ENGLISH FOR INDUSTRIAL ENGINEERING STUDENTS
MODULES 7-9
2023

MODULE 7

MEANS OF TRANSPORT

AUTOMOBILES

Everything in life is somewhere else, and you get there in a car.
E. B. White, an American writer.

Learning points for Module 7
Reading:
Text 7A. You Can Go Fast, You Can Go Easy, You Can Go Anywhere
Text 7B. Are Electric Cars Part of Our Future?
Text 7C. Still No Flying Cars?

Vocabulary in context: Word definitions. Collocations. Synonyms.

Grammar*:* Infinitives and Gerunds

Speaking*:* Future Car Technologies

Skills: The skill of Listening

Learning aims:
- to practise reading and speaking about automobiles
- to learn and practise active vocabulary related to the topic of the module
- to learn about and practise how to use Infinitives and Gerunds
- to learn and practise the skill of listening

Lead-in

1. In groups discuss the cars in the pictures. Guess what period they belong to and what they are called. Which of them do you like the most? Explain why.

1

2

3

4

5

6

READING

Part 1

2. Read the text and decide which paragraph

- describes a few trends in the modern automotive industry
- summarises the author's message
- analyses how car manufacturing has affected human life
- introduces the theme of the text and its importance
- offers a brief overview of the history of the automobile

Text 7A

You Can Go Fast, You Can Go Easy, You Can Go Anywhere

(1) Since the invention of cars, the world has become a much smaller place. As the most widely accepted method of transportation, cars have transformed the way people live all over the world. They have affected all aspects of society such as family life, the economy, and even the environment. It is hard to find a movie, a book, or a TV show that does not feature some type of automobile in it. Over generations, automobiles have influenced every aspect of society in many ways and have changed to keep up with the times. Currently, cars still dominate when it comes to the most popular form of transportation. They have become essential for people to get to work, go on holiday or run everyday errands[1]. Automobiles (e.g. lorries) are also used to transport goods and other products.

(2) Although concept automobiles were already being built in the late 1800s, it was only in the early 20th century when cars really made an impact on the transportation market[*]. They quickly gained fame as a new and fast way to travel. Other modes[2] of transportation had to be pushed aside to make room for the more comfortable and convenient automobile. Horse driven carriages

were affected the most by sudden popularity of the automobile and eventually disappeared completely as a common means of transport.
(3) Around 1913, the car manufacturing industry was revolutionised by introducing a continuously[3] moving assembly line[4]. The principle of having workers assigned to a specific post doing a specific job, simple and highly effective, allowed them to sell cars at a more affordable price, contributing to the gain in popularity of the automobile. All of a sudden, those fancy vehicles that only the richest could afford were accessible to a much wider group of people. Cars increased the speed of human life in two ways: first they allowed humans to move in an easier and faster way, and, secondly, their fast-paced[5] manufacturing increased the speed of production and transformed the face of the industry forever.
(4) The modern automotive industry is huge and increasingly competitive. While developing new cars, today's engineers seem to focus more on the safety aspect of the car instead of its features. As cars become more advanced, the safety measures must advance as well. New inventions, such as an airbag and in-car sensors, protect not only the passengers, but whatever or whoever may be near the car on the outside. These inventions all came about because they are demanded by the current market. Another trend in car design is creating eco-friendly vehicles which will slow the process of global warming. These cars are able to run on fuel sources other than petrol[6]. Examples of new types of cars are fuel cell electric vehicles, solar powered, hybrids, and ethanol cars.
(5) To sum it up, automobiles have affected the world more than any other invention of its time. They allowed people to travel faster and at the same time in a more comfortable way. The changes that cars have brought can be seen in every aspect of modern society. The invention of the automobile opened up doors to other new inventions. Automobiles continue to influence every part of our economy. With each new year, cars are becoming quicker, more luxurious[7], and more environmentally friendly.

[*]*For example, in 1900, less than 1000 cars were manufactured in the US, while 15 years later, in 1914, 1.7 million cars were sold.*

Vocabulary notes for text 7A

[1] errands	дела
[2] mode	способ
[3] continuously	непрерывно
[4] assembly line	конвейер
[5] fast-paced	быстрый
[6] petrol	бензин
[7] luxurious	роскошный

3. Find the words and word combinations in the text which have the following meanings.

(1)
1. *a verb:* to have an effect on
2. *a verb phrase:* to stay equal or at the same level with someone or something
3. *an adverb:* at the present time
4. *a verb:* to have control over a place or person
5. *a noun:* a machine used for transporting people or goods

(2)
6. *a verb phrase*: to become famous
7. *a verb phrase*: to decide to ignore something
8. *a verb-phrase*: to create space for something
9. *an adjective*: providing a pleasant feeling; not giving any physical problems

10. *an adjective*: suitable for your purpose
11. *an adverb*: in the end
(3)
12. *a verb*: to give someone a particular job or responsibility
13. *an adjective*: not very expensive
14. *a verb+preposition*: to help to cause an event or situation
15. *a verb*: to be able to buy something because you have enough money
16. *an adjective*: able to be reached or easily got
17. *a verb*: to become or make something become larger in amount or size
(4, 5)
18. *an adverb*: more often or to a greater degree
19. *an adjective*: involving competition
20. *a preposition*: in place of someone or something
21. *an adjective*: designed to do the least possible damage to the environment
22. *a noun/adjective*: mixture of two different things
23. *a verb phrase:* to make something possible

4. Read the text again and answer the questions.

1. Why do you think the text says that the world has become a much smaller place since the invention of cars? 2. What aspects of society have cars affected? 3. When did cars really begin to make an impact on the transportation market? 4. What other modes of transportation were pushed aside with the appearance of automobiles and why? 5. What invention changed the face of the car manufacturing industry? How? 6. How did cars increase the speed of human life? 7. What is the modern automotive industry characterised by? 8. What do new inventions in the car industry focus on? 9. What other trends in car design are there nowadays? 10. What are some new types of cars? 11. How do you understand the title of the text "You can go fast, you can go easy, you can go everywhere"? Do you think it is a good title? What title would you suggest? 12. Can you imagine our life without automobiles? Think of a few examples of how your life could be different if there were no cars?

5. Identify 5-7 main points (key sentences) of text 7A and summarise it.

Example: *The text claims that* ***c****ars have changed the way people live all over the world.*

6. Work in pairs. Students A strongly believe that the invention of automobiles has brought lots of advantages to people; Students B strongly believe the opposite. Change partners again and talk about your ideas.

READING

Part 2

7. In pairs / groups discuss these words from text 7B. Explain their meaning or translate them into Russian. Use a dictionary if necessary.

Distant, extremely, consumers, altogether, virtually, fuel powered cars, to fill up a car, petrol, consistent, maintenance, affordable, to submit, emissions, to complain about something, to be concerned, furthermore, to consider, to charge a car, hazardous, to expect.

8. In groups discuss the following questions and share your ideas with others. Read the text and check if your answers were similar to the author's ideas.

1. Why are electric cars becoming increasingly popular in some countries? 2. Are there a lot of electric cars where you live? 3. What problems might electric cars cause? 4. Will electric cars replace conventional vehicles?

Text 7B

Are Electric Cars Part of the Future?

It appears that not so long ago, electric cars were considered a very distant possibility. However, in the modern world electric cars are becoming extremely popular and may well be a large part of our not-so-distant future. Electric cars have been produced, tried, and tested by many manufacturers and consumers are excited about their potential. More and more people believe that if electric cars take over, they will bring us a lot of benefits.

Firstly, electric cars are altogether cleaner and safer for our environment. By driving electric cars, our generation might virtually eliminate air pollution and improve air. Secondly, electric cars will be more affordable than fuel powered cars. According to certain studies on the subject, it is likely that operating costs for an electric passenger vehicle will be generally lower than for cars running on petrol. With the consistently rising fuel price electric cars will offer our finances some much-needed relief. Maintenance will be more affordable as well: there will be no need to worry about changing the oil or submitting your car for an emissions test. Thirdly, noise pollution is a common complaint, especially in larger cities. Electric cars will provide a quieter environment for everyone concerned. The future with electric cars will mean no more 3 a.m. wake up calls by your neighbours' noisy vehicles. Furthermore, the quality of life of those who live close to busy streets and motorways will improve without the extra noise from the cars on the road.

However, there are a few considerations to keep in mind. One of the problems is that currently electric cars cannot travel very far on a single charge and it takes hours to fully recharge an electric car before it is ready to go. Another one is that if millions of electric cars are coming, what will happen to all the discarded batteries? Recycling the batteries can be hazardous. But the technology of electric cars is still being researched and developed and we expect remarkable progress from them in the future.

9. Choose the best answer according to the text.

1. In the modern world electric cars are …
   a. just getting started b. getting popular c. mainstream
2. People think that electric cars will …
   a. cause lots of problems b. not take over c. bring us a lot of benefits
3. Electric cars are altogether …
   a. cheaper b. faster c. cleaner and safer
4. It will cost less to run the electric cars than …
   a. to fill up your car with petrol b. to use public transport c. to use car sharing service.
5. Electric cars will be … than fuel powered cars.
   a. more common b. more affordable c. more expensive
6. Electric cars provide a … environment than other types of vehicles.
   a. safer b. quieter c. happier.
7. The future with electric cars means …
   a. improved roads b. no early wake-up calls by noise from cars c. no other types of vehicles.
8. At present electric cars can …
   a. travel far on one charge b. be replaced by conventional cars c. reduce air and noise pollution.

9. Recycling electric cars batteries …
   a. is not possible b. is hazardous c. not a problem
10. The technology of electric cars …
   a. is fully developed b. is being developed c. will take a long time to be developed

10. Retell Text 7B using the words below as clues.

Consider, distant possibility, extremely popular, produced and tested, consumers, prospects, cleaner and safer, fuel powered cars, to fill up a car, affordable, maintenance, to submit, to complain about, to be concerned, noise pollution, issues, to charge a car, hazardous, to expect.

11. In groups think of more examples and arguments to illustrate the advantages and disadvantages of electric cars.

12. In pairs ask and answer the following questions. Add two or three more questions to your list. Take notes. Summarise your partner's answers.

STUDENT A's QUESTIONS	STUDENT B's QUESTIONS
1) What is your answer to the question asked in the headline? 2) What springs to mind when you hear the word 'car'? 3) What are the benefits of electric cars? 4) What are the downsides to electric cars? 5) Why do people like fast cars?	1) Did you like reading this article? Why? 2) What is your favourite car and why? 3) How will future cars be different? 4) Which are better: electric or conventional cars? 5) What impact will electric cars have on traffic accidents and road safety?

READING

Part 3

13. Scan the text and find the following information as quickly as possible.

1. What did the film "Back to the Future II" predict?
2. What key ideas will influence transportation in the coming years?
3. What is Uber?
4. What is Waze?
5. When did Google begin testing driverless cars?

Text 7C

Still No Flying Cars?

(1) We may not yet be living in an age of flying cars, as predicted in the 1985 film "Back to the Future II", but the rise of smartphones and other new technologies is creating a reality that is just as exciting and almost as far-fetched[1]. Experts agree that economic and demographic changes, technological advances, and environmental concerns are fundamentally changing transportation.
(2) As the transport infrastructure grows old, cities are forced to redefine what transportation is. Urban planners are now realising that old methods focused on reducing traffic congestion[2] are not enough to solve problems like population growth and carbon emissions. Transportation is now a key part of protecting the environment.

(3) Big cities are working to make better use of their streets by adding more bus lanes and pedestrian walkways, and expanding rail networks. At the same time, they are working on advanced technologies that will allow a vehicle to drive itself and communicate with other vehicles and its environment. The most sustainable[3] places to live are places that have multi-modal transport systems. Here are three key ideas that experts predict will influence transportation in the coming years.

(4) **Connectivity.** Ride-sharing services like Uber – taxis booked via[4] smartphone – and apps like Waze, which uses real-time traffic data to find the quickest routes for drivers, are dramatically changing how people move around and affecting the way traffic moves through a city. Communication between riders and drivers, between different vehicles and between cars and infrastructure is bringing transportation into a new era.

(5) **Automation.** Driverless cars have been in the headlines ever since Google began road testing the vehicles back in 2012 but no-one really knows when driverless cars will become commonplace. However, the partial automation of cars is already underway. The idea of a fully automated transportation system is intriguing because it could improve safety by removing human error. It could also help reduce carbon emissions and traffic congestion, and allow more people access to cars.

(6) **Environmental concern.** Concern about the environment could lead to everything from zero- and low-emission vehicles to apps that encourage more walking, biking and carpooling[5]. When considering the future of transportation, it is also important to keep in mind why people travel: they may be going to work, to meet friends or family, or to get their groceries. Technologies that reduce the need for those trips – for example, virtual meetings or telecommuting – could also have a big effect on transportation. In the past, the idea of a flying car represented the best innovation but the technologies that people are imagining and developing now are possibly even more sophisticated and more useful in solving the social and environmental problems that we face in the coming decades.

Vocabulary notes for text 7C

[1] far-fetched	неправдоподобный
[2] congestion	затор, перегруженность
[3] sustainable	устойчивый, рациональный
[4] via	посредством, через
[5] carpooling	автомобильный пул (совместное использование автомобиля)

14. Read text 7C again and circle any words you do not understand, write them down and look them up in the dictionaries.

15. Are these statements true (T), false (F) or not given (NG) according to the text?

1. Transportation is fundamentally changing due to economic and demographic changes, technological advances, and environmental concerns.
2. Big cities are building more roads to reduce traffic congestion.
3. Multi-modal transport systems create more sustainable places to live.
4. The key idea that will influence transportation in the coming years is to develop flying cars.
5. Driverless cars are already commonplace.
6. Reducing emissions will lead to more walking, biking and carpooling.
7. Technologies that reduce the need for using a car could have a big effect on transportation.

16. Work in groups of three. Choose one idea from text 7C that will influence transportation in the coming years to read about in detail and prepare to tell your group about it. Decide which idea is the most promising. Explain why. Together think of some other ways to solve the problem of traffic congestion in big cities.

17. Listen to the discussion of the future of transport and tick the ideas of how we'll be travelling to work in 30 years' time that the speakers mention.

https://www.youtube.com/watch?v=YY1mN_ibteU&t=65s

- the horse and cart
- high speed trains
- driverless vehicles
- flying cars
- automated trains
- commuter trains
- a maglev train in a vacuum system
- air travel
- a solar-powered bike
- electric cars

18. Listen again and fill in the gaps. What do you think about the ideas the speakers discuss? Which of them in your opinion are more likely to catch on or do you agree with one of the speaker's opinion that they are a bit far-fetched?

1. According to the Guinness World Records the fastest ever speed has been recorded _____ .
2. Automation means _____ to do work that humans normally do.
3. If something sounds _____ , like flying cars that we see in sci-fi movies, it's difficult to believe because it's unlikely to happen.
4. The Hyperloop is a maglev train (that's a short way of saying magnetic levitation) in a _____ .
5. The idea is, you get loaded into a _____ then you're pushed through a metal _____ at high speed, taking you to your destination in minutes rather than hours.
6. A vacuum is a space that has all the air and other gases _____ from it so there's no _____.
7. The Hyperloop is simply combining _____ and maglev trains and it allows you to be more energy efficient.
8. If we didn't try _____ we'd still be travelling around on horse and cart!

VOCABULARY

Module 7 Word List

Text 7A	**Text 7B**
accessible (adj)	altogether (adv)
affect (v) something	be concerned (v, passive)
afford (v)	be on the rise (verb phrase)

affordable (adj)
assign (v)
comfortable (adj)
competitive (adj)
contribute (v) to something
convenient (adj)
currently (adv)
dominate (v)
eco-friendly (adj)
eventually (adv)
gain (v) fame
goods (n, pl)
hybrid (adj, n)
increase (v)
increasingly (adv)
influence (v) something
instead of (prep)
keep (v) up with somebody
make an impact on (verb phrase)
make room for something (verb phrase)
method/mode (n) of transportation
open up doors to something (verb phrase)
push aside (phrasal verb)
vehicle (n)

charge (v) a car
complain (v) about
consider (v)
consistent (adj)
consumer (n)
distant (adj) possibility
fill (v) up a car
fuel powered car
furthermore (adv)
maintenance (n)
petrol (n)
submit (v)

Text 7C

be underway (verb phrase)
bus lane (n)
carpooling (n)
commonplace (adj)
congestion (n)
connectivity (n)
demographic (adj)
dramatically (adv)
face a problem (verb phrase)
far-fetched (adj)
pedestrian (n)
route (n)
sustainable (adj)

19. Give definitions of the words below and try to recall how they were used in text 7A.

Mode of transportation, to affect, to keep up with something, currently, to dominate, to make an impact, to gain fame, to push aside, to make room for something, eventually, convenient, goods, to assign, to afford, accessible, to contribute, to increase, instead of, comfortable, competitive, eco-friendly, hybrid, to open up doors, to influence.

20. Fill in the gaps with the words from Exercise 19 in the right form. The first letters are given. Translate the sentences into Russian.

A. 1. Henry Ford **g_____ f_____** worldwide by introducing the assembly line mode of production in car manufacturing. 2. We have to invest in new technology if we are to remain **c_____**. 3. Some people think that a bike is a very **c_____** way of getting around in big cities as it allows you to avoid traffic jams. 4. When it was developed, the new vaccine was given only to those who could **a_____** to pay for it. 5. **I_____ o__** complaining, why don't we try to change things? 6. Travelling to distant areas is seldom straightforward and usually involves more than one **m_____ of t_____** . 7. If you don't update your professional skills regularly you will be **p_____ a_____** in favour of more qualified specialists in your field. 8.While studying, all the students are **a_____** a lot of different tasks to complete. 9. The cost of the project has **i_____** dramatically since it began. 10. Technology is changing so fast that it is difficult to **k_____ u____ w____** it. 11. Environmentalists demand that we must stop using nonrenewable sources of energy to **m_____ r_____** for renewable ones. 12. The manufacturers are **c_____** testing driverless cars.

B. 13. The idea to replace conventional cars with electric or hybrid cars is **d**_____ today. 14. The number of companies using the Internet to sell **g**_____ is increasing rapidly. 15. Examples of **e**____-_____ projects include ecotourism, biodiversity prospecting, and selective logging. 16. **H**_____ teaching combines traditional in-class teaching with online teaching. 17. New measures are designed to **o**_____ **u**___ **d**_____ to greater competition. 18. Pollution cannot be mitigated without looking at all the components that are **c**_____ **t**__ the problem of emissions. 19. Due to the Internet information has become widely **a**_____ . 20. Car designers predict that electric cars will replace petrol cars **e**_____ . 21. The restrictions are **a**_____ the national economy in many ways. 22. The new teacher **m**_____ an immediate **i**_____ on her students. 23. When he decides something, no one can **i**_____ his decision. 24. I can't go for a walk with you. My new shoes are not very **c**_____ for walking.

21. Look at the words below. Try to recall how they were used in text 7B.

Distant, consumers, altogether, virtually, fuel powered cars, to fill up a car, petrol, consistent, maintenance, to submit, emissions, to complain about, to be concerned, furthermore, to consider, to charge a car, hazardous, to expect.

22. Match the words with the correct definition of the word as it is used in text 7B. Think of your own example sentences with some these words.

A

1	far away in space and time	*a*	to be on the rise
2	to think about something carefully before making a choice	*b*	excited
		c	affordable
3	happy, interested or hopeful	*d*	distant
4	to give or offer something for a decision or inspection	*e*	to consider something
5	if you can buy it because you have enough money it is	*f*	to submit
6	to be increasing		

B

1	involved or affected by some situation	*a*	to complain about
2	repairs needed to keep something in good condition	*b*	consistent
3	to say that you are annoyed or unhappy	*c*	maintenance
4	a person who buys goods or services	*d*	furthermore
5	in addition, more importantly	*e*	concerned
6	staying the same	*f*	a consumer

23. Complete the sentences with the words from Exercise 22. Translate the sentences into Russian.

1. It is important to hear the arguments on both sides and _____ them carefully. 2. We are all _____ by the prospect of a party. 3. This flat is quite _____ because it is not in the centre. 4. More and more people today are deeply _____ about the economy. 5. I prefer to live in the country because the environment is healthier there than in the city. _____ the air is cleaner and easier to breathe. 6. Roads need a lot of _____, especially in the countries with cold winters. 7. Lots of people living in big cities _____ about the noise. 8. Since he began to work hard, there has been a _____ improvement in his results. 9. According to statistics, unemployment is on the _____ because of the pandemic. 10. New means of transport made travelling to _____ lands accessible to a lot of people. 11. While applying for a job, a candidate should _____ a CV (резюме) and an application letter (сопроводительное

письмо). 12. Because of the lockdown _____ did not spend as much money as it had been expected.

24. Fill the gaps in the sentences using the words from text 7C. The paragraph numbers are given to help you.

1. If something is _____, it is difficult to believe because it is very unlikely. (§ 1) 2. _____ is a situation in which a place is crowded with vehicles. (§ 2) 3. A _____ place to live is where you can live for a long time without causing damage to the environment. (§ 3) 4. _____ is the ability of computers and other types of electronic equipment to connect successfully with other computers or programs. (§ 4) 5. If something is _____ , it happens very often and is therefore not unusual. (§ 5) 6. If something is _____ , it is already in progress. (§ 5) 7. _____ is a system in which a group of car owners travel together so that they use only one car. (§ 6) 8. _____ technology is complicated and advanced in design. (§ 6)

25. Find the following words or phrases in text 7C.

1. *a verb:* to say that an event or action will happen in the future (§ 1)
2. *a noun phrase:* a feeling when you are worried about pollution (§ 1)
3. *a verb:* to change the meaning of something (§ 2)
4. people who make decisions how a city will be developing are called … (§ 2)
5. *a verb:* to make something larger (§ 3)
6. *a noun:* a particular way or direction between places (§ 4)
7. *a verb:* to have an influence on someone or something (§ 4)
8. *a two-word noun phrase*: a mistake made by a person controlling a machine or process rather than something wrong with the machine or process itself (§5)
9. *an adjective*: created by computers or appearing on computers or the internet (§ 6)
10. *a noun*: the invention of new ideas, methods, equipment, etc. (§ 6)

26. Two-word noun phrases. Match the words in the left-hand column with those in the right-hand column to make noun phrases. Use them in the sentences of your own.

Example: transport + system = transport system. Urban planners claim that multi-modal transport systems will help solve transport problems.

1	urban	*a*	networks
2	carbon	*b*	lane
3	bus	*c*	walkway
4	traffic	*d*	services
5	travel	*e*	transport system
6	pedestrian	*f*	planners
7	rail	*g*	error
8	multi-modal	*h*	congestion
9	ride-sharing	*i*	emissions
10	human	*j*	time

27. Complete the table. Use the adjectives in the sentences of your own.

Example: sustainability → sustainable. We should try to promote sustainable development in all countries.

noun	adjective
1 technology *2* environment *3* economy *4* problem *5* resident *6* catastrophe *7* excitement *8* innovation *9* drama *10* demography	

28. Use the word given in brackets to form a word which fits in the gap.

1. _____ advances and environmental concerns are fundamentally altering the transportation landscape. (*technology*) 2. _____, urban planners are realising that the old auto-centric models aren't working. *(increase)* 3. The most _____ places to live are those that have multi-modal transport systems. *(sustain)* 4. Uber and Waze are _____ changing how people get around. (*drama*) 5. Waze has led to a _____rise in cars moving through residential neighbourhoods. *(problem*) 6. The _____ automation of cars is already underway. (*part*) 7. _____ concern could lead to everything from zero- and low-emission vehicles to apps that encourage more walking, biking and carpooling. (*environment*) 8. One of the most important qualities of a good IT engineer is to be able to find _____ solutions. (innovation)

29. Match the verbs in the left-hand column (1-10) with the nouns in the right-hand column (a-j) to form collocations. Write your own example sentences with these phrases.

*Example***:** charge + a car = charge a car. It takes hours for an electric car to charge.

1	allow	*a*	technology
2	develop	*b*	an impact
3	increase	*c*	a reality
4	make	*d*	the efficiency of something
5	create	*e*	traffic congestion
6	reduce	*f*	rail networks
7	expand	*g*	a problem
8	remove	*h*	more walking
9	encourage	*i*	access to something
10	face	*j*	human error

30. Work in groups. Choose 5-7 words from Module 7 Word list and prepare a short news story to tell your group using these words. Ask your listeners to note down the words while they listen to your story. Compare your lists.

Example: One of the major problems that most residents of big cities are **concerned** about are traffic jams. For almost a decade Moscow has been ranked first in the world's road **congestion** rankings. Today it doesn't have the worst traffic anymore. To combat traffic jams, new **bus lanes**, roads and interchanges are built, the old road network is repaired and expanded in Moscow. An **increasing** number of streets are converted into **pedestrian** or car-free zones, with

lots of **pavements** and options for different **modes of transport** other than a car, such as bicycles, skateboards, push-scooters). To make public transport more **accessible** the Department of Transport is actively developing the Metro system: 56 new stations have been opened in Moscow since 2011. Also the Mayor's Office introduced a paid parking system to reduce the use of private vehicles.

31. Summarise in English using some key words from the vocabulary section.

История современного автомобиля начинается около 140 лет назад, когда немецкие инженеры Карл Бенц и Готлиб Даймлер создали первый автомобиль с двигателем внутреннего сгорания. Именно с появления этого двигателя и начинается история современного автомобиля. Это был прорыв в технике и автомобилестроении, после которого начала формироваться эра машиностроения. Вообще, первые паросиловые машины, способные перевозить человека, начали создавать еще в 17 веке. Они были больше похоже на экипажи, ездили медленно, сильно шумели и дымили.
В 1807 году появилась первая машины, приводимая в движение двигателем внутреннего сгорания, что в конечном счете привело к появлению повсеместно используемого сегодня газолинового или бензинового двигателя внутреннего сгорания. Машины, работающие на электричестве, ненадолго появились в начале 20-го века, но почти полностью исчезли из поля зрения вплоть до начала 21-го века. История автомобиля интересна и многообразна, но самой главной ее особенностью является скоротечность. Всего лишь немногим более 100 лет отделяет первые автомобили от современных.

SPEAKING AND DISCUSSION

32. My Car. Discuss in groups which of the following would you like to own and why?

- an electric car
- a driverless car
- a flying car
- any other car?

33. Rank these with your partner. Put the most important things your car must have at the top. Compare your rankings with other pairs.

central locking	fuel efficiency	space	sports wheels
bluetooth connectivity	GPS navigation	airbags	speed

34. Think of as many reasons as you can in favour of or against the following statements, then discuss them in groups.

1. Driverless cars are the perfect solution. What could possibly go wrong?
2. Petrol and diesel vehicles should be made illegal because they damage the environment.
3. Everyone should use public transport and private cars should be banned.
4. The world would be a better place without cars.
5. Car owners care too much about their cars.

35. Discussion. Which future car technology is the most important? Use the cards below to prepare to describe your technology and say why it is the most important. Present your ideas in mini-groups. Decide which three technologies are the most promising.

Student A's Card. Cars That Communicate with Each Other and the Road

Car manufacturers are seriously looking into and researching two technologies that would enable future cars to communicate with each other and with objects around them. Imagine approaching an intersection as another driver runs a red light. You don't see them at first, but your car gets a signal from the other car that it's directly in your path and warns you of the potential collision, or even hits the brakes automatically to avoid an accident. A developing technology called Vehicle-to-Vehicle communication, or **V2V**, is being tested by car manufacturers as a way to help reduce the amount of accidents on the road. But researchers aren't only considering V2V communication. Vehicle-to-infrastructure communication, or **V2I**, is being tested as well too. V2I would allow vehicles to communicate with things like road and traffic signals and provide information to the vehicle about safety issues. These technologies could transform the way we drive and increase automotive safety dramatically. Good news is that car companies and the governments are already working on making this technology a reality.

Student B's Card. Self-Driving Cars

The idea of a self-driving car is not new. Many TV shows and movies have had the idea and there are already cars on the road that can park themselves. But a truly self-driving car means exactly that, one that can drive itself, and they're probably closer to being a reality than you might think. Engineers have already tested self-driving cars. Not only can they record images of the road, but they can also recognise road signs, find alternative routes and see traffic lights before they're even visible to a person. By using lidars, radars, and cameras, the cars can analyse and process information about their surroundings faster than a human can. Self-driving cars could make transportation safer for all of us by eliminating the cause of 95 percent of today's accidents: a human error. Although self-driving cars may seem far off, some people believe that you'll see some sort of self-driving car in showrooms in the next decade.

Student C's Card. Augmented Reality Dashboards

In the near future cars will be able to identify external objects in front of the driver and display information about them on the windshield. Think of the Terminator, or many other science fiction stories, where a robot looks at a person or an object and automatically brings up information about them and can identify who or what they are. Augmented reality dashboards, AR for short, will function in a similar way for drivers. BMW has already implemented a windshield display in some of their vehicles which displays basic information, but they're also developing augmented reality dashboards that will be able to identify objects in front a vehicle and tell the driver how far they are away from the object. The AR display will overlay information on top of what a driver is seeing in real life. So if you're approaching a car too quickly, a red box may appear on the car you're approaching and arrows will appear showing you how to maneuver into the next lane before you collide with the other car. An augmented reality GPS system could highlight the actual lane you need to be in and show you where you need to turn down the road without you ever having to take your eyes off the road.

Student D's Card. Airbags That Help Stop Cars

Ever since airbags were added to vehicles, they've continued to make their way around the inside of our vehicles. Mercedes is working on a new way to use airbags that moves them away from a passive safety measure and makes it part of an active safety system. Mercedes is experimenting with airbags that deploy from underneath the car that will help stop a vehicle before a crash. The airbags are part of the overall active safety system and deploy when sensors determine that at

impact is inevitable. The bags have a friction coating that helps slow the car down and can double the stopping power of the vehicle. The bags also lift the vehicle up to eight centimeters, which counters the car's dipping motion during hard braking, improves bumper-to-bumper contact and helps prevent passengers from sliding under seat belts during a collision.

Student E's Card. Energy-storing Body Panels

Exxon Mobil predicts that by 2040, half of all new cars coming off the production line will be hybrids. That's great news for the environment, but one of the problems with hybrids is that the batteries take up a lot of space and they are very heavy. That's where energy-storing body panels come in. A group of auto manufacturers are currently researching and testing body panels that can store energy and charge faster than conventional batteries of today. The body panels being tested are made of polymer fiber and carbon resin that are strong enough to be used in vehicles and pliable enough to be molded into panels. These panels could reduce a car's weight by up to 15 percent. The panels would capture energy produced by technologies like regenerative braking (or when the car is plugged in overnight) and then feed that energy back to the car when it's needed.

