

HOME SCIENCE

Senior Three

TEACHER'S GUIDE

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FOREWORD

Dear teacher,

Rwanda Education Board is honoured to present Senior 3 Home science teacher's guide which serves as a guide to competence-based teaching and learning to ensure consistency and coherence in the learning of the Computer Science subject. The Rwandan educational philosophy is to ensure that learners achieve full potential at every level of education which will prepare them to be well integrated in society and exploit employment opportunities.

In line with efforts to improve the quality of education, the government of Rwanda emphasizes the importance of aligning teaching and learning materials with the syllabus to facilitate their learning process. Many factors influence what they learn, how well they learn and the competences they acquire. Those factors include the relevance of the specific content, the quality of teachers' pedagogical approaches, the assessment strategies and the instructional materials available. We paid special attention to the activities that facilitate the learning process in which learners can develop ideas and make new discoveries during concrete activities carried out individually or with peers. With the help of the teachers, learners will gain appropriate skills and be able to apply what they have learnt in real life situations. Hence, they will be able to develop certain values and attitudes allowing them to make a difference not only to their own life but also to the nation.

This is in contrast to traditional learning theories which view learning mainly as a process of acquiring knowledge from the more knowledgeable who is mostly the teacher. In competence-based curriculum, learning is considered as a process of active building and developing of knowledge and understanding, skills and values and attitude by the learner where concepts are mainly introduced by an activity, situation or scenario that helps the learner to construct knowledge, develop skills and acquire positive attitudes and values.

In addition, such active learning engages learners in doing and thinking about what they are doing and they are encouraged to bring their own real experiences and knowledge into the learning processes. In view of this, your role is to:

- Plan your lessons and prepare appropriate teaching materials.
- Organize group discussions for learners considering the importance of social constructivism suggesting that learning occurs more effectively when the learner works collaboratively with more knowledgeable and experienced people.
- Engage learners through active learning methods such as inquiry methods, group discussions, research, investigative activities and group and individual work activities.

- Provide supervised opportunities for learners to develop different competences by giving tasks which enhance critical thinking, problem solving, research, creativity and innovation, communication and cooperation.
- Support and facilitate the learning process by valuing learners' contributions in the class activities.
- Guide learners towards the harmonization of their findings.
- Encourage individual, peer and group evaluation of the work done in the classroom and use appropriate competence-based assessment approaches and methods.

To facilitate you in your teaching activities, the content of this teachers' guide is self-explanatory so that you can easily use it. It is divided in 3 parts:

The part 1: Explains the structure of this book and gives you the methodological guidance;

The part 2: Gives the sample lessons plan as reference for your lesson planning process;

The part 3: Provides details the teaching guidance for each concept given in the student book.

Even though this teacher's guide contains the answers for all activities given in the learner's book, you are requested to work through each question and activity before judging learner's findings.

I wish to sincerely appreciate all people who contributed to the development of this teacher's guide, particularly REB staff who organized the whole process from its inception. Special appreciation goes to the teachers who supported the exercise till its completion. Any comment or contribution would be welcome to the improvement of this text book for the next versions.

Dr. NDAYAMBAJE Irénée

Director General of Rwanda Education Board

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Joan MURUNGI,

Head of Curriculum, Teaching and Learning Resources Department (CTLR)

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PART I. GENERAL INTRODUCTION

1.0. About the teacher's guide

This book is a teacher's guide for Home Science S3. It is designed to accompany senior three student's book and intends to help teachers in the implementation of competence-based curriculum specifically Home Science S3 syllabus.

As the name says, it is a guide that teachers can refer to when preparing their lessons. Teachers may prefer to adopt the guidance provided but they are also expected to be more creative and consider their specific classes' contexts and prepare accordingly.

1.1. The structure of the guide

This section presents the overall structure, the unit and sub-heading structure to help teachers to understand the different sections of this guide and what they will find in each section.

Overall structure

The teacher's guide of senior three **Home science** is composed of three main parts.

Part one is related or involved to general introduction that discusses methodological guidance on how best to teach and learn Home science, developing competences in teaching and learning Home science addressing cross-cutting issues in teaching and learning Home science, and Guidance on assessment.

Part two consists of sample lesson plan.

This means that since we have 8 units, there are 2 sample lesson plans developed to guide the teacher on how to prepare a lesson plan in Home science.

Part three is about the structure of a unit and the structure of a lesson

This includes information related to the different components of the unit and these components are the same for all 8 units in Senior 3 Home science.

This part provides information and guidelines on how to facilitate learners while working on learning activities. In part 3, the Teacher Guide (TG) provides additional information for the teacher on the unit basis and there are a variety of activities classified in 3 categories (remediation, consolidation and extended activities) to help learners enrich their concepts and content development.

Structure of a unit

Each unit is made of the following sections:

- **Unit title:** from the syllabus

- **Key unit competence:** from the syllabus
- **Prerequisites (knowledge, skills, attitudes and values)**

This section indicates knowledge, skills and attitudes required for the success of the unit. The competence-based approach calls for connections between units/topics within a subject and interconnections between different subjects. The teacher will find an indication of those prerequisites and guidance on how to establish connections.

- **Cross-cutting issues to be addressed**

This section suggests cross cutting issues that can be integrated depending on the unit content. It provides guidance on how to come up with the integration of the issue. Note that the issue indicated is a suggestion; teachers are free to take another cross-cutting issue taking into consideration the learning environment.

- **Guidance on the introductory activity**

Each unit starts with an introductory activity in the learner's book. This section of the teacher's guide provides guidance on how to conduct this activity and related answers. Note that learners may not be able to find the right solution, but they are invited to predict possible solutions or answers. Solutions are provided by learners gradually through discovery activities organized at the beginning of lessons or during the lesson.

- **List of lessons/sub-heading**

This section presents in a table suggestion on the list of lessons, lesson objectives copied or adapted from the syllabus and duration for each lesson. Each lesson /subheading is then developed.

- **End of each unit**

At the end of each unit, the teacher's guide provides the following sections:

- Summary of the unit which provides the key points of content developed in the student's book.
- Additional information which provides additional content compared to the student's book for helping the teacher to have a deeper understanding of the topic.
- End unit assessment which provides the answers to questions of end unit assessment in the textbook and suggests additional questions and related answers to assess the key unit competence.

- **Additional activities:** remedial, consolidation and extended activities). The purpose of these activities is to accommodate each learner (slow, average and gifted) based on end unit assessment results.

Structure of each sub heading

Each lesson/sub-heading is made of the following sections:

- **Lesson sub heading title**
- **Prerequisites/Revision/Introduction**
This section gives a clear instruction to the teacher on how to start the lesson
- **Teaching resources**
This section suggests the teaching aids or other resources needed in line with the activities to achieve the learning objectives. Teachers are encouraged to replace the suggested teaching aids by the available ones in their respective schools and based on learning environment.
- **Learning activities**
This section provides a short description of the methodology and any important aspect to consider. It provides also answers to learning activities with cross reference to text book:
- **Exercises/application activities**
This provides questions and answers for exercises/ application activities/

1.2. Methodological guidance

1.2.1. Developing competences

Since 2015 Rwanda shifted from a knowledge based to a competence-based curriculum for pre-primary, primary and general secondary education. This called for changing the way of learning by shifting from teacher centered to a learner centered approach. Teachers are not only responsible for knowledge transfer but also for fostering student's learning achievement and creating safe and supportive learning environment. It implies also that a learner must demonstrate what he/she is able to do using the knowledge, skills, values and attitude acquired in a new or different or given situation.

The competence-based curriculum employs an approach of teaching and learning based on discrete skills rather than dwelling on only knowledge or the cognitive domain of learning. It focuses on what the learner can do rather than what learners know.

Learners develop basic competences through specific subject unit competences with specific learning objectives broken down into knowledge, skills and attitudes.

These competences are developed through learning activities disseminated in learner-centered rather than the traditional didactic approach. The student is evaluated against set standards to achieve before moving on.

In addition to specific subject competences, learners also develop generic competences which are transferable throughout a range of learning areas and situations in life. Below are examples of how generic competences can be developed in home science.

Generic competence	Examples of activities that develop generic competences
Critical thinking	<ul style="list-style-type: none"> Research and discuss Compare the exercises Observe, record, interpret Debate Make basic home science equipment out of locally available materials
Research and Problem solving	<ul style="list-style-type: none"> Use the internet Use a library Create a school library Collect data through observation and recording Identify a problem and design a methodology to collect the information needed to solve the problem

<p>Innovation and creativity</p>	<p>Create home science workshop to prove a point</p> <p>Invent new ways of doing traditional things</p> <p>Develop a graph to illustrate information</p> <p>Create a flow chart to show the main stages in a process</p> <p>Design a data collection survey/questionnaire</p> <p>Conduct home science workshop with objectives, methodology, observations, results, conclusions</p> <p>Make hypotheses and identify ways to test them</p> <p>Identify local problems and ways to resolve them</p>
<p>Cooperation, Personal and Interpersonal management and life skills</p>	<p>Work in pair</p> <p>Small group work</p> <p>Large group work</p>
<p>Communication</p>	<p>Present ideas in verbally, writing, graphically, digitally</p> <p>Set out pros and cons</p> <p>Argue a case in verbally, in writing, graphically (compare), digitally</p> <p>Observe, Record, Interpret the results of a measurement accurately.</p> <p>Select and use appropriate formats and presentations, such as tables, graphs and diagrams.</p> <p>Organise and present a complete report in a clear and logical form using spelling, punctuation and grammar with an acceptable degree of accuracy.</p> <p>Report accurately and concisely.</p>

<p>Lifelong learning</p>	<p>Take initiative to update knowledge and skills with minimum external support.</p> <p>Cope with the evolution of knowledge and technology advances for personal fulfilment</p> <p>Seek out acquaintances more knowledgeable in areas that need personal improvement and development</p> <p>Exploit all opportunities available to improve on knowledge and skills.</p>
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1.2.2. Addressing cross cutting issues

Among the changes in the competence-based curriculum is the integration of cross cutting issues as an integral part of the teaching learning process as they relate to and must be considered within all subjects to be appropriately addressed. The eight cross cutting issues identified in the national curriculum framework are: genocide studies, environment and sustainability, gender, Comprehensive Sexuality Education (CSE), Peace and Values Education, Financial Education, standardization Culture and Inclusive Education.

