

**MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE**

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Methodological guidelines  
for practical work  
on the subject

**“ENGLISH”**

*(for 1–2-year full-time and part-time students majoring in  
192 – Construction and Civil Engineering)*

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## UNIT ONE. BUILDING PROFESSIONS

### THE TEXT

#### BUILDING SITE

George and Angela had been married for two years. At first they lived with Angela's mother, but they wanted a home of their own very much. So they put down a deposit on a new flat.

The builders had demolished two big, old houses with large gardens and they were building ten small, modern flats on the *site*. Most weekends George and Angela went to see how much progress the *builders* had made.

When the *workers* had cleared the site, they dug deep *trenches* for the *foundations*, the *drains*, the *gas* and *water pipes*, and the *electricity supply*. Then they began to build the *brick walls*. Unlike so many *modern buildings*, *these flats* were not made *of concrete*.

There was a lot *of equipment* on the site. A big *crane* was used to unload the *lorries* and there were several *cement mixers*. Neatly stacked in one corner there was a big *pile* of bricks and thirty or forty *bags of cement* covered with *plastic sheets*.

The workers had erected a small *wooden hut* where they made their tea and ate their sandwiches. There were *bricklayers* who built the walls, *carpenters* who were responsible for the *woodwork and plumbers* who installed the water pipes. There were also *gas fitters* and *electricians*

who came and went.

The *foreman*, responsible for coordinating the work of all these people, was a large, red-faced man called Bill. George and Angela got to know him quite well and occasionally he would invite them to sit down in the worker's hut and have a mug of strong tea.

As the building got higher a *scaffold* was built around it and the *painters* arrived and began to *paint* all the woodwork.

One day George and Angela noticed a tall man, dressed in a dark suit, talking to Bill. Bill told them later that it was the *architect*, who had *designed* the flats. He had called at the site to see how things were progressing.

## EXERCISES:

- 1. Read and translate the text (orally). Practise the correct reading.**
- 2. Define the tense form and voice of the predicate in each sentence.**
- 3. Study the italicized words and word combinations.**
- 4. Choose the following most suitable words to fill the gaps in the sentences below.**

*An architect, bricklayers, carpenters, a cement mixer, a crane, drains, an electrician, fitters, a foreman, plumbers, a scaffold, trenches.*

- a) The \_\_\_\_\_ build walls.
- b) The \_\_\_\_\_ is in charge of the other worker's job.
- c) The \_\_\_\_\_ will install the bath, showers and toilets.
- d) The gas \_\_\_\_\_ will be responsible for installing the gas pipes.
- e) The \_\_\_\_\_ will fit the wooden window frames.
- f) The \_\_\_\_\_ drew the original plans for the building. He designed the flats.
- g) The foundations of the building are sunk in deep \_\_\_\_\_.
- h) The dirty water from the kitchen will escape down the \_\_\_\_\_.
- i) Building materials are unloaded from the lorries with a \_\_\_\_\_.
- j) The painters don't stand on ladders to paint the upper window.
- k) A \_\_\_\_\_ is built to work on.

**Find out the meaning of the two words you didn't use.**

### **5. Find words in the text that mean:**

- a) The stone or brick base on which a building stands.
- b) The underground pipe that carries dirty water away.
- c) The experienced worker in charge of other workers' job.
- d) The place where building will stand,
- e) The powder which is mixed with water and used to join bricks together.
- f) Plan and draw.
- g) Fit or fix.
- h) The man or woman responsible for planning new buildings.
- i) The structure made of poles and planks on which workers can stand while working.
- j) The person who has been trained to fit new taps, water pipes, etc.

**6. Make up sentences:**

1. A man who has been an apprentice for some time in a plasterer.  
 any building trade, he may be a carpenter or a joiner, a a mason . bricklayer,  
 a mason, a slater, a tiller, a plumber, an a bricklayer. electrician, a  
 house painter, a glazier, a plasterer, a paper a carpenter. – hanger, a  
 steeplejack, a hot water fitter is called ... a tradesman or craftsman.

<p>2. A man who erects wood frames, fits joints, fixes wood floors, stairs and other wall boards, builds or dismantles wood or metal form work is called ...</p> <p>3. A stone worker or a stone setter is...</p> <p>4. A man who sets prepared stones in walls whether the stone is only facing or to the full wall thickness is called...</p> <p>5. A tradesman who builds and repairs brick-work is called ...</p> <p>6. A tradesman who may be a fibrous plasterer in solid work, the latter lays successive coats of plaster or fixes fibrous plaster such as mould cornices and wall pattern (he can use a horsed mould, erect lathing for plaster and apply stucco) is called ...</p> <p>7. A man who makes joinery and works mainly at the bench of wood which has been cut and shaped by machines is called...</p>	<p>a fixer –  mason or  a builder  mason.  a joiner.</p>
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**7. Answer the questions:**

What kind of work does the concrete layer (a bulldozer operator, a steeplejack, a building surveyor, a chief engineer, a work safety engineer, a crane operator, a roofer, a house painter, a glazier, a fitter, a welder, a plumber, a work superintendent (sup't), a slater, a parquet floor layer, a paper hanger, a construction site chief, a foreman) perform?

## 8. Make up a story about any kind of a building profession.

### IT'S INTERESTING TO KNOW...

A *bricklayer* can lay and joint salt glazed stoneware drains, set, chimney pots, manhole frames and fire places. He renders brick-work, including the insides of manholes. A sewer and tunnel bricklayer is a specialized bricklayer. In some districts of Great Britain, bricklayers also fix wall and flooring tiles, and slating and lay plaster and granolithic floors. But elsewhere these are plasterer's specialties.

\*\*\*

The two trades a *carpenter and joiner* were originally the same, and most men can do both, but specialize in one or the other. In the USA the term “carpenter” includes the joiner. The word is derived from the French word “carpentry” which means a wood or metal frame work.

\*\*\*

*Engineering* is one of the oldest occupations in the history of mankind. Indeed, without the skills that are included in the field of engineering, our present-day civilization could never have evolved. The skilled technicians who devised irrigation system and erected the great buildings of the ancient world were the *civil engineers* of their time. One of the earliest names that has come down to us in history is that of Imhotep, the designer of the stepped pyramid in Sahara, Egypt about 3,000 B.C.

Many of the early branches of engineering were based not on science but on empirical information, that is, information that depended on observation and experience rather than theoretical knowledge. Many of the structures that have survived from ancient times exist because they were built with greater strength than modern standards require. But at least the ancient engineers were sure that their buildings would last for a long time. Probably the oldest text in engineering is the work of a Roman architect and engineer named *Vitruvius Pollio*, who wrote a book in the first century B.C. about the engineering practised in his day. Many of the problems were similar to those that modern engineers still must confront.

**Answer the following questions:**

1. Whose trades were originally the same?
2. What kind of work does a bricklayer perform?
3. Who were the forerunners of modern civil engineers?
4. Who was Imhotep?
5. What kind of information were many of the early branches of engineering based on?
6. How are the buildings that have survived from ancient times compared with those built by modern standards?
7. What is probably the oldest textbook about engineering?



## UNIT TWO. BUILDING MATERIALS

### THE TEXT

#### MATERIALS FOR BUILDING CONSTRUCTION

Homes and other buildings all over the world are built using a **wide range** of different materials. Each material is specially chosen for the job it has to do.

#### Building Houses

Houses can **be made** of many **different materials**. You might live in a house **built** mainly **of bricks**, or in a block of flats **built of concrete**. Bricks and concrete **are the most common building materials used**. Some other building materials you might see used are **stone, wood, plastics and metal**.

You will probably see many different kinds of materials **used for** building roofs, this may include **grey slate, red tiles, straw thatch, metals and green or black roofing felt**.

#### Sand, Cement and Concrete

**Sand, cement** and **concrete** are materials used for building. Sand is **a natural material obtained from** the ground. Cement and concrete are **manufactured materials**.

On its own, sand is not much good as a building material. It is too soft and the grains do not stick together. When sand is **mixed with** other materials, it becomes a very **useful building material**

Sand is **made up** of very tiny grains of rock, found at the seaside or in a rock called **sandstone**. Sandstone is used as a building material. It can be either red or light brown. Many castles and old town walls in some areas were built of sandstone. It has a disadvantage of being a soft stone. It can be worn away by the action of the weather, this is known as weathering. Sandstone is not very hard.

Cement is **made by** roasting a **mixture of chalk or limestone., and a clay** in a very hot **oven** called a **kiln**, once it is cool, it is crushed to powder which is called cement.

Cement is an important building material, used to make **mortar** for building walls. Mortar is a mixture of sand, cement and water. A brick layer builds up the

walls of bricks, using mortar to stick the bricks together. Mortar sets very hard.

Concrete is made by mixing tiny stones called **gravel** with sand, cement and water. This makes a **stiff mixture**, like *paste*, which in a few hours sets very hard. **Paving slabs** are often made out of concrete. You can clearly see the tiny gravel stones in the slabs as they become worn and chipped.

Extra - strong concrete, called **reinforced concrete**, is made **by adding steel rods** before the mixture sets. Reinforced concrete can be used for buildings such as blocks of flats or offices. It is also used for building motorways, bridges and structures which need to be very strong. The channel tunnel is built of huge amounts of reinforced concrete.

### Stone

**Rocks, pebbles and gravel** are all made of **stone**. Stone is a natural material which is dug from quarries in the ground.

