

МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ

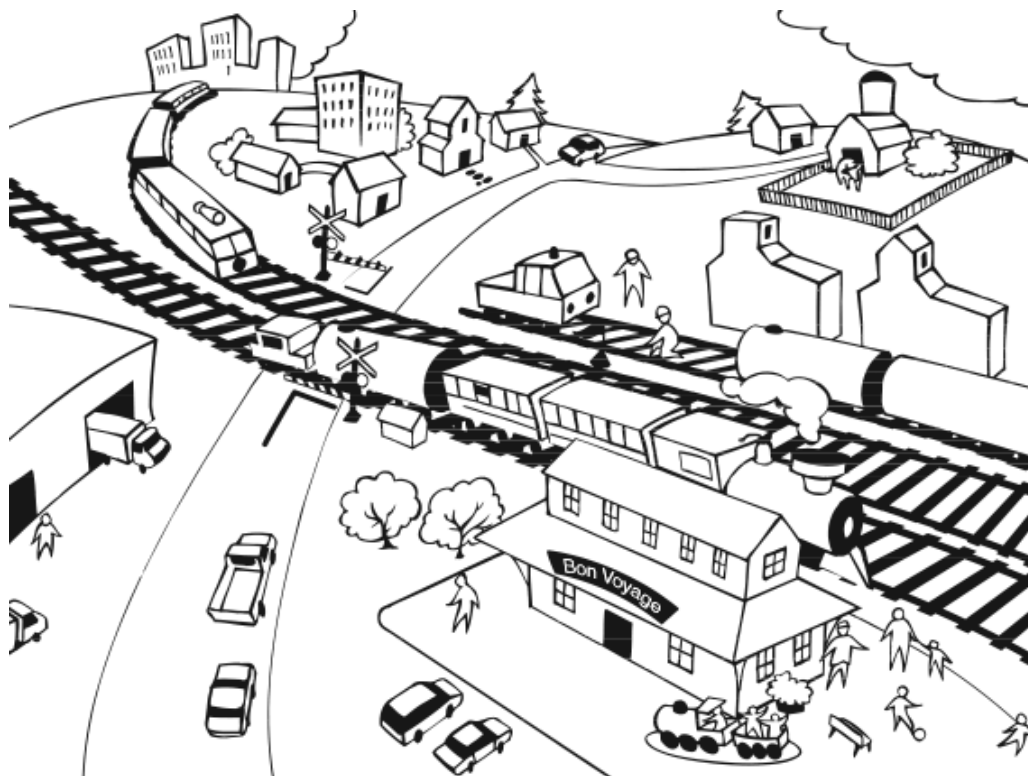
ХАРКІВСЬКА НАЦІОНАЛЬНА АКАДЕМІЯ МІСЬКОГО ГОСПОДАРСТВА

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TRANSPORTATION SYSTEMS

**ЗБІРНИК ТЕКСТІВ І ЗАВДАНЬ
З ДИСЦИПЛІНИ
“ІНОЗЕМНА МОВА (ЗА ПРОФЕСІЙНИМ СПРЯМУВАННЯМ)”
(англійська мова)**

(для організації практичної роботи студентів 1 курсу денної форми навчання
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INTRODUCTION

This course is for the students studying English for scientific and technical purposes (ESP). The course is designed to familiarize the students of non-language higher education institutions with the information on transportation system management in particular.

This course consists of the fifteen units. These are:

Unit One. The Transportation Profession.

Unit Two. Introduction to Transportation.

Unit Three. Transportation.

Unit Four. The History of Transportation.

Unit Five. The History of Transportation and Environment.

Unit Six. The Problems with Modern Transportation Systems.

Unit Seven. Transportation and Logistics.

Unit Eight. Traffic Management.

Unit Nine. Passenger Transport: Trams, Buses and Trolleybuses.

Unit Ten. Passenger Transport: Automobiles.

Unit Eleven. Passenger Transport: Trains.

Unit Twelve. Transportation in Ukraine.

Unit Thirteen. Traffic Signs.

Unit Fourteen. Traffic Lights.

Unit Fifteen. Road Safety.

Most of the units provide the learner of English with authentic texts from different sources concerning specifically the transportation system management problems and focus on the area of vocabulary that is useful for the students studying transportation system management.

UNIT ONE

THE TRANSPORTATION PROFESSION

Before you start

1. Think of as many professions as you can which deal with transportation. Then discuss your ideas with the group mates.
2. Now answer the following questions.

Do you want to:

- solve real world problems – big problems?
- work with a wide variety of professionals – government leaders, land developers, architects, lawyers and others?
- be involved in your community?
- apply computers and advanced technology to reduce congestion and increase safety?
- focus on people, as well as things?

Then you should consider becoming a transportation professional. It's a vital growing profession with excellent career growth potential and exciting opportunities. As a transportation professional, you'll plan, design, operate and manage transportation facilities working as a consultant, researcher, or in government.

TASK 1. Read the text.

Part 1. The Transportation Profession

Transportation professionals are responsible for planning, designing, and operating streets and highways, transit systems, airports, railroads, ports, and harbours to provide for the safe, rapid, comfortable, convenient, economical and environmentally compatible movement of people and goods.

As a transportation professional you can work on a wide variety of projects, such as:

- investigating and minimizing the effects of new developments and proposed highway projects on air and noise pollution, wetlands, and other aspects of the

environment, as well as socio-economic impacts;

- implementing ways to relieve traffic congestion, such as bus/carpool lanes on roadways and encouraging the use of public transportation;
- planning, designing and operating parking facilities for airports, shopping centers, recreational, industrial, office and residential developments;
- preparing traffic impact studies for new developments and determining transportation improvements to mitigate the additional traffic;
- planning, designing, and operating airports, railroads, ports, and harbours;
- planning and designing pedestrian circulation systems at universities, malls, and other busy pedestrian areas to ensure safety;
- designing and controlling a computerized traffic signal system to allow for efficient movement of traffic;
- inventing ways to increase the capacity and safety of roadways through the use of Intelligent Transportation Systems.

TASK 2. Reading comprehension.

1. What projects can a transportation engineer work on?
2. What are transportation professionals responsible for?
3. What project you think is the most important?

Part 2. Transportation Careers

Transportation professionals work in planning, design and construction, operations, and research, among many other fields.

Planning

As a transportation planner you will work with other transportation professionals, as well as people in technical vocations, neighbourhood groups and public officials. Many projects require the preparation of environmental documents since the project's success may depend on minimizing the effects on air, water, noise and wildlife. Noise barriers, landscaping or special design considerations may be required. It is the planners responsibility to meet each challenge and to present a

solution that both does the job and addresses the concerns of the public. You may be called upon to justify your plan to neighbourhood groups, lawyers, business leaders, news media and elected officials.

Design and Construction

As a transportation designer, you may be challenged to build a bridge that is compatible with the surrounding landscaping, or to design a ramp for a busy existing interchange. The design phase relies greatly on computer technology, as do most transportation fields. Computers aid in actually drawing transportation facilities. With the use of the computer, the engineer can experiment with many different alternatives to determine the most efficient design with the least adverse impact and lowest cost.

If you like to work outdoors, you might prefer the construction phase. From a spectacular bridge project to a simple lane widening, the construction engineer is responsible for the final product that it is built as designed and that the correct materials are used. The construction field is constantly changing with new methods being introduced on practically every project.

Operations

Transportation operations is another important field of the transportation profession. Traffic engineers are responsible for design, implementation and maintenance of traffic controls, signs and pavement markings. Traffic control is essential for safe travel on ordinary roads and construction work zones, detours, and for special events. Traffic engineers use computers to monitor the flow of traffic onto existing freeways, to control parking decks, analyze accident locations, determine roadway capacities, improve traffic flow at intersections, and coordinate the operation of traffic signals throughout a city. Traffic engineers must work with developers, planners and designers to meet the challenge of providing a safe and efficient transportation system. The field of operations also includes working with public transportation. Public transportation professionals are challenged to determine the routes and service frequency to meet the demand at the least cost.

Research

In the field of research you'll tackle the unknown. Maybe you'll develop a new computer programme for an on-board automobile navigational system or discover new ways to design automated 'smart' highways. You'll work on the latest technology and with top thinkers in the profession. You might be part of a team assigned to a large federal project or manage your own smaller study for a private concern – working today on the transportation systems of tomorrow.

TASK 3. Decide whether the statements are true (T) or false (F).

1. A transportation professional can work in many fields. **T/F**
2. While planning a transportation professional considers the environment, landscape and design. **T/F**
3. A transportation designer has nothing to do with the computing technology. **T/F**
4. As a constructor the transportation professional can work both indoors and outdoors. **T/F**
5. Traffic engineers provide a safe and efficient transportation system. **T/F**
6. The transportation systems of tomorrow are developed by new computer programmes. **T/F**

TASK 4. What does each professional do? Match the left and the right side of the following.

- | | |
|-------------------|---|
| 1 engineer | A a person whose activity is based on intellectual application in the investigation of matter with the purpose of discovering, interpreting, and the development of methods and systems for the advancement of human knowledge on a wide variety of scientific matters of our world and the universe |
| 2 planner | B someone who is concerned about the environment and minimizes the effects on air, water, noise and wildlife |

- 3 researcher C a person who is professionally concerned with developing economical and safe solutions to practical problems, by applying mathematics and scientific knowledge while considering technical constraints
- 4 designer D an individual who contracts with another organization for the construction, renovation or demolition of a building, road or other structure
- 5 builder E a person who guides, instructs, trains or helps another in the process of learning knowledge, understanding, behaviour or skills, including thinking skills
- 6 teacher F a person who is involved in the development of the appearance, and to some extent the ergonomics, of motor and road vehicles
- 7 environmentalist G a person who deals with creating and maintaining a plan and is engaged in the psychological process of thinking about the activities required to create a desired goal on some scale

1 –...; 2 – ...; 3 – ...; 4 –...; 5 – ...; 6 – ...; 7 – ...

TASK 5. The following words refer to motion in general. Group the terms according to the type of motion (four terms in each group).

vehicle movement navigation velocity subway motion walk legs
journey aviation boating carriage flying drive tour van

successive change of place	
locomotion by land	
organs and instruments of locomotion	

locomotion by water, or air	
-----------------------------	--

TASK 6. Match different types of vehicles with their definitions.

- | | | | |
|----------|---------|----------|--|
| 1 | vehicle | A | a covered vehicle with no side windows in its back half, usually smaller than a lorry/truck, used for carrying goods or people |
| 2 | wagon | B | a bicycle or motorcycle |
| 3 | van | C | a thing that is used for transporting people or goods from one place to another |
| 4 | tram | D | a railway/railroad truck for carrying goods |
| 5 | cycle | E | a large motor vehicle carrying heavy loads by road |
| 6 | lorry | F | a vehicle driven by electricity, that runs on rails along streets of a town and carries passengers |

1 – ...; 2 – ...; 3 – ...; 4 – ...; 5 – ...; 6 – ...

TASK 7. Translate the paragraph into your native language.

The skills necessary to work in transportation are as varied as the jobs. The most important skills an employee of the transport industry can possess are a good work ethic and the ability to work under pressure. Some jobs within the field require varying degrees of specialized skills and training. Pilots need to know how to fly aircraft loaded with people and goods. Truck drivers need to know how to operate large, diesel trucks. Longshoremen must understand the controls of a crane. Transportation managers must figure out the relative needs and costs of transport. People who like to be active and can complete a task quickly and efficiently will excel in this field.

VOCABULARY

- | | | |
|------------------|---|---|
| environmentalist | – | спеціаліст з питань довкілля, еколог
(специалист по вопросам окружающей среды, эколог) |
| car pool | – | автомобільний парк
(автомобильный парк) |

detour	– обхідний шлях, об'їзд (окольный путь, объезд)
adverse	– несприятливий, шкідливий (неблагоприятный, вредный)
community	– жилий комплекс, суспільство (жилой комплекс; общество)
congestion	– затор вуличного руху (дорожная пробка)
freeways (AE)	– автострада, автомагістраль
(motorway (BE))	(скоростная автострада с транспортными развязками)
highway	– шосе, основна дорога (шосе; основная дорога)
lane	– полоса (дорожного) руху (полоса (дорожного) движения)
ramp	– похила полоса, схил (наклонная плоскость, аппарель)
wetland	– вологий район, заболочена територія (влажный район, заболоченная территория)
challenge (v)	– вимагати; критично оцінювати (запрашивать, требовать; критически оценивать)
challenge (n)	– проблема (проблема)
locomotion	– пересування (передвижение)
longshoreman	– портовий вантажник, докер (портовый грузчик, рабочий)

UNIT TWO

INTRODUCTION TO TRANSPORTATION

Before you start

1. Complete the sentences below for you. Then compare your answers with the group mates.
 - A system for carrying people or goods from one place to another using vehicles, roads, etc is called _____ .
 - A vehicle or method of travel is called _____ .
 - The activity or business of carrying goods from one place to another using lorries/ trucks, trains etc is called _____ .

TASK 1. Read the text.

Transportation is the process of moving people and products from one place to another. Where once human beings could get from point A to point B only by walking, we can now choose from many options. We even transport ourselves for recreation and exercise.

Moving things from here to there can be thought of as a transportation system. A system includes: **a goal, input, process, output** and **feedback**. The simplest transportation system is the act of walking to a destination – say to a river to get a drink of water. In this case the **goal** is to move oneself to the river. The **input** needed to do this includes a living body supplied with adequate food, water, and oxygen along with knowledge of how to get to the river. In this case the transportation **process** is to convert the food, water and oxygen into the energy needed to get to the river and then decide on what route to take and walk. The **output** is getting to the river, along with sweat, heat, and exhaled carbon dioxide and other gases. In this case let's imagine that our person chose to hike over a hill to get to the river. The **feedback** may be that the hill was too steep and that, in the future, this person will decide to take a path around the hill to get to the river. The transportation system is redesigned to meet a revised goal – to move oneself to the river using less effort.

TASK 2. Reading comprehension.

A. Choose the titles to the following examples. It will help you understand parameters for defining a transportation technology system with regard to *goals, input, process, output* and *feedback*.

- 1 goals **A** Moving products or people from one place to another are the central output of any transportation system. But many systems have unwanted outputs as well. Pollution, time spent stuck in traffic, spending money on insurance, fuel and car maintenance are a few examples.
- 2 inputs **B** How well is your transportation system working? Do you get to school on time or are you often stuck in traffic? Is your old car or bicycle still comfortable and safe? Do you spend too much money on insurance and car maintenance? Are there alternative transportation systems, or can you modify your current system in order to provide yourself with more of the desired outputs and less of the unwanted ones? Feedback enables you to evaluate the system and modify your goals.
- 3 processes **C** A primary goal of any transportation system is to move products and people from point A to point B. Today, we can add recreation as another goal for some transportation systems. Less obvious, but just as important, goals of transportation systems are that they be low cost, get us to our destinations on-schedule and in a timely fashion, be safe, and be comfortable. Increasingly, many people would also like our transportation systems to be as close to pollution-free as possible and be independent of foreign-controlled resources, such as Middle East oil.
- 4 outputs **D** Converting fuel into motion is the most basic process of any transportation system. But other processes are important to maintain a safe, low cost, low pollution, timely transportation system. Safely driving the family car depends on systems that

enforce traffic rules, educate drivers, and maintain roadways.
 Financial systems are needed to finance the purchase of new cars.
 Emissions regulations are needed to prevent too much pollution.

- 5 feedback E Gasoline, cars, minivans, roads, bridges, and drivers are all inputs into the most popular transportation system – getting around in family vehicles.

Each of these inputs relies on additional complex systems such as:
 1) mining metals and processing petroleum, 2) designing, manufacturing and transporting gasoline, cars, and trucks, 3) designing and building roads and bridges, and 4) staffing teachers, police, and the court system to train and monitor drivers for a safe transportation system. We can also add automotive repair, financial, insurance, and medical systems needed to maintain both cars and drivers.

1 – ...; 2 – ...; 3 – ...; 4 – ...; 5 – ...

B. Answer the questions.

1. Where can people transport themselves?
2. What are the main components of a transportation system?

TASK 3. Group the following terms according to the titles in the table (four terms in each group).

move products and people	converting fuel into motion
be low cost	preventing pollution
roads	be safe
be comfortable	pollution
police	time spent stuck in traffic
medical system	safely driving
bridges	money spent on insurance
enforced traffic rules	car maintenance

The goals of a transportation system	
The materials and people needed to make a transportation system work	
Actions that are needed to make a transportation system work	
Intended or not intended results of using a transportation system	

TASK 4. Complete your *Personal Transportation Log*. Use a means of transport you like best.

<p>MEANS OF TRANSPORT _____</p> <p>1. GOALS: Circle all that apply.</p> <p style="text-align: center;"><i>moving people moving objects recreation other</i></p> <p>2. INPUTS: Briefly describe those that apply. What is needed for this transportation mode?</p> <p>Briefly describe where each input comes from.</p> <p>Energy/Fuel: _____</p> <p>Goods/Materials: _____</p> <p>Pathways: _____</p> <p>Safety Measures: _____</p> <p>3. PROCESSES: What needs to happen for transportation to take place?</p> <p>_____</p> <p>_____</p> <p>4. OUTPUTS: List what happened, intended and unintended, as a result of the process?</p> <p>Things you wanted to happen: _____</p> <p>_____</p>

Things you wish didn't happen: _____

5. FEEDBACK

For this trip, consider other travel modes you could have used to get where you wanted to go. Name one other mode that could have gotten you where you wanted to go without some of the unwanted side effects you listed under No.4 above. Briefly describe this alternative technology system.