Some cross-cutting issues may seem specific learning areas or subjects, but the teacher needs to address all of them whenever an opportunity arises. In addition, learners should always be given an opportunity during the learning process to address these cross-cutting issues both within and out of the classroom so as to progressively develop related attitudes and values.

Below are examples on how crosscutting issues can be addressed in home Science:

Cross-cutting issue	Examples on how to integrate the cross-cutting issue
Inclusive education	<p>Involvement of all learners in all activities without any bias.</p> <p>E.g.</p> <ol style="list-style-type: none">1. Allow a learner with physical disability using wheelchair to take notes or lead the team during practical exercises of home science. For example, on the activity of using fridge and freezer this learner can do it sitting in his/her wheelchair.2. Let learners with visual difficulties sit in the place where they see well what is done in some activities. For example, when representative of a group is presenting storage area and their available storage temperature related to the types of food, a learner with visual difficulties comes and sits nearby the student who is presenting.
Gender	<p>While creating groups, each group must be composed by girls and boys to be heterogeneous.</p> <p>Involve both girls and boys in all activities: No activity is reserved only to girls or boys.</p> <p>Teachers should ensure equal participation of both girls and boys during lesson activities, as well as during lesson activity. For example,</p> <p>Involve both boys & girls to identify dry food and their appropriate store.</p>

<p>Peace and Values Education</p>	<p>During group activities, presentations, the teacher will encourage learners to help each other and to respect opinions of colleagues.</p> <p>For example, if a learner gives an example of how they preserve food at home, the other colleagues find that they don't use it at their home, they shouldn't refuse that opinion, they have to discuss and agree on final idea.</p>
<p>Standardization culture</p>	<ul style="list-style-type: none"> • Some lessons involve carrying out practical activities of home science. Instructions should be clear for learners to always check if they are not using expired chemicals or defective apparatus. • In addition, when performing practical activities of home science, learners have to record the data accurately. <p>For tasks regulation or setting of temperature according the kind of food in which the learner is asked to freeze, they have to always present accurate regulation, For example on the activity of freezing, refrigerating and drying of frozen, perishable and dry food (frozen chicken, vegetable, and rice).</p>
<p>Environment and sustainability</p>	<ul style="list-style-type: none"> • Food preservation and storage is included in environment and sustainability because environment may be broadly understood to mean our surroundings. • In home science teachers must use this cross-cutting issue by showing the learners how to sustain the environment, <p>For example, tell them to clean the class after studying by removing and collecting the waste that are in class after studying. For example, in the lesson of receiving food delivery by identifying types of food.</p>

Financial Education

When performing practical activity of home science, learners should avoid wastage of materials (tools, ingredients...)

1.2.3. Attention to special educational needs specific to each subject

When we think about inclusive education, we often think about getting students *into school*, i.e. making sure they are physically present in school. However, we also need to ensure that students are *participating* in the lessons and school life, and that they are *achieving* academically and socially as a result of coming to school. So, we need to think about presence, participation and achievement.

Some people may think that it is difficult to address the needs of a diverse range of students. However, by working as a team within your school, with support from families and local communities, and by making adaptation of teaching methods, teaching and learning materials, the teacher will be able to meet the needs of all students, including those with disabilities.

Teachers need to:

- Remember that students learn in different ways, so they have to offer a variety of activities (e.g. role-play, music and singing, word games and quizzes, and outdoor activities);
- Demonstrate Always the objective of the activity; show students what they expect them to do.
- Vary their pace of teaching to meet the needs of each student. Some students process information and learn more slowly than others.
- Use clear consistent language – explain the meaning (and demonstrate or show pictures) if you introduce new words or concepts.
- Make full use of facial expressions, gestures and body language.
- Pair the students who have disability with a friendly classmate. Let them do things together and learn from each other. Make sure that a friend is not over protective and does not do everything for the student with disability. Both students will benefit from this strategy.
- Have a multi-sensory approach to your activities.

Below are strategies related to each main category of disabilities and how to deal with every situation that may arise in the classroom? However, the list is not exhaustive because each student is unique with different needs that should be handled differently.

Strategies to help student with developmental disabilities:

- Be patient! If you find that the student takes longer than others to learn or to do an activity, allow more time.
- Do activities together with the student.
- Gradually give the student less help.
- Let the student do the activity with other students and encourage them to help each other.
- Divide the activity into small achievable steps.
- Remember to praise and say ‘Well done’ when the student learns something new or makes a strong effort.

Strategies to help learners with physical disabilities or mobility difficulties:

- Adapt activities so that students who use wheelchairs or other mobility aids, or other students, who have difficulty moving, can participate.
- Ask for adaptation of furniture – e.g. the height of a table may need to be changed to make it easier for a student to reach it or fit their legs or wheelchair.
- Encourage peer support between students.
- Get advice from parents or a health professional about assistive devices.

Strategies to help learners with hearing disabilities or communication difficulties

- Always get the student’s attention before you begin to speak.
- Encourage the student to look at your face.
- Use gestures, body language and facial expressions.
- Use pictures and objects as much as possible.
- Ask the parents/caregivers to show the signs they use while communicating at home and use them to facilitate communication at school.
- – use the same signs yourself and encourage other students to use them.
- Keep background noise to a minimum.

Strategies to help learners with visual disabilities

- Help students to use their other senses (hearing, touch, smell and taste) to play and carry out activities that will promote their learning and development.
- Use simple, clear and consistent language.
- Use tactile objects while explaining a concept.

- If the student has some sight, ask them what they can see. Get information from parents/caregivers on how the student manages their remaining sight at home.
- Make sure the student has a group of friends who are helpful and who allow the student to be as independent as possible.
- Plan activities so that students work in pairs or groups whenever possible.

Adaptation of assessment strategies

Each unit in the teacher’s guide provides additional activities to help learners achieve the key unit competence. Results from assessment inform the teacher which learner needs remedial, consolidation or extension activities. These activities are designed to cater for the needs of all categories of learners; slow, average and gifted learners respectively.

1.2.4. Guidance on assessment

Assessment is an integral part of teaching and learning process. The main purpose of assessment is for improvement. Assessment for learning/ **Continuous/ formative assessment** intend to improve learners’ learning and teacher’s teaching whereas **assessment of learning/summative assessment** intends to improve the entire school’s performance and education system in general.

Continuous/ formative assessment

It is an ongoing process that arises out of interaction during teaching and learning process. It includes lesson evaluation and end of sub unit assessment. This formative assessment should play a big role in teaching and learning process. The teacher should encourage individual, peer and group evaluation of the work done in the classroom and uses appropriate competence-based assessment approaches and methods.

In Senior **Three Home Science textbook**, formative assessment principle is applied through exercises/activities that are planned in each lesson to ensure that lesson objectives are achieved before moving on. At the end of each unit, the end unit assessment is formative when it is done to give information on the progress of students and from there decide what adjustments need to be done. Assessment standards are taken into consideration when setting tasks.

Summative assessment

The assessment done at the end of the term, end of year, is considered as summative. The teacher, school and parents are informed on the achievement of educational objective and think of improvement strategies. There is also end of level/ cycle assessment in form of national examinations.

1.2.5. Students' learning styles and strategies to conduct teaching and learning process

There are different teaching styles and techniques that should be catered for. The selection of teaching method should be done with the greatest care and some of the factors to be considered are: the uniqueness of subjects; the type of lessons; the particular learning objectives to be achieved; the allocated time to achieve the objective; instructional available materials; the physical/sitting arrangement of the classroom, individual students' needs, abilities and learning styles.

There are mainly four different learning styles as explained below:

a) Active and reflective learners

Active learners tend to retain and understand information best by doing something actively, discussing, applying and explain it to other. **Reflective learners** prefer to think about it quietly first.

b) Sensing and intuitive learners

Sensing learners tend to like learning facts; **intuitive learners** often prefer discovering possibilities and relationships. Sensors often like solving problems by well-established methods and dislike complications and surprises; intuitive learners like innovation and dislike repetition.

c) Visual and verbal learners

Visual, learners remember best what they see from pictures, diagrams, flow charts, time lines, films, demonstrations, etc.; **verbal learners** get more out of words written and spoken explanations.

d) Sequential and global learners

Sequential learners tend to gain understanding in linear steps, with each step following logically from the previous one. **Global learners** tend to learn in large jumps, absorbing material almost randomly without seeing connections, and then suddenly "getting it."

1.2.6. Teaching methods and techniques that promote the active learning

The different student learning styles mentioned above can be catered for, if the teacher uses active learning whereby learners are really engaged in the learning process.

What is Active learning?