GRAMMAR

THE INFINITIVE

Lead-in

36. Look at the sentences from the reading section noticing the words in italics. In groups discuss the following questions.

1. What are the highlighted words called? 2. What do they look like? 3. What is their meaning and role in a sentence? 3. Is there an equivalent verb form in Russian?

1. It is hard *to find* a movie, a book, or a TV show that does not feature some type of automobile in it.
2. They (automobiles) have become essential for people to get to work, to go on holiday or *run* everyday errands.
3. Over generations, automobiles have influenced every aspect of society in many ways and have changed *to keep* up with the times.
4. They quickly gained fame as a new and fast way *to travel*.
5. Other modes of transportation had *to be pushed aside* in order *to make room* for the more comfortable and convenient automobile.
6. One of the problems is that currently electric cars cannot *travel* very far on a single charge.
7. However, there are a few considerations *to keep in mind*.
8. In the near future cars will be able *to identify* external objects in front of the driver and *display* information about them on the windshield.

STUDY NOTE

Infinitives are verb forms like *to read, to write, to be used*. Unlike verb tenses (*e. g. he writes, they developed*) they do not show the actual times of actions, but refer to actions in a more general way. They are usually used with **to**, but there are some exceptions. *Infinitives* have many *functions*. They can be used to add more information after certain verbs, adjectives and nouns; explain the reason or purpose; as subjects and complements.

I wanted to meet him. (after a verb to add more information)
He is too busy to help you. (after an adjective to add more information)
I went to university to get a degree. (to explain the purpose)
My dream is to travel around the world. (as a complement)
There's a great need to improve our service. (after a noun to add more information)
To eat much sugar is bad for your health. (as a subject)

37. Find the Infinitives in the examples below and decide what they do in each sentence choosing from the given options. Translate the sentences into Russian.

a. add more information (after nouns, verbs, adjectives)
b. explain the reason or purpose of something
c. function as a subject/a complement
d. after question words in indirect questions
e. after auxiliary/modal verbs

1. My brother went to university to study computing. 2. Who was the last to come? 3. He is too lazy to get up early. 4. Do you want to see this film? 5. His goal was to become a well known writer. 6. It was difficult to sell my car. 7. To find fault with others is easy. 8. This is a difficult question to answer. 9. I don`t know how to respond. 10. I`m going to see her tomorrow. 11. He borrowed some money to buy flowers. 12. The task was too difficult to do without help.

38. Translate the sentences into Russian paying attention to the functions of the Infinitives.

1. To create eco-friendly vehicles is one of the goals of a long-term plan to protect the environment. 2. The aim of engineers who are developing new cars is to focus on the safety aspects. 3. Underwater surveys are conducted to study underwater flora and soils. 4. To calculate the living standard of the people we have to take into account the cost of education. 5.To speak English fluently is the aim of our students. 6. To speak English fluently it is necessary to practise regularly. 7. There are a lot of sites where you can find good books to read or films to watch. 8. The spacecraft set to be launched in a few days has been constructed in accordance with the most up-to-date principles. 9. To replace conventional cars with electric cars we need to develop infrastructure to charge electric vehicles. 10. The developers of driverless cars have a number of problems to solve before these cars are mass produced.

STUDY NOTE

Sometimes Infinitives are used without **to**. They are called **bare** Infinitives.

- after modal verbs: *Could you **answer** a few questions?*
- after the verbs to let, to make (to force), dare, need (used as a model verb) and (optionally) help: *Weather changes often make cyclones **appear**. Let me **explain** the rule.*
- after the verbs like: to see, to hear, to feel, to watch, to notice, etc.: *I have never seen you **look** so happy.*
- after the expressions had better/ would rather: *You had better **go** there.*
- in the sentences beginning by 'Why (not)': *Why **tell** her the bad news?*

*Why not **pay** more in other shops?*

Note: In Passive voice the verbs make, hear, see, etc. are followed by to-infinitive: *She was made to rewrite the essay.*

39. Decide which option in brackets is correct.

1. She always makes him (do/to do) everything she wants. 2. They may (arrive/to arrive) soon. 3. It is better (to leave /leave) than to stay. 4. I'd rather (walk/to walk) than take a car. 5. Why not (go/to go) there at once. 6. Will you (let/to let) me (ask/to ask) a few questions? 7. I didn't hear you (to come in/ come in). 8. Let's (go/to go) out tonight. 9. Can you (to help/help) me (to do/do) this work? 10. We'd better (go/to go) home as soon as possible. 11. Has anybody seen him (leave/to leave)? 12. I'd like (to go/go) on holiday in July. 13. She said she would never (tell/to tell) lies again. 14. People were made (to stay /stay) indoors during the lockdown.

(If you want to learn more about when 'bare' infinitives are used, watch a video following this link: https://www.youtube.com/watch?v=TG6ZEJSrMyc)

40. Complete the sentences with the bare or to-Infinitive of the verbs in brackets.

1. We had ___ (put on) our overcoats because it was cold. 2. How dare you___ (call) me a liar? 3. They heard this girl ___ (cry out) with joy. 4. I would rather ___ (stay) at home today. 5. You look tired you had better___ (go) home. 6. I was planning ___ (do) many things today. 7. Do not let us ___ (get worried). 8. What made you ___ (think) so? 9. He was made ___ (obey) the rules. 10. Why not___ (talk) with her yourself?

THE GERUND

Lead-in

41. Look at the sentences from the reading section paying attention to the words in italics. In groups discuss the following questions.

1. What are the highlighted words called? 2. What do they look like? 3. What is their meaning and role in a sentence? 4. Is there an equivalent verb form in Russian?

1. At the time the car manufacturing industry was revolutionised by *introducing* a continuously moving assembly line.
2. Another trend in car design is *creating* eco-friendly vehicles which will slow the process of global warming.
3. By *driving* electric cars, our generation will virtually eliminate air pollution and improve air quality.
4. *Recycling* the battery can be a hazardous business.
5. Transportation is now a key part of *protecting* the environment.
6. Autonomous cars will probably offer less pleasure for those who love *driving* on the open road, but they will bring a number of benefits to the society.
7. Imagine *approaching* an intersection as another car runs a red light.
8. The bags also lift the vehicle up to eight centimeters, which counters the car's dipping motion during hard *braking*.

STUDY NOTE

Depending on their function, **-ing** verb forms in English can be called either **Participles** or **Gerunds**. In the examples above the highlighted **-ing verb forms** 'act' more like nouns and are called **Gerunds**.

Compare*: The students are reading the explanation. (Participle)*
Reading helps you develop your cognitive abilities. (Gerund)
We use **Gerunds** to add information after certain verbs, nouns and adjectives; as objects; after prepositions; as subjects and complements; to list activities; after certain common expressions. (*e.g. it is worth doing, no use doing etc…)*

We enjoy listening to his lectures. (object of a verb)
Are you still interested in dancing? (after a preposition)
Doing nothing is sure to get you into a difficult situation. (subject)
There's no use trying to convince him. (special expression)
I hope you don't mind my asking a question. (after a verb)

Note: add ***not*** before a Gerund to make a negative statement.
Not inviting him was a big mistake.

42. Decide which usage of Gerunds each group of examples illustrate? Match the uses (a-e) with the groups (I-V). Translate the sentences into Russian.

a. Gerunds after prepositions
b. Gerunds after verbs/nouns/adjectives
c. Gerunds after *do* and *go*
d. Gerunds after verbs/adjectives/nouns +preposition
e. Gerunds as subjects or complements

A. 1. Who`s going to do the cooking? 2. You ought to do some studying. 3. I did a bit of shopping this morning. 4. This is a good place to go fishing.
B. 5. How do you like the idea of having dinner in a restaurant? 6. My brother is talking about starting a pop group. 7. We succeeded in finding the place. 8. My mum is fond of doing crosswords. 9. I am not good at drawing. 10. I`m used to walking. 11. I insist on having a rest. 12. I`m afraid of Sarah`s doing too much.
C. 13. On hearing the news, they left at once. 14. We like having a hot drink before going to bed. 15. Can`t you help us instead of just standing there? 16. You won`t pass the exams without doing any work. 17. You need a special tool for cutting glass. 18. When I studied for exams I stayed awake by drinking black coffee.
D. 19. Eating fast food is bad for you. 20. My favourite activity is reading. 21. Smoking isn`t allowed here. 22. Driving a car isn`t as comfortable as travelling by train.
E. 23. This film is worth seeing. 24. I find reading on a bus difficult. 25. Have you finished writing the letter? 26. Barry suggested going for a walk. 27. I don`t mind waiting a few minutes. 28. Do you enjoy listening to music? 29. It's no use trying to stop him. 30. Our trip involved changing planes.

43. Complete the gaps with Gerunds of the verbs given below. Pay attention to the verbs and other expressions followed by Gerunds. Explain the meaning or translate the sentences into Russian.

to send, to take a train, to work, to put, to eat, to open, to use, to hear, to take, to try

Example: I don't mind …… earlier. → I don't mind leaving earlier.

1. I find _____ the best way of getting from one city to another in Russia. 2. My job involves _____ in the evenings but not very often. 3. If you want to feel better you'd better give up _____ fatty foods. 4. The student admitted _____ his smart phone in the exam. 5. I suggest _____ an alternate route if possible. 6. It is no use _____ to stop technological advancements. 7. I'm looking forward to _____ from you soon. 8. Would you mind _____ the window. 9. I've always avoided _____ things off till the last minute. 10. I consider _____ them a letter to explain the situation.

CHOOSING BETWEEN AN INFINITIVE AND A GERUND

44. Read the sentences below. Underline Infinitives and Gerunds and try to explain what the choice of either an Infinitive or a Gerund depends on in each example. Use the questions below to help you.

- Do we use Gerunds or Infinitives after prepositions?
- Do we use Gerunds or Infinitives after verbs/adjectives/nouns?
- Do we use Gerunds or Infinitives after auxiliary (e.g. modal) verbs?
- Do we use Gerunds or Infinitives to express the purpose?
- Do we use Gerunds or Infinitives as subjects or complements?

1. With introducing a continuously moving assembly line in the car manufacturing industry car manufacturers were able to sell cars at a more affordable price.
2. Urban planners realise that the old methods focused on reducing traffic congestion are not enough to solve the problems like growing population and carbon emissions.
3. Developing new cars today tends to focus more on car safety than its features.
4. Big cities are trying to make better use of their streets by adding more bus lanes and pedestrian walkways, and expanding rail networks.
5. Driverless cars have been in the news ever since Google began road testing the vehicles back in 2012 but no-one really knows when driverless cars will become a commonplace.
6. Modern technologies may prove to be more useful in solving the social and environmental problems in the coming decades.
7. Automobiles continue to influence every part of our economy.
8. Environmental concerns can lead to the development of apps that encourage walking, biking and carpooling.
9. If one of your favourite activities is driving on the open road, you'll probably won't be thrilled at the prospect of buying an autonomous car.
10. The car of the future opens up amazing doors to technological innovation and presents the opportunity to rethink transportation as a whole.

STUDY NOTE

Gerunds are often used in similar ways to **Infinitives**. In a small number of cases it makes no difference whether we choose an Infinitive or an –ing form:
It began to rain = raining.
We have a good chance of making = to make a profit.

We use Infinitives:
-after certain nouns and adjectives: *I am **glad to meet** you.*
-after auxiliary verbs (modals): *I **can speak** English.*
-after many non-auxiliary verbs: *They **refused to take** part in the discussion.*
-after the first/second/last/only…+ noun or 'one': *He was **the only one to answer** all the questions.*
-after verb + question word: *I don't **know what to do**.*

We use Gerunds:
-after certain verbs: *They **discussed modernising** the industrial process.*
-after prepositions and the verbs/adjectives with prepositions including phrasal verbs: *She was accused **of telling** lies. I'm afraid **of doing** the wrong thing.*
-after some expressions: *It is **no use crying**.*

45. Choose the right form of the verb in brackets and explain your choice. Translate the sentences into Russian.

1. Before trains were invented people used (to travel/ travel/ travelling) on horseback. 2. China has set a record for (to create/ create/ creating) the highest heat ever recorded in an artificial sun that is five times hotter than the sun. 3. The scientists want (to develop/ develop/ developing) the artificial sun which will (to create/ create/ creating) a near-endless supply of clean energy. 4. Scientists around the world have been trying for decades (to develop/ develop/ developing) nuclear fusion. They say it is the best way (to produce/ produce/ producing) clean energy. 5. There are currently a few companies that are working on (to build/ build/ building) the flying vehicle. 6. This travel agency is one of the most successful companies in the market because of (to be/ be/ being) able to provide customers with the option (to travel/ travel/ travelling) rapidly, and sustainably. 7. Mercedes-Benz, the luxury carmaker, has unveiled a car that lets you (to use/use/using) your mind (to control/ control/ controlling) certain things. 8. The movie Avatar was about how (to use/ use/ using) the brain for (to connect/ connect/ connecting) with nature. 9. It's hard (to keep/ keep/ keeping) up with technology these days. 10. After (to land/ land/ landing) at the airport, the pilot of a flying car will only need to push one button (to transform/ transform/ transforming) the aircraft into a sports car. 11. A man who cannot move his arms or hands has used his thoughts (to write/ write/ writing) on a computer screen. 12. Two tiny sensors implanted into the man's brain let the man (to write/ write/ writing) using his thoughts.

(For more explanation and examples watch a video using the link:
https://www.youtube.com/watch?v=1VaoDZpzWTw

Verb + Infinitive / Verb + Gerund

46. Look at the sentences from the reading section paying attention to the words in italics. What does the choice of a gerund or an infinitive after a verb depend on? Is there a rule?

1. Vehicles are also used *to transport* goods and other products.
2. Cars increased the speed of human life in two ways: first they allowed humans *to move* in an easier and faster way, and, secondly, their fast-paced manufacturing increased the speed of production and transformed the face of the industry forever.
3. Modern car designers keep on *creating* eco-friendly vehicles which will slow the process of global warming. These cars are able *to run* on fuel sources other than petrol.
4. Today automobiles continue *to influence* every part of our economy.
5. Autonomous cars will probably offer less pleasure for those who love *driving* on the open road.

6. While developing new cars today's engineers seem *to focus* more on the safety aspect of the car instead of its features.
7. Big cities are trying *to make* better use of their streets by adding more bus lanes and pedestrian walkways, and expanding rail networks.
8. Modern technologies may prove *to be* more useful in solving the social and environmental problems in the coming decades.

STUDY NOTE

Some verbs are followed by the **Infinitives** of other verbs: e. g. *want to do*. Some verbs are followed by the **–ing forms** of other verbs: e.g. *enjoy doing.*

The **to-Infinitive** often describes a *future* event, or stresses that something is more *speculative* or *hypothetical*.
*I hope **to see** you next week* (future event)
*It's bad for you **to do** exercise after a meal.* (speculative: if you were thinking about doing some exercise, perhaps you shouldn't)

The **Gerund** describes an *activity* or what *actually happens* or has happened.
*I enjoy **driving**. (an activity)*
*We enjoyed **seeing** you last weekend. (what has happened)*

Some verbs* (*e.g. to remember, to stop, to forget, to regret…)* can be followed by either Infinitives and or Gerunds with a difference in meaning.
Compare: *People **stopped buying** newspapers because all the news can be found on the Internet. (*they no longer buy newspapers)
*On his way home he **stopped to buy** a newspaper. (*interrupting one action to do something else)
*You can find more information about these verbs in an Independent Further Study section.

47. Do you know which verbs and phrases are followed by Infinitives and which are followed by Gerunds? Try to put the following verbs into the correct columns. Compare your lists in groups. Then check them using the table in Grammar Section. Think of your own examples with some of these verbs.

Verb (+person) + Infinitive	*Attempt to do, want (somebody) to do,…*
Verb + preposition + Gerund	*Apologise for doing,…*
Verb + Gerund	*Avoid doing, …*

Approve, arrange, attempt, agree, appear, appreciate, advise, apologise, admit, anticipate, allow, ask, avoid, consider, carry on, complete, complain, decide, delay, deny, discuss, dream, enjoy, excuse, expect, fail, feel like, finish, forgive, fancy, give up, happen, help, hope, hesitate, intend, involve, insist, invite, imagine, keep(=continue), learn, look forward, manage, mention, mean, mind, miss, offer, object, plan, practise, prepare, pretend, prevent, promise, put off, seem, refuse, recommend, report, risk, succeed, suggest, tend, wish, want, would like.

48. Complete the sentences by choosing one of the options (a, b).

1. They agreed not (*a. to speak b. speaking*) about the case. 2. They have arranged (*a. to stay b. staying*) in this hotel. 3. We've never attempted *(a. to pass b. passing*) this exam. 4. She could not put off (*a. to go b. going*) to her parents at that time. 5. He didn't expect (*a. to be involved b. being involved*). 6. He promised (*a. to walk b. walking*) in the park every day. 7. The scientist suggested (*a. submit b. submitting*) the student's work for consideration. 8. Are you just pretending (*a. to take part b. taking part*) in this matter? 9. She admitted (*a. to tell b. telling*) lies.

10. Does your work involve (*a. meeting b. to meet)* a lot of people? 11. I stayed at home last night because I didn't feel like (*a. going out b. to go out*).

49. Put the verbs in brackets into the Infinitive or the Gerund.

1. Replacing conventional cars with electric cars promises (solve) the problem of pollution in big cities. 2. Our department invites all the students (take part) in the conference on the topic "The Future of Public Transport". 3. I don't mind (have) evening classes from time to time. 4. Why have you decided (go) to university? 5. My colleagues often complain about (have/work) overtime. 6. The speaker insists on (be) an expert in the field of computing but I doubt that he really is. 7. Why is everybody blaming him for (lose) the game? It is not entirely his fault. 8. Some people don't approve of (use) robots extensively because they are afraid of (lose) their jobs. 9. Our teacher told us (prepare) for a test but I don't know how. 10. The chairman asked the audience (not/make) so much noise. 11. When I was leaving my home town (go) to university I thought I would miss (see) my family and school friends. 12. The tutor didn't recommend (spend) too much time on (do) this assignment. 13. I've always wanted (live) in my own house. 14. What do you think of (go) to the cinema at the weekend? 15. Is there anything you enjoy (do)? 16. If you keep on (try), you'll succeed. 17. The developers expect (create) more exciting applications in the near future. 18. Don't forget (practise) regularly if you want (learn) (speak) English fluently.

STUDY NOTE
Note the use of Gerunds or Infinitives after certain expressions in the following examples:

*She **can't stand** being contradicted= She **can't stand** to be contradicted.*
*He **used** to think that life ended at forty, but now he knows it is not.* (in the past he thought…)
*I **am used** to doing morning exercises every day.* (it is my everyday routine)
*They **can't help** eating sweets.* (they are unable to do otherwise)
*It **was supposed** to be sunny, but it is raining.* (was expected)
*This new film **is worth** seeing.* (it is interesting or important to do so)

50. Put the verbs in brackets into the right verb form (an Infinitive or a Gerund). Translate the sentences into Russian.

1. He was supposed (take) part in the discussion but he was not ready. 2. We used (be) best friends but now we have nothing in common. 3. It took me a while, but I have finally got used to (use) this new software. 4. I can't help (think) that she is not telling the truth. 5. There is nothing worth (read) on his blog. 6. I used (be) really shy but now I'm getting more confident 7. I can't help (wonder) what you are going to do. 8. It is worth (do) some research when looking for the course that is right for you. 9. Our boss can't stand (be) interrupted. 10. Everybody is used to his (be) late. 11. Try to forget it. It isn't worth (worry) about.

INDEPENDENT FURTHER STUDY

51. Match the words in column A with their Russian equivalents in column B.

A.	**B.**
1. body	a. тормоза срабатывают
2. car wheels	b. силовая передача
3. power train	c. главная передача
4. power plant	d. коленчатый вал двигателя
5. springs	e. нажимать на педаль

6. steering system 7. clutch 8. final drive 9. engine crankshaft 10. push down the pedal 11. brakes are applied 12. frame with axles 13. fuel system 14. lubricating system 15. accessories	f. силовая установка g. колеса автомобиля h. рама с осями i. топливная система j. рулевая система k. сцепление l. вспомогательные устройства m. система смазки n. кузов o. рессоры

52. Read the text and learn about the structure of the automobile.

Components of the Automobile

1. Basically, the automobile consists of three parts: the power plant, or the engine, the chassis and the body. To these may be added the accessories: the heater, lights, radio, speedometer and other devices.
2. The power plant, or 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.
3. The chassis consists of a power train, frame with axles, wheels and springs. The chassis includes brakes and steering system.
4. 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.
5. 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.
6. 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.

53. Match questions and answers.

1. What are the main basic parts of the automobile? 2. What does the chassis consist of? 3. What units does the power train contain? 4. What is the function of the clutch? 5. Why are brakes needed?
a. The clutch, gearbox, cardan shaft and the final drive.
b. Freeing the engine from the gearbox.
c. The power plant, the chassis and the body.
d. To slow or stop the car.
e. A power train, frame with axles, wheels and springs.

54. Finish the sentences.

1. The mechanism used for stopping the car is ...
a) clutch b) gearbox c) brakes
2. The mechanism used for changing the speed is …
a) clutch b) gearbox c) brakes
3. The mechanism used for connecting (or disconnecting) the engine from the gearbox is …

a) brakes b) clutch c) steering system
4. The unit carrying the power from the engine to the car wheels is …
a) power plant b) power train c) chassis
5. The instrument measuring the speed of the car is …
a) heater b) lights c) speedometer.

55. Put the words into the correct sentences.

airbag, alarm, central locking, change gear, driving license, handbrake, lane, clutch, brake, headlights, overtake, seatbelt, windscreen

Cars and Roads

1. The _____ are badly adjusted. I can only see about 10 metres in front of the car. 2. I don't really know how to _____ . I've always driven automatics. 3. When the traffic is heavy, just stay in the same _____ and relax. 4. It is dangerous to _____ another car on a bend. 5. You can get a _____ at the age of eighteen. 6. Don't forget. When you see an obstacle, there's a certain amount of thinking time before you actually _____ . 7. When a car _____ goes off in our street, no one takes any notice at all. 8. Keep the _____ nice and clean. A clear view of the road is absolutely essential. 9. Before you change gear on a manual car, you have to press the _____ down. 10. The car's slipping backwards down the hill. Put the _____ on. 11. It is amazing the way the _____ inflates so fast when the car hits something. 12. Always fasten your _____ . It keeps you safe and secure inside your vehicle. 13. It is ok. Don't worry about your door. The car has a _____ .

56. Read the text about a flying car and circle the correct word.

Flying Car Could Be on Sale Soon

Humanity is set to enter a new 1. *are / era* of transport as a flying car could go 2. *on / in* sale in the near future. An airborne vehicle was unveiled in California. Its designers say it can travel for 3. *along / up to* 40km at a speed of 100kph. It will 4. *eventual / eventually* cost the same as a typical sports-utility car. The vehicle has been 5. *testing / tested* and its use has 6. *been authorised / authority*. Even though it will take to the skies, drivers (or pilots) will not need a pilot's license 7. *for / to* get behind the controls. However, its operators will have to successfully 8. *compete / complete* a pilot's written examination and receive training in how to use the 9. *vehicular / vehicle*. Critics say the term "car" is 10. *somewhat / what* of a misnomer as it has no wheels and cannot be driven on roads. A more 11. *accuracy / accurate* description would be a person-carrying drone. The vehicle can only carry one person and is 12. *powerful / powered* by eight propellers - four at the front of the car and four at the 13. *backing / back*. The flying car is re-energising the 14. *artistic / art* of flight with a safe and affordable flying vehicle that can 15. *free / freely* its operators from the everyday restrictions of ground transportation. The 16. *age / aged* of personal flight could be arriving. This is an example of how things go from impossible to inevitable in a very short period 17. *off / of* time

57. Reread the text and find the right answer a, b, or c.

1) What is humanity set to enter a new era of?
a) relations b) transport c) tourism
2) How fast can the new car fly?
a) 200kph b) 120kph c) 100kph
3) What did the article say people would not need to fly the car?
a) a pilot's license b) a bank loan c) a crash helmet

4) What will people have to get in order to fly the car?
a) a compass b) training c) a crash helmet
5) What do critics say a misnomer is?
a) drones b) flight c) the term "car"
6) How many people can the flying car carry?
a) 4 b) 2 c) 1
7) How many propellers does the flying car have?
a) 8 b) 12 c) 16
8) What is the flying car re-energising?
a) hybrid cars b) automobile companies c) the art of flight
9) How long did it take things to go from impossible to inevitable?
a) an infinite time b) a very short period of time c) ten years

58. Read this page from a computer games forum noticing the words in italics. Explain the difference in meaning of the phrases where the same verb is followed by an Infinitive or a Gerund form or translate the sentences into Russian.

Home>Forums>Gaming>Off-Topic


MikeSpeed: If you've ever thought of a gameplay which would be fun at high speeds, then this game might be of interest. You will stop playing any other games.


TheLastWinner: Have you ever won? How do you play?


MikeSpeed: *Try to move* through or attack walls that look out of place with their surroundings. *Remember to move* until it hits a wall.


MistyJJ: *Try playing* before you buy. You may *try to test* your single-player tactical skills or play the role of famous historical figures. You will never *forget navigating* within a scene in this game. It's amusing!


MikeSpeed: You will *remember playing* this game. It's very realistic!


Brain100: Recording and streaming games is a great way to share or upload your greatest gaming achievements. But what if this tool *stops working?* □


MikeSpeed: It's best to use an external screen recorder.


Brain100: There may be no way to stop that train. The brain also loves novelty, new experiences, and art, after all! *Stop to listen* to music!□

59. Match the sentences with their meanings.

remember, forget	
1. Remember to move until it hits a wall	a. past action/event
2. You will never forget navigating	b. future action/event
stop	
3. Stop to listen to music!	a. to finish the action
4. But what if this tool stops working?	b. to interrupt one action in order to do something else
try	
5. Try to move through or attack walls.	a. an attempt or effort to do, get or achieve something
6. Try playing before you buy.	b. an experiment or test to achieve a particular outcome

60. Compare the sentences in each pair. Try to explain the difference between them. Use the clues below to help you.

1. I remember going to see my grandparents every summer when I was at school. Remember to buy some bread on your way home. 2. Try drinking herbal tea before you go to bed. They tried to persuade their son not to smoke. 3. He never regretted getting married. I regret to tell you that our cooperation is over. 4. They finished reading and went on translating the article. After university he went on to become one of the leading professionals in his field. 5. They don't allow smoking inside. My boss didn't allow me to take a break. 6. We are used to working together. I used to live in the centre, but now I'm living in the country.

a. an Infinitive suggests some kind of effort or difficulty is involved in action; a Gerund means making a suggestion.
b. we use a gerund when we mean that the task needs to be done but don't specify by whom; when we specify who has a task to do, we use a full infinitive form.
c. an Infinitive used after this expression means that you did something regularly in the past, but no longer do it; a Gerund is used after this expression with the meaning accustomed to doing something;
d. an Infinitive refers to the future (something we are about to do); a Gerund refers to the present or past

(For more explanation and examples you can watch a video following the link: https://youtu.be/v2_Qic03XFI)

61. Put the verbs in brackets into the Gerund or the Infinitive. Explain their meaning or translate the sentences into Russian.

1. We listened to this symphony last Wednesday. Do you remember _____(listen) to it? 2. Alex was very forgetful. He never remembered _____ (lock) the garage. 3. My sister forgot _____ (bring) the knives for our picnic: she left them on the kitchen table. 4.You must never forget _____ (say) please and thank you. 5. I didn't know how to get to the university. That's why I stopped _____ (ask) for directions. 6. Everybody thinks that they all know what should be done. But the board still needs _____ (convince). 7. The company regretted _____ (cause) the customer inconvenience. 8. We plan _____ (go) abroad for our holidays this year. 9. The teacher doesn't allow us _____(talk) during the lessons. 10. I don't remember _____ (he, say) something like that. 11. I recommend _____ (consult) an expert. 12. I'll stop _____ (lend) you money if you waste it on buying such things. 13. The airline regrets _____ (to announce) the cancellation of flight. 14. The windows need _____ (clean). 15. Could you please stop _____ (make) so much noise? 16. We didn't have enough petrol to reach our destination, so we had to stop _____ (fill up) the car. 17. A master's degree in French requires _____ (study) in a French-speaking country for one year. 18. On some occasion students at Cambridge are required _____ (wear) black gowns.

62. Complete the sentences by choosing one of the options (a, b).

1. I'm used (a. to hear; b. to hearing) about his achievements. 2. I used (a. to play; to playing) volleyball when I was younger. 3. You have no experience (a.to account; b. in accounting). 4. I cannot explain my anxiety about (a. to fly; b. flying) 5. I'm looking forward (a. to meeting; b. to meet) you. 6. I'll never forget (a. travelling; b. to travel) down the Volga. 7. My mum asked me not to forget (a. calling; b. to call) her when I know the results of the test. 8. She apologised and said that she regretted (a. being late; b. to be late) for the classes. 9. The apartment needed (a. to renovate; b. renovating). 10. We regret (a. to inform; b. informing) you that your house has been sold.

63. Make up sentences using Gerunds or Infinitives after some of these verbs. Write them on

separate cards using gaps instead of the key words. Exchange your cards with other groups and do the gap filling exercise. Check your answers.

Agree, decide, expect, fail, demand, hope, intend, learn, manage, need, neglect, offer, plan, prefer, prepare, pretend, promise, refuse, tend, wait, want, admit, anticipate, appreciate, avoid, give up, involve, delay, deny, enjoy, complete, consider, carry on, mean, mind, can't stand, risk, miss, suggest, put off, look forward.

THE SKILL OF LISTENING

64. Watch the video using the link below, take notes and prepare to discuss how to use audio and video materials for learning a foreign language and why it is important.

https://www.youtube.com/watch?v=t2z9mdX1j4A

Go to Skill Section to find more information on the topic of developing the skill of listening in a foreign language. Think about your own experience (*e.g.* what helped you learn to understand English speakers better) and prepare to share your comments, ideas, and opinions on this topic in class.

