

MINISTRY OF HIGHER EDUCATION, SCIENCE AND INNOVATION

TASHKENT INSTITUTE OF TEXTILE LIGHT INDUSTRY

TASHKENT INSTITUTE OF TEXTILE AND LIGHT INDUSTRY

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ENGLISH FOR TEXTILE INDUSTRY

TEXTBOOK ON PRACTICAL ENGLISH

7071071 - Chemical Technology
(Chemical Finishing of Fiber Materials)



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ENGLISH FOR TEXTILE INDUSTRY

To'qimachilik sanoati jahon iqtisodiyotining muhim tarmog'i bo'lib, gazlamalar, kalava iplar, matolar pardoqlashni o'z ichiga oladi. Mazkur darslik oliy o'quv yurtlarining to'qimachilik fakulteti kimyo-texnologiya (tolali materiallarni kimyoviy pardoqlash) yo'nalishi talabalari uchun mo'ljallangan. Ushbu darslik kasbga oid turli mavzularda muloqot qilishni o'rgatishga qaratilgan.

Bunda kundalik va kasbiy sohalar mavzulari asosida tuzilgan leksik va grammatik materiallar, shuningdek, o'tilgan grammatik qoidalar bo'yicha topshiriqlar jamlangan.

Ushbu darslik amaliy xorijiy tili fan dasturiga muvofiq tuzilgan. Bunday mavzular to'qimachilik kimyosi, to'qimachilik sanoati kabi kimyo sanoatining muhim tarmoqlari haqida umumiy ma'lumot beradi. Darslikda to'qimachilik sohasi bo'yicha pardoqlashning bir necha usullarini to'plash va tushuntirishga ko'zda tutilgan bo'lib, asosan, bo'yash va gul bosish asoslariga e'tibor qaratadi. Jahon bozorida raqobatbardosh bo'lish uchun to'qimachilik biznesining barcha ishtirokchilari joriy yutuqlar haqida fundamental bilimga ega bo'lishlari zarur. "To'qimachilik sanoati uchun ingliz tili" darsligi 30 ta bo'lim, mashqlar, mavzular bo'yicha krossvordlar, tinglab-tushunish uchun audio fayl va sohaga oid atamalardan iborat.

Текстильная промышленность является жизненно важной отраслью мировой экономики, охватывающей производство тканей, хлопчатобумажных нитей и отделку тканей. Учебник предназначен для студентов химико-технологического факультета (химической обработки текстильных материалов) текстильных программ вузов.

Целью учебника является обучение коммуникативным навыкам по различным темам, связанным с текстильной профессией. Он включает в себя лексические и грамматические материалы, основанные как на повседневном, так и на профессиональном контексте, а также упражнения, закрепляющие изученные грамматические понятия. Учебник разработан согласно учебной программе практического обучения иностранному языку.

Затрагиваемые темы дают обзор ключевых аспектов химической промышленности, таких как текстильная химия и методы отделки текстиля. Основное внимание уделяется сбору и объяснению распространенных методов отделки текстиля с упором на основы крашения и тиснения.

Чтобы оставаться конкурентоспособными на мировом рынке, всем участникам текстильного бизнеса необходимо четкое понимание текущих событий в отрасли. Этот учебник, состоящий как из текстового, так и из аудиокomпонентов, помогает вооружить учащихся необходимой отраслевой терминологией и знаниями.

The textile industry is a vital branch of the global economy, encompassing the production of fabrics, cotton threads, and fabric finishing. This textbook is intended for students in the chemical technology (chemical finishing of textile materials) department of university textile programs.

The textbook aims to teach communication skills on a variety of topics related to the textile profession. It includes lexical and grammatical materials based on both everyday and professional contexts, as well as exercises reinforcing the learned grammatical concepts. The textbook was developed according to the curriculum for practical foreign language education.

The topics covered provide an overview of key aspects of the chemical industry, such as textile chemistry and textile finishing techniques. The primary focus is on collecting and explaining common methods of textile finishing, with a emphasis on the fundamentals of dyeing and embossing.

To remain competitive in the global market, all participants in the textile business need a strong grasp of current industry developments. This textbook, consisting of both text and audio components, helps equip students with the necessary field- specific terminology and knowledge.

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Unit 1 A. Introduction to Textile Design

Vocabulary

N	Word	Definition
1	Textile Design	The art of creating designs and patterns for knitted, woven, printed fabrics or surface ornamented fabrics.
2	Weave	To make cloth by interlacing threads on a loom.
3	Pattern	repeated decorative design on fabric.
4	Fabric	Material produced by weaving or knitting textile fibers.
5	Dye	A natural or synthetic substance used to add color to or change the color of something.
6	Print	To apply designs onto fabric by pressing shapes onto it with ink.
7	Texture	The feel, appearance, or consistency of a surface or a substance.
8	Fiber	A thread or filament from which a textile is formed.
9	Loom	A device used to weave cloth.
10	Knit	To make (a garment, blanket, etc.) by interlocking loops of wool or other yarn with knitting needles or on a machine.

Reading

Task 1.1 Read the questions and share your ideas about them?

1. What is textile design, and why is it important in creating clothes?
2. How does the weaving process contribute to textile design?
3. What role do patterns play in textile designs?

"Fundamentals of Textile Design: Crafting Beauty and Functionality in Fabrics"

Textile design is the intricate art of creating designs for woven, **knitted**, or **printed** fabrics. This process involves choosing specific types of **fibers**, deciding on color schemes through **dyes**, and determining the **texture** that will best suit the end product. For instance, a designer might decide to **weave** cotton fibers using a **loom** to create a soft, breathable **fabric** ideal for summer clothing. **Patterns**, whether printed or knitted, add visual appeal and uniqueness to the fabric, making each piece

distinctive. The choices in the design process directly impact the look, feel, and functionality of the finished textile product.

Task 1.2 Discussion Questions about the text

1. How do you think the choice of fiber affects the final product in textile design?
2. Can you think of an example where the texture of a fabric plays a crucial role in its appeal or functionality?
3. Discuss the importance of color and pattern in fashion and interior design.

Task 1.3 Read the provided statements carefully. Based on the information given in the text "Fundamentals of Textile Design: Crafting Beauty and Functionality in Fabrics," decide if each statement is True, False, or Not Given.

Select "True" if the statement is correct according to the text,

"False" if the statement contradicts the information or is incorrect,

"Not Given" if the information is not stated in the text.

Write your answers in the spaces provided next to each statement.

1. Textile design only involves the creation of patterns for fabrics.
2. Dyes are used to remove color from textiles.
3. A loom is a device that can be used in the knitting process.

Task 1.4 Read the questions and choose the best option.

1. What does textile design primarily involve?
 - A) Painting on fabrics
 - B) Creating designs for fabrics
 - C) Writing instructions for machinery
 - D) Sewing clothes
2. Which of the following is NOT a method used in textile design?
 - A) Weaving
 - B) Knitting
 - C) Dyeing
 - D) Melting
3. What is the role of a dye in textile design?
 - A) To clean the fabric
 - B) To change or add color to the fabric
 - C) To make the fabric thicker
 - D) To create patterns by removing color
4. Which term refers to the feel or appearance of a surface or substance?
 - A) Pattern
 - B) Texture
 - C) Print
 - D) Weave
5. What is a loom used for?

- A) Dyeing fabrics
- B) Knitting yarns
- C) Weaving threads
- D) Printing designs

Task 1.5 Read the each sentences and fill in the gaps.

Sentence 1: Textile design is an art that involves creating _____ for _____, knitted, or printed fabrics.

Answer: designs; woven

Sentence 2: A _____ is a tool used in textile design to interlace threads to create cloth.

Answer: loom

Sentence 3: _____ refers to the repeated decorative design found on fabric, adding visual appeal and uniqueness.

Answer: Pattern

Sentence 4: Textile designers use _____ to add color to fabrics, which can significantly impact the fabric's final appearance.

Answer: dyes

Sentence 5: The _____ of a fabric can influence its feel and appearance, often determining its suitability for specific uses.

Answer: texture

Writing

Task 1.6. Describe Your Favorite Piece of Clothing:

1. Write a paragraph about your favorite piece of clothing, focusing on its fabric, texture, and pattern. Explain why you like it and how its design contributes to its appeal.

Task 1.7. Design Your Own Fabric: Imagine you are a textile designer. Describe the process of designing a new fabric for summer dresses. Include the type of fibers you would use, the colors, the texture, and the pattern. Explain why you made these choices.

Task 1.8. The Future of Textile Design: Write a short essay on how you think textile design will change in the future. Consider advancements in technology, sustainability, and consumer preferences.

Unit 1.B. Uzbekistan's textile industry

Task 1.9 Read the questions and share your ideas about them

How would you define textile?

Give 3 examples of textiles?

Vocabulary

Word	Definition
Textile	A cloth made by hand or machine.
Weave	To make cloth by interlacing threads on a loom.
Engage	to become involved, or have contact, with someone or something
Fabric	Material produced by weaving or knitting textile fibers.
Profitable	Making or likely to make a profit
Machinery	A group of machines, or the movable parts of a machine
Texture	The feel, appearance, or consistency of a surface or a substance.
Fiber	A thread or filament from which a textile is formed.
Loom	A device used to weave cloth.
Knit	To make (a garment, blanket, etc.) by interlocking loops of wool or other yarn with knitting needles or on a machine.

Reading

Task 1.10. Read the text and say which information is new to you.

As the sixth-largest cotton producer, Uzbekistan was the third-largest cotton exporter until recently, when it began to concentrate more on exporting high-value products than raw cotton.

The **knitwear**, **textile**, and garment industries play a vital role in Uzbekistan's economy by employing a large portion of the labor force, advancing the nation's industrial and economic potential, and enhancing its standing abroad. Because of its advantageous geopolitical location, Uzbekistan may **engage** in direct economic discussion with a wide range of nations and pursue **profitable** commercial partnerships with both European and Asian nations.

The light industry expands yearly. The adoption of cutting-edge production methods, the usage of high-performing, contemporary **machinery**, and effective management

all work together to guarantee high worker productivity at industry businesses and a rise in industrial output. The Republic, which for a long time solely exported cotton fiber, now has countless chances to take the lead in the global textile market as both a supplier of cotton fiber and an exporter of textile goods, particularly completed goods.

Among the top manufacturers of knitwear, cotton yarn, and natural textile fibers worldwide is Uzbekistan. There are almost 7,000 textile companies in the country, with an annual capacity of:



In parallel, 300 textile enterprises were established with the help of international investors from Germany, Switzerland, Singapore, China, South Korea, Russia, India, and other nations.

Furthermore, these association **enterprises** ensure the development and introduction of new generation products into production - new innovative products. Other products of a wide range and specific profiles that they produce include medical products, **nonwovens**, **wadded** products, special working clothes, and terry products. Sewing knitwear and clothing represents the biggest increase in value added in the textile industry's cotton supply chain.

Task 1.11. Discussion Questions about the text

1. What is Uzbekistan's ranking in terms of cotton production globally?

2. How do the knitwear, textile, and garment industries contribute to Uzbekistan's economy?
3. What advantages does Uzbekistan's geopolitical location offer for economic discussions and partnerships?
4. How has the light industry in Uzbekistan been expanding over the years?
5. What factors contribute to high worker productivity and increased industrial output in the textile industry?

Task 1.12. Write your answers in the spaces provided next to each statement

1	The knitwear, textile, and garment industries play a vital role in Uzbekistan's economy.	T/F
2	The knitwear, textile, and garment industries employ a small portion of the labor force in Uzbekistan.	T/F
3	The knitwear, textile, and garment industries enhance Uzbekistan's standing abroad.	T/F
4	Uzbekistan has an advantageous geopolitical location for engaging in direct economic discussions with other nations.	T/F
5	Uzbekistan can't pursue commercial partnerships with both European and Asian nations.	T/F
6	The knitwear, textile, and garment industries play a vital role in Uzbekistan's economy.	T/F
7	True: The knitwear, textile, and garment industries employ a large portion of the labor force in Uzbekistan.	T/F

Task 1.13. Read the questions and choose the best option

1. Which country is the third-largest cotton exporter until recently?
 - a) Germany
 - b) Switzerland
 - c) Uzbekistan
 - d) China
2. What industries play a vital role in Uzbekistan's economy?
 - a) Automotive and aerospace industries
 - b) Oil and gas industries
 - c) Knitwear, textile, and garment industries
 - d) Software and IT industries
3. How many textile companies are there in Uzbekistan?

- a) 3,000
- b) 5,000
- c) 7,000
- d) 10,000

4. Which of the following countries did not invest in establishing textile enterprises in Uzbekistan?

- a) Germany
- b) Switzerland
- c) Russia
- d) Japan

5. What represents the biggest increase in value added in the textile industry's cotton supply chain?

- a) Raw cotton exports
- b) Cotton yarn production
- c) Sewing knitwear and clothing
- d) Textile machinery manufacturing

6. What are some products produced by the association enterprises in Uzbekistan?

- a) Electronic devices and appliances
- b) Agricultural machinery
- c) Medical products and wadded products
- d) Chemical fertilizers and pesticides



Listening

1.C. Grammar. Present perfect tense.

Task 1.14. .Listen carefully to the dialogue between Person A and Person B discussing Uzbek textile traditions.

What grammatical tense is used in this dialogue?

Person A: Have you heard about the exquisite textile from Uzbekistan? I've been fascinated by its beauty and craftsmanship.

Person B: Yes, Uzbek textile is renowned for its rich history and intricate designs. The country has a long tradition of weaving and embroidery that dates back centuries.

Person A: That's amazing! What sets Uzbek textile apart from others?

Person B: One of the distinctive features of Uzbek textile is its vibrant colors and bold patterns. The artisans use a variety of natural dyes to create stunning hues that reflect the region's cultural heritage.

Person A: I've seen some beautiful examples of ikat fabric from Uzbekistan. The technique of dyeing the threads before weaving creates such mesmerizing patterns.

Person B: Absolutely! Ikat is a traditional Uzbek weaving technique where the threads are resist-dyed before being woven into fabric. It requires great skill and precision to achieve those intricate designs.

Person A: I also learned about suzani embroidery. It's breathtaking how the artisans create intricate floral and geometric motifs using silk threads.

Person B: Yes, suzani embroidery is a true work of art. It's often done on large textiles like bedspreads, wall hangings, or even clothing. Each piece is unique and represents the creativity and symbolism of the Uzbek culture.

Grammar bank. The present perfect tense. The use of present perfect tense to talk about past experiences or actions that have a connection to the present. This tense is used to convey that the actions or experiences they are referring to have happened in the past but are still relevant or have an impact on the present moment.

Speaking

Task 1.15. After listening to the dialogue, answer the comprehension questions based on what you heard.

1. What is Person A fascinated by in the dialogue?
2. According to Person B, what is one of the distinctive features of Uzbek textile?
3. Describe the technique of ikat weaving mentioned in the dialogue.
4. How does Person B describe suzani embroidery?

In what contexts is suzani embroidery typically used, as mentioned by Person B?

Task 1.16. Look at the photo. Work in pairs. Would you like to appear in such clothes at the university? Why? or Why not?

Do you wear a uniform?

How comfortable are uniforms?



1.15. Match each textile technique mentioned in the dialogue with its corresponding description.

vibrant colors	Ikat weaving	
Suzani embroidery	resist-dye	bold patterns

___ Traditional Uzbek weaving technique where the threads are resist-dyed before being woven into fabric, resulting in mesmerizing patterns.

___ Intricate floral and geometric motifs created using silk threads, often seen on large textiles like bedspreads, wall hangings, or clothing.

___ energetic, bright, strong colors.

___ to print (a fabric) by repeatedly putting a resist on different parts of the pattern and placing the fabric in successive dye baths.

___ any pattern which is magnified and has complimenting eye-catchy color combinations.

Unit 2.A. History of textile

Task 2.1. In pairs, discuss the following questions.

Who made the first textiles?

Can you provide information on the role of textiles in ancient civilizations?

Task 2.2 You have one minute to look at a picture. Describe all that you can see in the picture and answer the questions.

1. What were the main materials used during this time period?

2. How did textile production impact society during this era?



Vocabulary

N	Word	Definition
1	Textile	A cloth made by hand or machine.
2	Thread	A long, thin strand of cotton, nylon, or other fibres used in sewing or weaving.
3	Interlacing	To join different parts together to make a whole, especially by crossing one thing over another or fitting one part into another:
4	Knitting,	Something being made by the act of knitting.
5	Crocheting	To make clothes and other things using wool and a special needle with a hook (= curve) at one end
6	Gluing	In this paper, we consider the space 2 of the planar homeomorphisms that are obtained by gluing two translations together, endowed with the compact-open topology.
7	Wall murals	A wall mural is a painting applied to and made integral with the surface of a wall or ceiling ¹
8	Loincloths	a piece of cloth that hangs down from around the waist, sometimes worn by men in hot countries
9	Loom	A device used to weave cloth.

10	Embalming	Embalming is the process of introducing a disinfectant solution to the internal environment of the body when someone passes away
11	Upholstered	To make (a garment, blanket, etc.) by interlocking loops of wool or other yarn with knitting needles or on a machine.

Task 2.3. Match the word on the left with its corresponding description on the right.

Textile	A. A method of preserving and preparing a deceased body for burial or viewing.
Thread	B. Fabrics or cloth materials produced by weaving, knitting, or felting.
Interlacing	C. Thin strands of material used for sewing or weaving.
Knitting,	D. The process of joining two materials together using an adhesive substance.
Crocheting	E. Decorative paintings or designs applied directly to a wall surface.
Gluing	F. Traditional garments worn around the waist or hips, often made of cloth.
Wall murals	G. A device used to create woven fabric by interlacing warp and weft threads.
Loincloths	H. A technique of creating fabric by looping yarn with hooked needles.
Loom	I. The technique of creating fabric by interlocking loops of yarn with a hooked needle.
Embalming	J. The act of intertwining or weaving multiple elements together.
Upholstered	K. Furniture or seating that has been covered with fabric or padding

Reading

Task 2.4 Choose the correct heading from the list .

How to make handkerchiefs

History of textile

EGYPTIAN FASHION

Home sweet home

Read the text and say which information is new to you.

The term '**Textile**' is a Latin word originated from the word 'texere' which means 'to weave'. In textile assembly industries (such as dressmaking and tailoring), the terms fabric and cloth are frequently used as synonyms for textile. These terminologies do, however, have a few significant variances. Any material composed of interlacing fibers is referred to as a textile. Any material created by **knitting**, **crocheting**, weaving, or **gluing** is referred to as fabric. A finished piece of fabric that can be used to cover a bed is referred to as cloth.

Around 3400 BC, textiles first came into existence and were a common product among the ancient Egyptians. The first textile, linen, was made by the Egyptians from flax that was gathered along the banks of the Nile. The account of the labor-intensive process of gathering flax, making **thread**, and weaving the fibers on a loom is shown in **wall murals** found in the pyramids. Egyptians utilized linen for a wide range of items, including ship sails, sophisticated royal clothing, and loincloths for the common people. Linen was a material used for both the living and the dead. Rich Egyptians utilized linen strips of cloth for the **embalming process**. The first textiles had an impact on every life and social class, both in the here and now and in the afterlife.

Uses: Textiles are used for a variety of purposes, the most popular being clothes and bags and baskets. They are utilized in carpeting, **upholstered** furniture, window treatments, towels, table and bed coverings, and artwork in the home. They are employed in industrial and scientific procedures like filtration at work. A few examples of their various applications are flags, tents, nets, handkerchiefs as cleaning cloths, balloons, kites, sails, and parachutes as transportation tools; reinforcement in composite materials like fiber glass and industrial geotextiles; and smaller cloths that are used for washing by "soaping up" the cloth and using it instead of just soap.

Task 2.5. Discussion questions about the text

1. From which Latin word the term 'Textile' was originated ?
2. What kind of material referred to as a textile?
3. What is the difference between the textile, fabric and cloth?
4. When and where the first textiles came into existence and were a common product?
5. For what purposes the linen is utilized among Egyptians?

Task 2.6. Read each statement below carefully. Place a T on the line if you think a statement is TRUE. Place an F on the line if you think the statement is FALSE .

1	The term 'Textile' is an English word originated from the word 'texere'.	T/F
2	In textile assembly industries the terms fabric and cloth are frequently used as synonyms for textile.	T/F
3	Any material composed of interlacing fibers is referred to as a fiber.	T/F
4	Around 3500 BC, textiles first came into existence.	T/F
5	The first textiles were a common product among the ancient Egyptians.	T/F
6	The first textile, linen, was made by the Egyptians from flax that was gathered along the banks of the Nile.	T/F
7	Poor Egyptians utilized linen strips of cloth for the embalming process.	T/F

Task 2.7. Read the each sentences and fill in the gaps.

1. The term 'Textile' is a Latin word originated from the word '_____' which means 'to weave'.
2. Any material created by knitting, crocheting, weaving, or gluing is referred to as _____.
3. A finished piece of fabric that can be used to cover a bed is referred to as _____.
4. Around _____ BC, textiles first came into existence and were a common product among the _____.
5. Egyptians utilized linen for a wide range of items, including _____, _____, and _____ for the common people.
6. Textiles are used for a variety of purposes, the most popular being _____, _____ and _____.

Listening



2. B Listening Task. Listen to the following passage and answer the questions that follow.

Textile History of Africa

In the ancient times, the most important aspect of textiles or more precisely cloth in Africa was that cloth was used as a form of money. The width of cloth strip was usually standardized in each region of Africa and therefore there used to be a regular number of such standard length cloth strips required to make a woman's wrapper cloth. This would then be used to serve as the unit of value. The cloth was a convenient form of money primarily because it was used by everybody, fairly durable and easily subdividable.

The weavers, dyers and other textile artists of Africa together make an active contribution in creating an exquisite and amazing range of textiles. African textiles usually embody a great variety of styles. Adinkara, kente and bogolan are some of the some of the African textiles which are becoming increasingly popular while some others like Yoruba, ase-oke and adire are equally beautiful but less well known.

2.8. Now, answer the following questions:

1. What was the primary use of cloth in ancient Africa?
2. Why was cloth a convenient form of money?
3. What were some of the popular African textiles mentioned?
4. Name three African textiles that are less well-known but equally beautiful.

2.9. Matching with pictures.

1. Kente	a. refers to a Ghanaian textile made of hand-woven strips of silk and cotton.
2. Adinkra are	b. this textile is a handmade, Malian, cotton fabric which has traditionally been dyed with fermented mud in a painstakingly long and complex process.
3. Bogolan	c. visual symbols that represent concepts, proverbs, and aphorisms.



A)

b)

c)

Writing

Task 2.10. Imagine you are a textile artist in ancient Africa. Write a journal entry describing your role in creating textiles and contributing to the cultural fabric of your community.

2. Reflect on the importance of textiles as a form of currency and the artistic techniques you employ in your craft.

Unit 2.C. History of Clothing

Vocabulary

N	Word	Definition
1.	Clothing	garments worn by human communities
2.	Anthropologists	scholars who study human societies and cultures
3.	Vegetation	plants considered collectively, often referring to plant life in general.
4.	Animal hides	the skin of an animal, typically with fur or hair, used as material for clothing.
5.	Archeological	relating to the study of human history and prehistory through excavation and analysis of artifacts.
6.	Textile	any material made of interlacing fibers, such as fabric or cloth.
7.	Neolithic	relating to the later part of the Stone Age, characterized by the development of agriculture and the use of polished stone tools.
8.	Flax	a plant cultivated for its fiber, used to make linen
9.	Mummification:	the process of preserving a dead body by embalming and wrapping it in cloth.
10.	Silk	a fine, strong, lustrous fiber produced by silkworms, used to make fabric.

Reading

2.11. Choose the correct heading from the list .

When Did Clothing Originate? **THE NEOLITHIC ERA**

Famous fabrics

Linen today

A distinctively human feature, clothing is worn by members of the majority of human communities. The exact date that humans began wearing garments is unknown, however theories as to why exist. According to anthropologists, vegetation and animal hides were evolved to provide shelter from the elements.

Another theory is that clothes may have been created initially for other uses, such magic, decoration, cults, or prestige, before being discovered to be a useful tool for defense. It is possible to ascertain the historical appearance of specific clothing items through the use of archeological discoveries and artistic depictions of clothing. Archaeological evidence preservation is a concern since some locations maintain finds better than others and in some cases, there is no evidence at all.

It was most likely felt that was the first textile material utilized for garments instead of leather. This ancient textile technique, which is believed to have originated in 6500 BC, is similar to knitting. The first known woven textiles from the Near East were discovered at a Neolithic site in Anatolia. The dead were wrapped with them. approximately the Near East, flax was first planted around 8000 BC, while sheep breeding began considerably later, approximately 3000 BC. In ancient India, cotton was utilized for clothing as early as the fifth millennium BC. In Ancient Egypt, linen was produced starting in the Neolithic era. Grown even earlier was flax.

In addition to using linen for clothing and kilts, the ancient Egyptians also used it for mummification bandages. The earliest evidence of silk manufacture in China comes from the tamed silkworm cocoon, which was sliced in two with a sharp knife and dates from between 5000 and 3000 BC. Weaving was first practiced in Japan during the Jōmon era (12,000–300 BC). There is proof of 5500 BC pottery figurines with clothes on them as well as a piece of cloth fashioned from bark fibers.

2.12. Discussion Questions about the text.

1. What are some theories about the origins of clothing according to the text?
2. How do archaeologists determine the historical appearance of specific clothing items?
3. What is believed to be the first textile material utilized for garments instead of leather?
4. What are some materials mentioned in the text that ancient civilizations used for clothing?

5. When and where was the earliest evidence of silk manufacture found, according to the text?

2.13. Answer to each statement true or false.

1.The exact date when humans started wearing clothing is clearly known.	T/F
2. Anthropologists believe vegetation and animal hides were initially used for clothing to provide shelter from the elements	T/F
3. clothes may have been created initially for other uses, such magic, decoration, cults, or prestige, before being discovered to be a useful tool for defense	T/F
4.The first textile material used for garments was leather.	T/F
5.Cotton was utilized for clothing in Ancient India before the Neolithic era.	T/F

2.14 Read the questions and choose the best option.

1. What is one theory about why humans began wearing garments?
 - a) For decorative purposes
 - b) To provide shelter from the elements
 - c) For religious ceremonies
 - d) To enhance physical appearance
2. What was most likely the first textile material utilized for garments?
 - a) Leather
 - b) Cotton
 - c) Wool
 - d) Felt
3. Where were the first known woven textiles discovered?
 - a) Ancient India
 - b) Anatolia
 - c) Ancient Egypt

d) Ancient China

4. Which ancient civilization used linen for both clothing and mummification bandages?

a) Ancient India

b) Ancient Egypt

c) Ancient China

d) Ancient Japan

5. When was weaving first practiced in Japan?

a) 8000–3000 BC

b) 5500 BC

c) 6500 BC

d) 12,000–300 BC

Task 2.15. Read the each sentences and fill in the gaps.

1. The first known woven _____ from the Near East were discovered at a Neolithic site in Anatolia.

2. This ancient textile technique, which is believed to have originated in 6500 BC, is similar to _____.

3. Another _____ is that clothes may have been created initially for other uses, such magic, decoration, cults, or prestige, before being _____ to be a useful tool for defense.