Active learning is a pedagogical approach that engages students in doing things and thinking about the things they are doing. In active learning, learners are encouraged to bring their own experience and knowledge into the learning process.

The role of the teacher in active learning

- The teacher engages learners through active learning methods such as inquiry methods, group discussions, research, investigative activities and group and individual work activities.
- He/she encourages individual, peer and group evaluation of the work done in the classroom and uses appropriate competence-based assessment approaches and methods.
- He provides supervised opportunities for learners to develop different competences by giving tasks which enhance critical thinking, problem solving, research, creativity and innovation, communication and cooperation.
- Teacher supports and facilitates the learning process by valuing learners' contributions in the class activities.

The role of learners in active learning

- Learners are a key in the active learning process. They are not empty vessels to fill but people with ideas, capacity and skills to build on for effective learning. A learner engaged in active learning:
- Communicates and shares relevant information with other learners through presentations, discussions, group work and other learner-centred activities (role play, case studies, project work, research and investigation)
- Actively participates and takes responsibility for their own learning
- Develops knowledge and skills in active ways
- Carries out research/investigation by consulting print/online documents and resourceful people, and presents their findings
- Ensures the effective contribution of each group member in assigned tasks through clear explanation and arguments, critical thinking, responsibility and confidence in public speaking
- Draws conclusions based on the findings from the learning activities.

Some active techniques that can be used in home science

The teaching methods strongly emphasised in the Competence Based Curriculum (CBC) are active methods. Below are some active techniques that apply in home sciences:

Practical work-

Many of the activities suggested in the **Home Science** syllabus as well as in the student's book are practical work. -

Practical work is vital in learning **Home Science**; this method gives the learner the opportunity to implement a series of activities and leads to the development of both cognitive and hands-on skills. The practical work and questions given should target the development of the following skills in students: observation; recording and report writing; manipulation; measuring; planning & designing.

In case your school does not have enough home science workshop materials and consumables, practical work can be done in groups but make sure every student participates. In case your school does not have materials make arrangements with the neighbouring science school of excellence and take your students there for a number of experiments.

Demonstration

Literally demonstration means “show” the teacher shows something, such as a specimen, a model, or a skill while students watch. The method is preferred mainly under three conditions: Shortage of materials, practical work and it needs specific skills to be learnt first e.g. Oven baking, slicing by machine

Demonstration is done in three main stages:

- **Preparation:** Checking materials to ensure they are available and at good state; try the experiment before; think of safety rule and give instructions to technician if you have any.
- **Performance:** Sitting or standing arrangement of students; introduction of the experiment: aims and objectives; setting up the apparatus; performing the experiment; write and record the data.
- **Discussion:** Observations and interpreting data; make generalisations and assignment: writing out the practical work report and further practice and research.

Project work

Home science teachers are encouraged to sample and prepare project works and engage their students in as many as possible. A well-produced project will demonstrate students' competence (basic and generic) of students and integration of cross cutting issues in a number of ways:

- It gives students an opportunity to link concepts, principles learnt in a classroom or home science workshop to the outside world, thus aiding revision and anchoring of such concepts.
- Stimulates the interest of students in the subject

- It exposes students to a wider range of skills and instruments
- It trains students in the designing of a practical investigation or problem solving with suitable controls, sampling procedures and presentation
- It helps to improve student's communication skills
- When performed in groups, talents of all in groups are shared for the benefit of everybody in the group.
- It promotes interdisciplinary activities as it calls for use of different skills.

There are about three types of project work

- **Practical work** in a **home science workshop** carrying out and experiment to investigate a particular problem e.g. cake making, linens washing etc.
- **Observational:** Collecting data, analysing data and interpreting the data that already exists. e.g. data collection on spreading of deficiency nutritional disease (kwashiorkor) and its sign and symptoms.
- **Survey:** use of techniques like questionnaires, provides information such as environment protection e.g. the safety of home science workshop characteristics.
- **Field trip**

One of the main aims of teaching home science in Rwanda is to apply its knowledge for development. To achieve this aim we need to show to students the relationship between classroom home science lessons and applied home science. This helps them see the link between home science principles and technological applications.

Field trip is one of the methods we can use to achieve this aim because it:

- **Makes learning more meaningful:** Experiences are fairly direct, making the learning more meaningful, realistic and memorable.
- **Motivates learners:** Experiences during the visits, use of more than one sense, thus offers stimulus variation, which is likely to motivate learners.
- **Orientation of career choice:** Can help students in their career choices

However, field trips are costly, disrupt lessons of other subjects if planed on a learning day, take a lot of time to plan, Accidents may occur on the road to or from the trip and some students can be difficult to control on a trip. Therefore, the following guidelines should be observed:

Write to the authority persons seeking for permission in your note include; date, time, purpose and number of students

- Start detailed plans
- Visit the area before the trip if possible to familiarise yourself with the place
- Write out the worksheet that will guide the learners on activities to observe, look for during the visit

- Work out the timetable for the trip
- Try to team up as science teachers and make it a science trip, arrange and go with at least one science teacher
- Finally leave the contact address to the school administration

When students come back from trip, the teacher should plan for follow-up. The follow-up should allow students to share experiences and relate them to the prior home science knowledge. This can be done in several ways;

Either: Students write a report individually or in groups and give to the teacher for marking. The teacher then arranges for discussion to explain possible misconceptions and fill gaps. **Or:** Students write reports in groups and display them on the class notice board for everyone to read.

Note: Field trip can provide a worthwhile experience if planned well. Students like having a change from those classrooms and home science workshop. Most students return from trip sounding refreshed, motivated and ready to absorb more home science concepts next day.

Main steps for a lesson in active learning approach

All the principles and characteristics of the active learning process highlighted above are reflected in steps of a lesson as displayed below. Generally, the lesson is divided into three main parts whereby each one is divided into smaller steps to make sure that learners are involved in the learning process. Below are those main part and their small steps:

1) Introduction

Introduction is a part where the teacher makes connection between the current and previous lesson through appropriate technique. The teacher opens short discussions to encourage learners to think about the previous learning experience and connect it with the current instructional objective. The teacher reviews the prior knowledge, skills and attitudes which have a link with the new concepts to create good foundation and logical sequencings.

2) Development of the new lesson

The development of a lesson that introduces a new concept will go through the following small steps: discovery activities, presentation of learners' findings, exploitation, synthesis/summary and exercises/application activities, explained below:

Discovery activity

Step 1

- The teacher discusses convincingly with students to take responsibility of their learning
- He/she distributes the task/activity and gives instructions related to the tasks (working in groups, pairs, or individual to instigate collaborative learning, to discover knowledge to be learned)

Step 2

- The teacher let the students work collaboratively on the task.
- During this period the teacher refrains to intervene directly on the knowledge
- He/she then monitors how the students are progressing towards the knowledge to be learned and boost those who are still behind (but without communicating to them the knowledge).

Presentation of learners' productions

- In this episode, the teacher invites representatives of groups to presents the students' productions/findings.
- After three/four or an acceptable number of presentations, the teacher decides to engage the class into exploitation of the students' productions.

Exploitation of learner's productions

- The teacher asks the students to evaluate the productions: which ones are correct, incomplete or false
- Then the teacher judges the logic of the students' products, corrects those which are false, completes those which are incomplete, and confirms those which correct.

Institutionalization (summary/conclusion/ and examples)

- The teacher summarises the learned knowledge and gives examples which illustrate the learned content.
- Exercises /Application activities
- Exercises of applying processes and products/objects related to learned unit/sub-unit
- Exercises in real life contexts
- The Teacher guides learners to make the connection of what they learnt to real life situations. At this level, the role of teacher is to monitor the fixation of process and product/object being learned.

3) Assessment

In this step the teacher asks some questions to assess achievement of instructional objective. During assessment activity, learners work individually on the task/activity. The teacher avoids intervening directly. In fact, results from this assessment inform the teacher on next steps for the whole class and individuals. In some cases, the teacher can end with a homework assignment.

PART II: SAMPLE OF LESSON PLAN

School Name:..... Teacher's Name:

Term	Date	Subject	Class	Unit N°	Lesson N°	Duration	Class Size
1 ST Term	9/2/2018	Home science	S3A	1	4 of 9	8:40-9:20	39
Type of special educational needs and number of learners for each category		2 learners with low visual difficulties: Bring the learners nearby the audio-videos or big pictures showing the procedures of cleaning a wall					
Unit title		Home cleaning and home arrangement					
Key Unit Competence		Learners should be able to apply cleaning procedures and arrange a home					
Title of the lesson		Procedures of Cleaning the wall					
Instructional Objectives		Using appropriate pictures and videos/audio-videos, learners should be able to explain clearly the procedures of cleaning a wall.					
Plan for this class (Location: In / Outside)		Inside the class within 7 groups					
Learning Materials (for all learners)		Videos/ audio-videos or pictures					
References		Internet: https://m.wikihow.com , Clean-walls					

Timing for each step	Description of teaching and learning activity		Generic Competences and Cross Cutting Issues to be addressed
	Teacher groups students in groups of 5; learners guided by facilitator, watch and analyse audio-video (or observe pictures) showing procedures of cleaning a wall and make presentation of their findings.		+ Short explanation
	Teacher's activities	Learners' activities	
Introduction (10min)	<p>Ask learners to stand up and do some physical exercises.</p> <p>Ask learners to give examples of hard surfaces.</p>	<p>Learners stand up and do some physical exercises.</p> <p>Learners give examples of hard surfaces.</p>	<p>Communication skills while they answer to the question asked by the teacher.</p> <p>Critical thinking while giving examples of hard surfaces instead of soft surfaces.</p>