Revised goal: _____

Alternative travel mode: _____

Inputs needed: _____

Processes to be used: _____

Outputs (intended and unintended, as a result of the process): _____

TASK 5. Complete the table with other forms of some of the words presented in the text. Use a dictionary to help you if necessary.

<i>verb</i>	<i>person noun</i>	<i>abstract noun</i>	<i>adjective</i>
move			
walk			
supply			
design			
recreate			

TASK 6. Choose and underline the correct form of the words in brackets.

The transportation industry relies (1) *on* / *in* the industrial equipment that companies use to transport products around the (2) *world* / *word*. As a result, companies that manufacture and distribute transportation (3) *equipment* / *goods* are directly correlated with the industry and its performance. (4) *Manufacturers* / *manufacturing* of transportation equipment produce everything from railroad cars,

automobiles and planes to ships and (5) *heavy / hard* machinery.

TASK 7. Translate the paragraph into your native language.

Transportation affects almost every aspect of resource use, air and water quality, and urban livability. Reducing the need for automobiles has major environmental benefits and is one of the most important urban planning strategies. Building designers and planners can help reduce automobile use in three ways:

- Integrate complementary occupancies within building projects.
- Encourage pedestrian, bicycle and transit use.
- Reduce the environmental impacts of parking facilities.

VOCABULARY

get out (of)	–	позбутися (звички) (<i>бросить (привычку)</i>)
enforce (v)	–	проводити в життя, підсилювати (<i>проводить в жизнь, придавать силу</i>)
apply (v)	–	застосовувати, вживати (<i>применять, употреблять</i>)
pathway (n)	–	дорога, шлях (<i>дорога, путь</i>)
input (n)	–	надання інформації, вхідні дані (<i>предоставление сведений, входные данные</i>)
output (n)	–	результат, вихідні дані (<i>результат, выходные данные</i>)
revise (v)	–	переглядати, виправляти (<i>пересматривать, исправлять</i>)
feedback(n)	–	зворотній зв'язок (<i>обратная связь</i>)
log (n)	–	реєстрація, запис (<i>регистрация, запись</i>)
log (v)		реєструвати (<i>регистрировать</i>)
van	–	фургон; багажний чи товарний вагон (<i>фургон; багажный или товарный вагон</i>)
staff (v)	–	укомплектовувати штати, набирати персонал (<i>укомплектовывать штаты, набирать кадры</i>)

UNIT THREE

TRANSPORTATION

Before you start

1. Do you know what kinds of transport are the most popular with the people of your native place? Where can you find this information?
2. What types of transportation do you use in your own lives?

TASK 1. Read the text.

The transportation industry is enormous, encompassing everything from municipal bus, subway, and commuter-train systems that get folks to and from work and school to the container ships that transport goods from port to port all around the globe; from the rail and trucking networks that move those containers across states, countries, and continents to the airliners we use to fly to destinations near and far for work and pleasure, to the express shipping companies.

The industry encompasses all those businesses that move people or goods, by land, sea, or air, from one point to another. This is a big industry, employing millions: in addition to the package deliverer, truck driver, and airline attendant – the ambassadors of the industry – there’s a beehive of behind-the-scenes workers bustling to load containers, fuel airplanes, coordinate the logistics of thousands of railroad cars, and chart the best routes for truck drivers to take across the country.

Virtually everything that surrounds us – including our clothes – comes from somewhere else. Your computer’s components, manufactured in multiple countries, all had to be transported to the computer manufacturer, assembled, and then transported to a store or perhaps your front door. The newspaper you read this morning could not have been produced (think of the trucks delivering logs to the paper mill; think of the paper and ink being delivered to the printing press) or delivered without the transportation industry. And then there’s passenger travel – the airlines, trains, boats, and buses that people use every day to get from place to place. Transportation may not be sexy, but it pervades nearly every area of our lives.

Without the transportation industry, economies, global and domestic, would disintegrate.

Opportunities in the industry can be classified geographically, as local, regional, national, or international. In many career paths, you'll need to pay your dues in a local job before moving up to a regional transportation outfit, and you'll have to work at a regional one before moving to a national one. And if you go into freight transportation, be aware that this sector has been consolidating, as companies seek to become global players by merging into giant, full-service transportation integrators, combining ships, trains, boats, and rail.

TASK 2. Reading comprehension.

1. What proves that transportation industry is enormous?
2. What do people in transportation industry deal with?
3. How does the transportation industry pervade nearly every area of our lives?
4. How can opportunities in the industry be classified?

TASK 3. Decide whether the statements to the text are true (T) or false (F).

1. Transportation industry encompasses different vehicles and operations. **T/F**
2. People and goods are transported by different businesses. **T/F**
3. Nothing can be produced or delivered without the transportation **T/F** industry.
4. Transportation industry disintegrates global and domestic economies. **T/F**
5. Making a career one must pay his/her dues in the relevant job. **T/F**

TASK 4. Complete the table below with the correct *verbs*, *nouns* and *adjectives*.

<i>verb</i>	<i>person noun</i>	<i>abstract noun</i>	<i>adjective</i>
	-----		serviceable
govern			
equip	-----		
-----			industrial
		responsible	

	production		
	-----	existence	

TASK 5. Fill in the gaps with one suitable word from the table above. Make necessary changes. Read the text about transportation.

The transportation (1) _____ can be broken down into three major groups of companies: shipping, passenger transport, and (2) _____ manufacturers. In some cases, particularly within shipping and passenger transport, companies provide (3) _____ in multiple areas of the industry. Shipping companies are (4) _____ for the transportation of supplies, and products to businesses, (5) _____ and individual consumers and operate on a global basis. The passenger transport segment provides people with the means to get anywhere on the planet, whether it is by air, sea or land. Finally, the manufacturing segment (6) _____ the trucks, planes, ships and railcars along with all the technology that allow transportation to (7) _____ in its current form. These manufacturers are just as essential to the transportation of materials and people as are the companies that transport them.

TASK 6. Complete the definitions (1 – 5) with the underlined words in the text in Task 1. Use the dictionary to help you.

1. A _____ is a person who takes goods to somebody.
2. A _____ is a person or company that produces goods in large quantities.
3. _____ are things that are produced to be sold.
4. A _____ is a person who is travelling in a car, bus or train and who is not driving it.
5. An _____ is a person whose job is to help people in a public place.

TASK 7. Translate the paragraph into your native language.

Nearly every company, business, government and consumer in the world is, to some degree, dependent on the transportation industry. As such, the shipping of supplies, products and consumer goods is essential to the domestic and international

economic system. Since 1998 the transportation industry has accounted for 3% of the U.S. GDP each year.

VOCABULARY

pervade (v)	– поширюватися, охоплювати (распространяться, охватывать)
outfit (n)	– установа , підприємство (учреждение, предприятие)
pay sb's due	– (тут.) виконувати свій обов'язок (зд.) отдавать должное, выполнять свой долг)
be aware	– знати, усвідомлювати; (знать, сознавать)
encompass (v)	– містити у себе; (заключать в себе)
beehive	– (тут.) дуже багато; (зд.) очень много)
merge (v)	– зливатися, поєднувати (сливаться, соединяться)
full-service	– повний комплекс послуг (полный комплекс услуг)
log (n)	– колода, деревина; (бревно)
integrate (v)	– об'єднувати, інтегрувати (объединять в единое целое, укрупнять)
GDP	– валовий внутрішній продукт
(gross domestic product)	(валовой внутренний продукт)
railcar	– дрезина, автомотриса (рельсовая тележка, автомотриса)
sexy	– захопливий, цікавий (увлекательный, интересный)

UNIT FOUR

THE HISTORY OF TRANSPORTATION

Before you start

1. Why might people long ago have begun to travel?
2. How has transportation changed since early times?
3. Why do you think that people invented the car, train, ships, or other types of transportation?

TASK 1. Read the text.

A Brief Look at the History of Transportation

Archaeologists believe that the very first step toward man-made transportation began in either Mesopotamia or Asia, sometime around 4000 – 3500 BC, with the invention of the wheel. The invention of the wheel would eventually make man's ability to transport his crops from one place to another less awkward, and birth the idea of trade and exchange. The invention of the wheel would lead to the development of mass transportation, as man put his new invention to practical uses.

The next logical evolutionary step from the wheel was the invention of the cart and chariot. The two-wheel chariot found its birthplace in Sumeria, and is believed to be the world's first form of wheeled transportation. Built around 3500 BC, this chariot increased the speed of travel over land, and eventually led to the four-wheeled cart, which took the burden of carrying supplies and equipment off of the shoulders of the common man.

As man overcame the boundaries of land travel, his curiosity about the world around him increased. To his aid, man had developed a means of travelling on water even before he had domesticated the horse. The addition of the boat changed the face of transportation. Boats allowed man to, for the first time ever, cross bodies of water without getting wet.

Then ships began to shed their sails on the rivers once again. The advent of automation was changing transportation forever. The very first automation in ships was the cumbersome paddlewheel. After the paddlewheel came the steamship and

then there was the diesel engine design that became the industrial and military standard until after World War II.

Automation also improved travel by land. Mass transit became a standard, originally through the steam engine of the eighteenth century. But these early trains were slow and very often dangerous. Then, in 1804, locomotives came into use. These locomotives were powerful enough that one engine could pull several cars.

Over the next one hundred years, various improvements would be made to the locomotive, speeding up transit and attempting to make train travel safer. Then, during World War II, the diesel engine came into widespread use, and steam was almost completely forgotten. Even electricity had been experimented with in the running of trains, as early as 1895, but was considered too expensive and unreliable to run until the advent of the subway, when electricity became the easiest and cleanest means of underground motion.

Automation was not, however, reserved exclusively for mass transit. As early as 800 BC, there is some evidence that steam powered vehicles were used in the Orient. But these were not used for mass transit, but rather for individual travel. However, the first actual surviving record of a powered vehicle is from AD 1670, when a Jesuit missionary in China built a cart driven by a steam turbine. By 1840, this concept had developed into the ‘road locomotive’, a contraption not very unlike the modern-day bus.

The first actual automobile, however, wasn’t patented until the 1890s. Advancements have continued to be made in the time since. The automobile was the single most important development in the history of transportation since the invention of the wheel. Automobiles increased personal mobility and permitted people to live at greater distances from their work, leading to the formation of suburbs.

The next stride in transportation looked not to the land, or even to the seas, but to the sky. The invention of the aeroplane allowed people to cover great distances in less time, cutting transatlantic travel time in half.

Having conquered flight, man’s gaze turned toward the night sky, and the stars. On October 4, 1957, however, the USSR succeeded in launching the very first earth-

orbiting satellite, Sputnik I. The first manned space-flight, however, did not take place until April 12, 1961, when the Russian Cosmonaut Yuri Gagarin orbited the Earth in the Vostok I. Then, on July 16, 1969, American astronaut Neil Armstrong became the first man to set foot on the moon. From the wheel to the stars, man's travel has only ever been limited by the scope of his imagination. As each new challenge is conquered, humanity looks beyond it, to the next challenge. The annals of history are evidence that humanity will continue to stride forward, particularly when faced with challenges in transportation.

TASK 2. Reading comprehension. Circle the letter of the best answer.

1. It is believed that the very first transportation _____ .
 - A** started with a vehicle with wings.
 - B** began in the times when the Christ was believed to have been born.
 - C** caused the invention of the early traffic signal.

2. The invention of the wheel _____ .
 - A** resulted in the development of a means of travelling on water.
 - B** was only patented after World War II.
 - C** increased the speed of travel over land.

3. The evolution of transportation is as follows: _____ .
 - A** a wheel, the wheeled transportation, transportation on the water, automation of transportation, the conquering of flight.
 - B** mass transportation, wheeled transportation, boats and then ships, automotive vehicles, aerospace vehicles.
 - C** wheeled transportation, earth-orbiting satellites, manned space-flights, automated means of transportation.

TASK 3. Write the correct words in the blanks.

vehicle system invention sleeper railways

1. George Stephenson is considered to be the inventor of the first steam locomotive

engine for _____.

2. Richard Trevithick's _____ is considered the first tramway locomotive, however, it was a road locomotive, designed for a road and not for a railroad.
3. The Pullman Sleeping Car was invented by George Pullman in 1857. Pullman's railroad coach or _____ was designed for overnight passenger travel.
4. The first mass transportation _____ in America was called an omnibus.
5. Frank Sprague installed a complete _____ of electric streetcars in Richmond, Virginia, in 1888.

TASK 4. Complete as much as possible of the table with other forms of some of the words presented in the text. Use a dictionary to help you if necessary.

<i>verb</i>	<i>person noun</i>	<i>abstract noun</i>	<i>adjective</i>
transport			
invent			
survive			
experiment			
develop			

TASK 5. Give no less than two adjectives from the text in Task 1 to go with the nouns below. Try not to repeat any of the adjectives you choose.

transportation

engine

travel

TASK 6. It's interesting to know. Read and decide for yourself what the greatest or the most important invention in the history of transportation is.

The History of Transportation

3500 BC Fixed *wheels on carts* are invented – the first wheeled vehicles in history.

Other early wheeled vehicles include the chariot.

3500 BC *River boats* are invented – ships with oars.

- 2000 BC **Horses** are domesticated and used for transportation.
- 181–234 The **wheelbarrow** is invented.
- 770 Iron **horseshoes** improve transportation by horse.
- 1492 Leonardo da Vinci first to seriously theorize about **flying machines** – with over 100 drawings that illustrated his theories on flight.
- 1620 Cornelis Drebbel invented the first **submarine** – a human oared submersible.
- 1662 Blaise Pascal invents the first **public bus** – horse-drawn, regular route, schedule, and fare system.
- 1740 Jacques de Vaucanson demonstrates his **clockwork powered carriage**.
- 1783 First practical **steamboat** demonstrated by Marquis Claude Francois de Jouffroy d'Abbans – a paddle wheel steamboat.
- 1783 The Montgolfier brothers invent the first **hot air balloons**.
- 1787 **Steamboat** invented.
- 1769 First **self-propelled road vehicle** invented by Nicolas Joseph Cugnot.
- 1790 Modern **bicycles** invented.
- 1801 Richard Trevithick invented the first **steam powered locomotive** (designed for roads).
- 1807 Isaac de Rivas makes a **hydrogen gas powered vehicle** – first with internal combustion power – however, very unsuccessful design.
- 1807 First **steamboat with regular passenger service** – inventor Robert Fulton's Clermont.
- 1814 George Stephenson invents the first practical **steam powered railroad locomotive**.
- 1862 Jean Lenoir makes a **gasoline engine automobile**.
- 1867 First **motorcycle** invented.
- 1868 George Westinghouse invents the **compressed air locomotive brake** – enabled trains to be stopped with fail-safe accuracy.
- 1871 First **cable car** invented.
- 1885 Karl Benz builds the world's first practical **automobile** to be powered by

an internal combustion engine.

- 1899 Ferdinand von Zeppelin invents the first successful *dirigible* – the Zeppelin.
- 1903 The Wright Brothers invent and fly the first *engined airplane*.
- 1907 Very first *helicopter* – unsuccessful design.
- 1908 Henry Ford improves the *assembly line for automobile manufacturing*.
- 1908 *Hydrofoil boats* co-invented by Alexander Graham Bell & Casey Baldwin – boats that skimmed water.
- 1926 First *liquid propelled rocket* launched.
- 1940 Modern *helicopters* invented.
- 1947 First *supersonic jet* flight.
- 1956 *Hovercraft* invented.
- 1964 *Bullet train transportation* invented.
- 1969 First *manned mission* (Apollo) to the Moon.
- 1970 First *jumbo jet*.
- 1981 *Space shuttle* launched.

TASK 7. Translate the paragraph into your native language.

In the 1960s and early 1970s, considerable interest developed in the possibility of building tracked passenger vehicles that could travel much faster than conventional trains. From the 1970s, interest in an alternative high-speed technology centered on magnetic levitation, or maglev. This vehicle rides on an air cushion created by electromagnetic reaction between an on-board device and another embedded in its guideway.

