text

In ignition system enables the enables to start and keep running. It depends on the type of the engine and the fuel used. Petrol engines are typically ignited a precisely timed spark, and diesel engines by compression heating.

The ignition is located either on the side of the steering column or on the dashboard. It is a multifunctional switch, into which you insert your key, in order to energize the electrical circuits and activate your starter motor.

The spark plug ignites the fuel and air mixture in each cylinder. This process is called “combustion” and it takes places in the “combustion chamber”.

Electricity for the igniting process or ignition is supplied by the alternator and a battery. The current is then carried to a coil, then to a distributor and finally to the spark plugs.

The car’s starting system consists of two components: the electric starter motor and the starter solenoid. As you turn the ignition key to the start position, the starter solenoid gets activated and this energizes the starter motor. The starter motor spins the engine a few revolutions allowing the combustion process to begin and the car to start moving.

Task 2. Mark the following statements as true (T) or false (F).

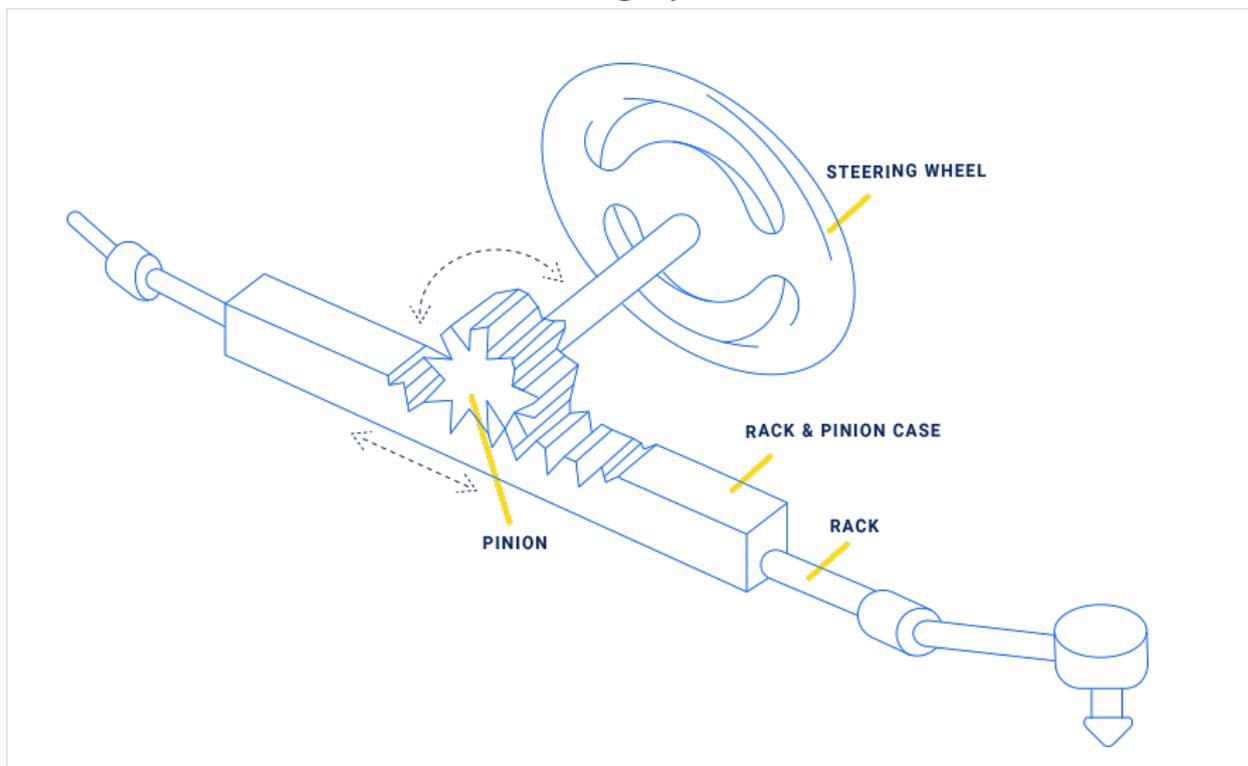
- 1 _ If an ignition switch is bad, a car's lights won't work.
- 2 _ The article recommends that professionals handle all work with batteries.
- 3 _ A malfunctioning alternator could lead to a dead battery.

Task 3.Fill in the blanks with the correct words and phrases from the word bank.

Alternator turn over jump start ground starter relay clicking
--

- 1 Attach these cables to your battery before the
- 2 When I turned the key, I heard a(n) sound.
- 3 Electric current is sent by the
- 4 A bad _____ can lead a dead battery.
- 5 When the engine doesn't _____ , the car doesn't start.
- 6 A (n) _____ is attached a battery's ²⁸negative terminal and completes the circuit.

Steering system



steering wheel – рулевое колесо

rack – рейка, стойка

pinion - шестерня

spindle - шпиндель

hydraulic power steering -
гидроусилитель руля

electric power steering -
электроусилитель руля

Task 1. Read and translate the text

A steering wheel is a type of steering control in vehicles. It is the part of the steering system that is manipulated by the driver; the rest of the steering system responds to such driver inputs. This can be through direct mechanical contact as in recirculating ball or rack and pinion steering gears, without or with the assistance of hydraulic power steering, HPS, or as in some modern production cars with the assistance of computer-controlled motors, known as electric power steering.

