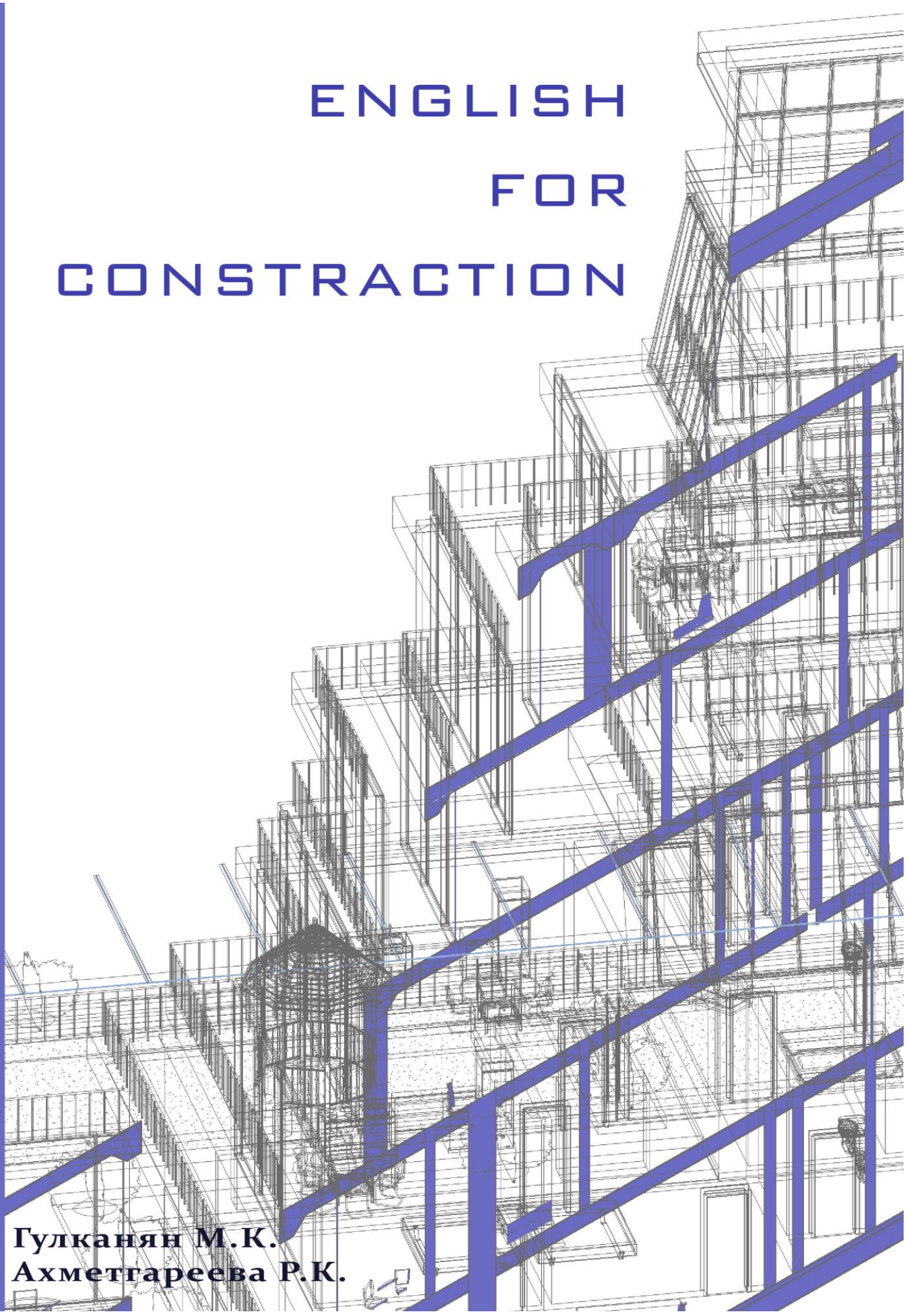
ENGLISH FOR CONSTRACTION



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Учебное пособие для студентов очной формы обучения
направления подготовки 08.03.01 «Строительство»,
по профилям «Промышленное и гражданское строительство» и «Производство и применение строительных материалов, изделий и конструкций»

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Учебное пособие предназначено для студентов-бакалавров очной формы обучения неязыковых вузов. Основная цель учебного пособия – развитие и совершенствование навыков устной коммуникации и письменной речи в рамках предложенной тематики.

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Content

Предисловие

Данное учебное пособие представляет собой практикум для развития навыков профессионально ориентированного речевого общения и предназначено для студентов 1 курса технических ВУЗов обучающихся по направлению 08.03.01 «Строительство», по профилям «Промышленное и гражданское строительство» и «Производство и применение строительных материалов, изделий и конструкций».

Предлагаемый курс построен по тематическому принципу, включает 7 разделов и призван развивать у студентов профессионально-ориентированную грамматическую и коммуникативную компетенцию, обеспечить совершенствование навыков правильного грамматического оформления речи.

В данном пособии отражен коммуникативный подход в обучении. Для успешного овладения иностранным языком обучаемые должны знать не только языковые формы (т.е. грамматику, лексику и произношение), но также иметь представление о том, как их использовать для целей реальной коммуникации. Представленный учебный материал знакомит обучаемых с функциональным аспектом изучаемого языка и предлагает соответствующую систему упражнений. В данном пособии показаны основные приемы коммуникативно - ориентированного подхода к обучению иностранного языка.

Каждый раздел (Unit) включает в себя тексты для ознакомительного, изучающего и просмотрового чтения, которые содержат актуальную информацию из аутентичных источников. Тексты сопровождаются подробным словарем, а также значительным количеством иллюстраций, что привлекает внимание студентов и облегчает понимание представленного им материала. Резидуальный контроль осуществляется в разделе Revision. Для каждого раздела предусмотрены задания (Tests), направленные на контроль усвоения пройденного материала.

Целью учебного пособия является развитие и совершенствование умений и навыков устной речи в деловой и общепрофессиональной коммуникации, формирование профессионально ориентированной лингвистической

компетентности студентов. Формальные аспекты языка: грамматика, лексика и фонетика представлены в коммуникативном контексте так, что обучаемым сразу становится понятно их использование в речи. Кроме того, обучаемым предлагаются приближенные к реальной жизни задания, в ходе выполнения которых систематически развиваются иноязычные речевые умения. Такой поход предполагает создание на занятиях атмосферы доверия и сотрудничества, когда обучаемые вовлечены в процесс обучения.

Учебное пособие может быть использовано как для работы в аудитории, так и для самостоятельной работы.

При составлении данного пособия был соблюден общедидактичексий принцип «от простого к сложному», то есть отбор материала по уровню сложности, что позволяет определить последовательность введения нового материала и его количество, а также темп его изучения.

Учебное пособие составлено в соответствии с Государственным образовательным стандартом по иностранным языкам и квалификационными требованиями к содержанию и уровню профессиональной подготовки студентов вузов.

Construction

UNI 1

The construction Industry

1a. Construction

In short:

- What do you know about the construction industry?
- What's the difference between civil engineering and heavy engineering?
- What is the significance of the construction industry?

Must know

civil engineering - *гражданское строительство*
heavy engineering - *тяжёлое машиностроение*
one-off design- *индивидуальный проект*
demarcation- *разделение*
traditional arrangement- *традиционные договоренности*

1. a) Read and translate the text.

The **construction industry** is concerned with the planning, *regulation*, *manufacture*, *fabrication*, *erection* and *maintenance* of buildings and other structures. It includes the separate areas of activity of building, **civil engineering** and **heavy engineering**. *Whilst* the *demarcation* between these broad sectors is *blurred*, the majority of architects are involved on building projects in their various forms.

There are particular characteristics that distinguish the construction industry from all others including:

- the physical nature of the product
- the product is normally manufactured on the client's *premises* (i.e. the construction site)
- most of the products are *one-off designs*
- the *traditional arrangement separates* design from manufacture
- it produces investment rather than consumer goods
- its activities may be affected by the *vagaries* of the weather
- its processes include a complex mix of different materials, skills and *trades*

Source: *Chappell, David and Willis, Andrew, The Architect in Practice, 9th edition*

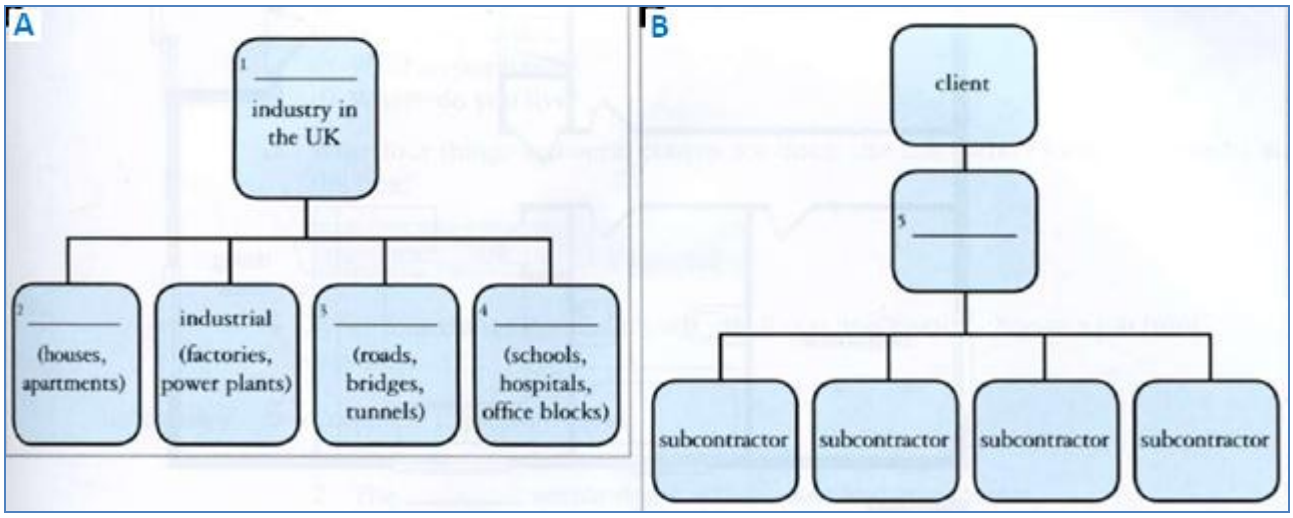
b) Discuss these questions.

1. What is the construction industry concerned with?
2. What does the construction industry include?
3. What are the particular characteristics of the construction industry?

2. a) Read this text and complete charts A and B.

The construction industry in the UK consists of four different sectors. The residential sector deals with houses and apartments. The industrial sector deals with big projects like factories and power plants. The infrastructure sector is for projects like roads, bridges and tunnels. The commercial sector is for things like schools, hospitals and office blocks. The client pays for the project and hires general contractors to deal with subcontractors, equipment and materials.

Source: *English for Construction 1 Evan Frendo*



b) Complete these sentences with the verbs in the box.

are consists of deal with hires pays for

1. The general contractor _____ subcontractors.
2. General contractors_____ subcontractors, equipment and materials.
3. The team_____ a site manager, three roofers and a plumber.
4. Roads, bridges and tunnels _____infrastructure sector projects.
5. The client _____the project.

3. Grammar point: Plurals.

We add **-s**, **-es**, or **-/es** to make a noun **plural**.	*apartment -apartment**s*** *box - box**es*** *factory - factor**ies***

4. Read the text in 2 again and underline the plurals.

1 b. Jobs in construction

In short:

- Who is involved in a construction project?
- Who is a tradesperson?
- Who is a subcontractor?

Must know

trade - *профессия*
skill – *умение*
customer – *заказчик*
building contract - *подряд на строительство*

structural engineer- *инженер-строитель*
building services engineer- *инженер по обслуживанию здания*
competitive tender- *конкурентные торги*
site agent- *начальник строительной площадки*

1. Match tradespeople with the words in t h e box.

carpenter concrete finisher electrician glazier painter plumber roofer welder

_____

_____

_____

_____

_____

_____

_____

_____

Source: English for Construction 1 Evan Frendo

2. a) Read and translate the text.

A construction project is not usually a one-person job, but a process taken care of by a project team, which comprises designers, *consultants* and constructors working on behalf of the client.

A building project may begin relatively simply with a client and an architect, but over a few months, depending on the size of the project, many more people become involved. The client is the customer and therefore the most important member of the team. Because the development of a project includes a mix of materials, a team often involves many different **trades** offering a variety of **skills**.

Client. The client is the person who commissions the design and the

construction. Under standard *building contracts*, the client is known as the e*mployer* and is the one who makes the investment and finances the project. A good relationship between the client and the architect is extremely important and should *be based on trust*.

Architect. It is the architect's task to translate the client's ideas into an acceptable design and produce a building that meets the client's needs. The architect requires creative skills and a professional understanding of materials, construction techniques and their application on site.

Consultants. The design team may also include the following consultants:

- A *structural* engineer offers advice on the structural design from the *foundations* to the roof. The work includes *advice*, *specifications*, design and *supervision* of the works in progress.
- A *building services engineer* is responsible for the mechanical and electrical aspects of a project. A building services engineer provides advice and drawings, and is sometimes involved in the tendering procedures with specialist firms.
- A *landscape architect* is involved in the design and supervision of external works. Ground formation, planting and arboreal work provide the finishing touches to every project.

Contractor. The building contractor is the second major party in the project team. The contractor is usually selected by *competitive tender* and has a contract directly with the client. The contractor turns the architect's design into reality. Depending on the size of the contractor's company, a contract manager may be responsible for the management of the work. It is from the contract manager that the *site agent* receives instructions.

Site agent. The site agent has control of all construction processes on site. The *site agent* initiates each particular operation, coordinates it with other trades, ensures that it has a clear run and is supplied with appropriate plant, labour and materials.

Subcontractor. As the name suggests, work is sub-let to subcontractors by the (main) contractor. The contractor retains responsibility for all construction operations and remains *liable* to the client for any defects in sub-contracted work.

Source:*Sharon Heidenreich English for Architects and Civil Engineers*

b) Discuss these questions.

1. What does a construction project mean?
2. What trades does a project team involve?
3. Who is the client?
4. What is the architect's task?
5. What consultants does the design team include?
6. What is the function of the site agent?
7. What's the difference between a general contractor and a subcontractor??

1 c. Project organisation

In short:

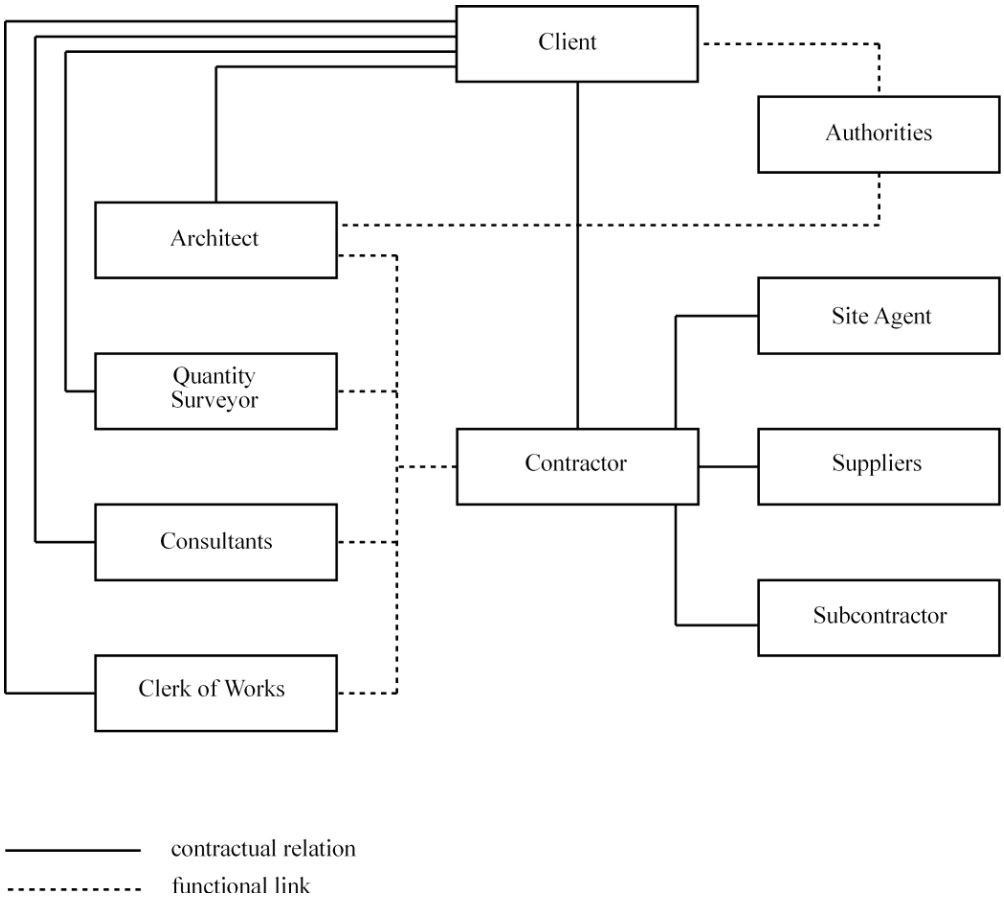
- What are organigrams?
- Why is an organigram a useful way to present the functions of individuals and the relationships between them?

Must know

supplier - *поставщик*
contractual relation - *договорные отношения*
turnkey development - *разработка "под ключ"*
quantity surveyor - *инженер-сметчик*
cost estimating - *составление сметы*

Source:*http://ogc.gov.uk/documents/CP0062*

1. Read and translate the text.



Traditional contract. The organigram shown above is typical of one for a traditional contract for a medium-sized project. The client commissions the architect to lead a project from beginning to end. The architect advises the client to *appoint* consultants to deal with particular tasks, such as calculating structures, *cost estimating*, landscape design or technical matters. Contractors are selected by the client and commissioned to execute the work according to the drawings and specifications produced by the design team. The contractor's site agent controls site operations and coordinates all trades. Contractors order material from *suppliers* and employ subcontractors to complete certain tasks within the project.

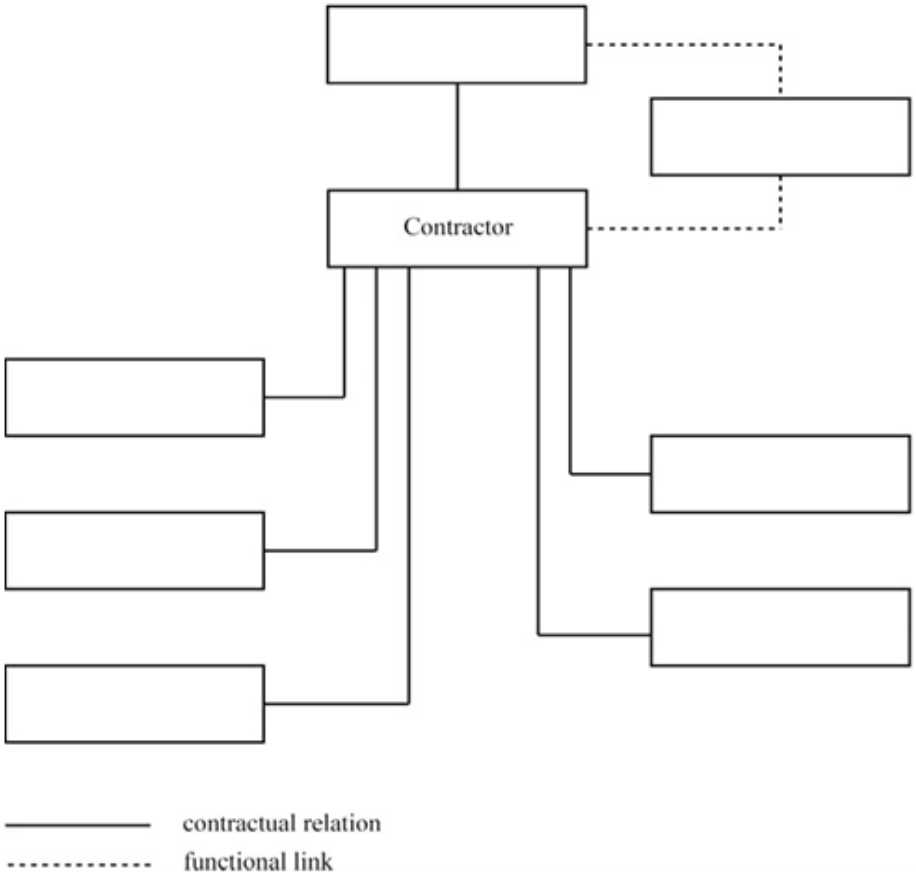
Design and build contract. The following organigram shows a contract form which has become very popular in recent years. In this case, the contractor carries the responsibility for both design and construction. The concept is to offer the client a package or, what is known as, a *turnkey development*. The contractor is responsible for providing everything, sometimes even furniture and pictures on walls. As the name suggests the client simply turns the key and starts using the building.

It goes without saying that this system also involves architects. However, in this case, the architect's employer is not the client, but the contractor.

Source:*Sharon Heidenreich English for Architects and Civil Engineers*

2. Insert the functions below into the organigram and describe the relationships.

architect · authorities· supplier · subcontractor client · quantity surveyor · consultants



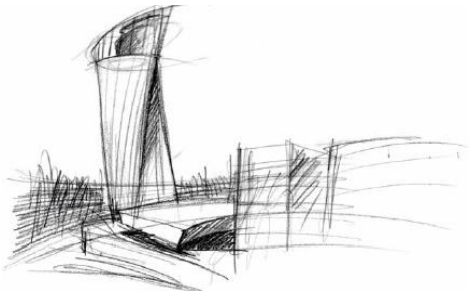
1 d. Architect's workplace

In short:

- What changes have occurred in recent years?
- Are all office staff computer trained and multi-skilled?

Must know

drawing board - *чертёжная доска*
tee-square - *тавровый угольник*
stencil - *трафарет, шаблон*
filing cabinet - *шкаф для хранения документов*
dyeline – *светокопия*
drawing ink - *чертёжная тушь*
cable clutter - *путаница проводов*



Source: *www.chapmantaylor.com*

1. a)Read and translate the text.

Architects who have been in practice for more than 15 years are fully aware of the changes, which have taken place due to information technology. Over the years, *drawing boards*, *tee squares*, *stencils* and *tracing paper* have been replaced by computer applications. There is no longer a need for large *filing cabinets* to store *dyelines*. Today the originals are nicely stored on disks and printed out on plotters when required. Changes are simply made by a mouse click without requiring *razor blades* to remove the *drawing ink* once used to make the drawings.

Nowadays, all office staff are computer trained and multi-skilled in that they not only prepare their own drawings, but also draw up diagrams and charts, as well as write a lot of their own letters and e-mails. The *cable clutter*, which once occupied much of the floor space behind and under tables and desks, has disappeared since introduction of *wireless* equipment. Wireless phones, printers, monitors and keyboards bring great flexibility to once very rigid office arrangements.

Despite all these changes, architecture is one profession which will never be able to cope as a *paperless office*. Paper and pencils will always remain the architect's first tool. A pencil is small, quick, totally independent of electricity and able to express such a lot in a small space of time.

Source:*Sharon Heidenreich English for Architects and Civil Engineers*

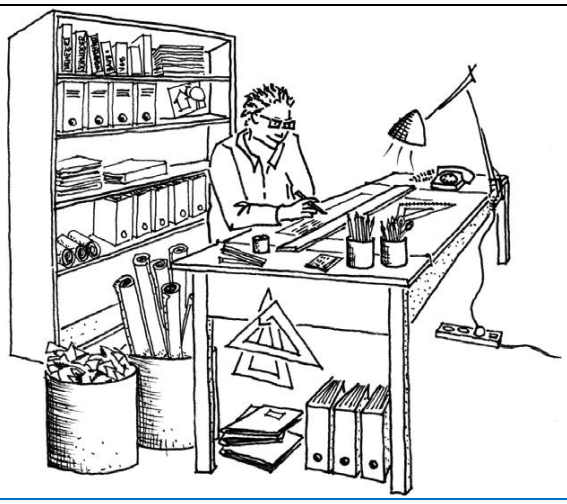
b) Discuss these questions.