Pebbles are found at the coast. They are pieces of stone rounded and smoothed by the action of the sea. It can be interesting to collect different coloured pebbles and to sort them. Some pebbles you might find could be **flint, granite** or sandstone.

The stone used for buildings is a **heavy material**. It is mostly used where there is a supply nearby. There are exceptions to this. Some of the stone is used in building. Stonehenge in England was brought to the site from south-west Wales, nearly 350 km away. Stone is a **hard-wearing material**.

Stone can be used to **decorate** houses. Some houses have **pebble-dashed walls**, where the house is coated with a thin layer of cement, then tiny pebbles are thrown into the effect. Flint is a particular kind of stone. It is sometimes used for decoration. Flint is very hard.

Most of the stone quarried is used as basis for road building. Stone provides roads with a hard, solid base or foundation. In road-surfacing, **stone chips** are mixed with **tar** to produce a hard-wearing surface.

Gravel is made up of small pieces of stone. It is **used in** making concrete and for surfacing paths and driveways around houses. Gravel is obtained from the ground. Where it is removed, it leaves huge holes in the ground. These usually are filled with water and become small lakes.

## Wood

**Wood** is a natural material obtained from trees. The trees are cut down, dried and sawn into *manageable pieces* called planks.

Before wood can be used it has *to be dried*. The process of *drying* wood is called *seasoning*. Wood is usually seasoned quickly in special ovens called kilns. It can be dried very slowly in the open air. Wood is a very useful material because:

- it can **be very strong**;
- it can **be bent easily**;
- it can **be of light weight**;
- it can **be shaped easily**;
- it can **be joined easily**.

Wood is used as a building material because it is easy to be cut and shaped. It can be joined using nails, screws or glue. If it is looked after, it will last for a long time. Wooden window frames and door frames can be painted. This helps to stop the wood from rotting.

## Clay

Clay is a natural material which *comes out* of the ground. It is made up of pieces of rock so tiny that they stick together to make a *soft substance*. When soft clay *is* dried or *baked* inside an oven or a kiln it becomes very hard. This process is called *firing*.

Bricks for building are made *by firing clay* at very high temperatures. This makes it very hard and ideal for walls. Walls are usually made by setting the bricks into a cement mixture called mortar. In Mexico, clay bricks are shaped, then dried in the sun. The bricks are stuck together with liquid clay to make walls. Walls built like this are called *adobe walls*.

*Roof tiles* and some water pipes are also made by firing clay at high temperatures.

In some parts of Britain, clay is used as a building material for *cob walls*. Cob walls are a mixture of clay, gravel, sand and straw, built up layer by layer. Houses built with walls of this material need to be made waterproof by coating with limewash.

## Plastics

Plastics are widely used for many different purposes. It is used for building because it will not rust or decay. This means plastics-coated window frames and doors are easier to look after than wooden ones, and they do not rot. They do not have to be painted.

There are many kinds of plastics, including *polythene* and nylon. They *are* all *made of chemicals* which *come from oil*. Most plastics *are not coloured* at first, so dye *is added* to colour them. Some plastics are *rigid* and will *snap* if you try to *bend* them. Others are *flexible* and *bend easily*. They can be quite soft. Some plastics can only be shaped once. They are called *thermosets*. Other plastics can change shape when heated. They are called *thermoplastics*.

## Glass

Glass is a manufactured material. It is important in everyone's daily life. Glass is made by *heating sand* together with substances called *soda* and *lime* in a *furnace* until they *melt*. When it *cools*, the mixture will be glass.

Nobody really knows who first discovered how to make glass. It is thought that around 5,000 years ago, the Egyptians were already using it to make jugs and vases. The Romans were the first to use glass window panes. These have since been found during archaeological excavations at places such as Pompeii.

Glass is used for windows because it can be made transparent and it lets the light through. You can see clearly through *transparent glass*. Glass for windows is made in very *large sheets*. It is then cut to size.

Many buildings, including churches sometimes have *colourful stained glass windows*. Many stained glass windows are very old. They may be pictures showing stories, or they may be made into bright patterns.

The windows of patio doors must be *toughened by safety glass* in case people walk into them. Safety glass is made so that it will not *shatter* and *splinter* if broken. It is very strong.

*Patterned or frosted glass* is often used for *bathroom windows*. This type of glass lets light in, but it is difficult to see through. Patterned or frosted glass is *translucent*.

## EXERCISES:

**1. Read and translate the text (orally). Practise the correct reading.**

**2. Define the tense form and voice of the predicate in each sentence.**

**3. Study the italicized words and word combinations**

**4. Answer the questions:**

- What natural building materials do you know?
- What manufactured materials are used for construction?
- What is the difference between cement and concrete?
- How do we get concrete?
- What materials is the cement made of?
- How is cement made by?
- How can we use stone?
- What is made of stone?
- Why has stone been popular for many hundreds of years?
- What advantages and disadvantages has wood?
- What is wood used for?
- What is the name of the processing clay drying?
- How can we use clay?
- Where can plastics be applied?
- What advantages do plastics offer?
- What do plastic materials consist of?
- What is glass?
- What kinds of glass are there?
- Where is glass used for?

**5. Choose the following most suitable words to fill the gap in the text below.**

*Flooding, breezes, thick, rounded roofs are built on, bamboo leaves, locally, concrete houses, strong glasses, using, building materials, built, used, for, log cabins, mud bricks, were used.*

## Houses in Other Countries

In some other countries, ..... for houses can be different from those ..... here ..... are used ..... . some houses in the hot, dry countries in Africa. If mud bricks ..... in Britain, the rain would wash them away ..... are sometimes ..... in the huge forests of Canada. Log cabins can be built quickly and cheaply ..... the local trees from the forest.

In Ethiopia, some homes are built using ..... grown ..... and ..... Houses like these provide shelter from the blazing sun. On Greek islands, ..... are painted white to reflect the heat of the sun. They often have ..... of concrete to keep the inside of the house cool.

In the Far-East, in the countries such as Thailand, some houses in the countryside ..... wooden stilts. This stops them from ..... to cool them from beneath. It is also concrete cement that helps to keep wild animals out!

### 6. Make up sentences:

Concrete	<ul style="list-style-type: none"> <li>– may be made by burnt clay, of concrete, of mortar or of a composition of sawdust and other materials.</li> <li>– concrete in which the binder is partly dehydrated plaster.</li> <li>– -a white substance, obtained by burning.</li> <li>– -a type of rock, used for making cement.</li> <li>– a powder when mixed with water.</li> <li>– -a type of rock, used for making cement.</li> <li>– -a stone sand mixture into a strong concrete within a few days.</li> <li>– -a paster of cement, sand and water laid between bricks, blocks or stones, and usually is made of masonry cement formerly of cement and lime putty.</li> <li>– a mixture of water, sand, stone and a binder which hardens to a stone - like mass.</li> <li>– -a hard, usually shiny substance such as iron.</li> </ul>
Cement	
Limestone	
Gypsum	
Brick	
Metal	
Mortar	

**7. Translate the following word combinations and make up sentences using them:** *natural compounds; production of cement; property of glass; a completely new building material; decorative plastics; a revolution in interior and exterior design; resistances to frost.*

## **8. Make up a story about any kind of building materials**

### **It's interesting to know**

Home is one of the most important places in the world. It is the place where we live, where we keep our possession, where we belong to and feel safe. From the beginning of human history, people found or constructed homes.

Early people were wandering hunters and food gatherers. They would shelter in a cave or anywhere, that would protect them from the weather, wild beasts, and other dangers.

Gradually, as they discovered how to make tools, people began to make shelters from natural materials.

Early builders learned how to create homes that suited the local environment and made use of the raw materials that nature provided.

For thousands of years, earth, vegetation, stone and wood were traditional building materials.

Different people of different cultures developed their own distinctive ways of using them. Beside the lake of Titikaka in Peru, people build homes from reeds. Earth and rubble have long been used to build the homes high up in the mountains of Peru. Along the Sepik River in New Guinea, people build their homes on stilts to keep them safe from flooding. In the desert of New Mexico, native Americans build their homes out of sun-dried bricks called adobe. These homes have thick walls and tiny windows to keep out the summer heat and to keep in the warmth during winter. The houses in Western Samoa have a high roof and no side walls to keep it as cool and dry as possible. The traditional Korean house is built of wood and stone. Its roof of thick reed thatch helps to keep it warm and dry. Half-timbered houses are a feature of many European countries. The wooden frame of the building is filled in with woven twigs and plaster to make strong “wattle and daub” walls. Stone walls and roofs of growing turf keep these cottages warm and dry in the wet climate of western Ireland. Where there is a good supply of trees, homes are built with wooden sides and roofs. In dry places where there was little good building wood, settlers made cottages out of blocks of turf.

**Answer the following questions**

1. Why do people need homes?
2. What were the traditional building materials for thousands of years?
3. Why do people use different kinds of natural building materials?
4. What is the difference between using building materials in different countries?
5. What natural building materials do people use?



## UNIT THREE. BUILDING PARTS

### THE TEXT

#### PARTS OF A BUILDING

Almost everyone saw the construction of a building and followed its progress with interest.

First the excavation is dug for the **basement**, then the **foundation walls** below ground level are constructed; after this the **framework** is erected and clothed with various finishing materials and protected by several coats of paint.