VOCABULARY

tracked	– транспортний засіб для перевезки пасажирів за
passenger	встановленим маршрутом
vehicle	(транспортное средство для перевозки пассажиров по установленному маршруту)

chariot	– колісниця (колесница)
contraption	– хитрий винахід; штуkenція (хитроумное приспособление; штуковина)
cumbersome	– громіздкий (громоздкий)
wheelbarrow	– візок (тачка)
maglev	– 1. потяг на магнітній підвісці (поезд на магнитной подвеске) 2. магнітна левітація (магнитная подвеска; магнитная левитация) 3. Magnetic levitation (a relatively new transportation technology in which noncontacting vehicles travel safely at speeds of 250 to 300 miles per hour or higher while suspended, guided, and propelled above a guideway by magnetic fields). 4. Maglev train (a type of high-speed train that runs on magnets supported by a magnetic field generated around the track).
cable car	– 1. вагон канатної дороги, фунікульора (вагон канатной дороги, фуникулера) 2. A mass transit system using cars that are propelled by a continuously moving cable running at a constant speed. Individual cars stop and start by releasing gripping this cable as required.
Sumeria	– a civilization and a historical region located in Southern Iraq (Mesopotamia), known as the Cradle of civilization

UNIT FIVE

THE HISTORY OF TRANSPORTATION AND ENVIRONMENT

Before you start

1. Of the problems related to our current transportation systems, which do you think are the most important?
2. Have you ever seen or ridden in an alternative-fueled vehicle? If so, what was the vehicle like? Was it very different from a vehicle running on gasoline or diesel? Was your experience different?

TASK 1. Read the following information. You will see a close interrelation between the transportation development and its effect on the environment.

Part 1.

- 1825** First passenger railroad opens in England.
- 1860** First true bicycle, the ‘boneshaker,’ becomes popular in Europe and America.
- 1869** U.S. Transcontinental railroad opens.
- 1885** Safety bicycle invented in England. Its popularity created a demand for better roads. Automobiles would take advantage of the better roads.
- 1887** First electric street railway opens in Richmond, Virginia.
- 1890s** First electric and gasoline automobiles are developed and compete for popularity. Advantages of electrics: absence of noise and noxious odors; ease of control. Advantages of gasoline-powered vehicles: can travel longer distances without refueling, easier to refuel.
- 1890s** Most larger communities have electric streetcar systems (trolleys).
- 1899** Americans could buy electric automobiles from more than a dozen manufacturers.

TASK 2. Reading comprehension to Part 1.

1. When does the history of transportation date from?

2. What was the first popular vehicle?
3. What did the development of first vehicles create a demand for?

Part 2.

- 1900s** Many early automobile owners fall in love with touring (driving out into the countryside). Gasoline automobiles, with their ease of refueling and range of travel without refueling, quickly become more popular than the electric automobiles.
- 1908** Henry Ford begins selling the Model T, designed for mass appeal.
- 1909** 124,000 cars manufactured. In comparison, 2,000,000 horse-drawn carriages manufactured.
- 1914** Ford Motor Company introduces their new idea for increasing production, the moving assembly line. Model T, now costing \$360, becomes affordable to more Americans.
- 1916** The Federal Ad Road Act offers federal funds to the states for road-building.
- 1920** Studebaker Company stops making horse-drawn wagons.
- 1920s** Outside cities, automobiles become the primary mode of travel. Suburbs based on automobile transportation begin to develop.
- 1929** Nearly five million cars manufactured.
Americans own nearly one automobile for every five people.
- 1930s** Trolley lines begin to close down because of competition from buses and cars.

TASK 3. Reading comprehension to Part 2.

1. What new industry developed in the early 1900s?
2. What vehicle became the primary mode of travel ?
3. Why did the demand for electric streetcar systems decrease?

Part 3.

- 1940** First super highway opened.

- 1940s** Los Angeles and other cities begin to experience spells of severe air pollution, known as ‘gas attacks.’ Automobile exhaust and petroleum refinery emissions trapped in low-lying areas are the cause.
- 1950** Automobile exhaust is linked to the creation of smog.
- 1954** In Los Angeles, dense smog is blamed for causing 2000 automobile accidents in a single day.
- 1956** Interstate Highway Act passed. It leads to 44,000 miles of new highways.
- 1960** Numbers of cars escalate causing air and noise pollution in cities to become a major concern.
- Clean Air Act recommends national air quality standards. Air quality remains primarily a local concern.
- 1969** A photograph of the earth, taken from space, shows a tiny, fragile ball of limited resources, floating in a huge expanse of space. It dramatically alters human perceptions of our world.
- 1969** Nationwide public outcry over an oil spill from offshore drilling in southern California.
- 1969** Cleveland’s oily Cuyahoga River bursts into flames catching the attention of the American public. Public outrage over this and other environmental problems helps lawmakers establish the EPA, the Clean Air Act, and the Clean Water Act.

TASK 4. Reading comprehension to Part 3.

1. What is the characteristic feature of the third part of the transportation development history?
2. Why did human perceptions of the world dramatically change?
3. What were the measures against the environmental problems?

Part 4.

- 1970** Congress establishes the Environmental Protection Agency (EPA) as an independent agency of the US government and gives the new Agency broad responsibility for regulating motor vehicle pollution.

1970 The Clean Air Act of 1970 calls for 90 percent reductions in automotive emissions from new cars by 1976. As part of the Clean Air Act the U.S. Government requires for the first time that air quality in the U.S. meet clean air standards for six specified pollutants. Automobile exhaust includes all six of these pollutants. (These are known as the six criteria pollutants.)

1970 The first Earth Day. 100,000 people marched down 5th Avenue in New York City.

Oil Producing Exporting Countries (OPEC) limit the amount of oil exported to the USA resulting in a gas shortage, high prices, and very long lines at gas stations.

At the request of the auto industry, Congress delays some reductions in automotive emission standards until 1978.

Energy Policy Conservation Act establishes the first fuel economy goals and the Corporate Average Fuel Economy (CAFE) program establishes a phase-in of more stringent fuel economy standards beginning with 1975 models.

Unleaded gasoline and catalytic converters appear in response to hydrocarbon and carbon monoxide pollution standards.

At the request of automakers, amendments to the Clean Air Act relax some of the 1970 guidelines.

1980s Minivans, which are held to lower fuel economy standards than cars, become highly popular.

1981 New cars meet the amended Clean Air Act standards for the first time.

1985 EPA adopts stringent emission standards for diesel-powered trucks and buses, to take effect in 1991 and 1994.

The supertanker, 'EXXON Valdez' spills 11 million gallons of crude oil into the pristine waters of Alaska's Prince William Sound.

Amendments to the Clean Air Act require stricter emissions designed to significantly improve air quality by 2005.

TASK 5. Reading comprehension to Part 4.

1. What bodies regulated motor vehicle pollution?
2. How many specified pollutants affect the air quality?
3. What special agency in America regulates motor vehicle pollution?

Part 5.

1990 California law requires automobile manufacturers to deliver zero-emission vehicles (electric vehicles) in the future.

1990s Sport Utility Vehicles, which are held to lower fuel economy standards than cars, become highly popular.

1992 Earth Summit in Brazil brings increase international attention to global warming and other major environmental problems.

1994 Phase-in begins for cleaner vehicles required by the 1990 Clean Air Act.

The first commercially produced electric vehicle in nearly 100 years goes on sale in California.

An international treaty known as the Kyoto Protocol calls for mandatory reductions of the carbon dioxide emissions by industrial countries to slow global warming U.S. EPA data shows that over 100 million people still live in counties with unhealthy air.

The first electric-gasoline hybrid automobile goes on sale in America. It gets an average of 70 miles per gallon.

2000 Oil prices again rise sharply when OPEC nations limit the amount of oil they produce.

TASK 6. Reading comprehension to Part 5.

1. How long is the history of transportation development?
2. What vehicles became highly popular in 1990s?
3. How many people continue living in counties with unhealthy air?

TASK 7. The following passage is based on an interview with an old woman. Complete the sentences with the right words or word-combinations and you will

know about the changes in Cairo, Egypt, where she has lived for many years.

<i>horses' heads</i>	<i>royal stable</i>	<i>working families</i>	<i>noise</i>	<i>donkeys</i>
<i>Tower Bridge</i>	<i>quite different</i>	<i>city centre buildings</i>	<i>design</i>	<i>traffic</i>

‘Of course it’s all cars, buses, and lorries now. But when I was younger, things were (1) _____.

If you look out of my window at the building opposite, the one next to the mosque, you can see carvings of (2) _____ on the wall. It’s a museum now. But, before 1952, when there was a King of Egypt, that building was a (3) _____. There were some cars, but most people used to walk, or cycle, or they travelled on (4) _____ or donkey-pulled carts – you can still see them sometimes in the markets and the old city. Some even had carriages pulled by horses. It all depended on how rich you were. I mean, they weren’t for (5) _____ like us.

There were trams too, as there were in London. They were handy, and cheap. But of course the (6) _____ grew, till five years ago things had to make way for a new bridge and flyover. They say it’s progress – so long as you don’t have to live with the (7) _____ and the fumes, that is.

As my son will tell you, the markets are full of life, and the Bulaq people are always keen to help each other out. You can see some beautiful (8) _____ from here – like the TV Centre and the Foreign Office. Mind you, with 26th July Street in the way, they could be in another world sometimes.

One thing I must mention, looking back. Before they built the new bridge, people used an old low one. You can still see it if you look. Abu Al’Elar, it’s called. It was supposed to open in the same way as (9) _____ in London. But unfortunately, it was too heavy to open! The bigger cargo boats could not get under the bridge. That meant more trade for Bulaq, as they had no choice but to unload here. It wasn’t a very clever (10) _____, especially when you consider who built it. Heard of the Eiffel Tower in Paris? It was the same man, Gustav Eiffel.

Well, anyone can make a mistake, I suppose!’

TASK 8. Translate the paragraph into your native language.

The relationship between transportation (i.e., mobile sources) and air quality, as well as emissions of greenhouse gases related to global climate change, have been understood for decades, and one of the benefits of sensing technologies might be to locate high emitters of pollutants. The more general question, however, is whether ITS would be a plus or a minus for the environment.

VOCABULARY

exhaust (n)	– вихлопні гази (<i>выхлопные газы</i>)
wagon (n)	– коляска, платформа (<i>тележка, платформа</i>)
noxious	– шкідливий, отрутний, згубний (<i>вредный, пагубный, ядовитый</i>)
carriage	– екіпаж, коляска; пасажирскій вагон (<i>экипаж, коляска; пассажирский вагон</i>)
appeal (n)	– заклик, звернення; привабливість (<i>призыв, обращение; привлекательность</i>)
appeal (v)	– приваблювати, подобатися (<i>привлекать, нравиться</i>)
refinery	– очісний завод (<i>очистительный завод</i>)
outcry (v)	– протестувати (<i>протестовать</i>)
oil spill	– забруднення нафтопродуктами (<i>загрязнение нефтепродуктами</i>)
offshore	– розташований на морі; той, що знаходиться на материковому шельфі (<i>расположенный в море, находящийся на материковом шельфе</i>)

outrage (v)	– порушувати закон (<i>преступать, нарушать закон</i>)
pristine waters	– чисті, незіпсовані водоймища (<i>чистые, нетронутые водоемы</i>)
phase-in (n)	– поступове ввєння (<i>постепенный ввод</i>)
OPEC (Oil Producing Exporting Countries)	– Організація країн-експортерів нафти (<i>Организация стран-экспортёров нефти</i>)
CAFE (Corporate Average Fuel Economy)	– Закон про середні витрати палива автомобілями, що випускає корпорація (<i>Закон о среднем расходе топлива автомобилями, выпускаемыми корпорацией</i>)
EPA (Environmental Protection Agency)	– Управління з охорони довкілля (<i>Управление по охране окружающей среды</i>)
ITS (Intelligent Transportation Systems)	– “Розумні” транспортні системи (<i>“Умные” транспортные системы</i>)
boneshaker	– стара розхитана машина, старий велосипед, драндулет (<i>старая расшатанная машина, старый велосипед, драндулет</i>)
oil spill	– забруднення моря нафтопродуктами (<i>загрязнение моря нефтепродуктами</i>)
stringent emission standards	– суворі норми вмісту токсичних речовин у відпрацьованих газах (<i>строгие нормы содержания токсичных веществ в отработавших газах</i>)

UNIT SIX

THE PROBLEMS WITH MODERN TRANSPORTATION SYSTEMS

Before you start

1. Why are there so many types of transportation?
2. What would be the best way to go from your house to the grocery store? Why?
Compare and contrast two different vehicles.

TASK 1. Read the text.

The Problems with Modern Transportation System

For many people, commuting by car or by public transportation is a daily necessity. People with their own cars, use it to commute to work, to go shopping or to take the family out on weekends. For those who cannot drive or afford to buy their own vehicles, public transportation provides these commute with their only means of transportation. However, it seems that it won't be too long before our society will have to resort back to the horse and buggy cart era if our politicians don't build better roads or resolve the ongoing oil crisis.

Our roads and highways are congested most of the time, and the meaning of rush hour has all but disappeared. Heavy pedestrian traffic and poorly designed roads are all factors that can lead to a slow down in traffic flow. A lot of construction work that takes place along our roads and highways are actually doing more to hamper the critical flow of traffic, than to help provide a better solution to the traffic problem. The reason why traffic flow is becoming such a nightmare is simple, our early town and city planners failed to factor in the future needs for an efficient mass public transportation system.

Another problem with modern transportation systems is the depletion of our natural oil reserves. The reality is that we don't have enough oil reserves to supply worldwide demands. But what's even worse is that there are currently no alternative sources of energy to replace the oil and gas shortage that our society so much depends upon. With our natural oil reserves dwindling away, many analysts are

expecting oil barrel prices to continue to rise.

With no solution in sight to the traffic congestion on our roads, or to the current oil crisis the world has no choice but to explore alternative sources of energy or else resort back to the horse and buggy cart era.

TASK 2. Reading comprehension.

1. Why has the meaning of rush hour disappeared?
2. What explanations are given for the increases in oil prices?
3. Do you agree or disagree with the author's statement that the oil crisis is a bad thing?

TASK 3. Decide whether the statements are true(T) or false (F).

1. For many people it is necessary to travel daily between the place of work and the home. **T/F**
2. People prefer public transportation to their own cars. **T/F**
3. Nowadays a traffic flow is slowed down by poorly designed roads and heavy pedestrian traffic. **T/F**
4. The best solution to the traffic problem is to resort back to the horse and buggy cart era. **T/F**
5. Our early town and city planners did their best for an efficient modern mass public transportation system. **T/F**
6. It is the alternative sources of energy that will resolve the ongoing oil crisis. **T/F**

TASK 4. Match the words with their definitions.

A

- | | |
|------------------|---|
| 1 deplete | A to make use of sth, especially sth bad, as a means of achieving sth, often because there is no other possible solution |
| 2 resort | B to reduce sth by a large amount so that there is not enough left |

- | | | | |
|---|---------|---|--|
| 3 | dwindle | C | to travel regularly by train, car, bus etc. between your place of work and your home |
| 4 | hamper | D | to become gradually less or smaller |
| 5 | commute | E | to prevent sb from easily doing or achieving sth |

1 – ...; 2 – ...; 3 – ...; 4 – ...; 5 – ...

B

- | | | | |
|---|------------------------|---|---|
| 1 | commuter | A | a person who travels by foot |
| 2 | congestion (congested) | B | someone who frequently travels by public transport. |
| 3 | rush hour | C | too crowded because of heavy traffic or too many people |
| 4 | pedestrian | D | different options and choices |
| 5 | alternative | E | a period of heavy traffic |

1 – ...; 2 – ...; 3 – ...; 4 – ...; 5 – ...

TASK 5. The following tables give you some advantages/disadvantages of different means of transport. Decide for yourself which means of transport you prefer. Give your reasons.

BUSES



- efficient network of city buses
- carry lots of people at the same time
- often crowded
- pick pocketing
- expensive tickets
- fare dodgers
- dirty and smelly

CARS



- freedom
- independence
- traffic jams
- expensive to buy and maintain
- no parking lots in city centres
- have a crash easily
- exhaust fumes
- observe traffic regulations

- bus lanes are often used by other vehicles

- _____
- _____
- _____
- _____
- _____

- pay a fine

- _____
- _____
- _____
- _____
- _____

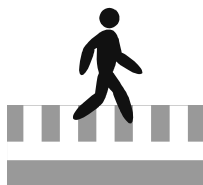


BICYCLES



- you can be hit by a vehicle easily
- wear protective clothing
- slow
- uncomfortable when the weather is cold and rainy
- you can't carry a lot of luggage
- bikes can be stolen
- you can see everything when you ride

- lanes for cyclists
- _____
- _____
- _____
- _____



UNDERGROUND



- fast
- trains often run
- no pollution
- few cities have an efficient network of underground lines
- always crowded
- you can't see any sights of the city
- you must walk a lot under the ground when you want to change lines

- _____
- _____
- _____
- _____
- _____

TASK 6. Read the text given below and decide which answer A, B, C or D best fits each space.

Cities are locations having a high level of accumulation and concentration of economic (1) _____ and are complex spatial structures that are supported by transport systems. The most important transport problems are often related to urban (2) _____, when transport systems, for a variety of reasons, cannot satisfy the numerous requirements of urban (3) _____. Urban productivity is highly dependent on the efficiency of its transport system to move labour, consumers and freight between multiple origins and (4) _____. Additionally, important transport terminals such as ports, airports, and rail yards are located within urban areas, contributing to a specific array of (5) _____. Some problems are ancient, like congestion (which plagued cities such as Rome), while others are new like urban freight distribution or environmental impacts.