<p>Development of the lesson (20 minutes)</p>	<p>Teacher groups students in groups of 5 members and give them this activity:</p> <p>To watch/ analyse the audio-video then after analysing the cleaning procedures of wall.</p> <p>Ask a group representative from each group to present their findings.</p>	<p>Learners are observing pictures and watching video and then they identify the cleaning procedures of wall from the picture and video including what they follow while cleaning the wall at their homes.</p> <p>1. Cleaning unpainted wall Step 1: Cover any carpet or furniture in the immediate area Step 2: Move everything that is against the wall Step 3: Dust the wall Step 4: Start at the top of the wall when washing</p> <p>2. Cleaning painted walls Step 1: Remove marks or stains first Step 2: Wash the walls Step 3: Make your own spot cleanser</p> <p>4. Cleaning wooden walls Step 1: Dust the wall Step 2: Use warm, soapy to wash down the walls Step 3: Create a vinegar mixture to remove any stains Step 4: Rinse walls with clean water</p> <p>2 selected learners in their group; one shares the findings to the whole class while another one is writing the findings on a chalk board.</p>	<p>Cooperation, interpersonal management, life skills:</p> <p>Co-operating with others as a team while working and discussing to the question assigned.</p> <p>Inclusive education: Involves all learners in all activities without any bias by helping those 2 learners with speech and communication difficulties participate in learning wall cleaning procedures.</p>
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Conclusion (10Minutes)	Ask learners to give out the brief of wall cleaning procedures in their steps Comment on the learners' presentation and add missing information needed if any. Give clear summary of cleaning procedures of a wall.	Learners give the brief of wall cleaning procedures in their respective steps. Listen from the teacher's comments. Write the clear summary of cleaning procedures of a wall.	Environment and sustainability while they remove dust to the wall of their home.
Teacher self-evaluation			


School Name:

Teacher's Name:

Term	Date	Subject	Class	Unit N°	Lesson N°	Duration	Class Size
3	03/9/2018	Home science	S3A	8	1 of 6	11:40-12:20	38
Type of Special Educational Needs and number of learners for each category				1 learner with hearing difficulties Use pictures and objects as much as possible to help him/her learning successfully.			
Topic area:	Food preparation and service						
Sub-topic area:	Basic pastry and bakery						
Unit title	Basic principles of preparing cakes						
Key Unit Competence:	Learners should be able to prepare and bake a variety of basic cakes						
Title of the lesson	Preparation of carrot cake						
Instructional Objectives	Using given ingredients and materials for making carrot cakes, students should be able to make carrot cakes appropriately.						

Plan for this Class (Location: In / Outside)	In school kitchen within 6 groups.		
Learning Materials (for all learners)	baking ovens, wall clocks, weighing scales , pictures flip charts, projectors self-raising flour, caster sugar ,baking powder, ground cinnamon, teaspoon, eggs, grated raw carrot, salt, sunflower oil, Frosting, cream cheese, melted butter, icing sugar, vanilla essence, Zest of one orange.		
References			
Timing for each step	Description of teaching and learning activity		Generic Competences and Cross Cutting Issues to be addressed
	Teacher groups students in groups of 6 members; guided by teacher, students prepare carrot cakes and present cooked cake.		+ Short explanation
	Teacher's activities	Learners' activities	

<p>Introduction (10min)</p>	<p>Ask learners to stand up and make one circle.</p> <p>Ask each learner to tell his/her left classmate his/her favourite dessert.</p> <p>Ask learners to give examples of different food they eat especially on birthday or wedding.</p>	<p>On a circle each learner tells his/her left classmate his/her favourite dessert</p> <p>Learners give examples of food they eat especially on birthday or wedding.</p>	<p>Communication skills: while they answer to the question asked by the teacher.</p>
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<p>Development of the lesson</p> <p>(50 Minutes)</p>	<p>Using cards, teacher groups students in groups of 6 (boys and girls), and give them the following activity:</p> <p>Activity:</p> <p>Ask learners to go in store and collect ingredient for making a cake.</p> <p>Using the materials and ingredient make a carrot cake.</p> <p>Ask learners to present prepared cake</p>	<p>Students do activities in their respective groups.</p> <p>Learners collect from the store the following ingredient for making a cake.</p>  <p>Respecting the following steps, learners guided by the teacher make cake.</p> <p>Steps of cake making:</p> <p>Step. 1: Preparing ingredients on work place</p> <p>Step. 2: Shred the carrots</p> <p>Step.3: Combining dry ingredients and cutting in the butter</p> <p>Step.4: Add the wet stuff</p> <p>Step. 6: Baking</p> <p>Step.6: Cooling</p> <p>Learners present cooked cake</p> 	<p>Gender: while making heterogeneous groups</p> <p>Cooperation with others as a team while preparing cake and discussing to the question assigned in their groups.</p> <p>Critical thinking while executing different steps to make carrot cake.</p> <p>Standardization culture while respecting measures and paying attention in the moment of choosing ingredients.</p> <p>Financial education: learners, on occasion of the family parties, are aware of how they can eat cakes made by themselves without spending money.</p>
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<p>Conclusion (20 Minutes)</p>	<p>Ask learners to list the materials and ingredient and steps they have gone through while making carrot cake.</p> <p>Appreciate the cooked cakes, congratulate the best groups and correct the errors from the cake which are not well performed.</p>	<p>Learners respond on the list of the materials and ingredient and steps they have gone through while making carrot cake</p> <p>Learners listen from the appreciations of the teacher.</p>	<p>Lifelong learning by taking initiative to prepare carrot cakes and eat to help their body and fight against some diseases.</p>
<p>Teacher self-evaluation</p>			



UNIT 1: HOME CLEANING AND HOME ARRANGEMENT

1

1.1. Key Unit Competence

Learners should be able to apply cleaning procedures and arrange a home.

1.2. Prerequisites

The concept of a home.

1.3. Cross-cutting issues to be addressed

a) Environment and sustainability

Home cleaning and home arrangement is included in environment and sustainability because Environment may be broadly understood to mean our surroundings. It can be divided into non-living and living components. The environment provides resources which support life on the earth and which also help in the growth of a relationship of interchange between living organisms and the environment in which they live. It is important to realize that humans enjoy a unique position in nature due to their exceptional ability to influence and mould the environment. Here the teacher will process as follows:

- Creation of curiosity of the learners to provoke them to ask “why?” e.g. why is it important to clean and arrange home?
- Field trips. Outdoor activities allow learners to have direct contact with the environment. This helps learners to learn to observe, investigate and appreciate important environmental concepts.
- Developing a class strategy. All learners need to acquire the necessary skills, knowledge base, values and attitudes to be active global citizens in creating a sustainable society. Teachers should be truly concerned if they want learners to be actively involved in promoting Education for sustainable development. Familiarizing learners with updated information on world emerging issues with special consideration of their local environment, e.g. deforestation issue.

b) Gender

Gender refers to the socio-cultural definition of man and woman; the way societies distinguish men and women and assign them social roles. It entails the behaviors and attitudes which are culturally accepted as appropriate ways of being a woman (femininity) and ways of being a man (masculinity). The sex of a person is biologically

determined, whereas ways of being a man or a woman are learned: they are constructed, reinforced, maintained and reconstructed over time through social and cultural practices. Gender will be addressed in this unit because home cleaning is not reserved for any sex, either a man or women can do it.

The teacher should put into consideration the following elements:

Understanding the difference between gender and sex always

Balancing female-male roles: this may be in the form of allocating tasks to girls and boys together or interchangeably

Asserting female roles: it is important that teachers work on creating female role models, e.g. showing women in occupations like being a doctor, giving examples of female scientists, important women in history.

Avoid gender biased language and images,

E.g. use him/her or the plural pronouns, gender - aware plays and poems.

Building learners' self-esteem.

Giving Gender - balanced examples in all the interactions between teachers and learners.

c) Financial Education

This cross-cutting issue will help learners to improve their financial capacity by creating works and earning money through home cleaning and home arrangement, where financial education is a planned program of study that aims to equip young people with the knowledge, skills, and confidence to manage their money well. It will build a strong foundation among the learners for responsible money management by developing good planning and saving habits and prepare them for life, such as managing their own finances.

d) Standardization culture

Some lessons involve carrying out practical activities of home science. Instructions should be clear for learners to always check if they are not using expired products.

In addition, when performing practical activities of home science learners have to use required measurements and to follow well the procedures.

e) Peace and Values Education

Peace and Values Education (PVE) is all about how education can contribute to a better awareness of the root causes conflict, violence and disturbances at the personal, interpersonal, community, national, regional, and international/global levels on the one hand, on the other hand, about how education can simultaneously cultivate values and attitudes which will encourage individual and social action for building more peaceful

selves, families, communities, societies, nations and ultimately a more peaceful world. Through a given lesson: How do educators teach values?

Set a learning objective addressing attitudes and values. The learning objective may be set this way: ‘By the end of the lesson, learners will be able to appreciate the importance accuracy in their daily life’. Bringing out the value: During the lesson development, the teacher can use ‘probing questions’ to increase feelings in learners about the value. For instance, the teacher asks learners: ‘what do you think if the person who built our classroom was not accurate in the angles?’ Then learners discuss this in a group of three or four and give feedback.

Assessing the value: this is done when the teacher is summarizing the lesson. The teacher makes the evaluation of the understanding and readiness to put the value into practice in daily life.