The part upon which the stability of the structure depends is the **framework**. It is intended for safety carrying the loads imposed. The **floors, walls, roofs**, and other parts of the building must be carefully designed and proportioned.

The architect or designer must decide, what the size of the walls, the floors, the beams, the girders and the parts which make up the framework will be and how they will be placed and arranged.

Here are the main parts of a building and their functions.

**Foundations** serve to keep the walls and floors from contact with the soil, to guard them against the action of frost to prevent them from sinking and setting which cause cracks in walls and uneven floors.

**Floors** divide the building into stories. They may be either of timber or of a fire-resisting material. Walls are built to enclose areas and carry the weight of floors and roofs. The walls may be solid or hollow. The materials used for the walls construction can be brick, stone, concrete and other natural or artificial materials.

\*\*\*

Mr. Hudson sells his house. At the moment he is showing 736 Pearblossom Avenue to Mr. and Mrs. Willis.

– Here we are. And you can see, Mr. and Mrs. Willis, it's really quite a big house, with two *storeys*. *Upstairs* there are three *bedrooms and a bathroom, and downstairs* we have a large *dining room and a kitchen*. There is no *basement* under the house.

– Before we go in, let's take a look at the house from the outside. I think you'll agree that **the front garden** is a nice size and the **hedge** around it makes it a little more private. You've got a car, haven't you? So the **garage** next to the house will be very useful. Now we look up there at the **roof**. It was repaired only four months ago, so you won't have any trouble from the rain. The **chimney** up there doesn't work any more. You see, the **fireplaces** were taken out when the **central heating** was put in.

– OK. Let's go in here through the garden **gate** and up **the path to the front door**. Follow me.

– I'll just open the door and here we are inside. Here's a little **hall** where we can hang our hats and coats. On your right there is the living room, and this door on your left leads into a small dining room. As you can see, it has a lovely **wooden floor**. The dining room and the kitchen are connected, so you can cook in the kitchen and serve the meals in the dining room. From the **kitchen window** you can have a pleasant view of the **back garden**, which has a strong **wooden fence** around it.

The house is **in excellent condition**. You'll have no problems with any of the **walls, floors** and **ceilings**. So any questions? Ah, yes, the price. Three bedrooms, a garage and a garden. Well, what do you think?

#### EXERCISES:

**1. Read and translate the text (orally). Practise the correct reading.**

**2. Define the tense form and voice of the predicate in each sentences.**

**3. Complete the following sentences:**

- The excavation is dug..... \_\_\_\_ .
- The stability of the structure depends upon \_\_\_\_ .
- The building is divided into stories by \_\_\_\_ .
- The main parts of the building are ..... \_\_\_\_ .
- is done first during the construction of a building
- \_\_\_\_ keeps the walls and floors from contact with the soil
- The walls of a building serve for \_\_\_\_ .
- The walls are made of \_\_\_\_ .
- Floors are made of \_\_\_\_ .

#### 4. Put the following words into the sentences below:

*upstairs, a sitting room, a skylight, a landing, a double glazing, French windows, downstairs, an attic, a chimney, a letter box, a cellar, a porch, a dining room, a hall, a gutter, a central heating.*

- a) A house consists of two floors \_\_\_\_ and \_\_\_\_.
- b) Smoke comes out of a \_\_\_\_.
- c) The room under the house is called the \_\_\_\_.
- d) The pipe at the bottom of the roof to carry away rainwater is called the \_\_\_\_.
- e) You eat in the \_\_\_\_.
- f) The space under the roof, often used for storing boxes, etc. is called the \_\_\_\_.
- g) The window which opens out into the roof is called the \_\_\_\_.
- h) The postman delivers letters through the \_\_\_\_.
- i) Most modern houses have .....instead of open fires.
- j) The space inside the front door (usually higher than the stairs) is called the \_\_\_\_.
- k) In modern houses, the windows are made up of two panes of glass instead of one. This is called \_\_\_\_.
- l) The space at the top of the stairs is called the \_\_\_\_.
- m) Doors made of glass which usually open out into the garden are called \_\_\_\_.
- n) In some houses, there is a covered space before you go through the front door. This is called \_\_\_\_.

#### 5. Read through the sentences and fill in the missing words.

1. A room in a hospital where people needing treatment stay;
2. A room in a house or flat where you usually do the cooking;
3. A room under a house.
4. A room at the top of a house, under the roof. It is often used for storing things.
5. Small rooms on board a ship where the crew and passengers sleep.

6. A room used for studying or working.
7. A room under a church.
8. The part of a ship below deck where goods are stored.
9. A room in a house where food is stored.
10. A room in a house used by a family for receiving guests - a sort of <guest room>.
11. A room for an artist or photographer.
12. A large, comfortable room for sitting, found at a hotel.
13. A room with lots of beds used for sleeping, e.g. at a boarding school

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

**6. What are the rooms used for? Match each part of the house with what usually happens in it**

- |                    |                                     |
|--------------------|-------------------------------------|
| 1. The kitchen     | a) a place to wash                  |
| 2. The dining room | b) a place to sleep                 |
| 3. The bedroom     | c) a place to hang coats            |
| 4. The garage      | d) a place to relax and have a rest |
| 5. The garden      | e) a place to cook                  |
| 6. The bathroom    | f) a place to grow flowers          |
| 7. The living room | g) a place to keep a car            |
| 8. The hall        | h) a place to eat                   |

**7. Which part of the house is different from the other three in each group?**

**Explain, why?**

1. Floor, wall, stairs, ceiling.
2. Fireplace, roof, central heating, chimney.
3. Bathroom, garage, kitchen, bedroom.
4. Window, wall, gate, door.
5. Downstairs, upstairs, basement, storey.
6. Fence, path, hedge, wall.

**8. Find the answer the following questions. Study the underlined words and word combinations**

### **HOUSE I. HOW TO START.**

QUESTIONS:

1. What is it necessary to start building a house from?
2. Where is the *foundation* built?
3. Why is it built under the ground?
4. What is built on the foundation?
5. What *are the walls built of*?
6. What other *building materials* are the walls built of?

7. Where are **stones** got from?
8. What material is stone?
9. What are **bricks**?
10. What *are* bricks **made of**?
11. What is a man who **builds with bricks**?
12. What is a man who builds with stones?
13. What is mortar made of?

ANSWERS:

- a) The foundation is built under the ground.
- b) The walls are built on the foundation.
- c) Sometimes the walls are built of mortar, **timber and metals**.
- d) Stone is a **natural building material**
- e) Bricks are made of **clay, sand and burnt lime**.
- f) **A man** who **works with** stone is a mason
- g) Mortar is made of sand, **cement** and water,
- h) A man who **lays bricks** is a bricklayer.
- i) Bricks are **artificial**.
- j) Stones are got from rocks and quarries.
- k) The walls are built of brick, **stone blocks and concrete**.
- l) It is built under the ground to make the house stand firmly.
- m) To build a house it is necessary to build the foundation first.

## **HOUSE II . WINDOWS AND DOORS**

QUESTIONS:

1. Why do builders leave **square openings in the walls**?
2. What are the **doors and windows** made of?
3. How do they **move easily**?
4. What are the **hinges** made of?
5. How *are* the doors **kept shut**!
6. What parts are windows made of?
7. Why are windows made **of glass**?

8. What is glass made of?
9. How do we call each square of glass in a window frame?
10. Why are the windows to open?

ANSWERS:

- a) The windows are to open to let fresh air in during the day time.
- b) Glass *is made out* of *sand, flint* and *soda, melted together*.
- c) The windows are made *of wooden frames filled with glass*.
- d) The hinges are made *of iron*. Sometimes they are made *of brass*.
- e) They are made of timber and metal.
- f) Each *square of glass* in a window frame is *a pane*.
- g) Builders leave square openings in the walls for doors and windows.
- h) They are made of glass to let the light in and keep out the wind, rain and snow.
- i) Windows and doors move easily on the hinges,
- j) The doors are kept shut by *latches* and *locks*.

### HOUSE III. THE ROOF

QUESTIONS:

1. When the walls are built what *is the top of the house closed by?*
2. What materials are roofs built of?
3. What *are* the roofs *covered with?*
4. How do we call the *wooden beams* in the roof?
5. What were cottages covered with in early times?
6. What are *slates?*
7. What are tiles?
8. What part of the wall rises higher than the roof?
9. Why are *chimneys* built over the roof?
10. What is there on the top of the chimney?

ANSWERS:

- a) In early times cottages were covered with straw then called *thatch*.
- b) Tiles are *broad thin bricks* made of clay.
- c) The chimney is built over the roof not to let smoke in and to carry it away from the house.
- d) The top of the house is closed by the roof.
- e) The roof is covered with *slate, tile, metal-tile or other covering materials*.
- f) On the top of the chimney there is *a cap*.
- g) The chimney rises over the roof.
- h) Slate is a *dark-coloured stone* easily *split into thin plates*.
- i) The wooden beams in the roof are called *rafters*.
- j) The roof is built of timber, iron, concrete and wooden beams.

#### HOUSE IV. INTERIOR PREMISES

QUESTIONS:

1. How is the inside of a house divided?
2. How is the room for cooking called?
3. What is the room for sleeping?
4. How is the room for receiving guests called?
5. What is the room full of books?
6. How are underground rooms called?
7. What *are* cellars *used for*?
8. What are the rooms in the roof of the house?
9. What do all the rooms on one level *make up*?
10. How do you get from one room to another on the same floor?