CHECK YOURSELF

1. The History of the Automobile Quiz. Choose the right option.

1. The first theoretical plans for a motor vehicle were drawn up by …
a. Leonardo da Vinci
b. Isaak Newton
c. Rudolf Diesel

2. The very first self-propelled road vehicle was powered by …
a. petrol
b. steam
c. electricity

3. The most broadly applied and widely used power-generating devices for cars currently are…
a. electrical generators
b. internal-combustion engines
c. steam engines

4. The automatic transmission made cars …
a. cheaper
b. more common
c. more convenient to drive

5. Henry Ford is famous for …
a. inventing the car
b. inventing the assembly line
c. making cars affordable

6. The first hybrid vehicle was created by …
a. Karl Benz
b. Ferdinand Porsche
c. Henry Ford

7. The first petrol powered car was patented by …
a. Nikolaus Otto
b. Gottlieb Daimler
c. Karl Benz

8. The first ever car accident was registered in …
a. 1769
b. 1891
c. 1910

9. The first features added to a car were …
a. speedometers and seatbelts
b. turn signals
c. electric windows and air conditioning

10. … was/were introduced in 1974.
a. cruise control
b. the padded dashboard
c. the first airbags

2. Fill in the gaps with the words in italics.

dominating, goods, assigned to, to keep up with, method of transportation, essential, affordable, contributed to, convenient, pushed aside, gained fame, to make room

As the most widely accepted (1)_____ , cars have changed the way people live all over the world. As the pace of life is accelerating, automobiles also have to change (2)_____ the times. When it comes to the most popular form of transportation today, cars are still (3)_____ . More and more people say that they cannot imagine their life without a car, so cars have become (4) _____ to the functioning of people in everyday life. Vehicles are among the most common modes of transport today and are widely used to transport (5)_____ and other products. After the mass production of automobiles began, they quickly (6)_____ as a new and fast way to travel. Other modes of transportation, such as bicycles, railroads, and horses had to be (7)_____ in order (8)_____ for the more comfortable and (9)_____ automobile. The idea of having workers (10) _____ a specific post doing a specific job was a breakthrough in car manufacturing. Cars could be sold at a more (11)_____ price, which (12)_____ the gain in popularity of the automobile.

accessible, affordable, afford, instead of, to run on, constantly, contributed to, hybrids, competitive, eco-friendly, to influence, opened up doors

All of a sudden, those fancy vehicles only the richest could (13)_____ were (14)_____ to a lot of other people. The modern automotive industry is huge and increasingly (15)_____ . New cars are (16)_____ being developed. Today's engineers seem to focus more on the safety aspect of the car (17)_____ its features. Another trend in car design is creating (18)_____ vehicles which will slow the process of global warming. These cars are able (19)_____ something other than petrol. Examples of new types of cars are electric, fuel cell, solar powered, (20)_____, and ethanol. The invention of the automobile (21)_____ to other new inventions. Automobiles continue (22)_____ every part of our economy.

3. Give the definitions of the following words.

Example: petrol → liquid obtained from oil used as a fuel for cars and other vehicles (US gas).

A fuel powered car, a hybrid car, maintenance, a pedestrian, traffic congestion, carpooling, connectivity, sustainability, a driverless car, affordable.

4. Guess the word by its definition. Try to remember how these words were used in text 7A.

Example: a verb meaning *help to cause* or *bring something about*. → to contribute to something. → Selling cars at a more affordable price contributed to the gain in popularity of the automobile.

1. A verb meaning *to have an effect on*; 2. a verb meaning *to have control over a place or person*; 3. a noun meaning *a machine used for transporting people or goods*; 4. a verb phrase meaning *to become famous*; 5. a verb meaning *to give someone a particular job or responsibility*; 6. a verb meaning *to become or make something become larger in amount or size*; 7. an adjective meaning *designed to do the least possible damage to the environment*; 8. a noun meaning *a person who buys goods or services*; 9. a verb meaning *to give or offer something for a decision or inspection*; 10. an adjective meaning *far away in space and time*.

5. Complete the sentences with the Infinitive or the Gerund of the verb in brackets. Explain your choice.

1. We hope _____ you soon. (see) 2. Are you looking forward to _____ a letter from the company? (receive) 3. Some people are opposed to _____ vaccinated. (get) 4. They've been waiting _____ for ages. (be noticed) 5. His parents persuaded him _____ university. (not/give up) 6. It takes some time to get used to _____ in such a big city as Moscow. (live) 7. Have you ever wanted _____ a second degree? (get) 8. In addition to _____ English it is really useful _____ a second foreign language. (learn) 9. It was very unfortunate that I forgot _____ an umbrella. (take) 10. The more we learn about the origin of the virus the closer we get to _____ a way to deal with it. (find out) 11. Positive thinking is the key to _____ success. (achieve) 12. No one objected to _____ the meeting as soon as possible. (start) 13. Though he was doing well, he decided _____ the course. (give up) 14. Watching his vlog is similar to _____ to all those destinations by yourself. (go) 15. The government suggested _____ new measures to protect people. (take)

6. Open the brackets using either an Infinitive or a Gerund.

1. He deliberately avoided (mention) the fact that we could get into a serious trouble. 2. My father offered (give) them a lift. 3. I prefer (travel) by train to flying. 4. We tend (have) cold winters and dry summers. 5. I would like (make) an appointment. 6. She admitted (get into trouble). 7. I can't put off (see) the manager any longer. 8. I suggested (prepare) the talk in advance. 9. I don't mind aquatic turtles (live) in the house. 10. They anticipate (have) a lot of sales. 11. He promised not (involve) us in this matter. 12. They risk (lose) their business if they

don't pay off the loan on time. 13. I recommend (write) your ideas down on paper. 14. Neil denies (steal) the car. 15. I enjoy (meet) people. 16. We're considering (sell) the house. 17. If we want to catch the train, that we need (leave) earlier. 18. There were a lot of shoppers waiting (enter) the store. 19. He failed (arrive) on time. 20. The customer demanded (see) the manager.

7. Answer the following questions. Consult Module 7 texts if necessary.

1. How did the appearance of cars transform the world?
2. When and why did cars become so popular?
3. What car features do modern car designers mostly focus on?
4. Do you know what the phrase 'early electric cars' refers to?
5. When do you think electric cars first appeared?
6. What cars were early electric cars replaced by? Why?
7. Why are car manufacturers focusing on electric cars today?
8. What measurers do modern urban planners suggest to improve transportation?
9. What alternative modes of transport are used in big cities?
10. What are their advantages and disadvantages?

MODULE 7 PROGRESS TEST

Vocabulary. ***Decide which answer a, b or c best fits each gap.***

A typical car carries on average just one and a half people. The (1)_____that made the car a 20th century icon has been eroded (разрушать) by its popularity. People waste countless hours sitting traffic 2_____. One study indicates that the global car fleet could be reduced by a third if 3_____ schemes were widely adopted. But the transition will not be a painless or an easy one as shared cars 4_____ for utilisation and space produces positive but modest advantages. However, reclaiming our streets from car 5_____ will transform the quality of urban living. 6_____ that sharing schemes do not lead to a reduction in car use are not supported by the majority of the evidence. Ride-sharing apps do reduce the numbers of 7_____ on the road, but as importantly they also 8 _____ for a behavioural shift towards multi-modal, 9_____ transport which complements public and active forms of transport - cycling and walking. Long-distance car-sharing services significantly increase car occupancy and reduce 10_____ per kilometre.

1. a. convenience	b. comfort	c. competition
2. a. flow	b. congestion	c. jams
3. a. dividing	b. sharing	c. distributing
4. a. demand	b. domination	c. competition
5. a. domination	b. power	c. authority
6. a. Charges	b. Concerns	c. Complains
7. a. vehicles	b. traffic	c. transport
8. a. invited	b. encouraged	c. opened up doors
9. a. sustainable	b. competitive	c. essential
10. a. gases	b. emissions	c. fumes

Grammar. ***Decide which answer a, b or c best fits into each gap.***

1) The power of scientific and technological advancement allowed designers _____ superfast automobiles.

a. create b. creating c. to create

2) Scientists expect major developments in the near future _____ place in biotechnology.

a. take b. to take c. taking

3) Engineers announced _____ the new eco-friendly vehicles that will slow the process of global warming.

a. to test b. being tested c. testing

4) If you are really interested in science, you do not like any problem, however difficult, _____ .

a. not to solve b. to be solved c. not to be solved

5) The latest example of science fiction _____ science fact is a flying car _____ between two cities.

a. to become/to test b. become/test c. becoming/testing

6) Today we can see many new areas of research _____ into being as a result of unexpected breakthroughs.

a. to come b. come c. to be coming

7) _____ bus lanes made _____ by public transport easier.

a. open/travel b. to open/to travel c. opening/travelling

8) It's possible now to avoid _____mistakes in extremely complicated computations due to the use of supercomputers.

a. to make b. making c. make

9) The principle _____workers assigned to a specific post doing a specific job allowed manufacturers to sell cars at a more affordable price.

a. to have b. having c. of having

10) By examining the car before _____ a long journey the driver can be sure that he will get to his destination without any accidents.

a. starting b. started c. to start

MODULE 8

AIR AND SEA TECHNOLOGY

"The aeroplane has unveiled for us the true face of the earth."
Antoine De Saint-Exupery, a French writer and pilot.




Learning points for Module 8

Reading:

Text 8A. From a Dream of Flight to Modern and Future Air Travel
Text 8B. Discover the Hovercraft
Text 8C. Pioneers in the sky

Vocabulary in context: Collocations. Giving Definitions. Synonyms

Grammar: Forms of Infinitives. Infinitive Constructions

Skill: Saying numbers

Speaking: A New Birth of Closed Projects

Learning aims:

- to practise reading and speaking about aircraft and submersibles
- to learn and practise active vocabulary related to the topic of the module
- to learn more about the Infinitive and its forms, to practise understanding and using different forms of Infinitives and Infinitive constructions
- to learn and practise the skill of saying numbers

Lead-in

1. Match the words with the pictures to learn about different forms of transport.

On water
submarine cruise ship hovercraft lifeboat

1.  2  3  4 

In the sky

dirigible jet aircraft helicopter balloon

1.  2.  3.  4. 

2. Discuss the following questions in mini groups and share your ideas with others.

1 What other forms of water or air transport do you know?
2 Which of them have you used for travelling?
3 What is the fastest means of transport today?
4 What is the safest way to travel, in your opinion?
5 If you were going to travel to a distant destination, would you prefer to go by air or by sea? What type of transport from the pictures above would you choose?

READING

Part 1

3. Match the words (a-l) with their definitions (1-12).

a.	ancestor	d. glider	g. marine	j. airframe
b.	milestone	e. propeller	h. tyre(s)	k. cockpit
c.	failure	f. to spin	i. airliner	l. workload

1 a very important event in the development of something
2 an adjective to describe something connected to the sea, ships or the navy
3 the body of an aircraft
4 a piece of equipment consisting of two or more blades that spin around, which makes an aircraft or ship move
5 a noun meaning not doing something which people expect you to do
6 the amount of work that a person or machine is expected to do
7 a large passenger plane (old-fashioned)
8 to turn with a circular movement around a central point, or to make something do this
9 a thick round band of rubber that fits around the wheel
10 the area in a plane where the pilot sits
11 a light plane that flies without an engine
12 the form in which a modern machine, vehicle, etc. first existed

4. Scan the text and find the following information as quickly as possible.

1. What is Leonardo da Vinci credited with?
2. When and where did Lomonosov demonstrate his model?
3. When did the first airplane make its first flight?
4. What might flying in the future be like?

5. Skim the text and decide which of the following sentences best answers the question of what this text is about. Why?

1. This text is about airplanes.
2. The text tells us about the history, present and future of air travel.
3. The text tells us about how the dream of mankind to fly like birds was realised when the airplane was invented; how aircraft design continued to adapt and change over time which ultimately led to the era of mass travel; and, also, how some designers see the future of flying.

Text 8A

From a Dream of Flight to Modern and Future Air Travel

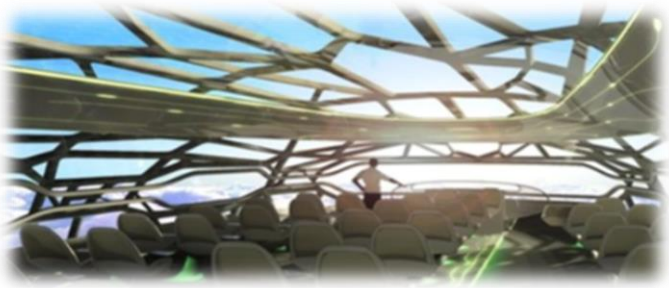
(1) The fantasy of flying through the air like birds had been in people's imagination for hundreds of years before it became a reality. Many early attempts to fly ended in failure and death*. However, famed Italian inventor Leonardo da Vinci is credited[1] with designing early ancestors of the airplane based on the flight of birds.

(2) Three centuries had passed before another major milestone in vertical flight appeared. Looking for a way to loft[2] meteorological instruments into the air, noted Russian scientist Mikhail Lomonosov designed a model that used two propellers rotating in opposite directions on the same axis[3]. Lomonosov demonstrated his model powered by a clock spring[4] to the Russian Academy of Sciences in 1754. Questions remain whether the device managed to lift itself during the demonstration or whether it was supported by a string[5].

(3) The year of 1783 was considered a breakthrough year in aviation: hot air balloons became popular in Europe with the help from the Montgolfier brothers. More significant advances came at the end of the nineteenth century when gliders were developed. Aviation industry received a boost when the Wright brothers developed the theory that the air pressure exerted on different parts of the machine could be altered by making the wings adjustable[6] which would maintain equilibrium. Starting in 1902, the brothers developed a full sized, power-driven heavier-than-air machine. On December 17, 1903, the first airplane made its maiden[7] flight. The airplane was born at just the right time for its intensive development by an industrial society. Before the availability of petrol, the Wrights' invention would have been nothing more than an improvement in gliders. The airplane found the old marine propeller and the new petrol engine for application. Pneumatic tyres replaced skids[8].

(4) The following years were marked by significant progress in the technology of aircraft construction. Aviation developed incredibly fast, with longer and longer flights and progressively larger planes. Aviation shortened distances between places, made it easier for people to travel from country to country and between continents. Very large passenger airliners eventually brought relatively cheap air travel within the reach of millions of people. Today's airplanes made a reality a wide range of technological advancements, including the introduction of full fly-by-wire[9] flight controls technology, employing advanced materials in its airframes, developing cockpit designs that improve pilot workload and efficiency, environmental control systems, and more. They can take us farther and faster, and move us in greater comfort than ever before.

(5) But what about the future? One of the ideas suggested by aircraft designers is an aircraft with a lace-like[10] structure which takes inspiration from the human skeleton, the design which is both strong and relatively lightweight. This means it could, in theory, drastically reduce the fuel costs of flying. The aim would be to 3D print the composite material that would make the structure. Other ideas for the plane of the future include an upward curve[11] on the tail to reflect engine noise upwards and reduce noise pollution. Inside the aircraft, engineers envisage new "zones" to replace the traditional seating, with the seats that are able to harvest energy from those sitting in them as



well as change shape to fit the size of passengers. It was also suggested that instead of having small doors into the jet, as is currently the case, the planes of the future would have much wider entrances where people could leave their hand luggage. The bags would then be automatically delivered to their seats. However, design alone would not solve all the industry's problems. Other aviation industry targets are to reduce environmental impact, to enhance efficiency and to ensure safety. Flying in the future must remain both safe and affordable while also being safe from an environmental perspective.

**E.g. the flight of Icarus in Greek Mythology.*

Vocabulary notes for text 8A

[1] be credited	приписывать кому-либо совершение какого-либо действия
[2] to loft	отправлять, запускать
[3] axis	ось
[4] spring	пружина
[5] string	струна, веревка
[6] adjustable	регулируемый, настраиваемый
[7] maiden	начальный, первый
[8] skids	полозья
[9] fly-by-wire	электродистанционная система
[10] lace-like	похожая на кружево
[11] curve	кривая, дуга

Note
an aircraft - pl. aircraft: About 100,000 aircraft take off and land every day.

6. Read the text in detail and choose the best option to complete the sentences according to the information in text 8A.

1. The credit of designing early ancestors of the airplane goes to … .
   a. Icarus b. Leonardo da Vinci c. Mikhail Lomonosov
2. The device demonstrated by M. Lomonosov to the Russian Academy of Sciences in 1754 … .
   a. was supported by a string
   b. managed to lift itself
   c. either was supported by a string or managed to lift itself
3. The most important breakthrough in aviation definitely was … .
   a. the appearance of hot air balloons
   b. the development of gliders
   c. the development of power-driven heavier-than-air machine
4. The first successful airplane flight was made in … .
   a. 1783 b. 1902 c. 1903
5. Progress in the technology of aircraft construction resulted in … .
   a. more people travelling over long distances
   b. distances actually becoming shorter
   c. technological advancements in other forms of transport
6. One of the technological advancements which today's airplanes made a reality is … .
   a. high-end computer systems
   b. the use of advanced materials
   c. considerable reduction in fuel consumption
7. Aircraft engineers are not ready yet to introduce such technologies as … .
   a. lace-like structure
   b. greater fuel efficiency
   c. advanced composite materials

7. Read the text again and fill in the table.

The major milestones in the history of air travel	Today's airplanes	Aircraft of the future ideas
➢ the fantasy of flying like birds ➢ _____ ➢ _____ ➢ _____ ➢ _____	➢ shortened distances between places ➢ _____ ➢ _____ ➢ _____ ➢ _____	➢ lace-like structure ➢ _____ ➢ _____ ➢ _____ ➢ _____ ➢ _____

8. In pairs ask and answer the following questions. Explain your answers or give your own examples. Add two or three more questions to your list. Take notes. Summarise your partner`s answers.

1. Did you like this article? 2. Are there any facts in the text which surprised you or you find particularly interesting? 3. Have you ever travelled by air? When? Where? 4. Describe one of the flights that either you or someone you know has taken. 5. What innovations mentioned in the text do you like the most or find unrealistic? 6. Can you suggest one or two ideas of your own of what the planes of the future should be like?

9. Work in groups of three. In turn, tell your groupmates about the history of air travel, about modern airplanes, and about airplanes of the future. Use text 8A and/or look for extra information on the Internet to add more ideas.

READING

Part 2

10. Read the text and fill in the gaps with the missing words from the right-hand column.

Text 8B

Discover the Hovercraft

(1) A hovercraft, also known as an air-cushion[1] vehicle or ACV, is an amphibious craft _____ (1) of travelling over land, water, ice, and other _____(2). Two jets[2] of air are forced downwards underneath the _____ (3). The cushion of air that is created is held in by a flexible skirt[3] that surrounds the base of the vessel. The skirt doesn't hang vertically, but is drawn in slightly round the bottom, so that air reaching the ground gets pulled back up towards the base of the craft _____ (4) than escaping out under the bottom of the skirt. The _____ (5) air under the vessel creates invisible rollers[4] of air that help to hold it up off the ground. Because the craft is moving through air rather than water, it can go faster than a _____ (6) boat of similar power.

rather

surfaces

compressed

capable

vessel

conventional

(2) A number of scientists had been trying to create this vehicle before it saw _____ (7). Konstantin Tsiolkovskiy was the first to give the description of the ground effect and to provide theoretical methods of calculation of air cushion vehicles. Soviet engineer Vladimir Levkov designed and built his version of a vessel using air cushion in the 1930s, but WWII put an end to his work. Finally, in 1959, the first technically and commercially viable[6] hovercraft was built and flown across the English Channel. It was an unqualified success, and the hovercraft has since been transformed into the useful and versatile[5] vehicle it is today. One of the most outstanding characteristics of the hovercraft is that it can move with equal ease across a land surface or a water surface. It is possible, therefore, for passengers to _____ (8) a hovercraft on land, and then be conveyed[7] out across water. No special dock _____ (9) is needed. It is an ideal form of amphibious transport in wilderness areas. Hovercraft are used for _____ (10), commercial, and military applications to transport, save and protect people across the world's most _____ (11) environments.

board

challenging

facility

the light of the day

rescue

Vocabulary notes for text 8B

[1]air-cushion	воздушная подушка
[2] jet	сильная струя, поток
[3] flexible skirt[1]	гибкое ограждение воздушной подушки
[4] rollers of air	*зд.* потоки воздуха
[5] versatile	разносторонний
[6] viable	жизнеспособный
[7]convey	перевозить, переправлять

11. Which option is correct according to the text.

1. A hovercraft is … .
   a. an air-cushion vehicle b. a glider c. a submarine
2. A hovercraft cannot travel … .
   a. over water b. over land c. over the hills
3. A cushion of … is created by a large fan underneath the craft.
   a. steam b. air c. water
4. A skirt surrounding the base of the craft … .
   a. allows the air to escape
   b. prevents too much air from escaping
   c. protects the craft
5. A hovercraft … a conventional boat of similar power.
   a. cannot go faster than b. can go faster than c. goes as fast as
6. The first viable hovercraft was presented to public …
   a. in the 1930sb. during WWII c. at the end of the 1950s
7. The hovercraft has since been transformed into a(n) … it is today.
   a. useful and versatile vehicle b. effective tool c. sophisticated machine
8. One of the most outstanding characteristics of the hovercraft is … .
   a. low noise level
   b. safety and reliability
   c. the ability to move across land or water with equal ease
9. To board the hovercraft passengers … .
   a. need a special dock facility
   b. should use a boarding terminal
   c. don't need a special dock facility
10. Hovercraft is an ideal form of amphibious transport … .
   a. in big cities b. in mountainous areas c. in natural areas

12. Retell Text 8B using the words below as clues.

A hovercraft, an air cushion vehicle, create, surface(s), to hold up, compressed air, rather than, capable of, a vessel, conventional, to launch, to see the light of the day, an unqualified success, useful and versatile, outstanding characteristics, to board a hovercraft, wilderness areas, rescue, applications, challenging environments.

READING

Part 3

13. Match the pictures (1-8) with the titles (A-G).

1  **2**  **3**  **4**  **5** 

6  **7**  **8** 

A. An Antonov An-2 biplane
B. An autogyro
C. Solar Impulse 2 at the Payerne Air Base in November 2014
D. The Tupolev Tu-144; the first supersonic aircraft to enter service and the first to leave it
E. The Tu-114 at Monino Museum. (A turboprop-powered long-range airliner)
F. Sikorsky Helicopter HNS-1 C.G. 39040
G. The 1842 Aerial Steam Carriage of Henson and Stringfellow
H. Air fighter. A Soviet Air Force MiG-23MLD

14. Look at the title. What information do you think you will find in the article? Read the article and choose the most suitable heading from the list A-E for each part (1-4) of the article. (There is one extra heading which you do not need to use)

A. The race for supersonic flight
B. Agile like a bird
C. Modern supersonic fighter
D. How to make a heavy machine fly
E. The flagman of the Soviet aircraft industry

Text 8C

Pioneers in the Sky

(1) How could a man make such heavy machines fly? The power of thought of a human being is amazing. Build a model, then you'll know what the issues are and whether it is viable. If Icarus's mishap is true, the engineers have advanced a long way since then. Now we know that to make a heavy machine fly one should take into account the laws of aerodynamics. Aerodynamics from Greek (ἀήρ aero-air + δυναμική-dynamics) is the study of motion of air, particularly when affected by a solid object, such as an airplane *wing*. In modern times George Cayley invented the first flying machine that technically demonstrated the chambered *lifting* wing, stabilisers, control surfaces and identified the four *forces* acting on an aircraft: propulsion[1] (he used a horse to get into the air more quickly) countered by *drag*, aerodynamic *lift* countered by *weight*.

(2) What modern aircraft can do is the most spectacular thing in transportation technologies. The Su-35 with vectored thrust[2] engines and unstable design, is probably the most maneuverable plane. The aerobatics of the Su-35 leaves the impression that the aircraft is weightless: it can stop in mid-air and descend[3] in circles, *sailing* like a leaf on the wind. There are plenty of airshow videos showing the Sukhoi do backflips and J turns and what not. It can *hover*, move in any direction and stop on a dime, rotate very quickly through any axis, stop and immediately reverse. Nothing we have seen really comes close to doing what it can do in terms of maneuverability.

(3) The Tu-114 is a long-haul aircraft, which is made for the transport of passengers and is equipped with turboprop[4] engines. It was designed in the mid-1950s on the basis of the Tu-95 bomber. The Tu-114 had no equal in the world *in terms* of the number of passengers that could be accommodated *on board* and it had remained the largest passenger plane untill the early 1970s. *Due to* the fact that the aircraft was low-wing, the designers *equipped* it with a *fairly* high chassis, which was not found in any aircraft of this class. But this landing gear[5] system also *brought its disadvantages* to the aircraft. With the help of this plane, as many as

32 world records were set. They were obtained for the following achievements:
- this was the largest turbofan aircraft at the time that was able to carry passengers on board;
- it was also the fastest passenger *liner* in the world with this type of engine;
- it had the most powerful engines in the world back in its time.

At the moment, there are no operating Tu-114s left in the world. Only three *non-operational* versions exist and all the three are used as museum exhibits. During its service life, only two Tu-114s crashed. So, probably, it was also one of the safest aircraft ever.

(4) Although it is the Concorde that earned a place in history, the lesser known Tu-144 beat it twice: it had its maiden flight on December 31, 1968, two months before Concorde, and then achieved its first *supersonic flight* in June, 1969, beating the competitor by four months. Both planes were clearly ahead of their time, as civil aviation had barely just transitioned from *props* to *jets*. But their striking similarities have long fuelled spy stories. Although they looked alike and could fly at nearly twice the speed of sound cutting travel time in half, they were rather different planes. The Tu-144 was bigger and faster than the Concorde. Europeans managed to create a liner more suitable for the conditions of market operation. It was more economical, had a longer range and was definitely safer. The Tu-144 had been in passenger service for a year before it was withdrawn[6] over *safety* concerns, after only 55 flights. Concorde had been twenty-seven years in service and was retired three years after the crash outside Paris on July 25, 2000. So, at this moment there is no supersonic passenger plane *in service*. Still some companies are working on its development. Will we fly supersonic again?
(https://www.rbth.com/science-and-tech/333904-tu-114-history-of-ussrs-biggest-airplane)

Vocabulary notes for text 8C

[1]propulsion- the action of driving or pushing, typically forward or onward
[2]thrust- *syn*. propulsion
[3]descend- to move oneself downwards
[4]turboprop-a turboprop engine is a turbine engine that drives an aircraft propeller
[5]landing gear- the landing equipment (*syn.* a chassis US: /ˈtʃæsi/, UK: /ˈʃæsi/; plural chassis /-iz/ шасси)
[6]be withdrawn - take away, stop working

15. Read the text noticing the words in italics and try to figure out their meaning from the context or look them up in a dictionary. Circle any other words you do not understand and find out their definitions or Russian equivalents using a dictionary.

16. Answer the questions using the information from text 8C.

1. Why does the author suggest building a model of a plane? 2. What does the author call ‘Icarus’s mishap’? 3. What did George Cayley invent? 4. Why does the Su-35 leave the impression that the aircraft is weightless? 5. In what way was the Tu-144 the best at its time? 6. What were the achievements which allowed the Tu-114 to set 32 records? 7. Why were Concorde and the Tu-144 ahead of their time? 8. Why was the history of their development full of spy stories? 9. How were they different? 10. What passenger supersonic planes are in service now?

17. Watch one of the videos using the links below. Take notes. Prepare to tell your groupmates about what you have learned. Add your comments. Prepare 3-5 questions to ask your listeners after your talk to check their understanding.

Visions of future flying: https://www.youtube.com/watch?v=7oQY0uC52jY

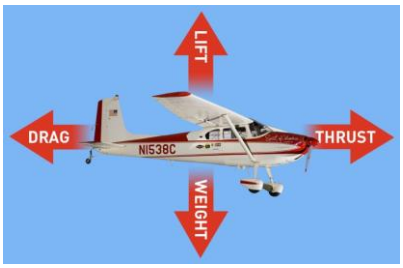
Meet the dazzling flying machines of the future: https://youtu.be/RCXGpEmFbOw

The Aircraft Seats Of Tomorrow: https://youtu.be/Es89BsdB6a8

The Future of Flying Robots: https://youtu.be/ge3--1hOm1s

WRITING

Four Forces of Flight



18. Look at the picture and answer the questions. Then match the words with numbers 1-6 with the words with letters (a-f).

Which of the forces moves the aircraft forward? Which of the forces moves it up? Which of the forces are natural and which are artificial?

1. the forward acting force	a. drag
2. the downward acting force	b. to oppose
3. the backward acting force	c. lift
4. the upward acting force	d. weight
5. to counter	e. driving forward
6. propulsion	f. thrust

19. Complete the sentences with the words below.

backwards, forward, lift, thrust, countered, can't fly, upwards, drag, weight, propulsion

1. _____ is the force that moves an aircraft in the direction of the motion. 2. _____ is the force that that acts opposite to the direction of motion. 3. _____ is the force caused by gravity. 4. _____ is the force that holds an airplane. 5. If thrust is greater than drag, the plane moves _____. 6. If drag is greater than thrust, the plane moves _____. 7. If lift is greater than weight, the plane moves _____. 8. If weight is greater than lift, the plane stays on the ground and _____. 9. During the flight the weight is _____ by both lift and drag. 10. To overcome drag, airplanes use a _____ system to generate thrust.

20. Use the phrases to write about how an aircraft takes off.

Thrust pushes, accelerates engine, propulsion system... created by engine, by increasing propulsion system, thrust counters, drag reduces, friction between aircraft, lift pushes …up against, gravity reduces, weight pulls…to, if lift is greater than … the plane moves, special design of the wing.

VOCABULARY

Module 8 Word List

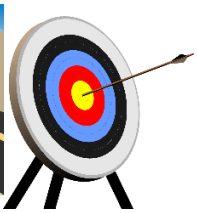
Text 8A	Text 8B
adjustable (adj)	board (v) a ship/plane
ancestor (n)	capable (adj) of
as well as (prep)	challenging (adj) environments
bring (v) within reach (n)	convey (v)
deliver (v)	escape (v)
efficiency (n)	facility (n)
ensure (v)	rather than doing smth
envisage (v)	rescue (v, n)
exert (v) pressure (n)	see (v) the light of the day
failure (n)	surface (n)
incredibly (adv)	underneath (prep)
luggage (n)	unqualified (adj) success
maintain (v) smth.	vessel (n)
make (v) a reality	viable (adj)
manage (v) to do smth.	**Text 8C**
marine (adj)	accommodate (v)
milestone (n)	be in service
opposite (adj) (directions)	descend (v)
perspective (n)	gear (n)
propeller (n)	long-haul (adj)
receive (v) a boost	propulsion (n)
reduce (v)	retire (v)
reflect (v)	spectacular (adj)
rotate (v)	striking (adj)
support (v, n)	suitable (adj) for
take (v) inspiration (n)	supersonic (adj)
target (n)	thrust (n)
upward (adj/adv)	wing (n)
workload (n)	withdraw (v)

21. Look at the words below. Give their definitions and try to recall how they were used in text 8A.

Failure, milestone, propeller, opposite, support, rotate, glider, adjustable, marine, reduce, incredibly, workload, deliver, efficiency, upward, reflect, luggage, perspective, as well as, target.