Rack and pinion steering is one of the most common steering systems used today. But few people actually know how it works. It all starts with the steering wheel. It turns a steering shaft, which is attached to the pinion. The pinion, a gear, locks

with the rack, another gear. So when you rotate the wheel, the steering shaft turns the pinion. The pinion then turns the rack. Attached to each side of the rack are inner and outer tie rods. These rods connect to the spindles. As the rack pulls and pushes the rods, they move the spindles. And it is the spindles that hold the wheels. By turning the spindle, the rods turn the wheel.

Most modern cars also have power steering. Most modern cars also have power steering. In these systems, the rack has a cylinder with a piston in the middle. The power steering pump supplies high pressure fluid to move the piston. This reduces the amount of force needed to turn the pinion gear and rack.

There are basic types of power steering systems found in vehicles: the hydraulic power steering (HPS) and the electric power steering (EPS).

The hydraulic power steering uses high pressure fluid for assisting steering movements. When the driver turns the steering wheel, it opens up the pressurized fluid in such a way that helps to turn the wheels in the required direction.

The electric power steering works the help of an electric motor and an electronic control unit which has some sensors.

Task 2. Match the words (1-5) with the definitions (A-E).

1 _ spindle

2 _ rotate

3 _ steering shaft

4 _ power steering

5 _ rack

A - a system that makes turning easier

B - a gear that moves the tie rods

C – to turn something in a circular motion

D – a piece that connects the steering wheel to the pinion

E – a part that holds wheels in place

Task 3. Fill in the blanks with the correct words and phrases from the word bank.

power steering pump pinion tie rod steering system steering wheel

1. The _____ is connected to the rack and spindle.

2. High pressure fluid is moved by the _____

3. The rack is turned by the _____ 30

4. Every turn starts by moving the _____

5. This is a combination of several parts, including wheels, rods, and gears.

Task 4. Answer the questions

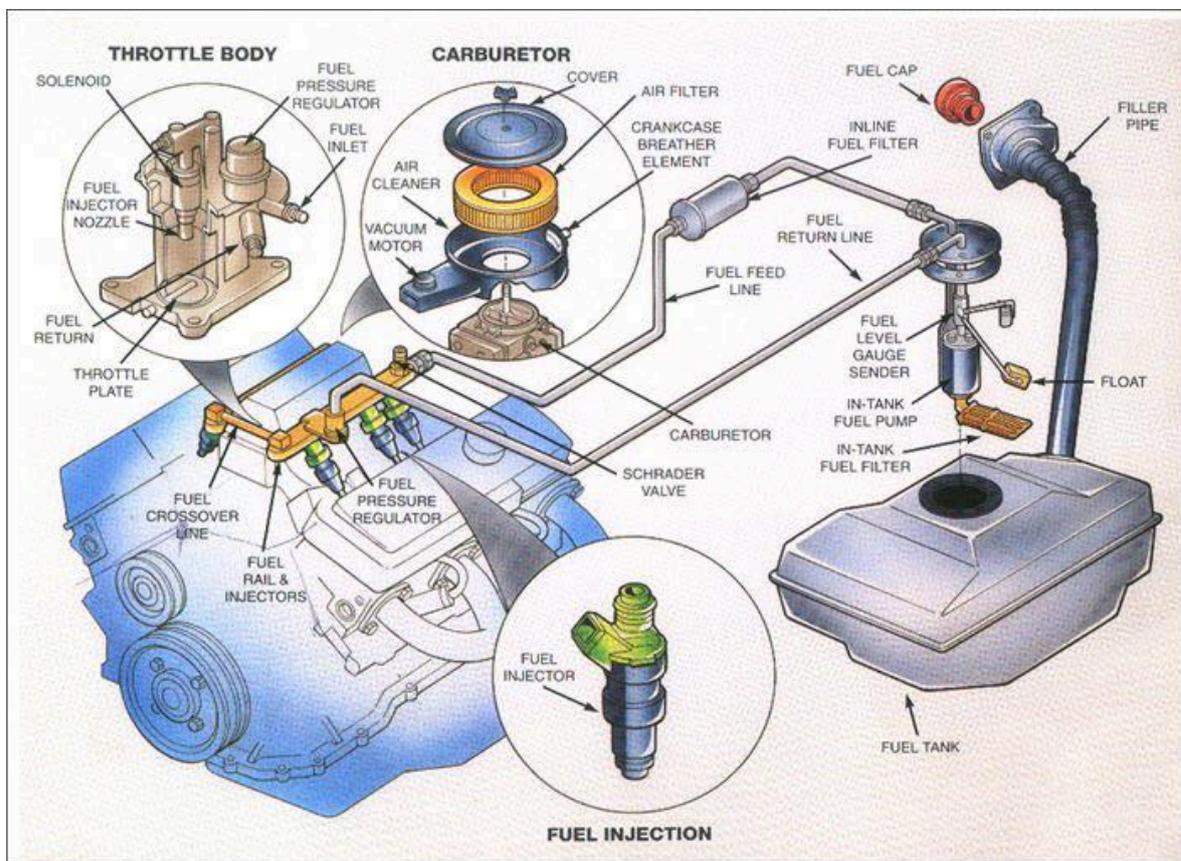
What is a steering wheel used for ?

What kinds of steering wheel systems are there ?

What is the hydraulic power steering ?

How does the electric power steering work?

Fuel system



fuel – топливо

fuel pipe – топливопровод

fuel tank – топливный бак

fuel pump – топливный насос

camshaft - распределительный вал

31

optimum ratio - оптимальное соотношение

Task 1. Read and translate the text

The fuel system consists of a tank, a fuel pipe, a pump and a carburetor.