ANSWERS:

- a) From one room to another on the same storey you can go by a *passage*.
- b) The rooms in the roof of the house are called *attics or garrets*.
- c) Underground rooms are called *cellars*.



- d) The room for guests is a *sitting-room* or a *parlour* or a *drawing-room* or a *reception-room*.
- e) The room for cooking is called a *kitchen*.
- f) The inside of a house is divided into *rooms, stairs and passages*.
- g) The room for sleeping is a *bed-room*.
- h) The room full of books is *a library or a study*.
- i) Cellars are used for keeping vegetables and foodstore.
- j) The rooms or *apartments* on one level make up *a story (a storey)*.

### HOUSE V. INTERIOR DECOR

#### QUESTIONS:

1. How can you get from one story to another?
2. What are *the stairs*?
3. What stairs are safer?
4. What are *the floors* made of?
5. What is *the inside roof of a room* called?
6. What are the floors covered with?
7. What are the inside walls and the ceiling covered with?
8. What is the plaster generally *laid on*?
9. How are *the plaster walls* covered?
10. How can we make the room quite dark during the day?
11. What is the function of *shutters* at night?

#### ANSWERS:

- a) We can get from one story to another by *the stairs*.
- b) It is safer to have *stone stairs*.
- c) The inside roof of a room is called *ceiling*.
- d) The inside walls and the ceiling are covered *with plaster, a mixture of lime, sand and water*.
- e) *The plaster walls* are covered *by painting* or sometimes *with paper-hangings*.
- f) At night *shutters* keep out wind, noise and robbers.

g) The stairs are number *of steps*, made of wood or stone.

h) Generally the floors are made of wood, cut *into planks* and fitted closely together.

i) The floors are covered with *carpets with parquet, linoleum, wood cut into planks*.

j) The plaster is generally laid on *thin strips of wood fastened* to the wall, called *laths*.

k) We can make the room quite dark during the day by closing the shutters, *Venetian blinds* or *jalousie*.

## HOUSE VI. MODERN CONVENIENCES

### QUESTIONS:

1. How do we *light* our rooms at night?
2. How do we *heat* our rooms?
3. How is gas *brought* to the house?
4. How is gas *carried through* the rooms in the house?
5. What is carried in *radiator*?
6. *Are* all houses *supplied* with water?
7. Why should every house be supplied with water?
8. How can *drains* work?
9. What are *gas stoves* made of?
10. What parts does any gas stove consist of?
11. What are they made of?
12. What are *gas ovens* made of?
13. What are the most *common modern conveniences* in a house?

### ANSWERS:

a) The most common modern conveniences in a house are: *gas, heating and water supply systems, drains electricity, telephone* and *radio*.

a) *Gas rings* and *gas sprayers* are made *of fireproof metal alloys*.

b) Gas stoves are made of metal *and fire resistant glass*.

- c) Every house should be supplied with water because water is needed for health as much as air.
- d) Water is carried in radiators.
- e) Gas is brought from the gas work in *iron pipes* laid under the ground.
- f) At night we light our rooms with electric lamps.
- g) Gas ovens are made *of heat resistant glass, fibre and metal*.
- h) Any gas stove consists of gas rings, gas sprayers and the oven.
- i) No drains can work without water.
- j) Not all houses are supplied with water supply system. Many people have to carry water from *a well or pump*.
- k) Gas is carried through rooms in the house in *tin pipes*.
- l) Our rooms are heated by radiators or by *gas heating system*.

**Find the answers to the following questions: study the italicized words and combinations:**

- a) Think of a house you live in and describe it to an auditorium.
- b) How much does the average house cost in your country?
- c) What makes one house more expensive than another?

**Make up a story «How a Small Brick House is Built».**

**Describe your summer-house**

IT'S INTERESTING TO KNOW...

A HOUSE OF GLASS AND PLASTICS

The first house of glass and plastics was built in Petersburg. It is looked upon as an experimental construction and therefore nobody lives in it. Everything in this house -from the walls and the ceiling to the last screw - is made of plastics and glass. The building is given quite a modern appearance. Many enterprises were invited to discuss and take part in the construction as it was paid great attention to.

The building itself is composed of eight plastic rings which form the walls and the ceiling. The house with all its equipment and furniture weighs no more than four

and a half tons. It is built at a two-meter height above the ground. It is mounted on a technical chamber, which houses the heating, ventilation and electric equipment and is made of glass blocks and mounted on a ferro-concrete foundation.

The outer walls are covered with a light coloured film of plastics. The outer and inner walls are as thick as 4 millimeters. The vacuum between them is filled with an excellent thermal and sound-proof material. The strength of the structure is influenced by many factors: design, materials, etc... The synthetic materials of which the house is made can be relied upon because of their high quality.

The wall structure weighs little because the entire thickness of the walls is 10 centimeters. The entire useful floor space of this one-flat house is as large as 40 square meters.

The front wall of the house is made of non-breakable organic glass, which easily lets the ultra-violet rays through so that one can take a sun-bath right in the house. If the weather is bad, one has only to switch on the lights in the bathroom and fountain rays from special lamps will fall on him.

Much attention was also paid to the interior of the house. With the help of synthetic draperies the room can be easily converted into a three-room flat. The room temperature is always maintained at about 19 degrees C with the help of stoves which are installed in the technical chamber.

**Answer the following questions:**

1. Where was the first house of glass and plastics built?
2. What is the building composed of?
3. How much does the house weigh?
4. What is it mounted on?
5. Where is the heating, ventilating and electric equipment installed?
6. How large is the entire useful floor space of this house?
7. What is the front wall of the house made of?
8. What is the normal temperature in the house?
9. Is this an experimental or ordinal house?
10. Do any people live in it?

## UNIT FOUR. BUILDING TOOLS

### THE TEXT

#### TOOLS

John moved into a new flat recently and as he found that he didn't have enough space for his books, records and tapes, he decided to build some shelves.

Using his *tape measure* he worked out how the shelves were going to be. Then he drew a plan. He wasn't able to *buy planks* of exactly the right length, but he had an *electric circular saw* and a *handsaw*, so *cutting up* the wood was no problem. He *smoothed* the rough edges with a *plane* and fine *sandpaper*.

Before he *could fix* the shelves in position, he had to remove some old *nails* from the floor. He did this with *a pair of pliers*. The *head* of one nail *broke off*, so he *hammered* it in with a *hammer*.

He used small *metal brackets* to rest the shelves on and he *screwed* these into place using *a screwdriver* and small *screws*. From time to time he checked that the shelves were not crooked. He did it with *a spirit level*.

To make sure the shelves didn't fall forward, he screwed them against the wall. He made the necessary *holes* in the wall with his *electric drill*. For this job he had to buy a special *masonry drill* (or *bit*) and *he filled* the holes *with plastic rawlplugs* so that the screws would grip firmly.

When the job was done he was very pleased. He decided to paint the shelves white and so he bought some *paint* and a *new paintbrush*.

#### EXERCISES:

- 1. Read and translate the text (orally). Practise the correct reading.**
- 2. Define the tense form and voice of the predicate in each sentence.**
- 3. Study the italicized words and word combinations.**
- 4. Below is a list of tools and the descriptions of what we use the tools for.**

**Match up the tools with the description.**

*hammer, masonry drill, paintbrush, plane, pliers, sandpaper, saw, screwdriver, spirit level, tape measure.*

– we make holes in walls with this

- we use this to make sure that surfaces are level
- we smooth planks of wood with this
- we knock nails in with this
- we bend wire or remove nails with this
- we cut wood with this
- we use this to find out how long things are
- we rub down wooden surfaces with this before we paint them
- we turn screws with this
- we use this to apply colour to surfaces.

**5. Make up sentences using the following verbs and nouns.**

**Study these words and word combinations**

*strike something with a hammer, to hammer a nail in (into),, to make smooth with a file, to fasten things together with a screw, to screw (tighten) nuts, to screw in, to unscrew, to turn a screw, to make holes in wood (metal), to saw metal, to hold something tightly, to hold things, to draw, to pull out nails, to saw wood, to plane, to make wood smooth, to chop wood, to fasten things together with a nail, to drive a nail in (into), an axe, a soldering-iron, pincers, a vice, a hand-saw, a wrench, a file, a gimlet.*

**6. Answer the following questions:**

- What do you use for making a piece of wood smooth?
- What do you use for sawing metal?
- What do you use for making a piece of metal smooth?
- What tool do you use for tightening a nut or unscrewing it?
- What do you use to hold a piece of hot metal?
- What do you do with an axe?
- What do you use for making holes in wood?
- What do you use for making holes in metal?
- What tools do you use to make a shelf?
- What do you do to make a shelf?

- What tools have you at home?
- What can we make with a hammer, a plane, a saw, a nail, a screw, a hand drill?