- | | | | | | | | | |
|---|---|------------|---|-----------|---|-----------|---|--------------|
| 1 | A | activities | B | solutions | C | plans | D | companies |
| 2 | A | lands | B | areas | C | zones | D | places |
| 3 | A | travel | B | change | C | mobility | D | movement |
| 4 | A | locations | B | units | C | buildings | D | destinations |
| 5 | A | letters | B | books | C | problems | D | lectures |

TASK 7. Translate the paragraph into your native language.

Transportation planners in developing countries face a number of problems ‘that require innovative solutions.’ Large increases in urban population and pollution have seriously compromised existing transportation systems and significantly increased the challenge of creating future transportation systems. And ‘despite extensive spending on urban transportation systems,’ the problems ‘seem to only get worse.’

VOCABULARY

commute (v) – робити регулярні поїздки на роботу у місто з передмістя

(совершать регулярные поездки на работу в город из пригорода)

resort to (v)	– вдаватися (до чогось) ; звертатися (по допомозу) (прибегать (к чему-либо), обращаться за помощью)
congest (v)	– перевантажувати, переповнювати (перегружать, переполнять)
hamper (v)	– перешкоджати, заважати (препятствовать, мешать)
critical	– основний, визначальний (основной, определяющий)
depletion	– виснаження, вичерпання (запасів) (истощение, исчерпывание (запасов))
dwindle (v)	– скорочуватися, вичерпуватися (сокращаться, истощаться)
mean	– мати значення (иметь значение)
array	– безліч, сукупність (масса, множество)
labour	– робітничий клас (рабочий класс)
challenge	– важка проблема (трудная проблема)
buggy cart	– кабриолет; двоколка (кабриолет, двоколка)
traffic regulations	– правила дорожнього руху (правила дорожного движения)

UNIT SEVEN

TRANSPORTATION AND LOGISTICS

Before you start

1. Do you know any transportation professional?
Would you like to be one? Why? Why not?

TASK 1. Read the text.

Guide to Transportation and Logistics

Logistics management is the science of getting stuff where it needs to be, when it needs to be there, as part of a larger process, like manufacturing. In business, logistics management most often refers to transportation, inventory management and storage issues related to the supply chain: where are your parts or materials coming from, where do they need to get to, when do they need to get there, do they need to be stored anywhere *en route*, and how are you going to make all that happen in a safe, efficient, reliable way.

Transportation and logistics management also come into play at the other end of the line, helping you get your product to your customers quickly and efficiently.

In trim global markets, fine-tuned transportation and logistics practices can deliver a competitive edge. If you and your competitors make a similar product from similar parts, the winner will be the one whose product gets to market quickest for the lowest cost-per-unit – and that’s done through logistics.

Larger companies have transportation and logistics professionals among their supply chain management staff. But smaller companies can reap the benefits of lean logistics without adding any staff. At its simplest, effective logistics management is just a matter of making smart decisions about warehouse shipping and inventory management. More elaborate logistics management is called for when certain complications enter the mix. For instance:

- Transportation and logistics are more complex when dealing with international shipping and markets.

- Tariffs, duties and exchange rates require more sophisticated logistics management.
- Distributed manufacturing demands greater attention to transportation and logistics.

TASK 2. Reading comprehension.

1. What does logistics management deal with?
2. What does logistics management refer to in business?
3. What things can make a situation with transportation and logistics more complicated?

TASK 3. Complete as much as possible of the table with other forms of some of the words presented in the text. Use a dictionary to help you if necessary.

<i>verb</i>	<i>person noun</i>	<i>abstract noun</i>	<i>adjective</i>
manage			
produce			
supply			
deal			
distribute			

TASK 4. Match the words with their definitions.

- | | | | |
|---|----------------|---|---|
| 1 | logistics | A | a person who does a job that needs a special training and a high level of education |
| 2 | transportation | B | a person or an organization that buys sth from a shop/store or business |
| 3 | transponder | C | a commercial building for storage of goods |
| 4 | professional | D | the management of the flow of goods, information and other resources |
| 5 | customer | E | the movement of people and goods from one location to another |

- 6 warehouse F a wireless communication, monitoring, or control device that picks up and automatically responds to an incoming signal

1 - ...; 2 - ...; 3 - ...; 4 - ...; 5 - ...; 6 - ...

TASK 5. Match each word on the left with a word on the right.

- | | |
|------------------|-----------------|
| 1 storage | A product |
| 2 reliable | B management |
| 3 transportation | C way |
| 4 similar | D practices |
| 5 logistics | E rates |
| 6 inventory | F staff |
| 7 international | G issues |
| 8 exchange | H professionals |
| 9 management | I chain |
| 10 supply | J market |

1 - ...; 2 - ...; 3 - ...; 4 - ...; 5 - ...; 6 - ...; 7 - ...; 8 - ...; 9 - ...; 10 - ...

TASK 6. Write the correct words in the blanks.

delivery transport operational manufacturers customer

Logistics and Transportation Industry

Each segment of the logistics and transportation industry – including air (1) _____, motor freight, railroad and water transportation, pipelines, logistics (3PL/4PL) providers or couriers, and support services – is under transport for meeting greater (2) _____ expectations, improving return on assets, minimizing operating costs, optimizing capacity and promoting (3) _____ excellence.

Companies in these segments have to be at the forefront of adopting new technologies that allow time-specific (4) _____ and electronic tracking of cargo. For example, In-cab mobile computers and transponders, as well as satellites, are increasingly being used to monitor goods and vehicles efficiently. Additionally, the increased adoption of just-in-time inventory management by (5) _____ is

forcing the freight-transport industry reshape and meet their demands.

TASK 7. Translate the paragraph into your native language.

Transportation and logistics consultants don't move and store stuff for you – they evaluate your operation, and then tell you how you could move and store stuff more efficiently. A consultant is a great option when you want to improve your logistics management but don't want to hand over your transportation and warehouse shipping needs to a third party.

VOCABULARY

inventory management	– керівництво службою матеріально-технічного забезпечення (руководство службой материально-технического обеспечения)
en route	– по дорозі, в дорозі (в пути)
trim	– упорядкований, збалансований (приведенный в порядок, сбалансированный)
reap	– пожинати плоди (пожинать плоды)
lean	– скудний, бідний (скудный, бедный)
elaborate	– ретельно розроблений, продуманий (тщательно разработанный, продуманный)
international shipping	– міжнародне судноплавство (международное судоходство)
third party	– третя сторона (третья сторона)
warehouse shipping	– перевантаження товару, торгівельне судноплавство (отгрузка товара, торговое судоходство)
need (n)	– потреби, недоліки, витрати ((pl.) потребности, запросы; недостаток, нехватка)
duty rate	– ставка митного збору (ставка таможенной пошлины)

3PL (Third Party Logistics)	– логістика третьої сторони (означає надання комплексу логістичних послуг від постачання і адресного зберігання до керування замовленнями та відслідковування руху товарів) <i>(логистика третьей стороны (означает предоставление комплекса логистических услуг от доставки и адресного хранения до управления заказами и отслеживания движения товаров))</i>
4PL (Fourth Party Logistics)	– логістичний провайдер четвертого рівня <i>(логистический провайдер четвертого уровня)</i>
operating costs	– експлуатаційні втрати <i>(эксплуатационные расходы)</i>
motor freight	– вантаж, що перевозиться автотранспортом <i>(груз, перевозимый автотранспортом)</i>
return on assets	– дохід від майта, дохід від активів <i>(доход от имущества, доход на активы)</i>
In-cab mobile computers	– мобільний інформаційний термінал, багатофункціональний індикатор, бортовий комп'ютер <i>(мобильный информационный терминал, многофункциональный индикатор, бортовой компьютер)</i>
transponder	– транспондер – прийомопередавальний устрій, що відсилає сигнал у відповідь на прийнятий сигнал <i>(транспондер – приёмопередающее устройство, посылающее сигнал в ответ на принятый сигнал)</i>

UNIT EIGHT

TRAFFIC MANAGEMENT

Before you start

- 1 Which of these statements do you agree with?
 - We don't like traffic jams.
 - Our traffic management policy is there to keep things fair.

TASK 1. Read the text.

The concept of traffic management as applied to the ground transportation industry encompasses a variety of processes, technology, and cooperative ventures, all of which are measures aimed at making more efficient use of existing roads by controlling the volume and speed of traffic. Such measures tackle a number of problems, including road safety and public transport penetration.

There are several implications from the trend of more and more vehicles travelling the roadways. For one, there is a corresponding rise in greenhouse gas emissions, including CO₂ which has been attributed to global ambient air temperature increases. Government policies are being drafted and implemented to address this issue, and one of the means to address the problem is through various traffic management schemes. A second result of increased road traffic is simply more congestion, which translates into wasted fuel, wasted time, and angry motorists.

TASK 2. Reading comprehension. Decide whether the statements to the text are true (T) or false (F).

1. Traffic management aims at making more efficient use of existing roads. **T/F**
2. The volume and speed of traffic is controlled by the ground transportation industry. **T/F**
3. Road safety and public transport penetration are problematic. **T/F**
4. Vehicles travelling the roadways contribute to the rise in greenhouse gas emissions. **T/F**
5. Various traffic management schemes result in more congestion. **T/F**

TASK 3. Match the words on the left with the most appropriate words and phrases on the right.

- | | |
|---------------|-------------------------|
| 1 the use | A of the means |
| 2 a number | B of problems |
| 3 a variety | C of processes |
| 4 the concept | D of traffic management |
| 5 one | E of existing roads |

1 – ...; 2 – ...; 3 – ...; 4 – ...; 5 – ...

TASK 4. Complete as much as possible of the table with other forms of some of the words presented in the text. Use a dictionary to help you if necessary.

<i>verb</i>	<i>person noun</i>	<i>abstract noun</i>	<i>adjective</i>
address			_____
measure	_____		
rise			
penetrate	_____		
attribute	_____		

TASK 5. Choose and underline the correct form of the words in brackets.

Transit and Ground Passenger Transportation

Industries in the Transit and Ground Passenger Transportation subsector include a (1) *various* / *variety* of passenger transportation activities, such as urban transit systems; chartered bus, school bus, and interurban bus (2) *travel* / *transportation* and taxis. These activities are distinguished based primarily on such (3) *production* / *product* process factors as vehicle types, routes, and schedules.

In this subsector, the principal splits identify scheduled transportation as separate from nonscheduled (4) *transportation* / *transport*. The scheduled transportation industry groups are Urban Transit Systems, Interurban and Rural Bus Transportation, and School and Employee Bus Transportation. The nonscheduled (5) *industry* / *industrialist* groups are the Charter Bus Industry and Taxi and Limousine

Service. The Other Transit and Ground Passenger Transportation Industry group includes both scheduled and nonscheduled transportation.

Scenic and sightseeing ground transportation services are not (6) *included* / *inclusive* in this subsector but are included in the Scenic and Sightseeing Transportation. Sightseeing does not usually involve place-to-place transportation; the passenger's trip starts and ends at the same location.

TASK 6. Read the text given below and decide which answer A, B, C or D best fits each space.

The aim of today's advanced (1) _____ management is to improve traffic flows by promoting more efficient use of the capacity of existing road infrastructure and transportation networks.

Traffic management is therefore based on advanced digital technology and uses the following (2) _____:

- Sensor systems for traffic monitoring.
- Traffic alert (3) _____ providing information about road works or incidents, for example.
- Data transfer systems for better communication between headquarters and the field.
- Control devices to the (4) _____ of traffic.
- Information systems to control mobility flows based on information provided by road users.
- Traffic management centres monitoring the current traffic condition, taking appropriate (5) _____, activating control systems and coordinating activities with other transportation organizations.
- Traffic models allowing the user to (6) _____ traffic, to provide traffic forecasts and to analyse different concepts.
- Data archives providing information about travel behaviour and impacts.
- Strategy management systems implementing, coordinating and synchronising (7) _____ strategies.

1	A	transit	B	travel	C	traffic	D	trunk
2	A	technologies	B	systems	C	structures	D	networks
3	A	marks	B	signals	C	sounds	D	music
4	A	number	B	flight	C	rows	D	flows
5	A	measures	B	actions	C	activities	D	deeds
6	A	activate	B	simulate	C	invite	D	imagine
7	A	pre-set	B	pre-arranged	C	pre-defined	D	predicted

TASK 7. Translate the paragraph into your native language.

The word traffic by itself has special meanings depending on the industry sector and specialty that uses it. Be careful to use the traffic terminology that is common in the segment of industry that you are concerned with. For highway engineering traffic usually refers to vehicles, traffic flow or traffic volume to rates of flow such as vehicles per hour or vehicles per day.

VOCABULARY

traffic management	—	керування транспортування (управление транспортировкой)
penetration	—	проникнення (проникновение)
implication	—	втягування (вовлечение)
split	—	розгалуження (разделение, разъединение)
scenic	—	мальовничий (живописный)
cooperative ventures	—	кооперативне підприємство (кооперативное предприятие)
alert marks	—	знаки, що попереджають про небезпеку (знаки, предупреждающие об опасности)

UNIT NINE

PASSENGER TRANSPORT: TRAMS, BUSES AND TROLLEYBUSES

Before you start

1. What are the usual means of transportation in Ukraine?
2. How many tram, bus and trolleybus routes in your city or town do you know?
3. What discount for tram and trolleybus fares do students in Ukraine have?

TASK 1. Read the text.

Trolleybuses and Trams

There are three main types of bus travel in Ukraine: by trolleybus or bus or tram.

Trolleybuses and trams. Both forms of transport hark back to the mid 20th century era in the United Kingdom for example. However, both forms of transport are very much making a comeback worldwide. Certainly the tram is making a big comeback, least not in the U.K.

Trolleybuses for those who have never travelled on one is an experience! Especially in Ukraine. Generally they are very full, and you could be face to face with a top military official or a peasant farmer.

For both trams and trolleybuses you have to wait at designated stops. You can get in either door but will have to pay the driver or the conductor. In bigger cities like Kyiv there tends to be just the driver. It will be very cheap. Generally 20 pence (Sterling), maybe half a dollar (U.S currency).

The trams and trolleybuses follow fixed routes as the tram obviously has to follow the tramlines and a trolleybus has a swinging arm overhead which gains its power from overhead cables. Trolleybuses in particular are seen all over Ukraine, but like buses there never seems to be one when you want one!

For westerners travelling in Kyiv and Ukraine, they are an essential part of the experience, although once tried a few times, if you are in a rush, cabs are available to travel in (often only \$1 – 2 for a fair journey) that these are a very popular choice.

Always best to pay on entering the tram or trolleybus, then it's done. Often the driver will take payment or you will see a conductor in a bright coloured tabard.

TASK 2. Reading comprehension.

1. What forms of passenger transport are most common in Ukraine?
2. Who do we usually pay the fare in trams and trolleybuses?
3. Why are trams and trolleybuses the essential part of the experience for westerners travelling in Ukraine?

TASK 3. Join up the left-hand sentences with the right-hand ones so that they make sense.

- | | | | |
|---|--|---|---|
| 1 | If you would like to get to your destination by either tram or bus and trolleybus, | A | you can buy monthly pass. |
| 2 | Sometimes you can wait for the necessary vehicle for a long time | B | it doesn't depend on the distance you travel. |
| 3 | When you board a tram, bus or trolleybus, take a seat | C | credit cards and cheques are not accepted. |
| 4 | The tram, bus and trolleybus fares are fixed in any Ukrainian city, | D | when you reach the place of your destination. |
| 5 | If you are travelling by tram and trolleybus a lot around the city, | E | if one is available or hold on tight. |
| 6 | Stops are announced, so you can leave a tram, bus or trolleybus | F | you should know the route number. |
| 7 | You should use cash to pay for your travel, | G | because of traffic jams and accidents. |

1 – ...; 2 – ...; 3 – ...; 4 – ...; 5 – ...; 6 – ...; 7 – ...

TASK 4. Complete as much as possible of the table with other forms of the words. Use a dictionary to help you if necessary.

<i>verb</i>	<i>person noun</i>	<i>abstract noun</i>	<i>adjective</i>
make			
wait			
pay			
stop			
own			

TASK 5. Choose and underline the correct form of the words in brackets.

There are different kinds of trains used in public transit.

Light rail trains, or trolleys, (1) *usual* / *usually* run over ground. They run on electricity from power lines over the train tracks. They can go as fast as fifty-five miles an hour, although they usually go (2) *much* / *more* slower in the city.

Light rail lines are more expensive than buses, but (3) *cheaper* / *cheapest* than heavy rail lines.

Some commuter trains run on electricity too. Others are (4) *powered* / *powerful* by locomotives, just like the trains that transported people and products (5) *around* / *round* the country before cars were invented.

TASK 6. Complete the sentences with the correct prepositions.

1. If you want to go _____ bus, you have to go _____ the bus stop.
2. You look _____ the time table.
3. Then you wait _____ your bus.
4. When the bus arrives, you get _____ the bus.
5. You buy a ticket _____ the driver or show your ticket _____ the driver.
6. When you arrive _____ your destination, you get _____ the bus.
7. Sometimes you even have to change buses _____ another bus stop.

TASK 7. Complete the text using the words below. Read the text about transporting people by buses in Ukraine.

fare next private route destinations buses

Buses

There are two main types of (1) _____ in Ukraine. The first ones are the state owned buses that follow a strict schedule and stop at allocated stops.