1. What things have been replaced by computer applications?
2. What changes have occurred in recent years?
3. Are all office staff computer trained and multi-skilled nowadays?

2. Grammar point: Simple present and simple past.

Simple Present is used to describe current facts and regular activities.
Simple Past is used to describe completed activities or facts of the past.

If you take a look at the two pictures you will notice a lot of differences between the past and the present situation.



Source:*Sharon Heidenreich English for Architects and Civil Engineers*

3. Complete the text below by putting the verb in brackets into either the simple present or simple past tense.

Architecture has always been practised. Even in ancient times *master-builders* …… (design) buildings and …… (manage) their construction. Up until the late 80ies *draughtspersons* …… (sit) at drawing boards using tee squares, *compasses* and stencils. In 1938, Konrad Zuse …… (invent) the Z1 – the first digital computer. The first CAD programmes …… (appear) in the 70ies, however, they …… (not become) affordable for smaller offices until the early 90ies. Nowadays, most architects …… (sit) in front of flat screens and …… (give) instructions to the computer by clicking the mouse. Despite all the changes, architects …… (still use) paper and pencil to jot down first thoughts.

Source:*Sharon Heidenreich English for Architects and Civil Engineers*

1. Vocabulary

a.	regulation [ˌregjə'leɪʃ(ə)n]	регулирование
	manufacture [ˌmænjə'fæktʃə]	производство
	fabrication [ˌfæbrɪ'keɪʃ(ə)n]	производство, изготовление
	maintenance ['meɪnt(ə)nən(t)s]	(техническое) обслуживание
	whilst [(h)waɪlst]	пока, в то время как
	demarcation [ˌdi:mɑ:'keɪʃ(ə)n]	разделение, размежевание
	blurred [blɜ:d]	неясный, расплывчатый
	minor works	вспомогательные работы
	enormously [ɪ'nɔ:məslɪ]	весьма, очень
	to decline [dɪ'klaɪn]	уменьшаться, идти на убыль
	premises ['prɛmɪsɪz]	недвижимость
	one-off design	индивидуальный проект
	traditional arrangement [ə'reɪndʒmənt]	традиционные договоренности
	to separate ['sep(ə)reɪt]	отделять, разделять
	vagary ['veɪg(ə)rɪ]	каприз
b.	to be based on trust	основываться на доверии
	occupier ['ɔkjupaɪə]	арендатор
	mediator ['mi:dɪeɪtə]	посредник
	building contractor ['bɪldɪŋ kən'træktə]	строитель-подрядчик
	client's representative ['klaɪənt] [ˌreprɪ'zentətɪv]	представитель заказчика
	thermal insulation calculation ['θɜ:m(ə)l ˌɪnsjə'leɪʃ(ə)n ˌkælkju'leɪʃ(ə)n]	расчет теплоизоляции
	advice [əd'vaɪs]	консультация (специалиста)
	specification [ˌspesəfɪ'keɪʃ(ə)n]	подробное описание, технические условия
	supervision [ˌs(j)u:pə'vɪʒ(ə)n]	надзор за качеством работ
	building services engineer	инженер по обслуживанию здания
	quantity surveyor ['kwɔntətɪ sə'veɪə]	инженер-сметчик
	bill of quantities ['kwɔntətɪ]	накладная, фактура

	procurement procedure [prə'kjuəmənt prə'si:dʒə]	процедура осуществления закупок и выдачи подрядов
	final account	итоговый счет
	to settle ['setl]	урегулировать, разрешить (спор)
	contractual disputes [kən'trækʧuəl ['dɪspju:t]	договорные споры
	competitive tender [kəm'petɪtɪv 'tendə]	конкурентные торги
	subcontractor [ˌsʌbkən'træktə]	субподрядчик (лицо, которому передается часть или весь контракт)
	liable adj ['laɪəbl]	ответственный
	clerk of works [klɑ:k]	представитель заказчика на стройплощадке
	workmanship ['wɜ:kmənʃɪp]	изделие; качество изготовления
	conform [kən'fɔ:m]	согласовывать, приводить к соответствию
C.	organigram [ɔ:ˈganɪgram]	схема организационной структуры
	functional link ['fʌŋkʃ(ə)n(ə)l lɪŋk]	функциональная связь
	appointment [ə'pɔɪntmənt]	назначение
	binding agreement ['baɪndɪŋ ə'gri:mənt]	обязательное соглашение
	oral contract ['ɔ:r(ə)l 'kɔntrækt]	устный договор
	terms and conditions	постановления и условия (договора)
d.	tracing paper	восковка, бумажная калька
	razor blade ['reɪzə bleɪd]	лезвие безопасной бритвы
	master-builder ['mɑ:stə'bɪldə]	строитель-подрядчик; архитектор
	draughtsman/-men pl ['drɑ:ftsmən]	чертёжник; рисовальщик
	draughtswoman/-women pl [	чертёжница; рисовальщица
	folding rule ['fəuldɪŋ ru:l]	складной метр
	power outlet strip	штепсельная розетка
	(rubbish) bin BE, trashcan AE ['rʌbɪʃ] [bɪn], ['træʃˌkæn]	мусорное ведро, мусорная урна

UNI 2

Preliminary Design

2 a. Presentation

In short:

- What forms of presentation do you know?
- What is the significance of the preliminary design?

Must know

preliminary design - *эскизный проект*
drawing - *чертёж; рисунок*
external appearance - *внешний вид*
concise report - *краткий отчет*
dimensions - *размеры, объём*
CAD (computer-aided design) systems - *системы автоматизированного проектирования*

4. a) Read and translate the text.

Taking into account the client's brief and the additional information obtained, the architect will commence to prepare drawings illustrating a possible solution. The first drawings may not be very detailed, but will show what the architect has in mind. They should illustrate and make it possible to appreciate the general *massing*, the *external appearance* of the building, its position on the site and the *arrangement of the interior*.

Usually several meetings take place with the client during this phase. The architect takes along drawings, sketches etc. to these meetings. While these should, of course, be *self-explanatory*, it is absolutely necessary for the architect to guide the client through the presentation.

Source:*Sharon Heidenreich English for Architects and Civil Engineers*

b) Discuss these questions.

1. What illustrates the possible solution?
2. What do the first drawings show?
3. What does the architect take along to meetings with the client?
4. Why is it necessary for the architect?

5. **a) There are numerous terms used to describe the various forms of presentation. Match the terms with the correct explanation.**

1.	a sketch	a.	a drawing made with paint
2.	a diagram	b.	often used to express the preparation of a technical drawing and still found in many collocations such as draughtsperson (AE draftsperson) or draughting machine (AE drafting machine)
3.	a plan	c.	a free-hand drawing made very quickly and not including a lot of detail
4.	a painting	d.	a computer-aided presentation offers the viewer a realistic understanding of the building by for example *taking a virtual walk* through the various rooms
5.	a drawing	e.	*compilation of* drawings showing all views
6.	to draft	f.	often used to sketch out the functional arrangement of rooms or routes within a building
7.	computer simulation	g.	a usually to-scale illustration in pencil or ink often made by using rulers, stencils or CAD

Adding an appropriate adjective can help to qualify these expressions. A *rough sketch* might be a sketch made with a thick pen with only a few lines, whereas a detailed drawing offers a clearer insight. The scale of a drawing also gives some indication of the amount of detail. Naturally a 1:50 drawing is more detailed than a 1:200 drawing. 1:50 is read as one to fifty.

Other forms of presentation are possible; for example, a model showing part or all of the development, a collection of *material samples*, illustrations or simply a *concise report*.

Source:*Sharon Heidenreich English for Architects and Civil Engineers*

b) Complete these sentences with the verbs in the box.

actual size scale general arrangement schematics set CAD

1. Enlarged drawings show components larger than their ..... .
2. For engineering drawings, 1:5 is a commonly used ..... .
3. Whole machines or structures are shown on ..... drawings.
4. Electrical drawings don't usually show sizes. They're shown as ..... .
5. A ..... of drawings for a large project can consist of hundreds of pages.
6. Most drawings are produced on computers, using ..... software.

Source:*Mark IbbotsonProfessional English in Use Engineering*

2 b. Proportions

In short:

- What can you say about the proportions?
- What is cubage?

Must know

proportions - *относительные размеры; пропорции*

cubage - *архитектурный объём (здания)*

gross floor area - *общая площадь здания (по внутреннему обводу наружных стен)*

covered area - *застроенный участок*

plot ratio – *процент застройки*

1. a) Read and translate the text.

The *cubage* of a building gives us an indication of the size, whether it is a small or a large building. However, it tells us nothing about the proportions, the relation between *width*, *depth* and *height*. The cubage is measured in cubic metres (cub m; m^3). Similarly the *gross floor area* only indicates the size of the *covered area*, not the *relation* between width and depth. In some areas, especially in non-residential ones, the proportion of a site, which may be covered, is determined by the *plot ratio*.

Cubage and areas are particularly relevant when it comes to costs and calculations. Architects apply the *volume method* when preparing a preliminary cost estimate. In order to determine the construction costs, the cubage is multiplied by an average cubic metre price, which includes everything from the structure to the finishes. The client is especially interested in the *net floor area* as it indicates the number of square metres *excluding* the *external walls*, which may be sold or *let*. Architects and designers are interested in the individual *dimensions*, the proportions, as these characterize the appearance of a building, a room or even a piece of furniture.

Source:*Sharon Heidenreich English for Architects and Civil Engineers*

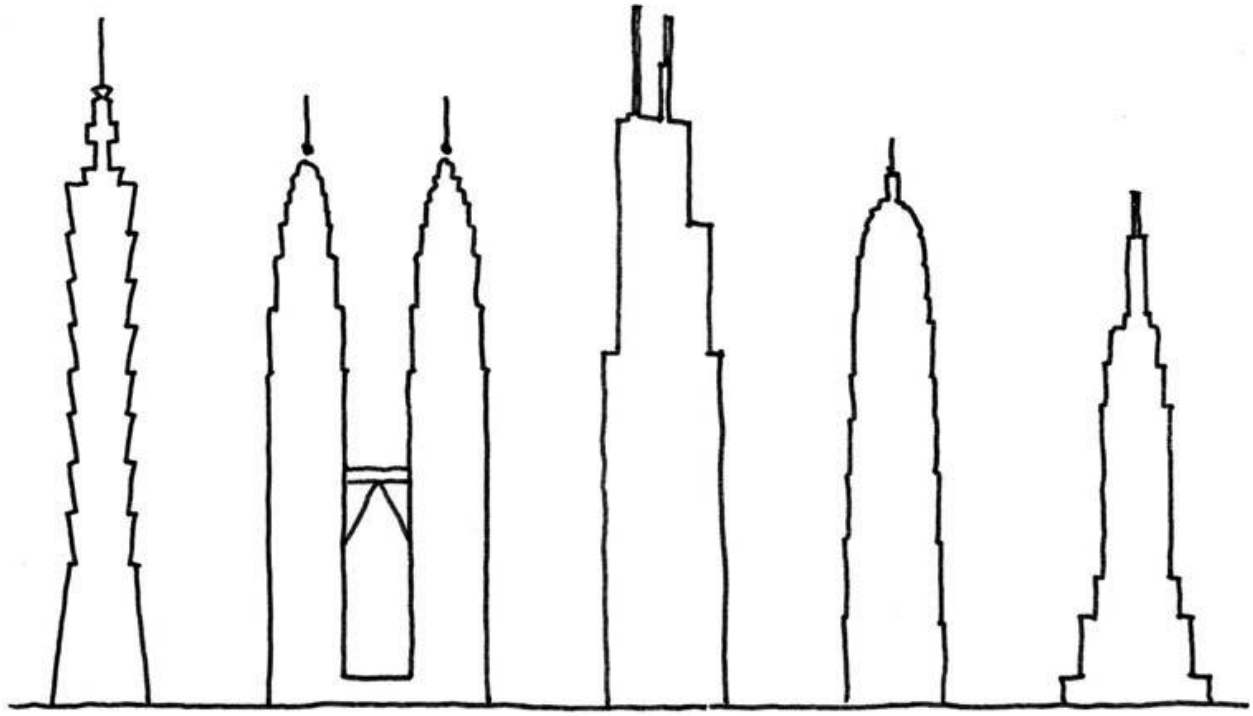
b) Discuss these questions.

1. What does the cubage of a building indicate?
2. Does it tell us about the proportions?
3. What does the gross floor area indicate?
4. In what areas the proportion of a site is determined by the plot ratio?
5. When do architects apply the volume method?
6. What are architects and designers interested in?

2. Grammar point: Comparisons and Adjectives. Use the information below to complete the following exercise.

Usually a design does not consist of just one element, but of several. Pointing out the relationships between the various elements helps the listener to gain a better understanding of the overall appearance. Making a comparison is an easy method to *emphasize* a difference.
Adjectives have three forms of comparison: positive, comparative and superlative.

Taipei 101 in Taiwan is ……. (tall) building in the world. It is also ……..……. (recent) construction. It is ……. (high) than both the Petronas Towers and the Sears Tower in Chicago. The Petronas Towers are only slightly……. (tall) than the Sears Tower. The Commerzbank Zentrale in Frankfurt measuring 259m is ……. (high) building in Germany. However, it is ……. (low) than all the buildings mentioned above. The Empire State building in New York is by far ……..……. (ancient) skyscraper. It is not ……. (tall) the Jin Mao Building in Shanghai, but it is a lot ……. (old).



Taipei 101 in Taipei, Taiwan Completed in 2004 Height: 509 m	Petronas Towers in Kuala Lumpur, Malaysia Completed in 1998 Height: 452 m	Sears Tower in Chicago, USA Completed in 1974 Height: 442 m	Jin Mao Building in Shanghai, China Completed in 1999 Height: 421 m	Empire State Building in New York, USA Completed in 1931 Height: 381 m

Source:*Sharon Heidenreich English for Architects and Civil Engineers*

2 c. Shapes

In short:

- What is the appearance of a building characterised by?
- How are shapes described?

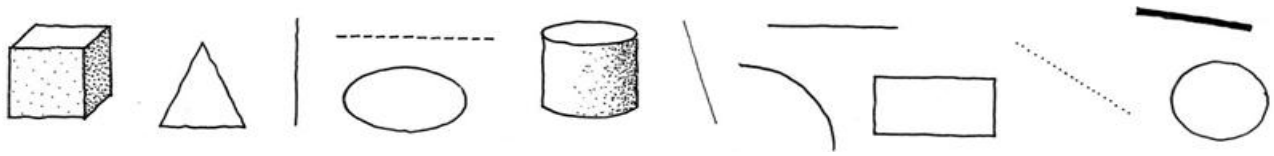
Must know

egg-shaped - *овальный*
rectangle - *прямоугольник*
ellipse - *овал*
broken line - *пунктир, прерывистая линия*
dotted line - *пунктирная линия*

3. Read the text and match the terms from below with the correct shape.

The appearance of a building is not only characterised by its dimensions and proportions but also by its shape. Some shapes are very straightforward like a cube or a rectangle. Others are slightly more difficult and require language skills to be described. We often use letters or appearances in nature – like I-shaped or *egg-shaped* – to describe a design to a client. The following vocabulary should help you to prepare a precise presentation.

rectangle · ellipse · horizontal line · broken line · cube · curved line · triangle · circle cylinder · vertical line · dotted line · thin line · thick line



Instead of using a noun to describe the shape of a building - the building is a rectangle – an adjective is often more elegant – it's a rectangular building. Note that not all adjectives are formed in the same way.

The panel is a rectangle. – a rectangular panel
The pool is an ellipse. – an elliptical pool
The house is a cube. – a cubic house
The window is a circle. – a circular window
The rooms are arranged in a line – a linear arrangement

Source:*Sharon Heidenreich English for Architects and Civil Engineers*

2. a) Read this text and underline all the descriptive terms. Try to imagine what the building looks like and make a sketch.

The main building is a rectangular, *two-storey* structure with a *mono-pitched roof*. A smaller rectangular one-storey structure *protrudes* at a *right angle approximately* a third of the way along the longer and taller side of the larger element. From a *bird's eye view* it looks like a T with differing lengths. The smaller element is a single-storey structure with a flat roof. There are no organic shapes or circles; the right angle *prevails*.

Source: *English for Construction 1 Evan Frendo*

b) You can practice this activity of characterising shapes at any time. Look at things when you are out and about and try to find the right words to describe them.

3. Complete these sentences with words to describe shapes.

1. The pendulum in Taipei 101 is _____ .
2. This page is _____ .
3. My cup of coffee is _____ .
4. A 90° cross-section of a pipe is _____ .
5. Many steel beams are _____ .

4. Work in a small group. Make lists of things that are the following shapes.

1. circular
2. rectangular
3. cylindrical
4. square
5. spherical
6. I-shaped
7. triangular

5. Compare your lists with other groups.

1. ……
2. ……
3. ……
4. ……
5. ……
6. ……
7. ……

2 d. Appearance

In short:

- What factors play a vital role in characterising the design?
- What do you know about the relationship between the exterior and the interior?

Must know

shell - *остов; каркас (сооружения)*
repellent - *водонепроницаемый*
to blend in - *сочетаться*
to stand out – *выделяться*
solid wall -*сплошная стена*
cavity wall –*пустотелая стена*
foam –*пеноматериал, пенопласт*
polystyrene beads -*полистироловые шарики*

1. a) Read and translate the text.

In most projects we are not simply dealing with a single cube, but with a complex arrangement of elements. The organisation of horizontal and vertical members creates a form meeting the demands of the functions within. The relations between the elements are fundamental factors, which play a vital role in characterising the design.

In every building, there is a relationship between the exterior and the interior. Depending on the type of building, the climate, the surroundings and its purpose, the *shell* separating interior and exterior fulfils different functions. Glass enables the architect to create a *visual link*, a view from the interior to the exterior and visa versa. Solid materials, such as brick or concrete, create a visual barrier between inside and out. Some surfaces can have a *repellent* character, are intended to emphasize a certain feature or add contrast to a complex arrangement of structures. Others are more inviting and *blend in* with the surroundings. Some buildings appear to be *embedded* in their environment and harmonise, while others are made to *stand out*. The wide spectrum of materials available gives the architect the opportunity to define the relationships between the various elements.

Source:*Sharon Heidenreich English for Architects and Civil Engineers*

b) Discuss these questions.

1. What does the organisation of horizontal and vertical members create?
2. What functions does the shell separating interior and exterior fulfil?
3. What materials create a visual barrier between inside and out?
4. What characters have surfaces?
5. What gives the architect the opportunity to define the relationships between the various elements?

2. *Building materials*: a) Choose the best word t o complete these word pairs.

1.	acoustic	a)	gravel	b)	insulation	c)	work
2.	concrete	a)	insulation	b)	mix	c)	equipment
3.	construction	a)	sizes	b)	railings	c)	aggregate
4.	electrical	a)	aggregate	b)	fittings	c)	sizes
5.	thermal	a)	insulation	b)	sizes	c)	gates
6.	alarm	a)	systems	b)	aggregate	c)	mix
7.	steel	a)	insulation	b)	mix	c)	staircase

Source: *English for Construction 1 Evan Frendo*

b) Complete these phrases with the words in the box.

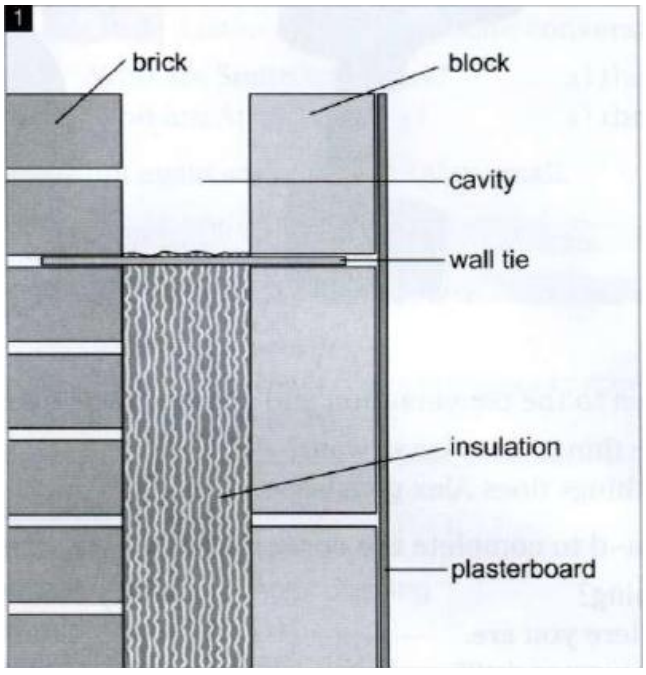
everything order standard wide your

1. a range of _____ sizes
2. _____ you need
3. made to _____ specifications
4. a_____ range of products
5. made to _____

3. *Insulation*: a) Are these statements true(T) or (F)? Correct the the false statemants.

1. Solid wall insulation is used to provide thermal insulation. (T/F)
2. Felt tape is used as cavity wall insulation. (T/F)
3. Cavity wall insulation goes between the inner and outer walls. (T/F)
4. Foam tubing is used to insulate pipes. (T/F)
5. Polystyrene beads are used to insulate pipes. (T/F)

b) Look at illustration and answer these questions.



1. Is it solid wall insulation or cavity wall insulation?
2. What three materials are used in cavity wall insulation?

Source: *English for Construction 1 Evan Frendo*

2. Vocabulary

a.	massing	компоновка архитектурных масс
	arrangement of the interior [ɪn'tɪərɪə]	расположение интерьера
	self-explanatory adj [ˌselfɪk'splænət(ə)rɪ]	ясный; не требующий разъяснений; самоочевидный
	taking a virtual walk ['vɜːʧuəl]	совершая виртуальную прогулку
	painting ['peɪntɪŋ]	окрашивание, покраска, окраска
	to draft [drɑːft]	составлять проект
	to take a virtual ['vɜːʧuəl] walk	совершить виртуальную прогулку
	compilation of sth [ˌkɔmpɪ'leɪʃ(ə)n]	сбор данных; собирание (материала, фактов); составление (сводок, таблиц)
	stencil ['sten(t)s(ə)l]	трафарет, шаблон, образец
	ruler ['ruːlə]	масштабная линейка, линейка разметки
	rough [rʌf] sketch	эскиз
	concise report [kən'saɪs rɪ'pɔːt]	краткий отчет
b.	cubage ['kjuːbɪʤ]	кубатура, архитектурный объём (здания)
	gross floor area	общая площадь здания
	covered ['kʌvəd] area	застроенный участок
	relation [rɪ'leɪʃ(ə)n]	отношение; соотношение
	plot ratio [plɔt 'reɪʃɪəu]	процент застройки
	cost estimate	смета расходов
	net floor area	чистая площадь пола
	excluding external walls	без учета наружных стен
	to let	сдавать внаем
	dimensions [daɪ'men(t)ʃ(ə)n]	размеры, объём
	to emphasize ['emfəsaɪz]	придавать особое значение
c.	curved ['kɜːvd] line	кривая линия
	triangle ['traɪæŋgl]	треугольник
	horseshoe ['hɔːsʃuː], ['hɔːʃʃuː]	подкова
	U-shaped [-ʃeɪpt]	подковообразный; U-образный
	to resemble [rɪ'zembl]	походить, иметь сходство
	mono-pitched roof (single-pitched roof)	моно-скатная кровля (односкатная шедовая крыша)
	to protrude [prə'truːd]	выдаваться, выпирать; высовываться

	bird’s eye view	вид с высоты птичьего полёта
	to prevail [prɪ'veɪl]	преобладать, доминировать
	roof areas	площадь закрытых производственных помещений
	pendulum ['pɛndj(ə)ləm]	маятник
d.	visual ['vɪʒuəl], [-zjuə-] link	визуальная связь
	to embed [ɪm'bed],[em-]sth in	вставлять; запечатлеться
	light adj	дневной свет; естественное освещение
	to float [fləut]	держаться на поверхности воды
	fair-faced brickwork	гладкая лицевая кладка, гладкая стена
	to render	штукатурить; оштукатурить; визуально воспроизводить
	core of insulation [kɔ:k ˌɪnsjə'leɪʃ(ə)n]	ядро изоляции
	ashlar stone facing	облицовочный камень, облицовка
	single/double/triple ['trɪpl] glazing	одинарное/ двойное тройное/ остекление
	curtain ['kɜ:t(ə)n] wall	несущая стена между колоннами каркаса
	posts and mullions [pəust] ['mʌlɪən]	подпорка, свая, стойка и средник (окна или двери)
	cavity ['kævətɪ]	впадина; углубление; каверна
	stainless-steel	нержавеющая сталь
	gypsum plaster ['ʤɪpsəm 'plɑ:stə]	строительный гипс
	waterproof membrane ['wɔ:təpru:f 'membreɪn]	водонепроницаемая мембрана
	vapour barrier ['veɪpə 'bærɪə]	пароизоляция, паронепроницаемый слой
	plywood ['plaɪwud]	клеёная фанера
	plasterboard ['plɑ:stəbɔ:d]	гипсокартон, штукатурная плита
	clamping strip	прижимная планка
	steel tube	стальная труба

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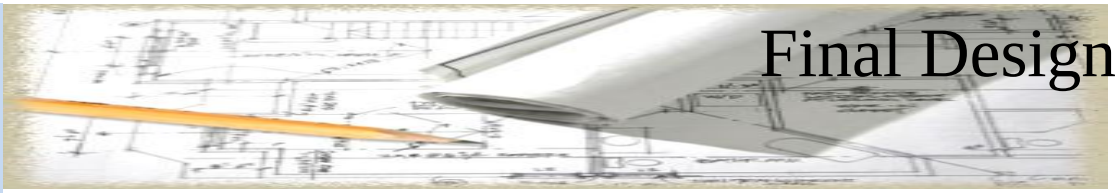


Final Design

3 a. Coordination

In short:

- Who coordinates the work of the design team?
- What is the significance of the completion of the design stage?