4. The _____ evidence of silk manufacture in China comes from the tamed silkworm cocoon.

5. A distinctively human _____, clothing is worn by members of the majority of human communities.

Unit3.A. Classification of textile fibers

1. Discuss with your partner.

1. What are your clothes made from?

2. Have you ever read a clothing label?



Vocabulary

	Word	Definition
1	modified	having been changed slightly, usually to improve something or make it more acceptable:
2	plants	a living thing that grows in earth, in water, or on other plants, usually has a stem, leaves, roots, and flowers, and produces seeds:
3	moisture	a liquid such as water in the form of very small drops, either in the air, in a substance, or on a surface:
4	regulation	an official rule or the act of controlling something:
5	creation	the act of creating something, or the thing that is created
6	substantial	large in size, value, or importance
7	waste	an unnecessary or wrong use of money, substances, time, energy, abilities, etc.
8	manufactured	to produce goods in large numbers, usually in a factory using machines:

Task 3.2. Read the text and underline the new words.

A Textile, also referred to as a cloth, is a flexible woven material that consists of a network of natural or artificial fibers. Textile refers to any material made of

interlacing fibers. Textile Fiber is a threadlike strand which is used for spinning yarn. On the basis of source, Textile fibers are broken down into two main classes: Natural fibers and Synthetic (man-made) fibers. Natural fibers are made from a materials originated from natural sources. There are three main sources for producing Natural fibers. They are Cellulosic fiber (Plant), Protein fiber (Animal) and Mineral fiber (Geological processes). Synthetic fibers refer to the materials that are developed by human by using chemical and mechanical processes. Thus, Synthetic fiber is well-known as the Man-made fiber. There are two base types of man-made that have been widely used by the textile industry, Natural Polymer base and Synthetic base.

Man –made fiber. Many different source materials are used to make fiber. Synthetic Between the 1950s and the 1970s, synthetic fibers made from oil (such as polyester, nylon, spandex, acrylic, and olefin) were developed. Since the late1990s, when PLA (corn) fiber, bamboo rayon, and other materials were introduced, fibers made from plant raw materials (rayon and acetate) have gained popularity once more. The production of manufactured fiber uses a lot of energy and results in chemical waste and pollutants. Many innovations have now made some fiber production methods more efficient and produce less emissions and waste than ever before.

Man-made fibers: Benefits and Drawbacks.

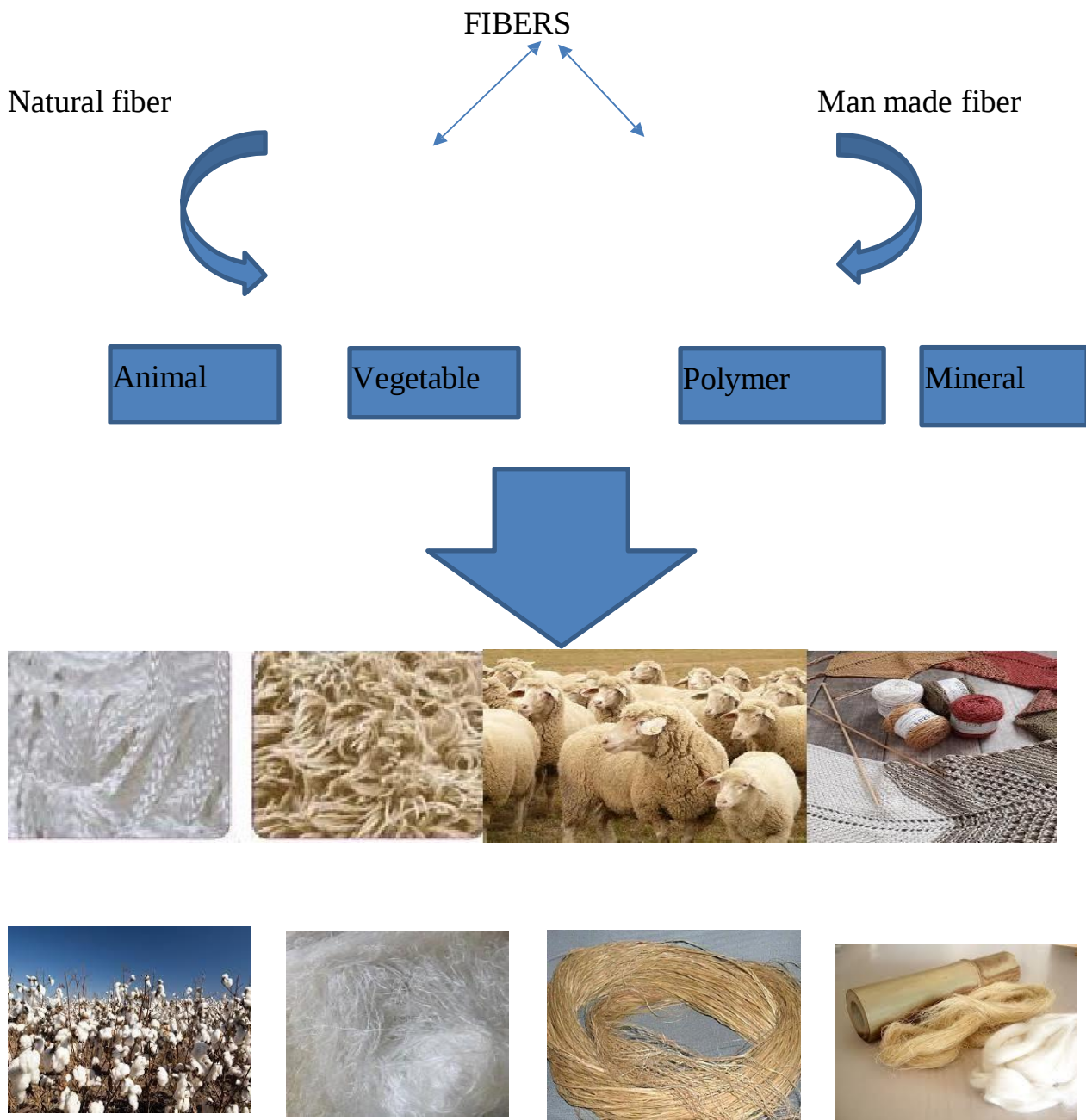
Positives: Oil-based fibers, including polyester and nylon, may now be modifiedto create new, high-quality fiber and high-function fabrics. The majority of man- made fibers made from plants feel pleasant against the skin. Chemical contamination is almost eliminated by new fibers. Compared to the manufacture ofnatural fibers there is frequently less fiber waste before fabric creation.

Negative: Chemical emissions and rubbish from both types of produced fiber are terrible for the environment and expensive to neutralize. The primary source for fibers made from oil is not renewable.

In general, unless they are modified to address moisture regulation, these fibers

don't feel pleasant against the skin. Before the creation of clothing, substantial amounts of fiber and fabric are wasted.

Task 3.3. Complete the classification of textile fibers using picture of fibers.



Task 3.4. Answer the questions

1. List the things which primitive people used to cover themselves?
2. What is textile fiber?
3. What are the two main types of textile Fibres?

4. What are natural fibers ?

3.5. Read each statement below carefully. Place a T on the line if you think a statement is TRUE. Place an F on the line if you think the statement is FALSE .

1. Synthetic fibers are made from natural sources.	T/F
2. Textile refers to any material made of interlacing fibers.	T/F
3. Natural fibers are derived from three main sources: plant, animal, and geological processes.	T/F
4. Synthetic fibers made from oil were developed between the 1950s and the 1970s.	T/F
5. Fibers made from plant raw materials have not gained popularity in recent years.	T/F
6. The production of manufactured fiber is environmentally friendly and produces minimal waste.	T/F
7. Oil-based fibers, such as polyester and nylon, cannot be modified to create new high-quality fibers.	T/F
8. Fibers made from plants often have a pleasant feel against the skin.	T/F
9. Chemical emissions and waste from manufactured fibers are harmful to the environment.	T/F
10. Fibers made from oil are a renewable source.	T/ F

Task 3.6. Unjumble the following words to form meaningful words:

1. lapentit	
2. odow	
3. cihemtal	
4. tlinixeg	
5. sibnythte	
6. nartaul	
7. clesuio	
8. nyleo	
9. trpaioc	

Grammar .Plural nouns vs. possessive nouns. Possessive nouns are nouns that show ownership, usually with an –’s at the end. So if you had a friend named Marja and Marat owned a bike, you would write:

Marat’s bike

Plural nouns are often confused with possessive nouns because both usually end in –s. However, the major difference between plural and possessive nouns is the apostrophe; possessive nouns have it, but plural nouns don’t (unless they’re plural possessive nouns).

[singular] boss	[singular possessive] boss’s	[plural] bosses	[plural possessive] bosses’
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Task 3.7. Complete the sentences with the plural form of the noun.(in bracket)
ex:property-properties

1.Textile finishing decides the ultimate appearance and aesthetic (property) of textile material.2. Additionally, it is liable to change various physical and chemical(property) of textile (material) per consumer needs.3. (Textile) are made with a wide variety of fibre (composition), yarns and fabric (structure).4. On such varied (platform), the finishers face a real challenge to impart desirable textile (property) to a desirable extent. 5. (Finish) are mostly applied in mixtures and are difficult to identify and to standardize.

Unit 3B. Discussion in group.

Task 3.8. How could you describe fibers in textiles?

- a) an artificial chemical substance.
- b) substances your body can not digest.
- c) a thin thread from a natural or synthetic substance.
- d) an important component of human digestion.

Task 3.9. Focus on vocabulary . Write the words next to the correct definitions.

<i>Cotton</i>	<i>Washable</i>	<i>Denim</i>	<i>Serge de Nimes</i>	<i>Worsted</i>
<i>Laundrying</i>	<i>Colors</i>	<i>Ribbing</i>	<i>Linens</i>	<i>Winter clothing</i>

1. _____ is the most widely used natural fiber in the textile industry.
2. It's important to choose _____ fabrics for garments that require regular cleaning.
3. Proper _____ techniques can help maintain the quality and longevity of cotton clothing.
- 4.: The _____ of cotton fabrics should be resistant to fading from both sunlight and washing.
6. _____ is a popular fabric choice for jeans due to its durability and unique ribbing pattern.
7. The diagonal _____ on denim fabric gives it a distinctive texture and appearance.
10. The term _____ refers to the historical connection between denim fabric and the city of Nimes in France.
12. _____, made from flax fibers, offer a cool and breathable option for warm weather garments.
13. Flax fibers: Flax fibers are known for their strength and moisture-wicking properties, making them ideal for linen production.
19. _____ fabrics are tightly twisted and have a clear surface texture, making them ideal for tailored garments.
20. Wool materials, such as woolen and worsted fabrics, are commonly used for _____ due to their insulation properties.

Task 3.10. Read the text and find fiber characteristics from the table.

Natural fibers

Cotton – the most widely used clothing fabric. Since most cotton materials are washable they should be chosen, if a dress requires laundrying. The colours should be fast to the sun as well as to laundrying. Denim comes from cotton fabric that has been woven in such a way as to produce a diagonal ribbing. Very stiff and sturdy. The name is derived from the French, "serge de Nimes" which refers to the city of "Nimes." Fades and wears well, which is why it's so widely

used in jeans.

Linens are not as important in the field of dress design as materials made from cotton. Flax fibres have poor affinity for dyes, therefore coloured linens fade easily.

Wool materials. Woolen fabrics are the most easily shaped to fit smoothly the colours of the body. There are two general types of wool fabrics – so called woolens and worsteds, both are used for winter clothing as they do not conduct heat.

Woolen fabrics are made from woolen yarns which are softer, i. e. have less twist. are tightly twisted and made of long combed fibres that lie parallel and are therefore without the protruding fibres found in the woolen yarns. They are smooth and strong. The worsted fabrics made from them are usually clear surfaced and hard textured. If the worsted yarn is very tightly twisted they produce springy fabrics which are unsuited to draping. Both woolens and worsteds are of approximately the same weight and thickness but the soft woolen fabric when held from one corner forms several bias folds, while the wiry worsted fabric tends to remain in its right angle position. The firm construction of this fabric enables it to hold pressed crease lines, so that pleats set well and last long with little additional pressing. As worsted fabrics resist wrinkling and are capable of holding a press they are especially satisfactory for tailored garments.

Silk. In spite of the tremendous displacement of real silk by man-made fibres in modern times pure silk fabrics are still regarded as the best ones when dress materials are discussed. Silk has two values: a) serviceability, b) attractiveness because of colour, texture, luster, feel. Silk is used for practically all kinds of clothes for women and for underwear, linings ect. Besides, it is extensively used for decorative fabrics. Silk is warm because it does not conduct heat. Being very strong and fine silk makes a light – weight fabric. The fabrics hold their shape because of the elasticity of the fibre.

Task 3.10. Identify the fiber characteristics

Natural staple fiber	Fiber characteristics	
Plant (cellulose) fiber Seed fiber (from seedpod). Cotton, Kapok	Positive	Negative
	Absorbent Strong when wet Conducts heat well Good abrasion resistance No static buildup Dyes well Matte appearance	Not colorfast in dark tones Shrinks Heavy fiber when wet Not fast-drying Poor resilience Can be attacked by mildew/pests Flammable No elasticity Fair resistance to sun
Bast (stem) fiber Flax (linen) Hemp Ramie Bamboo Kenaf Nettle Jute	Very absorbent Very strong when wet Excellent abrasion resistance No static buildup Accepts dye moderately well Doesn't shrink much Dyes well Some what lustrous appearance No elasticity Some are mildew-resistant Some are anti microbial Faster	Not colorfast in dark tones. Brittle on folded edges Poor resilience Fair resistance to sun Flammable

	drying than cotton	
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Animal fiber Fleece (sheared from sheep) Wool Merino wool	(protein) Matte appearance Good abrasion resistance Good elastic recovery Excellent resilience . Excellent absorbency Wicks moisture Dyes well Good colorfastness Retains heat well	Poor strength Elongates easily Shrinks easily Very heavy when wet Dries slowly Can be attacked by insects Mulesing in shearing Sheep-dip chemicals
Specialty fleece Mohair (sheared from Angora goat)	Lustrous appearance Extremely resilient Very fine fiber Resists pilling Same as for wool	Expensive Same as for wool
Cashmere (usually combed from animal) Camel hair Alpaca/Vicuna	Very soft hand Retains heat without weight Dyes well Good colorfastness Excellent resilience	Expensive Poor abrasion resistance Poor strength Shrinks easily Can be attacked by insects

Task 3.11. Find the correct answer.

1. Natural fibers can be harvested from

- a) plants and animals
- b) only from plants
- c) only from animals
- d) plants, animals, and minerals

2. The shiny nature of silk can be related to

- a) its hollow core
- b) its ability to refract light
- c) its smooth, round fibers
- d) mucus secretions from the silkworm

3. What characteristics of cotton make it a great source of fiber for clothing?

- a) It is very easy to grow.
- b) It is resistant to staining.
- c) The fibers are easily woven and dyed.
- d) The fibers are extremely long.

4. A characteristic of natural fibers is that they ...

- a) are stronger than synthetic fibers
- b) will not break down when exposed to bright light
- c) melt at a lower temperature than synthetic fibers
- d) are affected by microscopic organisms

5. Which of the following grows best in a black soil and warm climate?

- a) Cotton
- b) Flax
- c) Jute
- d) Coconut

6. Yarns is made from very thin strands called

- a) fibres
- b) looms
- c) silver
- d) weft

7. Which one of the following is not a natural fibre?

- | | |
|-----------|---------|
| a) Cotton | c) Flax |
| b) Nylon | d) Wool |

Task 3.12. Find the Textile Definitions

1. _____ A fine, hair-like substance
2. _____ Cloth or fabric
3. _____ Fibers made of plant or animal origin
4. _____ Fibers made from chemicals by man
5. _____ A combination of 2 or more fibers having the best characteristics of each.

Task 3.13. Choose the correct answer.

6. Which of the following fibers are obtained from the fleece of animals?
 (a) Jute (b) Cotton (c) Nylon (d) Wool

7. The pod of cotton containing fibres and seeds is called a cotton _____.
 (a) flower (b) fruit (c) boll (d) bloom

The thin strands of yarn that we see, are made up of still thinner strands called

- (a) Coir (b) thread

- (c) Hair (d) fibre

Cotton is usually picked by hand. Fibres are then separated from theseeds by combing. This process is called _____ of cotton .

- (a) Mathching (b) Ginning

- (c) Weaving (d) Spinning

8. Jute fibre is obtained from the _____ of the jute plant.

- (a) Stem (b) Flower

- (c) fruit (d) See

Writing

Task 3.14. Write a brief overview of natural fibers and their significance in the textile industry.

Introduce the main natural fibers to be discussed in the essay (cotton, linen, wool, silk).

Unit 3C.

Task 3.15. Discuss with your partner.

Find similarities and differences in this picture.



Task 3.16. Read the text and underline new words.

Synthetic fibers are formed from synthetic polymers, which are produced using chemicals derived from petroleum, coal, and other fossil fuels (monomers). polymerization is the process of combining these monomers, and after that, the blended polymers are spun (twisted) into yarns. The three synthetic fibers that are most frequently used in textile production are acrylic, polyamide (nylon), and polyester. synthetic fibers are categorized according to the polymer from which they are formed. You may be familiar with others like polyvinyl chloride (pvc), polypropylene, and elastane (lycra) (used in carpets). trade names are given to the synthetic fibers that are produced in chemical factories by a variety of international businesses. Microfibres are thin hair-like fibres made from polyamide or polyester. These fibres can be made up to 60 times thinner than a human hair, which makes them lightweight; they are strong and water repellent but also absorbent, breathable and have a very good handle or feel.

The most common products made from microfibers are underwear, sportswear, hosiery, and water-repellent outdoor wear, but designers are using these fibres more and more in their fashion collections. Tactel Micro is often seen today as a label on sportswear or underwear; Meryl Micro is used in active sportswear.



This microscopic image of two different fibers, wool (light brown) and synthetic (red), shows differences in fiber surface texture and shape

Synthetic filament fiber	Fiber characteristics	
	Positive	Negative
Polyester Virgin (new fiber) Recycled (from polyester fiber/ fabric/garments) Note: “Triexta,” formerly	Can be heat-set yet remain soft. Excellent resilience. Fast-drying. Excellent abrasion resistance . Strong. Manipulated for many functions.	Static buildup Nonabsorbent Absorbs oil easily Pills easily Melts in high heat
Elastic fibers (also monofilament yarns) Spandex Elastoester, triexta, and elasterell-p 	Excellent elasticity Excellent resilience	Fair to poor abrasion resistance. Fair to poor strength
Regenerated cellulose filament fiber		
Cellulosic filament fiber (plant material +	Very lustrous/shiny, silk-like appearance	Fair to poor absorbency. Low heat resistance.

		Not washable Not recyclable Polluting emissions
Viscose rayon 	Lustrous/shiny appearance. Very soft, cool hand. Excellent dyeability, especially black/deep tones. Good abrasion resistance. Very absorbent . Moderate cost	Poor resilience Polluting emissions Hazardous chemical waste. Fair colorfastness. Weakens when wet. Not machine washable No static buildup Can be attacked by mildew Not recyclable
Lyocell rayon (Closed-loop fiber production; chemicals are recycled into new fiber production) 	All of the above. Fair resilience. Machine washable	Fair resilience Fair colorfastness Can be attacked by mildew Not recyclable Higher cost than viscose
Bamboo rayon (If using closed-loop fiber production, this is a very sustainable	All of the above. Antimicrobial/no mildew, not Easily renewable raw material. Fair resilience	Always filament fiber. If viscose method, machine washable. Not

fiber) Note: If a manufactured fiber, bamboo must include rayon in its name.		recyclable
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Vocabulary

1.synthetic	Synthetic products are made from artificial substances, often copying a natural product:
2.polymerization	a chemical reaction in which many small molecules join to make a polymer
3.polypropylene	a type of plastic used for many purposes, such as food packaging, making ropes, and making artificial fabrics
4.lightweight	weighing only a little or less than average:
5.hosiery	a word used especially in shops for things such as socks, tights, and stockings:
6.Microfibres	a soft, light material made from very thin artificial threads
7.absorbent	able to take liquid in through the surface and to hold it.

Task 3.17. Answer the questions

- 1.What is the difference between natural and synthetic fibers?
- 2.Which is better synthetic or natural fibers?
- 3.Which fibre is stronger natural or synthetic?
- 4.Why are synthetic fibres more popular than natural fibres?
- 5.What is the main source of synthetic fibre?

6. What are the main types of synthetic fibers?

Task 3.18. Fill in the blanks with words from the box.

Nylon, Polyester, Thermosetting, Petroleum, Blended fibers, Spandex, Rayon, Bakelite, Polymerization, Cellulose, Acrylic, Teflon

1. made from both synthetic and natural fibers.
2. is the another name of lycra.
3. fibre is also called artificial silk.
4. Electrical switches are made of -----.
5. The process of combining monomers to form a polymer is called -----.
6. Rayon is a fiber regenerated from -----.
7. is often used as substitute for wool.
8. is used as a coating on the surface of non-stick frying pans.
9. synthetic fiber is commonly used to make strong ropes.
10. are long-chain polymers made by linking of several ester units.
11. plastics are set into a particular shape cannot be remolded.
12. is the most common source for synthetic fibers.

Task 3.19. Are these statements true or false.

1. Polyester is the strongest synthetic fibre.	T/F
2. If plastics are burnt, they evolve oxygen gas.	T/F
3. Bakelite is an example of thermoset.	T/F
4. Terry wool is a blended fibre.	T/F
5. Artificial silk is another name for silk.	T/F
6. Polyester is the strongest synthetic fibre.	T/F

Listening

Task 3.20. You will listen to a conversation between two



friends, Sora and Mansur, discussing man-made fibers. Listen carefully to their conversation and answer the questions that follow.

Sora: Hey Mansur, have you ever wondered about the different types of fibers used in clothing?

Mansur: Yeah, I have. Natural fibers like cotton and wool are quite common, but I'm curious about man-made fibers. They seem to be everywhere these days.

Sora: Absolutely! Man-made fibers have gained popularity due to their unique properties and versatility. For example, one common type is polyester.

Mark: Oh, I've heard of polyester. What makes it so popular?

Sora: Well, polyester is known for its durability and wrinkle resistance. It's often blended with natural fibers to improve their strength and reduce wrinkles. It's also easy to care for since it's machine washable and dries quickly.

Mark: That's interesting. Are there any other man-made fibers worth mentioning?

Sarah: Definitely! Another popular one is nylon. Nylon is known for its strength and abrasion resistance. It's commonly used in activewear, socks, and even hosiery. It's lightweight and has excellent elasticity.

Mansur: Ah, I see. So, nylon is ideal for items that require durability and stretchiness.

Sarah: Yes, exactly. And let's not forget about acrylic. Acrylic fibers are soft, lightweight, and have good insulating properties. They are often used in sweaters, blankets, and winter accessories.

Mansur: Acrylic sounds perfect for keeping warm during the colder months. Are there any drawbacks to these man-made fibers?

Sora: Well, one common concern is their environmental impact. Since man-made

fibers are synthetic, they are derived from petroleum-based products. However, efforts are being made to develop more sustainable alternatives.

Mansur: That's good to know. It's important to consider the environmental implications of the materials we use.

Now, answer the following questions based on the conversation:

1. What are some advantages of polyester?
2. Which man-made fiber is known for its strength and abrasion resistance?
3. In which types of clothing is nylon commonly used?
4. What are the characteristics of acrylic fibers?
5. What is one concern regarding man-made fibers?

Once you have finished answering the questions, you can check your answers for accuracy and comprehension.

Task 3.21. In Sora and Mansur's conversation, they discuss the different types of fibers used in clothing, with a particular focus on man-made fibers. Based on the results of the dialogue, match the words with their definition.

Acrylic	a) It's a popular man-made fiber known for its durability and wrinkle resistance. It is often blended with natural fibers like cotton to enhance their strength and reduce wrinkles. It is easy to care for since it is machine washable and dries quickly. It is commonly used in various clothing items.
Polyester	b) It's another widely used man-made fiber known for its strength and abrasion resistance. It is lightweight and has excellent elasticity, making it suitable for items that require durability and stretchiness. It is commonly found in activewear, socks, hosiery, and other similar products.
Nylon	c) These fibers are soft, lightweight, and have good insulating properties. They are often used in sweaters, blankets, and winter accessories to provide warmth. It is valued for its ability to imitate the feel of natural fibers like wool while being more affordable.

Unit 4A. Traditional methods of creating textiles.

Task 4.1. Discuss the importance of spinning in textile production and its historical significance. Do you know how yarn is made and where it comes from.

Task.4.2. Read the text and underline the new words.

Vocabulary

N	Word	Definition
1	Spinnng	The process of converting fibers into yarns through various mechanical actions such as drawing, twisting, and attenuating.
2	Textile:.	A flexible material made by interlacing fibers or yarns together, commonly used for making fabrics, clothing, and other textile products.
3	Fiber	Thin, thread-like structures that can be natural (such as cotton, wool, silk) or synthetic (such as polyester, nylon) and are used as the basic unit for making yarns.
4	Fabric	Material produced by weaving or knitting textile fibers.
5	Spindle:	A handheld or machine-mounted rod or pin used in traditional spinning to twist fibers into yarns.
6	Spinning wheel:	A mechanical device used in traditional spinning to spin fibers into yarns by the rotation of a wheel and a spindle.
7	Yarn:.	A continuous strand of fibers that is suitable for use in weaving, knittin other textile processes
8	Roving:	A loosely twisted strand of fibers produced by drawing and attenuating, which serves as a precursor to the final yarn.
9	Loom	A device used to weave cloth.
10	Knit	To make (a garment, blanket, etc.) by interlocking loops of wool or other yarn with knitting needles or on a machine.

Reading

Spinning

Spinning is a fundamental process in textile manufacturing that involves the conversion of fibers into yarns. It is a crucial step that determines the quality and properties of the final fabric. The spinning process imparts strength, durability, and uniformity to the yarn.

Traditionally, spinning was done manually using tools like spindles or spinning wheels. However, modern textile industries employ automated spinning machines, known as spinning frames or spinning mills, to achieve higher productivity and consistency.

The process of spinning involves several stages. First, the fibers are carefully selected and prepared by cleaning and carding, which aligns the fibers in a parallel arrangement. This preparation ensures that the resulting yarn has a consistent thickness and strength.

The fibers are then drawn into a fine strand called a roving. The roving is further attenuated and twisted to form a continuous yarn. This twisting action imparts strength to the yarn and holds the fibers together.



Spinning can be categorized into two main methods: ring spinning and open-end spinning. Ring spinning is the most widely used method and produces high-quality yarn with excellent strength and uniformity. Open-end spinning, on the other hand, is a faster and more economical process that is suitable for producing coarser yarn.

In recent years, advancements in spinning technology have led to the development of innovative spinning techniques such as compact spinning and rotor spinning. These techniques aim to improve yarn quality, reduce fiber waste, and enhance production efficiency.

Overall, spinning plays a vital role in the textile industry by transforming fibers into yarns that serve as the building blocks for fabrics. It is a complex and highly skilled process that continues to evolve with technological advancements, ensuring the production of high-performance textiles for various applications.

4.3. Discussion Questions about the text

1. What is the purpose of carding in the spinning process?
2. Which spinning method is known for producing high-quality yarn with excellent strength and uniformity?
3. What are two innovative spinning techniques that have been developed in recent years?

4.4. Answer to each statement as “True”, “False” or “Not given”

1. Traditionally, spinning was done manually using tools like spindles or spinning wheels.	T/F/Ng
2. The process of spinning involves only 1 stage.	T/F/Ng
3. Spinning is a relatively new technology.	T/F/Ng
4. It is important to choose high-quality raw materials for the spinning process.	T/F/Ng
5. Ring spinning is the most widely used method and produces high-quality yarn with excellent strength and uniformity.	T/F/Ng

Task 4.5 Read the questions and choose the best option.