**7. Make up the following sentences. Study the italicized words.**

<p>A carpenter  A roofer  A glazier  A plumber  A gas fitter  A heating  engineer  An electrician  A  paperhanger  A painter  A joiner</p>	<p>uses in his own  work such tools as</p>	<p><i>a handsaw, a plane,  a gimlet, a mallet, a two-  handed saw,  a cramp, a chisel,  an axe, a nail claw.  a glass holder, a  glazier hammer, a glass  cutter, a putty knife, a  glazier's ruler.  a metal shears, a  hollow punch, a slate  hammer, a slate nail, a  slate iron , a wood screw.  a wood rasp, a wood  file, chisels, panes. a  paintbrush, a step-ladder,  a paint roller, a stippler, a  scraper, a floor brush. a  scraper,  a smoother, a  stripping knife, a paste  brush, a filling knife, a  seam roller, a  paperhanger's trestle, a  ceiling paperhanger,a  paper roller, a cutter.  cutting pliers, a junior  hacksaw, an electrician's  knife.  a pipe cutter, a pipe  vice,a club hammer, a  blowlamp, a  soldering iron, a  screwdriver,  wrenches, flat-nose  pliers,combination  cutting pliers.</i></p>
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## **8. Make up a story «How to Make a Table»**

IT'S INTERESTING TO KNOW.

WHAT IS A MACHINE-TOOL?

A machine-tool is a power driven machine used to shape metal by cutting, drilling, pressure, electrical techniques, or a combination of these processes.

Thus, it is clear that machine-tools can be built in a wide variety of types. Basically, however, there are two main categories, the first being the cutting-type machine-tool, which shapes metal to certain size and contour.

For the various operations that are to be performed in the metalworking shop, there are many different kinds of machines. Each machine-tool is being designed to do the work of a specific nature.

There are special machine-tools that are built to perform successive operations. The operator only watches the successions of machining steps from the beginning to the end of the operation. Such equipment is considered to be automatic machinery.

Precision of operation is the most important characteristics of today's machine-tools. The precision makes it possible to produce hundreds of identical parts, all so much alike that they may be freely interchanged or substituted in assembly or repair, without hand-fitting.

The function of a machine-tool is to do hold both the work and a cutting-tool and move them relatively to each other to obtain the proper cutting action.

Machine-tools are known to serve four main purposes: 1) they hold the work or part to be cut; 2) they hold the cutting tool (or tools); 3) they impart to the cutting tool or work the motion required for cutting or forming the part; 4) they regulate the cutting speed and the movement between the tool and work.

The most common machine-tools are lathes, which perform cutting operations mostly, milling machines, drilling machines and grinders.

Since man first picked up a stone used it as a tool and weapon he began to develop and improve his tools. The replacement of stone tools by metal one thousand years ago was a great step in man's progress. Only metal tools could lift man out of the Stone Age into the Bronze Age, then Iron and Steel Age.



The development of machine-tools accelerated the industrial revolution and resulted in our modern industrial civilization.

**Answer the following questions:**

1. What is this text about?
2. When did man begin to improve his tools?
3. What was a great step in man's progress?
4. What accelerated the industrial revolution?
5. What did the development of machine-tools result in?
6. What is a machine-tool?
7. Why must a tool be made of a very hard steel and alloys?
8. Why can't modern civilization exist without machine-tools?
9. Are tools big or small? Are there any small machine-tools?
10. Where are machine-tools used?

## UNIT FIVE. TYPES OF DWELLINGS

### THE TEXT. HOMES AND LIFESTYLE

Homes have always reflected the lifestyles of their occupants. The people who were hunters and followed the migration of animals built less permanent homes, usually quickly erected shelters or tents. Many desert people are nomads, who can usually travel from place to place. Their homes are tents that can be carried with them wherever they go.

People who were fishermen or traders built homes near rivers, lakes or the sea. In the overcrowded city of Hong Kong the whole communities live and work on boats. The people, who built the stilt houses on the water's edge in Thailand, are fishermen.

As people learned how to be farmers, they could choose to stay in one place. They built more permanent homes out of wood or stone. When farmers built their homes, they also had to build shelters for their animals and places to store their crops. There are many people whose home and work place are together in the same building. In the windmill, the family lives on the ground floor.

Over the years, people have developed a great skill in constructing homes.

Stone and wood have remained important building materials, but new technology and products such as iron, glass, concrete, tile and brick are common.

As population increases, cities have had to go up instead of out.

In towns and cities where land is plentiful and people are able to choose the kind of home they want, a wide variety of *modern house styles* and building materials may be seen.

In overcrowded places where land for homes is scarce, people live in high-rise *apartment buildings* designed to house as many people as possible on the smallest area of land.

Nowadays there are a lot of types of dwellings where people can live. Such as a *detached house, a house of a housing estate (on a housing development), a terraced house or a stepped, a house divided into two flats (Am. a house divided into two*

*apartments, a duplex house), a pair of semi-detached houses divided into four flats, a block of flats with access balconies (Am. an apartment building, an apartment house), a weekend house or a timber house* (country house, mansion), according to the lifestyle, life situation and social level people can live in *a bungalow, a tent, a castle, a hotel, a cottage, a palace or a villa.*

Bungalow is a detached, single-story house in its own plot of land. The term first occurs in 1784 as an anglicization of the Indian word «bangla» and was given to lightly constructed dwellings with *verandas* erected for English officials in the middle of the 19<sup>th</sup> century to Indian cantonments and hill stations. Later the term was used for similarly light, simple dwellings built as second homes in England and America. In England the pioneer examples were at Westgate-on-Sea in 1869. So many of these were later built by unqualified designers that certain areas became known as «bungaloid growths».

In Roman architecture villa was the landowner's residence of farmstead on his country estate. It was a form of modern country house. In England a villa was a detached house usually on the outskirts of a town. In modern architecture it is a detached house. The basic type was developed with the growth of urbanization: it is of five bays, on a simple corridor plan with rooms opening to a central passage. The next stage is the addition of wings. The country villa fills a square plan with subsidiary buildings and an enclosure wall with a gate facing the main corridor block.

Constructing of houses that suit the environment is very important. Many people are employed in planning, designing and building the houses in which we live.

Houses of today use insulating materials to protect their owners from heat and cold.

Now houses of the future may well look different, but one thing won't change. For the people who live in them, they will always be Home Sweet Home.

What our houses will look like in 10,20,30 or 100 years is an interesting question to ponder. Perhaps there will be no houses, they will be replaced by controlled environment. Indeed, houses as we know them may become museum pieces, or only illustrations of architectural history.

With more leisure time anticipated in the future, more emphasis will be placed on recreation activities within or about the home.

EXERCISES:

1. Read and translate the text (orally). Practise the correct reading.
2. Define the tense form and voice of the predicate in each sentence.
3. Study the italicized words and word combinations.
4. Read through the sentences and fill in the missing words.

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1. A very large house, usually belonging to a wealthy person, often a nobleman.
2. A place you can stay at if you pay a certain amount of money each night.
3. You stay here when you are ill or injured in some way.
4. A small hut used by shepherds in the Alps during the summer.

5. A strongly built building used in the past for defence.
6. Where the King or Queen lives.
7. A flat (usually expensive) at the top of a large building.
8. A house on one level.
9. A large, detached house for only part of the year - especially the summer-and very popular in places such as the south of France.
10. Where soldiers live.
11. You usually sleep in one of these when you go camping.
12. A small, roughly-built wooden hut.
13. A house made out of blocks of ice.
14. Where red Indians used to live.
15. A small house in the wilds for hunters.

**5. Compare and contrast the two types of dwellings (a castle and a block of flats), using the following words and word combinations**

**CASTLE:** difficult to socialise with people, traditional, historical, cold, damp, haunted, spacious, picturesque grounds, expensive to maintain, impressive, isolated, fresh air, relaxed lifestyle.

**BLOCK OF FLATS:** close contact with others, modern, close to city center, small, all modern conveniences, lack of privacy, no garden, near public transport, crimeridden area, noisy, high rent, stressful lifestyle.

***USEFUL EXPRESSIONS:*** however, one (dis) advantage, also, because, ...  
than, so, therefore, while, it might be.

***EXAMPLE:*** One advantage of living in a city flat is that it is close to the city centre. However, it can also be noisy...

**6. Choose and fill in the correct word from the list below:**

a) *premises, owners, tenant, landlord, flat, lodgers.* There are two main alternatives to owning one's own home, the most popular of which is to rent a house or .... in this case the ..., usually pay a monthly rent to the. ... who, if the building is a block of flats, often lives on the .... alternatively, some... of house choose to take in ... to cut household costs.

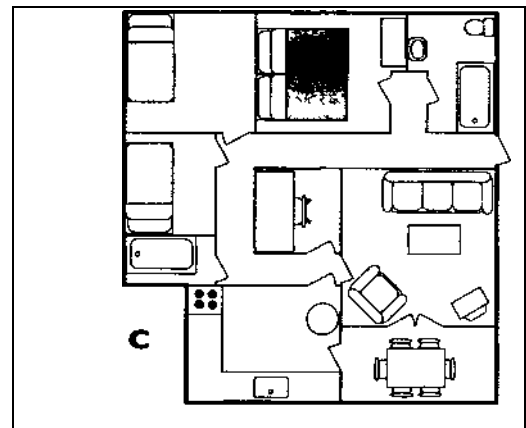
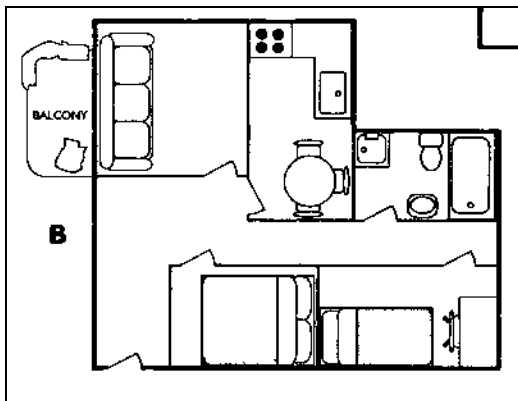
b) *refuge, inhabitants, barracks*

While like the troops were stationed abroad during the war, the soldiers stayed in... ..Often,... of the area would come to seek... because their houses had been bombed and they had nowhere to live.

c) *reside, dwellers, shelter, housing*

A... ..was opened yesterday for the pavement... of the city of San Paolo in Brazil, who will be free to ... there until... is found for them.