Must know

final design - *заключительный этап проектирования*
to iron out - *сглаживать (трудности, разногласия)*
cost calculation - *вычисление стоимости; смета*
incorporating - *соединение*

6. a) Read and translate the text.

This stage of the architect's work is the completion of the design stage. Ideally, there should be no major changes to the design after this point. If the project is sufficiently large to support a design team, there has to be a constant flow of information between the architect and the consultants. It is the architect's task, or, if commissioned, the project manager's task, to coordinate the work of the design team and *iron out* all conflicts arising between team members.

Similar to the drawings becoming more precise and detailed during the course of a project, the method used for the *cost determination* should also become more refined. What was once a *cost estimate* should during the final design stage become a *cost calculation* allowing a smaller margin for variations. The margin is reduced further towards the realisation and completion of each project. At tendering stage, *quotations* offer fairly realistic outlooks; the cost finding prepared at completion lists the actual costs.

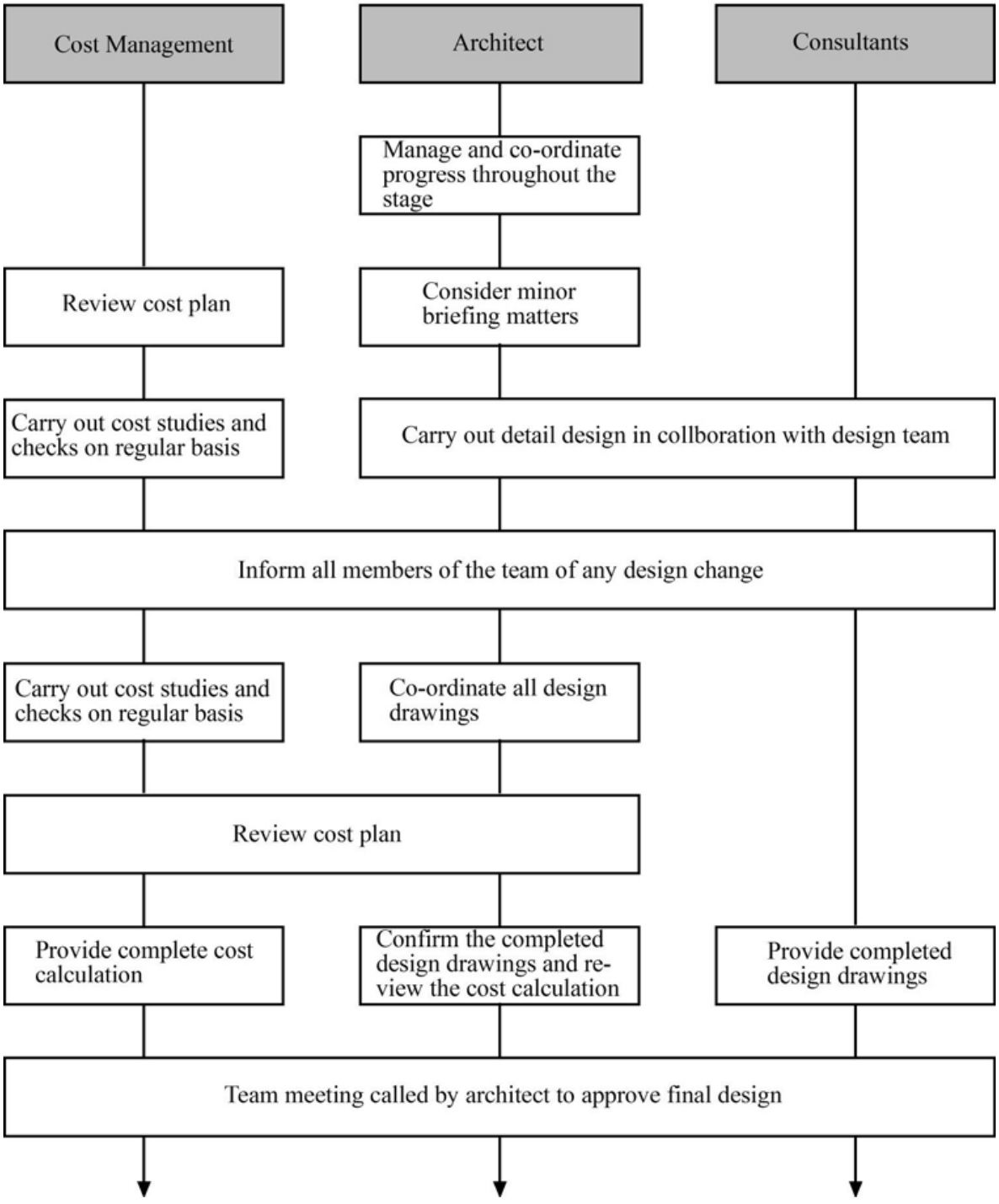
It is important to keep the client informed during this phase and regular meetings should take place. It may be necessary to report to the client on changes due to *incorporating* services or structural measures. The client has to approve all changes and make decisions on any outstanding items.

Source:*Sharon Heidenreich English for Architects and Civil Engineers*

b) Discuss these questions.

1. What does the completion of the design stage mean?
2. Why is the constant flow of information important between the architect and the consultants?
3. Why is it important to keep the client informed during design stage phase?

7. a) Study the diagram below which gives an indication of the development and the coordination during the final design planning stages.



Source:*Sharon Heidenreich English for Architects and Civil Engineers*

b) Complete the sentences. Use the diagram in a) to help you.

1. _____ carry out detail design in collaboration with design team.
2. _____ carry out cost studies and checks on regular basis.
3. _____coordinate all design drawings.
4. _____provide complete cost calculation.
5. _____provide completed design drawings.

3 b. Structural frameworks

In short:

- What is framework?
- What structural elements can you name?

Must know

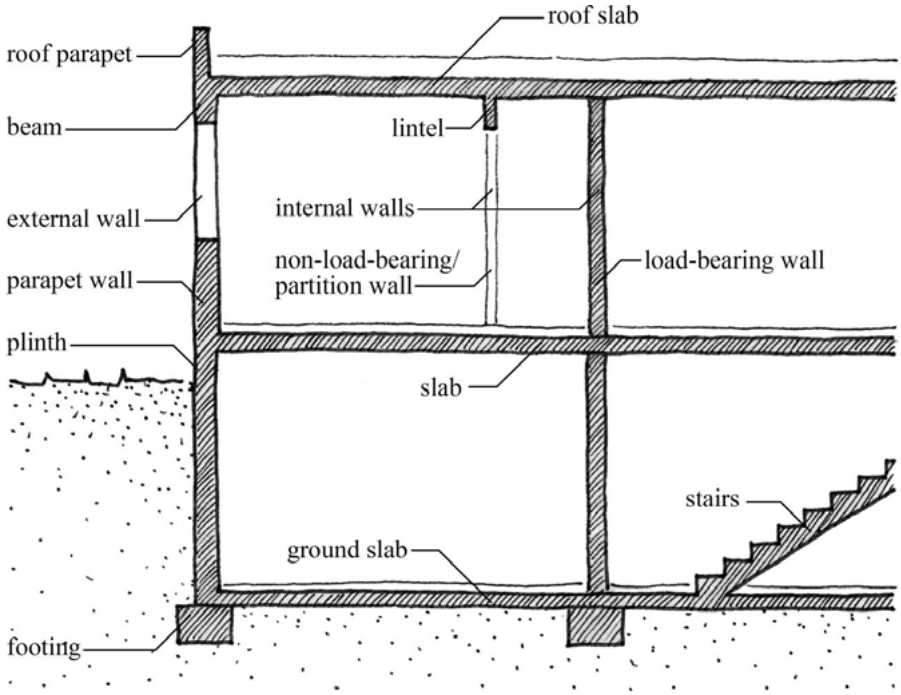
joint configuration - *совместная конфигурация*
alignment - *осевое направление*
bar system - *стержневая конструкция*
slab - *плита (элемент конструкции)*
diaphragm – *диафрагма жесткости*
strain of deflection – *натяжение прогиба*

6. a) Read and translate the text.

All structural elements and their interaction form the structural framework of a building. No single element alone is responsible for the supporting structure, but the combination of members together with the *configuration of joints*.

Elements can either be distinguished according to their *alignment*, vertical or horizontal members, according to their configuration, *bar or panel system*, or according to their *effectiveness*, *slab* or *diaphragm*. Whereas slabs merely bear the strain of *deflection*, diaphragms have a *stiffening effect* bearing vertical forces.

The correct choice and dimensioning of elements prevent *deformation* and ensure the stability of the structure.



Source:*Sharon Heidenreich English for Architects and Civil Engineers*

b) Discuss these questions.

1. What forms the structural framework of a building?
2. What elements are responsible for the supporting structure?
3. How can elements be distinguished?
4. What factors ensure the stability of the structure?

7. a) Match the definitions to the construction terms.

Vertical members

1.	another word for column; usually applied for square or rectangular columns, which are integrated in walls	**a)**	wall
2.	a slender light column, sometimes a member in framing	**b)**	pillar
3.	a vertical supporting member made of steel	**c)**	column
4.	vertical member supporting a roof or beam; in Greek temples, there is a differentiation between e.g. Doric and Corinthian ones	**d)**	post
5.	a vertical panel	**e)**	stanchion

Horizontal members

1.	a beam only supported on one end; it allows for overhanging structures without external bracing	**a)**	slab
2.	a horizontal beam usually supporting the masonry above a window or door	**b)**	beam
3.	a horizontal supporting member that runs from wall to wall, or beam to beam; typically it is smaller than a beam and usually made of steel	**c)**	truss
4.	a horizontal panel	**d)**	girder
5.	a structure comprising several members in triangular units to span great distances; top and bottom boom are not parallel	**e)**	joist
6.	a horizontal bar	**f)**	lintel
7.	a structure comprising several members in triangular units to span great distances; top and bottom boom are parallel	**g)**	cantilever

Source:*Sharon Heidenreich English for Architects and Civil Engineers*

3 c. Connections

In short:

- What connection methods in steel construction do you know ?
- What connections are applied in timber construction?

Must know

rigid - жёсткий, негнущийся
glued connection - клеевое соединение
riveting - заклёпочное соединение
welding - сварка
butt weld - стыковой сварной шов
fillet weld - угловой сварной шов
splice plate - стыковой лист
gusset plate - фасонный лист
carpentry connections- столярные соединения
tongue and groove joint - шпунтовое соединение
mortise and tenon joint – шиповое соединение

4. a) Read and translate the text.

All structural members forming a *rigid* construction have to be connected in one way or another. Depending on the method used, it is either referred to as a *bond* for *glued connections*, a junction or joint for either metal or timber or sometimes even a link.

In steel construction, there are 3 main connection methods, namely *riveting*, *bolting* and *welding*. For riveting, which is the least common nowadays, a rivet is hammered into aligned holes. When bolting two members, a *bolt* is pushed through the aligned holes and a *nut* is threaded on and tightened with a spanner.

Many joints, especially those made *in shop*, are welded. Welding joins metals by melting and fusing. There are two basic types, the *butt weld*, which is employed to join parallel members, such as pipes, and the *fillet weld*, which is used to connect a vertical to a horizontal member.

Splice and *gusset plates* are used to connect timber as well as steel. More traditionally *carpentry connections* are applied in timber construction. The most frequently used are the *tongue and groove* connection for fitting boards in one plane, especially in flooring and panelling. *Mortise and tenon* is a method used to connect two timber members at an angle close to 90°. The mortise is the cavity cut into a timber to receive the tenon.

Source:*Sharon Heidenreich English for Architects and Civil Engineers*

b) Discuss these questions.

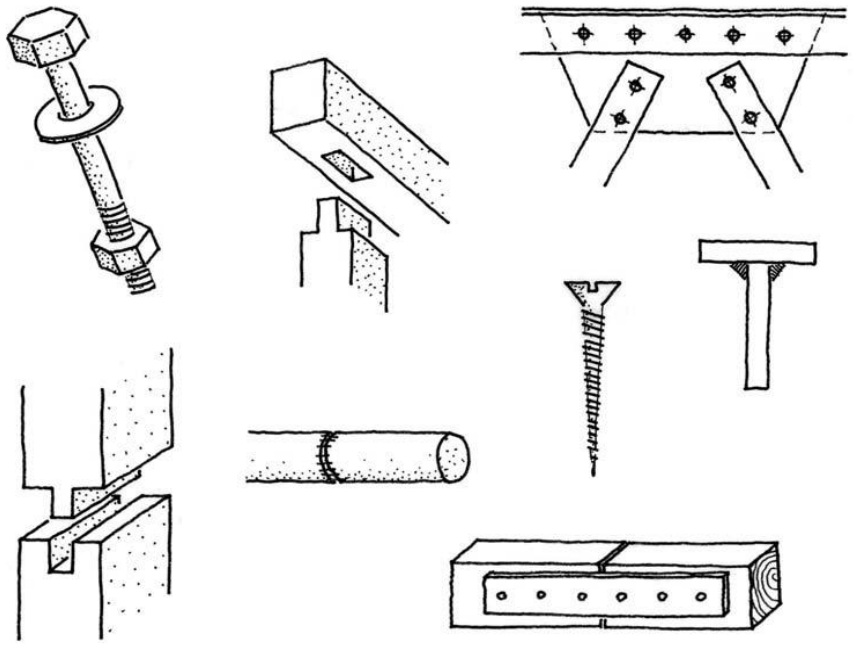
1. What type of connection does a rigid construction refer to ?
2. How are the 3 main connection methods named?
3. What connection method is more common nowadays?
4. In what construction carpentry connections are applied?

5. *Connectors*. a) Match the words.

1.	nut and bolt	a.	шпунт и гребень
2.	gusset plate	b.	сращивание
3.	fillet weld	c.	стыковой сварной шов
4.	screw	d.	шип-паз
5.	tongue and groove	e.	фасонный лист
6.	splice	f.	шуруп
7.	mortise and tenon	g.	гайка и болт
8.	butt weld	h.	угловой сварной шов

b) Label the following diagrams depicting methods for connecting structural elements.

nut and bolt · gusset plate · fillet weld · screw · tongue and groove · splice mortise and tenon · butt weld



Source:*Sharon Heidenreich English for Architects and Civil Engineers*

3 d. Presentation structure

In short:

- What kind of presentation should the architect prepare?
- What do you know about the presentation language?

Must know

planning application - *заявка на производство строительных работ*
disruption - *срыв*
determination of cost - *определение стоимости*
time schedule – *календарный план*
a good command - *хорошее владение языком представления*

1. a) Read and translate the text.

Before preparing documents and plans for the *planning application*, the client should *accept* the final design proposal and give instructions to proceed. Any second thoughts on the scheme after this point can cause serious *disruptions* and add cost. The architect should prepare a detailed presentation including a report, a *determination of cost* and a *time schedule*. The information from the consultants should be carefully *cross-referenced* to the design drawings.

Architectural drawings should be self-explanatory. However, when *submitting* the proposal to the client, the architect should present the scheme orally. In some cases, the architect may present the project to a single client, in other cases, especially when dealing with larger schemes, the presentation may be made to a group, such as a company board or a committee. In either case, good presentation skills, including a good *command of* the presentation language, are extremely important.

Source:*Sharon Heidenreich English for Architects and Civil Engineers*

b) What makes a presentation successful? Complete the following list of features using the words from the box.

humour · voice · structure · appearance · preparation
language · contact · attitude

To be a good presenter you need …

1. a simple and clear …….
2. a smart and professional …….
3. a good sense of ……...
4. good eye ……..
5. an enthusiastic ……
6. a strong ……
7. expressive body…….
8. careful ……

2. a) Read and translate the text to get more information about presentation structure.

A presentation usually consists of at least three parts. Typically there will be an introduction outlining the scope of the presentation and providing an overview of the project. The central part, or body, goes into greater detail and might be structured according to building sections or phases. The conclusion should sum up the scheme emphasising the key points and invite the audience to ask questions or take part in a discussion. The introduction is perhaps the most important part of a presentation – it is the *first impression* the audience has of the presenter.

The introduction should be used to:

- welcome the audience
- introduce the project
- outline the structure of the presentation.

The table below lists useful expressions that you can use to introduce the various parts of your presentation.

Function	**Language**	
Introducing the project	□ I'd like to start by … □ Let's begin by … □ First of all, I'll …	□ Starting with … □ I'll begin by …
Moving on to next phase	□ We'll now move on to … □ Let's now look at … □ Next … □ I'd like to continue with …	□ Another important aspect is … □ I'd like to expand on … □ I'd like to emphasize the importance of …
Sequence of events	□ Firstly … secondly … thirdly … lastly … □ First of all … then … next … after that … finally … □ To start with … later … to finish up …	
Reference to visuals	□ Let's take a look at … □ As you can see … □ I'd like to point out … □ If you take a look at …, you will see …	□ Here you can see … □ This diagram points out … □ This drawing shows …
Conclusion	□ In conclusion … □ Let's summarize briefly what we've looked at … □ Finally, I'd like to point out … □ If I can just sum up the main points …	
Dealing with questions	□ I'll come back to this question later … □ We'll be examining this question in more detail later on … □ Are there any questions? □ Would anybody like to comment on … ?	

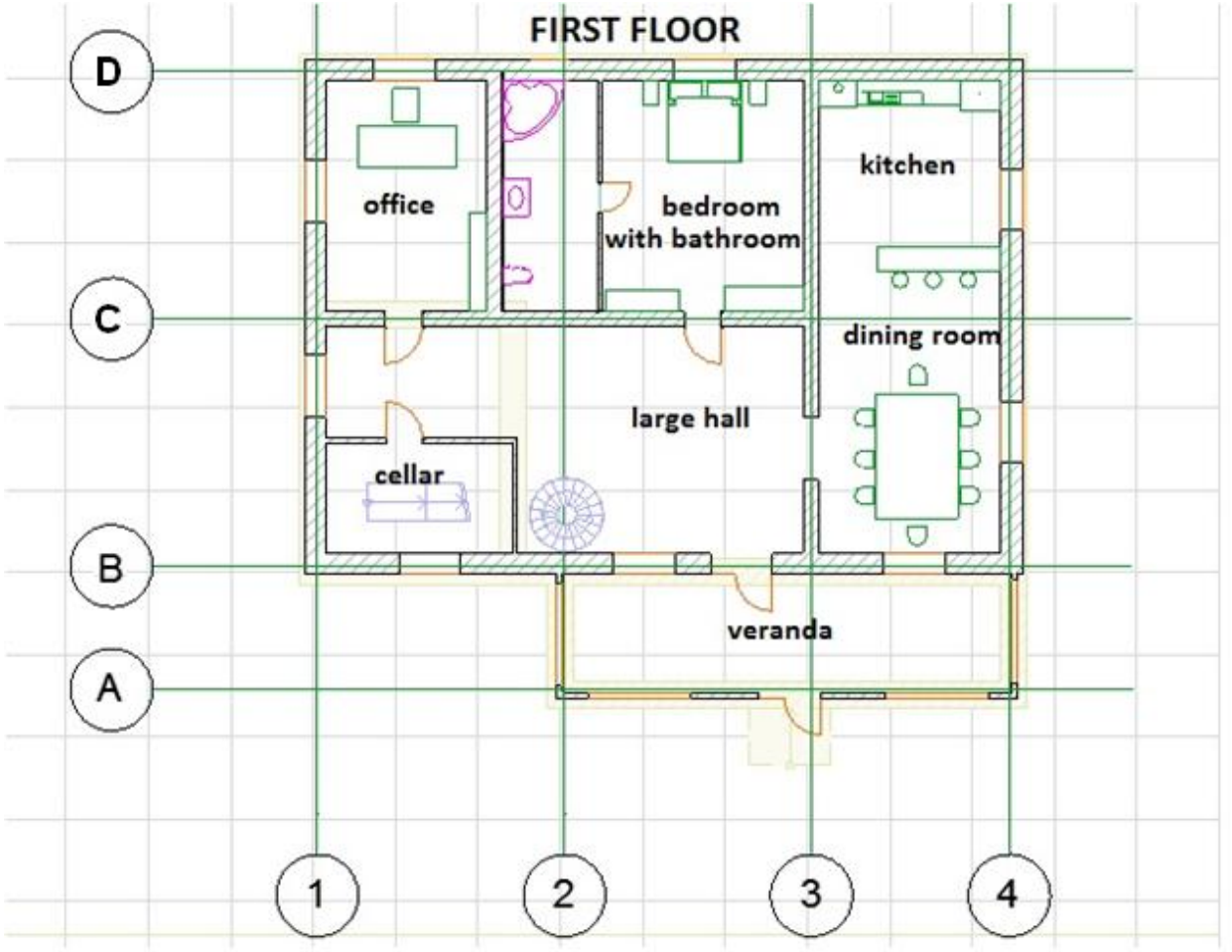
Source:*Sharon Heidenreich English for Architects and Civil Engineers*

b) Tim Smith presents the final design to the client, George Brown. A few changes have been made since the last meeting, and it is the first time the client receives a presentation of the project as a whole. Put the parts of the architect's presentation into the right order.