1. What is the purpose of carding in the spinning process?
 - A. The purpose of carding is to align the fibers in a parallel arrangement and remove impurities.
 - B. The main purpose is to make a fabric.
 - C. To give fibers a good appearance.
2. What are the two main methods of spinning?
 - A. The two main methods of spinning are air-used spinning and ring spinning
 - B. The two main methods of spinning are ring spinning and open-end spinning.

C. The two main methods of spinning are hand spinning and open-end spinning.

3. What is the name of the fine strand created by drawing and attenuating fibers during spinning?

A. Roving.

B. Rotor spinning

C. Carding

4. What are two innovative spinning techniques mentioned in the text above?

A. Two innovative spinning methods are ring spinning and open-end spinning.

B. Two innovative spinning methods are compact spinning and ring spinning.

C. Two innovative spinning techniques are compact spinning and rotor spinning.

5. Which spinning method is known for producing high-quality yarn with excellent strength and uniformity?

A. Rotor spinning.

B. Compact spinning.

C. Ring spinning.

Task 4.6. Read the each sentences and fill in the gaps.

1. The fibers are then drawn into a fine strand called a _____.

2. This twisting action imparts strength to the _____ and holds the fibers together.

3. Overall, spinning plays a vital role in the textile industry by transforming fibers into yarns that serve as the building blocks for _____.

4. Open-end spinning, on the other hand, is a faster and more _____ process that is suitable for producing coarser yarn.

Grammar. Future perfect. The future perfect tense is used to describe an action that will be completed in the future before another action or a specific time. It indicates that something will have happened or been completed by a certain point in the future.

The structure of the future perfect tense is as follows:

Subject + will have + past participle

Here are some examples:

By the time you arrive, I will have finished cooking dinner.

They will have completed the project before the deadline.

Task 4.7. Complete each sentence with the appropriate form of the verb in brackets, using the future perfect tense.

1. By the end of next month, the textile company _____ (upgrade) its spinning machinery for improved efficiency.
2. The workers _____ (complete) their training on the new spinning techniques by the end of this week.
3. By the time the new production line is installed, the company _____ (increase) its spinning capacity significantly.
4. The textile engineer _____ (develop) a revolutionary spinning method by the end of the year.
5. The research team _____ (gather) enough data on the effects of spinning parameters by the end of the experiment.



Speaking

Task 4.8. Imagine you are a textile industry expert giving a presentation on the future of spinning technology. Prepare a short speech discussing the advancements and innovations that will have taken place in textile spinning by the year 2030. Use the future perfect tense to describe the achievements and developments that will have

been accomplished in the field of spinning.

Instructions:

Begin your speech by introducing the importance of spinning in the textile industry. Discuss the current state of spinning technology and its limitations.

Use the future perfect tense to describe the advancements and innovations that will have taken place in spinning technology by 2030.

Mention specific achievements, such as improved efficiency, enhanced yarn quality, reduced waste, and increased production capacity.

Explain the impact these advancements will have on the textile industry and its ability to meet evolving market demands.

Conclude your speech by emphasizing the significance of continuous research and development in the field of spinning.

Note: You can use the information provided in the original text and incorporate additional ideas and predictions based on your own knowledge or imagination.

Unit 4.B. Weaving in textile

Task 4.9. Discussion in a group.

1. What is the primary tool used in traditional hand weaving?
2. Which natural fiber is commonly used in the weaving of carpets and rugs?
3. What is the process of interlacing vertical and horizontal threads to create a fabric called?

Vocabulary

N	Word	Definition
1	Weave	To make cloth by interlacing threads on a loom.
2	Fabric	Material produced by weaving or knitting textile fibers.
3	Garment	An item of clothing.
4	Looms	An apparatus for making fabric by weaving yarn or thread.
5	Fiber	A thread or filament from which a textile is formed.
6	Yarn	Spun thread used for knitting, weaving, or sewing.
7	Intricate	Very complicated or detailed.

8	Knit	To make (a garment, blanket, etc.) by interlocking loops of wool or other yarn with knitting needles or on a machine.
9	Texture	The feel, appearance, or consistency of a surface or a substance.
10	Foundation	An underlying basis or principle.

Task.4.11.

Read the questions and share your ideas about them.

1. When was the challenging period in the sphere of textile, and why?
2. What are the specific factors that can help to make more textile products?

Task 4.12. Match the definitions (a–h) with the vocabulary (1-8)

Vocabulary	Definitions
1. Weaving	a.: The process of interlacing threads or yarns horizontally and vertically to create fabric or textile products.
2..... Loom	b. Repeating or decorative designs formed by the arrangement of threads in woven fabric, often created by the interlacing of different-colored or textured yarns.
3..... Interlaces:	
4..... Thickness:	d. A device or machine used in weaving to hold and manipulate the warp (lengthwise) and weft (crosswise) threads, enabling the creation of woven fabric.
5..... Patterns	e. A continuous length of fibers that is used in weaving, knitting, or crocheting to create fabric. Yarn can be made from various materials, such as cotton, wool, silk, or synthetic fibers.
6..... Heaviness:	f. The measure of the distance between the top and bottom surfaces of a fabric or material. In weaving, the thickness of the fabric can be adjusted by the density of the interlaced threads.
7..... Robust:	g. The act of crossing or intertwining threads or yarns in a specific pattern to create a woven structure.

8..... Yarn:

Interlacing is an essential technique in the weaving process.

h. The weight or mass of a fabric, which can be influenced by the type of yarn used, the density of the weave, and the thickness of the fabric.

Task 4.13. Read the text and try to retell it.

Reading

Textile Weaving

Textile weaving is the interlacing of distinct yarns or threads to create cloth. The interlacing occurs at a right angle so that the cloth can grow in length. The process of weaving produces cloth known as **weave fabric**. Other types of cloths or fabrics can be produced by crocheting, knitting, braiding, etc. Textile weaving is generally done on a tools called a **loom**.

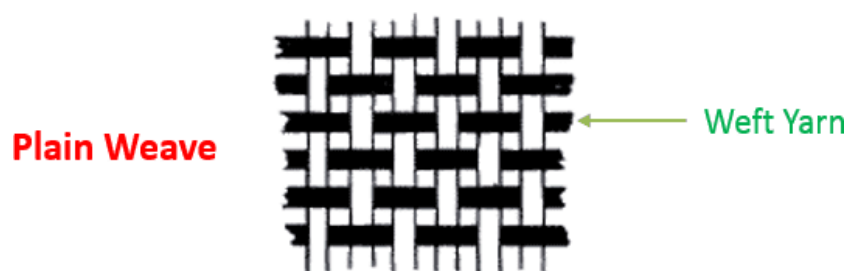
For centuries, the two **crafts** of spinning and weaving were done side by side in the house as a cottage business, with weaving being done by hand. Although there is proof that fabric was being woven as early as 7000–8000 BC in Mesopotamia and Turkey, pinpointing the precise period is challenging because textile products are perishable.

As civilization advanced, members of the clergy and nobility started to display their rank by donning elaborately woven garments. Men and women worked in separate jobs in the cottage weaving industry spinning and weaving together on manually operated looms to create finished cloth that was sold onto a cloth.

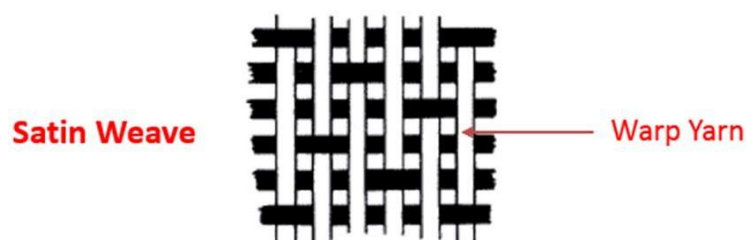
The weaver's cottages in West Yorkshire, which include mullioned windows that run the entire width of the building and provide enough light to illuminate the top floor loom chamber, are remnants of this rural business. Combinations of thread interlacing create a multitude of textures in woven fabrics. The term "weave" refers to the arrangement of threads in a fabric; a "**float**" is when there are no **interlaces** and the **yarn** crosses two or more threads.

There are three fundamental weaves—plain, twill, and satin—that serve as the foundation for nearly every kind of cloth currently in use.

A woven fabric's **thickness and heaviness** can be used to classify it as light, medium, or heavy weight. These three fundamental weaves form the foundation for all subsequent weave designs. Multiple basic weave designs can be combined to create more intricate weave patterns. **Plain weave:** To give the fabric a more firm, crisp handle, the weft yarn runs under and over each warp yarn in a plain weave, also known as a percale weave. Because all of the threads are weaved together, this is more **robust**. Typically, it is applied to thread counts of 180 and above.

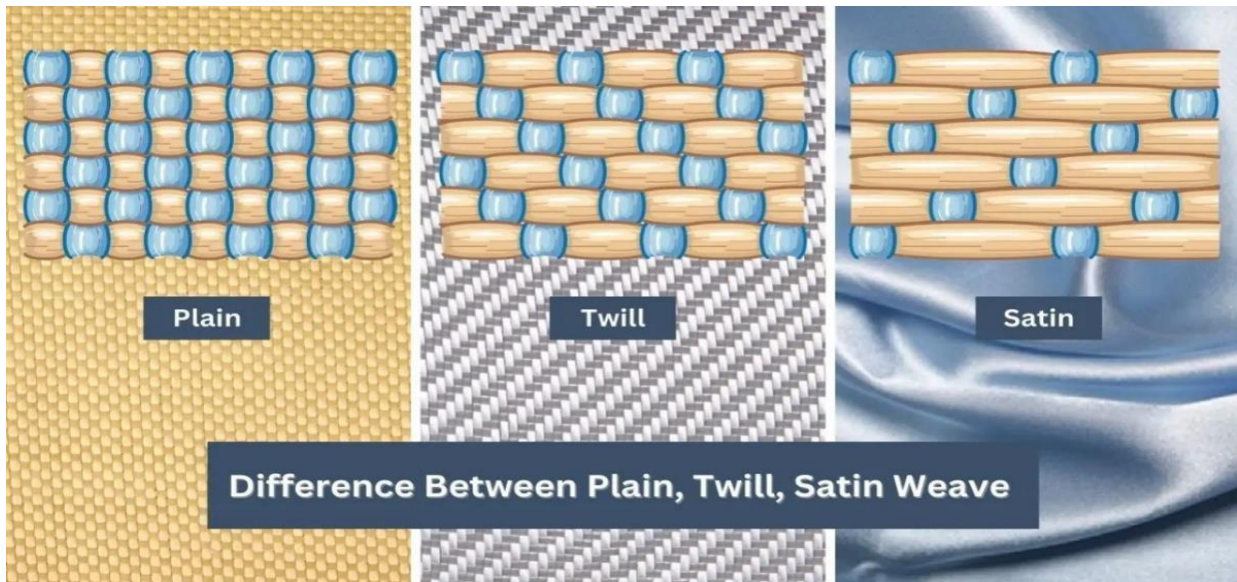


Satin or sateen weave: In these weaves, more of the warp yarn is visible on the surface of the fabric because the warp rests on top of several (sometimes four or five) weft threads. As a result, the process has more shine and seems brighter and silkier. Additionally, the hand feel is less rigid and gentler. The **drawback** of a satin weave fabric is that it is more prone to become bobbly since there is more exposed yarn on the surface, which is easier to rub and tangle. To generate the illusion of stripes, a satin stripe weave alternates between satin and reverse satin weaves.



Because the **warp and weft** interweaving points of twill fabrics generate an angle-shaped structure of diagonal lines on the fabric's surface, twill fabrics are simpler to recognize. Positive and negative points, less interweaving points, longer floating lines, a softer feel, increased density, thicker goods, and a strong three-dimensional

sense of organization are its defining characteristics. Every three threads at the absolute least, the warp and weft are intertwined. The fabric has the highest density and thickest layer, with a smoother, more exquisite, rich burnish surface. However, the price is comparatively expensive due to the greater cost of the product.



Task 4.14. Discussion questions about the text.

1. How do you think why did the weavers' cottages in West Yorkshire provided with many windows ?
2. What kind of advantages can give the separate job of men and woman in weaving textile?
3. Discuss the importance of weaving in the sphere of textile.

Task 4.15. Read the provided statements carefully. Based on the information given in the text "The civilization of textile weaving", decide if the statements are

"**True**" if the statement is correct according to the text,

"**False**" if the statement contradicts the information or is incorrect,

"**Not Given**" if the information is not stated in the text.

1. There are five fundamental weaves that serve as the foundation for nearly every kind of cloth currently in use.	T/F/N
2. The drawback of a satin weave fabric is that it is more prone to become bobbly since there is more exposed yarn on the surface, which is easier to rub and tangle.	T/F/N
3. Nowadays Russia is in the first place of producing textile fibers.	T/F/N

Task 4.16. Read the questions and choose the best option.

Question 1.

Where was the first woven fabric produced?

- A) Turkey and Mesopotamia
- B) Brazil and YAE
- C) India and Australia
- D) Uzbekistan and China

Question 2.

Why did men and women work separately in weaving fibers?

- A) To fasten the process
- B) To make more products
- C) To create finished cloth that was sold onto a cloth.
- D) To create more intricate weave patterns.

Question 3.

What kind of weaves have more of the warp yarn visible on the surface of the fabric?

- A) Plain
- B) Satin

- C) Twill
- D) Cotton fiber

Question 4.

How many fundamental weaves that serve as the foundation for nearly every kind of cloth currently in use?

- A) 2
- B) 3
- C) 4
- D) 5

Question 5.

What kind of fiber is comparatively expensive due to the greater cost of the product?

- A) Twill
- B) Plain
- C) Satin
- D) Synthetics

Task 4.17. Read the each sentences and fill in the gaps.

Sentence 1

The process of weaving produces cloth known as_____.

Sentence 2

Plain weave: To give the fabric a more firm, crisp handle, the weft yarn runs under and over each warp yarn in a plain weave, also known as_____.

Sentence 3

The weaver's cottages in West Yorkshire, which include mullioned _____that run the entire width of the building and provide _____to illuminate the top floor loom chamber, are remnants of this rural business.

Sentence 4.

There are three fundamental weaves—_____, _____, and _____—that serve as the foundation for nearly every kind of cloth currently in use.

Sentence 5.

The drawback of a satin weave fabric is that it is more prone to become bobbly since there is more exposed yarn on the surface, which is easier to _____ and _____.

Listening

Task 4.18. Listening Task: Weaving Techniques

Instructions: Listen to the following audio excerpts about different weaving techniques. After each excerpt, answer the questions that follow.

Audio Excerpt 1:

Narrator: Weaving is a fascinating craft that involves the interlacing of threads to create fabric. One popular technique used in weaving is called plain weave. In plain weave, the weft thread passes over one warp thread and then under the next, alternating in this manner throughout the fabric. This technique creates a strong and balanced fabric structure.



Question 1: What is the name of the weaving technique described in the audio excerpt?

Audio Excerpt 2:

Narrator: Another weaving technique commonly used is twill weave. Twill weave is characterized by diagonal lines or ridges formed on the fabric. In twill weave, the weft thread passes over two or more warp threads and then under one or more, creating a diagonal pattern. This technique is often used to create fabrics with a sturdy and durable nature.

Question 2: What is the main characteristic of twill weave?

Audio Excerpt 3:

Narrator: When it comes to the thickness and heaviness of woven fabric, the choice of yarn plays a crucial role. Thicker and heavier yarns can be used to create fabrics with a more substantial feel, suitable for items like blankets and upholstery.

Conversely, using finer yarns can result in lighter and more delicate fabrics, suitable for clothing and accessories.

Question 3: How does the choice of yarn affect the thickness and heaviness of woven fabric?

Audio Excerpt 4:

Narrator: Weaving patterns offer endless possibilities for creativity. One popular pattern is the herringbone pattern. The herringbone pattern is characterized by a V-shaped design formed by the interlacing of threads. It can create a visually appealing effect on fabric, often used in garments and home decor items.

Question 4: What is the main characteristic of the herringbone pattern?

Audio Excerpt 5:

Narrator: Weaving can result in the creation of robust and durable fabrics. By tightly interlacing the warp and weft threads, a strong fabric structure is achieved. The density of the interlacing and the choice of yarn can greatly influence the strength and longevity of the woven fabric.

Question 5: How can the interlacing of threads contribute to the robustness of woven fabric?

Unit 4C. Knitting

4.19. Read the questions and share your ideas about them?

1. What is knitting?
2. What are the basic tools needed for knitting?
3. How is knitting different from crocheting

Vocabulary

	words	definition
1	Knitting:	A method of creating fabric by intermeshing loops, where new loops are stitched through old loops using needles.
2	Wales:	The loops that run along the length or vertical columns of a knitted fabric.
3	Courses	The loops that run along the width or horizontal rows of a knitted fabric. They are formed by interlocking loops in the traverse direction.
4	Porosity:	The degree to which a fabric allows air and moisture to pass through. Knitted fabrics often have high porosity, making them breathable and suitable for summertime wear.
5	Thermal insulation:	The ability of a fabric to trap heat and provide insulation. Winter clothing made from knitted fabrics is often thicker to improve thermal insulation and keep the wearer warm.
6	Knitting machine	A device invented by William Lee and James Lee in 1589 that automates the process of creating knitted fabrics.
7	Arabic Knitting:	A form of knitting practiced in North Africa, introduced to Europe by Arabs.

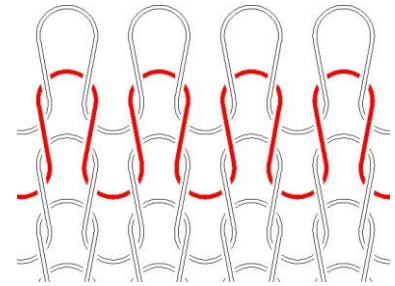
Task 4.20. Scanning for details

Look at the following numbers. Quickly scan through the text on the next page and find what they relate to.

- A) 250 AD
- B) in 1589
- C) 1920s

Reading

Knitting: definition, types and its history



Knitting is a very old practice of manufacturing fabric by intermeshing loops. Unlike woven fabrics (interlacement of two set of yarns lying in perpendicular direction), knitted fabrics are produced by interlocking loops with the help of needle / needles.

During the process a new loop is stitched through the old loop. The fabric consist loops along the longitudinal direction known as wales and along the traverse direction known as courses.

Yarns are woven together in this technique to create a thick, elastic, and flexible cloth. It's one of various methods for creating cloth out of yarn or thread. In that it is made out of loops pushed through loops, it is comparable to crochet. The purpose of the cloth will determine how closely or loosely the loops are created. A new loop is made in front of the old loop and the loops, or stitches, are interlocked using a needle that holds the existing loop. The knitted fabric is then formed by pulling the old loop over the new one. Knitting differs from weaving in that cloth can be made from a single piece of yarn. The knitted material is made up of vertical loop columns called Wales and horizontal rows called courses.

Knitting Stitches Type

Weft and warp stitches are the two types of stitches employed by the producer in textile knitting to create a knitted product. Each of them has unique qualities, both in terms of benefits and drawbacks, as well as methods of manufacture.

It is the most popular variety that the maker uses to create knitted textile goods like socks and shirts.

The knit fabric is more breathable and permeable due to its high porosity, which makes it comfortable to wear in summertime. In order to improve thermal insulation, winter clothing knits are typically made thicker. A sportsman's great stretch ability facilitates effortless body twisting. However, "bagging" around the elbows and knees results from insufficient elastic recovery. 1920s. Knitwear became more associated with "smart casual" wear.

In the fashion and apparel industries, knitted products are becoming more and more popular. The knitting was found practiced before 250 AD. Ancient "Arabic Knitting" was practiced in North Africa, and Arabs brought the craft to Europe. In England in 1589, William Lee and his brother James Lee invented the first knitting machine.

Task 4.21. Discussion Questions about the text

1. How are knitted fabrics different from woven fabrics in terms of their manufacturing process?
2. How does the purpose of the cloth influence the tightness or looseness of the loops in knitting?
3. Describe your favorite piece of knitted clothes.



Task 4.22. Answer to each statement as “True”, “False” or “Not given”

1. Knitting is a new practice of manufacturing fabric by intermeshing loops.	T/F/N
2. During the knitting process a new loop is stitched through the old	T/F/N

loop.	
3.The knit fabric is more breathable and permeable due to its high porosity, which makes it comfortable to wear in summertime.	T/F/N
4.The knitting process is very easy to learn.	T/F/N
5.Knitted fabric is made from two pieces of yarn.	T/F/N

Task 4.23. Read the questions and choose the best option.

1. Which of the following is a characteristic of knitted fabrics?
 - a) Interlacement of two sets of yarns in a perpendicular direction
 - b) Interlocking loops of yarn
 - c) Interweaving of warp and weft threads
 - d) Interlooping of warp and weft threads
2. What are the vertical loop columns in knitted fabric called?
 - a) Woven threads
 - b) Wales
 - c) Courses
 - d) Stitches
3. How does knitting differ from weaving?
 - a) Knitting involves interlacement of two sets of yarns, while weaving involves interlocking loops of yarn.
 - b) Knitting is done with a single piece of yarn, while weaving uses multiple threads.
 - c) Knitting creates a stretchy fabric, while weaving creates a rigid fabric.
 - d) Knitting is a quicker process compared to weaving.
4. Which type of knitting stitch allows for unique pattern designs using various yarns?
 - a) Purl stitch
 - b) Rib stitch
 - c) Weft stitch
 - d) Warp stitch
5. Which of the following is a basic knitting stitch?

- a) Chain stitch
- b) Slip stitch
- c) Double crochet stitch
- d) Purl stitch

Task 4.24. Read the each sentences and fill in the gaps.

1. Knitting is a very old practice of _____ fabric by intermeshing loops.
2. The _____ of the cloth will determine how closely or loosely the loops are created.
3. Weft and _____ stitches are the two types of stitches employed by the producer in textile knitting to create a knitted product.
4. In order to improve thermal _____, winter clothing knits are typically made thicker.
5. In England in _____, William Lee and his brother James Lee invented the first knitting machine.

Writing

Task 4.25.

1. Write about **The rise in demand for natural fibers**. Write a paragraph about your favorite type of natural fiber that you mostly prefer to wear in your daily life.

2. Give your opinions about **The impact of textile production and waste on the environment**. Give some examples of this issue on the scale of some famous countries of the world.

3. Write about the Textile industry of Uzbekistan. What kinds of achievements or failures did you notice in our country in this sphere last years, give examples.

UNIT 5.A.

Task 5.1 Discuss with your partner the importance of textiles. In your discussion, define the terms fiber, fabric, and textile.

Vocabulary

1.Made	produced in the stated way or place
2.Characteristics	a typical or noticeable quality of someone or something:
3.Surface	the outer or top part or layer of something:
4.Shrunk	to become smaller, or to make something smaller:
5.Texture	he quality of something tat can be decided by touch; the degree to which something is rough or smooth, or soft or hard
6.Fiber	any of the thin parts like thread that form plant or artificial material, esp. those that can be made into cloth, or a mass of such parts twisted together
7.Strength	the ability to do things that need a lot of physical or mental effort
8.Fabrics	cloth or material for making clothes, covering furniture,

Reading

Task 5.2. Read the text and try to retell it.

Fabrics



Fabrics are defined as the clothing material, which is made by weaving or knitting threads and is obtained from the yarn. They are made from tiny thread-like fibres. These fibres are twisted to make a yarn.

The characteristics of a fabric depend upon the type of fibre used and the treatment applied to them. Cotton voile, rayon, linen, satin, and denim are different types of fabrics.

Fabric is the medium of the garment designer. It is a two-dimensional, flexible surface that is transformed into a three-dimensional form through the vision of the designer. Knowledge of why and how a fabric behaves in the design process is often rooted in understanding the construction of the fabric. While fiber and yarn will help determine hand and drape, the overall performance of a fabric depends on how the fiber or yarn is used during construction and finishing. Fabric is produced using one of three methods:

Massing fiber together creates fabric directly from fiber, without the need for first producing yarns. This requires an understanding of a fiber's characteristics and what will hold fibers together to form a two-dimensional surface. The fibers can be shrunk, melted, or tangled together.

Weaving requires yarn production first. The strength of the yarns and their texture are important determining feature for the woven fabric.

Knitting also requires yarn production. Yarns can be less strong than for weaving, allowing for wide variety in yarn type for greater texture in knitted fabric.

Task 5.3. Answer the questions.

1. What is fabric?
2. What types of fabric do you know?
3. What is the main purpose of fabric?
4. How is the fabric made from the yarns?

Task 5.4 Give antonyms for these words

Include	
Obtain	
Feature	
Important	
Use	
Manufacture	

Task 5.5. Match the words with the definitions.

Cotton	a). This material comes from trees and is used to make furniture such as tables or cupboards.
Metal	b) This material is cold and hard. Heat and electricity can travel through it.
Wood	c) This soft material comes from the seeds of a plant. It is used to make clothes such as T-shirts.
Leather	d) This material is hard, breakable and you can see through it. It is used to make windows.
Checked	e) This material comes from the skin of an animal. It is used to make shoes, bags or belts.
Denim	f) This is a strong cotton fabric and is usually blue. It is used to make jeans.

Glass	g).This material comes from sheep. It is used to make winter clothes such as scarves or jumpers.
Wool	h)Patterned with small squares in different colours.
Polka dot	Patterned with spots (solid circles) of a different colour.

Grammar. Word order refers to the way words are arranged in a sentence.

The order of words in English is important if you want to communicate your thoughts and ideas.

I (S) am cleaning (V) the house (O). He (S) loves (V) the cold breeze (O).

The most used word order is: **Subject + Verb + Object + Adverb Of Place + Adverb Of Time.**

Task 5.6. Put the words in the right order to form sentences:

1. fibres, develop, cotton, cotton, along, with, the, plant seeds, of, the
2. Synthetic, fabrics, are fabrics, from artificial, or man-made, raw, materials, produced, that are.
3. fabric, that is made up, of synthetic, fibres, nylon, fabric, is a polymer.
4. fabrics include, mohair, cashmere, angora, wool.

Task 5.7 .Put the words in the right order to form sentences:

1. always/new/is/the/she /about/speaking/her/convertible
2. think/excellent/you?/ Marc/is/don't/student/an
3. music/to/Report/classical/sometimes/listens
4. daughter/'s/can/well/words/French/Mario/very/spell

Introduction:

Fabrics are an extraordinary part of our everyday lives, encompassing a diverse range of materials that surround us in various forms. From clothing and upholstery to industrial applications, the world of fabrics weaves together a captivating tapestry of history, innovation, and cultural significance. In this article, we will embark on a journey to explore the intriguing realm of fabrics, delving into their origins, unique characteristics, and the remarkable ways they shape our world.

Tapestry of Origins:

Fabrics have an ancient lineage, with evidence of textile production dating back thousands of years. Across civilizations, early humans discovered ways to transform natural fibers such as flax, wool, and cotton into functional and decorative materials. From the shimmering silk of ancient China to the vibrant textiles of the Mayans, each culture contributed to the rich tapestry of fabric heritage.

Task 5.8.Fill in the gaps in the following paragraph using appropriate words related to fabric origins:

Fabrics have an ancient _____, with evidence of textile production dating back thousands of years. Across civilizations, early humans discovered ways to transform natural fibers such as _____, _____, and _____ into functional and decorative materials. From the shimmering _____ of ancient China to the vibrant textiles of the Mayans, each culture contributed to the rich _____ of fabric heritage.