22. Fill in the gaps with the words from Exercise 21 in the right form. The first letters are given. Translate the sentences into Russian.



A. 1. A new **m**_____ in aviation industry was reached when Charles Lindberg made his first transatlantic flight which changed the world's views on possibilities of travel. 2. A few centuries ago people believed that the sun and all the planets **r**_____ around the Earth. 3. The first successful heavier-than-air craft were unpowered **g** _____ designed to fly without an engine. 4. The oil spill seriously threatened **m**_____ life around the Gulf of Mexico in 2010. 5. Doctors today have to cope with an ever-expanding **w**_____ . 6. The sound as **w**_____ as the picture quality are best on new TV screens. 7. The loud plane was an open **t**_____ for the enemy. 8. The noun phrase the "Icarus paradox" refers to a **f**_____ in business after a period of success. 9. A mechanical device for propelling a boat or aircraft, consisting of a revolving shaft (ось, вал) with two or more blades attached to it is called a **p**_____. 10. With an **u**_____ trend in inflation we expect prices to rise.

B. 11. If your **l**_____ is overweight when you check in for a flight, you should pay extra. 12. Sometimes we need to look at life from a different **p**_____ . 13. Most over-ear headphones are **a**_____ , so that they could fit many different head sizes. 14. His car turned over and caught on fire and yet, **i**_____ , he wasn't hurt. 15. The reduction in the number of workers needed to make a car allowed its producers to increase the **e**_____ in automotive industry. 16. The results of the recent studies have demonstrated the **s**_____ of the government's decisions. 17. The plane **r**_____ speed as it approached the airport. 18. The documents are **d**_____ by special messenger. 19. The light **r**_____ off the surface of the water. 20. To get to the other side of the street you need to walk in the **o**_____ direction.

23. Match the words with numbers (1-10) with the words with letters (a-j) to make up word collocations. Explain the meaning of these expressions and try to recall how they were used in text 8A.

1. opposite	a. to lift itself
2. to exert	b. reach
3. to make something	c. direction
4. to envisage	d. a boost
5. to maintain	e. inspiration
6. to manage	f. pressure
7. to bring within	g. new zones
8. to receive	h. safety
9. to take	i. equilibrium
10. to ensure	j. a reality

24. Complete each sentence with the correct word to make up a word collocation from Exercise 23. Translate the sentences into Russian.

1. With the top Toyota's hybrid Tundra pickup model fuel economy and car performance will receive a _____ . 2. The aircraft designers envisage a range of _____ for passengers, for example, a gaming zone where passengers will be able to play virtual games. 3. Although many human activities exert _____ upon wildlife, the extent of their impact on climate change might be overestimated. 4. On the morning of December 17,1903, the first heavier-than-air craft built by the Wright brothers managed _____ and soared into the air over a distance of 120 feet. 5. The runway at the Sheremetyevo airport was extended to ensure the _____ of take-off and landing. 6. When the volcano began to erupt, all the drivers were told to drive in the opposite _____ from the volcano. 7. Scientists are increasingly taking _____ from living organisms to create new technologies. 8. More and more people realise how small our planet is and how important it is to maintain ecological _____ . 9. The study shows that higher education brings success within _____ of not only an individual but also his family. 10. One of the keys to reach your goal is to believe in what you want to happen in your life and do something to make it _____.

25. Look at the words below. Try to recall how they were used in text 8B.

Capable of, surface, underneath, vessel, rather than, to escape, unqualified success, to see the light of the day, to board a ship/plane, to convey, facility, rescue, challenging environments.

26. Match each word with numbers (1-12) with the correct definition of this word as it is used in text 8B. Think of your own example sentences with some of these words.

Example: 1-d, capable of doing → having the ability to do something. No one is capable of doing everything.

~~1. capable of doing~~	a. situated directly below something
2. a surface	b. an act of saving from danger
3. a vessel	c. to become publicly known
4. rather than	~~d. having the ability to do something~~
5. to escape	e. a ship or a large boat
6. to see the light of the day	f. to go aboard a plane
7. to convey	g. difficult, not easy to deal with
8. a facility	h. something that is built to serve a particular purpose
9. rescue (n)	i. to get away
10. challenging	j. instead of
11. beneath	k. to transfer or deliver
12. to board a plane	l. the outside part of something

27. Complete the sentences with the words in italics. Translate the sentences into Russian.

facility, the light of the day, board, challenging, capable, rather, rescue, escaped, conveyed, vessel, surface

1. Lockdown was a _____ time for people in many countries. 2. They shouted for help, but nobody came to _____ them. 3. Nuclear research scientists work in a nuclear research _____ . 4. Lots of goods are _____ by ship today. 5. Nobody knows how many great ideas have never seen _____. 6. _____ than driving he cycled to work. 7. Not many passengers _____

from the sinking _____ . 8. The sun was reflected on the _____ of the water. 9. He was one of the best students in his group because he was _____ of working hard. 10. After they spent six hours at the airport because of the bad weather, everyone was happy when the passengers were allowed to _____ their plane.

28. Match the words with numbers (1-10) with their opposites (a-j).

Example: 'to evolve' is the opposite of 'to decrease, worsen'

1. failure
2. efficiency
3. opposite direction
4. receive a boost
5. safety
6. reduce
7. upward
8. board a plane
9. underneath
10. capable of

a. same direction
b. increase
c. get off a plane
d. incapable/unable
e. success
f. decrease
g. above
h. inefficiency
i. danger
j. downward

29. Rewrite each sentence replacing some of the words by the words in brackets so that it has an opposite meaning to the first sentence. Translate the sentences into Russian.

Example: He is physically capable of running a marathon. (incapable) → He is physically incapable of running a marathon.

1. All their plans ended in failure. (success) 2. The production efficiency is the result of good work. (inefficiency/bad) 3. His car hit a van coming in the opposite direction. (same) 4. Their production rates received a boost from the growing competition. (decrease/because of) 5. You should fasten your seat belts for extra safety. (if you don't/might/in danger) 6. Some people think that the use of electronic equipment in cars might lead to reducing the number of road accidents. (increase) 7. Unfortunately, prices continue their upward trend. (luckily/downward) 8. One of the ideas is that the planes of the future will have wide entrances which should let passengers to board the plane faster. (get off) 9. The new tunnel goes underneath the city centre. (bridge/above) 10. This robot is capable of understanding spoken commands. (incapable)

30. Complete the table.

Example: sustainability → sustain→ sustainable

Noun	**verb**	**adjective**
1. safety	save	safe
2. reality		
3. boost		
4. reduction		
5. facility		
6. success		
7. direction		
8. efficiency	xxxxxxxxxxx	
9. support		
10. challenge		

31. Use the word given in brackets to form a word which fits in the gap.

1. Scientists are now looking for _____ evidence _____ the theory of black holes. (direction, support) 2. This device is very _____ at processing complex calculations. (*efficiency)* 3. A lot of ideas sound good in theory but are not useful in the _____ world. (*reality)* 4. Due to the use of composite materials, the airplanes have become more _____ and _____. (*efficiency, safety)* 5. There is a pressing need for the _____ in the numbers of cars in big cities. (*reduce)* 6. Holidays without Wi-Fi really _____ young people today. (*challenging)* 7. If you work hard you will finally _____ in your quest to become an IT professional. (*success)* 8. The construction of the new terminal will _____ passenger service at the airport. (*facility)*

32. Work in groups. Choose 5-7 words from Module 8 Word list and prepare a short news story to tell your group using these words. Ask your listeners to note down the words while they listen to your story. Compare your lists.

Example: At 21 hours and covering almost 17,000 kilometers, **a direct flight** from Sydney to London would be the longest in the world. Travelling this far without a break is an attractive proposition for airlines. The technology is ready to go, with manufacturers saying they've built planes **capable** of the journey. So, the industry's all set to take to the skies for the best part of a day but are pilots and passengers **on board** with the idea? Airlines are keen to **facilitate** passengers' **adjusting** to being in the air for so long. But what about the crew? Ultra-**long-haul** flights require four pilots to share the **workload**. Although pilots can refuse to fly if they are tired, the report found most of them believed it would harm their careers to do so. The growing number of longer, **direct flights** is part of a move away from using hub airports where passengers change planes to complete their journeys. As well as saving time for passengers, **direct** flights by more **fuel-efficient jets** are also better for the environment.

33. To find out more about the Tu-114, watch the film using the link below and summarise the information about this passenger airliner in English.

https://youtu.be/fn9tcR-ij5s

SPEAKING AND DISCUSSION

34. Look at the words given below. Which vehicles - air, water or both - do they refer to?

Beach, wave, fly, on the move, flying machine, journey, vessel, cargo, stealth, high-speed, manoeuvre, abandoned, rust.

35. Guess if 1-5 below are true (T) or false (F).

1. In the photo below you can see an aircraft which can "land" on water.
2. The pilot can fly just above the runway for a long time.
3. Some laws of aerodynamics are used in cars, aircraft and ships.
4. Currently many flying ships - hybrid between airplanes and ships - are in service.
5. Some vehicles are able to move quite low over the surface of the ground or the water.

36. Now read the text and check your answers.

A New Birth of Closed Projects

(1) Beached on the western shores of the Caspian Sea, it looks like a colossal aquatic beast - a bizarre creation more at home in the deep than above the waves. It certainly does not look like something that could ever fly. But fly it did, albeit a long time ago. After lying dormant for more than three decades, the Caspian Sea Monster has been on the move again. One of the most eye-catching flying machines ever built, it is completing what could be its final journey.

(2) In July 2020 after 14 hours at sea, a flotilla of three tugs[1] and two escort vessels maneuvered slowly along the shores of the Caspian Sea to deliver their bulky special cargo to its destination, a stretch of coast near Russia's southernmost point.It is here, next to the ancient city of Derbent, in Russia's republic of Dagestan, that the 380-ton "Lun-class Ekranoplan" has found its new, and most likely definitive, home. The last of its breed to sail the waters of the Caspian "Lun" was abandoned in the 1990s, left to rust away at Kaspiysk naval base, some 100 kilometres up the coast from Derbent. But before it could fade into oblivion[2], it has been rescued thanks to plans to make it a tourist attraction right at the time when this unusual travel concept could be poised to make a comeback.

(3) Ground Effect Vehicles, also known as "ekranoplans," are a sort of hybrid between airplanes and ships. The International Maritime Organisation classifies these vehicles as ships, but, actually, they derive their unique high-speed capabilities from the fact that they skim the surface of the water at the height of between one and five meters (three to 16 feet). They move over water without actually touching it. They take advantage of an aerodynamic principle called "ground effect".

(4) In aviation, ground effect is a phenomenon in which an airplane’s lift is increased and its drag is decreased due to the airplane’s wings being close to the ground. Pilots can use this effect by flying just above the runway to be able to reach the climbing speed easier because of the improved lift and lesser drag. Ground effect is also exploited in automotive aerodynamics to create downforce, particularly in racing cars. In ekranoplans, this combination of speed and stealth due to their proximity to the surface makes them difficult to detect by radar, which could have been a significant advantage during missions.

[1]*tug* - буксир
[2]*fade into oblivion* - кануть в лету

https://edition.cnn.com/travel/article/caspian-sea-monster-ekranoplan/index.html

37. Read the list of some characteristics of ekranoplan and decide if they are advantages or disadvantages. Complete the table below.

The ability to land on the water even with strong waves; more economical than airplanes due to the specifics of the flight; preferably used in good weather conditions; high speed of movement in combination with a large load capacity; the ability to fly over land and ice; low visibility for radars; necessity to fly at an extremely low altitude; the ability to fly at low altitudes; low maneuverability; specific piloting (requires long-term training); bulky construction; faster than hovercraft (as they reach speeds of 500 kilometers per hour); do not need an airfield.

Advantages	***Disadvantages***

the ability to land on the water even with strong waves	preferably used in good weather conditions

38. Discuss these questions about the future of the technology of the ground effect.

1. What are the advantages of the technology of the ground effect (GEV)?
2. What are its disadvantages?
3. Do you think the latest developments in modern technologies will give a new birth to the GEV?

Read the passage which can give you some ideas.

"In the XXI century, amateur projects of aircraft models-screens were created. One of these aircraft models, created in 2021, is controlled by a computer, and the distance to the surface under the device is measured by a lidar (light detection and ranging technology). A person is not able to control the device due to the excessive complexity of its piloting The ekranoplan that has been moved to Derbent is the only one of its class ever completed and entered service in 1987."

4. Do you think it is more difficult to pilot a ground effect vehicle than a plane?
5. Why do you think they are safer than the conventional aircraft?
6. What other advantages over planes and ships does it have?
7. What is the Achilles' heel of ground effect vehicles?
8. Do you think that developers of ground effect vehicles will bring them back to life? If yes, for what purposes?

GRAMMAR

DIFFERENT FORMS OF THE INFINITIVE

Lead-in

39. Which of the following words are the Infinitives?

To read; work; looking; to be writing; kept; to have missed out; answered; be treated

STUDY NOTE

Besides **Simple Infinitives,** *e.g.: to prove, to live, …* there are also **Continuous, Perfect** and **Passive** Infinitive forms.

Compare:

- *It is nice* ***to be sitting*** *here with you.* (Continuous/Progressive Infinitive – suggests that the action is continuing around the time we are talking about)
- *I meant* ***to have phoned****, but I forgot. He should* ***have finished*** *his work.* (Perfect Infinitive emphasises that something happened before something else or refers to things that didn't happen –unreal past)
- *There's a lot of work* ***to be done***. (Passive Infinitive has the meaning similar to Passive Tense forms)
- *Try* ***not to be*** *late.* (Negative Simple Infinitive)
- *He could* ***have been working*** *outside. (*Perfect Continuous)

40. Fill in the table below with more examples of different Infinitive forms. Use the verbs given below.

To ask, to work, to write, to ensure, to manage, to envisage, to reflect, to convey, to board.

Infinitive	Active	Passive
Simple	*to help,*	*to be helped,*
Continuous	*to be helping,*	*xxx*
Perfect	*to have helped,*	*to have been helped,*
Perfect Continuous	*to have been helping,*	xxx

41. Find the Infinitives in the following examples. Decide what forms they are. Explain their meaning or translate the sentences into Russian.

1. I was glad to answer their questions. 2. I was prepared to be asked questions. 3. I am sorry not to have come on Tuesday. 4. I might have left my phone at home. 5. It is quite common not to understand everything in lectures. 6. He doesn`t seem to be listening. 7. It seems to be raining outside. 8. I want to be treated with more consideration. 9. It is nice to have finished the work. 10. She must have been studying all night. 11. You should have told me you were coming. 12. I must have left my umbrella at the restaurant.

STUDY NOTE

We use **Perfect Infinitives** to emphasise that the action expressed by the Infinitive happened before the action expressed by the predicate of the sentence or by a certain time.

*I'm sorry **to have missed** so many classes.*

We also use Perfect Infinitives to talk about 'unreal' past events, events that didn't happen or may not have happened.

*I meant **to have telephoned** but I forgot.*

42. Rewrite these sentences using Perfect Infinitives. Explain their meaning or translate them into Russian.

Example: I am sorry I have interrupted you. → I am sorry **to have interrupted** you.

1. I was glad I had completed the assignment. (I was glad to …) 2. It seemed that he had misunderstood me (He seemed to …) 3. We were pleased we had done our tests well. (We were pleased to …) 4. I am happy that I have met you. (I'm happy to …) 5. He did not want to pay for the meal so he pretended that he had lost his wallet. (… he pretended to …) 6. It seems that she has forgotten about the appointment. (She seems to …) 7. It is known that he has won the race. (He is known to…) 8. I hope I`ll have finished writing the essay by that time. (I hope to …) 9. My friend asked me to tell you that he was sorry that he had left without saying good-by. (… he was sorry to …) 10. She claims that she has met a number of famous people, but I don't believe her. (She claims to…)

43. Use the appropriate form of the Infinitive of the verbs in brackets.

1. I' m glad (introduce) to you. 2. Her mood seemed (change) for the worse. We had better (speak/ not) to her now. 3. I'm sorry (disappoint) you but I didn't mean anything of the kind. 4. He is thrilled (award) the Nobel Prize. 5. The building works were expected (finish) by the end of the year. 6. The poem can easily (memorise). 7. I have been waiting here for at least half an hour! You should (tell) me you were going to be late. 8. He is feeling nervous today because he is going (interview) tomorrow. 9. Look at him! He is smiling all the time. He must (read) something funny. 10. Though we often think of Leonardo Da Vinci as a painter, he actually is known (leave behind) only about 20 paintings. In fact, he seems (feel at home) in his role as an inventor and engineer.

INFINITIVE CONSTRUCTIONS

Lead in

44. Read the sentences paying attention to the phrases in italics. What do these phrases consist of? Do you know what they are called?

1. *Lomonosov* is believed *to have designed* a model of a flying apparatus that used two propellers rotating in opposite directions on the same axis.

2. A full sized, power-driven heavier-than-air *machine* is known *to have been developed* by the Wright brothers.

3. Only few people watched *the first airplane make* its maiden flight on December 17, 1903.

4. Aviation shortened distances between places, made it easier *for people to travel* from country to country and from continent to continent.

5. *An aircraft* with a lace-like structure is thought *to take inspiration* from the human skeleton.

6. *Composite materials* that would make the structure are planned *to be 3D printed*.

7. *The planes* of the future are supposed *to have* wider entrances where people will be able to leave their hand luggage.

8. It is possible *for passengers to board* a hovercraft on land, and then be conveyed out across water.

9. We *know hovercraft to be used* for a variety of applications to transport, save and protect people across the world's most challenging environments.

10. *The Tu-144* is reported *to have been in service* for a year before it was withdrawn over safety concerns.

STUDY NOTE

Infinitives are often used as a part of an **Infinitive Construction** or **Clause**. There are two main types of Infinitive Constructions. The Objective-with-the-Infinitive Construction (**Complex Object**) consists of an object (a noun or pronoun) + an infinitive with '*to*' or without '*to*'; it is equivalent to an object clause.

Complex Object

↓ ↓ ↓

*We see materials **science (object) turn (infinitive)** into a dynamic and exciting field.* (We see that materials science turns…)

The Subjective Infinitive Construction (**Complex Subject**) consists of a subject (noun or pronoun) + an infinitive as part of a predicate; it is similar in meaning to a complex sentence with an object clause.

Complex Subject

↓ ↓

*Materials **science** (subject) is considered **to be (infinitive)** one of the oldest forms of technology and applied science.* (People consider that materials science is one of the oldest forms…)

45. Read the sentences in the table below paying attention to the verbs and other expressions which can be followed by Infinitive Constructions (clauses). Translate the sentences into Russian.

Complex Object

1. I want you to help me.
2. I`d like her to be invited to the concert too.
3. I saw him cross the street.
4. I didn`t notice her enter the room.
5. Have you heard him play the piano?
6.I consider him to be about 40.
7. I asked him to be in Moscow by now.
8. We expect all the deadlines to be met.
9. I find him (to be) very clever.
10. The manager asked the letter to be sent at once.
11. The officer didn't allow the luggage to be checked.

Complex Subject

1.He is said to know five languages.
2.This book is expected to be published soon.
3. The technology is supposed to be a success.
4.They were believed to be on their way to Moscow.
5. Is this method thought to be really innovative?
6.The delegation is reported to have left.
7. He seems to be well prepared for the exam.
8. He has proved to be a good doctor.
9. I happened to be there at that time.
10. He is likely to know the answer.
11. They are certain to find out the truth.

46. Add the verbs and expressions from the example sentences in the previous exercise and the list of the verbs below to the groups of verbs in the table below.

to wish, to like, to desire, to hate, to watch, to observe, to feel, to think, to declare, to order, to command, to imagine, to explain, to tell, to rely upon, to count on, to announce, to state, to suppose, to turn out, to be sure

Complex Object is used after	**Complex Subject** is used after
1. verbs denoting wish or expectation: *to want, …* 2. verbs of saying, thinking, believing: *to believe, …* 3. verbs of physical perception: *to see, …* 4. verbs expressing request, order, permission: *to ask, …* 5. other verbs: *make, let, …*	1. verbs of saying and thinking used in the Passive Voice: *to say, to believe, …* 2. other verbs like *to seem, to appear, …* 3. some adjectives/adverbs used with the verb 'to be': *likely/unlikely, …*

Think of your own examples to illustrate each group. In groups discuss how Infinitive Constructions can be best translated into Russian.

STUDY NOTE

Sometimes after verbs of perception (sense verbs) we use the**-ing** Participle to convey the action in progress. The Infinitive signals that the whole action was observed.

*I saw her **walk** across the street. (*I watched her until she had completed her crossing)
*I saw her **walking** across the street. (*When I saw her, she was probably in the middle of crossing)

47. Translate from English into Russian paying attention to the Infinitive Constructions.

1. He didn't prove to be a good doctor. 2.The answer is unlikely to be given today. 3. He wants the work to be done at once. 4. I don't want you to be sitting here doing nothing. 5. He ordered everybody to leave. 6. They are supposed to be on their way to St. Petersburg. 7. I didn't see him leave the room. 8. The officer ordered everybody to stay where they were. 10. We expect her to arrive any minute. 11. Nobody asked him to pay for the meal. 12. Why won't you let me explain? 13. I don't consider him (to be) an honest man. 14. I expect the contract to be signed tomorrow. 15. I would like you to tell the truth.

48. Look at the following examples. Why are some verbs followed by object + to + Infinitive and others are used without to?

1. I want **you to help** me.
2. I saw **him leave** the building.
3. I've never heard **him say** a single word of truth.
4. I'd like **you to help** me with my essay.
5. Our coach never lets **us drink** water during the play.

STUDY NOTE
Verbs of physical perception (*to see, to notice, to watch, to hear, to feel*, etc.), the verbs *to help, make and let* are followed by a bare Infinitive:

*My parents let me **do** what I want. We saw him **run** as fast as he could.*

But if these verbs are used in the Passive, they are followed by a 'to'-infinitive clause:

*The students are made **to** write lots of tests.*

49. Complete the sentences with the bare or to-Infinitive of the verbs in brackets.

1. They saw him (to jump) from the bridge. 2. Her parents won`t let her (to go) to the disco. It's so unfair! 3. Nobody can make her (to do) anything she doesn`t want to. 4. Last Friday I invited her (to have) dinner with me. 5. After dinner I asked her (to explain) her strange choice. 6. One day I heard him (to sing) a song, he has such a beautiful voice! 7. I don't want you (to get) upset about it. 8. We made them (to apologise). They were so rude! 9. They were made (to apologise) because they were rude. 10. He was seen (to leave) the house early in the morning.

50. Look at the pairs of example sentences and try to translate them into Russian. Explain the difference in meaning between these sentences.

1. We expect the train to arrive at 10.
   The train is announced to have arrived.
2. They are likely to be at home.
   They are likely to have reached the place.

3. Our boss wants us to work overtime.
   We are certain to be given a pay-rise next month.
4. The girl seemed to be crying.
   The girl seemed to have been crying.

STUDY NOTE

Besides the ordinary Infinitive, Progressive, Perfect and Passive Infinitive forms are often used in Infinitive Constructions. They can have the same meaning as Progressive, Perfect and Passive tense forms.

*He seems **to be smoking** a lot. (the action is continuing around the time we are talking about)*

*The train is certain **to have left**. (*the infinitive refers to an earlier event)

*I'd like my friend **to be promoted**. ('*my friend' is the object of the action expressed by the Infinitive)

51. Translate into Russian paying attention to different forms of Infinitives in Infinitive Constructions.

1. He is certain to support our project. 2. He is known to have supported a few similar projects on previous occasions. 3. His hard work allowed him to fulfil the contract. 4. This allowed the contract to be fulfilled. 5. This information enabled the analyst to make a forecast for the next year. 6. This information enabled forecasts for the next few years to be made. 7. They believed all water on the surface of this planet to have been liberated by volcanic action. 8. They think volcanic activity on this planet to be moderate. 9. This analysis helped them deal with the problem. 10. This analysis helped the problem be dealt with. 11. The results of the experiment made them change their views. 12. The results of the experiment made the views be changed.

52. Use the appropriate form of the Infinitive using the verbs in brackets.

1.They are said (to finish) the work already. 2. Don't interrupt them. They seem (to prepare) for the lesson. 3. He is known (to write) only one good novel. 4. She is supposed (to do) it yesterday. 5. We are delighted as our company is reported (to achieve) good financial results. 6. He didn't seem (to remember) my name. 7. They proved (to be) highly motivated and hardworking. 8. I can't find her anywhere. She seems (to leave) the town. 9. It is very quiet. The children must (to play) a new computer game. 10. The text turned out (to be) more difficult than I expected.

53. Write these sentences in different way, beginning as shown. Use the <u>underlined</u> word in your sentence.

Example: It is <u>expected</u> that the cold weather will end soon. → The cold weather **is expected to end soon.**

1. It is <u>supposed</u> that the new film about space travel will be a hit. The new film about space travel is _____ . 2. It is <u>known</u> that hackers steal your personal information with the help of malicious programs. The hackers _____. 3. It is <u>reported</u> that billions of dollars are spent on space exploration. Billions of dollars _____. 4. It is <u>thought</u> that the thief broke into the shop by climbing over a wall. The thief _____ . 5. It is <u>alleged</u> that the new material doesn't need any electricity to work. The new material _____ . 6. It is <u>reported</u> that the building has been badly damaged by fire. The building _____. 7. It is <u>said</u> that the company is losing a lot of money. The company _____ . 8. It is <u>believed</u> that the company lost a lot of money last year. The company _____ . 9. It is <u>expected</u> that the company will lose money this year. The company _____ .

54. Complete each sentence using an Infinitive Construction so that its meaning is the same as the first sentence.

Example: My boss said I could use his car. → My boss let **me use his car.**

1. I was surprised that it was raining outside. I didn't expect it _____ . 2. Don't stop him doing what he wants. Let him _____ . 3. He looks older when he wears glasses. Glasses make ___ _____ . 4. I think you should know the truth. I want ___ _____ . 5. I didn't want to go to university but my parents persuaded me. My parents persuaded ___ _____ . 6. My friend said I shouldn't say anything to the police. My friend advised ____ _____ . 7. I was told that I shouldn't believe everything they say. I was warned ____ _____ . 8. If you've got a car, you are able to travel more easily. Having a car allows ___ _____ .

STUDY NOTE

The structure **for +noun/pronoun+ Infinitive** is very common in English. It is used when an Infinitive needs its own subject. The subject of the Infinitive is the object of the preposition for. The structure is often used to express possibility, necessity, wishes, suggestions, plans, etc.

*My idea was **for her** to help the new students.*

55. Read the following sentences paying attention to the Infinitive Constructions with the preposition *for*.

1. We will be happy for the staff to answer all your questions. 2. My idea was for him to learn English intensively. 3. To expect anybody to solve your problems for you would be a big mistake. 4. The tutor asked for the designs to be ready by the end of the month. 5. Can you arrange for the goods to be delivered on Monday? 6. He waited for them to begin a conversation. 7. I'm eager for the party to be a success. 8. There's no need for them to change the agreement. 9. It is too late for you to go there. 10. It was a challenging task for me to prepare for this presentation.

56. Write your own example sentences using Complex Subjects/Objects. Work in groups. Read out your sentences for your groupmates to translate.

Example: Don't **ask me to do** it now. I'm really busy.

INDEPENDENT FURTHER STUDY

57. You are going to read about four Russian aircraft designers. Read the article once. Why are they so famous?

Aleksander Fyodorovich Mozhaysky was a Russian naval officer and an early experimenter with flying machines with wings. After conducting his own studies of aerodynamic phenomena, Mozhaysky constructed a series of flying models and kites. It is claimed that he designed a glider that was towed into the air by horses. His plans for a full-scale powered flying machine were studied and approved by a government commission that included the great Russian chemist Dmitry Ivanovich Mendeleyev.

Andrey Nikolaevich Tupolev was a Russian and Soviet aircraft engineer, an academician of the Academy of Sciences of the USSR. He designed more than 100 airplanes, 70 of which were mass-produced. The well-known abbreviations, ANT and Tu, stand for aircraft created by Andrey Nikolaevich Tupolev. For example, he created the Tu-104, the first Soviet jetliner, which appeared in 1955 and became one of the first jet transports to provide regular passenger service; or the Tu-114, a long-range passenger plane, the largest propeller-driven aircraft ever in regular service. In 1968 new horizons were achieved - the display of the first supersonic passenger liner, the Tu-144. Between them, there was also the Tu-95, the first atomic bomb carrier, one of the most durable military aircraft ever built.

"The Il airplane, why are you hunchbacked? It is because I have carried the whole war on my back." This joke, popular during the World War II, has a grain of truth: Il-2 nicknamed 'hunchback' was a 'workhorse' of the war. Designed by **Sergey Vladimirovich Ilyushin,** it really occupies a place of honour. The list of models that followed later includes the piston-engine Il-14, the turbo-prop Il -18, and the second-generation machine Il-62, which would set the speed records and serve as aircraft No.1 for carrying the leaders of the USSR. The Il-76 and all other machines were designed and built without Ilyushin, yet the memory of him was preserved in model names.

Aircraft designer **Oleg Konstantinovich Antonov** was the creator of many models of aircraft for various purposes. In 1948 he produced the An-2 – a classic all-purpose airplane often called "the aircraft of the century". Antonov designed his first machine as a biplane. Its remarkable durability, high lifting power, and the ability to take off and land from poor runways have given it a long service life. The passenger airplane the An-10, the multipurpose short takeoff and landing aircraft the An-14, the world's first wide-body airliner the An-22 "Antei", the largest for its time transport aircraft the An-124 "Ruslan", and the An-225 "Mriya", the biggest heavy cargo-lifting aircraft – all these models were designed by Oleg Antonov.