- If you take a look at the *cross section*, you'll see that the *single pitched roof* rises towards the garden, which emphasizes the open character of the *façade*. The *overhang* of the roof is approximately 1m offering some structural shading to the sunny side of the house. As you can see here, the overhang is less on the north façade allowing as much light as possible to penetrate through the small windows.
- Well, I hope the *proposal* meets your expectations. Have you got any questions regarding any aspects of the house?
- It's nice to be here with you again today. I think we're nearly there, and if there are no major alterations to be made, we'll be able to submit the planning application next week. But before we start talking about business matters, let me talk you through the design. First of all I'm going to take you through the various floors, beginning on the ground floor, and then we'll look at the sections and the elevations.
- So, I've completed the little tour of the house. I think you can see that it is a very clear design. I know you *envisioned* a private adult area on a separate storey, however the extra height would be very difficult to manage on this site. Nevertheless, I think we have *succeeded* in offering clearly separated parent and children zones by adding the *spacious hall* on the first floor.
- Let's begin at the main entrance. You enter the building here and step into a large hall. Here you can see that the hall functions as both a *distributor* and as a *separator*. On the *ground floor* it separates the kitchen, dining and living area from the office, and on the *first floor* it separates the adult area from the children's area. Now let's take a look at the stairs. This set takes you up to the first floor. The stairs to the *cellar* are behind this door.

  Finally, the bedrooms on the first floor. The *master bedroom* with an *en-suite bathroom* and a *walk-in wardrobe* is situated above the office. The children's bedrooms are arranged in a row above the living and dining area.
- Good morning everybody,
- We'll now move onto the elevations. All bedrooms and living areas *face* southwest. Large windows with *movable shutters* look out onto the garden. All other facades, especially the north and east facing, are closed except for a few small windows.

Source:*Sharon Heidenreich English for Architects and Civil Engineers*



(Vakhitov's drawing –group 2PG 108)

(Vakhitov's drawing –group 2PG 108)

3. Grammar point: *Conditionals*.
a) Study the rules and examples.

Depending on the kind of presentation, discussions either take place during the presentation or immediately afterwards. During these discussions, the client or a person from the audience might propose an alternative or make a suggestion. A conjunction at the beginning of a conditional phrase is an indirect way of introducing a possibility and a careful way of making a suggestion.

Example:
If we increased the depth by half a metre, we'd *gain* a lot of extra *space* on the first floor.

The if-clause, which is the first part of the sentence above, states the possibility; the main clause shows what the speaker thinks the result of that possibility might be. The if-clause can be positioned at the beginning or at the end of a sentence. When it comes at the end, there is no comma after the main clause.

Depending on the level of possibility, we either use conditional I, II or III.

Conditional I for real possibilities (simple present/future with will)	If the client chooses a photovoltaic system, we'll have to change the angle of the roof.
Conditional II for *remote possibilities* (past simple/conditional with would)	If the site were slightly wider, we'd locate the garage next to the entrance.
Conditional III for impossibilities (past perfect/past conditional with would have)	If we hadn't submitted the planning application, we would have encountered many more changes.

It is also possible to use other conjunctions to connect two related ideas in a conditional sentence. "*Provided/providing that*" and "so long as" have a similar meaning to if. "In case" and "in the event of" indicate that a future event may or may not happen. "Unless" can be used for real possibilities with the same meaning as "on the condition that".

b) Match a part from the left with a part from the right to form conditional sentences.

1.	Supposing you raised the ceiling height,	**a.**	there'll be sufficient light to work.
2.	We'll cope with not having a larder	**b.**	unless you come up with a suitable alternative.
3.	So long as there is sufficient space for my car,	**c.**	if the client hadn't appointed a quantity surveyor.
4.	The architect would have had to prepare the cost estimate	**d.**	will the access from the hall still be necessary?
5.	If you add another window to the room,	**e.**	would the beam still be sufficiently dimensioned.
6.	We'll go ahead with this scheme,	**f.**	would the stairs still work in this way?
7.	If you increased the distance between the posts,	**g.**	providing the kitchen is no narrower than three metres.
8.	Supposing the office has a separate entrance,	**h.**	you may use the garage for technical equipment, too.

c) Complete the conversation with the correct form of the verbs in brackets. Two site workers are discussing the weather.

A: We'll carry on with the work when the conditions (a) _____ (improve).
B: If we'd known the weather was going to be this bad, we (b) _____ (delay) the start of the project.
A: We'll, if the rain (c) _____ (stop) soon, we'll get the foundations laid by evening.
B: It could have been worse. Do you remember building that bridge last year? If we (d) _____ (not build) the dike of sandbags, the river would have flooded the town.
A: And if we hadn't brought in that earthmover, we (e) _____ (not make) it in time.
B: If we get any more rain here, we (f) _____ (have to) repair the potholes in the road before we can use it.
A: Provided it (g) _____ (stop) soon, we'll be able to start preparing the timber. If they'd chosen another time of year, we (h) _____ (not have) these problems. It would be much nicer if we (i) _____ (have) indoor jobs at this time of year!

Source: *Brieger, Nick and Pohl, Alison,* ***Technical English*** *Vocabulary and Grammar, Summertown Publishing*

3. Vocabulary

a.	quotations [kwəˈteɪʃ(ə)n]	цена, предложенная подрядчиком
	cost determination	определение стоимости
	coordination in collaboration with [kəuˌɔːdɪˈneɪʃ(ə)n] [kəˌlæb(ə)ˈreɪʃ(ə)n]	взаимодействие в сотрудничестве с
	asap, as soon as possible	как можно скорее
	tight schedule [taɪt ˈʃedjuːl]	сжатые сроки
	to postpone [ˌpəustˈpəun]	откладывать; отсрочивать
	structural framework [ˈstrʌktʃ(ə)r(ə)l ˈfreɪmwɜːk]	структурное строение
b.	panel system [	панельная система
	effectiveness [ɪˈfektɪvnəs]	действенность, эффективность
	stiffening effect [ˈstɪfnɪŋɪˈfekt]	крепящий эффект; эффект, придающий жёсткость
	roof parapet [ˈpærəpɪt]	парапет крыши
	parapet wall [ˈpærəpɪt wɔːl]	парапетная стенка
	plinth [plɪnθ]	цоколь; постамент
	lintel [ˈlɪnt(ə)l]	перемычка окна или двери
	pillar [ˈpɪlə]	столп, опора; оплот, основание
	post [pəust]	мачта, подпорка, свая, стойка
	stanchion [ˈstɑːn(t)ʃ(ə)n]	стойка
	truss [trʌs]	связь; стропильная ферма
	joist [dʒɔɪst]	опорная балка; поперечная перекладина
	cantilever [ˈkæntɪliːvə]	консоль, кронштейн; укосина
c.	bond [bɔnd]	соединение; связка
	riveting [ˈrɪvɪtɪŋ]	заклёпочное соединение; заклёпочный шов
	bolting [ˈbəultɪŋ]	соединение болтами; болтовое крепление
	nut and bolt [nʌt ænd bəult]	болт и гайка
	cavity[ˈkævətɪ]	углубление
d.	to submit [səbˈmɪt]	передавать, представлять на рассмотрение
	cross-reference [ˌkrɒsˈrɛf(ə)rən(t)s]	давать, использовать перекрестные ссылки

	attitude ['ætɪt(j)uːd]	поза; осанка
	distributor [dɪ'strɪbjutə]	распределитель
	movable shutters ['muːvəbl 'ʃʌtə]	подвижные жалюзи
	single pitched roof	односкатная шедовая крыша
	façade [fə'sɑːd]	фасад (здания)
	overhang [ˌəuvə'hæŋ] of the roof	свес крыши
	major alteration [ˌɔːlt(ə)'reɪʃ(ə)n]	коренные изменения
	ground floor ['graund ˌflɔː]	первый этаж (на уровне земли)
	first floor	второй этаж (в Великобритании), этаж над цокольным этажом
	cellar ['selə]	подвальный этаж
	proposal [prə'pəuz(ə)l]	предложение; проект; план
	to envision [ɪn'vɪʒ(ə)n]	представлять себе
	to succeed [sək'siːd]	достигать цели
	spacious hall	вместительный зал
	separator	разделитель
	master bedroom	главная спальня
	en-suite bathroom [swiːt]	ванная, смежная со спальней
	walk-in wardrobe ['wɔːdrəub]	гардеробная
	row [rəu]	проход
	to face	выходить, быть обращённым (к кому-л. / чему-л.)
	to gain space [geɪn speɪs]	увеличивать(ся) пространство
	remote possibility [rɪ'məut ˌpɔsə'bɪlətɪ]	малая вероятность, отдалённая возможность
	provided/providing that [prə'vaɪdɪd], [prə'vaɪdɪŋ]	при условии, что

UNI 4

Construction

4 a. Trades

In short:

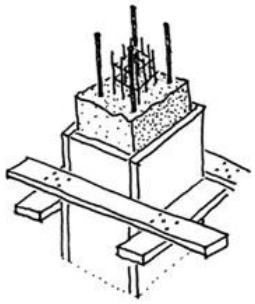
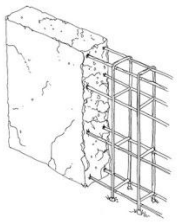
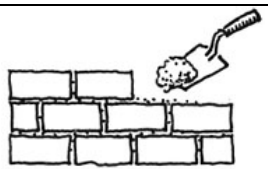
- What trades in construction industry do you know?
- What can you say about building processes.?

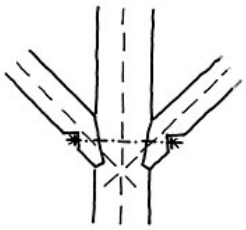
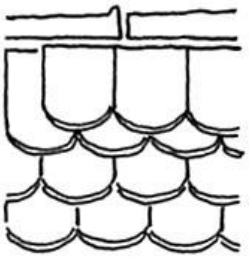
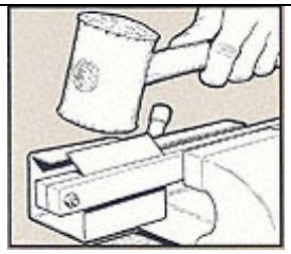
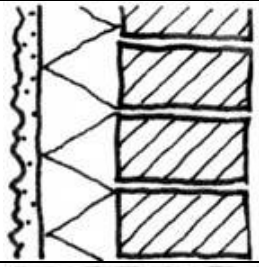
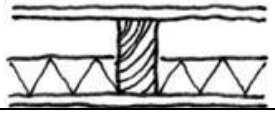
Must know

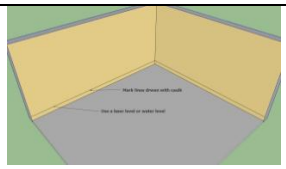
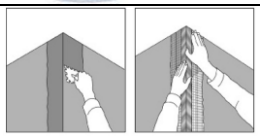
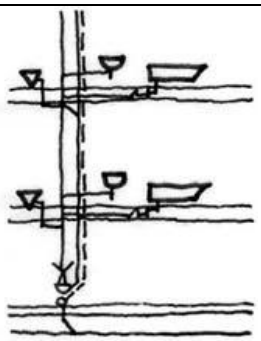
trade – *вид строительных работ*
excavation work - *земляные работы*
building contractor-*заказчик-застройщик*
concrete work - *бетонные работы*
formwork - *опалубка*
reinforcement - *армирование*
steelfixer - *арматурщик*
structural steelwork - *несущая стальная конструкция*
steel erector - *монтажник стальных конструкций*
brickwork - *каменная кладка*
timberwork - *деревянная конструкция*
roofing - *кровельные работы*
sheet metal work - *жестяные работы*
roof plumbing work – *кровельные паяльные работы*
thermal insulation work - *теплоизоляционные работы*
dry construction work - *полносборное строительство*
floor screeding - *заливка и выравнивание пола*
plaster work - *штукатурные работы*
rendering - *наружная штукатурка*
plumbing work - *слесарно-водопроводные и канализационные работы*
blacksmith's work- *кузнечное дело*
joinery work - *столярные работы*
tiling - *облицовка плиткой*
locksmith's work – *слесарные работы*
glazing - *застекление*
painting and wallpapering work - *покраска и поклейка обоев*
flooring- *настилка полов*

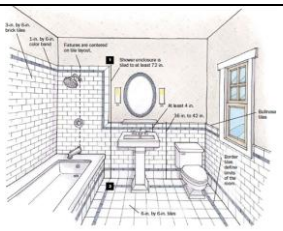
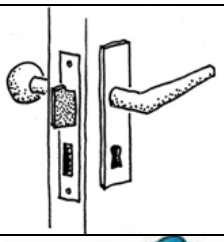
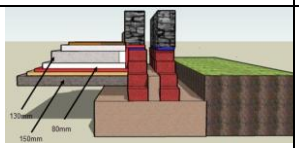
8. a) Read and translate this list of trades and building processes to get a general understanding of the work on the place.

Trade **Persons involved**		**Building process**
Excavation work Building contractor		The site is cleared, and the ground is prepared. *Profile boards* are pegged with the help of a level indicating the exact location of the building. *Excavators* dig the construction *pit*, which has to either be secured by planking or sloped to prevent

		collapse. Excavated material is either stored in *spoil heaps* or removed.
Concrete work Concrete worker		Ready-mixed concrete is poured into *formwork*, compacted by vibrators to ensure solidity and *cured* with sprinklers. Pre-cast concrete is cast and cured in factories and transported to the site. The components, aggregate, cement and water, define the strength, durability, density, *impermeability* and stability of the concrete.
Formwork Formworker		Before *in-situ concrete* can be poured, *formwork*, which is also known as shuttering, has to be prepared. It needs to be sufficiently tight to prevent leakage and smooth to impart a smooth finish to the concrete surface – this especially applies to *exposed concrete*. After an adequate *striking time*, the formwork is removed. For repetitive elements, *sliding formwork* is used. Occasionally, the formwork remains in the structure; this is then called *permanent formwork*.
Reinforcement Steelfixer		Steelfixers bend and fix reinforcement bars andcages and install them in formwork to strengthen concrete. *Barspacers* are used to guarantee a certain *concrete cover*. Bar intersections are securely tied with wire.
Structural steelwork Steel erector		Steel profiles are often used to form the structure of a building. Standard profiles with I-shaped, Tshaped, etc. cross sections are welded or bolted together to form stiffened frames.
Brickwork Mason		Bricks or larger blocks are layered with *mortar* to form walls, piers, chimneys etc. All combinations of *stretcher* and *header* bonds are termed *English bond*. *Face brickwork* is built to a fair face and *pointed*. *Cavity walls* consist of two skins

		joined together by wall ties.
Timberwork Carpenter		A carpenter's work includes the construction, erection and installation of timber structures. This may involve joining *purlins* and *rafters* to assemble a roof; it might involve posts and beams for a whole structure. A carpenter usually has a circular saw on site, other tools include milling and drilling machines, grinders and, not to be forgotten, the carpenter's hammer.
Roofing Roofer		The roofer is responsible for covering the roof and making the structure *watertight*. Most roofs involve a combination of structure, *waterproofing*, heat insulation and *vapour barrier*. Whereas a gable roof is covered with roof tiles, a flat roof is sealed with bituminous materials.
Sheet metal work Tin smith or sheet metal worker		A tin smith is the person who makes and repairs things made of light metal, copper, stainless steel, aluminium, zinc, etc. Most buildings, especially regarding roofs, require *flashings* or *copings*. Fixing *gutters*, *downpipes* and *sills* is usually also the work of a tinsmith.
Roof plumbing work Roof plumber		It is essential for a building to be watertight. In the roof area, *roofing felt* is installed to prevent the *penetration of moisture*. A vertical *damp proof course* (DPC) is usually applied around the base of the building using a *bituminous paint coat.*
Thermal insulation Work		Insulation material is either fixed or installed in or on walls, ceilings and roofs to prevent heat loss. Vapour barriers are installed on the warm side of the insulation to prevent moisture developing.
Dry construction work		Dry construction builders fix *plasterboards* as internal linings.

Dry construction Builder		Their work includes preparatory measures such as erecting frames and *battens* to fix boards, installing insulation and vapour barriers, as well as decorative measures.
Floor screeding Floor screeder		Screed is a layer of concrete or plaster is installed on top of the structural slab. Usually the mix is pumped into a specified area and leveled creating a smooth surface for floor coverings.
Plaster work Plasterer		Generally gypsum-based plasters are applied to internal walls in order to create smooth and uniform surfaces.
Rendering Renderer		Render is applied to external walls. Usually cement-based materials are used to protect and smoothen brickwork.
Plumbing work Plumber		Plumbing work involves all of the *pipework* within a building. This includes *water supply*, *discharge* and *drainage*, heating and gas. They also fit all *sanitary appliances* and radiators. Plumbing embraces a large area of work and most plumbers specialize in one specific field.
Electrical installations Electrician		Electrical work includes the installation of electrical and electronic equipment for industrial, commercial and domestic purposes, such as *lighting*, *plugs*, *switches*, etc. Electricians are responsible for laying cables in buildings and connecting a *distribution board* to the main supply. Electricians have to work in stages, alternating their visits on site with plasterers, painters, etc.
Blacksmith's work Blacksmith		A blacksmith creates objects from iron or steel by *forging* the metal, i.e. by using tools to hammer, bend, cut and shape metal. Blacksmiths create products such as *wrought iron* gates, grills, railings, etc.

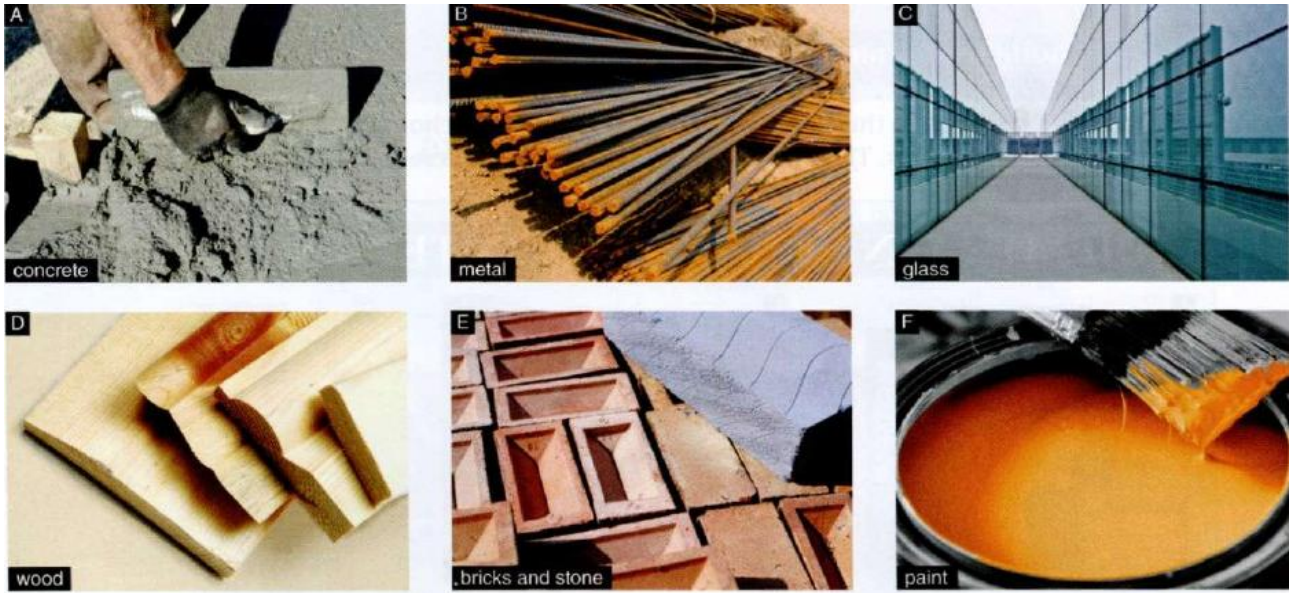
Joinery work Joiner		Joinery work involves all tasks from fabricating to installing architectural woodwork. The building components can include doors, windows, stairs, wooden panelling, shop cabinets, kitchens, etc. The skills of a joiner are somewhere between a carpenter and a *cabinet maker*.
Tiling Tiler		A tiler sets tiles made of ceramic, stone or glass in mortar or uses a *tile adhesive* to arrange tiles on floors and walls. *Grout* is used to fill and seal the joints between the tiles.
Locksmith's work Locksmith		Locksmiths traditionally secure buildings with locking mechanisms. Today electronic lock services involve overall security systems of complex structures.
Glazing Glazier		The trade involves selecting, cutting, installing, replacing and removing glass. *Double-glazing* and *triple glazing*, insulated glazing units with a hermetically sealed air spaces between the layers, have replaced *single glazing*. Glaziers work together with joiners in workshops, they also work on site installing *curtain walls*, glass floors, partitions, shelving, etc.
Painting and wallpapering work/ decorating Painter/decorator		Usually the decorating concludes all activities on site. The work includes painting, varnishing and wallpapering in order to protect and decorate interior and exterior surfaces.
Flooring Floor layer		Flooring is a general term for a permanent covering of a floor. It can refer to carpets, parquet, *raised flooring*, laminate and linoleum. The work of a floor layer also includes *levelling*, the installation of insulation and *skirting boards*.

Source:*Sharon Heidenreich English for Architects and Civil Engineers*

b) According to the descriptions above, decide which tradesperson performs the work below.

1. They work with a *trowel* and are responsible for creating the shell of a building ……..……
2. They will be on site to fit *built-in wardrobes* in the bedrooms. ……..……
3. When it comes to a roof conversion, they will erect dormers. ……..……
4. They are responsible for wall and floor finishes in kitchens and bathrooms. ……..……
5. They use wet materials to prepare internal walls for painting. ……..……
6. The owner commissions one to repair a *leak* in a flat roof. ……..……
7. They will produce and install a railing on a balcony. ……..……
8. They work with *wire* and *pliers* to make the building *tension resistant*. ……..……

2. What materials do these tradespeople use? Match materials A-F to tradespeople 1-6.



Source: *English for Construction 1 Evan Frendo*

1. carpenter _____
2. glazier _____
3. painter _____
4. bricklayer and mason _____
5. welder _____
6. concrete finisher _____

4 b. Site meetings

In short:

- Who is responsible for site meetings?
- What is one of the most important site meetings?

Must know

site meeting - *производственное совещание*
fortnightly - *раз в две недели*
to check actual against expected progress - *сверять фактический и ожидаемый прогресс*
to precede - *предшествовать*
manhours - *трудозатраты (в человеко-часах)*
agenda – повестка дня

8. a) Read and translate the text.

The architect is responsible for arranging and *conducting* site meetings. Usually these take place at regular intervals, either on a weekly, *fortnightly* or monthly basis. It is an opportunity to bring all participants involved to the table in order to provide and exchange information, answer queries and *check actual against expected progress*. Site meetings are always *preceded* by site inspections. An inspection can, however, be carried out independent of site meetings.

Regular site meetings do not remove the need for telephone calls or correspondence, as most queries, which need answering immediately, arise between meetings. Meetings are known *to swallow up* a lot of expensive *manhours* and many people attending may only have an interest in a small part of the proceedings. Meetings should therefore be reserved for specific purposes and prepared carefully. It is useful to prepare an *agenda* and circulate it to participants before the meeting.

The *agenda* of a meeting will usually include the following:

- Record of all participants as well as *absentees*
- Acceptance of previous *minutes*
- Items arising from the previous *minutes*
- Progress related to programme
- Labour strength and materials required
- Drawings received or due
- *Financial review*
- Any other business
- Date of next meeting

Source: *English for Construction 2 Evan Frendo*

Minutes should be taken at a meeting and copies should be sent to everyone concerned, the participants, absentees as well as the client. Minutes should be brief, recording decisions and not the, perhaps, endless discussions leading up to them. They should always include a column indicating the persons responsible for dealing with any action points.

One of the most important meetings during a project is the *pre-start meeting*. It should take place once the contract has been signed but before work commences. The aim of the meeting is to give everybody the opportunity to meet and hopefully form the beginning of a team. There will also be business matters to attend to, for example the *release of production information*, the construction programme and matters such as *insurance policies* and *bonds*.

Source:*Sharon Heidenreich English for Architects and Civil Engineers*

b) Discuss these questions.

1. How often do the site meetings take place?
2. What are site meetings preceded by?
3. Should the site meetings be reserved for specific purposes?
4. What is useful to prepare before the meeting?
5. What does the agenda include?