1.4 Guidance on introductory activity

Before introducing the first lesson of this unit (Home cleaning and home arrangement), the teacher let learners to answer diagnostic questions on page 1, Student book. This activity intends to relate the unit with learners’ daily life to capture their attention.

The teacher will give students enough time to observe the photograph and ask them to comment on the appearance of the weeding room after the event. The teacher asks learners to predict what they have to learn from the present situation in order to maintain the home arrangement and cleanliness all the time in our society.

1.5. List of lessons

No	Lesson title	objectives	No of periods
1	Surface cleaning procedures	<ul style="list-style-type: none"> Describe types of surfaces Understanding cleaning procedures 	1
2	Cleaning and organizing the curtains and beds	<ul style="list-style-type: none"> State the steps to organise curtains and beds Describe cleaning procedures for curtains and bed Care for different types of surfaces 	1

3	Cleaning and organizing the sofa and carpet	<ul style="list-style-type: none"> Describe cleaning procedures for cleaning sofa and carpet State the steps to organise sofa and carpet Apply cleaning procedures for cleaning sofa and carpets 	2
4	Cleaning the ceiling	<ul style="list-style-type: none"> Describe cleaning procedures for cleaning ceiling Apply cleaning procedures for cleaning wall 	2
5	Cleaning the wall	<ul style="list-style-type: none"> Describe cleaning procedures for cleaning the wall 	1
6	Cleaning the floor	<ul style="list-style-type: none"> Describe cleaning procedures for cleaning the floor Apply cleaning procedures for cleaning the floor 	1
7	Cleaning and organising the furniture	<ul style="list-style-type: none"> Describe cleaning procedures to follow for cleaning furniture. Explain the steps to organise furniture. Caring about cleanliness and organization of furniture within a home 	2
8	End of unit assessment	<ul style="list-style-type: none"> Practice the techniques of organising a home conform to the techniques of organizing a home and appreciate the result 	1

Lesson 1: Surfaces cleaning procedures

a) Prerequisites

This is the first lesson of unit 1. That covers the introduction of the whole unit. Students will learn better surfaces and guidelines of home cleaning if they have understanding on the concept of the home.

b) Teaching resources

Pictures, CD audio-visual showing surfaces and cleaning procedures.

Learning activities

The teacher asks learners to do the activities 1.1 and 1.2 respectively page 1 and 2 of the student's book.

The learners observe and identify different surfaces through pictures on page 1 student book.

The learners will watch the video and discuss in group of three to five members on home cleaning procedures

Answers to activity 1.1:

The surfaces are classified into **soft surface**, which is a material or surface that is pleasant to touch and not rough or stiff, **hard surfaces**, which is a material or surface that is hard or stiff to touch. **Examples:** sofa (soft surfaces) and floor (hard surfaces)

Answer to activity 1.2:

- 1) Learners observe the picture
- 2) Picture one from the left shows how letting light in, cleaning the floor (hard surfaces) the last shows emptying dustbin
- 3) Home cleaning provides a safe and healthy environment for human beings
- 4) In general, home cleaning involves the following procedures:
 - a. **Letting light in**, open the curtains and windows and shake off the dust.
 - b. **Cleaning** of bathroom, bed room, living room, kitchen and the home compound and surrounding
 - c. **Emptying dustbin**

Lesson 2: Cleaning and organizing curtain and bed

a) Prerequisites

Learners will learn better cleaning and organizing curtain and bed if they have understood the lesson about types of home surfaces (soft surfaces) and home cleaning procedures

b) Teaching resources

Dusters, dust pans, brooms, gloves, masks and cleaning products such as furniture polish, and air freshener.

c) Learning activities

In group of three to five members the facilitator guides Students to perform activities 1.3 and 1.4.

Answer to activity 1.3: See the procedures of cleaning and organizing curtains and bed in students' book respectively on page 13-15 and 19-20.

Answer to activity 1.4:

- When you to make your bed appropriately, this is the mise en place: bed sheets, blanket, duvet cover, bed cover, pillow cases, mattress, bed throw, bed runner.
- See steps for making a bed on page 19-20 student book

d) Application activity 1(page 15 student book)

This activity makes students competent to clean and well organize curtains.

Cleaning Steps	Cleaning Techniques	Remark /notice
Steps on page 14-16 student book	Techniques on page 14-16 student book	Cleaning and organizing curtain are detailed in student book page 14-16

Lesson 3: Cleaning and organizing sofa and carpet

a) Prerequisites

Students will learn better cleaning and organizing sofa and carpet if they have understood the lesson about types of home surfaces (soft surfaces) and home cleaning procedures.

b) Teaching resources

Sofa and carpet, dust bins, cleaning sprayer and spraying bottles, brushes, dusters, brooms, buckets, basins, sponges, gloves, rinse masks and cleaning products such as liquid soap, multipurpose cleaner, shampooer, disinfectant, and vacuum cleaner.

c) Learning activities

The teacher let learners watch and analyze audio-visual procedures of sofa and carpet cleaning and then after, do the activities 1.5 and 1.6 respectively on page 21 and 25 student book. The teacher will give learners time to observe and analyze the picture on page 21 and 25 student book to identify the location of soft surfaces in the picture on page 21 and describe the soft surfaces in the picture on page 25 student book. The teacher guides learners to discuss the usage of each soft surface from the picture on page 21 student book.

Answer to activity 1.5 (page 21 student book)

1. Students observe and analyze the picture
2. Carpet on the floor on the left side picture and sofa on the right side
3. Usage of carpet is to soften and protect the floor, sofa is a comfortable seat

Answer to activity 1.6 (page 26 student book)

1. Students observe and analyze the picture on page 26 student book
2. The surfaces shown are floors (hard surfaces) covered with carpets (soft surfaces)
3. These carpets are not locally made

d) Application activity 2

This activity makes students competent to clean and well organize sofa and carpet. See the procedures of cleaning and organizing sofa and carpet on page 22-24, 25-27 students' book

Lesson 4: Cleaning ceiling

a) Prerequisites

Students will learn cleaning of ceiling after knowing cleaning materials, tools, equipment and techniques. The teacher will help learners to review the concepts above.

b) Teaching resources

Water, basins, soaps, pictures, audio-visual showing ceiling cleaning procedures, dust bins, brushes, dusters, dust pans, brooms, buckets, basins, sponges, gloves, masks and cleaning products such as, liquid soap, multipurpose cleaner and air freshener, vacuum cleaner

c) Learning activity 1.7

The teacher let learners observe and analyze the picture of the ceiling cleaning activities on page 30-35 student book. The teacher will guide learners to observe and analyze the picture on page 31-32 student book, identify the ceiling cleaning procedures and describe the type of ceiling in the page 31-32 .

Answer to activity 1.7:

1. Students observe and analyze the picture on page 31 student book
2. Ceiling cleaning activity to provide a safe and healthy environment

Name of surfaces	Cleaning procedures	Remarks /observations
<ul style="list-style-type: none"> • Dropped ceiling • Coffered ceiling • Cathedral ceiling • Cove ceiling 	<ul style="list-style-type: none"> • Removing debris • wiping down your ceiling • cleaning specific stains 	The details about ceiling cleaning procedures are on page 33-36 student book

Lesson 5: Cleaning wall

a) Prerequisites

Students will learn cleaning of wall after knowing the different types of home surfaces.

Teaching resources

Water, basins, soaps, sponges, vacuum cleaner, pictures or videos/audio-visual showing wall cleaning procedures, dust bins, glass cloth, brushes, dusters, dust pans, brooms, buckets, basins, sponges, gloves, masks and cleaning products such as, glass cleaner, liquid soap, multipurpose cleaner and air freshener, and use books especially books of home science, flip charts and chalkboard.

b) Learning activities

Teacher organizes the class in groups of 3 students. He/she guides students in respective groups to observe the pictures given on activity page 35 students' book. He/she facilitates them to describe the tools, equipment and agents which are being used during wall cleaning through picture of the activity page 35 students' book. The presentation of findings from respective groups will end by a common summary consolidated by the class facilitator.

Answer to activity 1.8

1. Students observe and analyze the picture on page 35 student book.

Type of the wall	Tool	Equipment	Cleaning agent	Techniques
<ul style="list-style-type: none"> Unpainted wall Painted wall wallpapered walls wooden walls 	basins, pictures or videos/ audio-visual showing wall cleaning procedures, dust bins, dusters, dust pans, brooms, buckets, sponges, gloves, masks and, use books especially books of home science, flip charts and chalkboard.	<ul style="list-style-type: none"> vacuum cleaner, multipurpose cleaner 	Cleaning products such as soaps, water, glass cleaner, air freshener.	Details on page 37-41 Student book.

Lesson 6: Cleaning the floor

a. Prerequisites

Students will learn how to clean the floor after knowing cleaning materials, tools, equipment and techniques.

b. Teaching resources

Water, basins, soaps, sponges, vacuum machines, pictures, videos, vacuum cleaner, damp mopping, warm water, spray bottle, funnel, cotton cloth, baking soda, old toothbrush, small bowl, rubbing alcohol and use books especially books of home science, flip charts and chalkboard.

c. Learning activities

Teacher organizes the class in groups of 3 students. He/she guides students in respective groups to observe the pictures given on activity page 41 students' book. He/she lets them observe pictures given and they discover the part of the house the people in pictures are cleaning, they explain why it is necessary to clean it and how they clean the

floor of their class. The facilitator guides students on the following activities:

- Group discussion on floor cleaning.
- Research and presentation on floor cleaning.
- Applying their learning in real-life contexts by cleaning the floor.
- Exercises on cleaning of floor using materials provided.