Source: "Scientific Russia" (https://scientificrussia.ru/)

58. Read the extracts again and answer the questions below without looking at the text.

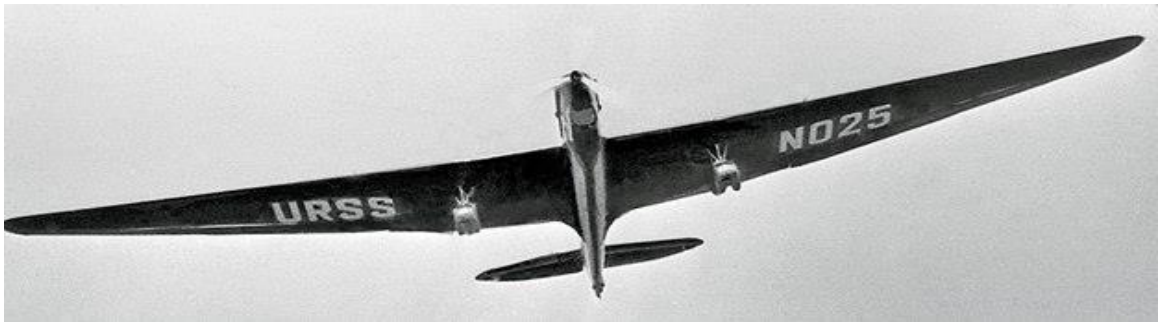
Which designer or designers …

1. designed aircraft No. 1 for carrying the leaders of the USSR?
2. designed one of the first jet transports to provide regular passenger service?
3. is the creator of the aircraft of the century?
4. designed a plane which is also called the 'workhorse' of the war?
5. made plans for a full-scale powered flying machine?
6. designed the largest for its time transport aircraft?
7. designed more than one hundred airplanes?
8. was a naval officer?
9. built one of the most durable military aircraft?
10. is (are) the most prominent?

59. Read the text about the Chkalov flight and fill in the gaps (1-10) with the missing phrases. Use the questions after the text to help you if necessary.

a. …made it possible to prepare for the flight and complete it
b. …the sky was clouded, and the oxygen supply was almost depleted.
c. …the advancement of aircraft engineering and air navigation in the world.
d. …the aircraft industry in the Soviet Union…
e. …the modern ANT-25 airplane could cover 12,000 kilometers in 75 hours
f. …to land at a military airport in Vancouver.
g. …suffered from oxygen deficiency.
h. …had a rest and prepared for the trip
i. …aircraft icing, complicated location finding, and the need to proof the airplane against extremely low temperatures.
j. …made the aircraft unstable.

Chkalov Flight Celebrates 85th Anniversary



June 2022 marked the 85th anniversary of the Chkalov flight — first nonstop transpolar flight over the North Pole in a single-engine airplane. This achievement proved to the whole world that the Soviet Union was a leading aviation nation.

A flight over the North Pole is difficult for a variety of reasons, among which are 1. _____. Bravery, professionalism, and perseverance of the crew 2._____ despite the severity of the conditions.

The idea of a nonstop Moscow-San Francisco flight was brought up for the first time in 1935. The length of the primary route — over the Atlantic Ocean — was 14,000 kilometers, whereas the shortest one went through the North Pole and was 9,605 kilometers long. The results of the latest test flights showed that 3._____ in 75 hours without a landing, so it was chosen for the transpolar flight. So far, no one had ever used an aircraft to cross the North Pole.

On June 18, 1937, the airplane with three crew members on board (Georgy Baydukov, copilot; Alexander Belyakov, navigator; Valery Chkalov, pilot) took off at the Shchelkovo airport. During the flight, the aviators would take shifts at the aircraft's controls. Since most of the time the flight was above 3,000 meters, the temperature in the cockpit remained below zero, and the crew also 4._____. On its way to the pole, the plane flew into a cyclone. The situation did not become any better after they crossed the North Pole. The station in Alaska that the crew was supposed to establish communication with did not respond, the sky was covered in thick clouds. To avoid them, the pilots had to climb up to 5,000 meters. Flying at such an altitude 5._____. The final part of the flight posed many other difficulties: the crew was exhausted, 6._____ . All these factors took their toll, and in order to make it to the United States, the ANT-25 had to lose speed. As a result, the temperature in the cockpit dropped. Eating and sleeping became impossible. The crew made the decision 7. _____ .

On June 20, 1937, at 4:20 p.m. GMT, the aircraft landed, having traveled 11,430 kilometers in 63 hours 16 minutes. The heroes were greeted personally by Gen. George Marshall, the commander of Vancouver Barracks, Washington state. The crew then 8._____ to San Francisco, Chicago, and later to Washington, where they would meet President Roosevelt. Apart from Yuri Gagarin, no Russian has since received such an honorable welcome in the U.S.

This flight gave a huge boost to 9._____ . It allowed to study how ice protection, fuel and oxygen supply systems work in extreme conditions. It also gave impetus to 10. _____ and became the basis for the development of top-class aircraft later on.

1. Why is a flight over the North Pole difficult?
2. What did bravery, professionalism, and perseverance of the crew make possible?
3. What did the results of the test flight show?
4. What did the crew suffer from because of the low temperature in the cockpit?
5. What did flying at the altitude of 5,000 metres result in?
6. What difficulties did the final part of the flight pose?
7. What decision did the crew make?
8. What did the crew do on landing in Vancouver?

9. What did the Chkalov flight give a boost to?
10. What did it also give impetus to?

PREPOSITIONS

STUDY NOTE

Prepositions are the words that we commonly use to show a relationship in space or time or a logical relationship between two or more people, places or things. Prepositions are most commonly followed by a noun phrase or pronoun (underlined):

*The last time I saw him he was walking **down** the road.*

*I'll meet you in the cafe **opposite** the cinema.*

*It was difficult to sleep **during** the flight.*

In some cases, pairs or groups of words operate like single prepositions:

*They were unable to attend **because of** the bad weather.*

*Mike will be playing **instead of** me.*

60. Check your knowledge of prepositions by filling in the gaps in the sentences below.

On, in, from, into, for, after, among, during, in front of, up to, with, because of, since.

1. Lots of information is readily accessible _____ the Internet. 2. The cause of the crash was determined to be a loss of control _____ unknown reasons. 3. The roads were closed _____ a public holiday _____ safety concerns. 4. The new model designer appeared last night ____ a current affairs program. 5. He didn't give any reason ____ being late. 6. This site provides customers ____ comprehensive information about new models. 7. The company has spent a huge amount of money ____ advertising new products. 8. Clean energy could help us ____ solution of the problem of pollution. 9. When this message appears _____ the screen, reboot your computer. 10. They didn't finish the maintenance work _____ the lack of time. 11. I always get nervous when I have to speak _____ an audience. 12. We estimate that there'll be _____ 10,000 people at the concert. 13. It was the worst storm _____ the 1990s. 14. Scientists say that _____ the next ten years there is an increasing probability that debris _____ a falling rocket could hit someone on Earth. 15. _____ doing research on the number of rockets launched _____ space, scientists called on nations and companies that send rockets to be more responsible. 16. The Pan African Heritage Museum in Ghana which is set to open soon will be _____ the top 100 world's greatest places to visit.

SAYING NUMBERS

61. Say the following numbers. Use the information in the Skill Section to help you with this task.

1. 598,346; 2. 1,654,890; 3. 3.456; 4. 0.00789%; 5. 3.14159; 6. $13.60; 7. £8.95; 8. 19,999; 9. 1,999 years; 10. In 1999; 11. 40 x 15 =…; 12. 40 + 15 = …; 13. -5°C; 14. The score of the match is 3-0; 15. The tennis game finished 30-0; 16. The phone number is 012 276 400; 17. I'm in room 804; 18. He was born in 2005; 19. It's a white Ford, registration number T015662XT; 20. The car has a 2l engine.

62. Complete the number sequences.

1. 1, 2, 3, 5, 7, __ , __ , __

2. 2, 5, 10, 17, 26, __ , __ , __
3. 0, 1, 10, 11, 100, 101, __ , __ , __

63. Read these questions out and then answer them.

1. What is five cubed? 2. What is the next prime number after 17? 3. What's 15% of 300? 4. What is 10^{-3}? 5. What is $\sqrt[3]{27}$?

CHECK YOURSELF

1. The History of Aviation Quiz.

1. What engine was on the first plane of the Wright brothers?

a. diesel b. gasoline c. electric

2. In what century did the Montgolfier brothers lift the first balloon into the air?

a. 19th b. 18th c. 17th

3. Who is called "father of Russian aviation"?

a. Sikorsky b. N. Zhukovsky c. K. Tsiolkovsky

4. Which military figure and inventor built an airplane in 1883 at his own expense?

a. Mozhaisky b. Wrangel c. Spassky

5. What does "aviation" mean in Latin?

a. to fly b. flight c. bird

6. What type of engine was not used by the English inventor of the first half of the XIX century, Sir George Cayley, in his aircraft?

a. external combustion b. steam c. internal combustion

7. What did Igor Sikorsky develop that made him famous?

a. a hovercraft b. a helicopter c. a glider

8. What is the world's largest passenger plane?

a. Airbus A380 b. Boeing 747 c. Tu-144

9. What is the largest cargo-carrying aircraft in the world?

a. A-350 b. An-225 "Mriya" c. An-124 "Ruslan"

10. A. Tupolev designed or oversaw the design of more than ___ types of civilian and military aircraft in the Soviet Union.
a. 50 b. 100 c. 30
11. The sonic barrier is the large increase in aerodynamic drag and other undesirable effects experienced by an aircraft when it approaches … .
a. the speed of sound b. subsonic speed c. Mach1

12. What happens if lightning strikes the plane?

a. The plane will shake, as in severe turbulence

b. There may be a minor damage to the aircraft skin that does not pose a threat to people on board

c. People on board may be electrocuted

13. What was the name of the legendary Russian folk hero that was used for Sikorsky's most successful large, four-engine aircraft?

a. Ilya Muromets b. Alyosha Popovich c. Dobrynya Nikitich

14. How often do planes take off and land globally?

a. every 5 seconds b. every 2 seconds c. every 10 seconds

15. What kind of aircraft does not exist based on its flight speed?

a. supersonic b. subsonic c. hypersonic

2. Explain the meaning of the following words in English.

Example: petrol → liquid obtained from oil used as a fuel for cars and other vehicles (US gas).

A failure, an ancestor, efficiency, a glider, a surface, a vessel, a facility, a target, a perspective, challenging environments, to rotate, adjustable, incredibly, marine, workload, as well as, capable of, to escape, to convey, rescue, beneath.

3. Guess the words from Module 8 texts using their definitions.

Example: a very important event in the development of something → a **milestone.**

1 the body of an aircraft;
2 the amount of work that a person or machine is expected to do;
3 to turn with a circular movement around a central point;
4 the area in a plane where the pilot sits;
5 difficult, not easy to deal with;
6 to go aboard a plane;
7 having the ability to do something;
8 an act of saving from danger;
9 to become publicly known;
10 situated directly below something;
11 a ship or a large boat;
12 something that is built to serve a particular purpose;
13 a verb meaning to get away;
14 a synonym phrase to instead of;
15 a verb meaning to transfer or deliver;
16 a light plane that flies without an engine;
17 an adjective used to describe something connected to the sea, ships or the navy;
18 the form in which a modern machine or vehicle first existed.

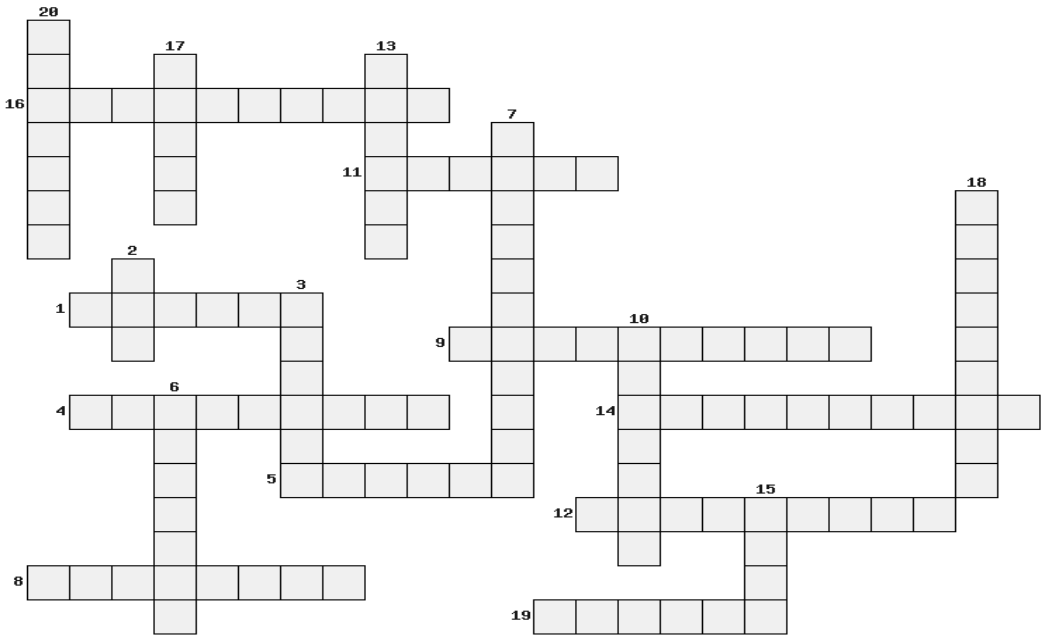
4*. Rewrite each sentence below replacing the underlined word(s) by one of the words given below so that the new sentence will have the same meaning as the first one. Translate the sentences into Russian.

to envisage, to manage, to ensure safety, to bring something to reality, to inspire, to go upward, to exert, to maintain, efficiency, opposite, an ancestor, to receive a boost, a failure, to bring within reach, to board a plane

Example: The difficult driving conditions led to several accidents. (cause)
The difficult driving conditions caused several accidents.

1. The crash happened because the car in front of the driver suddenly turned around and went in a <u>different</u> direction. 2. The governments must <u>put</u> pressure on manufacturing companies to reduce harmful emissions. 3. If you really want <u>to achieve</u> your goals, you should be determined and focus on what you want to achieve. 4. If more people could <u>imagine</u> the consequences of global warming, they would try to do their best to prevent it. 5. If our company <u>keeps</u> its high standards of service <u>at the current level</u>, it will get a competitive advantage. 6. If more measures are taken to support renewable energy sources, humans will <u>be able</u> to reduce air pollution. 7. The reduction in ticket prices <u>made</u> the best seats <u>available</u> for everyone. 8. Public interest in medical issues has <u>increased considerably</u> since the outbreak of the new pandemic. 9. I've always wanted to know what <u>motivates</u> people to set and achieve ambitious goals in life. 10. One of the ways <u>to provide a safe working environment</u> is to inform and to train employees. 11. Passengers are asked to <u>take their seats</u> half an hour before a take-off. 12. Because of her <u>expertise</u> we got all the work done in a few hours. 13. The modern airplane can <u>fly as high as</u> 20,000 feet. 14. The last product of the company <u>was not a success</u> compared to previous versions. 15. Babage's invention is considered to be a <u>predecessor</u> of the modern computer.

5. Do the crossword.



Across

1. a ship or a large boat
4. someone who is travelling in a vehicle, plane, boat, etc.
5. how tall someone or something is
8. the natural force that prevents one surface from sliding easily over another surface
9. a type of an aircraft with large metal blades on top

11. a light plane that flies without an engine
12. a very important event in the development of something
14. the natural ability that makes a machine or person able to do something
16. cheap enough for most people to afford
19. the process of making a drawing of something to show how you will make it

Down
2. a fast plane with a reaction engine
3. to start something, usually something big or important
6. the top layer of an area of water or land
7. progress or development in your job, level of knowledge, etc.
10. the area in a plane where the pilot sits
13. a journey in a plane or space vehicle
15. to turn around and around very quickly, or to make something do this
17. to get on a bus, plane, train, etc. in order to travel somewhere
18. at the present time
20. a typical quality or an important part of something

6. Translate from English into Russian paying attention to the Infinitive Constructions.

1. The article seems to have been published already. 2. He seems to have left his phone at home. 3. Our teacher proved to be very strict. 4. They are unlikely to be here soon. 5. The museum is said to have been closed. 6. He didn`t happen to be there. 7. The answer is unlikely to be given today. 8. A new shopping center is reported to be built next to our house. 9. She seemed to be talking a lot. 10. He is said to be writing a new novel. 11. The weather appears to be improving. 12. She seems to have forgotten her promise. 13. The house appears to have been built by a famous architect. 14. The eruption of the volcano is reported to have stopped. 15. Moscow metro is considered to be the most beautiful in the world. 16. Chinese is supposed to be one of the most difficult languages to learn.

7. Transform the following sentences using Complex Subject/Object Constructions.

Example: I know that he can speak English well. → He is known **to be able to speak** English well.

A. 1. Everybody thinks he is a good engineer. (He is thought …) 2. I saw her when she was crossing the street. (I saw her…) 3. It is likely that these changes will be introduced quite soon. (These changes…) 5. I know that he has graduated from university. (He…) 6. People say that LCD monitors are better than CRT ones. (LCD monitors…) 7. It turned out that our approach was wrong. (Our approach…) 8. All the students think that this test is too difficult. (This test…) 9. I do not believe that he is a good student. (He …) 9. It seems they have taken advantage of the favourable conditions. (They…) 10. They say he graduated from Oxford. (He…)

B. 11. It is not likely that he will finish his course successfully. 12. We know that our tutor is concerned about the problem. 13. It turned out that he had been wrong. 14. They were certain that the project would be completed on time. 15. When they arrived they saw that the bank was closed. 16. They don`t believe that he is a good teacher. 17. They assumed that the theory of superconductivity would explain this phenomenon. 18. It was found that the results of the experiment were not as expected. 19. It seems that he knows well what he is talking about. 20. We believe that we will solve this problem soon.

8*. Transform the following sentences with Infinitive Constructions according to the example. Translate the sentences into Russian.

Example: Science is known to contribute to every aspect of man's life. It is known that science contributes to every aspect of man's life.

1. Molecular biology is expected to dominate other sciences. (It is expected…) 2. The data are assumed to correlate with the present theory. 3. He seems to be working at the same problem. 4. He is likely to argue about it. 5. The results of these experiments are found to overlap. 6. Some people seem to be disappointed in science. 7. This research is likely to contribute to the solution of the problem. 8. Science is considered to affect people's lives. 9. Heat and other forms of energy were proved to be mutually convertible. 10. Gravity is known to pull on every particle of a body. 11. The results of the experiment are claimed to be promising. 12. The cooling system turned out to be broken.

9*. Transform the following sentences using Complex Subject/Object.

Example: It is known that science contributes to every aspect of man`s life. →
Science is known to contribute to every aspect of man`s life. *Or*: We know that he is a good engineer. → We know him to be a good engineer.

1. They expect that the project will be ready by the end of the term. 2. It is likely that he will finish his course successfully. 3. They say that this scientist is keeping in touch with his colleagues from different countries. 4. They find that travelling is very motivating for learning foreign languages. 5. It is considered that planes are the most comfortable means of transport. 6. It appears that smart homes are quite common today. 7. For the first time, scientists discovered that metal repaired itself after cracking. 8. It is certain that the car of the future will be electrically powered. 9. It happens that the break-up of the great southern continent of Gondwanaland began during the age of the dinosaurs. 10. It is reported that the plane was released in 1994 and it is still in good condition. 11. He noticed that the software had been changed. 12. People say that portable computers are better than the stationary ones.

10. Translate into English using Complex Object or Complex Subject.

1. Известно, что он хороший учитель. 2. Сообщают, что погода будет тёплой. 3. Он оказался хорошим другом. 4. Говорят, что она выиграла гонку. 5. Мне случалось встречать его раньше. 6. Ему разрешают смотреть телевизор каждый вечер. 7. Ожидают, что поезд прибудет вовремя. 8. Его видели бегущим по улице. 9. Было слышно, как она пела. 10. Говорят, что он провалился на экзамене. 11. Я, кажется, не помню его адреса. 12. Учитель казался сердитым. 13. Полагают, что доклад будет интересным. 14. Нам сказали остаться после уроков. 15. Их заставили переписать упражнение.

11*. Complex Object and Complex Subject are commonly used in academic and technical texts. Here are more examples for you to look at. Translate them into Russian using a dictionary.

1. One can assume this to be self- evident. 2. Most people believe the amount of effort in science to be correlated with the standard of living in the country. 3. One can watch more and more people move into biology from other areas of research. 4. An efficient laboratory head always knows how to get people to do their work properly and on time. 5. Most scientists regard biology rather than physics to be the central ground of scientific advance in the near future. 6. One of the major challenges for a university today is to cultivate the interest of young people in long-term academic and social issues. 7. Assuming this to have direct bearing on the future of man, the author goes into a detailed analysis of the present status of science and scientists in advanced countries. 8. He achieves his aim by having the reader follow his story of this new area of

research from its early days up to now. 9. All of the Cooper pairs would have to be halted at the same time for the current to stop, which is very unlikely to occur.

12. Answer the following questions. Consult Module 8 texts if necessary.

1. Who designed early ancestors of the airplane?
2. What important breakthroughs had been made before the first airplane was born?
3. What theory did the Wright brothers develop?
4. How did the development of aviation influence people's lives?
5. What technological advancements have modern airplanes brought to reality?
6. What will airplanes of the future be like according to the ideas of aircraft designers?
7. What is a hovercraft and where is it used?
8. What did the Concorde and the Tu-144 have in common?
9. What records were set with the help of the Tu-114?
10. What can the Su-35 do in terms of maneuverability?

MODULE 8 PROGRESS TEST

Vocabulary. ***Decide which answer a, b or c best fits into each gap.***

A radical idea is being explored at Delft University of Technology in the Netherlands. Researchers there are working on a new aircraft 1._____ known as the "Flying-V". It is a new concept for a 2._____ aircraft, which they claim would be up to 20% more 3._____ than state-of-the-art modern planes. They suggest abandoning the idea of a 4._____ fuselage. But in this case the shape is more like an arrowhead, with two wings stretching out behind the 5._____ in a V. Passengers and cargo would be carried within the wings themselves. The designers think it would be cheaper to build than the blended 6._____ because the two arms of the V could be "plugged" into the rest of the fuselage. So the aircraft could be built in parts, 7. _____all at once. The design takes 8._____ from the ideas of a graduate student which formed part of his thesis. It is being developed with 9._____ from the Dutch airline KLM and Airbus and in July a scale model took to the skies for the first time. The flight of the test aircraft was deemed a 10._____.

1. a. design	b. pattern	c. outline
2. a. distant	b. long duration	c. long-haul
3. a. effluent	b. effective	c. efficient
4. a. convenient	b. conventional	c. constructive
5. a. pilot zone	b. cockpit	c. cabin
6. a. wave	b. wind	c. wing
7. a. rather	b. rather than	c. instead
8. a. inspiration	b. creativity	c. illumination
9. a. maintenance	b. support	c. assist
10. a. succeed	b. succession	c. success

Grammar. ***Decide which answer a, b or c best fits into each gap.***

1. Aviation industry received a boost when the Wright brothers developed the theory that the air pressure exerted on different parts of the machine could _____ by making the wings adjustable.
   a. alter b. be altered c. have been altered

2. There are many things _____ into consideration while designing an aircraft.
   a. to be taken b. to have taken c. be taking

3. One of the major problems of a hypersonic flight is _____the heat that builds up on the aircraft.
   a. to dealing with b. to be dealt with c. to deal with

4. Invisible rollers of air created by the compressed air under the vessel are supposed _____ it up off the ground.
   a. to be held b. to have held c. to be holding

5. Launched in 1955, the first hovercraft had to wait a few more years _____ the light of the day.
   a. to see b. to be seen c. to have seen

6. We may not yet be living in an age of flying cars but new technologies seem _____ a reality that is just as exciting and almost as far-fetched.
   a. to be created b. to be creating c. to have been creating

7. The Su-35 was expected _____ the combat capability of the air force over the coming years.
   a. to ensure b. to have ensured c. to be ensured

8. Some people will naturally think such course of events _____ disastrous not only for science but for the future of mankind.
   a. to be b. being c. have been

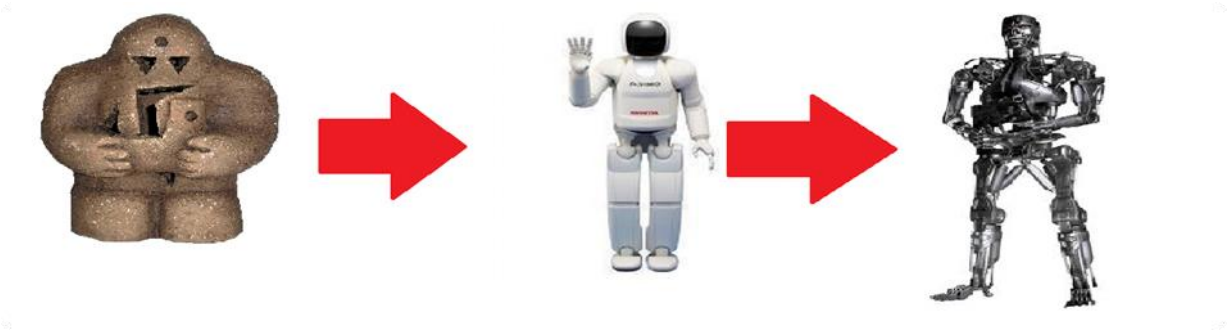
9. The author`s major concern is to make the reader _____ the full implication of genetic engineering.
   a. to realise b. realise c. have realised

10. Nobody likes his ideas being criticised without an attempt _____ them.
   a. to understand b. to be understood c. to have understood

MODULE 9

ROBOTS AND ROBOTICS

"Don't think of robots as replacements for humans - think of them as things that will help make us better at tackling many of the problems we face."
Eoin Treacy, an analyst, fund manager, lecturer and author.



Learning points for Module 9:

Reading:
Text 9A. The Invention of the Robot
Text 9B. Robot Teachers
Text 9C. Advances in Underwater Robots

Vocabulary in context: Word definitions. Collocations. Synonyms. Word forms.

Grammar*:* Forms of Gerunds. Gerundial Constructions

Speaking*:* Robots in our life

Skill: Describing graphs, charts, and diagrams.

Learning aims:

• to practise reading and speaking about robots and robotics
• to learn and practise active vocabulary related to the topic of the module
• to learn about the forms of Gerunds and Gerundial Constructions and practise how to understand and use them
• to learn and practise the skill of describing graphs, charts, and diagrams

Lead-in

1. Try to write a definition of a robot. Compare your definition with the definitions of an industrial robot given below. Which of them do you like the most? Explain why.
A robot is…

- a machine that can move and do some of the work of a person, and is usually controlled by a computer.
- a computer that moves itself or other objects in three-dimensional space under automatic control.
- a device which can be programmed to carry out certain manufacturing or other tasks which are similar to tasks carried out by people.

READING

Part 1

2. In groups complete the list of top ten facts about robots. Then read text 9A and check your answers. (Three facts are not given in the text. Try to find the answers by yourself).

1. The word robot comes from …
2. The concept of a robot dates back…
3. The first working robots were …
4. Robots are unable …
5. The first accident involving a robot occurred …
6. The great benefit of robotisation is that …
7. The average annual production rate of industrial robots is…
8. The great fear people have of robots is that …
9. The smallest robot is…
10. The number of robots in use is…

Text 9 A

The Invention of the Robot

(1) The history of robotics initially began in the ancient world. Concepts of artificial servants and companions[1] date at least as far back as the ancient legend of Cadmus*, who is said to have sown[2] dragon teeth that **turned into** soldiers. Another example is Pygmalion** whose statue of Galatea came to life. Among the first **verifiable** automata (mechanical devices that function automatically) is a **humanoid** drawn by Leonardo da Vinci (1452–1519) in around 1495. Leonardo's notebooks, rediscovered in the 1950s, contained detailed drawings of a mechanical knight in armour[3] which was able to sit up, wave its arms and move its head and jaw.

(2) The **actual** word 'robot' was invented in 1922 by Karel Čapek, a Czeck writer and playwright. The word comes from an old Slavonic 'rabota' which means 'forced labour'. It was used in a play about an army of industrial robots that became so intelligent that they were able **to take over** the world. Robots developed a **powerful** presence in fiction and film in the twentieth century, long before they were created in reality. It was a case of science fiction propelling[4] scientists forward until it became science fact.

(3) The popular idea is that a robot is a machine, **preferably** made of shiny[5] metal, that acts and **looks like** a human being. The real robots that were **actually** built to work on the production line in a car factory were far from humanoid. Most industrial robots are the equivalent of a mechanical arm that can pick things up, lift them, **extend**, and so on. The production-line robots are programmed **to carry out** a specific **sequence** of tasks. Robots are unable to think, or decide to do things differently. The robot's computer may be **set up** by writing all the **separate** movements out as a long computer program. **Alternatively**, it is possible to show the robot what to do.

(4) The great benefit of robotisation, the introduction of robots to carry out industrial tasks, is that it **relieves** factory workers of the most repetitive and tedious[6] jobs. Robots are also **suited** to carrying out dangerous tasks that are far too risky for people **to attempt,** such as detonating car bombs. Some robots are **fitted with vision equipment** that can **enhance** their **performance**. All the above robots including production-line robots, medical robots, movement imitating robots and self-driving cars are being widely developed and used today. The **average** annual **production rate** of industrial robots and their **installation** are increasing at a breathtaking

speed*. Furthermore, advanced humanoid-like robots that can completely imitate human motion also exist. But what about tomorrow?

(5) The great fear people have of robots, and a very natural one, is that robots will **take away** their jobs. So far, it looks as if there is less to fear from robots than once thought. Even robots designed for less technical tasks, such as housework, seem to be very limited. A robot can be programmed to vacuum clean the floor of a room, but it cannot **switch** in an instant, as a human being can, to moving a chair to one side **with a view to cleaning** underneath it, and then swiftly vacuum clean a **complicated** staircase[7]. The **replacement** of people with robots seems very unlikely. The real future of robotics is in the improvement of **existing** robots and in creating the new ones by humans, as no robot can compare to a human being in terms of[8] thinking and inventing.