9. Combine a beginning with an end of a sentence and decide whether the behaviour is appropriate or not.

				true	**false**
1.	The architect doesn't have to wear	a.	in order to give *devious* contractors time to cover up poor work.		
2.	Architects should look out for *infringements*	b.	a hard hat or any other protective clothing.		
3.	The architect should let the client	c.	of safety regulations.		
4.	It is wise to put all comments regarding defective work	d.	should be assessed in the office before answered.		
5.	Before leaving the site	e.	in writing.		
6.	Architects should always perform inspections at the same time	f.	the architect should make a few random inspections.		
7.	The architect should waste time	g.	with particular construction stages.		
8.	Complicated *queries* on site	h.	instruct builders directly.		
9.	Inspections don't have to *coincide*	i.	talking about the site agent's cold.		

10.Works in pairs. Decide how these comments from meetings relate to cost, time and/or scope. Explain your reasons.

1. We had so many meetings during the planning phase, just to discuss the *Work Breakdown Structure (WBS)*.
2. The timber we ordered is stuck in the port: the dockers are on strike. We can replace it, but it's going to cost about 50 percent more.
3. The deadline is the end of June. We're still on target.
4. I'm going to clear this invoice with the client - it's a bit more than we had originally forecast.
5. I'll send you a revised project plan. You'll get it by Friday.
6. Can you discuss these specifications with the architect after the visit? They don't look right to me.
7. They used the wrong additives in the concrete. It's already cracking.

Source: *English for Construction 2 Evan Frendo*

11.Grammar point. a) *Most:* Complete the statements with *most* or *the most.* Do you agree with the statements?

Most can be used: to describe a noun. In this sense, most means ***the majority of.***	*most companies/most organisations/most people*
Most can be used to make a comparison. In this sense ***the most*** means ***the one that is more than any other.***	*the most intelligent person/the most beautiful design/the most important issue*

1. _____ people in the construction industry have never been on a construction site.
2. In the UK_____ old buildings are listed.
3. The client is _____ important person in any project.
4. _____ building inspectors work for local authorities.
5. _____ engineers are not familiar with project management tools.
6. _____ unskilled labourers work on a temporary basis.
7. One of _____ difficult tasks in project management is avoiding cost overruns.

Source: *English for Construction 2 Evan Frendo*

b) Present perfect:

1) Make questions in the present perfect using these prompts.

We use the ***present perfect*** (have + past participle) to talk about things that happened in the past but not at a specific time.	*I **have discussed** this with the directors.* *We **have decided** to set up a portal.* *Why **haven't** you **actioned** the email?* *Who **has** he **spoken** to?*
Note that we often use ***now***, ***just*** and ***already*** with the present perfect.	*I have **now/just/already** spoken to the client and we can go ahead.*

1. you / speak to / the electricians?
2. he / write / the new WBS?
3. they / deliver / all the timber?
4. she / meet / the client?
5. you / hear / the weather forecast?
6. how many times / they / visit / the site?
7. why / they / not answer / the email?

Source: *English for Construction 2 Evan Frendo*

2) Complete the text below by putting the verb in brackets into either the simple past or present perfect tense. Where "since or for" are offered, decide whether it is a point in time or a period of time.

The design team ……..…… (work) on the Brown's house ……. (since/for) last April. They ……..…… (be) very thorough. They ……..…… (discuss) many options and ……..…..…… (prepare) detailed contract documents. ..…..… (Since/For) the last weeks, they …….…… (work) on the procurement procedure. Last Thursday, the successful tendering company ……..…… (sign) the contract. Work on site ….…….……..…… (not yet, commence). So far the client ……...…… (be involve, very). He ……..…… (take part) in many meetings with consultants and ……..…..… (make) lots of important decisions. He will now have to stand back and watch the work being realised on site.

Source:*Sharon Heidenreich English for Architects and Civil Engineers*

12.Read the text about contracts and answer these questions.

1. What is the difference between the two models?
2. What are the advantages and disadvantages of the DB model?

Traditionally, most companies use a design *bid* build (DBB) model. The client finds a company to design their project and then looks for a construction company (or companies) to build it for them. Different companies bid for the work. And finally, the contractor with the most attractive offer is selected and becomes responsible for the project. In the design build (DB) model, the client only has one point of contact. This may be an architect, for example, or a general contractor. There is no bidding. This means that the DB system is faster and cheaper, but of course the client has to hope that quality is not compromised. It is easy for a contractor to cut corners.

Source: *English for Construction 2 Evan Frendo*

4 c. Cause and effect

In short:

- What is used to express the relationship between two aspects and to combine clauses?
- What possibilities to express cause and effect do know?

Must know

cause and effect - *причина и следствие*
sentence connector - *лексический элемент соединитель предложений*
clause - *предложение (являющееся частью сложного предложения)*
sterm from – *возникать*
subordinating conjunction - *подчинительный союз*
washbasin – *умывальник*
spacious layout - *просторная планировка*
attributable – *относимый*
not to give rise to - *не давать повода для*

6. a) Read and translate the text.

The relationship between two aspects, dependent on or responsible for one another, is called cause and effect. Sentence connectors are used to express these relationships and to combine clauses.

There are many possibilities to express cause and effect.

Example: As a result of the client's visit to the site, a further window is to be added to the dining room.

The cause is the client's visit to the site; the effect is the additional window. The sentence connector chosen here is "as a result of". There are numerous sentence connectors, which can be used to express a cause/effect relationship.

 Verb and verb phrases:

The bad weather | is responsible | for the delay.
cause | verb link | effect

Alternative verb links with a similar meaning:
to account for, to result in, to bring about, *to give rise to*, to lead to, etc.

It is also possible to reverse the elements of the sentence above:

The delay | stems from | the bad weather.
effect | verb link | cause

Alternative verb links with a similar meaning:
to arise from, to result from, etc.

 Clauses of cause:

The contractor selected an alternative material	because	the tender item was not available.
effect	conjunction	cause

A subordinating conjunction links the effect and cause clauses.
Alternative subordinating conjunctions are:
as, since, etc.
 Phrases of cause:

Due to the delayed delivery of supplies,	operations on site are behind schedule.
cause	effect

In this case, an adverb phrase introduces the cause.
Alternative expressions with a similar meanings are: *as a result of, because of, on account of, owing to, etc.*
When an adverb clause begins the sentence, use a comma to separate the two clauses.
When the adverb clause finishes the sentence, there is no need for a comma.
Example: The operations on site are behind schedule due to the delayed arrival of supplies.

7. Enter the following words into the text below. Make sure to use the correct verb form.

as a result of · to lead to · to be attributable to · to bring about · owing to · due to not to give rise to · since

In addition to the extra window in the dining room, the client also requested a second washbasin in the family bathroom. A visit to a friends house ……..……. this idea. ……..…..……. the already spacious layout of the bathroom, this request was fairly easy to fulfil. ……..…….. the variation, the architect had to draw a new plan showing the modification. ……..…….. the sanitary appliances had not yet been ordered, the additional washbasin caused no delays. A mistake in the *door schedule* ……..……. a slight delay. The mistake ……..……. the architect, who noted a wrong number in the contract documents. ……..……. the speedy reaction of the joiner on site, the correct door was delivered quickly and the mistake ……. any delays.

Source:*Sharon Heidenreich English for Architects and Civil Engineers*

8. The following sentences contain a mistake. Find the mistake and correct it.

1. Owing a danger of falling objects, workers must wear a hard hat.
2. The driver wasn't badly injured in the accident on account from the airbag.
3. The car is cheap but reliable and that's the result for its popularity.
4. Due to oil is used in the manufacture of so many useful substances, it is a valuable raw material.

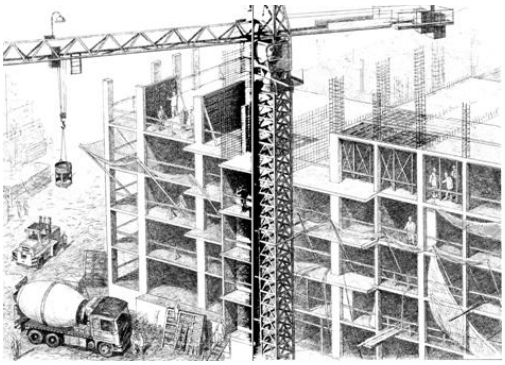
4 d. Construction site

In short:

- What does a site layout plan enable contractors?
- What does all contracts usually include?

Must know

site layout plan - *план общего расположения*
obstruction - *препятствие*
lifting capacity – *грузоподъемность*
perimeter fences - *ограждение территории*
steel mesh - *сетка из стальной проволоки*
adhere – *соблюдать*



4. a) Read and translate the text.

A *site layout plan* enables contractors to understand whether the important items are correctly placed in accordance with the general organisation of the site. In most contracts access roads constitute an important part of the site set-up. To avoid *obstructions* and delays, sufficient space should be allowed for lorries to load and unload. Access roads must be properly maintained, especially during wet weather.

All contracts usually include a tower crane, either a static one, requiring very little space, or one running *on rails*. It goes without saying that the radius of the *crane jib* as well as the *lifting capacity* at the *jib nose* have to be suited to the job. Sometimes *mobile cranes* are required to perform single operations, which exceed the capacities and accessibility of static plant.

Safety measures cover both, security and protection. *Perimeter fences* are primarily intended to guard the site against *trespass* and *theft*. Usually *fencing* is made of *steel mesh* fixed to concrete block fence bases. Sites directly adjoining *public footpaths* or roads must provide protection to the public. *Hoardings*, protected walkways and *guard rails* are installed for the duration of the site work. The contractor's insurance policy includes clauses relating to the provision of all necessary safety measures.

All equipment, plant and material belonging to the construction companies have to be positioned on the client's property. If additional space is required, temporarily or permanently, a permit must be obtained from the local government before work commences. The permit for a *road closure* usually involves a fee. Furthermore, all construction companies have to adhere to legal requirements regarding aspects such as working hours, noise and vibration, *waste management*, etc. *Emission standards*, for example, prescribe the volume of noise permitted at each hour of the day.

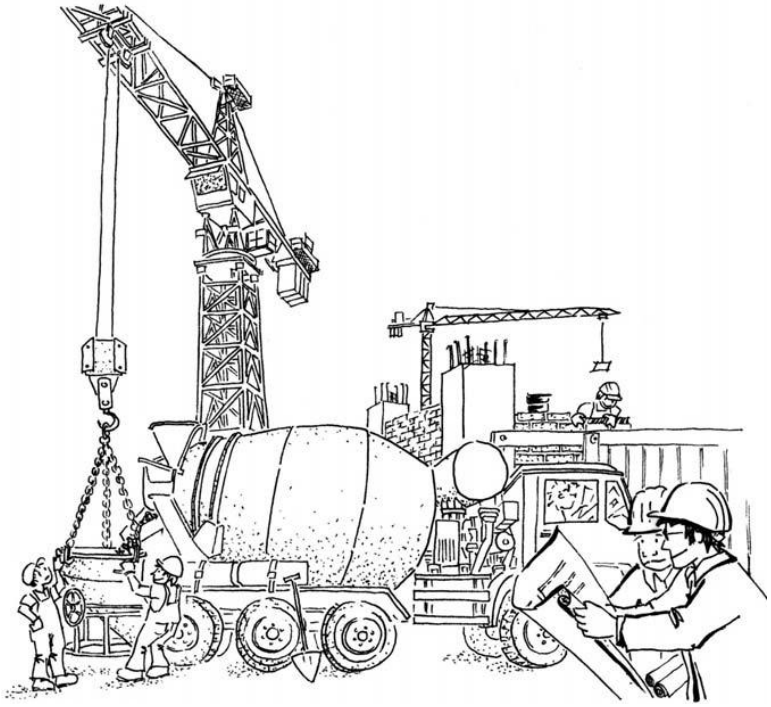
Source:*Sharon Heidenreich English for Architects and Civil Engineers*

b) Discuss these questions.

1. How are the items placed on the site?
2. How are access roads maintained?
3. What cranes are required on the site?
4. How are safety measures provided?
5. What equipment and material have to be positioned on the client's property

5. Take a look at the drawing below and find the following items.

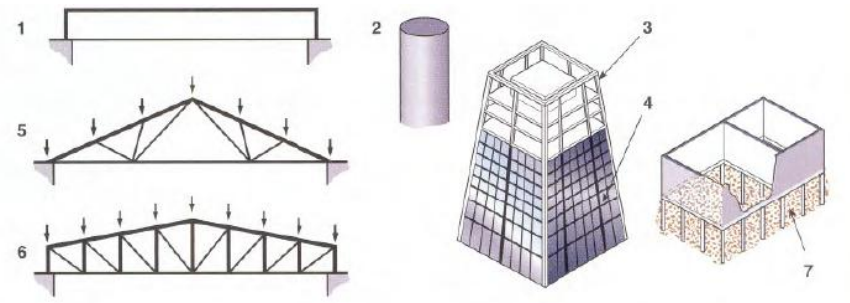
tower crane · lifting crab · hardhat · reinforcement · architect · safety shoes · shovel ready-mixed concrete · hook · concrete skip · plan · bucket



Source:*Sharon Heidenreich English for Architects and Civil Engineers*

6. Label the following diagrams using words from the box.

beam column steel girder curtain wall roof truss lattice girder pile foundations



1 _____ 4 _____ 7 _____foundations

2 _____ 5 roof _____

3 steel_____ 6 lattice_____

4. Vocabulary

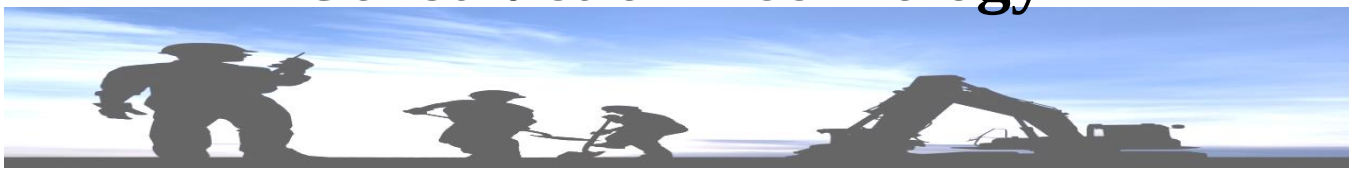
a.	profile board ['prəufaɪl [bɔ:d]	шаблон
	pit [pɪt]	яма, углубление
	spoil heap [spɔɪl hi:p]	свалка строительного мусора
	to cure [kjuə]	затвердевать
	sprinkler	автоматический распылитель
	aggregate ['ægrɪgət]	конструкция
	impermeability [ɪm,pɜ:mɪə'bɪlətɪ]	герметичность
	in-situ concrete [,ɪn'sɪtju:], [-'saɪ-]	монолитный бетон; бетон, уложенный на строительной площадке
	exposed concrete [ɪk'spəuzd], [ek-]	облицовочный бетон
	sliding formwork	скользящая опалубка
	permanent formwork ['pɜ:m(ə)nənt]	несъемная опалубка
	striking time	срок распалубливания
	concrete cover	защитный слой бетона
	steel erector	монтажник стальных конструкций
	stretcher ['stretʃə]	ложок (в кирпичной или каменной кладке - кирпич или камень, кладущийся вдоль основного направления кладки)
	header ['hedə]	тычок (в кирпичной или каменной кладке - кирпич или камень, кладущийся поперек основного направления кладки)
	English bond	английская система перевязки (вид каменной кладки)
	face	фасад (здания)
	to point	расшивать швы кладки (кирпичной или каменной)
	cavity wall ['kævətɪ]	пустотелая стена; стена с воздушной прослойкой
	purlin ['pɜ:lɪn]	обрешетина
	rafter ['rɑ:ftə]	стропило; балка
	roofer ['ru:fə]	кровельщик
	watertight ['wɔ:tətaɪt]	водонепроницаемый; герметичный
	waterproofing	гидроизоляция
	vapour barrier ['veɪpə 'bærɪə]	пароизоляция
	tinsmith ['tɪnsmɪθ]	лудильщик; жестянщик
	sheet metal worker	кровельщик
	flashing ['flæʃɪŋ]	гидроизоляция (стыков)

	coping ['kəupɪŋ]	карниз; навес
	gutter ['gʌtə]	водосток; жёлоб
	downpipe ['daʊnpʌɪp]	сливная труба
	sill	наружный подоконник (слив или отлив)
	roof plumber ['plʌmə]	кровельщик (работающий с металлической кровлей)
	roofing felt	рулонный кровельный материал (рубероид, толь)
	penetration of moisture ['mɔɪstʃə]	проникновение влаги
	damp proof course (DPC)	гидроизоляционная прослойка
	bituminous paint coat [bɪ'tju:mɪnəs]	битумная краска
	plasterboard ['plɑ:stəbɔ:d]	гипсовый картон (гипсокартон)
	batten ['bætn]	вагонка; обрешетина
	screed [skri:d]	шаблон; гипсовый маяк (в штукатурных работах)
	plaster work	штукатурные работы
	rendering ['rend(ə)rɪŋ]	штукатурка наружной поверхности стены
	render ['rendə]	обрызг; трёхслойная штукатурка; штукатурка (первый слой)
	pipework ['paɪpwɜ:k]	монтаж трубопровода
	discharge [dɪs'tʃɑ:dʒ]	сток, слив
	drainage ['dreɪnɪdʒ]	канализация
	sanitary appliance ['sænɪt(ə)rɪ ə'plaɪən(t)s]	санитарно-техническое оборудование
	electrical installation	электроустановка
	lighting ['laɪtɪŋ]	осветительные приборы
	plug [plʌg]	штепсель
	switch [swɪtʃ]	выключатель, переключатель
	distribution board [bɔ:d]	распределительный щит
	blacksmith ['blæksmɪθ]	кузнец (ручной ковки)
	wrought iron [rɔ:t 'aɪən]	кованое железо
	locksmith ['lɔksmɪθ]	слесарь, специалист по замкам
	joiner ['dʒɔɪnə]	плотник; столяр
	cabinet maker	краснодеревщик; мебельщик; столяр
	tiler ['taɪlə]	мастер по кладке черепицы
	tile adhesive [əd'hi:sɪv]	плиточный клей

	grout [graut]	жидкий строительный раствор
	glazing work	стекольные работы
	glazier ['gleɪzɪə], [-ʒə]	стекольщик
	single, double, triple glazing	одиночный, двойной, тройной стеклопакет
	curtain wall	несущая стена
	decorating ['dekəreɪtɪŋ]	декорирование
	decorator ['dekəreɪtə]	мастер по внутренней отделке помещений (штукатур, маляр, оклейщик обоев)
	to varnish ['vɑ:nɪʃ]	придавать лоск ; полировать
	floor layer	рабочий по настилу полов
	raised flooring ['flɔ:rɪŋ]	фальшпол, поднятые полы
	to level	выравнивать
	skirting board	плинтус
	built-in wardrobe ['wɔ:drəub]	встроенный шкаф
	leak	протечка
	pliers ['plaɪəz]	щипцы; плоскогубцы
	tension ['ten(t)ʃ(ə)n]	напряжение
b.	to conduct a meeting	проводить совещания
	fortnightly ['fɔ:tnaɪtlɪ]	раз в две недели
	minutes	протокол собрания
	financial review	финансовый обзор
	to swallow up ['swɔləu]	поглощать
	overruns	перерасход; превышение (стоимости)
	bid	предлагать на торгах
	insurance policies	страховые полисы
	bond	долговое обязательство
	devious contractor	хитрый подрядчик
	infringement [ɪn'frɪndʒmənt]	нарушение
	query ['kwɪərɪ]	вопрос
	coincide [ˌkəʊɪn'saɪd]	соглашаться, сходиться во мнениях
	daywork sheet	дневная норма; подённая оплата труда
	Work Breakdown Structure (WBS)	схема распределения работ
	bid	заявка (на торгах)
c.	to give rise to	вызывать, иметь результаты
	door schedule ['ʃedju:l], ['skedʒu:l]	схема расположения дверей
	project diary ['prɔdʒekt 'daɪərɪ]	дневник проекта

	fallible adj ['fæləbl]	не исключающий ошибки
	to jot down sth [dʒɔt]	набросать; записать
	notice of obstruction [əb'strʌkʃ(ə)n]	извещение о помехе, препятствии
d.	sufficient space	достаточное пространство
	on rails	по железной дороге
	crane jib	стрела крана
	lifting capacity	грузоподъемность
	jib	рычаг
	mobile cranes	подвижной кран
	perimeter fences	ограждение территории
	trespass	нарушение границ
	theft [θɛft]	воровство
	steel mesh	сетка из стальной проволоки
	public footpaths	пешеходная дорожка общественного пользования
	hoarding ['hɔ:dɪŋ]	временный забор вокруг строительной площадки
	guard rails	барьерное ограждение
	adhere [əd'hɪə]	соблюдать
	commence [kə'mɛn(t)s]	начинать
	road closure	закрытие дорог для движения
	waste management	организация удаления отходов
	emission standards	норма выбросов
	shovel	ковш
	lifting crab	тележка крана
	shovel ['ʃʌv(ə)l]	экскаватор; лопата
	hook	грузоподъёмный крюк
	concrete skip	бетонная смесь
	bucket ['bʌkɪt]	подъемная клеть

Construction Technology



A. *Who is technologist?*

In short:

- What construction professions do you remember?
- Name construction materials they work with
- What are the most popular construction materials? Why?

Must know

specification *спецификация*
false work *опалубка*
structural design *проектирование зданий и сооружений*
challenging task *сложная задача*
assure quality control *гарантировать контроль качества*

1. a) Read and translate the text to get information

Construction Technology involves study on methods of construction to successfully achieve the **structural design** with recommended **specifications** and conditions of contract.

It also includes study of geotechnics, construction equipments, and temporary works like scaffolding, **false work** and formwork etc. required to facilitate the construction process conforming to health and safety regulations. Construction technology also includes study of latest erection and fabrication processes. The modern trend is towards constructing lighter and taller buildings which is always a big challenge in an era of financial crunch. Excavation of foundation is also a **challenging task** in an area surrounded by existing buildings and a busy road. All of these factors should be considered while estimating the cost of the construction project. Construction technologist work very closely with construction managers and the quantity surveying professionals. Construction technologist should also have good knowledge about different types of materials used in construction along-with the testing procedures to **assure quality control** of these materials on site.

Source: *http://civilengineer.webinfolist.com/const_tech.htm*

b) discuss the questions

1. What is construction technology?
2. What are the challenges in construction?
3. How is the construction technologist involved in construction?

2. Grammar point. Translate and make up sentences with these phrases

- *To be good at smth*
- *To have sense of measure*
- *According to proportion*
- *To have good knowledge about smth*
- *To examine the cost*

3. What professional and personal qualities and skill should construction technologist have?

Professional qualities and skills	**Personal qualities and skills**
1. _____	1. _____
2. _____	2. _____
3. _____	3. _____

4. Fill in the gaps with the words from the box

support figure out withstand adopt update keep up solve

Many construction structures in our lives including bridges, airports, dams and buildings that we take for granted are the products of construction engineering. Technologists provide technical _____ and services to engineers and help design and build different types of structures.

Architects may design building we see around us, but construction technologists help _____ how to build them safely and economically so they can _____ all expected loads.

A construction technologist serves as a link between civil engineer and skilled craftsmen. They _____ scientific, mathematical and engineering theories in order to _____ various technical problems in the areas of research and development, manufacturing, construction, inspection and maintenance.

While assisting the development and research, they often work in laboratories.

They must find the most cost-effective solution to problems within safety and environmental standards. They are required to constantly _____ their skills and knowledge in order to _____ with technological advancements in this quickly changing field.

Source: *http://www.schoolsintheusa.com/careerprofiles_details.cfm?carid=274*

5. Put (✔) for true and (✖) for false statements

a. New technologies are used in construction only. _____
b. Construction technologist should be good at chemistry. _____
c. Construction technologists control all the processes on the site. _____
d. Construction can go without technologies. _____

B. *Safety first!*

In short:

- What is workplace? Who needs it?
- Do you have work place? How is it organized?