Task 5.8. Match the following natural fibers with their corresponding characteristics:

Cotton	d. Made from the flax plant, this fabric is durable, has high moisture absorbency, and is often used in bedding and tablecloths.
Wool	a. Soft, lightweight, and breathable fabric often used in summer clothing.
Silk	b. Provides warmth, has good insulating properties, and is commonly used in winter garments.
Linen	c. Known for its lustrous appearance, smooth texture, and excellent draping qualities.

Task 5.9. True or False:

Decide whether the following statements are true or false based on the information provided in the article.

Fabrics have no cultural significance.	T/F
Silk is a natural fiber.	T/F
Linen is often used in winter clothing.	T/F
Cotton is lightweight and breathable.	T/F

Writing

Task 5.10. Fabric and Emotions:

Choose a fabric that you associate with a particular emotion or mood, such as comfort, excitement, or nostalgia. Write a short story or poem that explores how this fabric evokes those feelings. Consider the color, texture, and personal experiences associated with the fabric. Use descriptive language to bring your emotions to life through the fabric.

Unit 5 C. Harnessing the Power of Non-Woven Fabrics: A Versatile Solution for Modern Applications.

5.11 Read the questions and share your ideas about them?

1. How do you understand non-woven fabric?
2. Where we can meet non-woven fabrics in our daily life?
3. For what purposes can we use non-woven fabrics?

Vocabulary

Versatility:	The quality or state of being capable of being used in various ways or for various purposes.
Practicality	The quality of being useful, functional, or suitable for a specific purpose
Woven	Made by interlacing yarn or threads in a specific pattern to create a fabric.
Bonding:	The process of joining or adhering fibers together to form a fabric without weaving or knitting.
Felting:	The process of matting or pressing fibers together to create a fabric without weaving or knitting.
Adoption:	The act of accepting or embracing something new or different.
Absorption	The process of soaking up or taking in a liquid or substance.
Leakage	The unintentional escape or release of a substance or fluid

Reading

Task 5.12. Choose the correct heading from the list .

a)Non-woven fabrics: their usage and benefits

b)all about packaging

c)Natural fabrics

In the world of textiles, non-woven fabrics have emerged as a game-changer, revolutionizing various industries with their remarkable versatility and practicality. Unlike traditional woven or knitted fabrics, non-woven fabrics are produced by bonding or felting fibers together, offering a host of advantages that have propelled their widespread adoption. This article explores the myriad applications and benefits of non-woven fabrics in today's modern world.

Hygiene and Personal Care:

Non-woven fabrics have become an integral part of the hygiene and personal care industry. From disposable diapers to feminine hygiene products, these fabrics provide exceptional softness, breathability, and liquid absorption properties. Their lightweight construction and ability to prevent leakage make them ideal for use in products that prioritize comfort and cleanliness.

Medical and Healthcare: In the medical field, non-woven fabrics play a crucial role. They are extensively used in surgical gowns, masks, drapes, and wound dressings.

Automotive:

The automotive industry benefits from non-woven fabrics due to their durability, insulation properties, and ease of customization. These fabrics are used for car interiors, including upholstery, carpeting, and insulation materials.

Packaging and Consumer Goods:

The packaging industry has embraced non-woven fabrics for their strength, versatility, and aesthetic appeal. These fabrics are used to manufacture reusable bags, gift bags, and product packaging. Non-woven fabric totes have gained popularity as eco-friendly alternatives to single-use plastic bags, contributing to a sustainable future.

Task 5.13 Discuss the questions about the text

1. What are some key advantages of non-woven fabrics in the hygiene and personal care industry?
2. How are non-woven fabrics used in the automotive industry?
3. What are some applications of non-woven fabrics in the field of environmental protection?

Task 5.14 Answer to each statement as “True”, “False” or “Not given”

1. Non-woven fabrics have become an integral part of the hygiene and personal care industry.
2. The packaging industry has not embraced non-woven fabrics for their lack of durability and unaesthetic appeal.
3. Non-woven fabrics is a great option to remove knitted fabrics from usage.
4. In the medical field, non-woven fabrics still play a small role.
5. Non-woven fabrics have found applications in civil engineering and construction industries as geotextiles.

5.15. Read the each sentences and fill in the gaps.

1. Unlike traditional woven or knitted fabrics, _____ are produced by bonding or felting fibers together, offering a host of advantages that have propelled their widespread adoption.
2. The automotive industry benefits from non-woven fabrics due to their durability, insulation properties, and ease of _____.

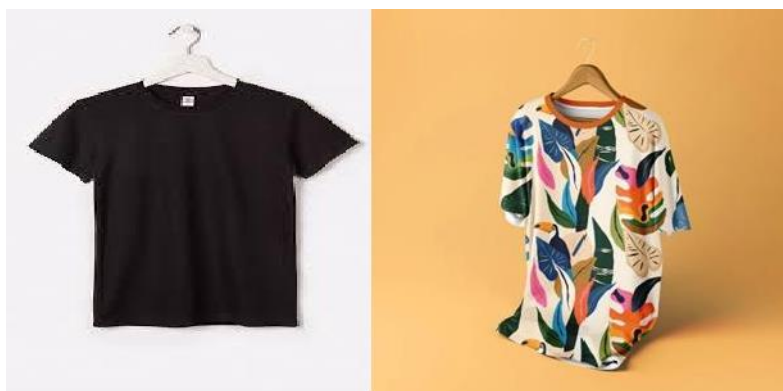
3. Unlike traditional woven or knitted fabrics, non-woven fabrics are produced by _____, offering a host of advantages that have propelled their widespread adoption.
4. These fabrics offer a _____ against microorganisms, ensuring a safe and sterile environment.
5. Non-woven fabric totes have gained popularity as _____ alternatives to single-use plastic bags, contributing to a sustainable future.

Writing

5.16. Write a few sentences to each question.

1. How have advancements in non-woven fabric technology expanded their applications across various industries, and what potential future developments can we expect?
2. In what ways do non-woven fabrics outperform traditional woven or knitted fabrics in terms of functionality, performance, and sustainability?
3. What are the main challenges or limitations associated with the production and disposal of non-woven fabrics, and how can they be addressed to further improve their environmental impact?

Unit 6 A. General issues of printing on textile materials.



Task 6.1. Discuss in a group.

Describe the clothes you are wearing today. Use as many adjectives as you can. What kind of clothes do you prefer, plain or printed?

Is brightly colored print clothing allowed in your institute?

Vocabulary

	Word	Definition
1	Dye	A natural or synthetic substance used to add color to or change the color of something.
2	Cellulosic	A natural polymer found in plant cell walls. It is the most abundant organic polymer on Earth. It is found in cotton, wood, and other types of plants.
3	Protein-fiber	A natural or synthetic fiber composed of protein. Natural proteins fibers include Wool, Hair, Fur, and Silk.
4	Coolant	A liquid or gas that is used to remove heat from something .
5	Thickeners	A substance added to a liquid to make it firmer.
6	Printing	To apply designs onto fabric by pressing shapes onto it with ink.
7	Diffusion	The spreading of something more widely.
8	Fiber	A thread or filament from which a textile is formed.
9	Hardens	Make or become tougher and more clearly defined.
10	Sequence	A particular order in which related things follow each other.

Reading

Task 6.2 .Read the text and underline the new words

Printing on fabrics differs from dyeing in that the dye is applied to specific areas of the fabric surface. It is depicted in the form of a flower. Although the composition of the solution is more complex, the physical and chemical laws are the same. It is similar to painting. The mixture that causes the fabric to color is called a dye and is made from a dyeing solution. It makes a difference by its power. The dye for textile printing contains: dye, including thickeners and excipients. The dyes used for

printing are textile materials. It must give a pure and solid color on the surface. The following grade meets these requirements dyes conform:

- When printing colors on cellulosic products, active, cubic, water insoluble dyes and pigments;
- for protein-fiber products - active, cube, chromium, acid metal complex dyes and pigments;
- for acetate and synthetic fibers - predominantly dispersed dyes and pigments, except acidic (for polyamide fibers), cationic (polyacrylonitrile fibers), cubic (for viscose and polyester fibers) dyes.

The coolant is a multicomponent dispersed system or a water-soluble natural or chemical polymers, a solution of thickeners, unconfined dye mixed to form a permanent printing. Flower pressing. Dyeing substance and fiber that occurs during the dyeing process basic physico-chemical laws that determine the state of materials and their effects the flower is preserved during the pressing process. But different from painting, flowers on fabrics. Diffusion of dyes in the solution and on the fiber surface during printing it loses its meaning. A dye applied to the surface of the fabric in the shape of a flower intermolecularly with the thickener molecules when the substance leaves the drying. It is firmly held by bonds and hardens in the thickener film remains, its diffusion into the fiber stops. What happens during the dyeing process and the continuous sequence of physico-chemical stages is broken.

Task 6.3. Read the questions and share your ideas about them?

1. What is the difference between printing and dyeing in textile?
2. What kind of requirements dyes conform?
3. How do you think, why printing is so important?
4. Which components are typically found in the dye for textile printing?

Task 6.4. Read the provided statements carefully. Based on the information given in the text "General issues of printing on textile materials." decide if each statement is True, False, or Not Given.

Write your answers in the spaces provided next to each statement.

1. Printing and dyeing are the same process.	T/F
2. Dyes are used to remove color from textiles	T/F
3. Dyeing substance and fiber that occurs during the dyeing process basic physico-chemical laws that determine the state of materials and their effects the flower is retained during the pressing process	T/F
4. True or False: Diffusion of dyes in the solution and on the fiber surface is significant during the printing process.	T/F
5. The dye applied to the fabric surface in the shape of a flower forms bonds with the thickener molecules and remains firmly held in the thickener film.	T/F
6. The continuous sequence of physico-chemical stages during the dyeing process is disrupted when printing flowers on fabrics.	T/F

Task 6.5. Read the questions and choose the best option.

Question 1: What is the composition of the dye used for textile printing?

- A) Only dye molecules
- B) Dye, thickeners and excipients
- C) Only thickeners and excipients
- D) Dye and water

Question 2: What are the requirements for dyes used in textile printing for different types of fibers?

- A) All types of fibers require the same type of dye
- B) Different types of fibers require different types of dyes
- C) Only natural fibers can be printed with dyes
- D) Dyes for textile printing do not have specific requirements

Question 3: What role does the coolant play in the printing process?

- A) Acts as a solvent for the dye
- B) Helps in fixing the dye on the fabric
- C) Adds fragrance to the printed fabric
- D) Does not play a significant role in the printing process

Question 4: How does the process of flower pressing differ from painting flowers on fabrics?

- A) Flower pressing involves drying flowers while painting involves using dye
- B) Flower pressing preserves the actual flower while painting creates a visual representation
- C) Flower pressing uses a complex dye composition while painting uses a simple one

- D) Flower pressing requires special equipment while painting can be done with basic tools

5: How does the dye interact with the thickener molecules during the printing process?

- A) The dye forms bonds with the thickener molecules, preventing diffusion into the fiber
- B) The dye dissolves the thickener molecules, allowing deeper penetration into the fiber
- C) The thickener molecules repel the dye, causing uneven coloring on the fabric
- D) The thickener molecules evaporate during printing, leaving only the dye on the fabric

Task 6.6. Read the each sentences and fill in the gaps.

Sentence 1: Printing on fabrics differs from _____ in that the dye is applied to specific areas of the fabric surface.

Sentence 2: The mixture that causes the fabric to color is called a _____ and is made from a dyeing solution.

Sentence 3: 3. The dyes used for textile printing must give a pure and solid color on the surface and are made from textile materials such as active, cubic, water-insoluble _____ for cellulosic products.

Sentence 4: The coolant used in the printing process is a multicomponent dispersed system or a water-soluble natural or chemical _____

Sentence 5: During the pressing process, the flower is preserved on the fabric surface by intermolecularly bonding with the _____ molecules.

Listening

Task 6.7. Listen the audio, Whose opinion is closer to you

Ezoza: Hey, have you noticed that some students prefer printed clothing over the traditional uniform?

Malik: Yeah, I've noticed that too. It seems like printed clothing is becoming more popular among students.

Ezoza: I wonder why that is. Maybe they find it more fashionable and expressive than a standard uniform.

Malik: That could be it. With printed clothing, students can showcase their personal style and creativity.

Ezoza: True, uniforms can sometimes feel restrictive in terms of self-expression. Printed clothing allows students to stand out and show off their unique personalities.

Malik: On the other hand, uniforms have their advantages too. They promote a sense of unity and equality among students.

Ezoza: That's a good point. Uniforms create a level playing field, where everyone looks the same regardless of their background or socio-economic status.

Malik: Absolutely. It eliminates the pressure of dressing up and reduces any potential judgment based on clothing choices.

Ezoza: However, I can understand why some students prefer printed clothing. It gives them a chance to express themselves and feel more comfortable in their outfits.

Task.6.8.Listen to the audio clip and answer the following questions:

- 1.What are some reasons why some students prefer printed clothing over the traditional uniform?
2. What is the main disadvantage of uniforms mentioned in the dialogue?
- 3.How does printed clothing allow students to express themselves?
- 4.What advantage do uniforms have in terms of clothing choices?

Task 6.9.Listen the dialogue again, are these statements true or false

1.Uniforms eliminate the pressure of dressing up and potential judgment based on clothing choices.	T/F
2. Printed clothing allows students to showcase their personal style and creativity.	T/F
3. Uniforms promote a sense of unity and equality among students.	T/F
4 Printed clothes gives them a chance to express themselves and feel more comfortable in their outfits.	T/F

Task 6.10. Unjumble the following words to form meaningful words related to the dialogue of printing on fabrics:

ltinrgip	
mrofbai	
unifrom	
eetxnirsp	
esinsxpreo	
nteiditux	
dynei	
htrtneie	

Unit 6B. Task

6.11.Discuss in groups.

1. Have you ever wanted to print personalized designs on a shirt or flag?
2. How does fabric get its colorful designs?



Vocabulary

Apply	to make use of as relevant, suitable, or pertinent
Fabric	a cloth made by weaving, knitting, or felting fibers
Pattern	a decorative design, as for wallpaper, china, or textile fabrics
Bond	something that binds, fastens, confines, or holds together.
Resist	to act against or provide resistance to
Friction	surface resistance to relative motion, as of a body sliding or rolling.
Impede	to retard in movement or progress by means of obstacles or hindrances
Cover	to be or serve as a covering for; extend over; rest on the surface of
Engrave	to chase (letters, designs, etc.) on a hard surface, as of metal, stone, or the end grain of wood
Exposure	the act of exposing, laying open, or uncovering
Steam	water in the form of an invisible gas or vapor
Screen printing	is a printing technique where a mesh is used to transfer ink (or dye) onto a substrate, except in areas made impermeable to the ink by a blocking stencil.

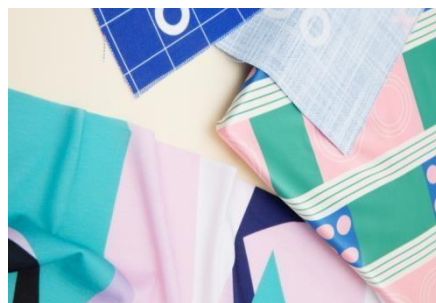
Task 6.12. Read the text and try to retell it.

Reading

Textile printing

Textile printing is the process of applying colour to fabric in definite patterns or designs. In properly printed fabrics the colour is bonded with the fibre, so as to resist washing and friction. Textile printing

is related to dyeing but in dyeing properly the whole fabric is uniformly covered with one colour, whereas in printing one or more colours are applied to it in certain parts only, and in sharply defined patterns.



In printing, wooden blocks, stencils, engraved plates, rollers, or silk-screens can be used to place colors on the fabric. Colorants used in printing contain dyes thickened to prevent the color from spreading by capillary attraction beyond the limits of the pattern or design. Printing creates decorations on fabrics that last over time. There are many ways to print on fabric, some going back hundreds of years, and others taking advantage of new technologies.

First Steps in Fabric Printing. Most fabrics are washed before any printing process begins to remove any **finishing chemicals or sizing agents**, substances added to fabric near the end of the manufacturing process that can impede the dye's ability to work well. There are two basic printing methods, direct printing and resist printing. Direct printing is where a dye is used to add color directly to fabric.

Block printing. One of the oldest direct printing techniques is block printing. You can find examples dating back thousands of years. In block printing, a design is carved into a hard substance like wood. Then, fabric is laid out flat, and the block is dipped in dye and pressed onto the fabric.

Similar to block printing but taking the idea to a much more industrial level is **engraved roller printing**. A large copper cylinder is engraved with designs that are then printed on fabric as it is fed through a machine. The design repeats as many times as needed. Many fabrics printed in factories in the eighteenth and nineteenth centuries were created with this process.

Screen printing uses a pattern or template with gaps in it for the design, which is burned onto a screen with an exposure light. Ink is pushed into the pattern, leaving color on the fabric through the gaps in the pattern. Screen printing can be done flat or on a rotary printing press. A separate screen must be used for each color.



One of the newest methods is **digital fabric printing**, done with ink jet technology (yes, just like your home printer). It uses inks formulated for specific kinds of fabrics. The fabric is fed through a printer, which applies the design through thousands of tiny ink drops. This method isn't cheap, but it can produce small amounts of very personalized fabrics. It's also friendly to the environment because it uses only a minimum amount of ink. The fabric must then be heated or steamed to set the design and make it permanent.

Task 6.13. Answer the questions

1. What are the four most common methods of textile printing?

2. Which ink is used for textiles?
3. What blocks are used for textile printing?
4. What are the advantages of textile printing?
5. What is inkjet technology?

Task 6.14. Find the correct answer.

1. Which printing method uses a wax-like substance to create designs by preventing dye from sticking in certain areas?
 - a) Block printing
 - b) Digital printing
 - c) Resist printing
 - d) Direct printing
2. Which method of printing uses patterns or templates and can be done flat or with a rotary system?
 - a) Block printing
 - b) Digital printing
 - c) Adinkra printing
 - d) Screen printing
3. Adinkra cloth from Ghana is created using what fabric printing process?
 - a) Screen printing
 - b) Block printing
 - c) Digital printing
 - d) Engraved roller printing
4. A person is dipping a wooden block in green ink and pressing it onto a fabric. What kind of process and method are they using?
 - a) Direct textile printing with a wood block
 - b) Discharge printing with a metal roller
 - c) Resist printing with a screen and stencil
 - d) Batik printing with a resist

5. In batik printing, a substance is used to repel the ink. When it's printed and then the fabric is dyed, the dye won't stick to it. What is this substance called?

- a) An activator
- b) An extract
- c) A resist
- d) A chemical wash

Task 6.15. Match the photos to the printing methods

screen printing, direct printing, digital fabric printing, engraved roller printing, block printing, heat transfer printing



a)



b)



c)



d)



e)



f)

Grammar. Modal verbs

Modal verbs are a category of auxiliary verbs in English that are used to express various shades of meaning, such as necessity, possibility, ability, permission, and obligation. Here are some commonly used modal verbs:

Can: Indicates ability, possibility, or permission. Example: "I can swim."

Could: Expresses past ability or possibility, or polite requests. Example: "Could you please pass me the salt?"

May: Indicates permission or possibility. Example: "You may leave the room."

Might: Expresses possibility or uncertainty. Example: "It might rain tomorrow."

Task 6.16. Find modal verb and underline them.

1. In printing, wooden blocks, stencils, engraved plates, rollers, or silk-screens can be used to place colours on the fabric. 2. This method isn't cheap, but it can produce small amounts of very personalized fabrics. 3. It's also friendly to the environment because it uses only a minimum amount of ink. 4. The fabric must then be heated or steamed to set the design and make it permanent. 5. Screen printing can be done flat or on a rotary printing press. 6. Separate screen must be used for each color.

Task 6.17. Choose the right modal verb.

1. There are plenty of tomatoes in the fridge. You..... buy any. 2. This is a hospital. You ...smoke here. 3. He had been working for more than 11 hours. Hebe tired after such hard work. Heprefer to get some rest. 4. Ispeak Arabic fluently when I was a child and we lived in Morocco. But after we moved back to Canada, I had very little exposure to the language and forgot almost everything I knew as a child. Now, Ijust say a few things in the language. 5. The teacher said weread this book for our own pleasure as it is optional. But weread it if we don't want to. 6....You stand on your head for more than a minute? No, I ... 7. If you want to learn to speak English fluently, you ...worry. We will help you become a fluent speaker

but you have to work hard.8. Take an umbrella. It ...rain later.9. You ...leave
small objects lying around. Such objects...be swallowed by children.10.
People ...walk on the grass.

Unit 6C.

Task 6. 18. Discuss with your partner, do you agree with this statement.

1. Think about the last time you walked to your closet and picked out your clothes.

What color were you drawn to?

2. Did you reach for a blue shirt, a red shirt, or one that was yellow and pink striped?

3. Whatever color you chose, the point is, you had many options. Colors are a great way to represent who we are, what mood we are in, they even serve as a way to brighten our day.

Vocabulary

1. Harvested	to pick and collect crops, or to collect plants, animals, or fish to eat.
2. Aniline	an oily liquid poisonous amine obtained especially by the reduction of nitrobenzene and used chiefly in organic synthesis (as of dyes)
3. Derived	being, possessing, or marked by a character (such as the large brain in humans) not present in the ancestral form
4. Applications	an act of putting something to use

5.Direct	to cause to turn, move, or point undeviatingly or to follow a straight course
6.Mordant	a chemical that fixes a dye in or on a substance by combining with the dye to form an insoluble compound
7.Vat	a liquor containing a dye converted into a soluble reduced colorless or weakly colored form that on textile material steeped in the liquor and exposed to the air is converted by oxidation to the original insoluble dye and precipitated in the fiber
8.Infuses	To steep in liquid (such as water) without boiling so as to
9.Ensuring	to make sure, certain, or safe

Task 6.18. Read the text and underline the new words.

Dyeing

Dye is a substance that changes the color of an object. Dyeing is one of the oldest methods of textile coloring and has been used since ancient times. The process involves immersing textiles in a liquid that reacts with the natural material to produce a new colorant.

The term "dye" is derived from the Middle English word *dey*, which comes from the Old French word *deie*. Dyeing is the process of applying a dye to fabric, hair, paper, or skin.

Dyes are usually made from plant materials such as plants and flowers. These plants may be harvested for their raw material or they may be grown specifically for dye production. The most common dyes are those made



from aniline coal tar dyes, which are made from coal tar pitch derived from petroleum.

Cultures have been dyeing textiles since as early as 2600 BCE. Dye can be used to change the color of natural fibers like cotton, wool, and silk. Dye can also be used on synthetic fibers like rayon, nylon, and polyester.

The primary difference between paint and dye is that paint is applied on a surface in liquid form while dye is applied in powder form.

Dye changes the color of fibers such as cotton or silk, whereas paint can be applied on hard surfaces like wood. Paint is usually applied in multiple layers, while dye is usually only applied once. The chemical differences between paint and dye are quite vast. Overall, the chemical structure of dye allows it to be a more saturating, permanent coloring substance.

Task 6.19. Answer the questions

1. What are dyes used for?
2. What is dye and its types?
3. What are the main types of dyes?
4. What is the source of natural dyes?
5. What is the source of synthetic dyes?

Task 6.20. Matching the words with their definitions.

1.Acetone	A substance dissolved in another substance.
2.Concentration	The abundance of a constituent divided by the total volume of a mixture; diluted solutions have low concentrations while “concentrated” solutions contain less solvent, such as water.
3.Solute	A homogenous mixture composed of two or more substances; for example, a saline water solution is made by adding table salt to water

4.Solvent:	A material capable of dissolving another substance.
5.Solution	A naturally occurring colorless, flammable liquid that used as a solvent for cleaning and other applications

Task 6.21. Find the correct answer.

1.What is the primary difference between paint and dye?

- a) Paint is applied on a surface in powder form, while dye is applied in liquid form.
- b) Paint is applied on a surface in liquid form, while dye is applied in powder form.
- c) Paint and dye are applied in the same form, either liquid or powder.
- d) Paint and dye are applied using different techniques, but the form is not a significant difference.

2.Which materials can be dyed to change their color?

- a) Only natural fibers like cotton, wool, and silk.
- b) Only synthetic fibers like rayon, nylon, and polyester.
- c) Both natural fibers and synthetic fibers.
- d) Only hard surfaces like wood.

3.How is dyeing different from painting?

- a) Dyeing involves immersing textiles in a liquid, while painting involves brushing or spraying liquid on a surface.
- b) Dyeing is a more permanent coloring method compared to painting.
- c) Dyeing can only be done using plant-based dyes, while painting can use various types of pigments.
- d) Dyeing requires multiple layers of application, while painting is usually applied once.

4.What is the chemical structure of dye responsible for?

- a) Allowing dye to be applied in powder form.
- b) Providing a more saturating and permanent coloring substance compared to paint.
- c) Reacting with the natural material to produce a new colorant.
- d) Creating a coating on the surface, similar to paint.

5. Which term is derived from the Middle English word "dey"?

- a) Textile
- b) Dyeing
- c) Aniline
- d) Petroleum

Grammar. Modal verbs (part 2). Must: Indicates necessity, obligation, or strong probability. Example: "You must submit the report by Friday."

Shall: Often used in formal or legal contexts to indicate future action or obligation. Example: "I shall attend the meeting."

Should: Expresses advice, recommendation, or expectation. Example: "You should study for the exam."

Will: Indicates future action or willingness. Example: "I will help you with your project."

Would: Often used to express politeness, make offers, or present hypothetical situations. Example: "Would you like some tea?"

Ought to: Expresses duty, moral obligation, or expectation. Example: "You ought to apologize for your behavior."

Modal verbs can be combined with other verbs to form different verb phrases, and their usage can vary depending on the context and intended meaning.

Task 6.22. Complete the sentences with the correct form of the modal verbs

1. Itdifficult to find a place to stay. There are so many hotels in this area.
2. She ...gone outside for a moment. She was just here a minute ago.
3. I ...go to the hospital. The doctor said the illness is pretty serious.
4. We ...brought an umbrella with us. The weather has been so clear all day long.
5. We've got plenty of time. You ...hurry.
6. You've just eaten a whole meal. You ...hungry already.
7. You ...tell anyone our secret. It's very important.
8. My grandfather ...speak 4 languages. He was really talented.
9. Dadcome to the office tomorrow. He has other things planned.
10. My brother has been working in the garden the whole afternoon. He ...tired.
11. I understand. You ...explain it to me again.
12. Jasur ...a new pair of shoes. He can't wear the old ones anymore.

Unit 7A. Types of Dyes

Task 7.1 Discussion in a group. What is difference between “Dyeing” and “paint”?

Vocabulary

1.Dye	a natural or synthetic substance used to add a colour to or change the colour of something.
2. Dyeing	process of coloring fibers, yarns, or fabrics.
3. Aniline Coal Tar Dyes	Dyes made from coal tar pitch, which is derived from petroleum. These dyes are commonly used in the production of textiles and other materials due to their vibrant colors and chemical properties
4.Paint	a coloured substance which is spread over a surface and dries to leave a thin decorative or protective coating.
5. Saturating	Referring to the ability of a dye to deeply penetrate and fully color a material, resulting in a rich and intense hue.
6.Chemical Structure	The arrangement and composition of atoms in a molecule. The chemical structure of a dye determines its properties, such as its color, solubility, and interaction with different materials.
7. Immersion	The process of submerging an object or material in a liquid, often for the purpose of dyeing or soaking.
8. Hue	The specific color or shade of a dye or pigment.
9. Coal Tar	a thick black liquid produced by distilling bituminous coal, containing benzene, naphthalene, phenols, aniline, and many other organic chemicals.

Reading

Task 7.2. Read the text and underline the adjectives.