The fuel is stored in a fuel tank. The fuel tank is connected to a fuel pipe. The fuel pipe carries fuel to the fuel pump. This pump can be either mechanic or electric on operation. Electric pumps are situated near the tank but a mechanic pump is located near the engine because it is driven by the camshaft.

The fuel pump is connected to the carburetor. There the fuel is mixed with air. The optimum ratio of air to petrol in the fuel mixture is 15 parts of air to 1 part of petrol.

The fuel and air are compressed by the piston and they are drawn into the engine.

In the engine the fuel and air are burnt and produce power.

Modern fuel supply systems use a fuel tank, fuel pump, fuel filter, fuel rail, fuel injectors, and a fuel pressure regulator to supply fuel to the engine.

Task 2. Match the words (1-5) with the definitions (A-E).

1 _ fuel line

2 _ carburetor

3 _ fuel tank

4 _ fuel filter

5 _ fuel injector

A a part that mixes fuel and air

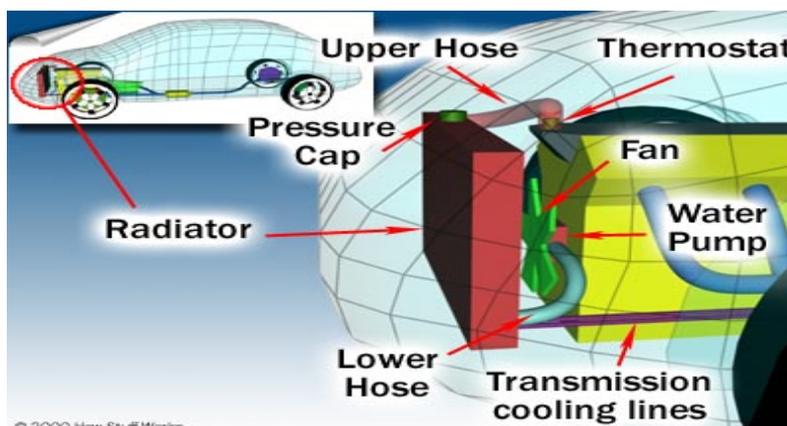
B a device that screens out dirt in the fuel'

C a storage container for fuel

D a tube that delivers fuel to the engine

E a pump that delivers fuel to the combustion chamber of the engine.

Cooling system



cooling system – система

охлаждения

water pump – водяной насос

fan – вентилятор

low freezing point - низкая точка

замерзания

high boiling point - высокая точка

кипения

freeze - замерзать

Task 1. Read and translate the text

The main function of the cooling system is to cool the engine and to keep it from overheating. Another important job of the cooling system is to allow the engine to heat up as quickly as possible and then to keep the engine at a constant temperature because when the engine is cold its components wear out faster and the engine is less efficient and emits pollution.

There are two types of cooling systems used in modern cars: air-cooled and liquid-cooled systems.

Most cars are equipped with liquid-cooled systems. The coolant flows around the engine and then passes through the radiator. Then it passes through the water pump and flows around the engine again. There are some stages of the cooling process. First, the liquid flows around the engine. The engine is cooled and liquid is heated. The hot water enters the radiator through the upper hose. Then it flows down through the radiator and here it is cooled by air. The air is pulled by a fan. This fan is turned by a belt which is driven by the engine. The cooled liquid leaves the radiator through the lower hose. The coolant is pumped around the engine again.

Modern cars operate in a wide variety of temperatures. So the fluid used to cool the engine must have a very and a and hold a lot of heat. Water freezes at too high a temperature to be used in car engines. The coolant used in most cars is a mixture of water and antifreeze. The recommended ratio is fifty-fifty. In other words, one part of antifreeze and one part of water.

Task 2. Match the words (1-7) with the definitions (A-G).