Answers to activity 1.9

1. Students observe and analyze the picture
2. The floor is being cleaned
3. To provide a safe and healthy environment for human beings

Answer to activity 1.10

1. Students observe and analyze the picture
2. The floors that are being cleaned are painted floor, rough cemented floor and stayer painted floor
3. According to the type of floor of the learners' class, the cleaning procedures/ techniques on page 48-54 student book will be applied

Lesson 7: Cleaning and organising furniture

a) Prerequisites

Students are going to learn how to clean furniture after performing the activities on how to clean and organize curtains, sofa, bed, ceiling, carpet, wall and floor.

b) Teaching resources

Water, basins, soaps, olive oil, sponges, vacuum cleaner, pictures or videos on how to clean different types of furniture, vacuum cleaner, and small mops spray bottle, cotton cloth, baking soda, toothbrush, small bowl, rubbing alcohol

c) Learning activities

Teacher organizes the class in groups of 3 students. He/she guides students in respective groups to observe the pictures given on activity page 52 students' book. He/she lets them observe pictures given and they identify the different types of furniture shown in the picture, on page 52 student book. The teacher guides learners to describe each item on the picture given on page 52 student book. The facilitator guides students on the following activities:

- Group discussion on furniture cleaning.
- Research and presentation on furniture cleaning.

- Applying their learning in real-life contexts by cleaning the furniture.
- Exercises on cleaning of furniture using materials provided.

Answer to activity 1.11

1. Students observe and analyze the picture
2. The furniture that are being cleaned starting from above on the picture are meeting table with chairs, on the left side is a reception counter, below is a dining table with chairs, upper right side is wooden doors and below it is a cupboard/ sideboard / service station.
3. Professionally the furniture will be cleaned according the following steps: gathering the cleaning supplies, preparing the area for some serious furniture cleaning, vacuuming the furniture and remove the dust, cleaning furniture with vinegar and water, performing the final buffing to remove moisture

Answer activity 1.12

1. Students observe and analyze the picture
2. Water, basins, soaps, olive oil, sponges, vacuum cleaner vacuum cleaner, small mops spray bottle, cotton cloth, baking soda, toothbrush, small bowl, rubbing alcohol
3. To provide a safe and healthy office for head teacher and guests
4. The procedures necessary to clean head teacher furniture office are gathering the cleaning supplies, preparing the area for some serious furniture cleaning, Vacuuming the furniture and remove the dust, Cleaning furniture with vinegar and water and performing the final buffing to remove moisture

1.6. Summary of the unit

The surfaces are of two types such as soft and hard surfaces. (e.g. Carpet and wall).

The cleaning procedures are the processes that enable the effective removal of contaminants without adding unwanted substances to the home environment.

The curtains' cleaning and organizing steps are as follows: thoroughly clean the window, inside and outside, hang your curtains so that their level and the rod are secured, arrange the drapes in fixed position using tiebacks, the rods are not visible, and the pleats are even, arrange the curtains so that the rod functions well, test the cords to make sure that the overlapping portions do not touch and that the drapery pins repositioned nicely.

Note: The curtains should break just on the floor surface, i.e. the hem should touch the ground, and the fabric should bend slightly. Arrange the flow of the swag to complement and hide the top of the drapes

When making a bed, materials such as bed base, mattress, night frill, mattress protector, bed sheets, blanket, duvet, bedcover, pillows / pillowslip, pillow protector, pillow cases, decorative cautions, bed throw, under sheet, bottom sheet

The seating room is kept attractive when furniture such as sofa, carpets and fittings plus compound are cleaned and organized. These are guidelines to follow so that to make sofas and carpets clean and organized to maintain home environmental healthy.

Pre-vacuum, all sofas are vacuumed with a wet & dry vacuum cleaner using a crack tool and sofa nozzle as appropriate, stain removal, cleaning solution, extractions cleaning, secondary extractions, cleaning appropriate fibers, deodorize and sanitize.

The hard surfaces in a home must promote a safe and healthy environment when they are cleaned well all the time. These surfaces (ceiling, floor, wall and furniture) are cleaned according to the main guidelines regarding daily cleaning:

There are three main steps to follow while cleaning a ceiling namely: removing debris, wiping down your ceiling, and to clean your ceilings by cleaning specific stains.

The four main steps are required to maintain a cleaned wall such as, in case of unpainted wall, cover any carpet or furniture in the immediate area, move everything that is against the wall, dust the wall, and start at the top of the wall when washing. In case of the painted wall, remove all marks or stains first, wash the wall, and make your own spot cleanser. In case of wallpapered wall, clean wallpaper with warm soapy water, use a vinegar mixture for vinyl-coated wallpaper, use vinegar and water to scrub stains and mold off wall, then rinse clean. When wooden wall, dust the wall first, use warm, soapy water to wash down the wall, create a vinegar mixture to remove any stains then rinse the wall with clean water

All the time, the floor requires to be cleaned however, the cleaning method will depend on a type floor such as (tiled mud floor and cemented floor).

The furniture is defined as a moveable article that are used to make a room or building suitable for living or working in, such as tables, chairs or desks and cupboard that are used to make a house or building a comfortable place to live. However, the home furniture will be cleaned by different steps such as, gather your cleaning supplies, prepare the area for some serious furniture cleaning, vacuum the furniture and remove the dust, cleaning furniture with vinegar and water and using vinegar and olive oil as a furniture polish.

The furniture organizing requires various steps such as empty the room, for most living

rooms, select a few large elements and a few small elements, select a center of attention, leave space between the walls and furniture, place your furniture for convenient use, use symmetry to create restful designs, use symmetry to add excitement and place furniture elements one by one.

1.7. Additional information

A clean house is important for the health and well-being of your entire family. First of all, a dirty house is a germy house, and the best defense against the spread of illnesses is to keep the germs washed away.

The well-being of the family is enhanced by an uncluttered atmosphere. If the rule of “**a place for everything and everything in its place**” is observed, the environment will be more serene, and less time will be wasted in looking for lost items. This is particularly true when you have a modern house design.

Any job requires a good set of tools. For cleaning the house, these tools range from very inexpensive to maybe not worth the money. Different rooms are cleaned differently, so your toolkit needs to include each type of equipment. Here are the categories of tools you need:

Bathroom: toilet brush, toilet cleaner, and bathtub spray.

Kitchen: cleanser with bleach, drain opener, broom, dustpan and brush, sponge mop, and general-purpose cleaning liquid.

Living room & bedrooms: dusting spray and cloth or duster, and vacuum cleaner with tools.

General tools: floor cleaner with wax, window cleaner, rubber gloves, bucket, sponges, and rags or microfiber cloths.

If you are less strict in your requirements, you can do two areas each week so that the whole house is cleaned every two to three weeks. If you are more relaxed and can live with a certain amount of messiness and dirt, you can get away with cleaning one area each week. In this case, the whole house would be finished approximately every month.

You may also want to assign different areas to various members of the family. For example, each person should keep his or her personal area (i.e., the bedroom) neat and clean. In addition, each family member can clean one area of the house. They may prefer to do the same area every week, or they may prefer to set up a rotation.

1.8. Answers of unit assessment

(Student's book page 58)

Answer:

1. Dust bins, sanitary bins glass cloth, mops, brushes, dusters, dust pans, brooms, buckets, basins, sponges, gloves, masks and cleaning products such as furniture polish, glass cleaner, liquid soap, toilet cleaner, multipurpose cleaner, disinfectant, floor polish and air freshener, vacuum cleaner, and beds and bed linen.

2. Guidelines to perform cleaning and organising of a girl's room to the school are:

- Open the curtains and shake off the dust. The natural light will brighten and open your space.
- You could also open the windows for some fresh air, which will help dispel any unpleasant odors and chemicals you may be using to clean. Then clean also the curtains
- Choose a manageable amount of time, such as 15 or 20 minutes, to really focus on cleaning without any distractions.
- Bring a bag with you to eliminate countless trips to the trash bin. Throw away all obvious trash, such as wrappers and old mail,
- Arrange each material on the table such as books, pens, newspapers... and put things back in the right place to facilitate the cleaning.
- Use a vacuum on the lowest setting and a brush attachment to quickly remove cobwebs, hair and dust.
- Clean the carpet accordingly with a vacuum, page 25 students' book
- Vacuum the floor last: Moving objects around shakes dust and debris onto the floor, so be sure to save this for the last step. This should be done once a week to keep the area clean and tidy.

3. The girl's room cleaned and organized well shows the characteristics below:

- A well cleaned and organized bed in the left corner
- A cupboard showing pads, soaps, underwares and body lotion in the light corner
- Bucket, jerrican, basin and towels, arranged well in the light corner
- A cleaned carpet covering a part of the floor
- Cleaned and organized curtains on the windows
- Cleaned ceiling.

1.9. Additional activities

1.9.1 Extended activities

You are asked to clean the head teacher's office. How can you perform the activity and leave the office well organized?

Answer

The seven main steps are required to have an organized and cleaned head teachers' office such as open the curtains and windows and shake off dust, ceil cleaning. Wall cleaning, furniture cleaning, and floor cleaning emptying dustbin then organizing furniture

1.9.2 Remedial activities

How do we organize the sitting room at the workplace?