Types of Dyes

Dyes are used in different industries and applications to create desired colors. There are various types of dyes that can be categorized based on their chemical composition, such as natural and synthetic dyes.



The most common types of dyes are:

Natural dyes are derived from plant or animal matter and contain carbon- based molecules called anthocyanins, which give them their color. They include aldehydes, ketones, and phenols.

Synthetic dyes are derived from mineral compounds like metals, oxides, or sulfides. They contain metal ions that react with the molecule's structure to form a colored compound.

Acid dyes produce colors by using acid as a reactant in the process. They also require an oxidizing agent such as an alkali to react with the dye molecules and form new compounds that produce color, like oxides and hydroxides.

Aniline dyes have organic bases, which means they contain carbon (C) and hydrogen (H) atoms in their molecular structure, but not oxygen (O). These bases react with acids to form new compounds that produce color like nitroso compounds.

Basic dyes are the most widely used dyes. They are made from natural materials like plants, bark, and leaves. They can be classified into direct dyes and vat dyes depending on how they react to light.

Direct dyes are made from compounds of carbon and hydrogen that react with oxygen in the air to produce color when exposed to light.

Vat dyes contain chemicals that produce color when mixed in a vat with other materials like pigments or other types of dye. Vat dyes are made of substances like indigo. Vat dyes must be treated with an alkaline solution.

Mordant dyes can be used on most types of fabric. Mordant dye bonds to the fabric, so it can be washed before the dye sets. Washing the fabric infuses the dye into the fibers, making it insoluble and ensuring it won't need to be re-dyed.

Indigo dyes are typically used as a blue dye for cotton fabrics. It is one of the oldest dyes used in the ancient world.

Task 7.3. Find the adjectives used to describe the different types of dyes mentioned in the text. Example:

1. *Natural dyes: vibrant, plant-based, animal-derived, carbon-based, colorful*

2. Synthetic dyes:

3. Acid dyes:

4. Aniline dyes:

5. Basic dyes:

6. Direct dyes:

7. Vat dyes:

8. Mordant dyes:

9. Indigo dyes:

Task 7. 4. Find the correct answer.

1. Which of the following is NOT a stage that dyeing is done?
A) When it is a fiber
B) When it is a yarn
C) When it is a completed product
D) You can dye textiles at all of the stages
2. What are the two major categories of dyes?
A) Natural and Sticky
B) Natural and Synthetic
C) Natural and Soluble
D) None of them
3. Which type of dye uses heat or an alkaline solution to get the process going?
A) Vat C) Mordant
B) Direct D) Reactive
4. Among the following dye colours, which one had superior value in the past?
A) yellow C) blue
B) red D) white

Task 7.5. Match the definitions (a–h) with the vocabulary(1–8).**Vocabulary****Definitions**

1.....Petroleum	A) A naturally occurring fossil fuel consisting of hydrocarbon deposits.
2.....Natural Fibers	b) Fibers created through chemical processes using substances such as rayon, nylon, and polyester.
3.....Synthetic Fibers	c)The basic material or substance used in the production of goods.
4.....Surface:	d)Fibers derived from plant or animal sources, such as cotton, wool, and silk
5.....Hard Surface:	e)A substance that imparts color to another material, such as a dye or pigment.
6.....Colorant	f) A rigid or solid material that is not easily deformed or penetrated, such as wood, metal, or glass

7.....Raw Material	g)The outermost layer or exterior part of an object or material.
8..... Paint	h)A liquid substance that is applied to surfaces such as wood, metal, or walls for decorative or protective purposes.

Writing

Task 7.6.

Dye Comparison and Application

Imagine you are working as a consultant for a textile company that is considering using different types of dyes for their fabric production. Your task is to write a report comparing and analyzing the properties, applications, and benefits of various types of dyes discussed in the given text.

In your report, you should address the following points:

Introduction: Provide a brief overview of the importance of dyes in the textile industry and the purpose of the report.

Classification: Explain the classification of dyes based on their chemical composition, such as natural and synthetic dyes.

Natural Dyes: Describe the characteristics of natural dyes, including their sources, chemical composition, and color-giving compounds.

Synthetic Dyes: Discuss the properties and composition of synthetic dyes, highlighting their

In your report, make sure to provide clear and concise explanations of each type of dye, their chemical processes, and their specific applications. Use appropriate headings and subheadings to organize the content, and ensure your writing is coherent and well-structured derivation from mineral compounds and the role of metal ions in color formation.

Remember, a well-structured report should have an introduction that sets the context and purpose, a main body that presents the information and analysis, and a conclusion that summarizes the findings and provides closure. By following these guidelines, you can create a comprehensive and effective report.

Listening



Task 7.7. Fill the gaps with appropriate words

It was a bright, sunny day in the small village. Sevara, a _____ seamstress, was preparing to _____ a new batch of fabrics for her clothing designs. She gathered her supplies - _____ dyes extracted from plants, _____ to help the colors bind to the fibers, and an assortment of _____ she had woven herself.

First, Sevara _____ the fabrics in a warm _____ of the natural dyes, carefully _____ the intensity of the colors as they gradually absorbed into the fibers. She knew that different dyes would _____ differently with the various types of fabrics, so she adjusted the dye baths accordingly.

Once the desired _____ were achieved, Sevara introduced the mordants, which helped lock the colors in place. She _____ stirred and agitated the _____, ensuring an even distribution of the mordants throughout.

After the dyeing and mordanting _____ were complete, Sevara hung the vibrant, freshly _____ out to dry in the warm, gentle breeze. As the fabrics fluttered and swayed, she could already envision the beautiful _____ she would create from them.

Later, Sevara carefully cut and stitched the dyed fabrics into her latest designs – flowing skirts, tailored shirts, and intricate embroidered patterns. Each piece was a _____ of her artistic vision and the rich _____ that had been passed down through generations.

With a sense of pride, Sevara displayed her creations in her small shop, knowing that each garment carried the story of the dyes and the craftsmanship that went into its making.

Unit 7B. Task 7.7. Discuss with your partner.

1. How did ancient people make colors?

Give examples.

2. In ancient times, what color of dye was

more expensive, blue or purple?



Vocabulary

Colorants	a substance used for coloring a material : dye, pigment
Derived	being, possessing, or marked by a character (such as the large brain in humans) not present in the ancestral form
Root	the usually underground part of a seed plant body that originates usually from the hypocotyl, functions as an organ of absorption, aeration, and food storage or as a means of anchorage and support, and differs from a stem especially in lacking nodes, buds, and leaves
Stem	the main trunk of a plant
Proof	the cogency of evidence that compels acceptance by the mind of a truth or a fact
Cellulose	a polysaccharide $(C_6H_{10}O_5)_x$ of glucose units that constitutes the chief part of the cell walls of plants, occurs naturally in such fibrous products as cotton and kapok, and is the raw material of many manufactured goods (such as paper, rayon, and cellophane)
Distinct	presenting a clear unmistakable impression
Sustainability.	of, relating to, or being a method of harvesting or using a resource so that the resource is not depleted or permanently damaged.
Effluent	waste material (such as smoke, liquid industrial refuse, or sewage) discharged into the environment especially when serving as a pollutant.

Reading

Task 7.8. Read the text and underline the newwords

Sources for natural dyes

Colorants derived from plants, invertebrates, insects, fungi, or minerals are known as natural dyes. Vegetable dyes, the majority of which are natural, are mostly derived from various plant parts, including roots, stems, seeds, barks, leaves, and wood. Other biological sources include mushrooms, snails, insects, and so on. Prior to chemical dyeing, natural sources were the primary source of textile colours. These natural resources were taken from and used to make dyes by our ancestors. Even though not all naturally occurring materials may produce color, some, excluding plants, can, such as sea snails and cochineal insects.

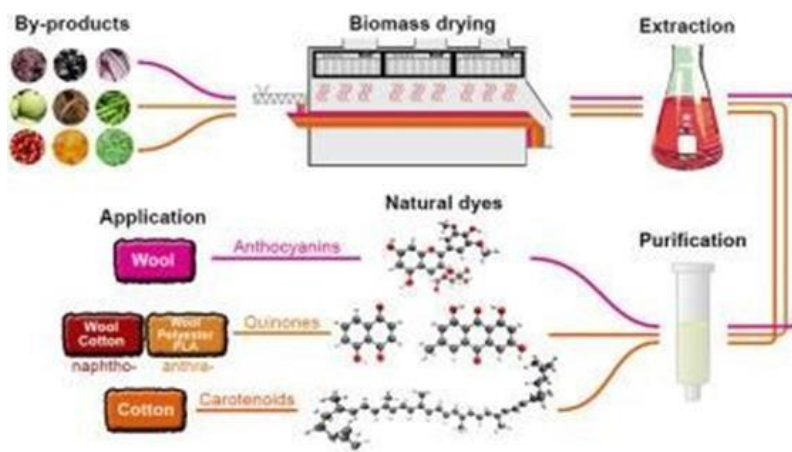
History of the Origin of Natural Dyes.

Exactly when the use of this natural color began is not yet known. However, the first natural dye use was found around 2600 BC. On the other hand, the vibrant cave paintings found in Spain's "El Castillo" cave reveal that they were created some 40,000 years ago. Around 34,000 BC, colored flax fiber dating back to that time was discovered in a prehistoric cave in the Republic of "Georgia." In Southern Anatolia during the "Neolithic period," iron oxide dyes obtained from the head were discovered on top. These dyes, which likely had red marks, are additional proof of textile dyeing. Data indicate that herbs, barks, and insects were used for dyeing in China about 5000 years ago To prepare cellulose and protein fibers for natural dyes, distinct mordant procedures are necessary due to the varied molecular structures.

Cotton, linen, flax, bamboo, rayon, and other cellulose-based fibers. Wool, angora, mohair, Kashmir, silk, leather, etc. are examples of protein fiber.

Compared to protein fibers, cellulose fibers have a lower affinity for natural dyes. The most typical procedure for cellulose fiber preparation involves using tannin first, followed by aluminum metal salts. Alum is used most frequently to prepare protein fiber. However, the historical record contains many distinct protein and cellulose fiber mordanting techniques. The weak attraction of natural colors to textile fibers necessitates the use of mordant dyes.

Natural dye provides a few unique advantages: 1) Safe for human health. 2) Dye can be readily extracted and purified from a variety of natural sources. 3) No effluent generation occurs. 4) Natural dyeing has a very high level of durability and sustainability. 5) Has a slight coloring problem. 6) A renewable resource is natural dye. 7) There are no allergic, carcinogenic, or toxic reactions to natural dye. 8) Natural dye has a high potential for absorbing UV rays.	Technical issues of natural dyeing: 1) The majority of natural fibers, including cotton, linen, wool, and silk, can be dyed with natural dyes; however, synthetic fibers cannot. 2) It has poor color fastness characteristics. 3). It establishes a tenuous bond with the fibers and has a lower attraction for them. 4) Natural dyeing requires the use of a mordant, which is bad for the environment. 5) The dyeing shade frequently changes as a result of the mordanting. 6) Natural dyeing requires a lot of effort and money.
--	--



Task 7.9. Answer the questions.

1. What are the most common natural dyes?
2. What are the 3 main sources of dyes?
3. What are the strongest natural dyes?
4. What are the main advantages of natural dyes?
1. What are the main disadvantages of of natural dyes?

Task 7.10. The following colors can be made from common grocery store items.

Matching the color with their sources





c)

shutterstock.com · 1932312230



d)



e)



f)



g)

Brown	Beet fresh (heat slowly and do not boil) or canned
Black	Blueberry, fresh or canned
Red	onion skins, boiled
Yellow	tea, brewed strong
Green	Turmeric, powdered
Orange:	Spinach, fresh or frozen
Purple/Black:	Black beans, dried

Task 7.11. Put the sentences in correct order.

Onion Skins. Preparation for dyeing:

Collect 2 pounds of onion skins.

Simmer for 30 minutes until dye bath is yellow.

Remove the cheesecloth and plant materials and add enough hot water to make the dye bath 4 gallons. Collect them over time at home or ask the produce manager at a local grocery store. To create a dye bath, wrap the skins in cheesecloth and cover with water. Dyeing: follow 5-9 from Goldenrod

Order of Adjectives

We normally use this order:

Size + **colour** + **pattern** + **noun**

E.g.: I'm wearing a **long red checked** skirt.

Task 7.12. Complete the sentences putting the adjectives in the right order:

1. She is wearing a _____ blouse. (flowery / long / blue)
2. My mum likes _____ skirts. (short / checked)
3. Flamenco dancer wear _____ dresses. (spotted / long)
4. I never wear _____ scarves. (flowery / pink / big)
5. No, I haven't got _____ shirt. (plain / small / white).

Task 7.13. For each of the following sentences, choose the correct order of adjectives to fill in the blank.

1. My grandmother lives in the _____ house on the corner)
little blue, green and white

a) little blue and green and white

b) little, blue, green, and white

2. The store carries an assortment of _____ objects.

a) interesting new, old and antique

b) new, old, interesting and antique

c) interesting, old and new and antique

3. We went for a two-week cruise on a _____ ocean liner.

a) incredible brand-new, huge Italian

b) incredible, huge, brand-new Italian

c) Italian incredible, brand-new, huge

Unit 7C . What is shibori?

Task 1. Discuss in a group.

What comes to your mind when you hear shibori?

Have you ever been interested in Japanese culture?

Vocabulary

1.Shibori	The traditional Japanese textile dyeing technique that involves manipulating fabric to create intricate patterns.
2.Stitching	Using needle and thread to sew or gather fabric tightly, creating areas that resist the dye.
3.Resist	A substance or technique used to prevent the dye from penetrating certain areas of the fabric during the dyeing process.
4.Binding	The act of tying or wrapping fabric tightly with cords, thread, or other materials to create areas that resist dye penetration.
5.Dye bath	A container or vessel filled with a liquid dye solution in which fabric is immersed to achieve the desired color.
6.Compressing	Applying pressure or squeezing fabric tightly, often by using clamps, to restrict the flow of dye.
7.Pleating	The process of folding fabric in a series of parallel folds to create evenly spaced creases
8.Kanoko	A shibori technique also known as tie-dye, involving tying fabric with thread at various intervals to create small, circular or irregular patterns.

Task 2. Read the text and underline the new words.

Shibori is a traditional Japanese textile dyeing technique that involves manipulating fabric to create intricate patterns. The word "shibori" translates to "to wring, squeeze, or press" in English, which reflects the method used in this art form.

The process of shibori begins with folding, twisting, binding, or compressing fabric in various ways before it is dyed. These techniques can include pleating, stitching, or clamping the fabric tightly, thereby creating areas that resist the dye. The fabric is then immersed in a dye bath, and the areas that were bound or compressed prevent



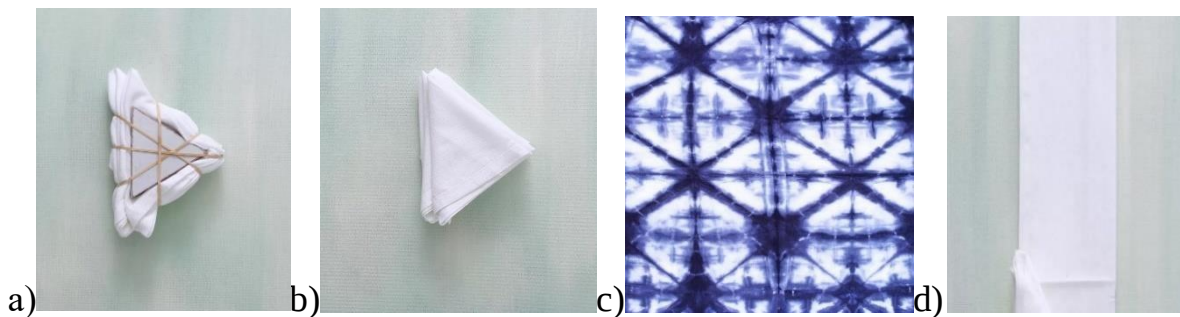
the dye from fully penetrating, resulting in unique and intricate patterns.

Shibori offers a wide range of design possibilities, including geometric shapes, undulating lines, or random bursts of color.

Shibori has a rich cultural history in Japan and has been practiced for centuries. It has gained international recognition as a unique and beautiful textile art form. Contemporary artists and designers continue to explore and experiment with shibori techniques, incorporating them into various applications such as clothing, home decor, and fine art.

Overall, shibori is a captivating and versatile textile dyeing technique that combines traditional craftsmanship with artistic expression, resulting in stunning and one-of-a-kind patterns on fabric.

Task 3. Dyeing Process. Put the pictures in correct order.



Task 4. Answer the questions

1. What is shibori?
2. What does the word "shibori" mean in English?
3. How does the process of shibori begin?
4. What are some techniques used in shibori?
5. What happens when fabric is dyed using shibori techniques?
6. What design possibilities does shibori offer?
7. How long has shibori been practiced in Japan?

Task 5. Match the pictures with the title.

Sari, shibori, Ombre Dip Dye Technique, ikat, kapunda, batik



Task 6. Are these statements true or false

1. Shibori is a traditional Japanese textile dyeing technique.	T/F
2. The word "shibori" translates to "to cut, tear, or rip" in English.	T/F
3. Shibori involves manipulating fabric to create simple patterns only.	T/F
4. The process of shibori begins with folding, twisting, binding, or compressing fabric.	T/F
5. Shibori techniques do not include pleating, stitching, or clamping the fabric.	T/F
6. The fabric is dyed first before any manipulation is done in shibori.	T/F
7. Shibori patterns are created by areas that resist the dye.	T/F
8. Shibori offers limited design possibilities, mainly geometric shapes.	T/F
9. Shibori has only been practiced for a few decades.	T/F
10. Contemporary artists and designers do not experiment with shibori techniques.	T/F

Speaking

1. Debate: Divide participants into two groups, one advocating for the preservation of traditional Shibori techniques and the other arguing for the integration of modern technology in Shibori practices. Each group can present their arguments, supported by evidence or examples, followed by a rebuttal round.

2. Discussion. Divide participants into pairs or small groups and have them discuss their knowledge or experiences with textile dyeing techniques. Encourage them to share if they've ever heard of or tried Shibori before, and what they find interesting about it.

Unit 8A.

Task 8.1. Discussion in a group.

1. What kind of machinery is it?

2. What is Textile Finishing?



Vocabulary

1. Manufacture	the making of goods or wares by manual labor or by machinery, especially on a large scale:
2. Impart	to make known; tell; relate; disclose
3. Sequence	the following of one thing after another; succession.
4. Customary	according to or depending on <u>custom</u> ; usual; habitual
5. Treatment	literary or artistic handling, especially with reference to style
6. Crease	a ridge or groove produced in anything by folding, heat, pressure, etc.; fold; furrow.
7. Durability	the ability to last over time, resisting wear, breakage, deterioration

8.Friction	surface resistance to relative motion, as of a body sliding or rolling
9.Limitation	1. a limiting condition; restrictive weakness; lack of capacity; inability or handicap. 2. something that limits ; a limit or bound; restriction.
10.Desirable	worth having or wanting; pleasing, excellent, or fine.
11.Compatibility	the natural ability to live or work together in harmony because of well-matched characteristics.

Task 8.2. Read the text and say which information is new to you.

Textile Finishing is a process used in manufacturing of fiber, fabric, or clothing. Textile finishing involves processes for improvement in the appearance of textiles. The cradle of fabric life spans from fiber to finished fabric. The finishing step is the last step in the processing of textiles. One important thing that should be kept in mind is that textile finishing is isolated from other processes such as scouring, bleaching, and coloration_processes .The fabric's sheen changes either physically or chemically. The handle, drape, fullness, and usability of the fabric is improved to a large extent. There are primarily two types of textile finishing: (i) physical finishing such as calendering, emerizing, compressive shrinkage, shearing, etc. and (ii) chemical finishing involving different chemicals to induce a specific finish.

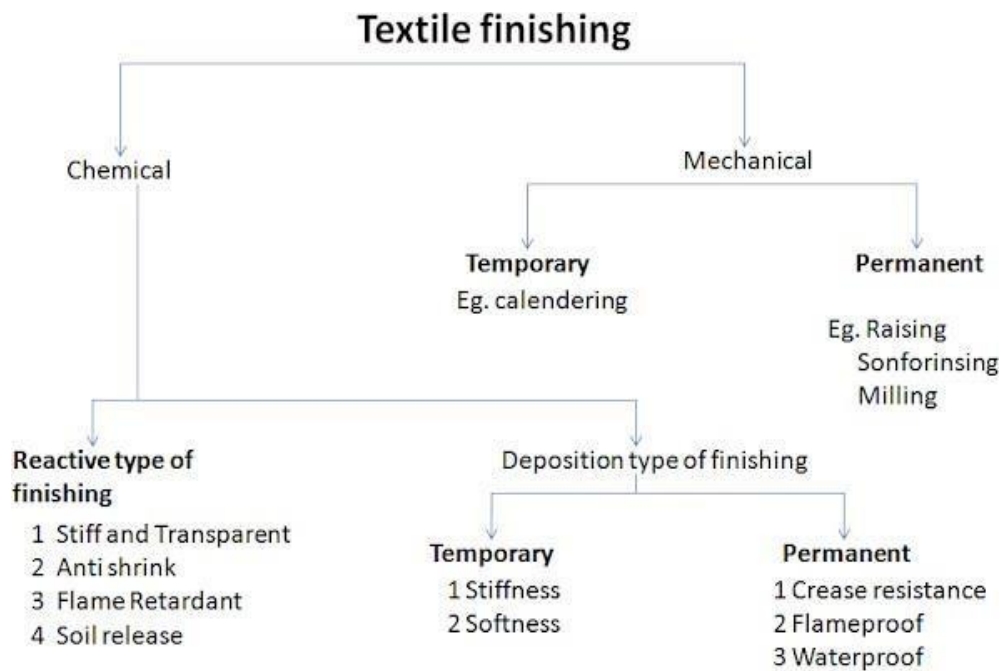
Nanotechnology is one of the fascinating areas, which has marked its glory in all walks of our lives. It involves a material in dimensions less than 100 nm. An infinitesimal change in its dimension brings a considerable shift in its properties such as optical, mechanical, and functional properties. Each property is tuned to its specific application or a series of applications in any area of interest. Textiles is one of the promising sectors where nanotechnology is used

extensively in the recent days

There are two broad categories of finishing:

1. Chemical finishing
2. Mechanical finishing.

Remember the structure of textile finishing



Task 8.3. Answer the questions.

1. What is textile finishing, and why is it an important step in textile manufacturing?
2. Why is it emphasized that textile finishing is isolated from processes like scouring, bleaching, and coloration?
3. Can you describe the main differences between physical and chemical textile finishing processes?
4. How does nanotechnology influence textile finishing, and what are some examples of its applications in the textile industry?
5. What are some properties of materials at the nanoscale, and how do they differ from their macro-scale counterparts?
6. How does nanotechnology contribute to improving the properties of textiles, such as optical, mechanical, and functional properties?

Task 8.4. Match the term on the left with its corresponding description on the right:

.....Nanotechnology	a. Deals with materials and devices at the nanoscale, typically ranging from 1 to 100 nanometers.
.....Nanoscale	b. The scale at which nanotechnology operates, where materials exhibit unique properties distinct from their bulk counterparts.
.....Nanoparticles	c. Tiny particles that enable targeted drug delivery and precise imaging in medicine.
.....Materials Science	d. Field that explores the properties and applications of nanomaterials for advancements in various industries.

Task 8.5. Complete the sentences using the words from the box with a similar meaning to the words in brackets.

manufacturing, Fabric Finishing, yarn, fiber

1. Textile Finishing is a process used in manufacturing of..., fabric, or clothing.
2. ... after leaving the loom or knitting machine is not readily useable. Called greyclot at this stage, it contains natural and added impurities.
3. Sometimes it is also processed at fiber or yarn stages of textile
4. Grey fiber or... or fabric goes through a series of processes such as wetprocessing and finishing.
5. is a broad range of physical and chemical treatments that complete one stage of textile manufacturing and may prepare for the next step, making the product more receptive to the next stage of manufacturing.

Grammar. Passive voice. Passive voice is a grammatical construction in which the subject of a sentence undergoes the action of the verb, rather than performing the action itself. In passive voice sentences, the focus is on the recipient of the action, rather than the doer. The passive voice is formed by using a form of the verb "to be" (such as "is," "was," "were") followed by the

past participle of the main verb. For example, in the active voice sentence "John painted the house," the subject "John" is the doer of the action. In the passive voice, the sentence would be "The house was painted by John," putting the focus on the house as the recipient of the action. Passive voice is commonly used in formal or academic writing, when the doer of the action is unknown or when the focus is on the result or impact of the action.

Task 8.6. Remember, converting active voice sentences into passive voice requires changing the subject of the active sentence into the object of the passive sentence and using the appropriate form of the verb "to be" along with the past participle of the main verb. The first is done for you.

Active: The workers apply a finishing treatment to the fabric.

Passive: A finishing treatment is applied to the fabric by the workers.

Active: The company uses chemical processes to enhance the fabric's properties.

Passive:

Active: The manufacturers apply a water repellent coating to the fabric.

Passive:

Active: The textile industry employs various techniques to improve fabric durability.

Passive:

Active: The technicians implement innovative methods to achieve desired fabric finishes.

Passive:

Unit 8B.Types of finishing .Mechanical Finishing

Task 8.7. Discuss in a group.

What is a finishing process?

Vocabulary

N	Word	Definition
1	.Waterproofing:	The treatment of fabrics to make them resistant to the penetration of water, preventing moisture from passing through the material.
2	Flame Retardant	A finishing treatment that reduces the flammability of fabrics, making them slower to ignite and limiting the spread of flames
3	Stain Resistance	The application of finishes to fabrics to make them resistant to staining by repelling liquids and preventing them from permeating the fibers
4	Antimicrobial	Finishing treatments that inhibit the growth of microorganisms on textiles, reducing odor and providing hygiene benefits.
5	Anti-static	Finishing treatments that reduce or eliminate static electricity build-up on fabrics, minimizing static cling and improving comfort.
6	Distortions	the act of twisting or altering something out of its true, natural, or original state : the act of distorting
7	Crimp	to cause to become wavy, bent, or pinched: such as a)to form (leather) into a desired shape
8	Finishing Agents	Chemical substances applied to textiles during finishing processes to enhance specific characteristics, such as softness, wrinkle resistance, or moisture-wicking properties

Task 8.9. Read the text and underline unknown words

Mechanical Finishing

Involving the application of physical principles such as friction, temperature, pressure, tension and many others. Commonly used mechanical finishes include calendaring, compressive shrinkage / Sanforizing, raising, emerizing / sueding / peaching, shearing / cropping.

1. Calendaring Finish

When a fabric is wet processed and dried, it will be in its least lustrous state. The surface will be rough due to the presence of highly crimped and wavy threads.

In order to solve this problem, the fabric is passed in between two rollers or bawls of a machine called as a 'Calendar'.

2. Raising: To create a pile, the fiber layers are raised off the fabric's surface. We call this process "rising." The fabric becomes incredibly soft as a result. The

Pile allows for the production of enormous amounts of air, which warms and softens the textiles. Most cotton textiles are raised. However, artificial fibers have also been

subjected to this procedure in recent decades. Because the raising process is carried out in a moist state, implementation is made simpler.

3. Setting & Heat-setting There is a greater likelihood of fabric structural, design, and uneven shrinkage distortions during operations like spinning or weaving. This is avoided by implementing a setting. By reducing the tensions, setting permanently and regularly stabilizes the fabric's woven structure. Heat, moisture, and pressure are the agents that cause this phenomenon. This procedure doesn't need any chemicals.