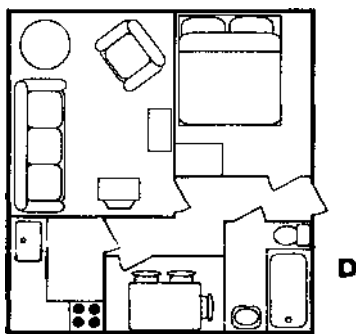
**7. Read the flat advertisements and look at the plan. Write the number of the correct flat under the plan. Which flats**



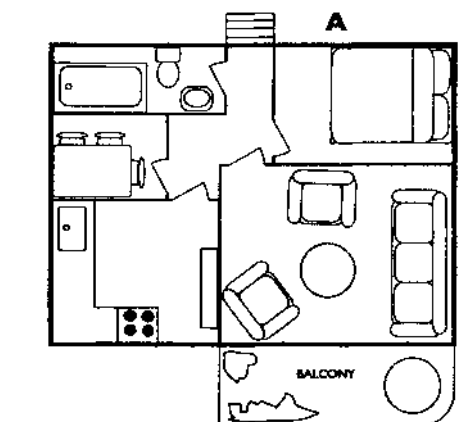
do not have plans?

16. Wisdom str., 5th floor living-room, bedrooms, kitchen, 1 bathroom.

205 Avenue "H", 1<sup>st</sup> floor, 2 living-room, kitchen, dining room, large hall, 3 bedrooms, 2 bathrooms.



11 Main str., ground floor, kitchen, dining-room, 1 bathroom, living-room, bedroom.



view, kitchen, dining room, 1 bathroom, living-room, 1 bedroom

**Four people bought the flats. Fill in the addresses of the flats they bought.**

1. A recently married couple. –
2. A single man whose main hobby is cooking. –
3. A large family. –
4. A working couple with a young child, who wants little housework.

**8. Read the article about a different approach to the building. Nine paragraphs have been removed from the article. Chose the paragraphs A-I the one which fits each gap.**

### GOING UNDERGROUND

The idea of living underground is not the sort of thing that would appeal to most people these days. But it could be the answer to many of today's overpopulation problems.

(1). Houses underground are less noisy, less expensive to heat and far less V destructive to our fragile environment. All that marks the position of an underground house is a door in the grass. You'd hardly know it was here.

(2). «Some people think we're mad», says Rodney Jones, «but we wanted something more original than a three bedroomed box. We liked the idea that the building would not disturb the country site or the wildlife, and that our fuel bills would be low».

It is certainly true that bills are lower in underground dwellings: the study carried out by Bath University found that underground houses saved 75% of the heating costs of an equivalent dwelling above ground. It raises an interesting question: with statistic like that, why won't more people live underground?...

(3). Christianity in particular has always equated the subterranean with evil. Even in today's society, the word «underground» is applied to the criminal and socially unacceptable.

(4). This may lead to other problems. The study of people working in an underground factory in Minnesota showed that they experienced higher levels of

anxiety, depression and hostility compared to those in above - ground settings. What may be done about this? The Japanese have some solutions in mind for their planned «Geotropolis» project.

(5). Giant caverns will be excavated in the mud-stone rock 50 meters, below the surface and linked with high speed railways to create a supercity 100 kilometers across.

(6). In addition, scientists at Japan's Shimizu Corporation have developed «space creation system» for the city, that mix light, sounds, breezes and aromas from the outside world.

(7). Places where windows are unnecessary, like cinemas, supermarkets and warehouses could all be submerged. It would save space, and make cities far more attractive.

(8). Regulations will also have to be imposed, forcing developers to consider long-term environmental impact, rather than short-term financial gain. But as the population expands, there may soon be nowhere else to go but down!

**Removed paragraphs:**

a) The Geotropolis project obviously involves extremely high technology. But on a less advanced level, there are hundreds of buildings in our society today that do not need to be above ground.

b) Geotropolis will be an underground extension to Tokyo. Work on it is due to start within the next ten years.

c) With land prices rising and the planet becoming more crowded, underground accommodation could provide the perfect solution. It has advantages over living above ground, too.

d) The idea of living underground is old fashioned and unpopular. Underground houses are permanently damp and cold, and there is no way of lighting them.

e) Such houses are still rare, but they are becoming more popular. In the Devon country side in Britain, Rodney Jones and his partner, artist Shannon Ridd, are converting a subterranean water Tank into their dream home.



f) To combat the problems of depression associated with living underground, rotating prisms in skylights will follow the sun above Geotropolis and reflect light down a huge shaft into underground gardens, giving people the illusion that they are above ground.

g) If underground building is going to catch on, it will require a change in culture. Architects, notorious show-offs, will have to learn to hide their buildings instead of parading them!

h) There are practical reasons as well. People are used to have reference points in everyday life, such as the sun, ground, sky and horizon. In an underground space, the lack of these things can make people feel dizzy and disoriented,

i) The reason for this can be put down to traditional associations. For centuries, underground structures like catacombs and dungeons have been places of enslavement, incarceration and burial.

## **9. Fill in the missing words according to the text**

### **“Going Underground”**

Living underground could be the answer to today's – problems. Houses underground are less expensive to – . A study by Bath University found that underground houses saved – of heating costs. However, Christianity associates underground places with – . Workers in an underground factory experienced anxiety – and hostility. Scientists in the Shimizui Corporation developed systems that mix light breezes and – from outside. Many buildings, where windows are unnecessary, such as cinemas, – and ware – houses could be submerged. This would save – and make cities far more - .

## **10. Answer the following questions:**

- Would you consider living under the ground?
- What would be the advantages /disadvantages of living under the ground?
- Where do you think cities of the future will be built?
- -What projects of living underground are in the world?
- -What words are related to the theme «dwelling»?

## **11. Describe a traditional type of a house in our country.**

### IT'S INTERESTING TO KNOW...

When the Ice Age passed Europe remained very cold at least in winter and so the people of the Old Stone Age had to find some warm and dry places to shelter from bad weather. They chose caves, as dwelling places that storm and cold could not destroy. On the walls of their caves ancient people painted pictures. Such decorated caves are found in Europe, Asia and Africa.

When man began to build a home for himself, caves were imitated in stone structures. Trees were taken as a model for huts built of branches, skins were raised on poles and formed tents.

Primitive stone structures, huts and tents are the earliest types of human dwellings, they are lost in the prehistoric past but serve as prototypes for structures of later historic times.

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In the days of early civilization, once men had learnt how to build simple houses for their families, they began to feel a need to have a number of different kinds of houses in one place. At first the difference was mainly in size - the chief or leader had a larger hut or tent than the rest of the people. Much later, when men began to build towns, there grew up a difference between town houses and country houses. The streets in towns were very narrow and there was not much place for building within the town walls, and therefore houses had to be built higher than they were in the country. A typical town house consisted of a shop opening to the street where the man did his work or sold his goods, with a kitchen behind and bedrooms above.

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In ancient Egypt ordinary people lived in simple one-storyed cottages which did not differ much from the mud and stone huts of an earlier age.

The rich people in the country, on the other hand, built huge castles with thick walls and narrow windows. These castles were built not only as dwellings, but also to

stand up to enemy attack and to be strong in the time of war. The earliest houses of anything is known are those of ancient Egypt. They were built of bricks dried in the sun. Some of them were built around a country yard or garden with rooms opening into it.

\*\*\*

The ancient Greek house varied in design according to the period and the wealth of the owner, but there were common features. The house was divided into two parts: the men's apartments and the women's apartments. The entrance door of the house opened into a vestibule, on both sides of the vestibule; in the interior there was the door keeper's room and shops for business and work. The vestibule led to an open court which was surrounded on three sides by columns, in the middle of which was the altar of Zeus, the patron deif of domestic life. Large houses, usually had a second court entirely surrounded by columns. At the side of the open court there were rooms for eating, sleeping and storage, as well as cells for the slaves. On the sides of the court opposite the vestibule there were no columns, but two pilasters which marked the entrance to an open room or vestibule. On one side of it there was the sleeping room of the master and mistress of the house. Some houses had an upper story, usually smaller in area than the lower story. The roof of the Greek house was flat. The rooms usually were lighted through doors which opened into a court.

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The ancient Roman dwelling consisted of a quadrangular court which was entered by the door of the house and which served as the common meeting place for the family. An opening to the sky provided light and served as a chimney and as an inlet for rain which fell into the tank sunk in the floor beneath. In some houses a garden surrounded by side buildings and covered colonnades were added at the back of the house. A great house had a kind of entrance hall raised above the street and approached by stairs. In the ordinary house there was only an indication of entrance hall; the door led directly into the hall, which opened directly into the quadrangular court. In Eater Roman houses, a second story became usual. As the dining room was generally in the upper storey all the rooms in the upper storey were called dining-

rooms. There were three storeyed houses in Rome as early as the end of the Republic. In Roman domestic architecture three types were developed: the domus or town-house, the multi-storey apartment house or a tenement block, and the villa or suburban or country house.