These are often yellow, so easy to spot. The (2) _____ is not peanuts now. It is fun to travel on. Hold on though! if standing up, the drivers are quite fast.

Minibuses

The minibuses tend to be (3) _____ companies. You see them lined up usually in the centre of cities, obviously in huge cities like Kyiv they are spread all over. The fare is often very reasonable. The private minibuses excel really in airport runs and particular (4) _____ .

They are easy to spot and normally all in white and yellow but sometimes dark blue.

Again, one of the beauties of Ukraine, you could be standing (5) _____ to a top official or a sweet peasant lady and her large jars of pickles! Such is the charm of this wonderful country and city of Kyiv.

Most buses run from about 6:00 a.m. to 11:00 p.m., but certain buses may run later depending on the demand for a certain (6) _____ (e.g. to the train station).

TASK 8. Read the text about the rules of travelling by public transport in EU and compare them with the way of travelling by city transport in our country. In the text find a) the synonyms of these words:

to get on	pass	to buy	getting on
to get off	pram	trip	getting off
marker	invalid	voucher	disable persons

b) and opposites for the following ones:

minimum	separate	spend	return
irrelevant	limited	prize	illegal
allowed	far from	back	in the daytime

Tickets

For travelling by city transport routes, **the tariff is based on zones**. Journeys by one connection are divided into two ones. Tickets for one zone are valid for a journey of up to five consecutive stops (excluding the stop you boarded the bus at). Travel tickets for two zones are valid for an unlimited length of journey by one connection.

If you do not travel often, single (either non-transfer or transfer) tickets are most suitable for your journey. The conditions for the latter are: a change is allowed only once, time for change is maximum 30 minutes from the first validating of the ticket, and both journeys must be validated on the ticket. If you travel with hand luggage, you can save money by using combined tickets.

If you travel more often, you can save money by using prepaid tickets. For travelling at night (11 p.m. – 5 a.m.), there is night tariff. In this period, neither discounts are valid. Prepaid tickets (except electronic tickets) can be used for night travelling. Tickets are sold at a number of locations (ticket machines at stops and stations, contracted vendors and transport operator ticket offices). If you do not purchase a ticket before boarding, the driver can sell you a two-zone non-transfer ticket.

Getting On and Getting Off

During the day time operation (5 a.m. – 11 p.m.), boarding and alighting is allowed via all doors. If you have a pushchair for children or wheelchair, you can board by the door that is marked by the respective sign (usually the second or third door). To alight with a pushchair or wheelchair you must notify the driver by pushing the button next to the door twice. At night (11 p.m. – 5 a.m.), boarding is allowed only via the front door.

In the front part of each vehicle, there are several seats reserved for older, less mobile and blind people. Please vacate the seats for them as you will make their travel easier.

According to EU law for the protection of non-smokers it is forbidden to

smoke in all public transport and in the area of transport stops and shelters as well as in the distance of up to four meters from the designated platform.

Validating the Ticket

After entering the bus, do not forget to immediately validate your ticket in the validator next to the door. The passenger is obliged to mark his/her voucher immediately after having entered the vehicle by means of the near-by marker. The voucher not marked is invalid.

Passengers with prepaid travel tickets are required to validate their tickets. Next to each door of the bus, there are one or two validators. Most of them can be used for validating both a single journey and prepaid tickets, some validators can only be used to validate single journey tickets.

To validate the single journey paper ticket, please insert the ticket into the slot in the direction of the arrow and hold it there for a few seconds. On the validator display, you will see red lights and the ticket will be validated with the relevant data.

Prepaid tickets can be validated by placing the chip card next to the validator at the designated place. When the chip card has been validated, the red lights will be shown and the validator beeps. If you hold the chip card there for longer, you can check the number of remaining journeys and validity of your card. If the validating of the card is not successful, the validator will beep three times.

Ticket Inspection

It is necessary to have the valid ticket during the travel and also at the time of getting off the vehicle! If you are unable to produce a valid ticket for your journey you risk a penalty fare of 56.43 euro. If you are unable to produce a valid ticket for your luggage or animal, you risk a penalty fare of 2.99 – 5.64 euro.

TASK 9. Translate the paragraph into your native language.

The tram was first introduced into Britain by an American gentleman with the wonderful name of George Francis Train. Unfortunately, his trams rattled too many fashionable tea-cups and lasted no more than six months. They were revived ten years later, however, and became both fashionable and successful. Then came the electric trams. These were seen as highly glamorous and the transport to be seen in!

But the motor bus and the trolleybus were fast catching up on the inside lane. The old-fashioned, inefficient tram was abolished in the 1950s and the motor engine ruled the day. In 2001 the tram became the answer to all the ills of modern urban transport.

VOCABULARY

hark back	– повертатися на вихідний пункт (<i>возвращаться к исходному пункту, положению, вопросу</i>)
comeback	– повертатися з новою силою (<i>возвращаться с новой силой</i>)
(swinging) arm	– поворотний кронштейн (стріла) (<i>поворотный кронштейн (стрела)</i>)
tabard	– плащ (<i>плащ</i>)
peanuts	– (розм.) гроші, безцінь (<i>(разг.) бесценок; гроши, мелочь, ‘смешные деньги’</i>)
run	– (тут) рейс, маршрут (<i>(зд.) рейс, маршрут</i>)
glamorous	– чарівний (<i>очаровательный</i>)
validate (v)	– підтверджувати достовірність, закомпостувати (<i>подтверждать достоверность, (зд.) закомпостировать</i>)
consecutive	– послідовний (<i>последовательный</i>)
vacate (v)	– звільнити (<i>освободить</i>)

UNIT TEN

PASSENGER TRANSPORT: AUTOMOBILES

Before you start

1. You can often say the same things in two different ways. Try to complete the table.

Other expressions:			
ride	=	go on horseback	hitchhike go by train
.....	=	go on foot	go by boat go by motor bike
drive	=	go	go by bus
fly	=	
cycle	=	

2. List three things you need while travelling by car.

TASK 1. Read the text.

The Invention of the Car

Being one of the most significant inventions of the 1920s, the automobile drastically changed the lives of Americans for the better. It helped America and other countries' transportation.

The first automobile developed with a combustion engine was invented by Henry Ford. Henry Ford later founded the Ford Motor Company, which was known for its achievements in bringing America its first affordable car, the Model-T. The first automobile was created much earlier, in 1866 by Richard Dudgeon of New York City. This first car was made with a steam engine.

Over the first few years of the 1920s, the automobile became a hit with everyone, especially young people who wanted freedom and excitement. Soon, almost every household in America owned one. Parents drove to work in their automobiles. Families visited friends and family who lived far away. And young people found a whole new way to have fun.

The automobile also helped American companies and industries.

Many people found it hard to drive on the poor dirt roads and that cars required a lot of fuel (gas) to run. So nation wide road construction took place, which created even more jobs, and strengthened the economy even further.

TASK 2. Reading comprehension.

1. Why is the car considered the most significant invention of the 1920s?
2. What is the difference between Henry Ford's and Richard Dudgeon's cars?
3. Who was the car very popular with at the beginning of the 20th century?

TASK 3. Match the mass transit system *goals* with the most appropriate *definitions*. You will realize what makes a mass transit system successful.

- | | |
|-------------------------|---|
| 1 convenient | A The vehicles need to be designed to fit the human body well. They need to be large enough to transport the numbers of people using the system. |
| 2 safe | B Time is important. Passengers want to know that they are getting where they want to go in a reasonable amount of time. |
| 3 comfortable | C Passengers need to know that the vehicle will be where it is scheduled to be and that they can depend on it to get them where they need to be. |
| 4 economically feasible | D People need to feel that they will not be threatened either by the vehicle itself, or by other people. |
| 5 well used | E 'Stops' need to be accessible to homes, places of employment, schools, commercial establishments, and entertainment centres. A successful mass transit system must get you to where you want to go when you want to go there. |
| 6 reliable | F The cost of transporting an individual must be reasonable. It must compare favourably to other modes of transportation. |
| 7 efficient | G A critical number of passengers need to use the system for it to be feasible and for it to continue. |

1 – ...; 2 – ...; 3 – ...; 4 – ...; 5 – ...; 6 – ...; 7 – ...

TASK 4. Complete as much as possible of the table with other forms of some of the words presented in the text. Use a dictionary to help you if necessary.

<i>Verb</i>	<i>person noun</i>	<i>abstract noun</i>	<i>adjective</i>
critisize			
access	_____		
achieve			
rival			
balance			

TASK 5. Complete the sentences (1 – 5) with the underlined words in the text in Task 1. Make necessary changes. Use the dictionary to help you.

1. It's not the right _____ to use only gasoline as it's more dangerous than ethanol.
2. When cars were first invented, they were powered by what are now considered alternative _____ .
3. The invention was a remarkable _____ for the country.
4. Most _____ now own at least one car.
5. Output has been _____ reduced.

TASK 6. Choose and underline the correct form of the words.

People are (1) *travelling* / *travelled* more miles each year. Because the automobile is the travel (2) *made* / *mode* of choice for most people, and because it is also the largest (3) *polluter* / *pollution* of our air, we have reasons to explore and encourage alternatives. Because pollution threatens our quality (4) *of* / *in* life, we should reexamine our lifestyles, including our transportation choices. One way to significantly decrease air pollution, traffic congestion, and land loss to roads is to (5) *establish* / *establishment* and use mass transit systems.

TASK 7. Translate the paragraph into your native language.

At one time mass transit systems played a much larger role in transporting

people, and not only in large cities. But cars offered people unrivaled freedom, enjoyment, and personal efficiency. As a result the landscape of cities, towns, and even the countryside, changed to accommodate the car.

Today automobile transportation is central to our way of life. As communities attempt to balance the transportation needs of their citizens with economic, social, and environmental pressures, mass transit offers many benefits. When successful, it can, and does rival the appeal of the automobile.

VOCABULARY

economic feasibility	–	економічне обґрунтування (экономическое обоснование)
be feasible	–	бути здійсненим, реальним (быть осуществимым, реальным)
reasonable	–	розсудливий; помірний, недорогий (приемлемый; умеренный, недорогой)
commercial establishment	–	комерційне підприємство (коммерческое предприятие)
rival (v)	–	суперничати, конкурувати (соперничать, конкурировать)
appeal (v)	–	приваблювати, подобатися (привлекать, нравиться)
efficiency	–	(тут) вміння, підготовка, кваліфікація ((зд.) умение, подготовка, квалификация)
become a hit with	–	мати успіх серед ...; бути модним серед ... (пользоваться успехом; быть модным среди...)
safe	-	надійний, безпечний (надежный, безопасный)

UNIT ELEVEN

PASSENGER TRANSPORT: TRAINS

Before you start

1. Read the following terms and the corresponding translations and learn them to use while practising English.

passenger train	— пасажирський потяг (<i>пассажирский поезд</i>)
baggage car, luggage van, left-luggage car	— багажний чи товарний вагон (<i>багажный или товарный вагон</i>)
bullet train, bullet, fast train	— швидкий потяг (<i>скорый поезд</i>)
commuter, commuter train	— приміський потяг (<i>пригородный поезд</i>)
couchette	— спальне місце у вагоні (<i>спальное место в вагоне</i>)
carriage, passenger car, coach	— залізничний вагон (<i>железнодорожный вагон</i>)
railroad train, train	— потяг, поїзд (<i>поезд, состав</i>)
mixed train	— товарно-пасажирський потяг (<i>товарно-пассажирский поезд</i>)
goods train	— товарний потяг (<i>товарный поезд</i>)
train service	— служба руху потягів (<i>служба движения поездов</i>)
smoking car	— вагон для курців (<i>вагон для курящих</i>)
Intercity, Eurocity, Supercity	— швидкісний комфортабельний потяг (<i>скоростной комфортабельный поезд</i>)

2. Try to guess the meaning of the following words and word combinations.

ticket machine

arrivals and departures board

sleeping car

long distance train

through train

change of trains, transfer

local train

car for non-smokers

TASK 1. Read the text.

Richard Trevithick built the first locomotive. A locomotive is a vehicle with an engine that runs on railroad tracks. It pulls other vehicles behind it.

Trevithick's locomotive could pull seventy people along ten miles of railroad tracks. It was powered by a steam engine.

A steam engine runs on boiling water. A fire of coal or wood heats the water, and the boiling water makes steam. The force of the steam pushes a piston up and down. Gears change the motion of the piston into the round-and-round motion of the wheels on tracks.

People also put steam engines on boats. Some of the first steamships travelled the Mississippi River. Instead of turning wheels round and round, the engines turned giant paddlewheels. Later on steamships used propellers.

Not everyone liked the new ways of travelling. One scientist thought that high speed train travel could make the brains fall out. Some farmers didn't like trains because the noise and smoke scared cows and horses.

Still, lots of people wanted to use trains and steamships to go long distances.

In 1840, an Englishman started the first steamship service across the Atlantic Ocean. Soon there were other services carrying mail, people and cargo across other oceans, too.

The first railroad line to carry people opened in 1825. After that railroad lines opened all over the world. The French built one in 1830; the Germans, in 1835. The United States built a railroad that went all the way across the country, from New York to Sacramento.

Railroads and steamships changed the way people lived. People could buy

fresh milk and vegetables that the trains transported from faraway places. They could visit faraway places too, or live in the country and ‘commute’ into the city by train. Steamships made it possible for millions of people to come to the United States from Europe.

Trains also changed the way people travelled in cities.

Before trains, horses and mules pulled trolley cars on tracks. These didn’t go very fast. Sometimes the horse pulled the car off the tracks by accident, and everyone had to get out and push the car back on again!

In the late 1800s, electric railways began to replace the horse trolleys.

TASK 2. Decide whether the statements are true (T) or false (F).

1. The first locomotive ran both on railroad tracks and roads. **T/F**
2. Trevithick’s locomotive was pulled by seventy people along the railroad tracks. **T/F**
3. Steam engines were also put on boats. **T/F**
4. Vehicles with steam engines allowed people to go long distances. **T/F**
5. The first railroad lines opened all over the world in 1825. **T/F**
6. Electric trains running on railroad tracks went much faster than other wheeled vehicles. **T/F**

TASK 3. Fill the gaps with words given below. Make necessary changes. Read the text about travelling by train.

- | | | |
|---------------------------|----------------------------|-----------------------------------|
| A compartment | G ticket office | M carriage |
| B ticket collector | H missing the train | N train schedule |
| C railway station | I adult fare | O buy ticket in advance |
| D one-way ticket | J railroad ticket | P round trip ticket |
| E return ticket | K fast train | Q get in line for a ticket |
| F passenger train | L fare | |

Travelling by Train

Many people like to travel by train. Travelling by train is slower than by plane, but it has its advantages. It may be a (1) _____ (скорый поезд) or a (2) _____ (пассажирский поезд). There is no doubt it's much more convenient to travel by a (3) _____ (скорым поездом), because it does not stop at small (4) _____ (железнодорожных станциях) and it takes you less time to get to your destination.

If you are going to travel by train you should to (5) _____ (купить билет заранее). If you don't want (6) _____ (стоять в очереди за билетом), you can book ticket in advance/ you have to ring up (7) _____ (билетную кассу железнодорожной станции) and they can even send your ticket to your place.

There are different types of (8) _____ (железнодорожных билетов) in our country such as (9) _____ (билет в один конец, билет туда и обратно, обратный билет). Student fare and child fare are cheaper than (10) _____ (стоимость билета для взрослого). (11) _____ (плата за проезд) depends on the distance and type of the train.

On the day of your departure reach the railway station on time to avoid (12) _____ (опоздания на поезд), find (13) _____ (доску расписания) where there is information what time your train leaves. In some time the loud speaker announces that the train is in and the passengers are invited to take their seats. You find your (14) _____ (вагон) and show your ticket to the (15) _____ (проводнику), enter the corridor and find your (16) _____ (купе) and your berth. It may be a lower berth. It is more comfortable than an upper one. You put your suitcase into a special box under the lower seat.

TASK 4. Match the words and word combinations with the definitions.

- | | |
|----------------------------|--|
| 1 passenger train | A a railway car where passengers' bags are carried |
| 2 baggage car, luggage van | B a train that carries passengers |

- | | | | |
|---|--------------------------------|---|--|
| 3 | bullet train, bullet | C | a passenger train that is ridden primarily by passengers who travel regularly |
| 4 | commuter, commuter train | D | a high-speed passenger train |
| 5 | courette | E | public transport provided by a line of railway cars coupled together and drawn by a locomotive |
| 6 | carriage, passenger car, coach | F | a compartment on a European passenger train; contains 4 to 6 berths for sleeping |
| 7 | railroad train, train | G | a railcar where passengers ride |

1 –...; 2 – ...; 3 –....; 4 – ...; 5 – ...; 6 – ...; 7 – ...

TASK 5. Choose and underline the correct form of the words in brackets.

Monorail is a rail-based transportation system based on a single (1) *rail* / *road*, which acts as its sole support and its guideway. The term is (2) *also* / *although* used variously to describe the beam of the system, or the vehicles travelling on such a beam or track. The term originates from the (3) *contraction* / *construction* of the words mono (single) and rail, from as early as 1897, as early systems used metal rails. The (4) *transportation* / *travelling* system is often referred to as a railway. In contrast, a light rail system has two rails sharing support of the train (5) *which* / *when* also share the responsibility of guiding the train.