4. Sanforizing

Sanford Lockwood Cluett created the form of treatment known as "sanforization" in 1930. Cotton textiles and textiles composed of synthetic or natural fibers are the primary materials used in this procedure.

Before cutting and producing, the cloth is stretched and shrunk during the sanforization process to establish its length and width. This method aids in lessening the shrinking that would otherwise happen following washing.

5 The process of napping involves using a napping machine to elevate, cut, and smooth the cloth's surface. This device is called a planetary napper. The cloth is incredibly soft and cozy because of the pile the machine creates. Usually, the nap is brushed in a certain direction so that light can reflect through it in a specific way.

6. Shearing is a mechanical procedure that involves cutting off the ends of the fibers. By using this method, the uneven fiber lengths are eliminated, leaving a smooth, level pile. Additionally, fabrics that undergo the sleeping process typically shear.



7. The procedure of **sanding** gives the surface of the cloth a suede-like appearance. One or more rolls of abrasive material are applied to the fabric surface, moving at a surface speed significantly faster than the cloth itself.

8. **Compaction** is a mechanical finish in which the fabric's structure is compressed to shorten its length. The structure of the fabric makes shrinkage more likely. Structures made of fabric with more open styles are more likely to shrink. Compaction aids in preventing this.

Gray goods are the term used for fabrics that come directly from the loom and are used as such. These are not actually gray in colour but are 'unfinished'



Compaction

Task 8.10. Answer the questions.

1. What are some physical principles involved in mechanical finishing?
2. How does calendaring improve the appearance of fabric?
3. What is the purpose of the raising process in textile finishing?
4. How does heat-setting contribute to stabilizing the fabric's structure?
5. Who is credited with inventing the sanforization process, and what is its purpose?
6. What is the role of a napping machine in textile finishing, and what effect does it have on the fabric's surface?

Task 8.11. Matching words with their definitions.

Setting	The process of lifting the fiber layers off the fabric's surface to create a soft and fluffy texture.
Raising	A treatment process in which the fabric is stretched and shrunk to establish its length and width, reducing the potential for shrinkage after washing.
Napping	The use of heat, moisture, and pressure to stabilize the fabric's structure, reducing tensions and preventing distortions.
Sanforizing	The process of subjecting the fabric to high temperatures to permanently stabilize its dimensions and improve its dimensional stability.
Calendaring	The process of passing fabric between two rollers or balls to create a smooth and lustrous surface.
Compaction	A mechanical finish that involves compressing the fabric's structure to shorten its length and improve its resistance to shrinkage.
Heat-setting	The process of using a napping machine to raise, cut, and smooth the surface of the fabric, creating a soft and cozy texture.

Task 8.12.Fill in the blanks after unscrambling the clues in the brackets:

1. The treatment given to fabrics to enhance their appearance, performance or handling is known as _____(N I F S I H E).
2. When no finish is applied on a fabric's surface, it is known as _____ fabric (R A Y G).
3. _____and _____produce variety in fabric (Y E D I N G, N I N G P R I T).
4. A chemical finish is also known as _____(E T W - I S H F I N). 5. Waterproof finish is a _____finish. (N C F U T I O N A L).

Task 8.13 Choose the correct answer.

1. Which mechanical finish involves passing fabric between two rollers or balls?
 - a) Raising
 - b) Calendaring
 - c) Setting
 - d) Sanforizing
2. Which mechanical finish creates a soft and warm fabric by raising the fiber layers off the surface?
 - a) Shearing
 - b) Sanding
 - c) Calendaring
 - d) Raising
3. Which mechanical finish stabilizes the fabric's woven structure by using heat, moisture, and pressure?
 - a) Sanforizing
 - b) Calendaring
 - c) Setting
 - d) Compaction

4. Which mechanical finish involves stretching and shrinking the fabric to establish its length and width?
- a) Sanforizing
 - b) Raising
 - c) Shearing
 - d) Sanding
5. Which mechanical finish involves cutting off the ends of the fibers to create a smooth and level pile?
- a) Calendaring
 - b) Setting
 - c) Shearing
 - d) Compaction
6. Which mechanical finish gives the fabric a suede-like appearance through the use of abrasive material?
- a) Sanding
 - b) Raising
 - c) Calendaring
 - d) Compaction
7. Which mechanical finish involves compressing the fabric's structure to prevent shrinkage?
- a) Raising
 - b) Shearing
 - c) Compaction
 - d) Calendaring
8. Which mechanical finish involves using a napping machine to elevate, cut, and smooth the cloth's surface?
- a) Sanding
 - b) Raising
 - c) Setting

d) Shearing

9. Which mechanical finish is used to create a lustrous state on fabric by reducing roughness?

a) Setting

b) Sanforizing

c) Compaction

d) Calendaring

10. Which mechanical finish is commonly used on cotton textiles to create a soft and cozy fabric?

a) Calendaring

b) Raising

c) Shearing

d) Sanding

Writing

Task 8.14. Imagine you are a textile engineer working for a clothing manufacturing company. Your task is to write a report discussing the importance and benefits of mechanical finishing techniques in the textile industry. In your report, address the following points:

Introduction: Provide a brief overview of mechanical finishing and its significance in the textile industry.

Calendaring Finish: Explain the process of calendaring and its purpose in improving the fabric's surface smoothness and luster. Discuss why this finish is necessary after wet processing and drying.

Raising: Describe the raising process and its effects on the fabric. Explain how raising creates a soft and cozy texture by forming a pile and enhancing warmth. Discuss the types of fabrics that commonly undergo raising.

Setting & Heat-setting: Discuss the importance of setting in stabilizing the fabric's

structure and preventing distortions like uneven shrinkage. Explain how heat, moisture, and pressure are utilized in this process. Highlight the advantages of setting without the use of chemicals.

Sanforizing: Provide an overview of the sanforization process and its purpose in controlling fabric shrinkage. Explain how sanforizing ensures the desired length and width of the fabric before cutting and production. Discuss the types of materials commonly subjected to sanforization.

Conclusion: Summarize the key points discussed in the report and emphasize the significance of mechanical finishing techniques in achieving desired fabric properties and enhancing the overall quality of textile products.

Instructions:

Write a well-structured report with an introduction, body paragraphs, and a conclusion.

Use the information provided in the prompt to support your explanations and arguments.

Aim for a report length of approximately 300- words.

Unit 8C. Chemical Finishing.

Task 8.15. Discuss in a group. Look at the picture. Why the fabric does not absorb the drop? Share your ideas.



Vocabulary

1.Flame Retardant:	A substance or treatment applied to textiles to increase their resistance to ignition and slow down the spread of flames.
2.Penetration	implies a searching mind that goes beyond what is obvious or superficial.
3.Water Repellent:	Refers to a finish that makes fabrics resistant to the penetration of water, causing water droplets to bead up and roll off the surface rather than being absorbed.
4.Odor	a sensation resulting from adequate stimulation of the olfactory organ
5.Antimicrobial	Relating to a finish or treatment that inhibits or prevents the growth of microorganisms, such as bacteria or fungi, on the fabric surface, thus reducing odors and providing hygiene benefits.
6.Pliable	supple enough to bend freely or repeatedly without breaking
7.Wrinkle-Resistant:	Describes a finish applied to textiles to minimize creasing and wrinkling, making them easier to care for and maintain their smooth appearance.
8.Wick	a bundle of fibers or a loosely twisted, braided, or woven cord, tape, or tube usually of soft spun cotton threads that by capillary attraction draws up to be burned a steady supply of the oil in lamps or the melted tallow or wax in candles

Task 8.16. Read the text and try to retell it.

Chemical Finishing.

Chemical Finishes: Chemical finishes modify the fabric's properties through the application of chemicals. Some common chemical finishes include:

Flame Retardant Finish: Adds flame resistance to textiles, making them slower to ignite and reducing flame spread.

Water Repellent Finish: Makes fabrics resistant to water penetration, causing water droplets to bead up and roll off the surface.

Antimicrobial Finish: Inhibits the growth of microorganisms on the fabric, reducing odor and providing hygiene benefits.

Wrinkle-Resistant Finish: Minimizes creasing and wrinkling, making fabrics easier to care for and maintain.

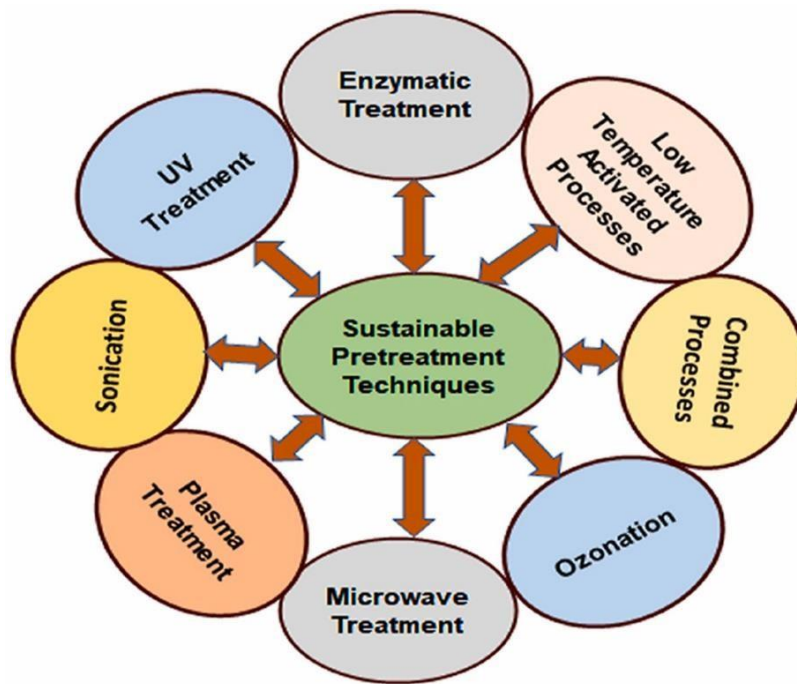
Stain-Resistant Finish: Provides resistance against staining by repelling liquids and preventing them from penetrating the fabric.

Heat Setting: Heat setting involves subjecting the fabric to high temperatures to stabilize its dimensional stability. This process is commonly used with synthetic fibers to lock in shape and prevent shrinkage.

Softening Finishes: Softening finishes are applied to textiles to enhance their softness and improve comfort. These finishes can make fabrics smoother, silkier, or more pliable, providing a luxurious feel.

Performance Finishes: Performance finishes improve the functional properties of fabrics. Examples include moisture-wicking finishes that draw moisture away from the body, UV-protective finishes that block harmful sun rays, and breathable finishes that enhance airflow through the fabric.

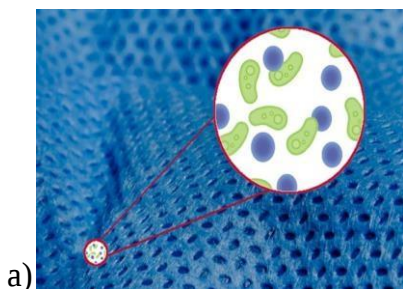
Specialty Finishes: Specialty finishes cater to specific fabric requirements. Examples include crush-resistant finishes, flame-resistant finishes, and shrinkage control finishes.



Task 8.17. Answer the questions.

1. What is the purpose of a flame retardant finish applied to textiles?
2. How does a water repellent finish affect the behavior of water on fabric surfaces?
3. What are the benefits of an antimicrobial finish on fabrics?
4. How does a wrinkle-resistant finish make fabrics easier to care for?
5. What is the primary function of a stain-resistant finish on textiles?
6. What is the process of heat setting and **why is it commonly used with synthetic fibers?**
7. How do softening finishes improve the comfort of textiles?

Task 8.18. Matching the names of chemical finishing with pictures.



a)



b)



c)



1 Water Repellent. 2. Antimicrobial. 3. Softening Finishes. 4. Wrinkle-Resistant. 5. UV-Protective 6. Flame Retardant Finish

Listening



Task 8.19 Listening fill the gaps.

Natural _____ agent coatings on textiles or fabrics have their origins in ancient Egyptian mummy wrap preparation, which involved the use of spices and _____ coatings on _____. Bamboo-kun, an _____ component, is why the Chinese have traditionally utilized bamboo fibers for housing construction. The inherent antibacterial and _____ qualities of _____ fibers, which are mediated by dendrocin and 2–6-dimethoxy-p-benzoquinone, have also been investigated. Antibiotic application evolved during World War II, and _____ use to stop _____ from spoiling was also in demand at the same time. In order to prevent _____ attack during periods of severe rain and snow, which could _____ fibers and raise the risk of infection, tents, tarpaulins, and truck covers were necessary.

Task 8.20. Match the following synonyms from the text

1.Origins	a. Developed
2.Utilized	b. Required
3.Investigated	c. Explored
4.Evolved	d. Used
5.Necessary	e. Beginnings

Task 8.21 Are these statements true or false.

1.Natural antimicrobial agent coatings on textiles have their origins in ancient Egyptian mummy wrap preparation.	T/F
2.Chinese traditionally utilize cotton fibers for housing construction because of their antibacterial properties.	T/F
3.The antibacterial and antifungal qualities of bamboo fibers are influenced by dendrocin and 2–6-dimethoxy-p–benzoquinone.	T/F
4.Antibiotic application originated during World War I.	T/F
5.Antimicrobial use in fabrics was in demand during World War I to prevent spoilage.	T/F
6.Tents, tarpaulins, and truck covers were necessary to protect fabrics from microbial attack during severe weather conditions.	T/F

Unit 9A.

Task 9.1. Discuss with your partner.

1. What is science?

Task 9.2. What do these terms mean? Match them with their definitions

Science	– the study of the nature and behavior of natural things and the knowledge obtained about them
a science	– a particular area of scientific knowledge and study, or the study of an area of a human behavior
scientific	– describes things that relate to science
scientist	– someone who works in science

Vocabulary

1.Employee	someone who is paid to work for someone else:
2.Department	a part of an organization such as a school, business, or government that deals with a particular area of study or work
3.Mechanical	relating to movement, or to mechanics (= the study of the effect of physical forces on objects and their movement):
4.Structure	the way in which the parts of a system or object are arranged or organized, or a system arranged in this way
5.Damage	to harm or spoil something:
6.Properties	an object or objects that belong to someone
7.Fiber	any of the thread-like parts that form plant or artificial material and can be made into cloth:
8.Ginning	any of various tools or mechanical devices: such as cotton gin
9.Textile	a fiber, filament, or yarn used in making cloth
10.Equipment	the implements used in an operation or activity

Task 9.3. Read the text and try to retell it.

The greatest scientist of Uzbekistan



A well-known and talented scientist - Maksuda Aghzamovna Khadjhinova, who made a significant contribution to the development of the textile industry in Uzbekistan was born July 8. 1912, in Tashkent, in the family of an employee. In 1928 M. A. Khadjinova entered the Tashkent industrial and economic college in the department of cotton growing.

After graduating from college in 1931, she worked at a cotton-picking station in the town of Kenemekh in Bukhara region as a supervisor of raw cotton acceptance.

In 1932, M.A. Khadjhinova entered the Moscow Institute of National Economy named after G.V. Plekhanov. Already in her student years, she was engaged in research of features of vegetable fibres and their classification under the guidance of professor P.A. Arkhangelsky. After graduating from the institute, in 1936 she was assigned to work at the Ministry of Trade of Uzbekistan, as an economist and commodity expert in the group of textile materials.

From 1938 to 1941 years. MA. Khadjhinova - postgraduate student at the Moscow Institute of National Economy named after G.V. Plekhanov. In 1941, she came to Tashkent. Despite the difficulties of wartime, MA Khadjhinova worked hard on a doctoral dissertation under the supervision of Professor G.N. Kukin.

In 1944 M.A. Khadjhinova worked in the Tashkent Institute of Textile and light

industry as an assistant in the department of “Mechanical technology of fibrous materials”. In 1946, she successfully defended her thesis on "The effect of humidity on the durability of cotton fabrics” Since 1947, M.A. Khadjinova worked as an assistant professor at the Textile Institute, she studied the structure and damage of cotton and bast fibres (kenaf, jute). From 1953 to 1957 years. Maksuda Aghzamovna is a doctoral student at Moscow Textile Institute, continuing the study of cotton structure and damage, from the moment of cotton harvesting to the process of fibre spinning. In 1957 M.A. Khadjinova created and head the department of textile material science at the Tashkent Textile Institute. On June 20, 1957, she was approved as a rector of Tashkent Institute of textile and light industry by the government. By this time she had finished her doctoral dissertation "Influence of mechanical damages of cotton fibers on properties and quality of produced yarn". Defense which was successfully held in 1958 at the Moscow Institute of Textile. Khadjinova’s work was met with great interest by the scientific community. The result of many years of research was a major work on this topic, published in Tashkent in 1963. The instruction - the methodology for assessing the damage of cotton fiber, proposed by Khadjinova had important national economic significance. It is successfully used now at enterprises in the cotton ginning and textile industry, as well as research institutes, and design offices in creating working detail of cotton ginning machinery and equipment for the primary processing of cotton. In 1960 Maksuda Agzamovna was elected a corresponding member of the Academy of Sciences of Uzbekistan, and in 1966 - the academician of the Academy of Sciences. She died of heart disease on November 5, 1981, at the age of 70.

Nowadays Tashkent Institute of Textile and Light Industry awards the Khadjinova scholarship. This kind of scholarship is got by the most distinguished students in studies and social work.

Task 9.4. Answer the questions

1. When was born Maksuda Aghzamovna Khadjinova?
2. Who was Maksuda Khadjinova?
3. What was the role of Khadjinova in the life of the TTLI?
4. When did she become a corresponding member of the Academy of Sciences of Uzbekistan?

Task 9.5. Choose the correct answer.

1. Where was Maqsuda A'zamovna Khadjhinova born?
 - a) Moscow
 - b) Tashkent
 - c) Bukhara
 - d) Kenemekh
2. In which year did M.A. Khadjhinova enter the Tashkent industrial and economic college?
 - a) 1928
 - b) 1931
 - c) 1936
 - d) 1944
3. What was M.A. Khadjhinova's role at the Ministry of Trade of Uzbekistan?
 - a) Economist
 - b) Supervisor of raw cotton acceptance
 - c) Commodity expert
 - d) Assistant professor
4. Where did M.A. Khadjhinova defend her thesis?
 - a) Tashkent Textile Institute
 - b) Moscow Institute of National Economy
 - c) Moscow Textile Institute
 - d) Tashkent Institute of Textile and Light Industry

5. When was M.A. Khadjhinova appointed as the rector of Tashkent Institute of textile and light industry?

- a) 1946
- b) 1957
- c) 1960
- d) 1966

6. What was the area of M.A. Khadjhinova's doctoral dissertation?

- a) The effect of humidity on the durability of cotton fabrics
- b) The structure and damage of cotton and bast fibres
- c) The study of cotton structure and damage
- d) Influence of mechanical damages of cotton fibers on properties and quality of produced yarn

7. When did M.A. Khadjhinova pass away?

- a) July 8, 1912
- b) November 5, 1981
- c) June 20, 1957
- d) 1963

8. Which institute awards the Khadjhinova scholarship?

- a) Moscow Institute of Textile
- b) Tashkent Institute of Textile and Light Industry
- c) Academy of Sciences of Uzbekistan
- d) Ministry of Trade of Uzbekistan

Task 9.6. Are the statements true or false?

1. Maksuda Aghzamovna Khadjhinova was born July 8. 1912, in Tashkent	T/F
2. In 1928 M.A. Khadjhinova entered the Tashkent institute of textile and light industry.	T/F

3. Maksuda Aghzamovna was a doctoral student at Moscow Textile Institute	T/F
4. In 1957 M.A. Khadjinova created and head the department of textile material science at the Tashkent Textile Institute.	T/F
5. 1947, she was approved as a rector of Tashkent Institute of textile and light industry	T/F
6. In 1966, she became an academician of the Academy of Sciences of Uzbekistan.	T/F

Writing

Task 9.7. Write an essay discussing the significant contributions of Maqsuda A'zamovna Khadjhinova to the development of the textile industry in Uzbekistan. Include the following points in your essay:

Introduction:

Introduce Maqsuda A'zamovna Khadjhinova as a well-known and talented scientist.

Provide background information about her birth, education, and early career.

Contributions to the Textile Industry:

Discuss Khadjhinova's work at the cotton-picking station in Kenemekh and the Ministry of Trade of Uzbekistan.

Explain her research on vegetable fibers and their classification during her time at the Moscow Institute of National Economy.

Highlight her role as an assistant professor at the Textile Institute and her study on the structure and damage of cotton and bast fibers.

Describe her doctoral dissertation on the influence of mechanical damages of cotton fibers on properties and quality of produced yarn.

Recognition and Impact:

Discuss Khadjhinova's appointment as the rector of the Tashkent Institute of Textile and Light Industry and her contributions to the institute.

Explain her election as a corresponding member and later an academician of the Academy of Sciences of Uzbekistan.

Highlight the national economic significance of her work, particularly the methodology for assessing the damage of cotton fibers.

Describe the continued use of her research in cotton ginning and textile industry enterprises, research institutes, and design offices.

Legacy and Recognition:

Discuss the establishment of the Khadjhinova scholarship by the Tashkent Institute of Textile and Light Industry.

Explain the criteria for receiving the scholarship and its importance in recognizing distinguished students in studies and social work.

Conclusion: Summarize the significant contributions of Maqsuda A'zamovna Khadjhinova to the development of the textile industry in Uzbekistan.

Highlight her achievements and lasting impact on research, education, and practical applications in the field.

Note: The essay should be well-structured with an introduction, body paragraphs addressing each point, and a conclusion. Use appropriate transitions to ensure coherence and provide evidence or examples to support your points. Aim for a well-rounded and informative essay that highlights the key aspects of Khadjhinova's contributions.

Unit 9B.

Listening



Task 9.8. Listen a text about TITLI. Fill the gaps with appropriate words

Tashkent institute of textile and light industry was ... in 1932. This institute

... bachelors and masters in such fields as... ..., spinning, weaving, and silk technology, specialists for ... and printing, man-made and... It also trains specialists for clothing..., printing and publishing industry, and manufacture of hosiery and knitted goods for central Asian and Kazakhstan. There are 4 faculties:

1. Technology of cotton industry.
2. Technology of textile industry.
3. Technology of light industry and design.
4. Technologies of poligraphy.

The students of senior courses of our institute take an active part in the work of ... conferences which are held at our institute every year. There is a rich ... and reading hall. Practically all students get.... There is also Khadjinova scholarship. This kind of scholarship is got by the most ... students in studies and social work.

Task 9.9. Find words which are described by the following definitions:

- A) a ceremony at which students receive a university degree _____
- B) scientific study done in the field, such as measuring and examining things _____
- C) A large hall (in schools) where meals are served _____

D) Time of rest and recreation away from school _____

E) a speech to a group of students, especially as a method of teaching at universities

F) a person who has completed a course of study in college or university _____

Task 9.10. Explain the meaning of these expressions in English:

term – semester – trimester – seminar – to cram for an exam – to grant a scholarship
– a freshman – undergraduate – gaps in knowledge – to acquire knowledge – exam
fever – thesis – a credit – to observe the rules – curriculum

Task 9.11. Read and use the idioms in your speech.

The knowledge and use of various idioms helps to understand another language and culture. In this article we offer some widely-used idioms on the topic “Education” and provide exercises which can be used by linguistic teachers at classes.

1. a for effort (realize that someone tries one’s best to do something even though they may not be successful)

2. above average (better or higher than average)

3. as easy as ABC (very easy)

4. below average (worse or lower than average)

5. bookworm (someone who reads a lot)

6. brainstorm something (try to develop an idea or think of new ideas)

7. cover a lot of ground (complete a lot of material in a class or course)

8. crack a book (open a book to study [usually used in the negative])

9. get credit for (a course) (receive official recognition and credits after passing a course) e.g. What should be done to get a credit for the informatics course?
10. higher education (education after graduating from high school - usually college or university)
11. learn by heart (memorize something so you can repeat it without thinking).
12. make the grade (be satisfactory and of an expected level)
13. meet the requirements (for something) (fulfill the requirements [for something]) e.g. The technical report wasn't accepted because it didn't meet the requirements.
14. pass with flying colors (pass something easily and with a high score)
15. read to oneself (read without saying anything so that other people cannot hear you)
16. school of hard knocks (the ordinary experience of learning from work and daily life)
17. teach someone a lesson (do something to someone in order to punish them for their bad behavior)
18. teacher's pet (the teacher's favorite student).

Task 9.12. Read the jokes and underline the names of elements. Chemists have a terrific sense of humor, but some chemistry jokes might be confusing to a non-scientist.

Proton and a neutron are walking down the street. The proton says, "Wait, I dropped an electron help me look for it." The neutron says, "Are you sure?" The proton replies, "I'm positive." Random Person: Why do you react violently when we put you in H₂O? Chemistry Cat: Because my race contains iron,

lithium and neon = FeLiNe origins. First man orders "I'd like H₂O". The second man orders "I'd like H₂O too". The second man died.

The atom asks the electron, "why are you small?" The electron replies, "because I have a low charge!"

Unit 9 C.

Task 9. 12. Discuss with your partners.

When can you see these signs?

 Explosive	 Flammable	 Oxidizer	 Corrosive for metals
 Toxic	 Skin or eye corrosive	 Irritating, sensibilizing	 Compressed, liquefied gas

Vocabulary

1.Science	knowledge or a system of knowledge covering general truths or the operation of general laws especially as obtained and tested
2.Experiment	A n operation or procedure carried out under controlled conditions in order to discover an unknown effect or law, to test or establish a hypothesis
3.Latex	a water emulsion of a synthetic rubber or plastic obtained by polymerization and used especially in coatings (such as paint) and adhesives
4.Harmful	of a kind likely to be damaging
5.Laboratory	a place equipped for experimental study in a science or for testing
6.Apparatus	a set of materials or equipment designed for a particular use
7.Counterpart	one of two corresponding copies of a legal instrument
8.Cylindrical	shaped like a cylinder
9.Mixtures	a distinct entity formed by the combining of two or more different things
10.Enlightening	providing useful information or knowledge
11.Facility	a structure that is designed and built for a particular purpose

Task 9.13. Read the text and underline the unknown words

Chemistry laboratory apparatus and their uses

Science is a body of knowledge that includes the systematic study of physical and natural phenomena. The chemical sciences include the behavioral study of matter in our environment through observation and experimentation. Experimentation is an important part of the chemical sciences because it allows us to better understand the complex interplay of chemicals. Laboratories are general facilities that provide a controlled environment in which to conduct these

experiments in institutions or any other organization. While working in a chemistry lab, one comes across several kinds of apparatus that are required to carry out experiments. It is essential to understand the functioning of these apparatus, as an ineffectiveness not only increases the risk of experimental error but also poses a potential laboratory hazard. Working in a chemistry lab is always exciting and enlightening, but it also carries the risk of being exposed to harmful chemicals. Hence it is always advised to be covered in the proper gear, also known as personal protective equipment (PPE), before entering the chemistry lab. The safety gear to work in the chemistry lab mainly comprises of three things:

Safety Goggles: As the name implies, safety goggles protect your eyes. Because the eyes are the most vulnerable part of the human body, they are one of the most important safety devices. Several chemicals, such as acids, can cause severe eye damage, such as eye rash or permanent vision loss.