The earliest houses in Britain were round, built of wood or wicker basket work plastered over with clay. In the center of the house there was the hearth and light came in through the hole in the roof above it and through the door because there were no windows.

**Answer the following questions:**

1. Where did primitive people look for protection?
2. What are the earliest types of human dwellings?
3. Why were the houses in town higher than in the country?
4. What were the houses in the ancient Egypt built of?
5. What is the difference between Greek and Roman houses?
6. What types of dwellings did the Romans develop?
7. How did the light come into early English houses?

## **UNIT SIX. BUILDING MACHINES**

### **THE TEXT**

#### **CRANES**

We can define a *crane as a machine* which *lifts heavy loads* and *displaces* them horizontally. In other words, a crane can lift loads and **move** them to a *different position* in *the horizontal plane*, unlike a *hoist* which is only a *lifting device*. We can divide *cranes* into two main classes. These are jib cranes and *overhead travelling* cranes. Jib cranes have a *jib* or *arm*, from which the load is suspended. The jib allows the load to be *raised or lowered* and then *deposited* to any point within the *radius of the jib*. The movement of the jib in the *vertical plane* is known as a *derricking* the rotation of the jib in the horizontal plane is called *slewing*.

The commonest kind of *non-revolving crane* is the overhead travelling crane. It consists of a *horizontal section* called a *load girder*, made up of a number of *steel*

*beams*, resting on end carriages which run on overhead *gantry rails*. A trolley to carry the crane hook, in turn, runs on the top of the load girder. Cranes like this are found in workshops where heavy machinery have to be transported from place to place on the shop floor for different stages in its manufacture.

The three movements of the overhead travelling crane are as follows. It can lift a load to the height of the load girder, it can *traverse* the width of the shop floor with it, and it can move the load along the length of the work-shop. As the body of the crane is mounted overhead it does not affect the work on the shop floor as it moves, cranes with a span of 40 meters and a maximum lifting capacity of 400 tons are made. For use outside a factory, for example, in timber yards, a *similar crane*, termed a *goliath crane*, is used. The load girder of a goliath crane is supported not on gantry rails but *on legs* running *on rails* on the ground.

There are many varieties of cranes for special purposes. They may be *fixed*, *portable* or *mobile*. A **portable crane** must be transported, whereas a mobile crane is either self-propelled or mounted on a truck chassis or a railway wagon. Cranes use different forms of power, for example, electric power, diesel power, hydraulic power, steam power and even hand power are used depending on the type of the crane and its application.

An example of a crane with a particular application is the shipyard crane. This is a heavy, fixed crane with a slewing cantilever mounted on a latticed tower which is firmly anchored in concrete. In addition to the main load trolley the crane may be fitted with a **small jib crane** running on *the cantilever*. Such cranes are necessary in shipbuilding because when a ship is being fitted out, heavy machinery, such as the engines, have to be lowered into the vessel. These cranes must be capable of placing the loads inside the ship with great accuracy. For this reason some form of fine electrical control is normally employed.

Another example is *the dockside crane* which is used to unload and load ships. It is usually mounted on rails which run along the length of the goal and is often fitted with a grab instead of a hook. A grab has two jaws which open and close like a clamshell. It is designed to handle bulk cargoes like iron ore and gravel. One variety

of dockside crane, known as a *kangaroo crane*, feeds bulk cargoes directly into a hopper at its base. From the hopper the cargo is weighed and discharged into tracks and railway wagons.

#### EXERCISES:

**1. Read and translate the text (orally). Practice the correct reading.**

**2. Define the tense form and voice of the predicate in each sentence.**

**3. Study the italicized words and word combinations**

**4. Answer the questions:**

- What is the difference between a hoist and a crane?
- What are jib cranes?
- What are the two horizontal movements of an overhead travelling crane?
- What is the similar crane?
- Why do shipyard cranes require fine electrical control for raising and lowering the crane hook?
- Describe the operation of a kangaroo crane?
- When is a grab used instead of a hook?
- Explain the difference between a mobile and a portable crane?

**5. Make up other questions for the text.**

**6. Make up sentences:**

A concrete		a self-propelled vehicle which may be track-laying,
A mixer		halftrack or
A bulldozer		wheeled, generally used for troweling a bowl scraper,
A beam bender		roofer, grader
A tractor		or plough, but often used as a mount for
A wheelbarrow		dozer, beam bender winch or other implement.

An excavator

A conveyor

a small cart that you use out-doors to carry things with a single wheel and two handles.

a self-propelled, crawler-mounted, rarely wheeled, digging machine which can slew 360° without moving its tracks.

equipment for moving sand, stone, continuously over relatively short distances.

a machine, usually with rotating drum, in which aggregates, cement and water are mixed for 2-3 min to make concrete.

a tractor usually on crawler tracks, with a wide blade, the mouldboard, mounted in front of it, at right angles to the tracks.

a machine for straightening or bending rolled-steel joists.

**7. Translate the following word combinations and make up sentences using them:**

balance, chair, concrete, elevator fountain, monkey, nose, plum, tank, revolution.

**8. Choose the following most suitable words to fill the gaps in the sentences below:**

*ropes, taking, used for, digs and moves, a vehicle, destroying, carrying, lifting*

Crane is a large tall machine used by builders for. .... heavy things <sub>b</sub>

Lorry is a large vehicle for ..... heavy goods.

Elevator is a machine with a moving belt and containers, ..... lifting and ..... tilings of building.

Excavator is a large machine that.... earth and soil.

Rope-pulley hoist is an equipment for lifting heavy objects with .....

Truck is a large road ..... used to carry goods.

Bulldozer is a powerful vehicle with a broad metal blade used for moving earth and rocks ..... buildings

### **9. Make up a story about a lorry, an excavator or an elevator**

#### IT'S INTERESTING TO KNOW...

##### The Word of Elevators

Can you imagine climbing the stairs to the top of the world Trade Center in New York City, or the Sears Tower in Chicago, or any tall building in your city?

Of course not, you would ride an elevator. And that's a smart idea, because travelling in an elevator is actually safer than using the stairs.

Much of the credit for the current state of the vertical transportation industry goes to one company Otis Elevator Company Elisha Graves invented the safety elevator in 1852, Otis Elevator has led the way in making elevator faster, safer and more comfortable to ride. Together with the breakthrough of the curtain-wall and structural frame in the 1880's, the advancements in elevator design pioneered by Otis, including the gearless traction elevator in 1903, made possible the rapid rise of the skyscraper as an established architectural typology. As one writer at the time stated, «American architecture as an independent school began its existence with the invention and adaptation of the elevator».

Today, there are over 1200000 Otis elevators in use around the world. The computerized elevator planning service helps architects to match systems to building. And the maintenance programs keep those systems running like new for the life of the building.

#### THE RISE OF THE ESCALATOR

When it comes to moving large numbers of people quickly and safely, nothing can compare with a modern escalator. Visit any large department store, office building, or airport in any country and you will surely find one.

At the world Trade Center in New York City, for example, there were 74 Otis Escalators in operation. And if the United States had the record for the most



escalators in a single building, the award for the tallest escalator went to Russia. There, an escalator in the Moscow Metropolitan Railway System lifts passengers to the height of 200 feet, roughly equivalent to a 20 storeyed building.

Today the modern escalator is a common and well accepted part of our everyday life, although it wasn't always that way. As late as the 1920's, while elevators were going up all across America, the escalator industry was struggling through.

Between 1900 and 1930, the escalator received its greatest acceptance from department stores, urban transit systems, railroad terminals and industrial plants, carrying combined totals of as many as 100 000 00 people a week-more than the population of New York City even today...

Today escalators have become essential wherever buildings are built and wherever large groups of people must go up or go down for business or pleasure. Over the years, escalators have become more than just moving stairs.... escalators have become a part of life.

**Answer the following questions:**

1. How can people be lifted to the height of 200 feet or to a 20-storeyed building?
2. Who invented the first elevator? When?
3. How was the elevator developing?
4. What advantages has an elevator?
5. Where are elevators and escalators used?
6. What is the history of escalators?

**UNIT SEVEN. THE WORLD'S WONDERS**

**THE TEXT**

**THE EGYPTIAN PYRAMIDS**

1. The Egyptian pyramids are the best known archaeological monuments in the world, due partly to their distinctive and instantly recognizable design. The feet that

the original reason for their construction is a mystery only adds to their popularity. Over the ages they have captured world wide attention and with it, a multitude of speculative theories, from the mundane to fantastic.

2. Speculation over the origin of these «grand mountains of stone» started with the Greeks. They believed that the first pyramid was constructed as a memorial to the wicked King Khifu's daughter a princess who had led a very sad and difficult life. During medieval times, the pyramids were explained in relation to biblical texts. Thus, according to tradition, they were believed to be large storehouses for grain, built in preparation for the famine that was predicted in the Bible. Along the same lines, Arab philosophers saw these pyramids as warehouses for Egyptian scientific and medical wisdom that would otherwise have disappeared during the Great Flood.