**Cadmus in Greek mythology was a prince, the son of Phoenix and brother of Europa.*
**Pygmalion in Greek mythology was a sculptor who fell in love with a statue he had created.*
**According to the new World Robotics report an all-time high of 517,385 new industrial robots were installed around the world in 2021.*

Vocabulary notes for text 9A

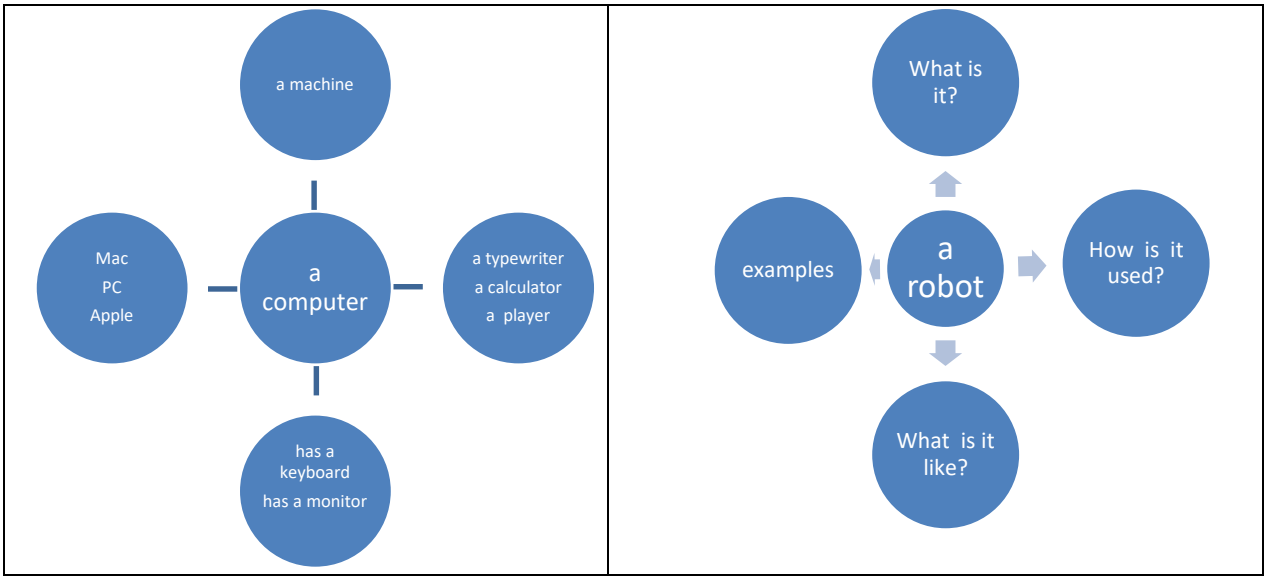
[1] companion	партнёр, компаньон
[3] knight in armour	рыцарь в доспехах
[4] propel(ling)	толкать вперед, побуждать, стимулировать
[5] shiny	блестящий, отполированный
[6] tedious	нудный, скучный, утомительный
[7] staircase	лестница
sown	как говорится в легенде, посеял
of	

3. Read the text again paying attention to the words in bold. Try to figure out their meaning from the context. Explain their meaning or translate them into Russian. Use a dictionary if necessary.

4. Answer the following questions using text 9A.

1. When did the concept of artificial servants and companions appear? How did we learn about it?
2. When were the drawings of a mechanical knight in armour rediscovered and who had drawn them?
3. Who invented the word ‘robot’ and what did it mean?
4. What do robots look like? What allows robots to perform specific sequences of tasks?
5. What are robots used for and what are the main benefits of using robots?
6. What types of robots are widely used today?
7. How does the text answer the question whether robots will replace humans?
8. What is the future of robotics?

5. Look at the sample concept-of-definition map of a computer and try to produce a concept-of-definition map of a robot using the information in Text 9A.



6. Which of the following sentences best summarises the main points of each paragraph? Explain why.

The first §
- a. is about the ancient legend of Cadmus
- b. explains how the concept of artificial servants was born
- c. gives an overview of the ancient prototypes of modern robots

The second §
- a. describes the origin of the word 'robot'
- b. gives some details on how the word 'robot' appeared and how the concept of robots became a reality
- c. is about Check playwright Karel Capek

The third §
- a. is about how real robots actually look like and operate
- b. what robots are made of
- c. how the robot's computer is set up

The fourth §
- a. is devoted to the benefits of robotisation
- b. describes different type of robots
- c. describes the most popular robots used today and the benefits of their application

The fifth §
- a. gives the author's opinion concerning our future jobs
- b. explains why the replacement of people with robots is unlikely and what the future of robotics really is
- c. describes the most complicated robot

7. Summarise text 9A using the sentences from the previous exercise as your key points. Make use of some of the linking expressions from the list below.

To begin with, as well, on the one hand, on the other hand, although, next, in addition, besides, however, for example, finally, according to the text, etc.

READING

Part 2

8. Match the words in italics with the definitions.

to underestimate *creativity* *to adapt* *to take over* *to diagnose* *empathy*

- the ability to think of new ideas
- to think something is less than it is
- to work out what kind of illness someone has
- when someone takes control of something, like a job or a place
- to change something so that it fits better
- the ability to deeply understand someone's situation or feelings

9. Read the text and decide which statements are True and which are False.

1. Most jobs can be done by robots or computers. (T/F)
2. Robots are always better at diagnosing illnesses than doctors. (T/F)
3. Many experts agree robots will replace teachers. (T/F)
4. One advantage of robot teachers is that they don't need to rest. (T/F)
5. Robot assistants could help teachers by marking homework and writing reports. (T/F)
6. Some teachers are using robots to reduce their time answering emails and marking homework. (T/F)

Text 9B

Robot Teachers

(1) If you think of the jobs robots could never do, you would probably put doctors and teachers at the top of the list. It is easy to imagine robot cleaners and factory workers, but some jobs need human connection and creativity. But are we underestimating[1] what robots can do? In some cases, they already perform better than doctors at diagnosing illness. Also, some patients might feel more comfortable sharing personal information with a machine than a person. Could there be a place for robots in education after all?

(2) Some educators predict that the robot will do the main job of transferring information and teachers will be like assistants. Intelligent robots will read students' faces, movements and maybe even brain[2] signals. Then they will adapt the information to each student. It is not a popular opinion and it is unlikely robots will ever have empathy and the ability to really connect with humans like another human can. One thing is certain, though. A robot teacher is better than no teacher at all. In some parts of the world, there aren't enough teachers and 9–16 percent of children under the age of 14 don't go to school. That problem could be partly solved by robots because they can teach anywhere and won't get stressed, or tired, or move somewhere for an easier, higher-paid job.

(3) Perhaps the question is not 'Will robots replace teachers?' but 'How can robots help teachers?' Office workers can use software to do things like organise and answer emails, arrange meetings and update calendars. Teachers waste a lot of time doing non-teaching work, including more than 11 hours a week marking homework. If robots could cut the time teachers spend marking homework and writing reports[3], teachers would have more time and energy for the parts of the job humans do best.

Vocabulary notes for text 9B

[1] underestimate	недооценивать, преуменьшать
[2] brain	мозг
[3] report	доклад, отчет

10. Match the words from text 9B with their definitions using the context.

1. human connection	a. to some degree, but not completely
2. to perform	b. to make something more modern or suitable for use by adding new information
3. to transfer information	c. a state of being related to someone or something else;
4. an assistant	d. to plan, prepare for, or organise something
5. to adapt	e. to do an action or a piece of work
6. partly	f. to correct mistakes;
7. to arrange (meetings)	g. a helper
8. to update (calendars)	h. to write a statement to parents about their child performance at school
9. to mark (homework)	i. to pass information from one person to another
10. to write reports	j. to change something to suit different conditions or uses

11. Read the text again and choose the best answer.

1. It is easy to think robots …
   a. will replace people even if we don't like the idea.
   b. are more capable than people and it's true.
   c. can do less than people but it is not always true.
2. Some educators think that teachers in the future will …
   a. help robots in class.
   b. teach knowledge to students.
   c. no longer exist.
3. Robots will probably never …
   a. have human understanding of emotions.
   b. be a popular choice for teachers.
   c. be intelligent enough to work in education.
4. Some parts of the world ...
   a. pay robots to teach.
   b. already use robots in teaching jobs.
   c. have a shortage of teachers.
5. Teachers …
   a. work harder than office workers.
   b. have less help than office workers.
   c. leave their jobs to become office workers.
6. Robots could …
   a. empathise with students.
   b. mark homework.
   c. prepare lessons.

12. Work in pairs. Students A strongly believe that robots are better than humans at teaching; Students B strongly believe that robots can never be as good as teachers. Change partners again and talk about your ideas.

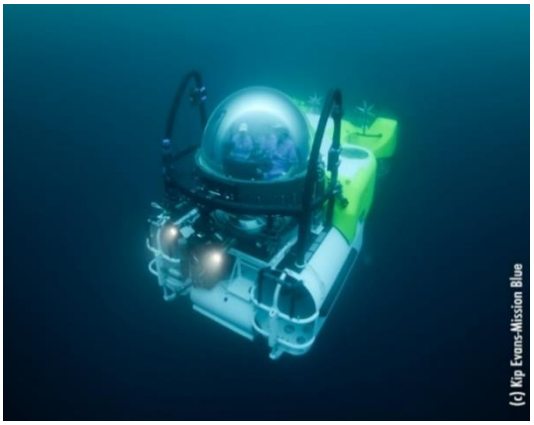
READING

Part 3

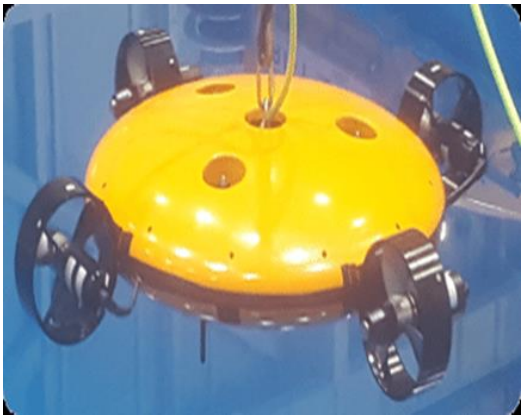
13. Before reading answer the following questions. Then read text 9C and check your answers.

1. What can you see in the pictures below? Do you know how these underwater vehicles are called?
2. In your opinion, how can the topic of robots be related to underwater vehicles?
3. What is the difference between the underwater vehicle (submersible) in the first and in the second picture?
4. For what purposes can these vehicles be used?

1.



2.



Text 9C

Advances in Underwater Robots

(1) A submersible[1] is a small, mobile undersea research vessel capable of functioning in the ocean depths. The development of a great variety of submersibles during the later 1950s and the 1960s came about as a result of improved technology and in response to a demonstrated need for the capability to visit the ocean depths to make direct observations and measurements, to recover lost equipment, and for possible rescue activity. Submersibles are extremely diverse in both shape and size and are designed to perform different and often highly specialised tasks.

(2) In recent years, it has become clear that special purpose, unmanned[3] submersible vehicles are replacing manned[2] submersibles. Submersible robots that have long been used to explore the underwater environment are expanding rapidly today. Underwater robots are being used in an increasing number of applications, including the military. In addition to rescue missions, submersibles are used for laying underwater pipelines[3], for work on offshore oil drilling platforms, for seafloor mapping[4], and underwater surveys[5]. Using robots to conduct underwater inspections is far safer and less expensive than using human divers. They also provide complete, detailed imagery[6], real-time data for 3D modelling, better precision[7] in detecting structural weaknesses, and improved access to previously unreachable areas, such as inside pipes.

(3) A variety of underwater robots have emerged over the last few decades to meet these challenging underwater tasks: **UUVs:** Unmanned underwater vehicles which travel in a single direction and are highly efficient at mapping large areas of seafloor. **ROVs:** Remotely operated

vehicles are designed for omni-directional[8] maneuvering and are often externally powered and tele-operated using a tether[9] cable. They are commonly used to inspect offshore structures. **AUVs**: autonomous underwater vehicles are typically untethered, maneuver themselves, and often have grasping[10] and manipulation capabilities. AUVs have a number of depth/size classes, ranging from man-portable vehicles with 100-meter depth ratings to deep-water platforms. Low-cost vehicles: Robotics companies are trying to bring smaller and less expensive vehicles to the general public and hobbyists. These are sometimes used by researchers to test specific aspects of the systems they are developing, such as new sensor arrangements or planning and control strategies.

(4) The dominant trend in underwater robotics is toward autonomy. Instead of remote control by a human or preprogrammed trajectories, we are seeing more built-in autonomy that can react to the specific conditions on-site. Artificial intelligence (AI) will also play a larger role in underwater robotics, where AI might actually take over the role of the ROV pilot, who tele-operates an underwater robot and evaluates its imagery.

Vocabulary notes for text 9C

[1]submersible	подводный аппарат
[2]manned	с человеком на борту
[3]pipelines	трубопроводы
[4]mapping	картографирование
[5]survey(s)	исследование, обзор
[6]imagery	снимки, изображение
[7]precision	точность
[8]omni-directional	во всех направлениях
[9]tether	трос
[10]grasping	схватывание, хватательный

14. Read the text and circle any words you do not understand. Try to figure out their meaning from the context, use a dictionary to check your guesses.

Example: to recover lost equipment – to rescue or get back some articles, e.g. old ships or other vessels, which have sunk (= поднять со дна затонувшее оборудование)

15. Choose the right option according to the information given in text 9C.

1. A submersible is …
    a. a vehicle that can travel under water.
    b. an underwater helicopter.
    c. a military ship that can stay under water.
2. A submersible was designed to …
    a. explore the ocean depths.
    b. to grow sea plants and collect pearls.
    c. to measure the distances.
3. UUVs are efficient at…
    a. collecting seafloor samples.
    b. mapping seafloor.
    c. rescue missions.
4. ROV …
    a. is controlled from the surface.
    b. eliminates the cable.
    c. is a manned submersible.

5. AUVs …
   a. maneuver themselves.
   b. use a tether cable.
   c. are designed for omni-directional maneuvering.
6. The dominant trend in underwater robotics is toward…
   a. remote control by a human.
   b. preprogrammed trajectories.
   c. autonomy.

16. Read the text again and find answers to the following questions.

1. What is a submersible?
2. When did the development of submersibles come about?
3. What were they designed to do?
4. What types of submersibles are there?
5. What are different types of submersibles designed for?
6. In what applications are submersibles being used nowadays?
7. What is the dominant trend in underwater robotics?

17. Mark the following statements as True or False.

1. A lot of different underwater vehicles appeared 60 years ago.
2. In the 60-s nobody was interested in the exploration of the underwater world.
3. There are no so many types of submersibles.
4. Without using submersibles we wouldn`t have been able to learn as much about the ocean depths as we have.
5. Unmanned submersibles are likely to be more widely used in the future.
6. The number of applications of submersibles is growing.
7. Unmanned submersibles are designed to carry out dangerous missions.

18. Search the Internet (e.g. https://oceanexplorer.noaa.gov/technology/subs/subs.html) to find more examples of how submersibles are used. Tell your group about one of them. Decide which examples can be considered important milestones in the development of submersibles. Compare your lists.

19. Study the descriptions of the links below. Choose one video that you find the most interesting, watch it a few times and prepare to tell your groupmates about it. Add your own opinion.

Will robots take our jobs?
It's very clear by now that technology has automated many tasks we once had to labour through - but what about your job? According to a survey of 1,900 experts by the Pew Research Center, an overwhelming majority believe artificial intelligence will continue to transform the world. Some experts, however, say this might not be totally to our advantage. This video will look at what the future may hold.

https://www.youtube.com/watch?v=a-7Azih0D98&t=11s

Artificial intelligence: Can you build a robot in one day?

The latest in the BBC's series on intelligent machines takes a look at how easy, or difficult, it is to create robots, while the author is set the challenge of using a Student Robotics kit to create his own robot, in just one day.

https://www.youtube.com/watch?v=FVMO7fYmTvc

Google Engineer Claims Piece of Software Has Feelings

A senior Google engineer says one of the company's artificial intelligence systems has become a sapient being. The technology firm has suspended Blake Lemoine for breaching confidentiality rules -- and insists there's no evidence its AI chatbot is now free thinking. A spokesperson for Google said while chatbots can imitate conversation, they are not sapient. Mr Lemoine has suggested the robot should get its own lawyer.
https://www.youtube.com/watch?v=XKe1qrQ5NtA

VOCABULARY

Module 9 Word List

Text 9A

- actual (adj)
- alternatively (adv)
- annual (adj)
- attempt (v, n)
- average (adj)
- be fitted (v) with
- carry out (v)
- complicated (adj)
- enhance (v) performance (n)
- existing (adj)
- extend (v)
- humanoid (adj)
- installation (n)
- look like (v)
- powerful (adj)
- preferably (adv)
- production rate (n)
- relieve (v)
- separate (adj)
- sequence (n)
- set up (v)
- suit (v)
- switch (v) to
- take (v) away
- take (v) over
- turn (v) into
- verifiable (adj)
- vision (n)
- with a view to doing something

Text 9B

- arrange (v) meetings
- assistant (n)
- cut (v) the time
- diagnose (v)
- empathy (n)
- human connection (n)
- mark (v) homework
- partly (adv)
- transfer (v) information
- underestimate (v)
- update (v) calendars
- write (v) reports

Text 9C

- capability (n)
- come (n) about
- detect (v)
- diverse (adj)
- emerge (v)
- evaluate (v)
- in response (n) to
- measurement (n)
- meet (v) challenging tasks
- observation (n)
- purpose (n)
- recover (v)
- rescue (n)
- submersible (n)

20. Match the words and word phrases with the correct definitions as they are used in text 9A.

A.

1. to turn into	a. able to be proved
2. verifiable	b. having a lot of power to control people or events
3. humanoid	c. to begin to have control of something
4. actual	d. to change or develop from one thing to another
5. to take over	e. the ability to see
6. powerful	f. existing in fact
7. vision	g. a machine or creature with the appearance and qualities of a human

B.

1. sequence	a. to make a machine ready to be used
2. to set up	b. to improve an unpleasant situation
3. separate (adj)	c. a series of related things or events
4. alternatively	d. to be convenient
5. to relieve	e. the act of putting a machine into position
6. to suit	f. existing or happening independently
7. installation	g. used to suggest another possibility (=instead)

C.

1. to enhance something (e.g. performance)	a. typical and usual
2. average	b. used to refer to something that exists now
3. to switch (to)	c. the speed at which the process of making goods to be sold happens
4. with a view to doing something	d. to change suddenly from one thing to another
5. existing	e. to remove or subtract
6. production rate	f. with the aim of doing something
7. to take away	g. to improve the quality of something

D.

1. preferable	a. to be similar in appearance to someone
2. to look like	b. to do or complete something
3. to extend	c. in a better or more suitable way
4. to carry out	d. an act of trying to do something
5. an attempt	e. to be equipped with
6. to be fitted with	f. difficult to understand or deal with
7. complicated	g. to add to something in order to make it bigger or longer

21. Read the sentences and choose the right option. Explain your choice and translate the sentences into Russian.

A. 1. At the current *amount/rate* of production they expect it will take a few months to carry out the order. 2. These measures have been taken with a(n) *view/aim* to improving the company's results. 3. Our faculties are in two *separate/secondary* buildings. 4. The results of the new research seem to contradict to the *exciting/existing* theories. 5. The CEO is one of the most *powerless/powerful* figures in a company. 6. She started studying English, but *chose/switched* to History in her second year. 7. He was an experienced player who was working hard to *enhance/enlarge* his performance. 8. If you don't make any *tries/attempts* to join in their

conversation they won't let you say a word. 9. This year they have introduced three new products *to extend/to rescue* their range.

B. 10. The quickest way to get there is through the city centre. *Alongside/alternatively*, there is a ring road, which is less busy. 11. They could choose whatever time *suites/suits* them best because they were among the first to apply. 12. The Titanic was *fitted/fixed* with 20 lifeboats which could hold only half the number of passengers onboard. 13. The *average/maximum* age of young people going to universities is about 18-20 years old in our country. 14. According to the forecast, rain in the morning will *turn/move* into snow in the afternoon. 15. The exams take place at the end of the term, but the *actual/real* results will be available in June. 16. If you look at the picture of a silicon chip, you might think that it *looks like/looks at* intricate cities. 17. The events in the article are presented in chronological *sequel/sequence*. 18. Water the plants twice a week, *preferentially/preferably* in the morning.

C. 19. Throughout the discussion they failed to present a single *verifiable/powerful* fact. 20. Some workers lost their jobs when machines *took over/took away* the repetitive tasks they used to perform. 21. Tests should be *carried away/carried out* to find out what the problem is. 22. Cats have good night *view/vision*. 23. A new generation of *human*/*humanoid* androids are highly intelligent. 24. When you apply for a job, you need to fill in a quite *hard/complicated* form. 25. He asked for help because he could not *sort/set* up the equipment. 26. There are lots of different medicines that *relieve/retrieve* pain. 27. The *installation/set up* of the laboratory equipment has to be completed as soon as possible.

22. Look at the words below. Try to recall how they were used in text 9B.

To underestimate, assistant, empathy, report, to update, connection, partly, to transfer, to arrange, to diagnose, to adapt, to mark, to cut the time, to perform.

23. Match the words with the correct definition of the word as it is used in text 9B. Think of your own example sentences with these words.

1. to underestimate
2. to adapt
3. empathy
4. a report
5. to update
6. a connection
7. partly
8. to transfer
9. to arrange
10. to mark

a. the state of being related to someone or something
b. to plan, prepare or organise something
c. to some degree, not completely
d. the ability to understand other people's feelings and problems
e. to think that something or someone is not as good as they really are
f. to correct mistakes and give points for a piece of work
g. a description of an event or situation
h. to change something to suit certain conditions
i. to make something more modern
j. to move something from one place to another

24. Replace the words in bold with their synonyms using the words from Exercise 23. Translate the sentences into Russian.

Example: Modern robots can **be taught** to use information from previous activities for future decisions. → Modern robots can **be instructed** to use information from previous activities for future decisions.

1. After the discussion it was decided **to pass on** control of public land to the state. 2. The meetings has been **set up** for Wednesday. 3. A **new version** of that code has just been published. 4. The Pearson English Portal is planning to use technology **to check** examination papers. 5. To write a **statement** to parents about a child's ability and performance at school is part of a teacher's job. 6. Many software companies have **changed** popular programs to work with the new operating system. 7. He handed in his homework only **half** finished. 8. The city **undervalued** the cost of the new building. 9. Such skills as cooperation, responsibility, self-control and **the capacity to understand other people's feelings** are really important these days. 10. Whether you have the Google Assistant or Siri, you can manage your network **contacts** by saying "turn Wi-Fi off" or "turn Wi-Fi on," which works with Bluetooth too.

25. Find the following words or phrases in text 9C.

(1)
1. A noun naming *a small underwater vehicle* used especially for deep sea research. (§1)
2. A phrasal verb which means *to happen or take place* (§ 1)
3. This noun phrase is used to describe *something which happens as an act of responding*. (§ 1)
4. The *quality or state* of *being capable*. (§ 1)
5. *The act of recognising or noting a fact or object* often using some instruments. (§ 1)
6. *The act or process of measuring*. (§ 1)
7. A verb meaning *to bring back to the normal condition*, to find. (§ 1)
8. A noun describing *an act of saving or being saved* from danger or difficulty. (§1)
(2)
9. A noun meaning *an aim or end to be reached*. (§ 2)
10. A verb meaning *to discover or determine the fact or presence of something*. (§2)
(3)
11. *A number or collection of different things*, especially of a particular class. (§3)
12. A verb meaning *to appear or become known.* (§ 3)
13. A participle form of a verb *range* in combination with the preposition *from* which expresses *the idea of a variety of different things.* (§ 3)
(4)
14. A phrase describing *a control of operation from a point at some distance* (§ 4)
15. A verb meaning *to determine the significance, worth, or condition of something* (§ 4)

26. Match the words with numbers (1-10) with the words with letters (a-j) to make up word collocations. Explain the meaning of these expressions and try to recall how they were used in texts 9A, B, or C.

A.

1. verifiable	a. rate
2. actual	b. a computer
3. powerful	c. the deadline
4. to extend	d. facts
5. to carry out	e. issues/meanings
6. to set up	f. results
7. separate	g. idea
8. to relieve	h. the task
9. to be fitted for	i. tension
10. production	j. research

B.

1. existing	a. the purpose
2. to suit	b. system
3. to arrange	c. challenges
4. to update	d. a meeting
5. to underestimate	e. mission
6. complicated	f. performance
7. remote	g. approaches
8. to enhance	h. control
9. to meet	i. an opponent
10. rescue	j. the software

27. Complete each sentence with the correct word in the necessary form to make up a word collocation from Exercise 26. Translate the sentences into Russian.

A. 1. My secretary will phone you to _____ a meeting. 2. The students are encouraged to participate in _____ __ research in their field of study. 3. This easily _____ fact proves that our theory is true. 4. _____ results may be different from the expected results. 5. Some _____ ideas have emerged at our university. 6. They agreed to _____ the deadline until the end of the month. 7. He helped me to _____ my computer. 8. Developing new robots and replacing human workers with intelligent robots are two _____ issues. 9. Herbal tea helps _____ tension and calm the nerves. 10. I'm afraid, I am not _____ __ so great a task.

B. 11. The oil _____ rate increased due to new technology. 12. In his new book he analyses the _____ approaches to managing. 13. The old building is now used as a hotel and has been reconstructed to _____ that purpose. 14. Since he hadn't _____ the antivirus software on his computer for a long time his system was infected. 15. They lost mostly because they had _____ their opponents. 16. Most of our graduates are well prepared to work with _____ systems. 17. It is difficult to imagine how people watched TV without a _____ control a few decades ago. 18. It has been shown that a bit of stress _____ performance during an exam. 19. If your immune systems fails to _____ the challenge of the first contact, you might be infected. 20. The news agencies say that submersibles can also aid search and _____ missions.

28. Work in groups. Choose 5-7 words from Module 9 Word list and prepare a short news story to tell your group using these words. Ask your listeners to note down the words while they listen to your story. Compare your lists.

Example: The P 3 humanoid robot was revealed by Honda in 1998 as a part of the company's continuing humanoid project. The president and CEO Hiroyuki Yoshino, at the time, described Honda's humanoid robotics program as consistent with its direction to enhance human mobility. In 1999, Sony introduced the AIBO, a robotic dog with a capacity of interacting with humans; the first models released in Japan sold out in 20 minutes. Honda revealed the most advanced result of their humanoid project in 2000, named ASIMO. ASIMO was fitted to be able to run, walk, maintain connections with humans, recognise faces, and interact with its environment.

29. Summarise in English using some key words from the vocabulary section.

Россияне усомнились в способности роботов заменить их на работе. При этом, если посмотреть на похожий опрос от 2019 года, число уверенных в своем преимуществе перед машинами сократилось. Россияне считают, что в обозримом будущем роботы не смогут занять их рабочие места. Социологический опрос на эту тему провел ВЦИОМ. 70% опрошенных заявили, что выполнять их обязанности роботы

не будут, хотя 18% считают, что в незначительной степени умные машины заменять их на работе все же смогут. 51% уверены, что сама по себе роботизация — скорее отрицательная тенденция. Больше в успех роботов верит молодое поколение (48%). Среди опрошенных в возрасте от 45 до 59 лет 78% уверены, что заменить их машинами в обозримом будущем не удастся. В опросе, который проводился посредством телефонных интервью, приняли участие 1600 респондентов. В 2019 году проводилось похожее исследование. Как заявили тогда 78% россиян, они не опасаются, что машины смогут заменить их на работе. Среди сфер, где можно использовать роботов, респонденты называли в первую очередь освоение космоса и опасные промышленные производства. Далее шли медицинская диагностика и ликвидация последствий чрезвычайных ситуаций.

SPEAKING AND DISCUSSION

30. Discuss some of the questions below in mini-groups. Think of what reasons you can give to explain your view, look for more examples to illustrate your points. Share your ideas with other groups.

1. Robots are already an integral part of manufacturing in factories. Do you believe that one day there will be little need for humans in manufacturing? How are robots better than the human workforce?
2. If you could have a robot, what tasks would you use it for? Would you ever trust a robot to look after your children or walk your dog?
3. Police and the military use robots to sweep for landmines and bombs. What are the advantages of these practices? Do you see any other uses for robots in combat and police work?
4. Do you think that one-day robots will replace teachers?
5. What threat do machines present to mankind?
6. Do you believe machines will ever outsmart people and take over the planet?
7. Robotic surgery is a method to perform surgery using very small tools attached to a robotic arm and a surgeon controls the robotic arm with a computer. How beneficial do you think this is now and for the future of medicine?
8. Do you believe it's just a matter of time before fast-food workers are replaced by machines?
9. What do you think would happen to the world's economy if robots began replacing people in the workforce?
10. Have you ever had a favourite character from a sci-fi film who happened to be a robot? If so, provide more details about the film and your thoughts about it.

31. Read how futurologist Gray Scott sees the future of robotics.

"Robots will harvest, cook, and serve our food. They will work in our factories, drive our cars, and walk our dogs. Like it or not, the age of work is coming to an end".

What is your opinion about this prediction? Can you describe a typical day in your life when all work is done by robots? What do you think people will be doing and how our life will change?

32. Work in pairs or groups. Discuss the benefits and disadvantages of machines and automation and create a mini-presentation based on your ideas.

GRAMMAR

THE FORMS OF THE GERUND

Lead-in

33. Underline Gerunds in the sentences from reading and try to explain their meaning or translate the sentences into Russian. Decide how the Gerund is used in each example choosing from the options below.

- As a subject, complement or object
- After certain verbs
- After prepositions

1. By developing a powerful presence in fiction and film in the twentieth century, robots had become known long before they were created in reality.
2. The production-line robots are capable of carrying out a specific sequence of tasks.
3. The robot's computer may be set up by writing all the separate movements out as a long computer program.
4. One of the benefits of robotisation is using robots to carry out industrial tasks resulting in relieving factory workers of the most repetitive and tedious jobs.
5. Robots are also suited to carry out dangerous tasks that are far too risky for people to attempt, such as detonating car bombs.
6. A robot can be programmed to vacuum clean the floor of a room, but it cannot switch in an instant to moving a chair to one side with a view to cleaning underneath it, and then swiftly vacuum clean a complicated staircase.
7. Completely imitating human motion is one of the capabilities of advanced humanoid-like robots that makes their development a most promising trend.
8. We still consider replacing people with robots in factories very unlikely.
9. The real future of robotics is in the improvement of existing robots and in creating new ones.
10. No robot is likely to be comparable to a living man in terms of thinking and inventing.