1 _ fan

2 _ pulley

3 _ radiator

4 _ antifreeze

5 _ heater hose

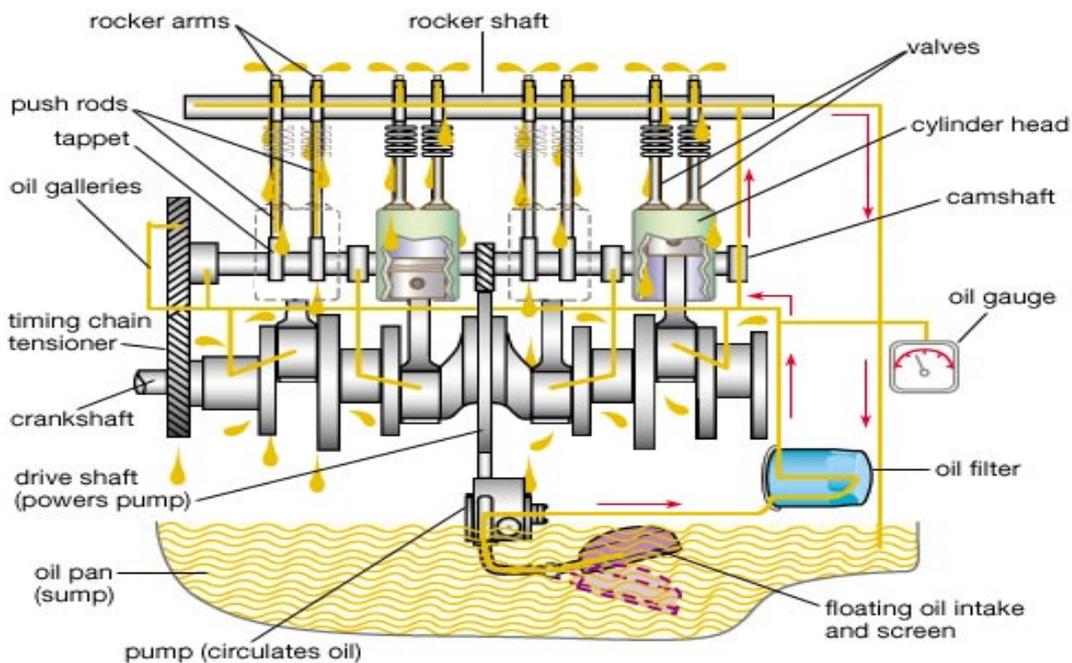
6 _ cooling system

7 _ serpentine belt

A the system that keeps the engine cool

- B a rubber tube that connects to the heater core
- C an electric device that blows air
- D a device with a wheel and a grooved rim
- E the device used to cool liquid in a cooling system
- F a type of coolant used to prevent water from freezing
- G a rubber belt that winds through pulleys

Lubrication system



lubrication system – СИСТЕМА СМАЗКИ

engine wear – ИЗНОС ДВИГАТЕЛЯ

friction – ТРЕНИЕ

film - ПЛЕНКА

Task 1. Read and translate the text

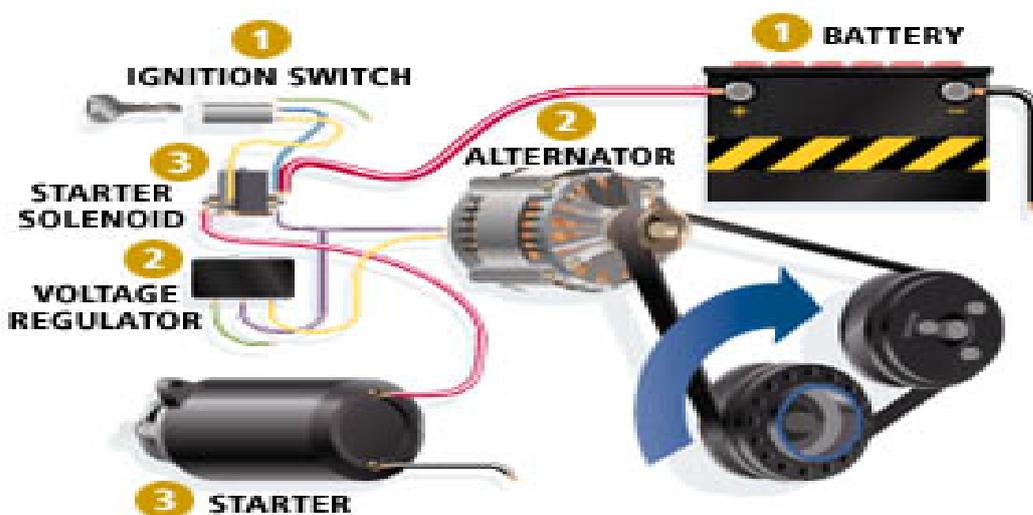
The delivers oil to the moving parts of the engine. As oil circulates through passages in the engine it spreads a film on the parts. Lubrication reduces friction and so minimizes engine wear. The oil also helps to cool the engine. Oil is stored in a pan under the engine. A pump circulates oil from the pan through a filter and then through lines to the engines. This filter prevents impurities from entering the engine.

Task 2. Fill in the blanks with the correct words and phrases from the word bank.

friction lubricate oil pressure reduce oil filter heat oil

- 1 The oil pump creates _____
- 2 The screens out dirt.
- 3 Grease is used to _____ engine parts.
- 4 Lubrication systems _____ damage caused by heat.
- 5 Parts rubbing together cause _ _ _ _
- 6 Resistance to motion between two parts that causes wear and heat,
- 7 A fluid used for lubrication

Electrical system



battery - аккумулятор

alternator – генератор

charge – заряд

troubleshooting – устранение проблем

fuse - предохранитель

relay – реле

Task 1. Read and translate the text

Every vehicle needs electricity to provide current for lights and other electrical equipment and to supply the necessary power for the ignition system. The electrical system is equipment in a car which provides electricity to start the engine, ignite the fuel, operate the lights, windscreen wipers, heater and air conditioner.

One of the important components of an electrical system is the battery. The electrical system starts and stops with the battery. While the vehicle is operating the electrical system is energized and recharged by the alternator that is powered by the engine. When troubleshooting an electrical problem start with the battery.

By using a voltmeter determine if the battery has enough voltage to operate the electrical system.

There are dozens of electrical components related to the electrical system, most include one or more of the following: alternator, battery, fuse, switch, relay, computer PCM, fusible link, wire, and electrical connectors.

Task 2. Do the task

1) The electrical system is equipment in a car which provides electricity to start the engine, ignite the fuel, operate the lights, windscreen wipers, heater and air conditioner.

A) true B) false

2) When troubleshooting an electrical problem start with the battery. By using a(n) _____ determine if the battery has enough voltage to operate the electrical system.

Voltmeter

Vehicle

Dozen

Electrical system

None of the Above

3) Which of the following is equipment in a car which provides electricity to start the engine, ignite the fuel, operate the lights, windscreen wipers, heater and air conditioner?