Must know

explosion *взрыв*
smoke *дым*
heat shock *тепловой удар*
collapse *обвал, обрушение*
chemical poisoning *химическое отравление*

3. Look at the photos.
Where does the construction technologist work? Explain your answer.

A

B

C

4. *a) Read and translate the text to get information*

Construction technologists work in both the public and private sectors. They are employed by government departments like, engineering consulting firms, construction companies, electrical utilities, research and educational institutions, communications companies, the manufacturing, processing and transportation industries, and many other industries. Some construction technologists work for private engineers in small consulting firms.

To research and develop construction technologies, they spend a lot of time in laboratories working on that problem. Namely they work with concrete, ceramics and polymer materials. They always should remember health and safety regulations to avoid emergency: explosion, smoke, fire, heat shock, collapse, chemical poisoning, etc. Precaution is one of the important parts of construction process.

Source: *http://www.schoolsintheusa.com/careerprofiles_details.cfm?carid=274*

b) discuss the questions

1. Where does construction technologist work?
2. Why do we need safety regulations?
3. Are Regulations same for all the organizations?

5. Match the phrases with their definitions

1	Emergency	**A**	all the companies involved in a particular type of business
2	Manufacture	**B**	to make a structure or object fall down
3	Collapse	**C**	something that you do to prevent bad things happening
4	Precaution	**D**	a serious or dangerous situation that needs immediate action
5	Industry	**E**	to produce something, usually in large numbers in a factory

6. Match these objects to the words and give situation where they are used.

First-aid box
Mask (dust mask)
Emergency button
Fire-control unit
Protective suit
Scale

a

b

c

d

e

f

7. Put (✔) for true and (✖) for false statements

a. Technologies always work for the government. _____
b. You should put a mask if you have a heat shock. _____
c. You may find all the medicines you need in the first-aid box. _____

8. Give a presentation on your future profession. Use the following items:

- Technologist in civil and industrial construction
- Pros and Cons of being a technologist
- Why I want to be a construction technologist

UNI 5

Concrete

5 a Where does the concrete come from?

In short:

- What construction material is your house made of?
- What are the most buildings in Kazan made of?
- What is the best and the worst construction material?

Must know

aggregate *заполнитель*
consistency *консистенция*
reinforced concrete *железобетон*
additives *добавки*
Portland cement *портландцемент*

Portland Bill, England

Portland cement

- *The most common type of cement in general usage in many parts of the world, as it is a basicingredient of concrete, mortar, stucco and most non-specialty grout.*
- *It was developed from cements (or correctly hydraulic limes) made in Britain, and its name is derived from its similarity to Portland stone, a type of building stone that was quarried on the Isle of Portland in Dorset, England*

Source: http://en.academic.ru

4. a) Read and translate the text to get information

Fact File: Concrete is a material used in building construction, consisting of a hard, chemically inert particulate substance **bonded together** by cement and water.

The Assyrians and Babylonians used clay as the bonding substance or cement. The Egyptians used lime and gypsum cement.

In 1756, British engineer, John Smeaton made the first modern concrete (hydraulic cement) by adding pebbles as a coarse aggregate and **mixing** powered brick **into** the cement.

In 1824, English inventor (bricklayer), Joseph Aspdin invented Portland Cement, which has remained the dominant cement used in concrete production. Joseph Aspdin created the first true artificial cement by burning ground limestone and clay together. The **burning process** changed the chemical properties of the materials and he created stronger cement than what using plain crushed limestone would produce.

Concrete is perhaps the most widely spread building material used nowadays. Concrete is an artificial stone, made by thoroughly mixing such natural ingredients or aggregates as cement, sand and gravel or broken stone together with sufficient water

to produce a mixture of the proper consistency. It has many valuable properties. It sets under water, can be **poured into moulds** so as to get almost any desirable form, and together with steel in reinforced concrete it **has very high strength**, and also resists fire. Prestressed concrete is most widely used at present while prefabricated blocks are employed on vast scale for skeleton structures.

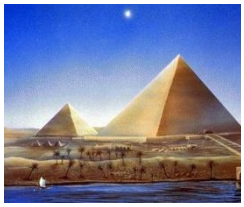
Source: *Английский для строителей. Мусихина О.Н.*

b) discuss the questions

1. When did people start producing concrete?
2. What forms can concrete get?
3. What properties does concrete have?

5. Follow the concrete history timeline, match dates with period description and tell the story of concrete development

6.



A
3000 BC

B
300 BC - 476 AD

C
1824

D
1908

e
NOWADAYS

1. Joseph Aspdin of England is credited with the invention of modern cement. He named it Portland Cement. _____
2. They used a material that is remarkably close to modern cement. They also used animal products in their cement as an early form of admixtures. _____
3. People were using early forms of concrete. They mixed mud and straw to form bricks and used gypsum and lime to make mortars. _____
4. Thomas Edison designed and built the first concrete homes in Union, New Jersey. These homes still exist today. _____
5. Concrete is used in almost all the constructions. _____

7. Grammar point. Translate and make up sentences with these phrases

- *To bond together*
- *To mix into*
- *Burning process*
- *To pour into molds*

5 b. The production!

In short:

- What does concrete consist of?
- How is it prepared?
- Who works with the concrete?

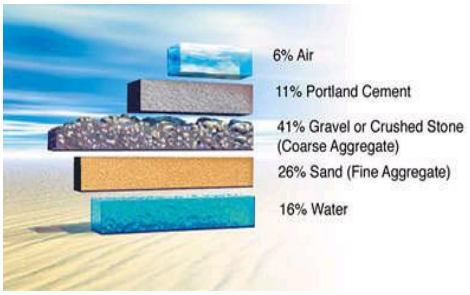
Must know

paste *цементное тесто*
coat *слой, покрытие*
hydration *гидратация*
rock-like mass *камневидная масса*
newly *только что*
durable *прочный*
proportion *пропорция*
porous *пористый*
smooth *гладкий*
rough *неровный*
to crack *трескаться*
ratio *соотношение*
workability *пластичность*
fill the voids *заполнить поры*
air pockets *воздушный пузырь*

9. a) Read and translate the text to get information

In its simplest form, concrete is a mixture of **paste** and aggregates, or rocks. The paste, composed of Portland cement and water, **coats** the surface of aggregates. Through a chemical reaction called **hydration**, the paste hardens and gains strength to form the **rock-like mass** known as concrete. Within this process lies the key to a remarkable trait of concrete: it's plastic and malleable when **newly** mixed, strong and **durable** when hardened. These qualities explain why one material, concrete, can build skyscrapers, bridges, sidewalks and superhighways, houses and dams.

Proportioning. The key to achieving a strong, durable concrete rests in the careful proportioning and mixing of the ingredients. A mixture that does not have enough paste to **fill all the voids** between the aggregates will be difficult to place and will produce **rough** surfaces and **porous** concrete. A mixture with an excess of cement paste will be easy to place and will produce a **smooth** surface, but can more easily **crack**.



The quality of the paste determines the character of the concrete. The strength of the paste, in turn, depends on the **ratio** of water to cement.

A properly designed mixture possesses the desired **workability** for the fresh concrete and the required durability and strength for the hardened concrete. Typical mix is presented in the figure

Hydration. Soon after the aggregates, water, and the cement are combined, the mixture starts to harden. Once the concrete is thoroughly mixed and workable it should be placed in forms before the mixture becomes too **stiff**. During **placement**,

the concrete is consolidated to compact it within the forms and to eliminate potential flaws such as **air pockets**.

Source: *http://www.cement.org/cement-concrete-basics/how-concrete-is-made*

b) discuss the questions

1. What do we call paste?
2. Why do we need careful proportioning and mixing of ingredients?
3. What is hydration?

10.Match the words with their synonyms

1	Ratio	**A**	Just
2	Newly	**B**	Strong
3	Air pocket	**C**	Layer
4	Coat	**D**	Proportion
5	Durable	**E**	Bubble

11.Put (✔) for true and (✖) for false statements

d. Concrete consists of water and cement. _____
e. Paste is plastic when newly mixed and durable when hardened. _____
f. The strength of paste doesn't depend on water-cement ratio. _____
g. Paste is liquid. _____
h. Concrete is used for road and building construction only. _____

12.Find all the words you can and give their translation (there are 15 words)

A	F	I	H	T	H	C	P	A	N
R	A	T	I	O	Y	M	A	S	S
B	S	G	A	M	D	Y	S	C	O
C	C	O	N	C	R	E	T	E	U
V	O	I	D	R	A	Q	E	M	W
E	A	I	R	A	T	P	U	E	A
F	T	K	l	C	I	O	L	N	T
M	O	L	D	K	O	S	I	T	E
G	S	T	R	E	N	G	T	H	R
H	A	G	G	R	E	G	A	T	E

_____ _____ _____
_____ _____ _____
_____ _____ _____
_____ _____ _____
_____ _____ _____
_____ _____ _____

13.Give a presentation "Concrete production". Use the items:

- Historical background
- Components
- Process of production

5 c. Meet the Concrete: so different and various!

In short:

- What does type of concrete depend on?
- How many types do know?
- What properties of construction material do you know?

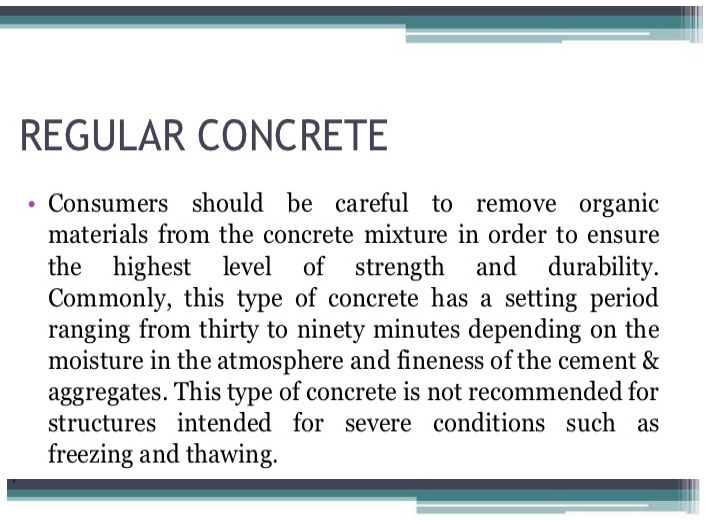
Must know

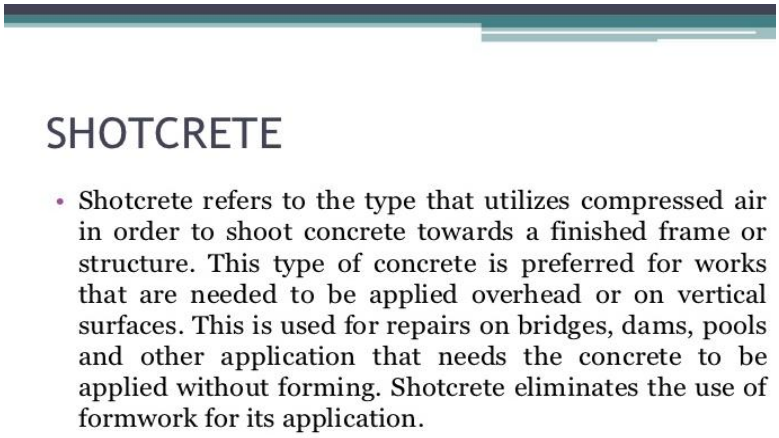
Regular concrete *бетон без дефектов*
Shotcrete *торкретбетон*
High strength concrete *высокопрочный бетон*

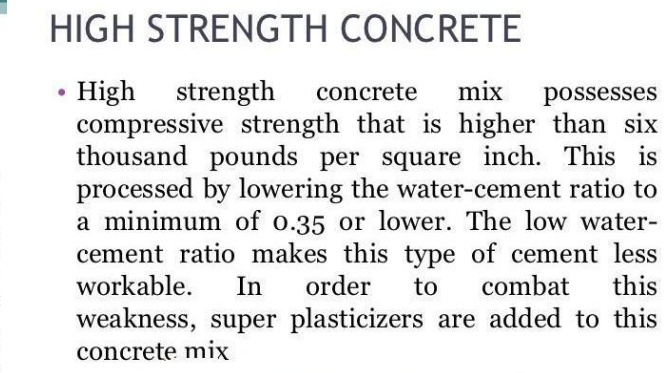
1. a) Read and translate the text to get information

There are different types of concrete that are manufactured nowadays that are appropriate for different needs and applications. The formulas and ingredients in different types of concrete vary to suit the condition and preference for specific construction design.

People who often use concrete for personal or commercial engagements should have an idea about the different types of concrete in order to appropriately pick the right type to optimize the value of the material.







Source: *http://www.slideshare.net/jenicabullworth/types-of-concrete*

b) discuss the questions

1. What type of concrete doesn't need formwork?
2. How do we get high strength concrete?
3. What type of concrete is better to use I mild climate?

c) translate the text into English

Марка или класс – это основной показатель качества бетона, который является определяющим при его покупке. Это обозначение прочности бетона к моменту его основного затвердевания. Вообще, процесс затвердевания бетонной смеси происходит довольно долго. Ошибочно полагать, что он проходит за 2-3дня. На самом деле это длится не один год, но основные свои свойства бетон получает уже на 28-й день затвердевания.

Марки бетона обозначаются в цифрах после буквы «М-» наиболее распространенные марки бетона это М-100, М-150... Основным определяющим моментом для марки бетона является количество цемента в составе смеси и его марка.

Класс бетона обозначается как «В-». Наиболее используемыми являются: В-7.5, В-10, В-12.5, хотя полный их спектр немного более: от 3.5 до 80.

2. Fill in the table

The main properties of concrete are: durability, frost /fire resistance, and waterproof. Give examples of other materials with these properties and fill in the table.

durability	frost resistance	waterproof	fire resistance

3. Put (✔) for true and (✖) for false statements

a. We may use any type of concrete in construction. _____
b. Prestressed concrete and reinforced concrete have the same meaning. _____
c. Construction technologist should know all the types of concrete. _____
d. Concrete hardens in 28 days. _____
e. Structure of concrete varies to suit construction design. _____

4. Compile as many words as you can with the letters of the word

CONSTRUCTION / REINFORCEMENT / PRODUCTION

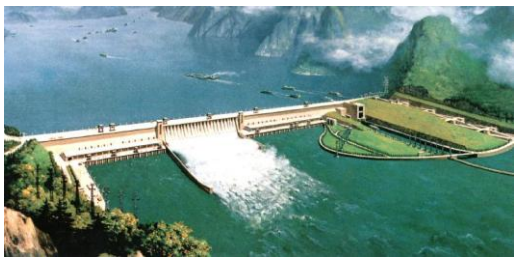
_____
_____
_____
_____

5 d. Putting into practice.

In short:

- Where and why do we use concrete?
- How do we choose concrete?
- What are the most famous structures made of concrete?

1. a) Read and translate the text to get information about world records



The world record for the largest concrete pour in a single project is the Three Gorges Dam in Hubei Province, China. The amount of concrete used in the construction of the dam is estimated at 16 million cubic meters over 17 years.

The world record for concrete pumping was set on 7 August 2009 during the construction of the Parbati Hydroelectric Project, near the village of Suind, Himachal Pradesh, India, when the concrete mix was pumped through a vertical height of 715 m (2,346 ft).

The world record for the largest continuously poured concrete raft was achieved in August 2007 in Abu Dhabi. The pour (a part of the foundation for the Abu Dhabi's Landmark Tower) was 16,000 cubic meters of concrete poured within a two-day period.

The world record for largest continuously poured concrete floor was completed 8 November 1997, in Louisville, Kentucky. The monolithic placement consisted of 225,000 square feet (20,900 m^2) of concrete placed within a 30-hour period.

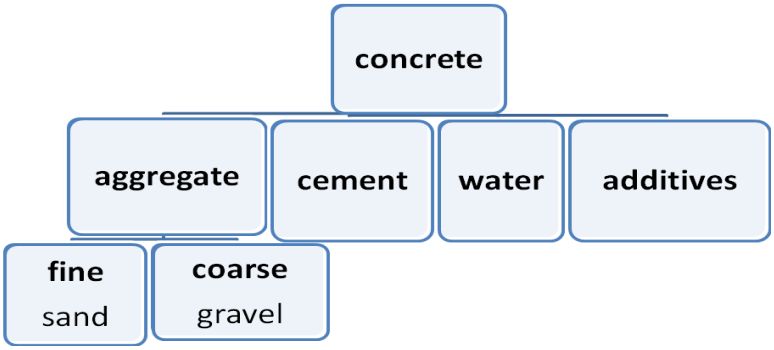
The record for the largest continuously placed underwater concrete pour was completed 18 October 2010, in New Orleans. The placement consisted of 10,251 cubic yards of concrete placed in a 58.5 hour period using two concrete pumps and two dedicated concrete batch plants.

Source: http://en.wikipedia.org/wiki/Concrete#cite_note-83

b) Do you know any other world records?

Review

1. Look at the chart and tell everything you learnt about concrete



2. Match the phrases with their definitions

1	aggregate	**A**	Plasticity
2	proportion	**B**	Concrete mixture
3	paste	**C**	Granular mineral material used to make concrete
4	additives	**D**	Ratio of materials
5	workability	**E**	Chemicals which are added to make substance better

1.	2.	3.	4.	5.

3. Make up a dialogue between 2 students

- Construction technologist and linguist
- Civil engineer and IT-student
- Designer and medical student

4. "True story…"

Tell your story related to concrete or concrete production to the class. They should guess if it is real story or not.

5. Be creative. Translate the poem into English (mind the rhyme)*

Бетономешалка

Бетономешалка с бетономешалкой
Делилась рецептом бетонного теста:
«Песка насыпаю я, сколько не жалко,
Щебенки по вкусу кладу и асбеста,
Потом заливаю водой из-под крана
И, чтобы бетон получился на славу,
Мешаю его я внутри барабана
То справа налево, то слева направо».

Source: *http://zanimatika.narod.ru.Автор. - Г. Дядина)*

UNI 6

Ceramics

6 a Where does the ceramics come from?

In short:

- What is ceramics?
- What ceramics is made of?
- What is made of ceramics?

Must know

ceramics *керамика*
silica *кремнезем*
pottery *гончарное искусство*
whiteware *тонкая керамика*
earthenware *глиняные изделия*
stoneware *керамические изделия*
chinaware *фарфоровые изделия*
porcelain *фарфор*

- *The word "**ceramic**" comes from the Greek κεραμικός (keramikos), "of pottery"*
- *The earliest ceramics made by human were pottery objects, made from clay, either by itself or mixed with other materials like silica, hardened, in fire.*
- *Later ceramics were glazed and fired to create smooth, colored surfaces.*

1. a) Read and translate the text to get information

Ceramics are defined as a class of inorganic, nonmetallic solids that are subjected to high temperature in manufacture and/or use.

Traditional ceramics refers to ceramic products that are produced from unrefined clay and combinations of refined clay and powdered minerals. Often, traditional ceramics is used to refer to ceramics in which the clay content exceeds 20%. The general classifications of traditional ceramics are described below.

Pottery is sometimes used as a generic term for ceramics that contain clay and are not used for structural (bricks, pipes, floor and roof tiles), refractory (kiln linings, gas fire radiants, steel and glass making crucibles), or technical purposes.

Whiteware refers to ceramic ware that is white, ivory, or light gray in color after firing. Whiteware is further classified as earthenware, stoneware, chinaware, porcelain, and technical ceramics.

Earthenware is defined as glazed or unglazed nonvitreous (porous) clay-based ceramic ware. Applications for earthenware include artware, kitchenware, ovenware, tableware, and tile.

Stoneware is vitreous or semivitreous ceramic ware of fine texture, made primarily from nonrefractory fire clay or some combination of clays, fluxes, and silica that, when fired, has properties similar to stoneware made from fire clay. Applications for stoneware include artware, chemicalware, cookware, drainpipe, kitchenware, tableware, and tile.

Chinaware is vitreous ceramic ware of zero or low absorption after firing that are used for nontechnical applications. Applications for chinaware include artware, ovenware, sanitary ware, and tableware.

Porcelain is defined as glazed or unglazed vitreous ceramic ware used primarily for technical purposes. Applications for porcelain include artware, chemicalware, insulators, and tableware.

Technical ceramics include vitreous ceramic whiteware used for such products as electrical insulation, or for chemical, mechanical, structural, or thermal applications.

Source: *http://www.epa.gov*

b) discuss the questions

1. Have you ever taken pottery classes?
2. Are ceramic products burnt in kilns?
3. Name three objects made of ceramics.

2. Put these words in the correct column

Bath, china, teapot, jar, mug, shower-toilet, brick, tile, cookware, insulator, washing basin, ceramic core, coffee set, icons of ancient Gods, baking tray

Pottery	Stoneware	Chinaware	Technical ceramics

3. Present a ceramic object to the class. Use the information from text 1a

6 b. The Brick!

In short:

- What is brick?
- What are the characteristics of the brick?
- Who works with bricks?

Must know

lightweight brick *легкий кирпич*
bonds *связка, сцепление*
brickwork *кирпичная кладка*
mortar *раствор*
air dried *необожженный кирпич*
fired bricks *обожженный кирпич*
binder *вяжущее*
straw *солома*

1. a) Read and translate the text to get information

A **brick** is a block or a single unit of a kneaded clay-bearing soil, sand and lime, or concrete material, fire hardened or air dried, used in masonry construction. **Lightweight bricks** are made from expanded clay aggregate. Fired brick is the most numerous type and laid in **courses** and numerous patterns known as **bonds**, collectively known as **brickwork**, and may be laid in various kinds of **mortar** to hold the bricks together to make a durable structure. Brick are produced in numerous types, materials, and sizes which vary with region and time period, and are produced in bulk quantities. Two most basic categories of brick are fired and non-fired brick. Fired brick are one of the longest lasting and strongest building materials sometimes referred to as artificial stone and have been used since circa 5000 BC. **Air dried** bricks have a history older than **fired bricks**, are known by the synonyms *mud brick* and *adobe*, and have an additional ingredient of a mechanical **binder** such as **straw**.

Source: *http://www.cement.org/cement-concrete-basics/how-concrete-is-made*

Sizes of bricks

Ordinary brick 250x120x65	**Brick and half** 250x120x88	**Twin brick** 250x120x140	**"Euro" brick** 250x85x65
			

Source: http://www.stenovoy.ru

b) discuss the questions

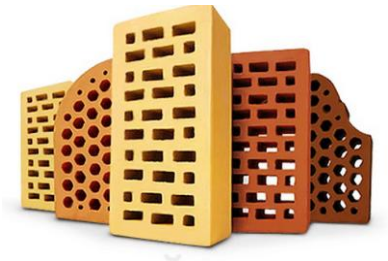
1. Name binders from the text.
2. What are the basic categories of brick?
3. What is adobe?

2. Match the brick type with the structure

NB *the higher brick type, the complicated and higher the structure*

Brick type		**Structure**	
1	M75	**A**	foundations of skyscraper
2	M125	**B**	ground floors and foundations
3	M 150	**C**	2-3 storied buildings
4	M200	**D**	multistoried building load bearing wall

1	2	3	4



3. Put (✔) for true and (✖) for false statements

i. Masonry construction deals with bricks. _____
j. Lightweight bricks are made from expanded clay aggregate. _____
k. Mortar keeps bricks together. _____
l. Width of the wall is measured in bricks. _____
m. Ordinary brick can be easily placed in human hand. _____

4. Find all the words you can and give their translation (there are 12 words)

B	R	I	C	K	I	L	N
R	A	D	I	A	N	T	A
E	D	R	I	E	D	O	I
B	R				A	N	L
M	A	K	S	A	M	N	I
I	Y	G	R	E	N	E	M
T	A	E	H	T	R	A	E

_____ _____
_____ _____
_____ _____
_____ _____
_____ _____
_____ _____
_____ _____
_____ _____

5. Give a presentation "Brick production".

Use the items:

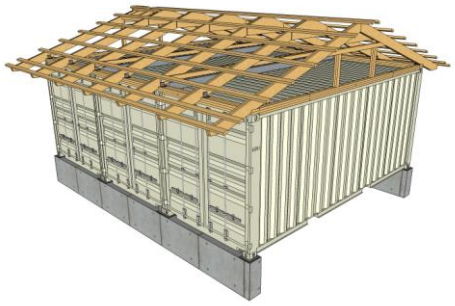
- Historical background
- Components
- Process of production

6 c. Roofing.