TASK 6. Take the quiz. Now you can see how many interesting facts you know about trains.

Train Era Quiz

- A locomotive is a vehicle that _____.

A	needs to calm down.	C	people drove like cars.
B	runs on railroad tracks.	D	knows the times tables.
- Who built the first locomotive?

A	Richard Trevithick.	C	Richard Simmons.
B	Richard Pryor.	D	Richard Nixon.

3. The first locomotives were powered by _____ .
- A their sense of smell. C gasoline.
B love of travel. D steam.
4. Steam engines also were used to power _____ .
- A sailboats. C steamboats.
B very, very old cars. D airplanes.
5. Before the invention of trains, trolley cars were pulled by _____ .
- A Richard Trevithick. C horses and mules.
B lions and tigers. D anyone who felt bored.

Richard Franklin Lennox Thomas Pryor III (December 1, 1940 – December 10, 2005) was an African-American comedian, actor and writer.

Milton Teagle Simmons (born July 12, 1948), known professionally as Richard Simmons, is an American fitness personality who promotes weight-loss programs, most famously through a line of aerobics videos and television programmes.

Richard Milhous Nixon (January 9, 1913 – April 22, 1994) was the 37th President of the United States (1969–1974) and the only president to resign the office. He was also the 36th Vice President of the United States (1953–1961).

Richard Trevithick (13 April 1771 – 22 April 1833) was a British inventor, mining engineer and builder of the first working railway steam locomotive.

TASK 7. Translate the paragraph into your native language.

Roads of rails called Wagonways were being used in Germany as early as 1550. These primitive railed roads consisted of wooden rails over which horse-drawn wagons or carts moved with greater ease than over dirt roads. Wagonways were the beginnings of modern railroads.

By 1776, iron had replaced the wood in the rails and wheels on the carts. Wagonways evolved into Tramways and spread though out Europe. Horses still provided all the pulling power. In 1789, Englishman, William Jessup designed the first wagons with flanged wheels. The flange was a groove that allowed the wheels to better grip the rail, this was an important design that carried over to later locomotives.

UNIT TWELVE

TRANSPORTATION IN UKRAINE

Before you start.

1. Read the following facts about driving a car in Ukraine:
 - frequent potholes; poor condition of many city and country roads
 - getting stopped frequently by traffic police
 - incompetent and reckless drivers (many bought their licenses instead of completing driving courses, and driving discipline is low in most cities)
 - driving at night (poor street lighting, people walk along the side of the road, especially in rural areas)
 - bad signs (no street names on street lights, etc.).
2. Now decide for yourself whether these facts are advantageous or disadvantageous to Ukrainian drivers.

TASK 1. Read the text.

Ukraine's Transportation Network

Ukraine has a very well-developed system of public transportation, and the country is much less reliant on private automobiles than the U.S. or western Europe. Every large city and regional capital is connected to the railway network and receives passenger trains daily from other major cities. The train station is the main transportation hub of every Ukrainian city. From there minibuses, trolleybuses, and private taxis take passengers to other parts of the city.

The other main transportation hub of any Ukrainian town is the intercity bus station. Often, but not always, the bus station is located next to the train station. The largest cities generally have several bus stations located at different ends of town. Intercity buses leave from the station that is in the direction of their destination.

Most Ukrainian regional capitals also have an airport on the edge of town for domestic flights and, occasionally, a small selection of international flights.

Intercity travel in Ukraine is quite a bit less expensive than in Europe, but prices have been rising steadily in recent years.

TASK 2. Reading comprehension. Circle the letter of the best answer.

1. The system of public transportation in Ukraine _____.
A receives passengers from the major cities and regional capitals.
B connects all parts of the country and every Ukrainian city.
C is supported by the private cars pool.
2. The intercity buses _____.
A are the main transportation hubs of Ukrainian cities and towns.
B are located at different ends of cities and towns in Ukraine.
C leave from the station that is in the direction of their destination.
3. Most regional Ukrainian cities have airports _____.
A that provide domestic and international transportation of passengers.
B that are connected to the railway networks.
C that are much more expensive than in Europe.

TASK 3. Join up the left-hand sentences with the right-hand ones so that they make sense.

- | | |
|--|---|
| 1 Four major railroad lines | A not only on state-owned holding companies. |
| 2 Ukraine has 12 large ports | B not posted anywhere. |
| 3 Ukraine's trucking system is based | C no less than 100 m away. |
| 4 Bus schedules are | D stop only at designated stops. |
| 5 In minibuses (marshrutki) you will need to call out your stop | E from the ticket dispatcher ('conductor'). |
| 6 Trolleybuses and street trams ('tramvayi') | F run through Ukraine. |
| 7 You can usually buy a ticket at ticket booths at major stops or | G serving international and costal trade. |

1 – ...; 2 – ...; 3 – ...; 4 – ...; 5 – ...; 6 – ...; 7 – ...

TASK 4. Complete as much as possible of the table with other forms of some of the words presented in the text. Use a dictionary to help you if necessary.

<i>verb</i>	<i>person noun</i>	<i>abstract noun</i>	<i>adjective</i>
	_____	crossing	
expect			
		border	
	_____	standard	
declare			

TASK 5. Complete the sentences (1 – 5) with one of the words in Task 4. Make necessary changes. Use the dictionary to help you.

1. Foreigners may enter and exit Ukraine by airplane or at any international border _____.
2. Border police and customs officers will _____ to see you leave the country on the same car as when you entered.
3. If you are crossing the Ukrainian _____ by train, you will not have to leave your compartment; the border and customs officers will come to your compartment themselves.
4. Fare on public transportation is very low by European _____.
5. If you have no items to _____ or less than \$1000 in cash, you will not need to fill out a customs declaration.

TASK 6. Complete the text using the words below. Read the text about Ukrainian traffic police.

police documents license culture bribe

Dealing with Ukrainian Traffic Police

Ukrainian traffic police are always very busy on the roads. It is common knowledge that if you are stopped, they are looking for a bribe. They will try to look for something wrong with your (1) _____ or car if there was no traffic infringement. The absence of serious fines for driving violations contributes to the poor driving (2) _____ on Ukrainian roads.

Traffic police will ask to see your vehicle registration certificate, driver's

(3) _____ , and passport (to check for the entry stamp). If everything is fine, they will probably ask for your immigration card. They have also been known to check for ‘warning triangles’ and first-aid kits, which every car is supposed to have, and wheedle a (4) _____ out of you if you don’t have it. If everything is okay, they will let you go without a bribe, of course.

In general, traffic (5) _____ will not stop you more often for having foreign plates, and they are not prepared to chatter away with you in English or any other foreign language. If you waste too much of their time, they will usually let you go. They have work to do.

TASK 7. Translate the paragraph into your native language.

Ukraine’s main competitive advantages in services, especially on international markets, are inexpensive skilled labour and a convenient location. Ukraine’s geographic advantage is mainly important for transport networks, such as highways, railways, ports, airlines, and oil and gas pipelines.

Ukraine renders transport services abroad mostly, while actively importing insurance, financial and advertising services. The most attractive areas for foreign investors are wholesale trade and brokering, and property services. The share of foreign capital in these segments is the highest among services.

VOCABULARY

pothole	– вибій, вибоїна, вирва (выбоина, рытвина)
reckless	– необачний, що нехтує (чимсь) (неосторожный, пренебрегающий (чем-либо))
hub	– (тут) центр ((зд.) центр)
bribe	– хабар, підкуп (взятка, подкуп)
wheedle (v)	– виманювати (выманивать)

UNIT THIRTEEN

TRAFFIC SIGNS

Before you start

1. Use the words from Column B to choose the correct answer.

A

B

- | | | | |
|----------|---|----------|----------------|
| 1 | The channel at the edge of a street or road that drains off the rainwater is called _____ . | A | boulevard |
| 2 | The place on a roadway reserved for parking the car in emergencies is called _____ . | B | zebra crossing |
| 3 | The marked place where pedestrians should cross the street is called _____ . | C | gutter |
| 4 | The place on the street reserved for pedestrians to walk is called _____ . | D | parking zone |
| 5 | A high-speed highway with several lanes is called _____ . | E | freeway |
| 6 | A street or avenue, usually wide and with trees on both sides is called _____ . | F | shoulder |
| 7 | The place (area) where you can park the car is called _____ . | G | sidewalk |

1 – ...; 2 – ...; 3 – ...; 4 – ...; 5 – ...; 6 – ...; 7 – ...

TASK 1. Read the text

What Is Road Sign?

Traffic signs or **road signs** are signs erected at the side of roads to provide information to road users. With the increasing speed of transport, the tendency around the world is for countries to adopt pictorial signs or otherwise simplify and standardize signs to facilitate international travel where language differences can create barriers and in general to reduce the risks in driving. Such pictorial signs use symbols in place of words and are usually a result of international standards. Such signs started to be developed in Europe and have become adopted by most countries

of the world to varying degrees.

Road signs may also serve other purposes. Vienna Convention on Road Signs and Signals (1968) defines eight categories of signs:

- Danger warning signs
- Priority signs
- Prohibitory or restrictive signs
- Mandatory signs
- Special regulation signs
- Information, facilities, or service signs
- Direction, position, or indication signs
- Additional panels

The earliest road signs were milestones, giving distance or direction; for example, the Romans erected stone columns throughout their empire giving the distance to Rome. In the Middle Ages, multidirectional signs at intersections became common, giving directions to cities and towns.

Traffic signs became more important with the development of automobiles. One of the first modern-day road sign systems was devised by the Italian Touring Club in 1895. By 1900, a Congress of the International League of Touring Organizations in Paris was considering proposals for standardization of road signage. The basic patterns of most traffic signs were set at the 1908 International Road Congress in Rome. In 1909, nine European governments agreed on the use of four pictorial symbols, indicating ‘bump’, ‘curve’, ‘intersection’, and ‘grade-level railroad crossing’. The intensive work on international road signs that took place between 1926 and 1949 eventually led to the development of the European road sign system.

Over the years, change was gradual. Today, signs are almost all metal, rather than wood, and are coated with retroreflective sheetings of various types for nighttime and low-light visibility.

New generations of traffic signs based on big electronic displays can also change their symbols and provide intelligent behaviour by means of sensors or by remote control.

The first road signs established in Czech Republic in November 1, 1935, were six blue-white danger warning signs. They were supplanted after November 1, 1935 with red-white-black signs.

In 1968, the European countries signed the Vienna Convention on Road Traffic treaty, with the aim of standardizing traffic regulations in participating countries in order to facilitate international road traffic and to increase road safety.

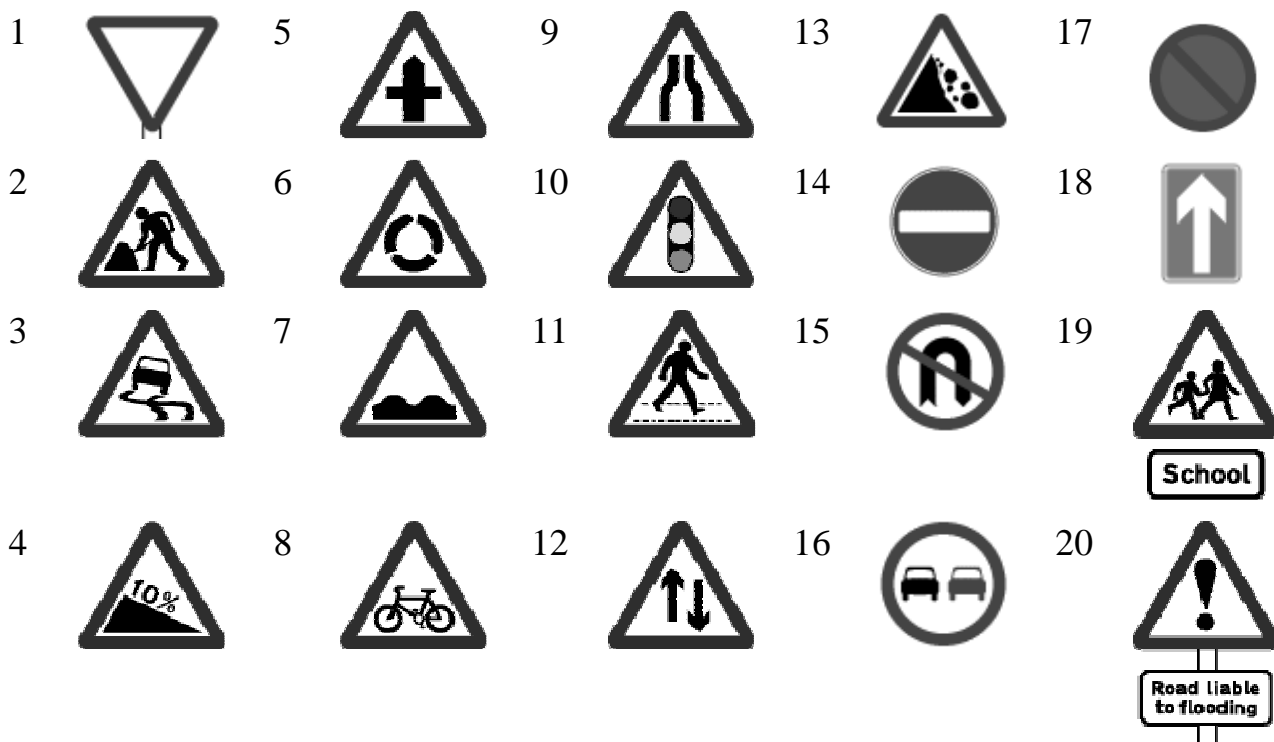
The European traffic signs have been designed with the principles of heraldry in mind; i.e., the sign must be clear and able to be resolved with one single glance. Most traffic signs conform to heraldic tincture rules, and rather use symbols than written texts for better semiotic clarity.

TASK 2. Decide whether the statement are true (T) or false (F).

1. Road Sign is a sign for the control of traffic. **T/F**
2. Signs advise the driver of special regulations and provide information about hazards and navigation. **T/F**
3. Signs which provide notice of traffic laws and regulations (e.g., signs for speed limits and for stop, yield or give-way, and no entry) and warning signs which call attention to hazardous conditions are classified as regulatory ones. **T/F**
4. Most countries post signage, known as traffic signs or road signs, at the side of roads to impart information to drivers. **T/F**
5. International signs using symbols in place of words have been developed in Europe and adopted in most countries of the world because language differences created barriers to understanding. **T/F**
6. Vienna Convention on Road Signs and Signals defined the traffic signs and signals. **T/F**
7. In Europe the traffic signs are well standardized. **T/F**

TASK 3.

A. Match the numbered pictures of the road signs with the relevant phrases given below.



- | | |
|---|---|
| A Two way traffic ahead | K One-way traffic |
| B Crossroads | L Pedestrian crossing ahead |
| C Cycle route ahead | M Uneven road |
| D Danger – words describe the danger | N Road works |
| E Falling rocks | O Roundabout |
| F Give way | P Slippery road |
| G No entry | Q Steep down hill |
| H No overtaking | R Traffic signals ahead |
| I No U turn | S Children going to or from school |
| J No waiting | T Road narrows on both sides |

1 – ...; 2 – ...; 3 – ...; 4 – ...; 5 – ...; 6 – ...; 7 – ...; 8 – ...; 9 – ...; 10 – ...;
11 – ...; 12 – ...; 13 – ...; 14 – ...; 15 – ...; 16 – ...; 17 – ...; 18 – ...; 19 – ...; 20 – ...

B. Match a warning with the correct sign from A. There are no signs for some warnings. What are these warnings?

- _____ 1. You can't make a U turn here.
- _____ 2. Slow down. There's a school nearby. Watch for children crossing the road.
- _____ 3. Traffic from another lane will enter the road.

_____ 4. Slow down. There's a crosswalk ahead. Watch for pedestrians crossing the road.

_____ 5. Be careful! The road ahead is slippery.

_____ 6. The road ahead is closed. Take this road instead.

TASK 4. Choose the correct answers.

1



- A You can go swimming here.
- B You must not go swimming here.
- C You can hire a boat here.

2



- A You can buy tickets here.
- B You can leave old tickets in this box.
- C You must show your ticket here.

3



- A Have you paid for everything in the supermarket?
- B Have you seen anyone who did not pay in the supermarket?
- C Have you bought a car park ticket and put it in the car?

4



- A Use your horn when necessary.
- B Some signs have been stolen.
- C Signs were changed.

5



- A No cyclists are allowed to use this road.
- B Be careful, cyclists can ride in the opposite direction.
- C Only cyclists are allowed in this road.

6

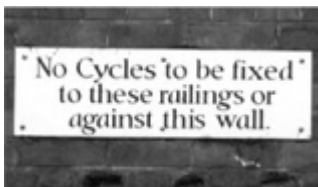




- A You must wear rubber boots in this room.
- B You must wear special shoes in this room.
- C You must not wear special shoes in this room.

7



- A Cars must not park here.
- B No vehicles at all are allowed to park here.
- C Only emergency vehicles can park here.