Answer

Step.1. Organize the area by considering new storage techniques

If you find that clutter keeps piling up in one area, or certain objects always end up where they shouldn't be, such as books, electronic chargers, or mail, try using some new storage techniques.

- Install shelves or use a basket to hold extra books.
- Store chargers in a basket to keep them collected in one place.
- Set up a mail station with labelled cubbies or two trays for ingoing and outgoing.

Step.2. Keep all of your remotes, chargers.... in place

Choose somewhere accessible that you will easily remember. Use a basket, drawer, or tray to keep them contained if need be.

Step.3. Ensure in some "double-duty furniture"

To maximize your space, find pieces that offer hidden storage such as benches and ottomans with inner storage areas or a chest for a coffee table. You could also look into solutions like cupboards and table storage to keep your things organized, easily accessible, and out of the way.

UNIT.2: DECORATION TECHNIQUES

2

2.1. Key unit competence

Learners should be able to demonstrate appropriate decoration techniques using wider range of colors, fabrics and style.

2.2. Pre-requisites

Students will learn better decoration techniques if they have understood the followings:

- Decoration colours (unit.2 S1)
- Colours in decoration (unit.2 S2)
- Sewing material, tools and equipment for basic stitches. (unit 4 S1)
- Characteristics of fabrics. (unit.3 S2)
- Seams (unit 4. S2)

2.3. Cross-cutting issues to be addressed

a) Inclusive education

- This unit involves several description activities and researches on different decoration techniques like embroidery for patchwork, quilting and appliqué. This may be challenging to students with special educational needs especially students with visual impairment or visual difficulties. However, the teacher can make some arrangements for them like:
- **Grouping students:** Students with special educational needs are grouped with others and assigned roles basing on individual student's abilities.
- If a teacher has students with visual difficulties; when writing on the blackboard, write in large, clear writing, or provide a copy in big character when it comes to take hand out notes on subjects. Teacher read out what he/she is writing, for the benefit of those who are not able to see the blackboard clearly. For students with visual difficulties, the teacher gives the large or big size of embroidery designs or pattern with big needles when it comes to embroidering.

- If learners are sharing textbooks, try to arrange for those with visual difficulties to have their own copies, as far as this is possible.
- Give extra time for them to write summary notes or write down observations after experiments.
- Every important point is written and spoken loudly.
- Remember to repeat the main points of the lessons.
- For students with visual impairment the teacher can write for them a summary using the Braille alphabet if possible.

Learners with mobility difficulties:

- These include learners in crutches, wheelchairs, or with walking difficulties. Encourage other learners to look out for and help their classmates. Ask their fellow learners to help them with their notes, if their conditions hinder them from writing well.

b) Gender

During group activities try to form heterogeneous groups (with boys and girls) or when students start to present their findings encourage both (boys and girls) to practice.

c) Peace and values education

During group activities, the teacher will encourage learners to help each other and to respect opinions of colleagues.

d) Financial education

As the unit deals with the importance of embroidery decoration in modern life, the teacher will draw the learners' attention on the economic impact of embroidery decoration.

2.4. Guidance on the introductory activity

For this activity, the facilitator forms groups of two (pair) students that are as heterogeneous as possible. He/she lets them do the activity in the student's book page 60. The facilitator provides a clear sheet for reporting and writes on highlighted comments of activity and makes sure that each student from each group performs the activity. The facilitator asks randomly representative of two or three groups to present their findings. After plenary, guided by the teacher all the class summarizes the work findings. The teacher ask students to predict what they are going to learn in the current unit.

Finally the teacher introduces the new lesson of this unit.

2.5. List of lessons

No	Lesson title	Learning objectives	Number of periods
1	Decoration of hand embroidery	<p>Categorize different decoration styles of hand embroidery.</p> <p>State different techniques of decorations and colour effects of hand embroidery</p> <p>Compare and apply different decoration styles of hand embroidery</p> <p>Contrast the colour effects and apply proportion of colour techniques of hand embroidery</p> <p>Make simple decoration with different styles of hand embroidery</p> <p>Follow colouring and decoration techniques of hand embroidery</p> <p>Appreciate different decoration styles of hand embroidery</p>	2

2	<p>Decoration of machine embroidery</p>	<p>Categorize different decoration styles of machine embroidery</p> <p>State different techniques of decorations and colour effects of machine embroidery</p> <p>Compare and apply different decoration styles of machine embroidery</p> <p>Contrast the colour effects and apply proportion of colour techniques of machine embroidery</p> <p>Make simple decoration with different styles of machine embroidery</p> <p>Follow colouring and decoration techniques of machine embroidery</p> <p>Appreciate different decoration styles of machine embroidery</p>	2
3	<p>Decoration of fabrics and dyeing</p>	<p>Categorize different decoration styles of fabrics and dyeing</p> <p>State different techniques of decorations and colour effects of fabrics and dyeing</p> <p>Compare and apply different decoration styles of fabrics and dyeing</p> <p>Contrast the colour effects and apply proportion of colour techniques of fabrics and dyeing</p> <p>Make simple decoration with different styles of fabrics and dyeing</p> <p>Follow colouring and decoration techniques of fabrics and dyeing</p>	2

4	Decoration of pens and pencils	Categorize different decoration styles of pens and pencils State different techniques of decorations and colour effects of pens and pencils Compare and apply different decoration styles of pens and pencils Contrast the colour effects and apply proportion of colour techniques of pens and pencils Make simple decoration with different styles of pens and pencils Follow colouring and decoration techniques of pens and pencils Appreciate different decoration styles of pens and pencils	1
5	Assessment	End unit assessment	1

Lesson 1: Decoration of hand embroidery

a. Prerequisites

- Decoration colours (unit.2 S1)
- Colours in decoration (unit.2 S2)
- Sewing material, tools and equipment for basic stitches. (unit 4 S1)
- Characteristics of Fabrics. (unit.3 S2)
- Seams (unit 4. S2)

b. Teaching resources

Reference pictures on decoration and embroidery, home science textbook, flipcharts, blackboard, sewing and embroidery tools and equipment.

c. Learning activities

The teacher displays pictures of embroidered garments that learners observe in pairs. A teacher is expected to guide learners in the activities below:

- Brainstorming on decoration of hand embroidery
- Individual practice on decoration of hand embroidery
- Research on identification of colour values and scale for hand embroidery
- Group discussion on decoration and colouring of hand embroidery
- Presentation on decoration and colouring of hand embroidery

Teacher asks learners to observe the pictures of different embroidered garment in student's book **page 61**, describe communicative colors used and their role in life situation.

d. Application activity 1

The teacher asks the learner to follow the steps of quilt leaf embroidery design, page 66 student book.

e. Application activity 2

The teacher asks the learner to follow the steps of fish bone stitch embroidery, page 67-68 student book.

Lesson 2: Decoration of machine embroidery

a) Prerequisites

- Decoration colours (unit.2 S1)
- Colours in decoration (unit.2 S2)
- Sewing material, tools and equipment for basic stitches. (unit 4 S1)
- Characteristics of Fabrics. (unit.3 S2)
- Seams (unit 4. S2)

b) Teaching resources

Reference pictures on decoration of machine embroidery, home science books, flipcharts, blackboard, sewing and embroidery tools and equipment.

Learning activities

The facilitator displays the images describing color shades so that learners observe in pairs and describe the color situation on the wheel and procedures to produce that color. He/she guides learners through the brainstorming activities on colouring and decoration of machine embroidery, research on identification of colour values and scale for machine embroidery, group discussion on colouring and decoration of machine embroidery, practice exercises on colouring and decoration of machine embroidery, and presentation on colouring and decoration of machine embroidery.

The activity 2.2, page 67 student book makes students competent to apply colour values in decoration of machine embroidery. The teacher guides learners to observe and describe the colour shades that are related to the colour scheme and shades are used in embroidery decoration.

Answer:

- 1) Student observe colour schemes
- 2) Colour scheme monochromatic
- 3) Complementary colour scheme
- 4) The colour value describe the significance of a particular event.

d) Application activities

- The activity “**quilting appliqué embroidery**”, page 69-71 student book makes students competent to decorate a dress with heart embroidery design for appliqué, the teacher guides learners step by step in this activity till they get embroidered dress.

Answer: Apply “quilting appliqué embroidery” step by step from page 72-73 student book.

- The activity “**patchwork quilting**” page 72-73 student book makes learner competent on creating patchwork embroidery. Guided by teacher, learners carrying out steps of how to quilt patchwork embroidery and instructions with pictures on each steps are provided for guidance.

Answer: Apply “Patchwork quilting” step by step from page 72-73 student book.

- The activity “**Patchwork quilting using decorative stitches**”, page 72-73 makes learners competent on creating patchwork heart embroidery. Guided by teacher learners perform the patchwork pieces secured with decorative stitches, trimmed and embroidery is finished with the embellishment stitches.

Answer: Apply “Patchwork quilting” step by step from page 74-76 student book.

Lesson.3: Decoration of fabrics and dyeing

a) Prerequisites

- Decoration colours (unit.2 S1)
- Colours in decoration (unit.2 S2)

b) Teaching resources

Reference pictures on decoration of fabrics and dyeing, home science books, books of graphic design, flipcharts, blackboard, drawing supplies.

c) Learning activities

The facilitator displays images describing decoration of fabrics by dyeing process so that learners observe in pairs.