STUDY NOTE

Besides **Simple Gerunds,** *e.g. living, doing*, there are also **Perfect** and **Passive** forms.

*She loves **being admired**. (*Passive form)

*My **having said** that made no difference. (*Perfect form)

*I am surprised at **not having been asked** about it. (*Negative perfect passive form)

34. Fill in the table below with more examples of different Gerund forms.

Gerund	Active	Passive
Simple	*writing,…*	*being written,…*
Perfect	*having written, …*	*having been written,…*

35. Find Gerunds in the sentences below and identify what forms they are. Decide whether the Gerund refers to: a time before that of the main verb, the same time or the future?

1. They were worried about missing the flight. 2. Our engineers suggest using robots in assembling automobile parts more extensively. 3. The developers have succeeded in working out the rules of the game. 4. I am thinking of going to Sochi in summer. 5. I don't remember having seen him before. 6. He mentioned having read about it somewhere. 7. I am proud of having passed all the exams. 8. He didn't approve of his son having dropped out of the university. 9. He complained of having been treated badly. 10. Your coffee is not ready yet. Would you mind waiting for a few minutes?

STUDY NOTE

The 'tenses' of the Gerund do not express absolute time; they express what is known as *relative* time, that is relative to that of the main verb.

Improving *living standards is one of our priorities*. (Simple Gerund refers to the same (or future) time as that of the main verb)

I don't remember ***saying*** *anything like that. (*In some contexts Simple Gerund refers to the time before that of the main verb)

My ***having said*** *that made no difference*. (Perfect form here stresses that the action expressed by the Gerund 'having said' precedes the action expressed by the main verb 'made').

36. Read the sentences paying attention to the forms of the Gerunds and explain their meaning. Translate the sentences into Russian.

Example: I remember his <u>having objected</u> to this plan. → Perfect form stresses that the action expressed by the gerund 'having objected' precedes the action expressed by the main verb 'remember'.

1. She is angry about not having been invited. 2. She loves being admired. 3. Visiting people is nicer than being visited. 4. He was afraid of being seen by the police. 5. I don`t like the dog being shut in the house. 6. My having said that made no difference. 7. The criminal's having shot the policeman reacted against him. 8. I completely forgot about having asked him to wait for me there. 9. He apologised for not having written the report on time. 10. I am surprised at not being asked about it.

37. Fill in the gaps choosing from the words in italics given below. Explain their meaning or translate the sentences into Russian.

having seen, being spoken, having allowed me, Combining, visiting, having had, having to, being corrected, being told

1. The place is worth _____ . 2. Can you remember _____ the man before? 3. She was terrified of _____ speak to anybody, and even more, of _____ to. 4. After _____ by the teacher, the students' papers were returned to them. 5. I was surprised at my mother's _____ to go on a trip. 6. On _____ the news, she turned pale. 7. _____ robots with the Internet of things is expected to open up thrilling possibilities along the way. 8. In his closing speech the chairman said that he appreciated _____ the opportunity to take part in the conference.

GERUNDIAL CONSTRUCTIONS

Lead-in

38. Make up sentences by matching two parts. Translate the sentences into Russian paying attention to the Gerunds.

1. We read about robots	a. their doing useful jobs.
2. We learned about K. Capek's	b. being suited to carry out dangerous tasks.
3. The text describes robots and gives a few examples of	c. having invented the word 'robot'.

STUDY NOTE

A combination of a Gerund with a noun or pronoun: a possessive noun (-'s) or possessive pronoun (my, your, his) or a noun in the general case, and a personal pronoun in the objective case (me, you, him) is sometimes called a **Gerundial Construction**. It is equivalent to the subordinate clause in meaning.

*Do you mind **Peter's (his) opening** the window?* (… if Peter opens the window?)
*Do you mind **my helping you out**?* (… if I help you?)
*Her thoughts were interrupted by **the door opening** gently.* (when the door opened …)

39. Rewrite the following sentences using Gerundial Constructions

Example: Employees must do their job well. → The boss insists on **the employees' doing** their job better.
1. The teacher allows his students to put off the work. The teacher doesn't mind the students'_____ . 2. My cousin got my e-mail although I had sent it to the wrong address. He got my e-mail in spite of my _____ . 3. He cannot participate in the tender. He is a foreigner. His _____ doesn't allow him to participate in the tender. 4. Did you give me back the book I had lent you? I can't remember ____ . 5. The woman said that I could open the window. She didn't mind _____ . 6. My father doesn't like me to stay out late at night. My father doesn't like _____ . 7. I'm sure she asked you not to phone after 11.p.m. Have you forgotten _____ ? 8. He was interrupted when the door opened and more people came in. He was interrupted by _____ . 9. Mike is never late. I could hardly imagine _____. 10. Richard came in and I had to stop talking. I was interrupted by _____ .

40*. Identify Gerundial Constructions and translate the sentences into Russian.

1. Mendeleev's having established a periodic law of nature has entered his name into the history book of the world science. 2. Success in science often results from the scientist's confining his attention to one problem for many years. 3. The results of the experiment depended upon his having applied the proper technique. 4. The idea of scientists' being responsible for most ills of the present day situation is unfortunately quite popular. 5. A brain-storming session consists of everybody's proposing as many and as wild ideas as possible, without being concerned as to whether they are workable or not. 6. Science is sometimes humorously defined as a practice of the scientist's satisfying his curiosity at the expense of the Government. 7. We know about Newton's having written "the Principia" in a very short time. 8. There is a theory of the Earth behaving as a large magnet.

GERUNDS AND GERUNDIAL CONSTRUCTIONS AFTER PREPOSITIONS

41. Read the sentences paying attention to the use of Gerunds and Gerundial Constructions after prepositions. Translate the sentences into Russian.

1. As AI continues to improve, we will be getting more and more used to technology making independent decisions in our homes, streets, and workplaces. 2. Programming robots to carry out a specific sequence of tasks made it possible to use them for working on the production line. 3. Every student knows of robots steadily moving outside the confines of factory lines. 4. If robots are suited for improvising in order to complete a task, it will be a great skill for a robot to have. 5. A robot could help make video calls to family members, including allowing them to make virtual visits by acting as a telepresence platform. 6. The infection of your computer may lead to deleting crucial files and installing hidden programs on your computer. 7. Unemployed people who will lose their jobs because of intelligent machines are unlikely to be thankful to scientists and engineers for having developed these smart robots. 8. It is hard not to be excited about being able to make a robot cope in a real human environment. 9. Many people with electric cars today suffer from "range anxiety", the stress caused by worrying about the battery running out of electricity. 10. Electric car manufacturers say that we are on the brink of achieving a revolution in the electric vehicle charging experience.

42. Read the sentences paying attention to the prepositions used with the verbs followed by Gerunds. Translate the sentences into Russian.

1. If you want to *enquire about* enrolling on the course you should send an email to this address. 2. They seem *excited about* being here. 3. Today we still cannot *rely on* autonomous cars eliminating all the accidents on our roads. 4. The delegation *insisted on* holding an emergency meeting. 5. He was *depressed about* being lonely and forgotten. 6. Though he *apologised for* not inviting me to his party I think he did it on purpose. 7. My colleague insisted on paying for the meal. 8. No one can be *faulted for* doing what they believe is best. 9. My driving instructor *warned me against* driving without seatbelts. 10. They *informed us about* opening dozens of new underground stations in the near future.

43. Read the text and choose the correct preposition. Tell your partner if you would like to visit Mount Hood and explain why?

Before/without learning the details about Mount Hood, in Oregon, we had seen this beautiful picture. We thought *for/ by/ of* visiting this picturesque place but decided that there was no point *in/at* going there *without / after/before* receiving information about this volcano. *After/ in/for* searching the Internet, we learned that volcano Hood was potentially active. But unofficially, Hood was considered calm and active tourism was developed there. We learned that there were three ski resorts. *For/at/by* going there, you need to take skis. *After/to/for* having visited this interesting place, we plan to invite friends, talk with them about our trip and show photographs.

44. Complete the sentences with the correct preposition and the Gerund of the verbs in brackets. Use a dictionary if necessary.

1. The possibility _____ _____ chemical energy into mechanical is evident. (to transform) 2. People worldwide should insist _____ _____ 'killer robots'. (to ban) 3. The engineer succeeded _____ _____ a very complicated problem. (to solve) 4. This engineer is involved _____ _____ the technologies that will give us a new generation of robots. (to develop) 5. The researcher objected _____ their _____ new methods before the test was completed. (to introduce) 6. During

the videoconference they discussed some methods _____ _____ new projects. (to finance). 7. The speaker improved his report _____ _____ the end. (to change) 8. The final decision depends _____ their _____ the details of the project. (to submit) 9. Everybody was surprised _____ his _____ in that experiment. (not/to take part) 10. He was disappointed _____ _____ the reason of the incident. (not/to find out). 11. Most of the population approved _____ the government's _____ taxes. (to cut) 12. Heat may be produced _____ _____ coal, gas or any other fuel. (to burn)

INDEPENDENT FURTHER STUDY

45. Listen about top 5 real-life robots. Match the names of robots with their descriptions.

Less than 30 years ago, advanced robots were nothing but a hopeful dream and futuristic vision. Fast forward to today, and thanks to the ever-increasing advancements in science and technology, these visions are genuine realities.
https://www.youtube.com/watch?v=9DaTZQxg21U&t=43s

Sofia, Robocop, Kuri, Toyota T-HR 3, ASIMO.

- This robot holds the title of the most socially advanced and one of the oldest cyborgs in the world.
- An adorable home robot and a super high-tech companion that could easily become your best friend.
- A life-sized police robot that patrols Dubai's city malls.
- A third generation humanoid robot which works by mimicking the maneuvers of its human operator.
- A realistic humanoid robot designed for research, education, and entertainment.

46. Answer the questions.

Which robot …

1. ... has 29 body parts and his movements are natural and smooth?
2. … displays how she is feeling using a bright LED?
3. … is capable of carrying out actions and lifelike movements that most humanoids cannot?
4. … can hold a conversation, has a sense of humour and can express her genuine feelings?
5. … can identify wanted criminals and collect evidence?
6. … can help humans in different situations, including at home, in healthcare facilities, construction work, areas affected by natural disasters, and even the outer space?
7. … is designed to specifically interact with humans at home?
8. … has gone through many stages of development?
9. … is the world's first robot citizen and the first robot Innovation Ambassador for the United Nations Development Programme?
10. … keeps the streets safe and sound for people to enjoy?

47. Listen again and note down what the following dates and figures refer to.

Example: February the 14th, 2016 → On the 14th of February, 2016, Sofia was activated

1. 60 …	6. 20 … and 14…
2. 2018 …	7. 3d (third)…
3. 0.6 …	8. 29, 10 and 16…
4. October the 25th, 2017 …	9. 75…
5. 25%...	10. 20 …

PHRASAL VERBS

STUDY NOTE

A **Phrasal** verb is a main verb plus one or two particles (an adverb or a preposition): *go away, put up with*. Sometimes the **meaning** of the phrasal verb is clear because it is very similar to the main verb: *open up doors.* But often it is almost impossible to guess the meaning of a phrasal verb because it is very different from the meaning of the main verb: *make up (=make piece), pull up (=stop).*
*The internet has **opened up** new opportunities for cost-effective brand building. Technology changes so fast, it is hard **to keep up with** it.*

Phrasal verbs are an important part of the English language and particularly of the everyday spoken English.

48. Find a suitable ending for each Phrasal verb. Use them in a sentence of your own.

1. back up	a. the light
2. bring out	b. important files
3. switch off	c. the old laptop
4. drop out	d. some problems
5. carry on	e. snakes
6. talk over	f. of college
7. cut down on	g. fast food
8. get by with	h. a new magazine
9. run out of	i. electricity
10. watch out for	j. with the project

49. Fill in the missing Phrasal verbs using the words in brackets as prompts.

took off, wake up, set up, make out, went on, cut in,
set off, came out, carry on, broke down

1. The driver … sharply after overtaking the lorry. (put oneself into a position between others) 2. Do you know who … the company? (started) 3. The taxi … on the way to the airport and I nearly missed my flight. (something went wrong with the taxi) 4. We'd better … before the rush-hour traffic starts. (begin our journey) 5. What time did … you this morning? (stop sleeping) 6. The book first … in 1997. (was published) 7. The plane … an hour late. (flew into the air) 8. The lecture … till 6.30. (lasted) 9. My tutor wants me to … with the project while he is away on business. (to continue). 10. It's difficult to … what she's saying. (hear/understand)

Separable or Inseparable?

50. Read the sentences below paying attention to the position of objects. Translate the sentences into Russian or explain their meaning.

1. Ann **reminds** me **of** a girlfriend of mine.
2. How can we **protect** children **from** dangerous material on the Internet?
3. I'd like to **thank** everyone **for** their kindness.
4. Somebody **broke into** his car and stole his radio.
5. I don't like this song. I don't want to **listen to** it any more.
6. Getting to the final **depends on** winning the semi-final!
7. She **took** her coat **off**, hung it up and sat down.
8. Often parents help their children **keep up with** their studies.

STUDY NOTE

Sometimes, the preposition/adverb is placed either after the verb or after the object.
*Mary **made up** a really entertaining story. Mary **made** the story **up**.*
If the object is a pronoun, however, the preposition/adverb has to be placed after the pronoun (object).
*She **made** it **up**. **Put** it **down. Take** it **off.***
Some Phrasal verbs are always inseparable.
*I **came across** some old photos in a drawer. ~~I **came** some old photos **across** in a drawer.~~*

51. Read the passage and try to fill in the gaps with Phrasal verbs. Do you agree with Mary?

to keep up with, putting off, to let somebody down, to meet up, to ring somebody up, point out, get together, stand by

Mary: How often do you and your friends 1._____ ? In our busy lives today, it's easy 2._____ our friends _____ by 3._____ social arrangements or even forgetting 4._____ them _____ . Yet our friends are the people who 5. _____ us when we need support. So while it's great 6. _____ people on social media, psychologists 7. _____ that's really important to make time 8._____ together too.

52. To find out more about Phrasal verbs and check your answers watch the video following the link:

https://www.youtube.com/watch?v=Gqu-bgwML00&t=35s

53. Choose the right option a, b, or c to test your knowledge of Phrasal verbs. Translate the sentences into Russian.

1. A new wearable device enables us to better understand how we feel, have more meaningful conversations with those we _____, and lead happier lives.
   a. care of b. care about c. care after
2. Some batteries in today's electric cars can _____ to 12 hours to charge fully.
   a. take up b. take in c. take out
3. There is a special feature on Google maps which allows to _____ the information about the air quality where you are _____ for a bike ride, picnic, or camping trip.
   a. find out/heading out b. find up/heading along c. find about/heading to
4. Google _____ its first translation service in 2006 and has continually added to its repository.
   a. rolled up b. rolled out c. rolled away
5. The electric-powered two-wheelers are helping people nimbly _____ traffic and effortlessly _____ town.
   a. zip between/get around b. zip among/ get through c. zip through/get about
6. Alternatively, the user can _____ their music device and the speaker will _____ the rider's favourite tunes.
   a. plug into/boom up b. plug at/boom away c. plug in/boom out
7. Special technology has been developed to cause plants to _____ light.
   a. give away b. give out c. give off
8. Many of us _____watching sci-fi movies with airborne taxis. The companies which aim to start operating air taxis also need to _____what traffic rules the taxis will need to follow, and what kind of training flying taxi pilots will need.
   a. grew up/ work out b. grew on/work up c. grew at/work through

9. Over generations, automobiles have influenced every aspect of society in many ways and have changed to _____the times.

a. keep with b. keep up c. keep up with

10. Computers have minds of their own and always seem to _____ or crash at the worst possible moment.

a. play away b. play up c. play out

11. Most PC users find it impossible to figure out what has gone wrong with their computers, so it is very important that you regularly _____ all your important files.

a. back in b. back on c. back up

12. It is equally important to _____ the computer correctly before you _____ .

a. shut away/ switch off it b. shut down/switch it off c. shut off/switch off

13. Whatever you do, don't forget to log off after using the Internet.

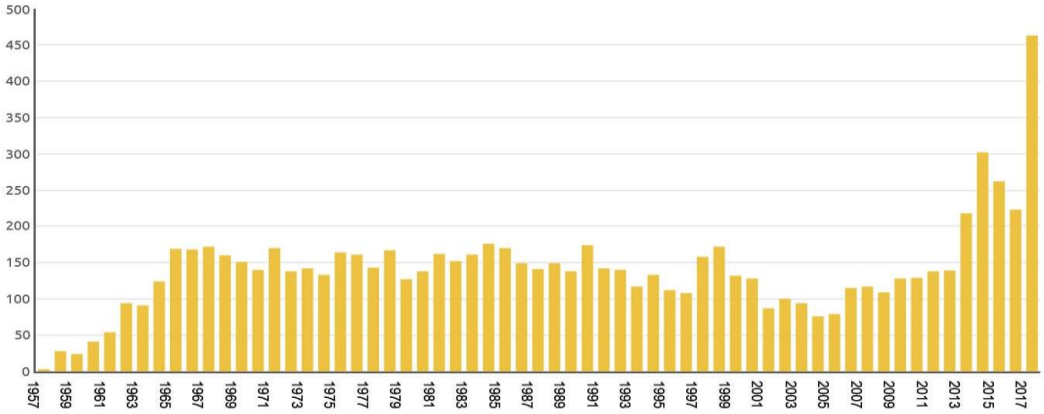
a. log off b. log away c. log out

14. Steve Jobs _____ university to set up a company. He and his friend _____ with an operating system which was a huge success.

a. dropped from/came out b. dropped off/came in c. dropped out of/came up

DESCRIBING DIAGRAMS AND GRAPHS

Number of satellites launched from 1957 to 2017



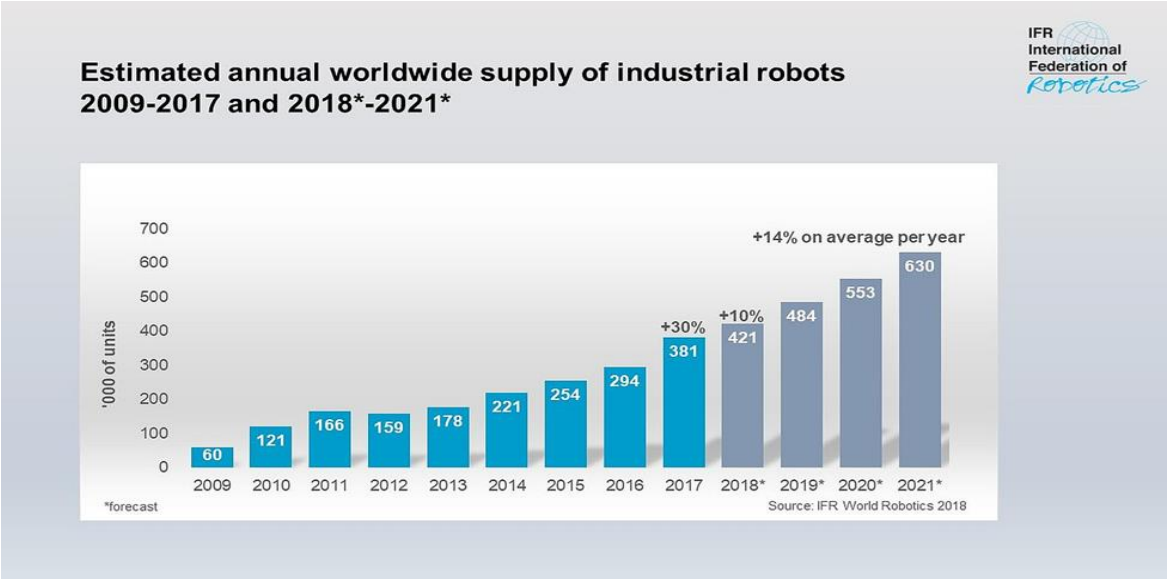
54. Chart description. Use the verbs below to complete the description of the chart.

over, remained, shows, constant, increase, overcoming, decrease, increasing

The bar chart _____ the number of satellites launched into space per year. It can be seen from the chart that after the first satellite was launched in 1957, an _____ trend continued up to 1965 with the number of launches _____ 100. Since 1965 until early 2000s the number of satellites launched per year _____ relatively _____ . Between 2001 – 2005 there came a minor _____ with the minimum number of launches in 2004. It was replaced by a major _____ in 2007 that continued up to 2017 when _____ 450 satellites were launched.

55. Describe the chart given below. Use the information in the Skill Section to help you with the task. Before you begin, read the following advice.

- Begin with an introductory statement: *e.g. The graph/table/chart shows/describes…*
- Don't try to describe every detail. Look for significant features
- End with a comment on general trends



CHECK YOURSELF

1. Robots Quiz. Choose the right answer.

1. What is a robot?

a. a machine designed to complete a task

b. mechanical parts put together

c. a program written for specific applications

2. What are the components of a typical robot?

a. robotic arms, legs and a body

b. sensors, control systems, effectors

c. the power source, the motor, the frame

3. Where were robots first used?

a. in automotive industry

b. in a lab

c. in the space

4. How do robots make decisions?

a. They consult with the motherboard.

b. They think and think until they come up with a decision.

c. They follow directions written in a computer program.

5. When was the first robot launched?

a. 270 BC

b. 1977

c. 1830

6. First robots could only perform one task at a time.

a. True

b. False

7. The idea of a robot apocalypse is something imagined by sci-fi writers and is not a real concern for researchers.

a. True

b. False

8. These are the robots that will not function unless controlled by humans.

a. manual

b. smart

c. sequential

9. These are the robots that are designed to perform series of tasks in the same sequence.

a. manual

b. smart

c. sequential

10. These are the robots that are considered to possess artificial intelligence.

a. manual

b. smart

c. sequential

2. Look at the words below. Try to recall how they were used in text 9A. Give their definitions or translate them into Russian.

Turn into, verifiable, humanoid, actual(ly), take over, powerful, sequence, set up, separate, alternatively, relieve, suit, vision, enhance performance, average, production rate, unit, switch to, with a view to doing something, complicated, existing, preferably, look like, extend, carry out, attempt, be fitted with.

3. Fill in the gaps with the words from Exercise 2 above in the right form.

A. 1. The study will be **c**_____ **o**____ over a six-month period. 2. There were lots of rumours but nobody knew what had **a**_____ happened. 3. More and more people admit that they fear that robots will **t**_____ **o**_____ their jobs. 4. When you go out, having some form of identification is recommended, **p**_____ a passport. 5. Inside the robot there's a built-in computer, which **l**_____ **l**_____ a card. 6. We do our best to **e**_____ our students' participation in the English Language Competition**.** 7. There is a particular **s**_____ in which you have to perform these tasks. 8. New toll roads could help **r**_____ congestion on other routes. 9. If you fail, you can have a second **a**_____ to pass the exam. 10. There are few scientists whose **v**_____ of the future seem to be likely to happen. 11. The **a**_____ of the three numbers *7, 12* and *20* is *13*, because the total of *7, 12* and *20* is *39*, and *39* divided by *3* is *13*. 12. More workers were employed to boost the **p**_____ **r**_____ of the vehicles. 13. Each **u**_____ of the text book focuses on a different grammar point.

B. 14. The road system in big cities is becoming increasingly **c**_____ making driving more difficult. 15. New medicines are developed which are successfully used in the **e**_____ courses of treatment. 16. Freezing temperatures **t**_____ water **i**_____ ice. 17. Tests allow teachers to monitor their students' **p**_____ . 18. A robot resembling humans is called a **h**_____ robot. 19. You can take an online course, or **a**_____, you can have a face-to-face classes. 20. When you deliver a presentation, you should use only **v**_____ facts. 21. The Internet has a **p**_____ impact on public opinion. 22. Such a database will be extremely costly to **s**_____ **u**__ . 23. After the quarrel they went their **s**_____ ways. 24. We hope that new technologies will make a **s**_____ to clean sources of energy possible. 25. His new car is **f**_____ with an alarm, so it is well protected. 26. He has a degree in Engineering and is best **s**_____ for technical work.

4. Guess the words from Module 9 word list using the definitions (a-i) and fill in the gaps in the text below using these words.

a. a helper
b. to some degree, but not completely
c. to correct mistakes while checking homework
d. to pass information from one person to another
e. a state of being related to someone or something else
f. to make something more modern or suitable for use by adding new information
g. to change something to suit different conditions or uses
h. to write a statement to parents about their child performance at school
i. to plan, prepare for, or organise something.

If you think of the jobs robots could never do, you would probably put doctors and teachers at the top of the list. It is easy to imagine robot cleaners and factory workers, but some jobs need 1._____ and creativity. Some educators predict that the robot will do the main job of 2._____ _____ and teachers will be like 3._____ . Intelligent robots will read students' faces, movements and maybe even brain^2 signals. Then they will 4._____ the information to each student. A robot teacher is better than no teacher at all. In some parts of the world, there aren't enough teachers and 9–16 per cent of children under the age of 14 don't go to school. That problem could be 5._____ solved by robots because they can teach anywhere and won't get stressed, or tired, or move somewhere for an easier, higher-paid job. Perhaps the question is not 'Will robots replace teachers?' but 'How can robots help teachers?' Office workers can use software to do things like organise and answer emails, 6._____ meetings and 7._____ calendars. Teachers waste a lot of time doing non-teaching work, including more than 11 hours a week 8._____ _____ . If robots could cut the time teachers spend marking homework and 9._____ , teachers would have more time and energy for the parts of the job humans do best.

5*. Use the words in the box to fill in the gaps in the sentences below. There are two extra words which you don't need to use in each box.

crew, submersible, vehicle, to collect, life –support, capability, to recover, remotely, rescue, samples.

___1___ is a small, mobile undersea research__2__ capable of functioning in the ocean depths. Some of the tasks submersibles performed were to make direct observations and measurements, ___3___ lost equipment, and for possible ___4___ activity. Manned submersibles also have a ___5___ compartment within a pressure hull and ____ 6___systems. Some submersibles have mechanical arms (manipulators) to collect ___7___and perform other modest tasks outside the vessel. To take the right decision they needed ___8___ data from various sources.

depths, submersible, carry out, operate, capability, remotely, perform, crew, samples, applications

Automated vehicles___9___ without continuous control from people and ___10___ routine tasks under the sea for months at a time. ___11___-operated vehicles are controlled by people from a safe distance and are often equipped with a manipulator, cameras and sensors. It is difficult for human beings to reach the ___12___ of seas and oceans. Submersibles are being used in an increasing number of ___13____. Submersibles are constructed in a variety of sizes and shapes and are designed to ____14___ different and often highly specialized tasks. The development of submersibles came about in response to a need for the ___15___ to visit the ocean depths. One of the most impressive submersibles is the *Aluminaut,* constructed of high-strength aluminum alloys and able to operate at 4,570 m carrying a ___16___ of six.

6. Complete each sentence by writing the correct preposition and form of the verb given in the right column.

1. Scientists succeeded … … the way for the exploration of Mars. 2. She doesn't approve … … in scandals. 3. He didn't object … … to a new flat. 4. They couldn't prevent her … … the house. 5. At the time I was thinking … … a job at a big firm in Moscow. 6. Why are you accusing her … … the documents? 7. I thanked him again … … me the car. 8. Unfortunately he persisted … … his crazy ideas. 9. They congratulated me … ... from university. 10. Are you accusing me … ...? 11. The police suspect him … … the money.	1. pave 2. be involved 3. move 4. sell 5. take 6. lose 7. lend 8. express 9. graduate 10. lie 11. steal

7*. Read the sentences and explain the use of the Infinitives and Gerunds. Translate the sentences into Russian.

1. I'd like to be chosen for this role. 2. She regretted not having told us about the accident. 3. The computer should have been repaired last week. 4. You'd better be sleeping now. 5. He denied having been asked to prepare a presentation. 6. Being invited to take part in the conference made them feel good. 7. He can't have done it on his own, he is not strong enough. 8. Everything's changed, but they forgot to send me the memo. 9. I can't stand being asked about my age. 10. She must have been sleeping all night.

8*. Complete the sentences with the appropriate form of the Gerund or the Infinitive of the verb in brackets.

A. 1. Every athlete's dream is (to choose) to take part in the Olympic games. 2. (go) to university changed many people's lives. 3. He thinks that hackers might (steal) money from his bank accounts for months. 4. His countrymen congratulated him on (win) the race. 5. Nobody knew of his (send) to work in Africa. 6. Do you know anyone who is not looking forward to (go) on holiday? 7. The public was warned about a new strain of coronavirus (spread) in the country. 8. I can't see our tutor. He seems (to leave) a few minutes ago. 9. The engineer denied (use) his colleagues' ideas in his work. 10. I can't find my key. I must (lose) it.
B. 11. After (fail) the exam in January he was allowed to re-take it in February. 12. Due to (be able/speak) French he found lots of job offers in France. 13. He doesn't respond well to (ask) to

do things. 14. Don't disturb her. She seems (to study) for her exams. 15. At the end of his presentation the speaker said that he was glad (to cover) all the points of his talk. 16. Black paintings by Goya are completely different from his earlier works because of his (to paint) them when he was old and ill. 17. He was sacked because they suspected him of (lie) in order to get the job. 18. The flat looks so tidy. You must just (to clean) it. 19. I don't like (to interrupt) when I'm working. 20. After (lose) my phone, I also realised that I had left my credit card at home.

9. Choose two or three statements below and decide whether you agree or disagree with them. Explain why. Give your own examples.

Statements about Robots

1. Robots seem like a modern day invention, but in reality they were created in ancient Greece and Rome.
2. Thanks to AI, some computers and robots can imitate human behavior.
3. Most jobs are better done by robots.
4. Robots will never replace humans.
5. Nanobots, robots scaled down to microscopic size, have a very promising future.
6. Some of the applications of robots that we only imagine in science fiction could become a reality one day.
7. Autonomous intelligent robots will replace people in various activities and functions in the near future.
8. One day the development of AI and robotics might move beyond human control.

MODULE 9 PROGRESS TEST

Vocabulary. Decide which answer a, b or c best fits into each gap.