- 8  A You must not park your bicycle here.
B You can park your bicycle here.
C You must not ride your bicycle here.
- 9  A Students can only go into this room with a teacher.
B Students can go into this room alone.
C Students are not allowed in this area at all.
- 10  A You are not allowed to use this road.
B You can use the road in order to get to the pub.
C You can only use this road when you have visited the pub.
- 1 – ...; 2 – ...; 3 – ...; 4 – ...; 5 – ...; 6 – ...; 7 – ...; 8 – ...; 9 – ...; 10 – ...

TASK 5. Read the following and decide which answer A, B, C or D best fits each space.

This sign means you are coming to a (1) _____ crossing.

- Railroad tracks are uneven. You should not try to bicycle or in-line skate over them.
- Many railroad grade crossings have a gate with a bell and blinking lights that closes when a train is approaching.
- **NEVER** go around a closed railroad gate.
- Trains are very large and heavy and take a long time to (2) _____ .
- Always look and listen carefully to be sure a train is not coming before crossing the tracks.



When people are working on the roads, parts of the road or (3) _____ are often dug up or rough.



- Use caution when walking, bicycling or in-line skating.
- Uneven, rough roads could make you fall off your bike or in-line skates.
- If you must move into the road to go around a (4) _____ ,

you should stop and look carefully to be sure there is no traffic coming before going into the road.

A detour is a way of getting around a (5) _____ that is closed. Roads are usually closed because of road work or dangerous conditions. Use (6) _____ on roads you aren't used to.



These signs show the (7) _____ and (8) _____ to towns and cities.



This sign shows that there is a (9) _____ path or (10) _____ route available. If there is a bike (11) _____, you must use it.



- | | | | | |
|----|--------------|---------------|------------------|-----------------|
| 1 | A railroad | B highway | C motorway | D path |
| 2 | A run | B stop | C start | D take a run |
| 3 | A railroad | B path | C sidewalk | D pavement |
| 4 | A work area | B traffic jam | C traffic lights | D slippery road |
| 5 | A city | B roundabout | C railway | D roadway |
| 6 | A heed | B caution | C carefulness | D wary |
| 7 | A assignment | B trend | C directions | D destination |
| 8 | A distances | B way | C road | D distant |
| 9 | A motorbike | B motorcycle | C bike | D bicycle |
| 10 | A highway | B path | C motorway | D road |

TASK 6. Choose and underline the correct form of the words. Then answer the questions given below.

Road signs help to keep roads safe and help us to use the roads (1) *correct* / *correctly*. They give directions, help to keep traffic (2) *moving* / *moved* and help to keep our roads safe.

There are standards to cover things such as when a sign is (3) *needs* / *needed*, its size and how it is positioned. Generally, the size and position of signs are (4)

based on / based by the speed of the traffic (5) *used / using* the road. The (6) *higher / highest* the speed, the (7) *largest / larger* the sign. Standards are applied nationally, to make sure they are (8) *consistent / consistency*, but signs can be adapted to the needs of (9) **different** places.

Signs are (10) *grouped into / grouped by* four types. (11) *Warning / Warned* signs draw the (12) *driver's / drivers* attention to possible (13) *dangerous / dangers* on the road ahead. This could be where they need to slow down or to highlight something such as a low bridge or a level crossing. They are the same across the country so they can always be recognised. (14) *Regulatory / Regulation* signs such as speed-limit signs are in place to let drivers know what traffic (15) *restrictions / restricts* there are and help to enforce these restrictions. Directions signs show how to get to a place. They have the same basic layouts across the country so drivers can always understand them. Other information signs include signs for local facilities, such as recycling sites.

1. Do road signs have to meet any standards?
2. How many different types of signs are there?
3. Why do we need road signs and markings?

TASK 7. Translate the paragraph into your native language.

The principle of the European traffic sign standard is that shapes and colours are to be used for indicating the same purposes. Triangular shapes (white or yellow background) are used in warning signs. The Vienna convention allows an alternative shape for warning signs, a diamond shape, which is rarely used in Europe. The prohibition signs in Europe are round with a red border. Informative and various other secondary signs are of rectangular shape. Animals shown on warning signs include moose, frogs, deer, ducks, cows, sheep, horses, polar bears, and monkeys. The Convention allows any animal image to be used.

Directional signs have not been harmonised under the Convention, at least not on ordinary roads. As a result, there are substantial differences in directional signage throughout Europe. Differences apply in typeface, type of arrows and, most notably,

colour scheme. The convention however specifies a difference between motorways and ordinary roads, and that motorways use white-on-green (Italy, Switzerland, Denmark, Sweden etc.) or white-on-blue (Norway, Germany, France, UK etc.).

European countries use the metric system on road signs. For countries driving on the left, the convention stipulates that the traffic signs should be mirror images of those used in countries driving on the right.

VOCABULARY

danger	warning	–	попереджувальні дорожні знаки
signs			(предупреждающие дорожные знаки)
priority signs		–	знаки пріоритету (знаки приоритета)
prohibitory		–	попереджувальні або обмежувальні знаки
or restrictive signs			(предупреждающие или запрещающие знаки)
mandatory signs		–	предписуючі знаки (предписывающие знаки)
regulation signs		–	знаки регулювання (регулирующие знаки)
information,		–	інформаційно-вказівні знаки і знаки сервісу
facilities,			(информационно-указательные знаки и знаки сервиса)
or service signs			
direction, position,		–	знаки напрямку, місцязнаходження і таблички до
or indication signs			дорожніх знаків (указатели направления, местоположения и таблички к дорожным знакам)
retroreflective		–	світлоповертаюче покриття
sheeting			(световозвращающее покрытие)
nighttime visibility		–	видимість у нічний час
			(видимость в темное время суток)
low-light visibility		–	видимість при тьмяному освітленні
			(видимость при тусклом свете)
intelligent		–	(тут) вірний режим дорожнього руху
behaviour			(зд.) правильный режим дорожного движения)
heraldic	tincture	–	правила геральдичного забарвлення (тинктур)
rules			(правила геральдической расцветки (тинктур))

UNIT FOURTEEN

TRAFFIC LIGHTS

Before you start

1. Complete the sentences below.

You know different colours (red, yellow, green, orange and blue) on traffic lights and signs which mean different things.

- _____ signs mean stop or use caution. _____ generally symbolizes danger or warning, making it a good choice for ‘stop.’

- _____ signs with black lettering are used to warn you that you are coming to a hazardous area or an area with special rules. Curiously, _____ or amber, is associated with warmth, happiness, and the sun. Despite these connotations, it was chosen to symbolize ‘caution.’ Perhaps because it contrasts well with green and red, and is highly visible without being too harsh on the eyes of motorists. Today, _____ is commonly used as a warning symbol for both traffic signs and alert systems.

- _____ signs with black lettering are used in areas where there is road construction.

_____ signals mean ‘go’. _____ is calming to us, probably because it is prolific in nature and a sign of health and abundance, so it might have lent itself to mean ‘go.’

- _____ signs show information, like the route to a hospital or where camping is available. _____ signs with white lettering show the directions and distances to different places.

TASK 1. Read the text.

The History of Traffic Lights

Traffic light is a road signal for directing vehicular traffic by means of coloured lights, typically red for stop, green for go, and yellow for proceed with caution.



Even during the horse and buggy days, traffic in big cities was often heavy. Police officers had to be stationed full time directing traffic at busy intersections.

The world's first traffic light came into being before the automobile was in use, and traffic consisted only of pedestrians, buggies, and wagons. Installed at an intersection in London in 1868, it was a revolving lantern with red and green signals. Red meant 'stop' and green meant 'caution.' The lantern, illuminated by gas, was turned by means of a lever at its base so that the appropriate light faced traffic. On January 2, 1869, this crude traffic light exploded, injuring the policeman who was operating it.

With the coming of automobiles, the situation got even worse. Police Officer William L. Potts of Detroit, Michigan, decided to do something about the problem. What he had in mind was figuring out a way to adapt railroad signals for street use. The railroads were already utilizing automatic controls. But railroad traffic travelled along parallel lines and ran along one way. Street traffic flow at intersections, travelled at right angles and was four-way. Potts used red, amber, and green railroad lights and about thirty-seven dollars worth of wire and electrical controls to make the world's first 4-way three colour traffic light. It was installed in 1920 on the corner of Woodward and Michigan Avenues in Detroit. Within a year, Detroit had installed a total of fifteen of the new automatic lights.

At about the same time, Garrett Morgan of Cleveland, Ohio realized the need to control the flow of traffic. A gifted inventor and reportedly the first African American to own an automobile in Cleveland, Ohio, he invented the electric automatic traffic light. Though it looked more like the semaphore signals you see at train crossings today.



The Morgan traffic signal was a T-shaped pole unit that featured three positions: Stop, Go and an all-directional stop position. This 'third position' halted traffic in all directions to allow pedestrians to cross streets more safely. His light was used throughout North America before being replaced by today's familiar red/yellow/green traffic lights.

TASK 2. Reading comprehension. Circle the letter of the best answer.

1. Why was traffic light needed before the automobile was in use?
 - A The roads were clogged with pedestrians, bicycles and animal-drawn wagons. There were no traffic laws to speak of, and chaos ruled the streets. Accidents were frequent.
 - B Police officers were tired to station full time directing traffic at busy intersections.
 - C Railways began to use a system of signals to control train traffic.

2. What was the first traffic light?
 - A It consisted of a signal arm in a horizontal position to express 'stop'. The signals were painted red as it was easy to identify and attract the driver's attention.
 - B The first crude traffic light was a manually operated gas lantern installed in London around 1868. The signal consisted of two colours – red and green.
 - C The first traffic signal was a T-shaped pole unit.

3. What was the same between traffic lights invented by W. Potts and G. Morgan?
 - A They were the world's first electric lights that used three positions.
 - B Potts and Morgan used two-coloured lights, red and green, and connected the signal by electricity.
 - C They were the world's first four-way three colour electric automatic traffic lights.

TASK 3. Join up the left-hand sentences with the right-hand ones so that they make sense.

- 1 When the signal light turns green, A so you should wait for the green light to show in your direction.

- 2 When you cross the street at a signal light, B cars go.

- 3 Some corners don't have a walk C before crossing the street.
signal,
- 4 Remember that cars may be turning, D you should wait for the WALK
so be sure to look carefully to the signal.
left, right and left again
-
- 5 When the signal light turns yellow, E and cars will enter the intersection.
- 6 If you are waiting to cross the street, F cars should slow down and prepare
you should not cross to stop.
- 7 The light is about to turn red, G cars stop.
- 8 When the signal light turns red, H if the light is yellow.
-
- 9 If the light is red in your direction, I part of the WALK signal.
- 10 The WALK signal is found at busy J to make sure no cars are coming or
intersections and means turning into the area where you are
going to cross the street.
- 11 But you should always look both K that it is okay for you to cross the
ways, by looking left, right and left street.
again
- 12 The DON'T WALK signal is L you should not walk across the street.
- 13 You should wait to cross the street M until the signal changes to WALK.

1 – ...; 2 – ...; 3 – ...; 4 – ...; 5 – ...; 6 – ...; 7 – ...;
8 – ...; 9 – ...; 10 – ...; 11 – ...; 12 – ...; 13 – ...;

TASK 4. Choose and underline the correct form of the words in brackets. Then answer the questions below.

Traffic lights control traffic (1) *effective* / *effectively* and usually need (2) *less* / *least* space (3) *than* / *then* a roundabout. They allow traffic from minor roads to join busy main roads. They also help pedestrians and cyclists cross the road. We can use several sets of lights together to improve the flow of traffic and reduce traffic jams.

Each traffic light has its own control unit in a roadside cabinet. The light sequence has been designed to give the best traffic flow for that junction and it tells

the traffic lights when to change colour and in what order, and includes essential (4) *save / safety* systems.

The timing for the green signal is usually decided by the amount of traffic that passes over detectors in the road surface. If there are no cars (5) *waiting / waited* on a side road to turn on to the main roads, the signal will stay red and allow the traffic on the main road to keep (6) *gone / going*.

Pedestrian crossings can be part of a junction or controlled by traffic lights in a separate area. There are several different types of crossings. At a (7) *controlling / controlled* crossing there is a push-button box. When you press the button, the WAIT sign appears. The green man lights up to show that it is OK to cross the road (8) *carefully / careful*. The traffic stops long enough for people to cross the road.

Traffic-signal (9) *inspects / inspectors* checking the systems are working properly every month using special equipment. They also check the lamps, that the lights are facing the traffic, detectors in the road surface, safety systems and the site (10) *in / on* general.

1. Why are traffic lights used?
2. Who controls the lights?
3. How is the time for the green signal decided?
4. How do pedestrians get a green signal?
5. Who checks that everything is working correctly?

TASK 5. Complete the text using the words below. Read the text about the role of traffic signals on the roads.

<i>electronic controllers</i>	<i><u>flow</u></i>	<i><u>intersection</u></i>	<i><u>motorists</u></i>	<i>stoplight</i>
<i>traffic <u>congestion</u></i>	<i><u>turn</u></i>	<i>repeating</i>	<i>roadway</i>	<i>vehicular traffic</i>

Traffic light is a road signal for directing (1) _____ by means of coloured lights, typically red for stop, green for go, and yellow to proceed with caution.

A traffic signal, or (2) _____ as it is also known, controls vehicle traffic passing through the (3) _____ of two or more roadways by giving a visual indication to drivers when to proceed, when to slow, and when to stop. Traffic signals also indicate to drivers when they may make a (4) _____. These signals may be operated manually or by a simple timer which allows traffic to flow on one (5) _____ for a fixed period of time, and then on the other roadway for another fixed period of time before (6) _____ the cycle. Other signals may be operated by sophisticated (7) _____ that sense the time of day and (8) _____ of traffic to continually adjust the sequence of operation of the signals. Traffic engineers use signals to avoid (9) _____ and improve safety for both (10) _____ and pedestrians alike.

TASK 6. Complete the definitions (1 – 5) with the underlined words in the text in Task 5. Use the dictionary to help you.

1. _____ is a change of direction, motion, or position and a place, as in a road or path, where a change in direction occurs.
2. _____ is a continuous movement or circulation.
3. _____ is a person who operates a motor vehicle.
4. _____ is a place where things intersect, especially a place where two or more roads cross.
5. _____ is an occurrence on roadways.

TASK 7. Translate the paragraph into your native language.

Pedestrian controlled crossings are sometimes provided with enhanced features to assist disabled pedestrians. Enhancements may include:

- **Tactile cones** near or under the control button. These rotate and shake when the pedestrian signal is green – the image of a ‘green man’. This is for blind or deaf pedestrians.
- **Tactile paving** laid flush within the adjacent footways, so that visually impaired pedestrians can locate the control box and cone device and know when they have reached the other side.

- **Audible signals**, such as beeps, in order to help blind or partially-sighted pedestrians; or a short recorded message, various electronic melodies are played. Beeps with long intervals in-between signify DON'T WALK mode and beeps with very short intervals signify WALK mode.

- A **vibrating button** in addition to an audible signal is used to assist hearing-impaired people.

- **Electrostatic, touch-sensitive buttons** require no force to activate. To confirm that a request has been registered, the buttons usually emit a chirp or other sound.

VOCABULARY

caution	– обережність; обачність (осмотрительность, осторожность)
connotation	– додаткове (супровідне) значення (подтекст, скрытый смысл)
harsh	– різкий (резкий)
alert system	– попереджувальна система сигналізації (предупредительная система сигнализации)
prolific	– плідний (продуктивный)
buggy	– легкий двомісний екіпаж, кабріолет (легкий двухместный экипаж, кабриолет)
revolving lantern	– ліхтар, що обертається (поворачивающийся фонарь)
injure (v)	– пошкодити, зіпсувати (испортить, повредить)
utilize (v)	– використовувати (использовать)
4-way	– чотирьохбічний (четырёхсторонний)

T-shape pole unit	– стовп у формі літери Т (<i>столб в форме буквы Т</i>)
enhance	– збільшувати, посилювати (<i>увеличивать, усиливать</i>)
tactile cones	– дотикові конуси (<i>тактильные конусы</i>)
tactile paving	– дотикова брудківка (<i>тактильное дорожное покрытие</i>)
adjacent footways	– суміжний тротуар (<i>прилегающий тротуар</i>)
audible signals	– аудіосигнали (<i>аудиосигналы</i>)
electrostatic, touch-sensitive buttons	– електростатичні, чутливі до дотику кнопки (<i>электростатические, сенсорные кнопки</i>)
chirp(v)	– цвірінькати, щебетати (<i>чирикаать, щебетать</i>)
hearing-impaired	– з погіршеним слухом (<i>с ослабленным слухом</i>)
crude	– необміркований, необдуманий (<i>непродуманный, необдуманный</i>)

UNIT FIFTEEN

ROAD SAFETY

Before you start

1. Take this quiz and find out!
 - What does the green light or signal WALK mean?
 - Before you step off the curb or the edge of the road to cross the street, what you must always do?
 - What do you do if you are in the middle of the street and the WALK signal starts to blink or the DON'T WALK signal comes on?
 - If the WALK signal is blinking when you get to the curb or edge of the road, what should you do?
 - If the DON'T WALK signal is blinking when you get the curb or edge of the road, but the traffic signal is green, what should you do?
2. Do you ever take risks with your safety by ignoring road safety rules? When?
3. Do you ever see other road user taking risk? Describe the situation.