In short:

- What is tile? What kinds of tile do you know?
- Have you ever worked with tile?
- What is Green Roofing?

Must know



Tile *черепица, плитка*
Flat tile *плоская кровельная черепица*
Imbrex *желоночная итальянская черепица*
Tegula *нижняя лотковая черепица*
Pantiles *голландская черепицы (S - образная)*
Interlocking roof tile *пазовая черепица*

4. a) Read and translate the text to get information

A **tile** is a manufactured piece of hard-wearing material such as ceramic, stone, metal, or even glass, generally used for covering roofs, floors, walls, showers, or other objects such as tabletops.

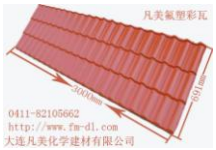
Roof tiles are designed mainly to keep out rain, and are traditionally made from locally available materials such as terracotta or slate. Modern materials such as concrete and plastic are also used and some clay tiles have a waterproof glaze. A large number of shapes (or "profiles") of roof tiles have evolved. These include:

Flat tiles the simplest type, laid in regular overlapping rows. They are usually made of clay (of stone, wood, plastic, concrete, or solar cells).

Imbrex and tegula an ancient Roman pattern of curved and flat tiles that make rain channels on a roof.

Roman tiles flat in the middle, with a concave curve at one end at a convex curve at the other, to allow interlocking

Pantiles an S-shaped profile, allowing adjacent tiles to interlock. These result in a ridged form resembling a ploughed field.



Interlocking roof tiles similar to pantiles with side and top locking to improve protection from water and wind.

Roof tiles are 'hung' from the framework of a roof by fixing them with nails. The tiles are usually hung in parallel rows, with each row overlapping the row below it to exclude rainwater and to cover the nails that hold the row below.

Source: *http://en.wikipedia.org/wiki/Tile*

b) discuss the questions

1. What is tile made of?
2. What tile profiles do you know?
3. What type of roof tile is typical for Kazan?

5. Be creative. Translate the poem into English (mind the rhyme)*

Крыша

Если есть крыша и лестница есть
Можно на крышу по лестнице влезть
Можно по крыше побегать потом
И можно лечь, развалиться…Все можно…
Нельзя забывать только о том,
Что с крыши можно свалиться!

Source: http://neposed.net. Автор.- В. Данько

6. Compare roof tile with other roofing material

№	Topic to compare	Roof tile	Roof slate	Roof sheet
1	The cheapest material			
2	The most durable material			
3	Has the best noise insulating properties (when raining)			
4	What roofing is typical for dwelling in Rissia?			
5	What roofing material do you like most?			
6	What would Karlsson choose?			
7	The most eco-friendly material			

7. Fill in the gaps

rainwater urban island landscape vegetation

Green roof is a roof of a building that is partially or completely covered with _____. Green roofs serve several purposes for a building, such as absorbing _____, providing insulation, creating a habitat for wildlife, increasing benevolence and decreasing stress of the people around the roof by providing a more aesthetically pleasing _____, and helping to lower _____ air temperatures and mitigate the heat _____ effect.

6 d. In the house.

In short:

- What ceramics do we have inside the house?
- How do we us it?
- Can we use construction material as decoration?

2. a) Read and translate the text to get information about tile

Decoration with tile

Ceramic tiles are tiles which are made from ceramic materials like earthenware and porcelain. Tiles are simply flat slabs of material which can be used in a range of applications, including flooring, countertops, roofing, walls, and showers.

Many people like to use ceramic tiles to make flooring. There are a number of advantages to tile flooring. It tends to be extremely durable, and heating and cooling systems can be installed underneath it to radiate through the floor. Many people also find tile flooring aesthetically pleasing, and it is easy to clean, especially in situations where drains are installed in the flooring, allowing people to essentially hose it down.

Tiles can also be used to line showers, pools, and bathtubs, to create countertops, to make decorative accents both inside and outside homes, and for an assortment of other purposes.

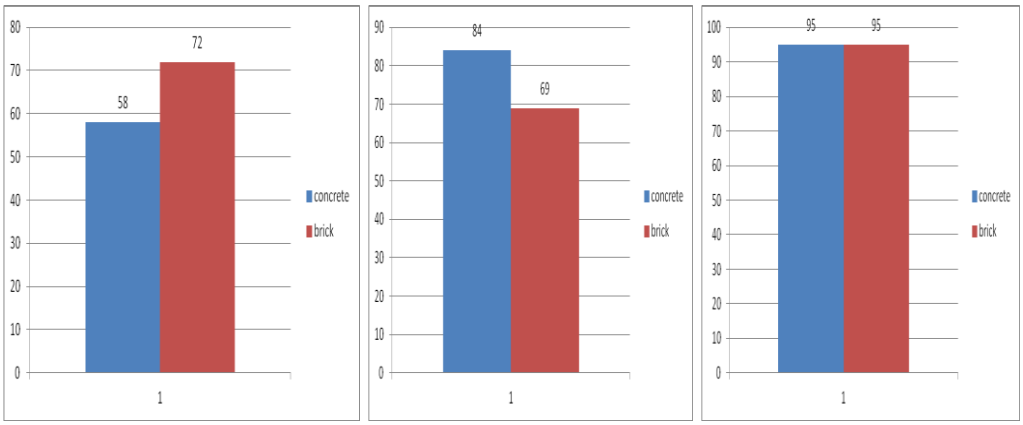
Source: *http://www.wisegeek.com*

b) discuss the questions

1. Where else do we use tile?
2. What properties does it have?
3. Is tile a good material for decoration?

Review

1. Look at the diagram of using concrete (blue) and brick (red) in building construction in different years and tell everything you see.



2003 2008 2012

2. Match the phrases with their definitions

1	Flooring	**A**	covering with a design in which one element covers a part of another
2	Underneath	**B**	A collection of various items.
3	Countertop	**C**	refers to a horizontal work surface in kitchens or other food preparation areas, bathrooms, and workrooms in general
4	Assortment	**D**	A side or surface that is below or under
6	Overlapping	**E**	Material used to cover the part of the room on which one stands

1.	2.	3.	4.	6.

3. Make up a dialogue. Choose the situation:

- Designer and owner are discussing the plan of the future house.
- Consultant in the shop helps to choose right brick type and roofing.
- Interview with the bricklayer.

4. "True story…"

Tell your story related to ceramics to the class.
They should guess if it is real story or not.

UNI 7

Polymers

7a A little chemistry in our lives

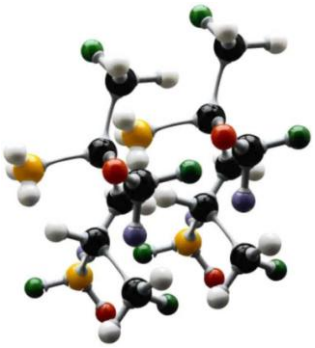
In short:

- Are you good at chemistry?
- What is polymer?
- Name 5 things made of polymers

Must know

molar masse *молярная масса*
repeating unit *повторяющееся звено*
starches *углеводы*
monomer *мономер*
addition polymer *аддитивный полимер*
condensation polymer *конденсационный полимер*

1. a) Read and translate the text to get information



Polymers are substances whose molecules have high **molar masses** and are composed of a large number of **repeating units**. There are both naturally occurring and synthetic polymers. Among naturally occurring polymers are proteins, **starches**, cellulose, and latex. Synthetic polymers are produced commercially on a very large scale and have a wide range of properties and uses. The materials commonly called plastics are all synthetic polymers.

Polymers are formed by chemical reactions in which a large number of molecules called **monomers** are joined sequentially, forming a chain. In many polymers, only one monomer is used. In others, two or three different monomers may be combined. Polymers are classified by the characteristics of the reactions by which they are formed. If all atoms in the monomers are incorporated into the polymer, the polymer is called an **addition polymer**. If some of the atoms of the monomers are released into small molecules, such as water, the polymer is called a **condensation polymer.**

Signs of addition polymers:

Source: *http://scifun.chem.wisc.edu/chemweek/Polymers/Polymers.html*

b) discuss the questions

1. What is the structure of polymers?
2. What does the chain consist of?
3. How are polymers classified?

2. Read the information in the table and match pictures with types of polymers. Explain your answer.






Name		Description
PETE polyethylene terephthalate	**ПЭТ** Полиэтилен-терефтала	It is thermoplastic polymer resin of the polyester family and is used in synthetic fibers; beverage, food and other liquid containers; engineering resins often in combination with glass fiber.
HDPE high-density polyethylene	**ПНД** Подиэтилен низкого давления	It is made from petroleum. Known for its large strength to density ratio, HDPE is commonly used in the production of plastic bottles, corrosion-resistant piping, and geomembranes.
V poly vinyl chloride	**ПВХ** Поливинилхлорид	PVC comes in two basic forms: rigid and flexible. The rigid form of PVC is used in construction for pipe and in profile applications. It is also used for bottles, other non-food packaging, and cards (such as bank or membership cards). It can be made softer and more flexible by the addition of plasticizers (electrical cable insulation).
PP polypropylene	**ПП** Полипропилен	It is a thermoplastic polymer used in a wide variety of applications including packaging and labeling, textiles, stationery, plastic parts and reusable containers of various types, laboratory equipment, loudspeakers, automotive components, and polymer banknotes.
PS polystyrene	**ПС** Полистирол	Polystyrene can be solid or foamed. Uses include protective packaging (such as packing peanuts and CD and DVD cases), containers, lids, bottles, trays, and disposable cutlery.

3. Grammar point. Translate and make up sentences with these phrases

- *To classify by*
- *In accordance with (according to)*
- *To have a general idea of*
- *To have wide range of*
- *To be familiar with*

7 b. Decking, siding, linoleum.

In short:

- What do you know about decks and decking?
- What is siding?
- What definition of linoleum can you give?

Must know

cedar *кедр*
pressure treated pine *прессованная сосна*
hardwoods *древесина твердой породы*
moisture *влага*
to attach *прикреплять*
fastening systems *крепеж*
wall cladding *наружная обшивка стен*
confusing *сбивающий с толку*

1. a) Read and translate the text to get information

For many years **decking** was primarily wood. People used redwood, cedar, pressure treated pine, and even some exotic hardwoods. Decking comes in many forms these days. There are over a hundred different man-made decking products on the market today. Wood decking will require you to stain your deck at least every year for the first several years to protect the surface from sun and moisture damage.

Wood decking is usually nailed or screwed to the joists for attachment. Alternative decking products have a wide range of hidden fastening systems. Always follow the manufacturer's instructions.

Source: *http://www.decks.com/deckbuilding/decking*

Siding and wall cladding is the exterior material applied to the walls of a house or other building. Installing a new siding is an innovative way to modernize the exterior of your home. It not only adds to the beauty of the house, but also protects it from wind, rain, snow, etc. Since there are many varieties available nowadays, selecting one can be difficult and confusing. No matter which type you choose, always keep in mind that it will remain there for years to come. So, thoroughly make up your mind before you purchase one.

Source: *http://www.buzzle.com*

Linoleum is a type of material that is produced in thin sheets, has a shiny surface, and is used to cover floors and counters. Linoleum was invented by Englishman Frederick Walton in 19th century.

b) discuss the questions

1. Which material is for interior\exterior works?
2. What is the main characteristic of these materials?
3. Which material is more eco-friendly?

2. Match the words with pictures

Cedar Pine Maple Birch Oak

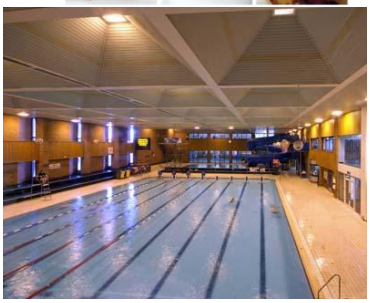




_____ _____ _____ _____ _____

3. Group discussion. How are these pictures related to our topic?




4. Learn more and make a presentation about

- invention of linoleum by Frederick Walton
- types of house siding
- decking in Kazan

5. Grammar point. Translate and make up sentences with these phrases

- *To keep in mind*
- *To make up one's mind*
- *To follow instructions*

7 c. Bitumen.

In short:

- Have you worked with bitumen?
- What is it for?
- What can we get from bitumen?

Must know

viscous *густая / вязкая*
crude bitumen *природный битум*
refined bitumen *очищенный битум*
renewable *возобновляемые*
to dampen the noise *заглушать шум*
roofing felt *рулонный кровельный материал*

1. a) Read and translate the text to get information

Bitumen is a mixture of dark, sticky, highly **viscous organic liquids** composed mainly of aromatic hydrocarbons. It is usually black or dark brown in color. Bitumen found in nature is known as **crude bitumen**, and that obtained by the distillation of crude oil is called **refined bitumen**. It is now possible to produce bitumen from non-petroleum based **renewable resources** such as sugar, molasses, or starch. Materials that contain bitumen are described as bituminous, such as bituminous coal and bituminous rock.

Bitumens are used primarily for paving roads. They have also been used for waterproofing products such as **roofing felt** and boats. Some have used bitumen plates **to dampen the noise** produced by moving computer parts (such as hard drives) and dishwashers. With the recent rise in oil prices, it has become profitable to upgrade bitumen to synthetic crude oil.

In British English, the word 'asphalt' refers to a mixture of mineral aggregate and bitumen (commonly known as tarmac). The word "tar," by contrast, refers to the black viscous material obtained from the destructive distillation of coal and is chemically distinct from bitumen.

In American English, bitumen is referred to as "asphalt" or "asphalt cement" in engineering jargon.

In Australian English, bitumen is sometimes used as the generic term for road surfaces.

In Canadian English, the word bitumen is used to refer to the vast Canadian deposits of extremely heavy crude oil while asphalt is used for the oil refinery product used to pave roads and manufacture roof shingles.

Source: *http://www.newworldencyclopedia.org/entry/Bitumen*

b) discuss the questions

1. How do we understand the term “bitumen” in Russia?
2. What is shingle? What is it made of?
3. What is the main characteristic of bitumen?

c) translate the text into English

Основу гибкой черепицы обычно составляет стеклохолст или стеклоткань, пропитанная битумом. Эти материалы выполняют функции так называемой арматуры, которая скрепляет два слоя модификатора, напрямую влияющего на гибкость и эластичность покрытия. Снаружи материал посыпается минеральной крошкой и гранулятом из базальта. Они способны не только защищать материал от повреждений, но и придавать ему разные цвета.

2. Fill in the table

Bitumen could be used in different ways.
Find more information and complete the table

Construction	Art
• _____	• _____
• _____	• _____

4. Compile as many words as you can with the letters of the word

MANUFACTURE / HYDROCARBON

_____

_____

7 d. Windows.

In short:

- What comes to your mind first when you hear “WINDOWS”?
- Why do we need window openings? What are their functions?
- Give a definition of WINDOW.

Must know

sash *створка*
casing *наличник*
muntins *горбылек(средний вертикальный брус)*
sill *нижний брус оконной коробки*
jamb *косяк*
glazing *стекло*
dungeon *темница*

3. Look at the table below, get information and discuss in the group.

Old-fashion wooden windows

- cheap
- plate glass
- timber\lumber

Glass-reinforced windows

- the most expensive windows
- durable
- less used in Russia

W I N D O W S

Modern wooden windows

- Expensive
- Fashionable
- Eco-friendly

PVC windows

- Quite expensive
- Multiple glazing
- Glued lumber\ veneered lumber
- Gas (argon)

4. a) Read and translate the text

Windows serve more than one purpose. Windows are for allowing sunshine and weather into a home. If there is smoke in the house or a foul smell, a window can also let the bad air out. A window is as decorative or as plain as you choose. With so many window designs available, you are bound to find the perfect windows for your house. Building a window into a house is easy as long as the framing is done prior to the completion of the home's construction. A home without windows would feel somewhat like a dungeon, so plan on constructing quite a few window frames.

b) discuss the questions

* the most decorative window you have ever seen
* what shapes of windows you know
* what are the windows at your place?

5. Match the window type with the place

1	Roof window	**A**	Spaceship
2	Stained glass window	**B**	Loft
3	Port-light	**C**	Cottage
4	Window	**D**	Boat
5	Viewing port	**E**	Church

1.	2.	3.	4.	5.

6. a) act out a negotiation process. Contractor and subcontractors providing windows. Choose the best presentation.

- Subcontractor #1 “World of Plastic”
- Subcontractor #2 “PVC means quality”
- Subcontractor #3 “Made of Wood”

b) tell a story

1. Make up a detective story. Glass or window should be the part of the answer.
2. Everyday I see through the window ….
3. My grandfather is a glass-blower.

REVISION
Vocabulary and Grammar

Construction

Construction means the erection or assembly of large structures, primarily those which provide shelter, such as commercial and residential buildings. It also includes major works such as ships, aircraft, and public works such as roads, dams, and bridges.

The major elements of a building include:

- the foundation, which supports the building and gives it stability
- the structure, which supports all the imposed loads and transmits them to the foundation
- the exterior walls, which may or may not be part of the primary supporting structure
- the interior partitions, which also may or may not be part of the primary structure
- the environmental-control systems, including the heating, ventilating, air conditioning, lighting, and acoustical systems
- the power, water supply, and waste disposal systems

Jobs in construction are many and varied, ranging from architects to painters. However, every building needs a solid *foundation* on which the *structure* can be erected, paying special attention to the *exterior wall* which will need to withstand the elements.

Jobs in construction

architect • carpenter • electrician • mason • painter • plasterer • plumber •quantity • quantity surveyor • roofer

The foundations

caisson • deep • mat • pile • reinforced concrete • shallow • spread footing

The structure

beam • bracing connection • column • floor • girder • rigid connection • roof • truss • wall

The exterior walls

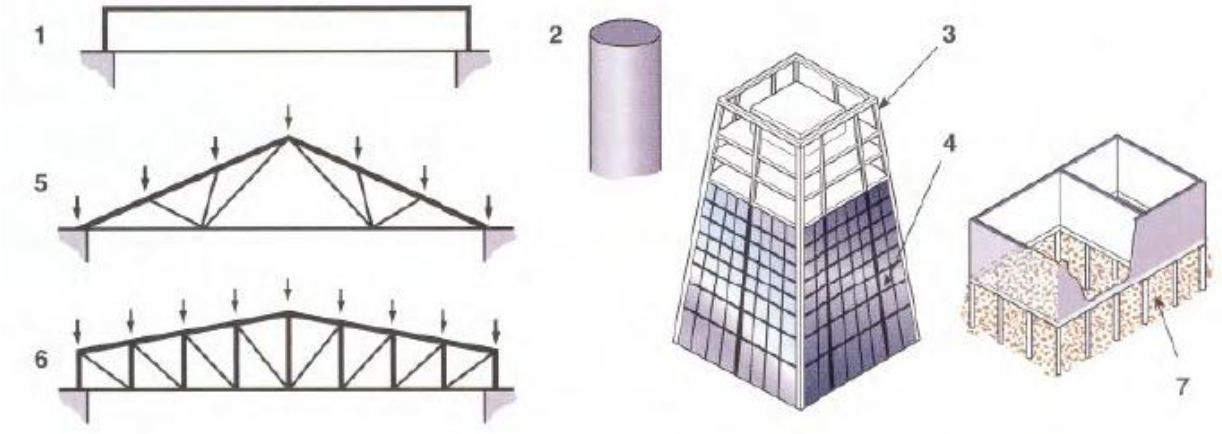
curtain wall • exterior skin • load-bearing wall • nonload-bearing wall • roofing felt • sound-deadening material • vapour barrier

Tasks

1. Choose the correct word in the following sentences.

1 A flat roof is usually covered in roofing felt/skin for protection against the weather.
2 Rooms in a building are divided by interior supports/partitions.
3 To prevent water entering the cavity of the wall, moisture barriers are used on the external surface and vapour/insulating barriers are used on the internal face.
4 The assembly/structure of a building transfers all the loads acting on the building to the ground.
5 The ventilating/acoustical system provides fresh air.
6 Sound-deadening/ -barrier material is used to reduce sound passing from one room to another.
7 The foundations for a skyscraper building must be deep/shallow.
8 A spread footing/ caisson piers is/ are used when the soil is weak.

2. Label the following diagrams using words from the opposite page.



1 _____ 4 _____ 7 _____foundations
2 _____ 5 roof _____
3 steel_____ 6 lattice_____

3. Here is part of a text about house building. Complete the text with words from the opposite page.

There are two main methods of building houses. In one, solid walls known as (a) _____ walls are constructed. They support the floors and the roof of the building. In the other, a framework of steel, timber or concrete is constructed. The frame can be covered or filled in with lightweight material.

When building a house, the (b) _____ first of all examines the site and makes a plan of the size and shape of the plot of land. Next, an (c) _____ makes a detailed drawing of the building, and gives information

about the materials which are to be used. A (d) _____ calculates exactly how much of these materials will be needed for the building. Then, the ground is dug out and the (e) _____ laid. During building, (f) _____make the wooden structures, (g) _____ cut and place stone, (h) _____construct the roof and (i) _____cover walls and ceilings with plaster. Once the building has been completed, (j) _____ lay meters of electrical cable, and (k) _____install pipes for heating and water. Finally (l) _____ paint the walls and ceilings of the building.

Civil engineering 1

The term engineering describes engineering work performed by civilians for non-military purposes. In general it describes the profession of designing and executing structural works for the general public and the communal environment. Civil engineering covers different areas of engineering, including the design and construction of large buildings, roads, bridges, canals, railway lines, airports, water-supply systems, dams, irrigation, harbours, docks, aqueducts, and tunnels.

The civil engineer needs a thorough knowledge of surveying, of the properties and mechanics of construction materials, of the mechanics of structures and soils, and of hydraulics and fluid mechanics**.** Today civil engineering includes the production and distribution of energy, the development of aircraft and airports, the construction of chemical process plants and nuclear power stations, and water desalination.

A range of *civil engineering tools and equipment* is used in the construction of *roads, bridges and water ways.*

Roads

camber • crown • culvert • kerb/curb • macadam • main • manhole • metal • pavement • pedestrian crossing • pothole • sewer • soft shoulder • tarmac • underdrain

Bridges

arch • bascule • cable • cantilever • clapper • crossover • lift • footbridge • span • suspender • suspension • swing • viaduct

Canals, rivers and other waterways

aqueduct • barrage • dam • dike • drainage • flume • lock • paddle • pier • sluice • watercourse • water main • weir • well

Civil engineering tools and equipment

bulldozer • dredger • earthmover • excavator • plate girder • pylon • road roller • shovel

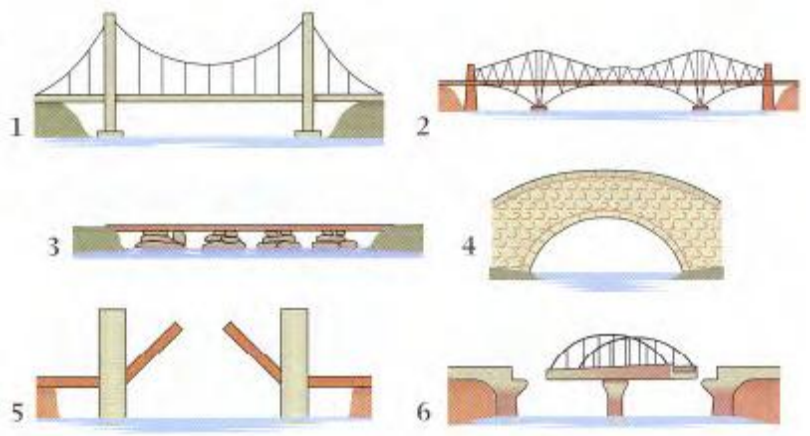
Here are the vital statistics of the famous Golden Bridge in San Francisco:

Total length of bridge	2,737 m	Length of suspension span	1,966 m
Length of main span	1,280 m	Length of one side span	343 m
Width of bridge	27 m	Width of road between curbs	19 m
Width of pavement		3 m	
Clearance above mean higher high water		67 m	
Deepest foundation below mean low water		34 m	
Total weight of bridge, anchorages and north ar d south approaches (1994)			887,000 tons

Tasks

1. Name the bridges opposite. Choose from the following.

masonry arch
cantilever
swing
suspension
clapper
bascule



2. What is being described?

1. This structure is built across a river to hold back the water to produce power, improve navigation or control flooding.
2. This structure is built along the banks of a river or along the coast to hold back water and prevent flooding.
3. This carries a road or railway across water.
4. This carries water (canal or river) across land, usually over a valley.
5. The section of a canal where the water level changes to raise boats from one level to the next.
6. These allow water to flow in or out in order to change the water level in a canal.
7. A deep hole in the ground where people can get water.
8. These are dug underground for roads and railways.