Dozen

Voltmeter

Vehicle

Electrical system
None of the Above

4) Every vehicle needs electricity to provide current for lights and other electrical equipment and to supply the necessary power for the _____ system

Other electrical equipment
Electricity
Equipment
Ignition
None of the Above

5) There are vehicle of electrical components related to the electrical system, most include one or more of the following: alternator, etc.

A) true B) false

6) There are _____ of electrical components related to the electrical system, most include one or more of the following: alternator,

Voltmeters
Electrical system
Dozens
Vehicles
None of the Above

7) While the vehicle is operating the electrical system is energized and recharged by the alternator that is powered by the engine.

A) true B) false

8) The electrical system is equipment in a car which provides electricity to start the engine, ignite the fuel, operate the lights, _____, heater and air conditioner

Components
Igniters
Other electrical equipment
Equipment
None of the Above

9) One of the important components of an electrical system is the battery.

A) true B) false

10) When troubleshooting an electrical problem start with the battery. By using a voltmeter determine if the battery has enough voltage to operate the electrical system.

- A) true B) false

11) The electrical system starts and stops with the battery.

- A) true B) false

12) Every vehicle needs _____ to provide current for lights and other electrical equipment and to supply the necessary power for the ignition system

Ignition

Other electrical equipment

Equipment

Electricity

None of the Above

13) There are dozens of electrical _____ related to the electrical system, most include one or more of the following: alternator, etc.

Components

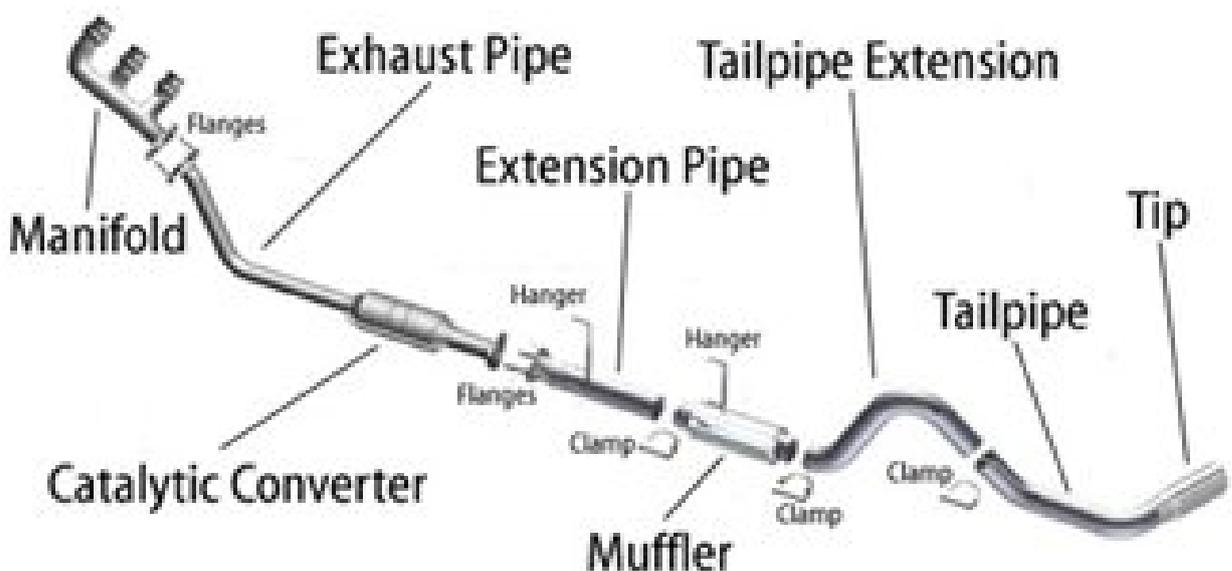
Windscreen wipers

Ignitions

Equipment

None of the Above

Exhaust System



exhaust system – ВЫХЛОПНАЯ
система

muffler - глушитель

exhaust flow - ВЫХЛОПНОЙ ПОТОК

rear axle - задний мост

stainless steel - нержавеющей сталь

exhaust manifold - ВЫХЛОПНОЙ
КОЛЛЕКТОР

Task 1. Read and translate the text

Exhaust system components are designed for a specific engine. The pipe diameter, component length, catalytic converter size, muffler size, and the exhaust manifold design are engineered to provide proper exhaust flow, silencing, and emission levels on a particular engine.

As a rule, the hotter a muffler runs the longer it lasts. Mufflers on vehicles with catalytic converters run hotter and last longer than those on older vehicles without converters. Mufflers located ahead of the rear axle last longer than those located after of the rear axle.

Mufflers rust from the inside out. Rust is caused by moisture in the exhaust. Moisture condenses in the muffler when the engine is shut off and the muffler starts to cool.

The longevity of muffler and pipes depends on what kind of steel the components are made of, how pipes are routed under the car, where the muffler is located, and whether or not the vehicle has a catalytic converter.

Original equipment pipes made of stainless steel can last up to 10 years or more. Most aftermarket pipes are made of ordinary steel which is good for about three to five years of service. Aluminized and stainless pipes are better, but cost more.

Task 2. Do the task

1) The _____, component length, catalytic converter size, muffler size, and the exhaust manifold design are engineered to provide proper exhaust flow, silencing, and emission levels on a particular engine

- a) longevity of muffler b) stainless pipes c) pipe diameter d) System diameter

2) _____ rust from the inside out

3) Mufflers located ahead of the rear axle last longer than those located after of the rear axle.

A) true B) false

4) Which of the following made of stainless steel can last up to 10 years or more?