TASK1. Read the text.

Safe Driving

More than 3.5 million people get hurt in car accidents in the United States each year. Here are some things you can do so that you and your passengers are safe.

Always wear a seat belt. Also, make sure that all the passengers in your car wear their seat belts. Children under the age of five should ride in child safety seats that you attach to the back seat of the car. The centre back seat is the safest.

Many accidents happen when cars are in bad condition. Take good care of your car. Check the brakes every week to be sure that you can stop the car when you need to. Keep the windshield clean so that you can see the road ahead. Be sure the windshield wipers work in the rain.

Be a careful driver. Pay attention to traffic signs, road condition, and other drivers. Look before you make a turn or change lanes on the highway. Don't 'tailgate'– don't stay too close to the car in front of you. The driver might stop

without warning. Be especially careful when the weather is bad. Slow down and use your headlights in the rain, snow, and fog. Pay attention to the speed limit. When the speed limit is sixty miles an hour, that's the fastest you should drive. On the other hand, don't be a slow driver. Slow drivers can cause accidents.

You can't pay attention to the road when you're tired or busy doing too many things. Don't eat, drink, or talk on your mobile phone while you're driving. Don't take any medicine that can make you sleepy before you drive. The label on such medicine usually has the warning 'May cause drowsiness.' Remember, other drivers are not always as careful as you are. Be prepared for their mistakes. If you are in an accident, the police will ask to see your papers. Always have your license, car registration, and insurance card with you to show to the police.

TASK 2. Reading comprehension. Choose the best endings to the following sentences.

1. The best place for a child's safety is _____.
 - A the front seat.
 - B the back seat next to the door.
 - C the centre back seat.
 - D next to the driver.

2. According to the text, drivers should _____.
 - A use headlights when it's foggy.
 - B always drive sixty miles per hour.
 - C ride in safety seats.
 - D make mistakes.

3. According to the text, drivers should NOT _____.
 - A be prepared for other drivers' mistakes.
 - B look before changing lanes.
 - C use their windshield wipers in the rain.
 - D use a mobile phone while they're driving.

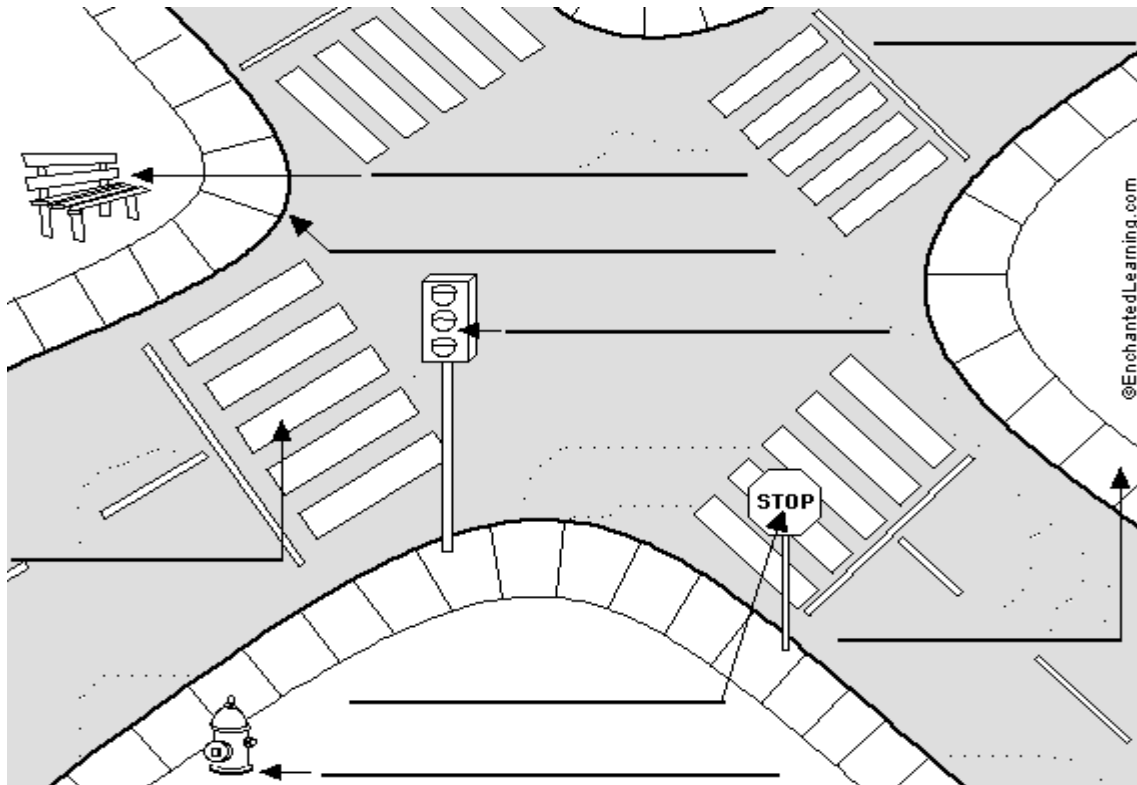
4. A driver who **tailgates** _____.
- A is a slow driver.
 - B drives too close to the car ahead.
 - C stops without warning.
 - D is a careful driver.
5. We can infer that **the windshield** _____.
- A stops the car.
 - B cleans the car.
 - C is at the back of the car.
 - D is at the front of the car.
6. '**May cause drowsiness**' means the medicine _____.
- A is expired.
 - B is bad for you.
 - C can make you tired.
 - D can make you nervous.

TASK 3. Match the left and the right side of the following.

- | | |
|--|---|
| 1 Curb or edge of the road | A When crossing the street wait for this sign. |
| 2 Crosswalk | B They help us cross the street. |
| 3 Look to the left, right,
left again | C Something that blocks your view of oncoming cars. |
| 4 WALK | D Before you cross the street stop here. |
| 5 Crossing guards | E When there are no sidewalks, walk in the street. |
| 6 Facing traffic | F One of the safest places to cross the street. |
| 7 Visual screen | G Before stepping into the crosswalk do this. |

1 –...; 2 – ...; 3 – ...; 4 – ...; 5 – ...; 6 –...; 7 – ...

TASK 4. Label the intersection.



bench corner crosswalk fire hydrant
sidewalk stop sign street traffic light

TASK 5. The following table gives you some do's and don'ts to make sure you cross the road safely. Below you see a number of phrases about pedestrian safety, write down them in Column 'DO'S' or in Column 'DON'TS'.

DO'S	DON'TS
<ul style="list-style-type: none"> Do look for a safe place to cross. Do look left and right and listen for traffic before crossing. Do Do... 	<ul style="list-style-type: none"> Don't run across the road. Don't hold onto or climb onto moving vehicles. Don't Don't

- allow children to cross the street alone if they're younger than 10 years old.
- continue to watch and listen for traffic while crossing.

- cross at a corner or bend in the road.
- cross at corners, using traffic signals and crosswalks.
- cross near or at parked vehicles.
- cross near the brow of a hill.
- cross where there are guard rails along the footpath.
- let any traffic coming in either direction pass, then look to the right and left again.
- make sure drivers see you before crossing in front of them.
- play in driveways, streets, parking lots or unfenced yards by the street.
- stop and wait near the edge of the path. If there is no path, stand close to the edge of the road.
- stop at the curb before crossing the street.
- walk across the street.
- walk briskly straight across the road when it is clear.
- walk facing traffic.
- wear white clothing or reflectors when walking at night.

TASK 6. Join up the left-hand sentences with the right-hand ones so that they make sense.

Road Rules for Pedestrians

- | | |
|--|---|
| 1 If there is no pedestrian crossing, | A and walk quickly straight across the road. |
| 2 Always check all nearby roads for vehicles before you cross, | B it takes time for a vehicle to stop. |
| 3 Remember – | C before crossing the road. |
| 4 Be sensible and wait for a gap in the traffic | D cross the road only when it's safe to do so. |
| 5 When crossing the road at an intersection, | E remember to check behind and in front for turning vehicles. |

- 6 When crossing the road at night, F on a pedestrian crossing.
- 7 If you get off a bus, wait until G you must use the crossing to cross the road.
- 8 You must not step out suddenly onto H it has moved away before checking a pedestrian crossing for moving vehicles.
- 9 If you're within 20 metres of a I cross near a street light if you can. pedestrian crossing,
- 10 Don't walk slowly J if any vehicles are so close to the crossing that they can't stop.

1 – ...; 2 – ...; 3 – ...; 4 – ...; 5 – ...; 6 – ...; 7 – ...; 8 – ...; 9 – ...; 10 – ...

1. What to do if there is no pedestrian crossing?
2. How to use pedestrian crossings?

TASK 7. Write the correct words in the blanks.

<i>composing</i>	<i>dangerous</i>	<i>driver</i>	<i>latest</i>	<i>latest</i>
<i>Prevention</i>	<i>temptation</i>	<i>using</i>	<i>least</i>	<i>specific</i>

Message Puts Man in Jail

'The jailing of a lorry (1) _____ who veered off the road and killed a man while (2) _____ a text message reinforced the need to ban the use of mobile phones while driving', said the Royal Society for the (3) _____ of Accidents after the Court hearing.

ROSPA said the (4) _____ to answer calls or text messages had to be removed.

There had now been at (5) _____ 16 deaths on Britain's roads in which a mobile phone had been implicated – and the (6) _____ case was the second where text messages were involved.

Kevin Clinton, ROSPA's Head of Road Safety said that this (7) _____ death might just be 'the tip of the iceberg'.

‘We believe hundreds of accidents may be caused by mobiles but are going unrecorded. This case in which a lorry driver has been jailed for 5 years for causing death by (8) _____ driving reinforces the need for a (9) _____ offence to ban the use of mobiles while driving.’

The only safe way for drivers to use mobiles was when they were stopped in a safe place. He urged companies to ban their drivers from (10) _____ mobiles while on the move. (*Care on the Road, April 2001*)

TASK 8. Read the newspaper articles about risks on the road and answer the questions below.

Biker Wins £80,000

A 20 year old man who was knocked from his motorbike by a van driver using a mobile phone has been awarded £80,000 compensation. Since the accident the victim has had six operations and surgeons had to take advice from specialists in the U.S on the treatment needed.

The van driver was working for a telecommunications company and it was they who were ordered to pay the compensation. The driver was fined £200 for careless driving. (*Care on the Road, February 2001*)

Remembering Rebekka

A garden has been opened in memory of an 11 year old girl who was killed by a motorist using a mobile phone. The memorial to Rebekka Hudd was opened on her birthday as her mother and ROSPA renewed their plea for a specific offence to ban the use of mobile phones while driving.

Mrs. Hudd said Rebekka was waiting for her brother Nick, then aged 15, when the driver of a fourwheel drive vehicle knocked her down. He admitted careless driving and was fined £250 and ordered to pay £35 costs.

The accident happened in 1996. Rebekka would have been 16 on the day her mother cut the tape to open the garden. It is built on land where she used to play opposite her home near Bristol. Her mother said: ‘It is a wonderful tribute to Rebekka. We hope it will provide a place of peace, but also remind people about

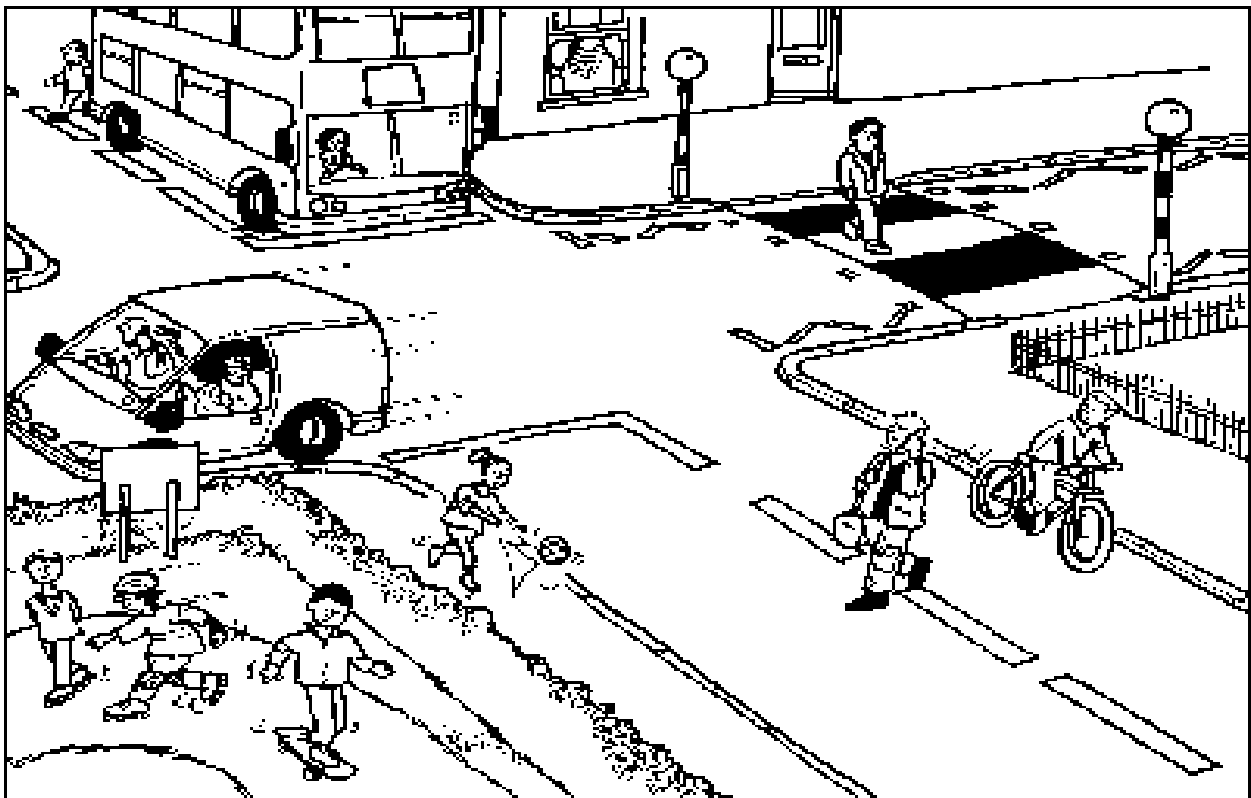
what happened to her and the dangers of mobile phones.’ (*Care on the road, October 2001*)

1. What new things take your attention away from what you are doing on the road?
2. What may be the result of using mobile phones on the road?
3. What are the effects of distractions – including mobile phones – on road safety?
4. What benefits of mobile phones in relation to travel are there?
5. How do the newspaper articles make you feel, e.g. sad, suprised, angry?

TASK 9. Now examine the picture and discuss traffic regulations. Then answer the questions.

- What are the risks?
- Why is the traffic dangerous here?
- Who could be harmed?
- What safety measures should be undertaken?
- What advice would you give in each dangerous situation?

Please note down your ideas.



TASK 10. Translate the paragraphs into the native language.

Road traffic safety aims to reduce the harm (deaths, injuries, and property damage) resulting from crashes of road vehicles. Harm from road traffic crashes is greater than that from all other transportation modes (air, sea, space, off-terrain, etc.) combined.

Road traffic safety deals exclusively with road traffic crashes – how to reduce their number and their consequences. A *road traffic crash* is an event involving a road vehicle that results in harm. For reasons of clear data collection, only harm involving a road vehicle is included. A person tripping with fatal consequences on a public road is not included as a road-traffic fatality. To be counted a pedestrian fatality, the victim must be struck by a road vehicle.

VOCABULARY

seat belt	– ремінь безпеки (<i>ремень безопасности</i>)
child safety seat	– дитяче безпечне місце (<i>детское безопасное место</i>)
windshield	– вітрове скло, передне скло (<i>ветровое стекло, переднее стекло</i>)
tailgate (v)	– невідступно прямувати за...; тягнутися за ... (<i>неотступно следовать за ...; тащиться за ...</i>)
headlight	– фара (автомобіля) (<i>фара</i>)
drowsiness	– сонливість (<i>сонливость</i>)
veer off	– відклонятися від напрямку (<i>отклоняются от направления</i>)
harm	– завдавати шкоди, шкода (<i>наносит ущерб, вред</i>)
ROSPA	– Royal Society for the Prevention of Accidents
reduce	– зменшувати (<i>уменьшают</i>)
consequences	– наслідок (<i>последствие</i>)

SOURCES

1. en.wikipedia.org/wiki/Transportation_management_system
2. en.wikipedia.org/wiki/Transport
3. en.wikipedia.org/wiki/Logistics

Навчальне видання

TRANSPORTATION SYSTEMS. Збірник текстів і завдань з дисципліни ‘Іноземна мова (за професійним спрямуванням) (англійська мова)’ (для організації практичної роботи студентів 1 курсу денної форми навчання напряму ‘Транспортні технології’ спеціальностей 6.070101 – ‘Транспортні системи’, ‘Організація регулювання дорожнього руху’, ‘Організація перевезень і управління на транспорті (міському електротранспорті)’.

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