9. This is the process of removing salt from sea water.
10. This large powerful vehicle uses a large blade to move earth and rocks.
11. This machine or ship is used for removing sand and mud from the bottom of a river or a harbor.
12. This machine is used for rolling tarmac or asphalt flat on a road surface.

3. A civil engineer is showing an international visitor around. Complete the text with words from *Roads* from the opposite page.

Here we are on one of our town streets. As you can see the road is not flat, it has a (a) _____ .This is to allow rain water to run off the surface and into the drains at the side. The highest part of the road is (b) _____ in the centre. A (c) _____ carrying waste water runs below the surface of the road. At certain points along the road you'll find large (d) _____ which allow engineers to go down and inspect electricity and telephone cables which also run below the road. On either side of the road there is a raised (e) _____ for pedestrians which is edged with (f) _____ stones. The black surface we use nowadays is a variety of (g) _____ .it was invented by a man of that name whose company was later called Tarmac. As you can see this road needs to be resurfaced. There are a number of (h) _____ following the heavy rain we had last month.

Now, here we are on a (i) _____ road out of town. There are no pavements here. Grass is allowed to grow along the edges and provides a (j) _____ _____ . over there you can see a (k) _____ carrying a small stream under the road.

Civil engineering 2

The functions of civil engineers fall into three categories:

1. before construction (**feasibility studies, site investigations**, and **design**),
2. during construction (dealing with clients, consulting engineers, and contractors),
3. after construction (**maintenance**)

Any major civil engineering project starts with a **feasibility study** to assess both financial and engineering aspect. During the feasibility study a preliminary site investigation is carried out. Once a scheme has been approved, a more extensive investigation is usually necessary to evaluate the load-bearing qualities and stability of the ground. This field is called soil mechanics. The design of engineering works may require the application of principles of hydraulics,

thermodynamics and nuclear physics. During the construction phase, a consulting engineer is often employed to be responsible for design of the works, supplying specifications, drawings, and legal documents to get competitive tender prices. In a turnkey or package contract the building contractor undertakes to finance, design, specify, construct, and commission the whole project. Maintenance is normally carried out by the contractor as part of the agreement: if there are maintenance problems, it is the responsibility of the contractor to pay for any necessary work.

Now look at the followinf statements about the pre-construction phase.

Preliminary feasibility study:
A series of steps by which all the attributes of each proposal are marked, resulting in two or three being selected.

Secondary feasibility study:
A process to determine the best of the two or three remaining schemes. Rough dimensions are put onto the structure at this stage. In order that a more accurate costing system can be implemented.

Feasibility study factors:
cost • aesthetic appeal • maintenance • ecology • disruption

Preliminary design:
Dimensions and quantities of materials are roughly analysed and calculations are performed to estimate prices and construction needs.

Detailed design:
At this stage of the design other factors are considered, such as the **exact geology** of the area. To determine this, **boreholes** and trial pits are sunk.

After all calculations have been worked out exactly and checked, detailed **technical drawings** are done. The result of these calculations is a **finished design** which can be built from the drawings produced. Once the detailed design is complete, construction can begin.

Read the list of the *essential duties and responsibilities* of a civil engineer below:

- to provide detailed fact finding, research and analysis
- to provide support for less experienced staff
- to develop computer models, including detailed and potentially complex spreadsheet analyses
- to assist with engagement planning activities including the development of **draft work plans** and budgets
- to prepare client communications for senior level review

Tasks

1. Match the following words and phrases with their definitions.

1.	feasibility study	a.	building or installation which is built, supplied, or installed complete and ready to operate
2.	site investigation	b.	activities carried out after the project to ensure problems are solved
3.	maintenance	c.	detailed plan of proposed structures
4.	soil mechanics	d.	dimensions and measurements
5.	specifications	e.	extensive investigation to evaluate the load bearing qualities and stability of the ground
6.	technical drawings	f.	investigation to assess both financial and engineering aspects of a project
7.	commission a project	g.	offer a bid for an engineering contract
8.	costing system	h.	procedure to monitor the costs of a project so that management can get information on development
9.	tender	i.	study of the proposed location to assess geology of the area
10.	turnkey project	j	to order a plan to be carried out

2. Put the following tasks into appropriate phase of construction.

consulting engineer communications with client • extensive site investigation • consulting engineer contact with contractors • feasibility study • detailed design • maintenance • employment of consulting engineer • preliminary site investigation

Phase	**Tasks**
Before construction	
During construction	
After construction	

3. The following extract is from a letter written by a qualified civil engineer in response to a job advertisement. Complete the extract by unscrambling the letters in brackets.

I am writing in connection with the job advertisement for a civil (a) _____ (renigeen), which appeared in today's *Civil Engineering*.
I have a degree in (b) _____ (rnlutiasid) engineering. After graduation, I worked, I worked for four years at Locke Engineers in the field of (c) _____ (onscorutiten) consulting. During my time there, I specialized in (d) _____ (ilamse) preparation and construction (e) _____ (ehdnsgulic). I am particularly interested in the opportunities to further develop my skills, especially in the following areas:

- development of (f) _____ (tdfar) work plans
- (g) _____ (etis) investigations
- preparation of (h) _____ (nicted) communications

Date _____ Name _____ Group # _____

Unit 1. Construction Industry. Test 1A

Task 1. Give definitions to the terms.

1	Industry	A	
2	Client	B	
3	Trade	C	
4	Supplier	D	
5	Contractor	E	

Task 2. Choose the correct answer.

1. Scheme characterizing relationship between people involved in construction
   a) Chart
   b) Organigram
   c) Standard

2. One of parties in project team connected directly with the client.
   a) Contractor
   b) Supplier
   c) Architect

3. Official paper which describes abilities and parties before starting any construction
   a) Contract
   b) Project
   c) Safety regulation

4. Which tool is replaced with modern one today?
   a) Drawing board
   b) Drawing tube
   c) Drawing ink

5. Profession which deals with timber, rulers, nails and roofs.
   a) Roofer
   b) Carpenter
   c) Welder

1	2	3	4	5

Task 3. Fill in the gaps.

consist of / factory / produce / site / to deal

There are a lot of …….. all over the Republic of Tatarstan and Russia. Most of them …….. with construction and engineering. They ……. Many shops, departments and administration controlling ……. Department of selling tries to make contracts and supply clients with materials delivering to the ……directly.

Good luck!

Date _____ Name _____ Group # _____

Unit 1. Construction Industry. Test 1B

Task 1. Give definitions to the terms.

1	Construction	A	
2	Site manager	B	
3	Subcontractor	C	
4	Skill	D	
5	Authorities	E	

Task 2. Choose the correct answer.

1. Way of work that is accepted by all the parties of construction operation
   a) Chart
   b) Organigram
   c) Standard
2. One of parties in project team providing all the material and equipment to the site.
   a) Contractor
   d) Supplier
   e) Architect
3. Official paper which describes all the ways of operation without accidents
   a) Contract
   d) Project
   e) Safety regulation
4. Program that is used to make computer drawings.
   a) PC
   d) CAD
   e) ATV
5. Profession which deals with tiles and roofs.
   a) Roofer
   d) Carpenter
   e) Welder

1	2	3	4	5

Task 3. Fill in the gaps.

Include / plants / manufacture / field / to concern

There are a lot of …….. all over the Republic of Tatarstan and Russia. Most of them …….. with construction and engineering. They ……. Many shops, departments and administration controlling ……. Department of selling tries to make contracts and supply clients with materials delivering to the ……directly.

Good luck!

Date _____ Name _____ Group # _____

Unit 2.Preliminary Design. Test 2A

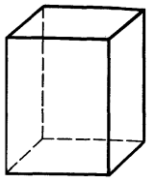
Task 1. Give definition to the following terms .

1 Preliminary design _____

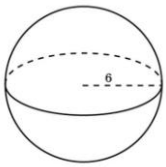
2 Cubage _____

3 Proportion _____

Task 2. Write in words.

V= a*b*h 

_____

V= 4/3* п * R^3 

_____

Task 3. Compare 2 buildings using degrees of adjectives. Mention the shape, appearance and proportion

Kazan Kremlin and Empire State Building

_____

_____

_____

_____

_____

_____

_____

_____

Good luck!

Date _____ Name _____ Group # _____

Unit 2.Preliminary Design. Test 2B

Task 1. Give definition to the following terms .

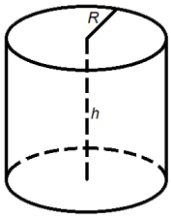
1 Drawing _____

2 Covered area _____

3 Cross-section _____

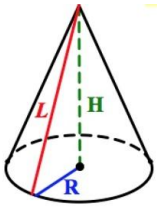
Task 2. Write in words.

$V= S_0*h$



_____

$V= 1/3* S_0*h$



_____

Task 3. Compare 2 buildings using degrees of adjectives. Mention the shape, appearance and proportion

Suyumbike and Taipei

_____

_____

_____

_____

_____

_____

_____

_____

Good luck!

Date _____ Name _____ Group # _____

Unit 3. Final Design. Test 3A

Task 1.

a) Match tools and materials with trades .

1	Carpenter	**A**	Cement, water
2	Concrete finisher	**B**	Pipes, water
3	Plumber	**C**	Wires, screw
4	Electrician	**D**	Timber hummer

1	2	3	4

b) Match the materials to their properties

1	Timber	**A**	Loose
2	Concrete	**B**	Durable
3	Metal	**C**	Eco-friendly
4	Sand	**D**	Waterproof

1	2	3	4

Task 2. Make up sentences (conditionals).

If I were

_____

_____

If I were

_____

_____

If I were

_____

_____

Task 3. Translate these sentences into Russian

The construction of the circuit was carried out in record time for such a huge project.

_____

_____

We manufacture a complete range of units, partitions, slabs and other parts.

_____

_____

Modular construction methods are becoming more and more popular in many parts of the world and are often used in emergency house construction.

_____

_____

Good luck!

Date _____ Name _____ Group # _____

Unit 3. Final Design. Test 3B

Task 1.

a) Match tools and materials with trades .

1	Welder	**A**	Plan
2	Roofer	**B**	Bitumen, clay
3	Tiler	**C**	Timber, nail
4	Designer	**D**	Fire sparks

1	2	3	4

b) Match the materials to their properties

1	Ceramic tile	**A**	Thermal insulating
2	Glass	**B**	Elastic
3	Mineral wool	**C**	Frail
4	Rubber	**D**	Brittle

1	2	3	4

Task 2. Make up sentences (conditionals).

If I were

_____

_____

If I were

_____

_____

If I were

_____

_____

Task 3. Translate these sentences into English

Чтобы построить прочный дом, нам нужны квалифицированные инженеры.

_____

_____

Мы могли построить дом из железобетона, но построили более дешевый домик.

_____

_____

Соблюдая стандарты, Баба Яга заказали избушку на курьих ножках из экологически чистого лесоматериала.

_____

_____

Good luck!

Date _____ Name _____ Group # _____

Unit 4. Construction. Test 4A

Task 1. Match words in column A with words in column B .

Column A	***Column B***
1 Chisel	**A** For leveling the ground
2 Excavator	**B** The work of a floor layer
3 Steel profile	**C** To form the structure of the building
4 Striking board	**D** To lay a course of bricks

1	2	3	4

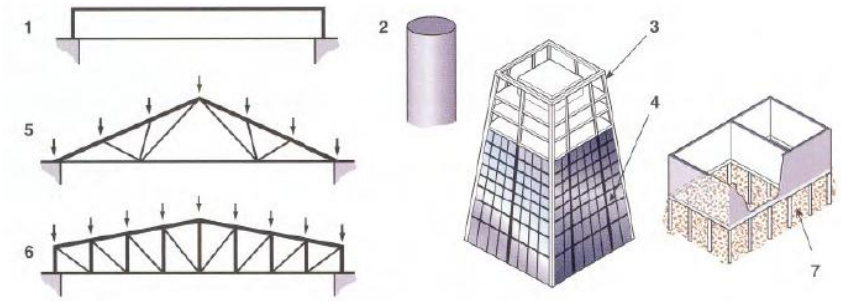
Task 2.Fill in the gaps.

Agenda / lifting capacity / reinforcement / spacious layout / issue

The topic of the meeting is ……..
Question or problem is ……
Architects needs a good imagination to understand ……..
The more powerful the machinery, the higher its ……..
Hardening is …….

Task 3. Label the following diagram using words in the box.

Beam / column / steel girder / curtain wall / roof truss / lattice girder / pile foundations



1 _____
2 _____
3 _____
4 _____
5 _____
6 _____
7 _____

Task 4. Write a short essay (50 words). Topic – the easiest and the hardest trade.

_____
_____
_____
_____
_____
_____

Good luck!

Date _____ Name _____ Group # _____

Unit 4. Construction. Test 4B

Task 1. Match words in column A with words in column B .

Column A	***Column B***
1 Hummer	**A** To level the ground
2 Scraper	**B** Is put on top of structural slab
3 Distribution board	**C** A part of work of electrician
4 Screed	**D** Used when smth should be carefully put into position

1	2	3	4

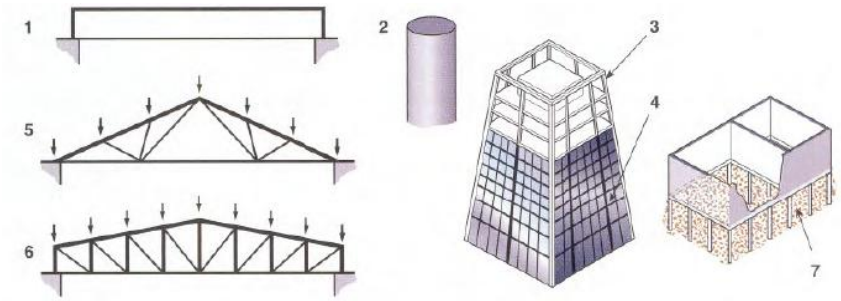
Task 2.Fill in the gaps.

Agenda / lifting capacity / reinforcement / spacious layout / issue

Questions that are being discussed during the meeting ……..
Problem of item is ……
……..helps to divide floor into rooms adequately.
One of the main characteristics of crane is its ……..
Strengthening is …….

Task 3. Label the following diagram using words in the box.

Beam / column / steel girder / curtain wall / roof truss / lattice girder / pile foundations



1 _____
2 _____
3 _____
4 _____
5 _____
6 _____
7 _____

Task 4. Write a short essay (50 words). Topic – the easiest and the hardest trade.

_____
_____
_____
_____
_____
_____

Good luck!

Date _____ Name _____ Group # _____

Unit 5. Concrete. Test 5A

Task 1. Choose the correct answer.

6. What does the concrete consist of?
   d) Water, cement
   e) Water, cement, aggregate,
   f) Water, cement, aggregate, and additives

7. Which type of concrete is used for repairs on bridges, dams and pools?
   f) High strength concrete
   g) Regular concrete
   h) Shortcrete

8. Chemical reaction when paste hardens and gains strength.
   f) Hydration
   g) Evaporation
   h) Preservation

9. Granular material used to make concrete.
   f) Additives
   g) Aggregate
   h) Mud

10. Machinery with high lifting capacity.
    f) Concrete mixer
    g) Crane
    h) Trailer

1	2	3	4	5

Task 2. Give definition to the following terms .

1 Consistency _____
_____
_____

2 Coat _____
_____
_____

3 Durability _____
_____
_____

Task 3. Fill in the gaps.

Comical composition / technologist / meet requirements/ construction / supplier /operation

When you work for a big …….. company, you should be very careful and responsible. Sometimes ……..deliver material which does not ……. So the task of the …….is to change the ……..to make it suitable for …….

Good luck!

Date _____ Name _____ Group # _____

Unit 5. Concrete. Test 5B

Task 1. Choose the correct answer.

1. Who invented Portland cement?
   a) Joseph Aspdin
   b) John Smeaton
   c) Bill Portland
2. Which type of concrete is recommended for structures intended for severe conditions?
   a) High strength concrete
   b) Regular concrete
   c) Shortcrete
3. What did Thomas Edison design?
   a) Concrete block
   b) Concrete home
   c) Concrete lamp
4. Chemicals added to make substance better.
   i) Additives
   j) Aggregate
   k) Mud
5. Machinery delivering and producing smooth concrete paste.
   i) Concrete mixer
   j) Crane
   k) Trailer

1	2	3	4	5

Task 2. Give definition to the following terms .

1 Ratio _____
_____
_____

2 Crack _____
_____
_____

3 Air pocket _____
_____
_____

Task 3. Fill in the gaps.

Material ratio / lab specialist / meet standards / building / provider / process

When you work for a big …….. company, you should be very careful and responsible. Sometimes ……..deliver material which does not ……. So the task of the …….is to change the ……..to make it suitable for ……

Good luck!

Date _____ Name _____ Group # _____

Unit 6. Ceramics. Test 6A

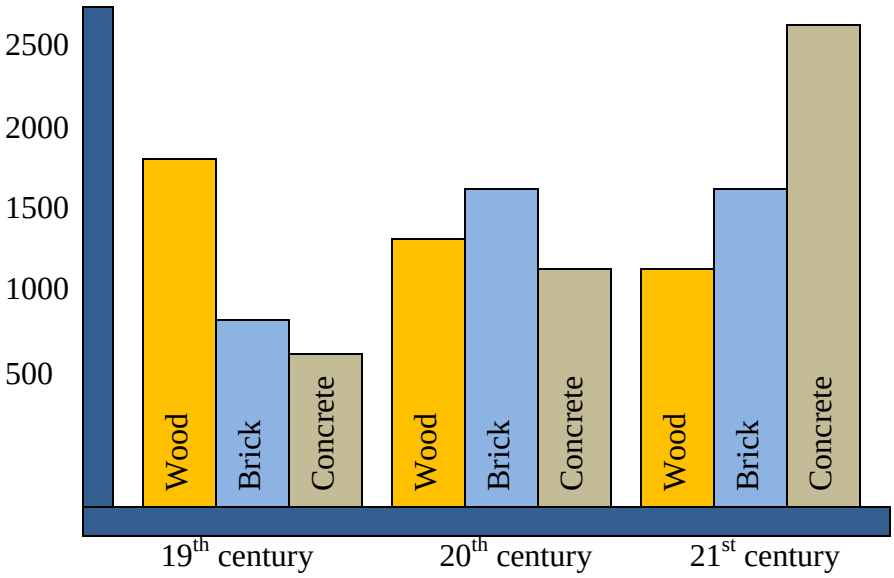
Task 1. Give 2-3 examples for every type of ceramics.

1 Pottery _____
_____
2 Whiteware _____
_____
3 Earthware _____
_____

Task 2. Give synonyms to the words and phrases .

1 Air dried brick _____
2 A single brick _____
3 Plants and flowers _____
4 Oven _____

Task 3. Describe the diagram showing changes in construction (50 words).



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_____

Good luck!

Date _____ Name _____ Group # _____

Unit 6. Ceramics. Test 6B

Task 1. Give 2-3 examples for every type of ceramics.

1 Stoneware _____
_____

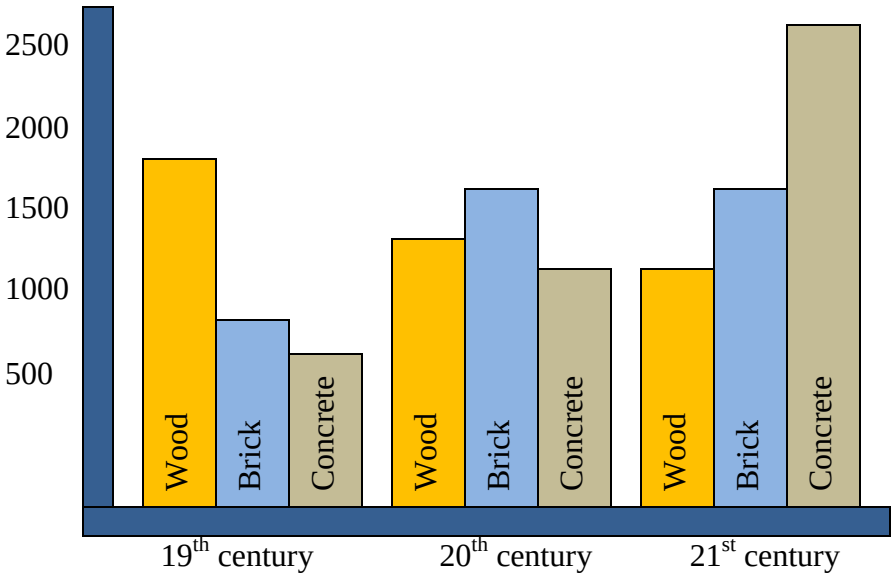
2 Chinaware _____
_____

3 Technical ceramics _____
_____

Task 2. Give synonyms to the words and phrases .

1 Mud brick _____
2 A line of bricks _____
3 A space, view _____
4 Mortar _____

Task 3. Describe the diagram showing changes in construction (50 words).



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_____

Good luck!

Date _____ Name _____ Group # _____

Unit 7. Polymers. Test 7A

Task 1. Fill in the table.

Polymer	***Translation***	***Example***
PETE	_____	_____
PVC	_____	_____
PP	_____	_____
PC	_____	_____
HDPE	_____	_____
LDPE	_____	_____

Task 2. Fill in the gaps.

Deal with / water resistance / roofing / interior decoration / introduce

Bitumen is one of the main materials when……..polymers. it is usually black and dark brown in color. The major characteristic of bitumen is its ……. It is used in tile production for …….. and …….. But construction is not the only sphere where it is used.

Another field where we …… bitumen is art. Designers use it to make things seem older.

Task 3. Write an essay.

Topic: describe everything made of polymers you see in the room (70 words).

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Good luck!

Date _____ Name _____ Group # _____

Unit 7. Polymers. Test 7B

Task 1. Fill in the table.

Polymer	***Translation***	***Example***
PETE	_____	_____
PVC	_____	_____
PP	_____	_____
PC	_____	_____
HDPE	_____	_____
LDPE	_____	_____

Task 2. Fill in the gaps.

Concern / waterproof / roofing / interior decoration / apply

Bitumen is one of the main materials when……..polymers. it is usually black and dark brown in color. The major characteristic of bitumen is its ……. It is used in tile production for …….. and …….. But construction is not the only sphere where it is used.

Another field where we …… bitumen is art. Designers use it to make things seem older.

Task 3. Write an essay.

Topic: describe everything made of polymers you see in the room (70 words).

_____
_____
_____
_____
_____
_____
_____
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_____
_____
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_____

Good luck!

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