Original equipment
Most aftermarket pipes

Exhaust system components
Stainless pipes

Transmission operation

torque - крутящий момент

differential - дифференциал

axle - ось

shaft- вал

gear – механизм, шестерня,
передача

ratio - соотношение

reverse – задний ход

Task 1. Read the text and try to understand the meanings of the underlined words.

What a transmission does

The power train includes a manual or automatic transmission; a clutch, on cars with manual transmissions; a differential; wheel axles, and, in rear drive cars, a drive shaft. While cars with a front engine, rear-drive layout were the norm for many years, most cars today are front-engine, front-drive. Front drive creates more passenger space and offers better traction on snowy or wet roads. Some cars and light trucks designed to go off-road or through bad weather use all-wheel drive, where all four wheels are coupled to the engine. The power of the engine consists of torque and speed. Torque is the twisting force of the engine's crankshaft. Speed refers to the rate of rotation of the crankshaft. Because of the great difference in engine speed and load between a car that is accelerating from a stop and one that is cruising at a steady speed, different gear ratios are needed to match engine output with the inertia of the vehicle. The transmission can adjust the proportions of

torque and speed that it delivers from the engine to the drive shaft. When it increases the torque, it decreases the speed; and when it increases the speed, it decreases the torque. Most automobile transmissions have between two and six gear ratios, along with a reverse gear. When the vehicle is started from rest, a high gear ratio is needed. As speed increases, lower gear ratios are selected. Almost all transmissions vary torque and speed by means of gears. A gear is a wheel with projections called teeth around the edge. The teeth fit together with the teeth of another gear. Suppose that a small gear with 12 teeth drives a large gear with 24 teeth. The large gear rotates with half the speed, but twice the torque, of the small gear. The amount of reduction is expressed numerically by the gear ratio. The gear ratio above is 2 to 1 because the small gear rotates twice for each rotation of the large gear. The gears can be combined in different ways to produce various gear ratios and thus various proportions of torque and speed. The gear ratios are often called simply gear or speeds. The process of changing from one gear ratio to another is called shifting gears.

Task 2. Before reading the text, answer the questions.

1. What function does a transmission perform?
2. What's the difference between automatic and manual transmissions?

Task 3. Match a–l with 1–12.

- | | |
|------------------------------------|---|
| a) torque | 1) уменьшать |
| b) the rate of rotation | 2) переключение скоростей |
| c) speed | 3) передаточное отношение |
| d) proportions of torque and speed | 4) зубчатая передача, шестерня |
| e) increase | 5) зубец |
| f) decrease | 6) крутящий момент |
| g) gear | 7) соотношение крутящего момента и скорость |
| h) teeth | 8) увеличивать |
| i) gear ratio | 9) скорость, передача |

- j) **shifting gears**
- k) **drive shaft**
- l) **all-wheel drive**

- 10) скорость вращения
- 11) привод на все колёса
- 12) ведущий (приводной) вал

Task 4. Complete the sentences.

1. The power train consists of
2. Front drive cars offer ... on snowy or wet roads.
3. The transmission adjust the proportions of
4. Most automobile transmissions have
5. Transmissions vary torque and speed by
6. The process of changing from one gear to another is called

Clutch

- friction device** — фрикционное
- pressure disc** — нажимной диск
- устройство
- hard-wearing material** -
- износостойкий материал
- connect** — соединять
- gearbox** — коробка передач
- frictional force** - сила трения
- start the car** - завести автомобиль
- clutch pedal** — педаль сцепления

- release the engine** —
- отсоединить
- is engaged** —
- включено(подсоединено)
- fix** — крепить (устанавливать)
- flywheel** - маховик
- is disengaged** - отключено
- friction disc** — фрикционный диск
- run idly** - работать вхолостую



Task 1. Read and translate the text

The clutch is a friction device. It connects the engine to the gears in the gearbox. It is used for disconnecting the engine from the gearbox, for starting the car and for releasing the engine from the car wheels.

The clutch is fixed between the flywheel of the engine and the gearbox and consists of two plates (discs): the friction disc and the pressure disc. The friction disc is situated between the flywheel and the pressure plate and has a hard-wearing material on each side.

The basic principal operation of the clutch is a frictional force acting between two discs. The clutch is controlled by the clutch pedal. When the pedal is at rest the clutch is engaged and the running engine is connected to the gearbox. When the pedal is pressed down the clutch is disengaged and the engine runs idly.

Task 2. Give the Russian equivalents to these words.

Friction device, clutch, gearbox, to free, to start, to release, flywheel, pressure plate, basic principle of operation, to fix, hard-wearing material, to consist of, to be controlled by, running engine, to run idly, to engage, to disengage, to press down, to be at rest.

Task 3. Answer the questions

1. What device is the clutch?
2. What units does it connect?
3. What is the clutch used for?
4. Where is the clutch placed?
5. What plates does the clutch consist of?
6. What is the basic principal operation of the clutch?
7. What is the clutch controlled by?
8. What takes place when the clutch pedal is at rest?
9. When does the engine run idly?

Task 4. Choose the correct endings

1. The clutch is a device connecting
 - a). the rear axle and axle shafts.
 - b). the gearbox and differential.
 - c). the engine and the gearbox.