The lab coat is not only a general uniform of medical and chemical professionals, but it also serves a specific purpose. The knee-length coat protects the body and clothing from accidental chemical spills and splashes. Furthermore, in the event of an emergency, such as a fire or contamination, a lab coat can be removed more easily and quickly than regular clothing. *Latex/Nitrile Gloves:* Chemicals like acids are very reactive, and physical contact with such chemicals can cause severe burns. Latex or nitrile gloves work as a barrier between human skin and protect them from burns, infections, and contaminations caused by hazardous chemicals .

Beakers are one of the most common laboratory instruments found in a chemistry lab. They are cylindrical with a flat bottom and a small spout on top for pouring chemicals. Beakers are typically made of borosilicate glass or plastic. While plastic beakers are only used to mix chemicals, glass beakers have high thermal stability and can be used to heat chemicals as well. Furthermore, glass beakers provide greater clarity for content visibility and measurement than their plastic counterparts .Beakers

come in several sizes with volumes ranging from 5 milliliters to 10000 milliliters. Individual chemicals or chemical mixtures are frequently held, mixed, and heated in beakers. A *flask* is a type of glassware used in chemistry labs. They come in a variety of shapes and sizes, with each one having a specific purpose associated with it. *Thermometer*: Every lab is equipped with a basic thermometer as many a time, certain chemical or biological reaction can be carried out in any particular temperature range.

Task 9.14. Matching the photos with their definition and writing the names



These are useful in handling chemicals, acids, or any solutions to prevent direct contact from these chemicals with the bare hand and	
They are cylindrical, have a flat bottom, and a small spout on the top to pour chemicals.	
They are one of the most important pieces of safety equipment, as the human eyes are the most vulnerable part of the body.	
It is not just a general uniform of medical and chemical professionals; but has a very specified purpose to it.	
a sturdy vessel in which material is pounded or rubbed with a pestle	
an optical instrument consisting of a lens or combination of lenses for making enlarged images of minute objects	
a container often somewhat narrowed toward the outlet and often fitted with a closure: such as	
a garment usually of cloth, plastic, or leather usually tied around the waist and used to protect clothing or adorn a costume	

Task 9.15. Answer the questions

1. What equipment is used in a laboratory?
2. What is the most important laboratory equipment?
3. Why is laboratory important in chemistry?
4. What does a chemist do?

Task 9.16. Match all safety equipment.

Safety equipment	Location in our classroom	When it would be used
Eye Wash		Chemicals splashed into eyes. Flush eyes for a minimum of 15 minutes if chemicals have splashed into the eyes.
Safety Shower		Chemicals (that are deemed dangerous) have splashed onto skin. Notify teacher before using shower, as some corrosive chemicals will have stronger effects if water is used.
Fire Extinguisher		Small injury that can be treated in the classroom, before the first aid attendant is called.
Fume Hood		Your clothes have caught on fire
Fire Alarm		Chemical reaction in beaker or on desktop has burst into flames.
First Aid Kit		Only used, if instructed by teacher, in the case that a lab fire has escalated beyond the control of the classroom
Fire Blanket		Chemicals are noxious or toxic. Known to be hazardous when inhaled.

Task 9.17. Choose the correct answer.

1. Which of the following is NOT a piece of safety gear recommended for working in a chemistry lab?

- A) Safety goggles
- B) Lab coat
- C) Gloves
- D) Rubber boots

2. Which laboratory instrument is commonly used for holding, mixing, and heating chemicals?

- A) Flask
- B) Thermometer
- C) Burette
- D) Petri dish

3. Which material is typically used to make beakers in a chemistry lab?

- A) Aluminum
- B) Stainless steel
- C) Borosilicate glass
- D) Polyethylene

4. Which laboratory instrument is essential for measuring temperature in a chemistry lab?

- A) Burette
- B) Beaker
- C) Pipette
- D) Thermometer

Listening

Task 9.18. Chemistry Lab Safety: Listening Task

Introduction:

In this task, you will listen to a dialogue between two students discussing safety protocols and laboratory apparatus in a chemistry lab. After listening, you will answer

multiple-choice questions based on the dialogue.

Audio Transcript:

Student 1: Hey, have you finished setting up for the chemistry lab experiment?

Student 2: Almost there. I just need to put on my safety gear.

Student 1: Safety gear?

Student 2: Yeah, safety goggles, lab coat, and gloves. You know, to protect ourselves from any accidents.

Student 1: Oh, right. I forgot about those. Thanks for the reminder.

Student 2: No problem. Safety first, always. Anyway, let's review the apparatus we'll be using.

Student 1: Sure, what do we have?

Student 2: Well, we'll need beakers for holding and mixing chemicals. They're made of borosilicate glass, right?

Student 1: Yeah, and some are made of plastic, but glass ones are better for heating chemicals.

Student 2: Exactly. And we'll also use flasks for specific reactions. They come in various shapes and sizes.

Student 1: Got it. And what about thermometers?

Student 2: Oh, those are essential. We need them to monitor temperature changes during experiments.

Student 1: Great, I think we're all set then.

Student 2: Yep, let's get started.

Questions:

What safety gear is mentioned in the dialogue?

A) Rubber boots

B) Safety goggles, lab coat, and gloves

C) Apron and sandals
 D) Sunscreen and sunglasses
 What material are beakers typically made of?

- A) Stainless steel
- B) Aluminum
- C) Borosilicate glass
- D) Polyethylene

What are flasks used for in the lab?

- A) Measuring volume
- B) Monitoring temperature
- C) Holding and mixing chemicals
- D) Filtering solutions

Why are thermometers essential in the lab?

- A) To measure pH levels
- B) To monitor temperature changes
- C) To calculate density
- D) To measure volume



Task 9.19. Fill in the missing prepositions.

1. Water boils ____ 100° C. 2. You should lower the temperature ____ several degrees.
 3. _____ these conditions the reaction doesn't occur. 4. Which
 Russianscientists have been awarded Nobel Prize ____ chemistry? 5. Air is composed
 mainly _____ nitrogen and oxygen. 6. Chemical equilibrium may be classified
 _____ two groups. 7. What is capable__ accepting a proton from another substance?

8. Solar power is the conversion of the sun's energy _____ heat and electricity. 9. Neutrons are not electrically attracted _____ either electrons or protons. 10. I'm a chemist _____ profession. 11. I want to specialize _____ biochemistry. 12. His thesis deals _____ nanomaterials.

Chemistry classroom

Task 9.20. Complete the text about chemistry using the words in the box.

bind charge science nucleus interactions shape mass particles matter density substances amounts ions molecules

Chemistry is the _____ that systematically studies the composition,

properties and activity of _____ and various elementary forms

of _____. Chemistry is the study of matter and energy and

interactions between them. Energy has no _____ or form. Matter is

everything that occupies space and has _____. _____ refers to

the amount of matter in a given amount of space and is defined as the mass per unit of a substance. The fundamental building block of matter is the atom. It has a

_____ at its center consisting of protons, which have a positive electrical

_____, and neutrons which are uncharged. Negatively charged electrons circle around nuclei. There are super-small _____ inside the protons and neutrons called quarks. Chemical reactions involve _____

between the electrons of one atom and the electrons of another atom. Atoms which have different _____ of electrons and protons have positive or negative electrical charge and are called _____. When atoms _____ together, they can make larger building blocks of matter called _____.

Unit 10A

Task 10. 1.Discussion in a group.

1. What is the meaning of the phrase “Out with the old, in with the new”?
2. Where are your favorite places to shop for clothes?
3. Why are these your favorites?
4. How important to you is cost and quality when purchasing clothing? Which is more important? Why?



Vocabulary

Word	Definition
1. Fast fashion:	Inexpensive, fashionable, mass-produced clothing that is characterized by quick turnover of styles and low-quality materials.
2. Wind smth. up	to close a business or organization:
3. Stacking up	to compare with another thing of a similar type
4. Landfills.	A designated area where waste materials, including discarded clothing, are disposed of and buried in the ground

5.Inexpensive,	Priced at a low cost, often affordable for consumers.
6.Income	money that is earned from doing work or received from investments
7.Emphasis	the particular importance or attention that is given to something
8.Endurance	The ability of a product to withstand wear, use, or time. Fast fashion prioritizes quick turnover and low prices over the endurance and longevity of clothing items.

Task 10.2.Read the text and try to retell it.

What is fast fashion?

Fast fashion refers to inexpensive, fashionable, mass-produced clothing that is very harmful to the environment. Customers are drawn to these clothes because they are stylish and reasonably priced. However, because the owner didn't spend much money on them in the first place and they aren't made to last, these clothes are thrown away rapidly and wind up stacking up in landfills.

The average adult American purchased less than 25 pieces of clothes annually in 1960. Over ten percent of the average American household's income was spent on shoes and clothes. Also, roughly 95% of clothing sold in the United States was produced there.

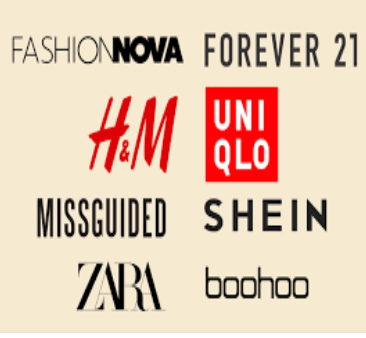
But in the 1970s, things started to shift. Large-scale industries and textile mills opened their doors in China, as well as other Asian and Latin American nations. They could easily make cheap clothes in large quantities thanks to the promise of cheap labor and materials. A few large American retail stores started exporting production by the 1980s.

Because clothing is so inexpensive, customers may purchase more of it. A whole business centered around seasonal trends has emerged, taking the place of the prior emphasis on endurance and quality. Even though the average American spends less

than 3.5% of their income on clothing, they buy roughly 70 articles of apparel annually. Currently, just 2% of clothing sold in the United States is produced there. Fashion firms have shifted from releasing clothing seasonally (four times a year) to a regular release model, sometimes updating their stock weekly, due to the extreme consumer demand for new products.

Zara, H&M, Shein, UNIQLO, Gap, Primark, Victoria's Secret, Urban Outfitters, Pretty Little Thing, Mango are just a few examples of popular fast fashion brands.

Task 10.3. Complete the infographic about fast fashion. Find answers from the text.

		
American in 1960 (1) less than 25	in 1960: Over 10%. (2)	less than 3.5% of their income(3)
		
Just 2%.(4)	in 1960: Roughly 95%(5).	gained popularity

Task 10.4. Are these statements true or false

The average adult American purchased more than 25 pieces of clothes annually in 1960.	T/F
Fashion firms have shifted from releasing clothing seasonally to a regular release model, sometimes updating their stock weekly.	T/F
Over ten percent of the average American household's income was	T/F

spent on shoes and clothes in 1960.	
Currently, just 2% of clothing sold in the United States is produced there.	T/F
Roughly 95% of clothing sold in the United States was produced there in the 1960s.	T/F
The average American currently spends more than 3.5% of their income on clothing.	T/F
Large-scale industries and textile mills opened their doors in China and other Asian and Latin American nations in the 1970s.	T/F
By the 1980s, a few large American retail stores had started exporting production.	T/F

Task 10.5. Answer the questions

1. What is the definition of "fast fashion" according to the passage?
2. Why are customers drawn to fast fashion clothing?
3. How has the average number of clothes purchased annually by Americans changed from the 1960s to today?
4. What percentage of the average American household's income was spent on clothing and shoes in the 1960s compared to today?
5. What factors enabled the rise of fast fashion production in other countries besides the United States?
6. What changes have fashion firms made in how often they release new clothing collections?
7. What are some examples of popular fast fashion brands mentioned in the passage?
8. How has the percentage of clothing sold in the US that is produced domestically changed over time?

Task 10.6. Choose the correct answer

1. What was the average number of clothes purchased annually by the average adult American in 1960?

- a) Less than 25
- b) Around 50
- c) Over 100
- d) There is no data provided on the exact number

2. What percentage of the average American household's income was spent on shoes and clothes in 1960?

- a) Less than 5%
- b) Around 7.5%
- c) Over 10%
- d) The passage does not provide this information

3. What percentage of clothing sold in the United States was produced domestically in the 1960s?

- a) Less than 50%
- b) Around 75%
- c) Roughly 95%
- d) The passage does not specify the exact percentage

4. When did large-scale industries and textile mills start opening in China and other Asian/Latin American nations?

- a) In the 1960s
- b) In the 1970s
- c) In the 1980s
- d) The passage does not provide an exact timeline

5. What percentage of the average American's income is currently spent on clothing?

- a) Less than 3.5%
- b) Around 5%
- c) Over 10%
- d) The passage states it is less than 3.5%

6. What percentage of clothing sold in the United States is currently produced domestically?

- a) Around 10%

b) Roughly 25%

c) Just 2%

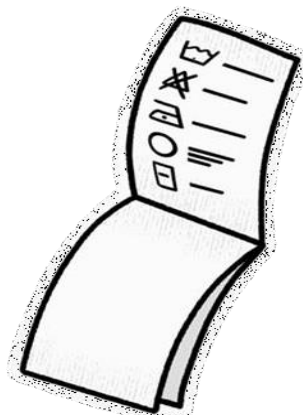
Writing

Task 10.7. Turn a piece of clothing inside out and read the garment care labels.

What information is on there? Collect the information using survey .

Then, working in your group, share the information you have collected, and continue to complete survey , adding the information about garments that others in your group have looked at.

Whose clothing?	What is it?	Where was it bought?	Where was it made?	What is it made from?
e.g. Nodira	Blouse	Zara	China	66% Cotton 34% Polyester



Speaking

Task 10.8. Discussion.

1. Is there anything you are surprised by from the data collection?
2. What do you notice about where your clothes were made?
3. What do you think the impact of your clothing being made in these places and out of these materials might be?

Unit 10B.

Task 10.9. Discuss in a group.

1. How do you describe this photo?
2. Do you feel guilty about purchasing from fast fashion brands?



Vocabulary

1. Rapid fashion	The practice of quickly producing and consuming fashion items, often resulting in negative environmental and social impacts.
2. Wastewater	Water that has been used and contains impurities or pollutants, often generated as a byproduct of textile dyeing and manufacturing processes.

3.Textile dyeing	The process of adding color to textiles or fabrics.
4.Toxic	Harmful or poisonous, referring to the potential dangers of certain substances or materials.
5.Regulations	Rules or guidelines set by governing bodies to ensure compliance and proper practices in a particular industry or field.
6.Devastating	highly destructive or damaging.
7.Dump	deposit or dispose of (rubbish, waste, or unwanted material), typically in a careless or hurried way.
8.Intended	planned or meant.

Task 10.10. Read the text. Choose the correct heading from the list .

The dark side of fast fashion

microplastic fibers, the United Nations Environment Program,

Save the water

It could be challenging for customers to stay away from goods made by businesses that engage in rapid fashion. Due to the environmental effects, customers of fast fashion can research the firms to find out if they employ fair labor standards and sustainable techniques.

Buying clothing at secondhand stores contributes to extending the life of garments while reducing the amount of waste produced. Figures from the United Nations Environment Program show that: the industry uses 93 billion cubic meters of water annually; one pair of jeans requires 3,781 liters of water; 20% of wastewater globally is from textile dyeing and is extremely toxic; many countries where clothing is produced have little or no regulations for disposing of wastewater; approximately 500,000 tons—or nearly 50 billion plastic bottles—of microplastic fibers from

clothing end up in the ocean; fashion accounts for more than 10% of carbon emissions worldwide.

How much waste is produced by the textile industry?

The amount of textile waste is increasing along with the popularity of quick and super fast fashion. Between 1975 and 2018, the amount of textiles produced per person worldwide more than doubled, from 5.9 kg to 13 kg. Less than 1% of used clothing is recycled into new garments, meaning that most clothes purchased are thrown away after being worn only a few times. The textile industry generates an estimated 92 million tonnes of textile waste yearly, most of which is burned or ends up in landfills.

Textile waste is frequently shipped and subsequently dumped in nations like Ghana and Kenya. When discarded in their billions, all these clothes—many of which are heavily loaded with industrial chemicals—have a devastating negative environmental impact on the surrounding ecosystems.

A portion of this waste is made up of brand-new products that were never even intended for consumers, such as out-of-date clothing lines that are destroyed rather than sold.

Task 10.11. Answer the questions.

1. What are some potential negative impacts of engaging in rapid fashion?
2. How can customers determine if a fashion brand employs fair labor standards and sustainable techniques?
3. How does buying clothing at secondhand stores contribute to waste reduction and garment life extension?
4. What are some alarming statistics regarding the environmental impact of the fashion industry?
5. How much textile waste is generated by the textile industry each year?

6. What is the percentage of used clothing that gets recycled into new garments?
7. Which countries often receive textile waste shipments and face negative environmental consequences as a result?

Task.10.12. Match the definitions (a–f) with the vocabulary (1–6).

Vocabulary	Definitions
1 Microplastic fibers	a) The release of carbon dioxide and other greenhouse gases into the atmosphere, contributing to global warming and climate change.
2 Carbon emissions	b) Tiny fibers, often made of plastic materials, that are released from clothing during washing and contribute to pollution, particularly in water bodies like the ocean.
3 Textile industry	c) Sites where waste materials are disposed of and buried in the ground.
4 Landfills	d) The process of converting waste materials into reusable materials or products.
5 Recycling	e) Natural systems or communities of living organisms interacting with their environment.
6 Ecosystems	f) The sector involved in the production, manufacturing, and distribution of textiles and clothing.

Speaking

Task 10.13. How to describe a picture: useful words and phrases

Look at the picture, discussing the environmental impact of the fashion industry and the importance of adopting sustainable practices.

Introduction:

Mention the negative environmental effects associated with the fashion industry.

Environmental Impact:



Chile's Atacama Desert

Highlight the toxic nature of textile dyeing and its contribution to wastewater pollution.

Explain the lack of regulations for wastewater disposal in many clothing-producing countries.

Describe the significant amount of microplastic fibers released into the ocean from clothing.

The artist / photographer / painter/ cartoonist uses ... to express ...

He / She (probably) wants to criticise / express / show ...

It is obvious that the artist wants to criticise / express / show ...

What the artist / photographer / painter wants to criticise / express / show is ...

What the artist / photographer / painter wants to point out / focus on is ...

Task 10.14. Unjumble the following words to form meaningful words. Write your answers in the correct order.

taresc	
dornig	
lusnggi	
datwesir	
selttab	
thgitnir	
yrethe	
lyenar	

Unit 10C.

Task 10.15. Discuss in a group

What do you do with your old T-shirts?

How can you upcycle an old T-shirt?

What do slow fashion garments look like?

Task 10.16. Match the words on the left with the definitions on the right.

1.....a garment	a. an item of clothing
2.....synthetic	b. a person who buys things for personal use
3.....a consumer	c. a place where rubbish is buried
4.....exploit	d. made with chemicals, not natural
5.....a landfill site	e. not damaging to the environment, so able to continue for a long time
6.....the minimum wage	f. the smallest amount of money that an employer can legally pay you
7.....sustainable	g. use (someone) unfairly for your own

Task 10.17. Read the text and underline the new words

What do slow fashion garments look like?

We not only use ecologically friendly raw materials to create more eco-friendly fashion brands, but we also create sustainable fashion:

Reputable firms utilize environmentally friendly techniques to print and dye fabrics, requiring significantly less water and energy.

They manufacture products with fewer chemicals. A clothing brand that isn't mass-produced by factories: producers make eco-friendly apparel in small batches to cut waste and guarantee excellent quality control, which is crucial in the slow fashion industry. Because they are constructed of better materials and are of higher quality, sustainable clothing is more durable. Check if you look for sustainable fibers and clothing by asking yourself these four questions before you purchase any brand. If not, use these guidelines to select more environmentally responsible brands:

Do I purchase from a store that has high-quality brands of clothing? There are many fast fashion stores, so use greater discernment. Shops carrying high-quality goods with a degree of craftsmanship in their production or those created by producers or designers renowned for their commitment to eco-friendly design should be your first choice.

Have I read the label and noted any important information? Verify if the fabric is synthetic, organic, or a combination of the three. More durable and cozy clothes are created from natural and organic fibers including cotton, hemp, linen, and wool.

When producing a slow fashion brand, manufacturers take the environment into account to ensure that there is either very little or no waste. Additionally, these brand

manufacturers see to it that their employees receive fair treatment and have access to hygienic, secure workplaces.

What is the cost of cleaning the clothing? Examine the washing guidelines. Buy something only if you want to wear it to a few formal events if it needs to be dry cleaned. The cost of maintaining the item will increase if you intend to wear it frequently.

Do I have enough knowledge about sustainable fashion to enable me to make an informed choice? Which apparel brands are more environmentally friendly than others, and which are classified as fast fashion?

Task 10.18. Look at the infographic and find these information from the text.

The fashion industry is one of the contributors of plastics microfibres entering our ocean



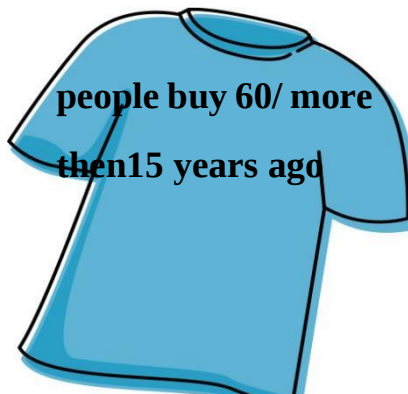
U.K consumers send 6,461 tonnes of clothing a week to landfill



When a new pair of jeans is made, an estimated 16,2 kg of CO₂ is emitted



people buy 60% more than 15 years ago



Grammar. Phrasal verbs are a common feature of the English language, consisting of a verb combined with one or more particles (prepositions or adverbs). These particles can significantly change the meaning of the verb.

Phrasal verbs can have multiple meanings depending on the context in which they are used. It's crucial to consider the surrounding words and the overall context to determine the intended meaning. Context can help disambiguate the phrasal verb. For example:

Turn on the TV (to switch it on)

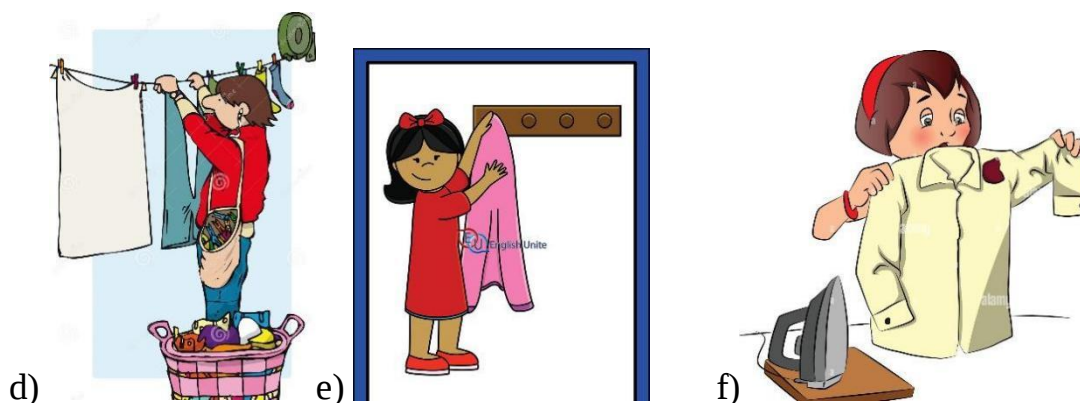
Turn on your friend (to betray or attack)

List of common clothing phrasal verbs in English

- Try on – to put on clothes to see if they fit or look good
- Put on – to dress oneself in clothes
- Take off – to remove clothes
- Get dressed – to put on clothes in preparation for going out
- Get undressed – to take off clothes, usually in preparation for going to bed
- Slip into – to put on clothes easily or quickly
- Put on – to wear for the first time
- Change into – to put on different clothes
- Take off – to remove clothes
- Dress up – to wear formal or fancy clothes
- Dress down – to wear casual or informal clothes
- Put on – to make an item of clothing look bigger or looser than it actually is
- Take in – to make an item of clothing fit better by making it smaller
- Put out – to iron clothes
- Hang up – to put clothes on hangers

Task 10.20. Match the words to the pictures





Task 10.21. Fill the gaps with appropriate phrasal verbs:

1. Could you _____ this shirt and see if it fits well?
2. I need to _____ before we leave the house.
3. It's getting warm in here. I think I'll _____ my sweater.
4. After a long day at work, she likes to _____ and relax.
5. He quickly _____ his running shoes and headed out for a jog.
6. The party is formal, so make sure to _____ for the occasion.
7. We're going to a casual event, so you can _____ and wear something comfortable.
8. She always _____ her clothes before going to bed, so they're ready for the next day.
9. Don't leave your clothes on the floor; _____ them _____ in the closet.
10. The fashion designer is planning to _____ a spectacular fashion show next month.
11. The tailor will _____ the dress to make it fit perfectly before the wedding.

Listening



WHAT IS SUSTAINABLE FASHION?

Sustainable fashion is about creating and using clothes in ways that are better for the environment and the people making them. There are lots of ways to make fashion more sustainable, from rethinking how clothes are produced, to repairing and rewearing and shopping second hand. In contrast to fast fashion, which prioritizes low-cost production and rapid turnover of clothing items, slow fashion focuses on quality, longevity, and environmental responsibility. It advocates for fair wages and safe working conditions for garment workers, as well as the use of environmentally friendly materials and production methods. One of the key principles of slow fashion is the promotion of timeless and durable designs that transcend trends and seasons. This encourages consumers to invest in high-quality pieces that will last longer and reduce the need for constant replacement.

Overall, slow fashion seeks to create a more sustainable and compassionate fashion industry by promoting conscious consumption, reducing waste, and fostering a deeper connection between consumers and their clothing choices. Choose the correct option for each question based on the information provided about slow fashion.

Task 10.22. Choose the correct answer

1. What is the main focus of slow fashion?
 - a) Low-cost production and rapid turnover
 - b) Quality, longevity, and environmental responsibility
2. What does slow fashion advocate for?
 - a) Fair wages and safe working conditions for garment workers
 - b) Expensive and trendy clothing items
3. Which materials and production methods does slow fashion promote?
 - a) Environmentally friendly materials
 - b) Cheap and synthetic materials
4. What type of designs does slow fashion encourage?

- a) Timeless and durable designs
- b) Short-lived and trendy designs

5. What is one of the goals of slow fashion?

- a) Increasing waste and consumption
- b) Reducing waste and fostering conscious consumption

Task 10.23 Listen the audio and fill the gaps.

Sustainable fashion is about _____ and _____ clothes in ways that are better for the _____ and the people making them. There are lots of ways to make fashion more _____, from rethinking how clothes are produced, to _____ and rewearing and shopping _____. In contrast to fast fashion, which prioritizes low-cost production and rapid turnover of clothing items, slow fashion focuses on _____, _____, and environmental responsibility. It advocates for fair wages and safe working conditions for garment workers, as well as the use of _____ materials and production methods. One of the key principles of slow fashion is the promotion of _____ and _____ designs that transcend trends and seasons. This encourages _____ to invest in _____ pieces that will last longer and reduce the need for constant replacement.

REVIEW

Foundations of Chemistry

Multiple Choice Questions

1. Of the following name/symbol combinations of elements, which one is WRONG?
 - (a) uranium/U
 - (b) sulfur/S
 - (c) nitrogen/N
 - (d) potassium/K
 - (e) iron/I
2. Of the following symbol/name combinations of elements, which one is WRONG?
 - (a) C/carbon
 - (b) B/barium
 - (c) F/fluorine
 - (d) N/nitrogen
 - (e) U/uranium
3. The chemical symbol for manganese is
 - (a) Mn
 - (b) Mo
 - (c) Ma
 - (d) Ga
 - (e) Mg
4. The number 0.005436 has how many significant figures? (a) 7; (b) 3; (c) 4; (d) 5; (e) 6;
5. The number 10.00 has how many significant figures? (a) 1; (b) 2; (c) 3; (d) 4; (e) 5
6. Which of the following is NOT true for the Group 1A elements?
 - (a) Most of them are soft, silvery corrosive metals.