3. More modern theories suggest that the role of the pyramids could be that of a mechanism for predicting the future or even as a road sign for alien beings. The former is the theory devised by Charles Piazzi Smyth, who converted the dimensions of the pyramids corridors and chambers into numbers which corresponded to calendar dates.

These dates were then used to predict significant events of the future. The latter stems from the more astrological and scientific study of the Erich Von Daniken and Graham Hancock. They attributed the building of the pyramids to supper-intelligent aliens as a means of predicting the apocalypse. This theory, however, underestimates the ability and achievements of man.

4. Despite all of these theoretical contrasts, the actual archaeological evidence behind the evolution of these pyramids, and their means of construction are beyond doubt. Egyptologists have been researching these questions for over a century and have produced conclusive proof. They discovered that the tomb holding the deceased body is only one part of the pyramid, which in fact also includes parts constructed for the funeral and the afterlife of the Pharaoh.

5. In addition, they have traced the entire history of the pyramids construction. Their evolution began with the small, rectangular, mud-brick tombs favoured by the First and Second Dynasty saw a great advance both in size and construction

techniques, evidence of which we can see today in the Giza plateau. After this era, during the Fifth and Sixth Dynasties, the pyramids were built on a much smaller scale, showing a great reduction in skill. The age of Teetan Khamun brought an end to the construction of pyramids.

6. Apart from the theory concerning the building of the pyramids by aliens, it is widely agreed that the pyramids construction is an amazing human achievement. Evidence from the archaeological sites of workmen's villages and stone quarries shows the organization of the workforces involved, and this alone must have taken careful planning and military-style coordination. Added to this, the traces of building ramps. Copper and stone tools found by the researchers emphasize the simple technology that was available at that time. And thus the amazing is the size and design of the pyramids. In the case of the Great Pyramid of King Khufu at Giza, more than two million blocks were moved.

It is now believed that the men working on the pyramids actually did so as a form of taxation and not under the master's whip or out of religious duty, as was previously thought. Some were even appointed as architects, skilled stone-workers and coordinators, and were thus respected as such.

#### EXERCISES:

- 1 Read and translate the text (orally). Practise the correct reading.**
- 2. Define the tense form and voice of the predicate in each sentence.**
- 3. You read a magazine article about pyramids. Choose the most suitable heading from the list A-H for each part (1-6) of the article:**

- A. Preserving Royal Corpses.
- B. A Definite Answer.
- C. Ancient Explanations and Biblical Connections.
- D. Evolution of the Pyramid.
- E. An Ever-Popular Mystery.
- F. Foreseeng the Future.
- G. Simple Tools for an Amazing Achievement.
- H. Not Slaves After All.

**4. Read the following summary and underline the correct item.**

**Then read the text again to find out if your choice is correct.**

The Egyptian pyramids are the best known 1) *archaeological/historical* monuments in the world. The Greeks believed the first pyramid was a 2) *memorial/gift* to King Knufifs 3) *wife/daughter*. In medieval times, they were seen as 4) *townhouses/storehouses* for 5) *grain/grass*. Arab philosophers saw, the pyramids as storehouses for scientific and medical 6) *books/wisdom*. One theory says the pyramids were built as a road sign for 7) *alien/human* beings. The pyramids were also said to be a means of predicting the 8) *apocalypse/weather*. Egyptologists discovered that the 9) room/tomb was holding the deceased 10) *body/mummy* is only one part of the Pyramid. The pyramids construction is amazing. Building camps and copper and stone 11) *tools/statues* show how simple the available technology was. To built the Great Pyramid at Giza, over two 12) *thousand/million* blocks were moved. Men working on the Pyramids probably did it as a form of 13) paid labour/taxation, not out of 14) *family/religious* duty or as slaves. Some were even appointed as 15) *architects/accountants*.

**5. Underline the correct word, then cover the text and compare and Contrast the Taj Mahan and the Parthenon.**

The Taj Mahal in Agra, northern India. And the Parthenon in Athens, Greece, are two of the most beautiful: 1) **dwelling/monuments** in the world today, and are visited by thousands of people every year. The Taj Mahal is a relatively new construction 2) **compared/opposed** to the Parthenon. The Taj Mahal was built in 1631, 3) **whereas/still** the Parthenon dates back to 447 BC. Another difference between the two is the reason they were built. The Taj Mahal was built by the emperor Shan-Jahan in 4) **memory/commemoration** of his favourite wife, while the Parthenon is actually a 5) **temple/church** dedicated to the goddess Athena, where the ancient Greeks would come to worship. One similarity between the two buildings is that they both consist entirely 6) **from/of marble**.

**6. Using the cues below compare and contrast the Kremlin and the Coliseum**

	The Kremlin	The Colosseum
Location	Moscow, Russia	Rome, Italy
Built	12 <sup>th</sup> century AD	80 AD
Building Material	red bricks	stone blocks
Shape	minaret-shaped	circular
Purpose	towers high walls houses central government offices	arena for gladiators, etc.

**7. Fill in the correct word derived from the words in brackets.**

Stonehenge, the 1)... ..*(locate)* of which is Salisbury Plain in England, is a prehistoric monument Its 2).....*(construct)* took place in about 1800 BC and is 3).... *(doubt)* an amazing human 4).....*(achieve)*. It consists of two circles of huge stones, some of which weigh up to 50 tons. What makes Stonehenge all the more 5).... *(impress)* is the fact that some of the stones 6).....*(original)* came from Pembrokeshire, which is over 200 miles away. 7)... .. *(transport)* of these stones would have been carried out using manual labour, since very little 8).... *(technology)* advancement had taken place at the time. Stonehenge is 9).... *(certain)* one of the most important archeological monuments in England, yet 10)..... *(archeology)* are still not sure exactly why it was built

**8. Read the article about the Statue of Liberty carefully. Fill in the blanks in the following article below.**

In 1851, Frederick-Auguste Bartholdi watched a girl with a torch leap over a barricade and die during the revolution in Paris. The scene impressed him so much that he was inspired to build a great statue as a symbol of freedom. His model was a girl named Jeane de Pirysieux whom he met in a cafe. The statue was built in Paris

and presented to the United States as a tribute to American democracy. It was taken by ship to New York and erected on Bedloe's Island, where it was unveiled on October 28, 1886 by President Cleveland. Known throughout the world as the Statue of Liberty, it is impressive even today. Made of iron and copper weighing over 200 tons, it rises to the height of 305 feet.

As your ship enters Harbour, you will see a tall statue standing on a small island named \_\_\_\_ . This famous statue, which is \_\_\_\_ feet height and weighs \_\_\_\_ tons, was designed by \_\_\_\_ who wanted to show his admiration for \_\_\_\_\_. He was inspired by the sight \_\_\_\_ of \_\_\_\_ a during the revolution in Paris in 18 \_\_\_\_ . He later met \_\_\_\_ in a \_\_\_\_ and she became the model for his great work. The statue, which is made of \_\_\_\_ and was built in \_\_\_\_ and transported to New York by \_\_\_\_ . It was unveiled by President on October \_\_\_\_ th 18 \_\_\_\_ and has since then been a symbol of freedom-hence its name, the Statue of Liberty.

**9. Read the article about Himeji Castle carefully, Fill in the blanks in the following article below**

Himeji Castle stands on a small hill overlooking the Inland Sea of Japan. Called the «Egret Castle» because of its graceful appearance, it was carefully designed from viewpoint of defence. It originally had three moats, several meters deep, although only one now remains. The high walls are built of stone. The main keep is five storeys high and commands a fine view of the surrounding countryside. The original castle was built in 1346 but the present building dates from the year of 1601. It was built by the son-in-law of the shogun Tokugawa Ieyasu and took eight years to construct.

Himeji Castle is one of the finest in \_\_\_\_ . Although it was designed from the viewpoint of \_\_\_\_, it is so graceful that it is called the «\_\_\_\_\_». The main keep is \_\_\_\_ stories high, and from the top the \_\_\_\_\_ can be seen. In addition to high walls made of \_\_\_\_\_, there used to be \_\_\_\_\_ moats, although only one still remains. The original castle was built in the \_\_\_\_- th Century; the present building, however, was constructed in 16 \_\_\_\_ by the son-in-law of \_\_\_\_ . It took over \_\_\_\_ years to build the castle, which stands on a small \_\_\_\_\_ overlooking the \_\_\_\_.

## ITS INTERESTING TO KNOW...

### Roofed Town in Yakutia

Graduates from different institutes of our country due to the application of the latest achievements worked out a project of a very interesting town - a roofed town.

This town will rise in Siberia, Yakutia, close to the Arctic Circle. It is a region of severe frosts, a land of dazzling snow and ice. The sun does not shine there in winter, everything is in ink-black darkness. The «Aikhal», it's the name of the town, will overcome this disadvantage. It will rise to sparkle with myriads of electric lights. It will defeat the long polar nights, the fierce winds and impossible cold. It will be a wonderful town, all under one roof with its own microclimate, its own temperature. So far it exists on paper. But engineers and workers are making high-tension line to the area from the Villui Hydropower Station. And engineers have chosen and marked the place for this town.

What will it be like, this town with the population of only 5,500 people? It will have glassed-in streets or galleries, with a temperature of +15°C (-60°C outside). There will be winter gardens, shops, schoolgyms, restaurants and cafes.

Its construction will not be costly because the basic building material will be a mixture of local limestone and sand.

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