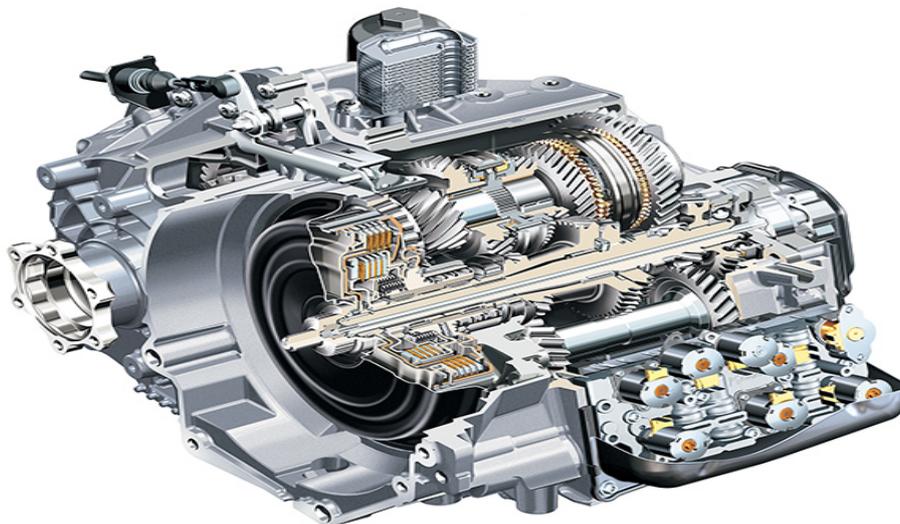
2. The clutch is situated between
 - a). the gearbox and cardan shaft.
 - b). the flywheel and the gearbox.
 - c). the gearbox and rear axle.

3. The clutch is controlled by
 - a). the brake pedal
 - b). the clutch pedal.
 - c). the gearbox and rear axle.

4. The clutch is engaged
 - a). when the clutch pedal is pressed down.
 - b). when the clutch pedal is at rest.

5. The clutch is disengaged
 - a). when the clutch pedal is at rest.
 - b). when the clutch pedal is pressed down.

Gearbox



gear — шестерня, передача
gearbox - коробка передач
gearing - зубчатое соединение
road conditions — дорожные условия
forward speed — передняя скорость
reverse drive - обратный (задний) ход
low gear - первая передача
top gear — четвертая (прямая) передача
sliding-mesh gearbox - коробка передач со скользящими шестернями
constant-mesh gearbox- коробка передач с постоянным зацеплением шестерен

epicyclic (planetary) gearbox - эпициклическая (планетарная) коробка передач
ordinary gearing — стандартное зубчатое соединение
characteristic feature — характерная особенность
fixed axes - зафиксированные (неподвижные) оси
rotate bodyly — вращаться корпусом
axis - ось
axle — вал
secure — обеспечить
shifting – переключение
in direct line-важно

Task 1. Read and translate the text

The gearbox is placed between the clutch and the propeller shaft. The principal function of the gearbox is to vary the speed of the car movement to meet the road conditions. The gearbox provides four forward speeds and one reverse, as follows:

1. First or low gear;
2. Second gear;
3. Third gear;
4. Fourth or top gear;
5. Reverse gear.

There are many constructional arrangements of gearboxes, which can be classified as follows:

1. Sliding-mesh type;
2. Constant-mesh type;
3. Epicyclic (planetary) type.

The sliding-mesh type is the simplest one and is the oldest historically. The constant-mesh type is the most widely used type. They are termed "ordinary"

gearing, the characteristic feature of which is that the axes of the various gears are fixed axes. The gears simply rotate about their own axes.

The characteristic feature of epicyclic gearing is that one gear rotates about its own axis and also rotates bodily about some other axis.

To secure the several speeds of the car the clutch shaft is mounted in direct line with the gearbox shaft. The gearbox shaft carries on it the sliding gears which are used for shifting to secure the forward speeds and the reverse drive.

Task 2. Answer the questions

1. Where is the gearbox situated?
2. What is the function of the gearbox?
3. What speeds does the gearbox provide?
4. What types of gearboxes do you know?
5. Why is the clutch shaft mounted in direct line with the gearbox shaft?

Task 3. Match two parts of the sentences.

- | | |
|---|--|
| 1. The principal function is.... mesh type and planetary type | a). sliding-mesh type, constant of the gearbox |
| 2. The gearbox provides | b). the simplest one and historically oldest |
| 3. Gearbox can be | c). to vary the speed of the car |
| 4. The sliding-mesh gearbox is | d). four forward speeds and one ... reverse |
| 5. The constant-mesh gearbox | e). the most widely used. |

Chassis

unit - узел, блок, агрегат	рулевого управления
gear — шестерня	shaft — вал
power transmission — силовая передача	car springs — рессоры автомобиля
gearbox - коробка передач	flywheel — маховик
tractive effort — тяговое усилие	rear axle — задний мост
running gear — ходовая часть	clutch — сцепление
driving wheels — ведущие колеса	final drive — главная передача
steering system — система	friction device - фрикционное устройство

axle shafts - полуоси

brakes - тормоза

crankshaft - коленчатый вал



Task 1. Read and translate the text

The main units of the chassis are: the power transmission, the running gear and the steering mechanism. The power transmission includes the whole mechanism between the engine and the rear wheels. This entire mechanism consists of the clutch, gearbox, propeller (cardan) shaft, rear axle, final drive, differential and axle shafts.

At the front end of the car is the engine. On the back of it is the flywheel. Behind the flywheel is the clutch. The clutch is a friction device connecting the engine with the gears of the gearbox. The main function of the gearbox is to change the speed of the car.