- (b) Their atomic radii increases with increasing molecular weight.
 - (c) They are named the alkaline earth metals.
 - (d) They are excellent conductors of heat and electricity.
 - (e) They exhibit a +1 oxidation state in compounds.
7. Which element group is the most reactive of all the metallic elements?
- (a) alkali metals
 - (b) alkaline earth metals
 - (c) coinage metals
 - (d) transition metals
 - (e) Group 2B metals
8. In a surprisingly large number of their properties beryllium resembles aluminum, and boron resembles silicon. Such a relationship is called:
- (a) amphoterism
 - (b) an allotropic relationship
 - (c) a diagonal relationship
 - (d) the periodic law
 - (e) an isoelectronic series
9. Which of the following properties of the alkaline earth metals decreases with increasing atomic weight?
- (a) ionic radii
 - (b) ionization energy
 - (c) atomic radii
 - (d) activity
 - (e) atomic number
10. Of the following oxides, the most basic is:

(a) MgO ; (b) Na_2O ; (c) P_2O_3 ; (d) BeO ; (e) SO_2 .

11. A 300 g sample of CaCO_3 was heated until 10.0 L of CO_2 was collected at 50.0°C and 742 torr. What percentage of the CaCO_3 had decomposed?

(a) 6.84% ; (b) 9.10%; (c) 12.3%; (d) 15.8%; (e) 20.6%

12. What mass of lithium nitride could be formed from 104 g of lithium and excess nitrogen gas?

(a) 35 g; (b) 60 g; (c) 105 g; (d) 140 g; (e) 174 g

13. The most abundant metal in the earth's crust is:

(a) Cu; (b) Fe; (c) Na; (d) Al; (e) Ca

14. Which element has the electron configuration $[\text{Ar}] 3d^7 4s^2$?

(a) Fe; (b) Co; (c) Cr; (d) Ti; (e) Zn

15. What is the electron configuration of Mn^{3+} ion?

(a) $[\text{Ar}] 4s^2 3d^{10}$

(b) $[\text{Ar}] 4s^2 3d^2$

(c) $[\text{Ar}] 3d^5$

(d) $[\text{Ar}] 3d^4$

(e) $[\text{Ar}] 4d^1 3d^3$

16. The nitrate of which of the following cations would exhibit paramagnetism to the GREATEST extent?

(a) Co^{3+}

(b) Cr^{3+}

(c) Fe^{3+}

(d) Mn^{3+}

(e) V^{3+}

Answers:

1. (e) 2. (b) 3. (a) 4. (c) 5. (d) 6. (c) 7. (a) 8. (c) 9. (b) 10. (b) 11. (c) 12. (e) 13. (d)
14. (b) 15. (d) 16. (c)

1. What are the raw materials needed for the manufacture of steel?

- a) Pig iron
- b) Nickel + oxygen
- c) Pig iron + oxygen
- d) Pig iron + nitrogen

2. Removal of impurities from pig iron by oxidation gives steel.

- a) True
- b) False View Answer

3. What is the temperature of the blast furnace in steel plants? a) 100 °C

- b) 1000 °C
- c) 500 °C
- d) 2200 °C

4. Which among the following impurity is not added to steel?

- a) Silicon
- b) Carbon
- c) Manganese
- d) Arsenic

5. Which method is commonly used for the manufacture of steel?

- a) Open hearth process
- b) Contact process
- c) Kraft's process

d) Monte catini process Answers: 1c,2a,3d,4d,5a.

6. Pigments are different from dyes as they use which of the following to help dissolve in a liquid?

A)Colorant; b)Nothing; c)Binde d)Water

7 .There are two ways to categorize a pigment, what are the two broad types:
a)organic and inorganic

b) acid and base

c) organic and natural

d) inorganic and metallic

8. Which trait does a chemical structure alter in a pigment?

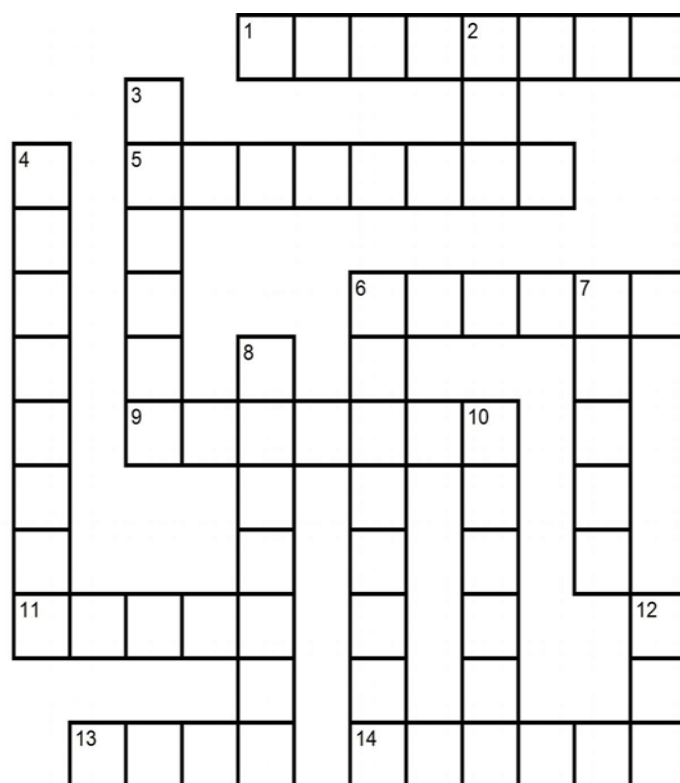
a)durability;

b)fading;

c)size;

d)color.

Chemistry crossword.



Across

1. The subatomic particle of an atom that has a negative charge is called a(n)
5. A chemical occurs when 2 or more molecules interact with each other causing the molecules to change.
6. The 4 fundamental states of matter are: solid, liquid, gas and .
9. The subatomic particle of an atom that does not have an electric charge is called a(n) .
11. The gases are found in group 18 of the periodic table, the last column on the right (helium, neon, argon, krypton, xenon & radon).
13. The amount of matter in a object

14. Organic chemistry is the branch of chemistry that deals with compounds containing

Down

2. How many hydrogen atoms are in a molecule of water?

3. The positively charged subatomic particle in the nucleus of an atom is called a(n) .

4. The chemical element with atomic number 1. It's the first element in the periodic table.

6. The table is a tabular arrangement of the elements.

7. A type of material that is considered a good conductor of electricity and heat

8. The central core of the atom containing protons and neutrons

10. The atomic is the number of protons in an atom.

12. A charged atom or molecule (the number of electrons is not equal to the number of protons).

English – Uzbek – Russian Dictionary

№	Inglizcha	O'zbekcha	Ruscha
1	balloon of the yarn	ip harakatlenganda hosil bo'lgan ballon	баллон, образуемый нитью при движении
2	bale-room	caralanma bo'limi	сортировочный отдел
3	bale opener	toytitgich	кипоразрыхлитель
4	bobbins of doubled yarn	pishitilgan ipli bobina	бобина крученой пряжей
5	bottom nipper	pastki qisqich	нижние тиски
6	both side pointed	ikki qutbi o'tkir uchli	остроконечные с двух сторон
7	can	toz	таз
8	calender rollers	kalandr valigi	валики каландра
9	card clothing	tarash mashinasining garniturasini	гарнитура чесальной машины
10	carding machine	tarash mashinasi	кардочесальная машина
11	cocoon	pilla	кокон

12	cotton feed	paxtani uzatish	подача хлопка
	cocoon form	pillaning shakli	форма кокона
13	combing machine	qayta tarash mashinasi	гребнечесальная машина
14	combing machine	qayta tarash mashinasi	гребнечесальная машина
15	cocoon unreeling	pilla chuvish	размотка коконов
16	cocoon thread	pilla ipi	каконная нить
17	cocoon steam	pillalarni bug'lash	запарка коконов
18	cocoon shell	pilla qobig'i	коконная оболочка
19	cocoon weight	pillaning vazni	масса кокона
20	cotton press	paxta pressi	хлопковый пресс
21	cotton seed	paxta chigiti	семя хлопка
22	cotton shoddy yarns	chiqindilardan olingan paxta ipi	угарная пряжа хлопчатобумажная
23	cotton threads	paxta tikuv iplari	нитки швейные хлопчатобумажные
24	cotton waste spinning	paxta chiqindilarni yigirish	прядение хлопчатобумажных угаров

25	cohesion tester	kozimetr	козиметр
26	chrysalis	g'umbak	куколка
27	croissure	chirmovlash	перевивка
28	creel	shpulyarnik	шпулярник,
29	cylinder	silindr	цилиндр
30	delivery rollers	uzatuvchi val	передающий валик
	defect cocoon	nuqsonli pillalar	дефектные коконы
31	doffer	ajratuvchi baraban	съемный барабан
32	double cocoons	qo'shaloq g'umbak pillalar	коконы двойники
33	doubling frame	qo'shib o'rash mashinasi	тростильная машина
34	doubling of the slivers	piltalarni qo'shish	соединение ленты
35	doubling machine	taranglab o'rash mashinasi	тростильная машина
36	draft	cho'zish	вытяжка
36	draw machine	piltalash mashinasi	ленточная машина

37	draw frame cover	piltalash mashinasining korpusi	корпус ленточной машины
38	drive motor	xarakatlantiruvchi	приводной электродвигатель
39	drying cocoons	elektrodvigatelъ	сушка коконов
40	fibre	pillalarni quritish	волокно
41	fibre length	tola	длина волокна
42	fibroin	tola uzunligi	фиброин
43	flats	fibroin	шляпки
44	flat clearer	shlyapkalar	шляпочный очиститель
45	fly frame operator	shlyapkali tozalagich	оператор ровничный машины
46	flyer	piliklash mashinasining operatori	рогулька
47	full creel	rogulka	полный шпулярник
48	jette bout	to'la shpulyarnik	Ловитель
49	handwheel,	ilgich	пульт управления,

50	high-draft speed frame	boshqarish pul'bi	ровничная машина с высокой вытяжкой
51	hopper feeder	katta cho'zish quvvatli piliklash mashinasi	бункерный питатель
52	hot air drying	bunkerli ta'minlagich	сушка горячем воздухом
53	knitting	issiq havoda quritish	трикотаж
54	Lap	trikotaj	холстик
55	lifting bolt	xolstcha	подъемный болт
56	linen yarn	зифир ип	льняная пряжа
57	mercerization	merserizatsiya	мерсеризация
58	mixture	aralashma	смесь
59	primarily cocoon processing	pillani dastlabki ishlash	первичная обработка коконов
60	principle of the comber	qayta tarash mashinasining printsipi	принцип гребнечесальной машины
61	process water	texnologik suv	технологическая вода
62	raw silk	xom ipak	шелк-сырец

63	reel	charx	мотовила
64	re-reelig	qayta o'rash	перемотка
65	ring spinning machine	halqali yigirish mashinasi	кольцепрядильная машина
66	ring and traveller	halqa va yugurdak	кольцо и бегунки
67	ring fitted into the rail	brusga o'rnatilgan urchuq	кольцо установленный в брус
68	ripe cotton boll	toy paxta	кип хлопчатника
69	ring and traveller	halqa va yugurdak	кольцо и бегунки
70	roller bearing	podshipnik vali	подшипник валика
71	roving	pilik	ровница
72	roving bobbins	pilik bobina	ровничная бобина
73	serisine	seritsin	серецин
74	signal lights	signal lampasi	сигнальная лампа
75	silk	ipak	шелк
76	silkworm	ipak qurti	тутовый шелкопряд
77	silk worm gland	ипак ажратиш беги	шелка отделительная железа

78	sliver	pilta	лента
79	sorting of cocoons	pillalarni saralash	сортировка коконов
80	spindle	urchuq	веретена
81	spindle drive	urchuq uzatmasi	привод веретена
82	spindle shaft	urchuq vali	вал веретена
83	spindle rail	urchuq brusi	брус веретена
84	spindles with separators	separatorli urchuqlar	Веретена с сепараторами
85	standard ring spindle	standart halqali yigirish mashinasi	стандартная кольцепрядильная машина
86	stopping handle	tormoz richagi	тормозной рычаг
87	top nipper	ustki qisqich	верхние тиски
88	top combap cradle	ustki taroq	верхний гребень
89	traveler	yugurdak	бегунок
90	three-phase motor	3 fazali motor	3 фазный мотор
91	twist	pishitish	крутка
92	waste	chiqindilar	угары

93	waste silk	ipak chiqindilar	отходы шелка
94	wharve (pulley)	urchuq bloki (shkiv)	блок веретена (шкив)
95	yarn (thread)	ip	пряжа (нить)
96	yarn wound onto the bobbin	bobinaga ipni qayta o'rash	перемотка пряжи в бобину

Typescripts

Unit 1.C

Person A: Have you heard about the exquisite textile from Uzbekistan? I've been fascinated by its beauty and craftsmanship.

Person B: Yes, Uzbek textile is renowned for its rich history and intricate designs. The country has a long tradition of weaving and embroidery that dates back centuries.

Person A: That's amazing! What sets Uzbek textile apart from others?

Person B: One of the distinctive features of Uzbek textile is its vibrant colors and bold patterns. The artisans use a variety of natural dyes to create stunning hues that reflect the region's cultural heritage.

Person A: I've seen some beautiful examples of ikat fabric from Uzbekistan. The technique of dyeing the threads before weaving creates such mesmerizing patterns.

Person B: Absolutely! Ikat is a traditional Uzbek weaving technique where the threads are resist-dyed before being woven into fabric. It requires great skill and precision to achieve those intricate designs.

Person A: I also learned about suzani embroidery. It's breathtaking how the artisans create intricate floral and geometric motifs using silk threads.

Person B: Yes, suzani embroidery is a true work of art. It's often done on large textiles like bedspreads, wall hangings, or even clothing. Each piece is unique and represents the creativity and symbolism of the Uzbek culture.

Unit 2.B Listen to the following passage and answer the questions that follow.

Textile History of Africa

In the ancient times, the most important aspect of textiles or more precisely cloth in Africa was that cloth was used as a form of money. The width of cloth strip was usually standardized in each region of Africa and therefore there used to be a regular number of such standart length cloth strips required to make a woman's wrapper cloth. This would then be used to serve as the unit of value. The cloth was a

convenient form of money primarily because it was used by everybody, fairly durable and easily subdividable.

The weavers, dyers and other textile artists of Africa together make an active contribution in creating an exquisite and amazing range of textiles. African textiles usually embody a great variety of styles. Adinkara, kente and bogolan are some of the some of the African textiles which are becoming increasingly popular while some others like Yoruba, ase-oke and adire are equally beautiful but less well known.

Unit 3Task.3.20. You will listen to a conversation between two friends, Sora and Mansur, discussing man-made fibers. Listen carefully to their conversation and answer the questions that follow.

Sora: Hey Mansur, have you ever wondered about the different types of fibers used in clothing?

Mansur: Yeah, I have. Natural fibers like cotton and wool are quite common, but I'm curious about man-made fibers. They seem to be everywhere these days.

Sora: Absolutely! Man-made fibers have gained popularity due to their unique properties and versatility. For example, one common type is polyester.

Mark: Oh, I've heard of polyester. What makes it so popular?

Sora: Well, polyester is known for its durability and wrinkle resistance. It's often blended with natural fibers to improve their strength and reduce wrinkles. It's also easy to care for since it's machine washable and dries quickly.

Mark: That's interesting. Are there any other man-made fibers worth mentioning?

Sarah: Definitely! Another popular one is nylon. Nylon is known for its strength and

abrasion resistance. It's commonly used in activewear, socks, and even hosiery. It's lightweight and has excellent elasticity.

Mansur: Ah, I see. So, nylon is ideal for items that require durability and stretchiness.

Sarah: Yes, exactly. And let's not forget about acrylic. Acrylic fibers are soft, lightweight, and have good insulating properties. They are often used in sweaters, blankets, and winter accessories.

Mansur: Acrylic sounds perfect for keeping warm during the colder months. Are there any drawbacks to these man-made fibers?

Sora: Well, one common concern is their environmental impact. Since man-made fibers are synthetic, they are derived from petroleum-based products. However, efforts are being made to develop more sustainable alternatives.

Mansur: That's good to know. It's important to consider the environmental implications of the materials we use.

Instructions: Listen to the following audio excerpts about different weaving techniques. After each excerpt, answer the questions that follow.

Unit 4.Task 4.18. Listening Task: Weaving Techniques

Audio Excerpt 1:

Narrator: Weaving is a fascinating craft that involves the interlacing of threads to create fabric. One popular technique used in weaving is called plain weave. In plain weave, the weft thread passes over one warp thread and then under the next, alternating in this manner throughout the fabric. This technique creates a strong and balanced fabric structure.

Question 1: What is the name of the weaving technique described in the audio excerpt?

Audio Excerpt 2:

Narrator: Another weaving technique commonly used is twill weave. Twill weave is characterized by diagonal lines or ridges formed on the fabric. In twill weave, the weft thread passes over two or more warp threads and then under one or more, creating a diagonal pattern. This technique is often used to create fabrics with a sturdy and durable nature.

Question 2: What is the main characteristic of twill weave?

Audio Excerpt 3:

Narrator: When it comes to the thickness and heaviness of woven fabric, the choice of yarn plays a crucial role. Thicker and heavier yarns can be used to create fabrics with a more substantial feel, suitable for items like blankets and upholstery.

Conversely, using finer yarns can result in lighter and more delicate fabrics, suitable for clothing and accessories.

Question 3: How does the choice of yarn affect the thickness and heaviness of woven fabric?

Audio Excerpt 4:

Narrator: Weaving patterns offer endless possibilities for creativity. One popular pattern is the herringbone pattern. The herringbone pattern is characterized by a V-

shaped design formed by the interlacing of threads. It can create a visually appealing effect on fabric, often used in garments and home decor items.

Question 4: What is the main characteristic of the herringbone pattern?

Audio Excerpt 5:

Narrator: Weaving can result in the creation of robust and durable fabrics. By tightly interlacing the warp and weft threads, a strong fabric structure is achieved. The density of the interlacing and the choice of yarn can greatly influence the strength and longevity of the woven fabric.

Question 5: How can the interlacing of threads contribute to the robustness of woven fabric?

Unit 6.Listen the audio, Whose opinion is closer to you

Ezoza: Hey, have you noticed that some students prefer printed clothing over the traditional uniform?

Malik: Yeah, I've noticed that too. It seems like printed clothing is becoming more popular among students.

Ezoza: I wonder why that is. Maybe they find it more fashionable and expressive than a standard uniform.

Malik: That could be it. With printed clothing, students can showcase their personal style and creativity.

Ezoza: True, uniforms can sometimes feel restrictive in terms of self-expression. Printed clothing allows students to stand out and show off their unique personalities.

Malik: On the other hand, uniforms have their advantages too. They promote a sense of unity and equality among students.

Ezoza: That's a good point. Uniforms create a level playing field, where everyone looks the same regardless of their background or socio-economic status.

Malik: Absolutely. It eliminates the pressure of dressing up and reduces any potential judgment based on clothing choices.

Ezoza: However, I can understand why some students prefer printed clothing. It gives them a chance to express themselves and feel more comfortable in their outfits.

Unit 7 A.

It was a bright, sunny day in the small village. Sevara, a skilled seamstress, was preparing to dye a new batch of fabrics for her clothing designs. She gathered her supplies - natural dyes extracted from plants, mordants to help the colors bind to the fibers, and an assortment of textiles she had woven herself.

First, Sevara soaked the fabrics in a warm solution of the natural dyes, carefully monitoring the intensity of the colors as they gradually absorbed into the fibers. She knew that different dyes would react differently with the various types of fabrics, so she adjusted the dye baths accordingly.

Once the desired shades were achieved, Sara introduced the mordants, which helped lock the colors in place. She meticulously stirred and agitated the fabrics, ensuring an even distribution of the mordants throughout.

After the dyeing and mordanting processes were complete, Sevara hung the vibrant, freshly dyed textiles out to dry in the warm, gentle breeze. As the fabrics fluttered and swayed, she could already envision the beautiful garments she would create from them.

Later, Sevara carefully cut and stitched the dyed fabrics into her latest designs – flowing skirts, tailored shirts, and intricate embroidered patterns. Each piece was a reflection of her artistic vision and the rich heritage of textile dyeing that had been passed down through generations.

With a sense of pride, Sevara displayed her creations in her small shop, knowing that each garment carried the story of the dyes and the craftsmanship that went into its

making.

Unit 8.C.Natural antimicrobial agent coatings on textiles or fabrics have their origins in ancient Egyptian mummy wrap preparation, which involved the use of spices and herbal coatings on linens. Bamboo-kun, an antibacterial component, is why the Chinese have traditionally utilized bamboo fibers for housing construction. The inherent antibacterial and antifungal qualities of bamboo fibers, which are mediated by dendrocin and 2–6-dimethoxy-p-benzoquinone, have also been investigated. Antibiotic application evolved during World War II, and antimicrobial use to stop fabrics from spoiling was also in demand at the same time. In order to prevent microbial attack during periods of severe rain and snow, which could damage fibers and raise the risk of infection, tents, tarpaulins, and truck covers were necessary.

Unit 9 B.

Tashkent institute of textile and light industry was founded in 1932. This institute trains bachelors and masters in such fields as cotton ginning, spinning, weaving, and silk technology, specialists for dyeing and printing, man- made and natural fibers. It also trains specialists for clothing manufacture, printing and publishing industry, and manufacture of hosiery and knitted goods for central Asian and Kazakhstan. The students of senior courses of our institute take an active part in the work of scientific-technical conferences which are held at our institute every year. There is a rich library and reading hall. Practically all students get scholarships. There is also Khadjinova scholarship. This kind of scholarship is got by the most distinguished students in studies and social work.

Unit 9C

Chemistry Lab Safety

Student 1: Hey, have you finished setting up for the chemistry lab experiment?

Student 2: Almost there. I just need to put on my safety gear.

Student 1: Safety gear?

Student 2: Yeah, safety goggles, lab coat, and gloves. You know, to protect ourselves from any accidents.

Student 1: Oh, right. I forgot about those. Thanks for the reminder.

Student 2: No problem. Safety first, always. Anyway, let's review the apparatus we'll be using.

Student 1: Sure, what do we have?

Student 2: Well, we'll need beakers for holding and mixing chemicals. They're made of borosilicate glass, right?

Student 1: Yeah, and some are made of plastic, but glass ones are better for heating chemicals.

Student 2: Exactly. And we'll also use flasks for specific reactions. They come in various shapes and sizes.

Student 1: Got it. And what about thermometers?

Student 2: Oh, those are essential. We need them to monitor temperature changes during experiments.

Student 1: Great, I think we're all set then.

Student 2: Yep, let's get started.

Unit 10.C. WHAT IS SUSTAINABLE FASHION?

Sustainable fashion is about creating and using clothes in ways that are better for the environment and the people making them. There are lots of ways to make fashion more sustainable, from rethinking how clothes are produced, to repairing and rewearing and shopping second hand. In contrast to fast fashion, which prioritizes low-cost production and rapid turnover of clothing items, slow fashion focuses on quality, longevity, and environmental responsibility. It advocates for fair wages and safe working conditions for garment workers, as well as the use of environmentally friendly materials and production methods. One of the key principles of slow fashion is the promotion of timeless and durable designs that transcend trends and seasons. This encourages consumers to invest in high-quality pieces that will last longer and reduce the need for constant replacement.

Overall, slow fashion seeks to create a more sustainable and compassionate fashion industry by promoting conscious consumption, reducing waste, and fostering a deeper connection between consumers and their clothing choices. Choose the correct option for each question based on the information provided about slow fashion.

Answers

Unit 1A

Task 1.3

- 1- False
- 2- False
- 3- Not given

Task 1.4

- 1- B
- 2- D
- 3- B
- 4- B
- 5- C

Unit 1B

Task 1.12

- 1- T
- 2- F
- 3- T
- 4- T
- 5- F
- 6- T
- 7- T

Task 1.13

- 1- C
- 2- C
- 3- C
- 4- D
- 5- C

- 6- C

Unit 1C

Task 1.15

- 1- Ikat weaving
- 2- Sezuni embroidery
- 3- Vibrant colors
- 4- Resist-dye
- 5- Bold patterns

Unit 2A

Task 2.3

- 1- B
- 2- C
- 3- J
- 4- H
- 5- I
- 6- D
- 7- E
- 8- F
- 9- G
- 10- A
- 11- K

Task 2.6

- 1- F
- 2- T
- 3- F
- 4- F
- 5- T
- 6- T
- 7- F

Unit 2C

Task 2.13

1- F

2- T

3- T

4- F

5- F

Task 2.14

1- B

2- D

3- B

4- B

5- D

Task 2.15

1- Textiles

2- Knitting

3- Theory, discovered

4- Earliest

5- Feature

Unit 3A

Task 3.5

1- F

2- T

3- T

4- T

5- F

6- F

7- F

8- T

9- T

10-

Task 3.6

1- Antipelti

2- Wood

3- Chemical

4- Textile

5- Synthetic

6- Natural

7- Closeiu

8- Lonely

9- Apricot

10- Synthetic

Unit 4A

1- True

2- False

3- False

4- Not given

5- True

Task 4.5

1- A

2- B

3- A

4- C

5- C

Task 4.6

1- Roving

2- Yarn

3- Fabrics

4- Economical

Unit 4B

1- Weave fabric

2- A percale weave

3- Windows, enough, light

4- Plain, twill, satin

5- Rub, tangle

Task 4.18

1- Plain weave

2- Diagonal lines and ridges

3- Thicker and heavier yarns

create thicker and heavier

fabrics, while finer yarns

create lighter and more

delicate fabrics

4- V-shaped design

5- Tightly interlacing the threads

creates a strong fabric

structure

Unit 4C

Task 4.22

1- False

2- True

3- True

4- Not given

5- False

Task 4.23

1- B

2- B

3- B

4- C

5- D

Task 4.24

1- Manufacturing

2- Purpose

3- Warp

4- Insulation

5- 1589

Unit 5C

Task 5.14

1- True

2- False

3- Not given

4- False

5- True

Task 5.15

1-

2- Non-woven fabrics

3- Customization

4- Bonding or felting fibers
together

5- Barrier

6- Eco-friendly

Unit k 6.4

- 1- False
- 2- False
- 3- True
- 4- False
- 5- True
- 6- True

Task 6.5

- 1- B
- 2- B
- 3- B
- 4- B
- 5- A

Task 6.6

- 1- Dyeing
- 2- Dye
- 3- Pigments
- 4- Additive
- 5- Fiber

Unit 6C

Task 6.21

- 1- B
- 2- C
- 3- A
- 4- B
- 5- B

Unit 7C

Task 6

- 1- True
- 2- False
- 3- False
- 4- True
- 5- False
- 6- False
- 7- True
- 8- False
- 9- False
- 10- False

Unit 8B

Task 8.13

- 1- B
- 2- D
- 3- C
- 4- A
- 5- C
- 6- A
- 7- C
- 8- B
- 9- D
- 10- B

Unit 9A

Task 9.5

- 1- B
- 2- A
- 3- C

4- C

5- B

6- D

7- B

8- B

Unit 9C

Task 9.17

1- D

2- A

3- C

4- D

Task 9.18

1- B

2- C

3- C

4- B

Unit 10C

Task 10.22

1- B

2- A

3- A

4- A

5- B

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