The 1_____ word "robot," derived from the Czech word '*rabota'* was first used in the play where robots appeared as artificial humans who functioned only as workers. Devices called "robots" today are extremely 2_____ in both shape and function. For example, the 3_____ robots that work in manufacturing plants mainly 4_____ a certain task programmed into them by human operators and usually 5_____ a human arm. Robots that help with 6_____ operations at disaster sites include those that move away debris and other obstacles through manipulation via 7_____ control. 8_____ , robots that can perform more complicated tasks, e.g. get around obstacles in their path and search for victims, are self-controlled. With the appearance of AI robots and computers have been able to learn and to use information from previous activities to make future decisions. Smart robots have been 9_____ the capability to act with human-like behavior. Face recognition software, computer10 _____ , or computer games that give players a response based on the players actions are all forms of artificial intelligence.

1.	a. real	b. actual	c. true
2.	a. diverse	b. various	c. multiple
3.	a. exciting	b. exiting	c. existing
4.	a. carry on	b. carry off	c. carry out
5.	a. look as if	b. look like	c. look similar
6.	a. rescue	b. relieve	c. reliable

7. a. distant b. long-range c. remote

8. a. alternately b. alternatively c. actually

9. a. fitted with b. fixed with c. fitted to

10. a. sight b. inspiration c. vision

Grammar. Choose the right answer.

1. Czeck writer Karel Čapek, who is claimed _____ the word robot, described robots' _____ the world in one of his plays.

a. to have invented/conquering b. to invent/conquer c. to be invented/to have conquered

2. Though robots are famous for _____ lots of complicated or dangerous jobs, they are unable _____ like humans and be creative.

a. have done/thinking b. doing/think c. having done /to think

3. Some people think that we are quite a long way off _____ the computing power of the algorithms for fully autonomous AI.

a. having developed b. being developed c. developing

4. Others admit that the potential consequences of _____ something that can match or surpass human intelligence frightens them.

a. creating b. having created c. being created

5. If robots become more intelligent than humans, the predictions of science fiction writers about robots' _____ over millions of human jobs will come true.

a. take b. taking c. having taken

6. In his essay on robots he described robots' _____ for exploring ocean depths and in space projects.

a. employed b. employing c. having been employed

7. In addition to _____ into the depths of the ocean and _____ tasks on the moon, modern robots were taught to do housework such as _____ floors.

a. diving/performing/vacuuming b. dive/perform/to vacuum c. having dived/performed/vacuuming

8. Scientists believe that robots of the future will be capable of _____ after us in our old age, _____ our emotions and _____ when we are happy or sad.

a. looking/understand/know b. looking/understanding/know c. looking/understanding/knowing

9. _____ certain manufacturing tasks similar to tasks performed by people is the main function of robots.

a. Carry out b. Carrying out c. Carried out

10. By _____ the location via sensors, the robot was able to find the person in the home and then tell us who was at the door and why.

a. access b. being accessed c. having accessed

APPENDIX 1

PRACTICAL SKILLS

THE SKILL OF LISTENING

How to Listen Correctly

Read the quotes below. Do you agree with the authors' opinions? Why?

1. The art of conversation lies in listening. – Malcolm Forbes
2. Wisdom is the reward you get for a lifetime of listening when you would have rather talked. – Mark Twain
3. I like to listen. I have learned a great deal from listening carefully. Most people never listen. – Ernest Hemingway

Why listening is important

It should not be difficult to realise the importance of listening when we consider that it occupies about 45 per cent of the time adults spend in communication. This is significantly more than speaking, which accounts for 30 per cent, and reading and writing, which make up 16 per cent and nine per cent respectively.
Yet, for all its importance, students (and even teachers) often fail to give listening the attention it needs. This is all the more remarkable as learners often say that listening is the most challenging of all the skills in English.

Listening challenges for English language learners

There are many difficulties an individual may face in understanding a talk, lecture or conversation in a second language (and sometimes even in their first language). The speaker, the situation and the listener can all be the cause of these difficulties.
Contributing factors include the speaker talking quickly, background noise, a lack of visual clues (such as on the telephone), the listener's limited vocabulary, a lack of knowledge of the topic, and an inability to distinguish individual sounds. While the challenges posed by the speaker or the situation may be out of the listener's hands, there are a few skills or 'strategies' that English learners can use to help them along.

A few tips

1. Predict content
Watch or listen to a recorded TV programme or clip from YouTube. Pause after every few sentences. Try to predict what is going to happen or what the speaker might say next.

2. Listen for gist

Find a short video with subtitles on a topic that interests you. Use the title to help you predict the content and then listen out for the **content words**. Go back, and listen again with the subtitles. How much did you understand the first time? Return to the video a week later and try again.

3. Detect signposts

Most course books for learners of English come with a CD and audio script. Find an example of a business presentation or lecture and see how many signpost phrases you can identify (listen more than once, if necessary). Then check your notes with the audio script.

4. Listen for details

Decide on a type of detailed information you want to practise listening for and watch programmes where you would expect to get that information. For example, you could listen to a weather report to get details about the weather, or you could follow the sports news to find out the latest results.

5. Infer meaning

Find a YouTube clip from a popular television show, for example *Friends*. Now, rather than watch it, just listen to the dialogue. How much can you infer about what is taking place, who is talking and what their relationship is? Now listen to the clip a second time but watch it too. Were your conclusions correct?

Practice the 5-step method

The 5-step method outlined below is highly effective in learning and retaining new words to level up your English listening skills. In order to use this method, you need to have access to a text and a recording of the text, or computer software that can read text aloud.

Step 1: Listen to the audio – No reading!

First, pick a text. This can be a news article, a short story, or even a children's book! Choose something at your language learning level that you find interesting. Then, listen to the text without looking at the words.

Step 2: Repeat!

On the second listen, make notes of the main points the speakers are making, any questions you have or anything you didn't understand.

Step 3: Get reading

Now that you've listened to the text twice, try reading it through to see if you can answer any of the questions you asked in step 2. This is a great time to notice if there are any words or phrases you didn't catch or understand while just listening. Circle or highlight unknown vocabulary.

Step 4: Listen with the text

Listen to the recording while reading the text. This is a helpful way to connect your listening and reading skills, especially if you are a visual learner. As with the other steps, continue to take notes on your comprehension.

Step 5: Listen again without the text

Play the recording a fourth and final time without reading. See if you have a higher level of comprehension this time around, and make note of any words or phrases you still don't understand. (Be sure to look these words and phrases up afterwards.)

Based on https://www.fluentin3months.com/improve-your-listening-skills/

HOW TO SAY NUMBERS

1. OH, ZERO, LOVE, NOUGHT, NIL
The above are all ways of saying 0 in English. We say **oh** after a decimal point, in telephone numbers, in bus numbers, in hotel room numbers, in years*:*
The area of the village is only 35.03 sq. km. (thirty five point oh three)
His phone number is 12 01 39. (one two seven oh one three nine)
Get the No. 201 bus. (two oh one)
I'm in Room 206. (two oh six)
We say **nought** before the decimal point:
0.02 (nought point oh two)
It started in 1901. (nineteen oh one)
We say **zero** for the number 0 for temperature:
It's -5°C. (five degrees below zero)
We say **nil** in football scores:
Spain won 5-0. (five nil)
We say **love** in tennis:
The score is 15-0. *(fifteen love)*

2. THE DECIMAL POINT
In English, use a point (.) and not a comma (,) for decimals. Commas are used in figures only when writing thousands:
9,001 is nine thousand and one.
9.001 is nine point oh oh one.
In English all the numbers after a decimal point are read separately:
6.55 (*six point five five)* Not *six point fifty five*
But if the number after the decimal point is a unit of money, it is read like a normal number:
$12.50 twelve dollars and fifty cents
£ 2.95 two pounds and ninety-five pence

3. PER CENT
The stress is on the *CENT* of per cent. Notice how the following are said in English:
27% *twenty-seven percent;*
0.5% *a half of one per cent;*
0.25% *a quarter of a percentage point*
For example: The Bank of England raised interest rates this morning **by** a quarter of a percentage point.

4. HUNDREDS, THOUSANDS, AND MILLIONS

In British English you hear *a hundred **and** twenty-three*. In American English you usually hear *a hundred twenty-three.*

The number 1,229 is said *one thousand two hundred and twenty nine.*

The year 1999 is said *nineteen ninety-nine.*

The year 2000 is said *the year two thousand*.

The year 2009 is said *two thousand and nine.*

The year 2025 is said *two thousand and twenty-five* or *twenty twenty-five*.

1.000.000 is a million or ten to the power six. (10^6)

1.000.000.000 is a billion or ten to the power nine. (10^9)

5. SQUARES, CUBES, AND ROOTS

10^2 is ten squared or ten to the power of two.

10^3 is ten cubed or ten to the power of three.

$\sqrt[2]{6}$ is the square root of six.

$\sqrt[3]{9}$ the cube root of nine.

6. TELEPHONE NUMBERS

We usually give telephone as individual digits: 012736344 *oh one two seven three six three four four;* 344 can also be said as *three double four*.

7. FRACTIONS

Fractions are mostly like ordinal numbers (fifth, sixth, twenty third, etc.):

⅓ - *a third* ⅕ - *a fifth* ⅙ - *a sixth*

But:

½ - *a half* ¼ - *a quarter* ¾ - *three quarters* 2¾ - *two and three quarters*.

8. CALCULATING

Remember to pronounce the s in equals as /z/. It is singular: the part on the left equals the part on the right.

10 + 4 = 14 *ten plus four is fourteen* or *ten and four equals fourteen*

10 - 4 = 6 *ten minus four is six* or *ten take away four equals six*

10 x 4 = 40 *ten times four is (or equals) forty* or *ten multiplied by four is forty*

10 : 4 = 2½ *ten divided by four is two and a half*

Also: + = add, - = subtract (or deduct), x = multiply, : =divide

9. NUMBERS AS ADJECTIVES

When a number is used before a noun like an adjective, it is always singular:

a fifty-minute lesson not *a fifty-minutes lesson*

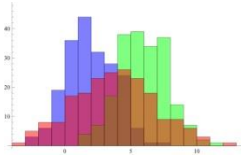
For example: *sixteen-week semester, a thirty-five rouble book*

DESCRIBING DIAGRAMS

Diagrams (graphs and charts) are often used to summarise data. They make it easy to see trends[1] and the amount of variation in the information being studied. That is why it is important to understand and be able to describe the ways charts and graphs display information.

Types of diagrams and graphs

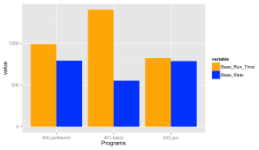
Pie chart



Histogram

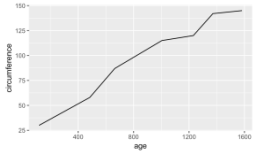
Number	Year
23	2019
31	2022

Table



Column/bar chart

Flowchart



Graph

Diagrams are visual ways of presenting data concisely. You could think of diagrams as a super-category.
A **pie chart** is a circle divided into segments from the middle (like slices of a cake) to show how the total is divided up.
A **column/bar chart** is a diagram in which different amounts are represented by thin vertical or horizontal bars which have the same width but vary in height or length.
A **histogram** is a kind of bar chart but the bar width also varies to indicate different values.
A **flowchart** is a diagram which indicates the stages of a process. A **table** is a grid with columns and rows of numbers.
A **graph** is a picture with measurements marked on it as lines or curves, used to compare different things or show the development of something. Graphs show how numbers increase or decrease.

Useful vocabulary

UP: increase[2], rise[3], grow (growth), went up, soar, double, multiply, climb, exceed, double, jump …

DOWN: decrease, drop, fall, decline, plummet, halve, plunge …

UP and DOWN: fluctuate, undulated, dip …

SAME: stable, stabilised, levelled off, remained constant or steady, consistent …

CHANGES: suddenly, sharply, dramatically, steeply …

TOP: reached a peak, peaked, reached its highest level …

BOTTOM: bottomed out, sank, reached the lowest level …

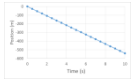
Introducing the graph
The graph/table/pie chart/bar chart/diagram:
gives information about/on …; provides information about/on ...; shows ...; illustrates ...; compares ...; explains why ...; describes ...; draws the conclusion of (a survey) ...; etc.

Description
If we look at this graph on (title) from (source) you can see…
The y axis (vertical) is… and the x axis (horizontal) is…
(Graph) These lines represent… (Bar) These Columns are… (Pie) These segments are… (Table) These rows are…
Overall, there is / has been… / Generally, there is…
What you can see is… / From the graph we can see…
I'd like to focus your attention on…
If you look at this…, you'll see / notice / understand …
A key significant area is … / Two key significant areas are …
An important point is… / Two important points I'd like to illustrate are …

Evaluation
This seems to suggest that…
This is possibly because of…
This is (clearly) due to…
One reason for this could be…
An evaluation of this data suggests / provides evidence for / highlights…
To provide evidence to my previous point the graph highlights…
Overall, this highlights the significance of…
Therefore, this provides evidence that…

Match the verbs with their opposites. Explain the meaning of the verbs below.





double	plummet
soar	fall below
multiply	depreciate
appreciate	decrease significantly
exceed	halve

[1]a *trend* is the direction of change in the data: *People's average lifespan has generally increased over the last century, even though in a few war years it declined. So we could say the* ***trend*** *has been for people to live longer than previous generations.*

[2] the nouns *increase* and *decrease* have the stress on the first syllable, but the verbs have the stress on the second syllable.

[3] the nouns *rise, growth, fall, drop* or *decline*, like *increase* and *decrease* are followed by in (to explain what is rising) or of (to explain the size of the change): *a* ***rise of 10% in the number of cars.***

Note that *graph* is a noun and *graphic* is usually an adjective:

*The economics textbook contains a lot of fascinating **graphs**.*

*My nephew studied **graphic** design.*

*The book contains some **graphic** descriptions of the main trends.*

Graphics can be used as a plural noun to refer to pictorial material: *The **graphics** in that computer game are brilliant.*

APPENDIX 2

ГРАММАТИЧЕСКИЙ СПРАВОЧНИК

Инфинитив (The Infinitive)

Инфинитив представляет собой основу глагола, которой обычно предшествует частица **to,** и относится к его неличным формам.

Формы инфинитива

Tense	Active	Passive
Simple Continuous Perfect	**to help to be helping to have helped**	**to be helped to have been helped**

1. The Simple Infinitive Active и **Passive** употребляется для выражения действия, одновременного с действием, обозначенным глаголом-сказуемым в предложении, в настоящем, прошедшем и будущем времени:

I am glad **to help** him. **Я** рад **помочь** ему.
I was glad **to help** him. Я был рад **помочь** ему.
I'll be glad **to help** him. Я буду рад **помочь** ему.
I am glad **to be helped.** **Я** рад, что **мне помогают.**

2. The Continuous Infinitive Active употребляется для выражения действия в процессе его развертывания, происходящего одновременно с действием, обозначенным глаголом-сказуемым в предложении:

I am glad **to be helping** him. Я рад, что **сейчас помогаю** ему.
It was pleasant **to be helping** him Было приятно снова **помогать** again. ему.

3. The Perfect Infinitive Active и **Passive** употребляется для выражения действия, которое предшествует действию, обозначенному глаголом-сказуемым в предложении:

I am glad **to have helped** him. **Я** рад, что **помог** ему.
I am glad **to have been helped. Я** рад, что **мне помогли.**

Функции инфинитива

Инфинитив может выполнять в предложении следующие функции**:**

1. подлежащего

To translate such an article without a dictionary is difficult. **Переводить (перевод)** такую статью без словаря трудно.

To work with computer was new to many of us. **Работать (работа)** с компьютером было новым для нас

В этом случае инфинитив стоит в самом начале предложения во главе группы слов перед сказуемым. Инфинитив в функции подлежащего можно переводить как неопределенной формой глагола, так и отглагольным существительным.

2. обстоятельства цели

To translate such an article without a dictionary, you must know English well. **Чтобы переводить** такую статью без словаря, вы должны хорошо знать английский язык.

One must work hard **to master** a foreign language. Нужно много работать, **чтобы овладеть** иностранным языком.

To increase the speed, the designers have to improve the aircraft shape and engine efficiency. **Чтобы увеличить** скорость, конструкторы должны улучшить форму самолета и КПД (эффективность) двигателя.

Once a week a student of Cambridge is to go to his tutor **to discuss** his work. Раз в неделю студент Кембриджа должен встретиться со своим наставником, **чтобы обсудить** свою работу.

В этом случае инфинитив может стоять как в самом начале предложения перед подлежащим, так и в конце предложения. В функции обстоятельства цели инфинитиву могут предшествовать союзы **in order to, so as** *чтобы, для того чтобы.*

3. части сказуемого (простого и составного)

Our aim is **to translate** technical articles without a dictionary. Наша цель — **переводить (перевод)** технические статьи без словаря.

He can **translate** this article without a dictionary. Он может **переводить** такую статью без словаря.

He will **translate** the article next week. Он будет **переводить** (переведет) эту статью на следующей неделе.

В этом случае инфинитив стоит либо после глагола **to be,** либо после модальных глаголов, либо после вспомогательных глаголов.

4. дополнения

He doesn’t like to translate technical articles. Он не любит **переводить** технические статьи.

The article was not difficult to translate. Эту статью было нетрудно **переводить.**

I am glad to have spoken to our lecturer about my work. Я рад(а), что **поговорил(а)** с нашим лектором о моей работе.

В этом случае инфинитив стоит после глагола или прилагательного.

5. определения

He was the first to translate this Он **первым перевел** эту статью, article.

В этой функции инфинитив стоит после слов the first, the second, the last и т. д. или после существительного.

После существительного инфинитив чаще всего стоит в пассивной форме, обычно имеет

модальное значение и выражает действие, которое должно произойти в будущем. В этом случае инфинитив переводится определительным придаточным предложением:
He gave me some articles **to translate**. Он дал мне несколько статей, **которые нужно было перевести (для перевода).**
Here is the article **to be translated.** Вот статья, которую нужно перевести.
Here is the article **to translate.** Вот статья **для перевода.**
Gagarin was the **first to orbit** the Earth. Гагарин **первый облетел** Землю.

The device **to be tested** has been made in our lab. Прибор, **который будет (должен) испытываться**, сделан в нашей лаборатории.

Инфинитив как часть сложного дополнения (The Complex Object)

В английском языке суждение, мнение, предположение о чем-то или о ком-то можно выразить двумя способами:

1) сложноподчиненным предложением с дополнительным придаточным предложением
We know that Professor V. is a good specialist in this field.

Мы знаем, что **профессор В. хороший специалист в этой области.**
2) простым предложением со сложным дополнением, которое представляет собой сочетание существительного (в общем падеже) или местоимения (в объектном падеже) с инфинитивом. На русский язык сложное дополнение с инфинитивом переводится точно так же, как и сложноподчиненное предложение с дополнительным придаточным предложением
We know **Professor V. (him) to be** a good specialist in this field.
Мы знаем, **что профессор В. (он)** хороший специалист в этой области.
Сложное дополнение с инфинитивом употребляется после следующих глаголов: **to know** *знать,* **to want** *хотеть,* **to find** *находить, устанавливать,* **to like** *любить, нравиться,* **to think** *думать,* **to believe** *полагать,* **to assume** *допускать, предполагать,* **to consider** *считать,* **to expect** *предполагать,* **to allow** *позволять,* **to enable** *давать возможность,* **to cause** *заставлять* и **др.:**
They expect **the meeting to be over** soon. *Они предполагают,* ***что собрание*** *скоро* ***закончится***
Особенностью употребления сложного дополнения с инфинитивом является то, что после некоторых глаголов опускается частица to перед инфинитивом. К ним относятся глаголы чувственного восприятия: to **feel** *чувствовать,* **to hear** *слышать,* **to see** *видеть,* **to watch** *наблюдать,* **to notice** *замечать***, to let** *позволять,* **to make** *заставлять:*

The students heard **the professor speak** about his experimental work. Студенты слышали, **как профессор говорил** о своей экспериментальной работе.
He made **us do** this work. **Он** заставил **нас сделать** эту работу.
Инфинитив как часть сложного подлежащего (The Complex Subject)

В английском языке мнение или предположение группы неопределенных лиц о чем-то или о ком-то можно выразить двумя способами:
1. сложноподчиненным предложением

It is known that he is a good specialist. Известно, что он хороший специалист.

It is expected that the experiment will be over soon. Предполагают, что эксперимент скоро закончится.

2. простым предложением со сложным подлежащим, которое включает имя существительное (в общем падеже) или местоимение (в именительном падеже) и инфинитив. Инфинитивный оборот «сложное подлежащее» употребляется после следующих глаголов в страдательном залоге: **to know** *знать,* **to say** *говорить,* **to report** *сообщать,* **to find** *находить, устанавливать,* **to assume, to suppose** *предполагать,* **to consider, to think** *считать, думать,* **to expect** *ожидать, полагать* и др.:

He is known **to be** a good specialist.

The experiment is expected **to be** over soon.

Перевод таких предложений следует начинать со сказуемого предложения и переводить его неопределенно-личным предложением *известно, предполагают, установлено, считают* и т. д., за которым следует придаточное предложение, вводимое союзом *что*:

Известно, что он хороший специалист.

Предполагают, что эксперимент скоро закончится.

Возможен и другой способ перевода этих предложений (начиная с подлежащего):
Он, **как известно,** хороший специалист.

Эксперимент, **как полагают,** скоро закончится.

Глагол-сказуемое может быть и в действительном залоге, если употребляются следующие глаголы: **to seem, to appear** *казаться, по-видимому, очевидно',* **to prove, to turn out** *оказываться***; to happen** *случаться, оказываться*:

They **seem to work** very hard. Они, **кажется,** много **работают.**

The method **appears to be** some interest. Этот метод, **по-видимому,** представляет интерес.

Наконец, глагол-сказуемое может быть составным: **to be likely** *вероятно,* **to be unlikely** *невероятно, маловероятно, едва ли,* **to be sure, certain** *несомненно, непременно, обязательно*:

Our professor **is likely to take part** in this discussion. Наш профессор, **вероятно, примет участие** в этом обсуждении.

Complex Object is used after	**Complex Subject** is used after
1. verbs denoting wish or expectation: *to want, to expect, to wish, 'd like, to like, to desire, …* 2. verbs of saying, thinking, believing: *to believe, to suppose, to know, to find, to think, to declare, to say, to consider, to imagine, to explain, to remind, to announce, to admit, to state…* 3. verbs of physical perception: *to see, to*	1. verbs of saying, thinking, believing, expectation and some others used in the Passive Voice: *to say, to believe, to suppose, to expect, to report, to consider, to hear, to know, to find, to think, to declare, to imagine, to remind, to announce, to admit, to state …* 2. other verbs like *to seem, to prove, to turn out, to happen, to chance, to appear, …* 3. some adjectives/adverbs used with the verb 'to be': *likely/unlikely, possible, certain,*

observe, to watch, to feel, to hear, to notice…[1] 4. verbs expressing request, order, permission: *to ask, to order, to tell, to command, to allow,* 5. other verbs: *make, let, rely upon, to count on, …*	*sure…*

Инфинитивный оборот с предлогом for

Инфинитивный оборот с предлогом **for** представляет собой сочетание предлога **for** с существительным в общем падеже или местоимением в объектном падеже и инфинитива. Инфинитив показывает, какое действие должно быть совершено лицом, обозначенным существительным или местоимением. Этот оборот переводится на русский язык придаточным предложением обычно с союзом *что, чтобы.*

He waited **for her to speak.** Он ждал, **что она** заговорит.

We stopped **for them** to pass by. Мы остановились, **чтобы они** могли пройти.

It is difficult **for students** to learn FORTRAN. **Студентам** трудно выучить FORTRAN.

Герундий (The Gerund)

Герундий — это неличная форма глагола, обладающая свойствами как существительного, так и глагола.

Герундий выражает действие, представляя его как название процесса. Герундий образуется путем прибавления окончания **-ing** к основе глагола. В русском языке нет формы глагола, соответствующей английскому герундию. Подобно существительному, герундий может быть в предложении подлежащим, частью сказуемого, прямым дополнением; перед ним может стоять предлог в функции определения или обстоятельства и, наконец, герундий может иметь в качестве определения существительное в притяжательном или общем падеже или притяжательное местоимение.

Подобно глаголу герундий имеет видовременные и залоговые формы, прямое дополнение и может определяться обстоятельством, выраженным наречием. В предложении The energy of body is its capacity for **doing** work. (Энергия тела — это его способность **совершать** работу.) герундий **doing** выполняет функцию определения существительного **capacity** (именное свойство герундия) и в то же время имеет прямое дополнение **work** (глагольное свойство герундия).

Формы герундия

Gerund	Active	Passive
Simple	*writing, asking*	*being written, being asked*
Perfect	*having written, having asked*	*having been written, having been asked*

Функции герундия

Герундий может выполнять в предложении следующие функции:

1) подлежащего

Reading English is necessary for every engineer. **Чтение (читать)** по-английски необходимо каждому инженеру.

His **having read** that article, helped him with his term work. **То, что он прочел** эту статью помогло ему с курсовой работой.

В функции подлежащего герундий переводится на русский язык существительным или неопределенной формой глагола, придаточным предложением, если перед герундием стоят определяющие его слова.

2) части составного сказуемого

His favourite occupation is **reading.** Его любимое занятие — **чтение** (читать).

В функции именной части составного сказуемого герундий переводится на русский язык существительным или неопределенной формой глагола.

3) прямого и предложного дополнения

He likes reading. **Он любит** чтение (читать).

В функции прямого и предложного дополнения герундий переводится на русский язык существительным или неопределенной формой глагола.

В функции предложного дополнения герундий обычно употребляется после глаголов с послелогами **to depend on** *зависеть от,* **to insist on** *настаивать на,* **to agree to** *соглашаться,* **to object to** *возражать против,* **to think of** *думать о,* **to succeed in** *удаваться,* **to prevent from** *мешать* и т. д.:

He thinks of **reading** his report at the next conference. Он думает **прочитать** свой док лад на следующей конференции.

4) Обстоятельства

On (after) reading the article he made a short summary of it. **После чтения (прочитав** ста), он кратко изложил ее содержание.

By reading much we learn much. Много **читая,** мы многое узнаем.

Перед герундием в функции обстоятельства всегда стоит один из следующих предлогов: **after, before, on, at, in, for, by, without** и др. В этой функции герундий обычно переводится существительным с предлогом или деепричастием несовершенного или совершенного вида.

5) Определения

I like his way **of reading.** Мне нравится его манера **читать (чтения).**

I’m glad to have the opportunity **of reading** this book. Я рад возможности **прочитать** эту книгу.

... a means **of doing** work. ... средство **для выполнения** работы.

Герундию в функции определения обычно предшествует предлог **of** (иногда **for).** В этой функции герундий переводится на русский язык существительным в родительном падеже, существительным с предлогом или неопределенной формой глагола.

Герундиальный оборот

Герундиальный оборот — это сочетание притяжательного местоимения или существительного в притяжательном или общем падеже с герундием. Такой оборот переводится обычно придаточным предложением:

We knew of **his having read** his report at the conference. Мы знали, что он прочитал свой доклад на конференции.

We know of **the earth behaving** as a large magnet. Мы знаем, что земля ведет себя как большой магнит.

We knew of Newton's **having written** «the Principia» in a very short time.

Мы знаем, что Ньютон написал «Начала» за очень короткое время.

1. Глаголы, после которых обычно следует инфинитив. (Verbs that can be followed by Infinitives.)

Afford, agree, aim, appear, arrange, attempt, beg, care, choose, consent, dare, decide, demand, claim, expect, fail, forget, happen, help, hesitate, hope, intend, learn, like, manage, mean, need, neglect, offer, pause, plan, prepare, pretend, propose, promise, prove, refuse, seem, start, swear, tend, threaten, trouble, try, want, wish.

2. Глаголы, после которых обычно следует дополнение с инфинитивом. (Verbs that can be followed by object + Infinitive.)

Advise, allow, ask, beg, cause, command, encourage, expect, forbid, force, get, help, instruct, invite, order, permit, persuade, recommend, remind, request, tell, want, wish, warn.

3. Глаголы, после которых обычно следует герундий. (Verbs that can be followed by Gerunds)

admit, appreciate, avoid, consider, delay, deny, detest, dislike, endure, enjoy, escape, excuse, face, fancy, feel like, finish, forgive, give up, can't help, imagine, involve, keep on, leave off, mention, miss, mind, postpone, practise, put off, resent, resist, risk, can't stand, suggest.

Некоторые глаголы и прилагательные с предлогами, после которых употребляется герундий как предложное косвенное дополнение. (Some verbs and adjectives with prepositions where the Gerund acts as a prepositional indirect object.)

accuse of *approve of* *agree to* *be afraid of* *dream of* *be disappointed at* *be fond of* *be interested in* *think of*	*congratulate on* *consist in* *depend on* *feel like* *hear of inform of* *insist on* *look forward to* *be proud of* *suspect of*	*object to* *persist in* *prevent from* *result in* *succeed in* *be surprised at* *think of* *thank for* *get used to*

Некоторые глаголы, после которых может использоваться и герундий, и инфинитив без изменения значения или незначительным изменением значения. (Verbs followed by a Gerund or a to Infinitive with little or no change in meaning.)

Example: It started to rain. / It started raining.

continue, can't stand, (can't) bear, begin, hear, start, watch, hate, like, love, need, neglect, prefer, propose…

Некоторые глаголы, после которых может использоваться либо герундий, либо инфинитив с изменением значения. (Verbs followed by Gerunds or Infinitives with different meanings.)

forget + -ing form:

They forgot working for this company. (They forgot that you had done it)

***forget + to*:**
They forgot to post the letter. (They forgot that they needed to post the letter.)

***need + to infinitive*:**

He needs to wash his car. *(*It is necessary to do.)

need +V-ing form:

The car needs washing. (Passive meaning. The car needs to be washed.)

***regret + to infinitive*:**

We regret to inform you that your house has been robbed**.** (We wish we didn't tell you bad news.) It is quite formal. The speakers regret about what they are going to say.)

regret + V-ing form:

She regretted being late for the party. (She looks back to an action that took place in the past)

***stop + to infinitive*:**

I often **stop to drink** a coffee during the day. (I often take a break and drink coffee.)

stop + V -ing form:

My doctor recently told me I should **stop drinking** coffee. (I should quit drinking coffee.)

***try + to infinitive*:**

We're trying to do this jigsaw, but it's very difficult. (We often use 'try to do' when we think something is hard.)

try + V-ing form:

The television's not working. Try plugging it in. Oh. (We often use 'trying doing' when there's a problem and we're suggesting a possible solution.)