The power is always transmitted by the cardan shaft to the live back axle. The final drive reduces the high speed of the engine to the low speed of the driving wheels.

The differential enables the driving wheels to turn at different speeds which is necessary when turning the car. The foundation of the automobile is the frame to which different chassis units are attached.

The rear axle is capable of moving up and down about the frame. The rear axle is an important part of the transmission. It carries the greater portion of the weight of the car. The steering mechanism is designed for changing the direction of the car. The brakes are used for stopping the car, for decreasing its speed and for holding the car position.

Task 2. Match the words with their definitions.

- | | |
|--|--|
| 1.differential | c).mechanism used to transmit power to the back axle |
| 2.steering wheel | d).instrument used to measure the speed of the car |
| 3.clutch | e).mechanism that slows or stops the car |
| 4.rear axle | f).mechanism used to guide the car |
| 5.steering system | g).mechanism used to engage or disengage the engine with gearbox |
| 6.speedometer | h).mechanism used to carry the greater portion of the car weight |
| 7.brakes | e).mechanism used to turn the wheels at different speeds |
| 8.gearbox | |
| 9.cardan shaft | |
| a).mechanism used to increase the speed of the car | |
| b).wheel used to turn the direction of the car | |

Task 3. Answer the questions.

1. What main units does the chassis consist of?
2. Where is the engine located?
3. Where is the flywheel fixed?
4. Where is the clutch placed?
5. What is the gearbox designed for?
6. By what shaft is the power transmitted to the back axle?
7. What does the rear axle do?

8. What is the function of the differential?
9. What purpose is the steering system designed for?
10. What is the function of the brakes?

Frame

frame — рама

twist - кручение

support — опора

suspension - подвеска

body - кузов

channel section — полая секция

longitudinal members - лонжероны

weld —сваривать

cross members — поперечины

rivet — заклепывать

reinforce — усиливать

insulate — изолировать

rigid — жесткий

rubber pad – резиновая прокладка

mining - прочный

unibody construction —

конструкция с несущим кузовом

withstand strains —

выдерживать нагрузки

strengthen – укреплять



Task 1. Read and translate the text.

The foundation of the automobile chassis is the frame which provides support for the engine, body and power-train members.

Cross members reinforce the frame. The frame is rigid and strong so that it can withstand the shocks, vibrations, twists and other strains to which it is put on the road.

The frame provides a firm structure for the body, as well as a good point for the suspension system. There are two types of frames, namely: conventional frames and integral frames .

Conventional frames are usually made of heavy steel channel sections welded or riveted together. All other parts of the car are attached to the frame.

In order to prevent noise and vibrations from passing to the frame and from there to the passengers of the car, the frame is insulated from these parts by rubber pads.

It is also important to insulate the frame in order to prevent metal- to-metal contacts.

Frameless constructions are called so because they are made integral with the body. The body parts are used to structurally strengthen the entire car. Some unibody frames have partial front and rear frames for attaching the engine and suspension members.

Task 2. Match the words with their definitions.

1.The frame provides support for....

2.Conventional frames are made of....

3. Tameless constructions are made....

4.The frame is insulated from other parts in order to

5.The frame is reinforced by....

a. channel sections welded together

b. prevent noise and vibrations from passing to the passengers

c. cross members

d. the engine, body and power train members

e. integral with the body

Task 3. Answer the questions.

1. What does the frame provide?
2. Why is the frame rigid and strong?
3. What types of frames are there?
4. What is the conventional frame made of?
5. By what is the frame insulated from the other car parts? For what purpose?
6. What do you know about unibody frames?

Suspension



suspension system – система подвески

shock absorbers – амортизаторы

durability – долговечность

spring – рессора

affordability – доступность

adjacent – прилегающий, соседний, смежный

Task 1. Read and translate the text.

Suspension system is a mechanical system that consists of springs and dampers that are connected to the wheel and chassis of the body. Suspension system is a mechanism which separates body from the wheel. These are mainly designed to maintain the vehicle stability by reducing the effects of improper road surfaces. The main functions of this suspension system are to minimize the acceleration inputs to the vehicle.

There are two general classifications of suspension systems known to date; dependent and independent. A dependent suspension system connotes that there is a beam or axle that connects the left wheel to the right so they work in tandem with each other. This classification of suspension can be sprung by either a combination of leaf springs and shock absorbers or coil springs and shock absorbers. This simple structure is what makes it rugged and cheap, allowing manufacturers to put it in mass-market vehicles that demands durability and affordability.

Unlike its counterpart, this type of suspension system does not feature a bar connecting both wheels. Rather, each wheel is given its own spring and shock combo, which gives a more comfortable riding experience. That's because a bump or pothole that affects one wheel won't influence the other – meaning, when one wheel is pushed upwards by a bump, the adjacent wheel will stay on the ground unaffected. Independent suspension systems can be used either in front or rear, with the former being the common nowadays to keep the front wheels on the ground and pointing the car in the right direction.

Task 2. Answer the questions.

1) There are two general classifications of suspension systems known to date; dependent and _____.

2) Suspension system is a mechanical system that consists of _____ and dampers that are connected to the wheel and chassis of the body.

absorbers

chasses

springs

shock

3) The main functions of this suspension system are to minimize the acceleration inputs to the _____.

chassis

vehicle

acceleration

wheel

4) A Suspension system connotes that there is a beam or axle that connects the left wheel to the right so they work in tandem with each other.

a) true b) false

5) Suspension system is a chassis which separates body from the wheel.

a) true b) false

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