As a facilitator, the teacher guides learners through the brainstorming activities on coloring and decoration of fabrics and dyeing, research on identification of color values and scale for fabrics and dyeing, group work on coloring and decoration of fabrics and dyeing, group discussion on coloring and decoration of machine embroidery, individual practice on coloring and decoration of fabrics and dyeing, and presentation on practice on coloring and decoration of fabrics and dyeing.

Answer to activity 2.3, page 74 student book

- 1) Learners observe the pictures shown in activity 2.3 student book.
- 2) The rubber gloves are important because they protect hands from crushing.
- 3) Dye solution should be mixed carefully and periodically to allow dyeing capacity to give quality dyed fabric.

4) While gathering all supplies, you have to pay attention because chemicals and tools should be collected separately to prevent chemicals from damaging fabrics or other materials.

d) Application activity 6, page 79 student book

This activity makes students competent to decorate fabric with dyeing.

Answer:

Step 1: The shirt, fit to be dyed

Step 2: Presenting your choice of dyes

Step 3: Materials and tools to use

Step 4: Soaking the Shirt

Step 5: Tying a Rainbow Swirl Pattern

Step 6: Achieving pie

Step 7: Join the band

Step 8: To tie dye

Step 9: Using the dyes

Step 10: Turn the pie over

Step 11: Waiting

Step 12: Unwrapping masterpiece and wear rubber/latex gloves

Step 13: Presentation of the task

Lesson 4: Decoration of pens and pencils

a) Prerequisites

- Decoration colours (unit.2 S1)
- Colours in decoration (unit.2 S2)

b) Teaching resources

Pictures on decoration of pens and pencils, graphic design books, flipcharts, blackboard, drawing supplies.

c) Learning activity 2.4, on page 83 of student book

The teacher displays a picture of a traditional peace basket so that learners observe in group of three and describe the frame.

As a facilitator, the teacher guides learners to design a traditional peace basket (Agaseke) through the brainstorming activities on coloring and decoration of fabrics and dying, individual practice on decoration of pens and pencils, research and presentation on identification of color values and scale for of pens and pencils, group discussion and presentation on decoration of pens and pencils.

Answer to activity 2.4

Answer:

What do you use to weave a basket?

Basketry is made from a variety of fibrous or pliable materials, anything that will bend and form a shape. Examples include pine straw, weaving needle, grasses and colored threads.

Instructions for Making a gift basket

1) You will be able to do most of this process on your own, but ask a friend to help you with the cellophane and ribbon.

Step.1 Start by selecting a theme and go shopping for items for your basket can be anything that goes with your theme. We went with Rwandan theme, so we chose Agaseke.

Make sure to have scissors, colored thread, tissue paper, tape or glue, and sheets.

Step.2 Set up your work area.

Step.3 Place all items on the table or work surface.

Step.4 Add a layer of tissue paper to the bottom of your basket to help prop up

items. If you're using a large container, you'll need lots of tissue and may find it helpful to add newspaper or even a small cardboard box (which you can then cover in tissue paper).

Step.5 Begin by placing one of your sturdiest items in the center. Think of this as your centrepiece and you'll build out around it.

Step.6 Add larger items and taller items behind the center item.

Step.7 Place smaller items toward the front.

Step.8 Using needle with threads secure the grasses neatly and continuously.

Step.9 Step back and make sure items stay in place. You can use glue dots or tape to secure items to each other.

Step.10 Eyeball it and feel free to rearrange a little if needed.

Step.11 Weave and twist the top of the basket.

Step.12 Give the basket its final nip and tucks.

2) This is useful in traditional wedding in Rwanda especially in introduction and dowry giving.

3) These colour shades in weaving Agaseke peace basket show what we call "ibaba" used for decorating traditional basket.

4) Within this task i learn decoration using a woven traditional basket according to the Rwandan culture.

2.6.summary of the unit

The term embroidery means the art or process of forming decorative designs with hand or machine needlework.

When you are embroidering clothes, you choose embroidery colour that will catch the attention of people. This means that embroidery colour can be part of the life and also impact on the way in which we all sense and also react. The meaning of embroidery colour may differ based on lifestyle as well as situation. Those colours values can either be applied to hand and machine embroidery for appliqué and patchwork quilting.

Colouring embroidery with crayons (tinting)



Using crayons for tinting embroidery is the most common technique. It's easy to learn and most people have at least a few crayons around.

Crayons produce a bold color, but you can also work more gently with them, resulting in a lighter tint. Just like coloring on paper with crayons, varying the amount of pressure and layering your coloring creates some very cool shading.

When filling an area of embroidery, we usually think of fill stitches like basic satin stitch or long and short stitch. Another way to add lots of colour to your stitching, without lots of labour, is to use a technique known as embroidery tinting

Decoration of fabric

- **Decoration of fabric by dyeing**

Once textiles have been woven, they more often than not require to be decorated so as to increase their artistic appeal. Decoration of fabrics brings about the subject of fabric design or fabric decoration. Fabric design or decoration can be done in many ways. One can apply decor using dyes, pastes, stitch work, patchwork and so on. The primary aim in all this is to increase aesthetic appeal.

Dyeing which is said in session is the process of adding colour to textile products like fibres, yarns, and fabrics. Dyeing is normally done in a special solution containing dyes and other chemicals.

Decoration of table using fabrics

In this lesson two ways of decorating with fabric are table skirting and napkin fold for dinner setup:

Table skirting

This the way of draping table with table cloth to hide a plain or unpleasant surface and table look attractive.

Procedures

Table skirts add an elegant touch to any occasion. They can hide a plain or unattractive table surfaces, provide a modest covering for diners or hide merchandise that you've stored underneath them. Attaching a table skirt is a moderately easy task.

Napkins folding

There are different napkin folds that should be used in setting a restaurant or dining table, those include rose napkin fold, pyramid napkin fold, butterfly napkin fold, etc.

2.7 Answers of end unit assessment

- 1) The coloured markers stain the T-shirt, and you can make designs from the dye
 - a) When you add drops of alcohol, the dye from the markers spreads farther through the fabric
 - b) If you place only water on the design, it will not have the same effect because the dye is not soluble in water. Therefore, only the water would spread through the table linen.
- 2) With white cotton t-shirt, read the instructions of how to hand embroider and color the embroidery you have made and decorate it by dyeing.



- Supplies needed:
- Cup rubber band
- Cloth lines
- Permanent colored marker
- Dyes
- Table linen
- Hoops
- Embroidery thread
- Needles

- Colored pencil
- Drawing pencils
- Eraser

These are steps to hand embroider and color the embroidery by dyeing:

Step.1. Take a table cloth and hoop it for safe hand embroidering.



Step.2. Draw the frame of the image given.

Step.3. Stitch with hands through the whole drawn frame.

Step.4. Start decorating by using decorative color shade.

- Washable marker are soluble in water, the dye would wash away in water. The dye in permanent marker is insoluble in water and cannot be easily washed away.
- Valid because the data support my hypothesis. Invalid because data do not support my hypothesis. I would reject my hypothesis and could form a new one.

2.8. Additional activity

2.8.1. Consolidation activity: *How to dye a table linen?*

Step.1. Using a permanent mark pen draws a circle that has the same size as for cup.

Step.2. Using thread, stitch in the pattern line.

Step.3. Position over the mouth of the cup. Stretch the fabric over the opening and hold it in place with a rubber band.

Step.4. Use the permanent colored markers to add desired small dots, lines, or designs and shade to the part of the table linen that is stretched over the cup.

Step.5. Use a dropper to place 5–10 drops of alcohol on the designs. Wait a few

minutes for the alcohol to soak the colors.

Step.6. Repeat 1–3 several times on different areas of the table linen.

2.8.2. Extended activities

Read and answer carefully questions below:

- What happens when you press the markers to the table linen?
- What happens to the ink designs when you add drops of alcohol?
- Do you think you will get a similar result if you place water on the ink designs? Why or why not?
- Why do you use permanent colored markers instead of washable markers?
- Is your hypothesis valid? Why or why not? If not, what would be your next steps?

Answers:

- The coloured markers stain the table linen, and you can make designs from the dye
- When you add drops of alcohol, the dye from the markers spreads farther through the fabric
- If you place only water on the design, it will not have the same effect because the dye is not soluble in water. Therefore, only the water would spread through the table linen
- Washable marker are soluble in water, the dye would wash away in water. The dye in permanent marker is insoluble in water and cannot be easily washed away.
- Valid because the data support my hypothesis. Invalid because data do not support my hypothesis. I would reject my hypothesis and could form a new one.

UNIT 3: LAUNDRY TECHNIQUES

3

3.1. Key unit competence

Learners should be able to apply laundering Techniques for different fabrics using the appropriate tools and equipment

3.2. Pre-requisites

Students will learn better the introduction to laundry techniques if they have understanding on the source of fibers and their nature, classification of fabrics and characteristics of different fabrics.

3.3. Cross-cutting issues to be addressed

a) Inclusive education

The laundry work is indispensable for human being daily life. This unit involves a number of laundry materials, tools equipment and application of laundry procedures. For that reason, it may be challenging to students with special educational needs especially those with visual, mobility and developmental impairment.

- Learners with visual impairment

The teacher should write in large print and clearly, especially when it comes to drawing pictures.

For practices the teacher should be more concrete by allowing learners to use their senses whenever possible (touch, smell, and taste).

If learners are sharing textbooks, try to arrange for those with visual difficulties to have their own copies, as far as this is possible. Give extra time for them to write summary notes or write down observations after experiments.

- Learners with mobility difficulties

These include learners in crutches, wheelchairs, or with walking difficulties. Encourage other learners to look out for and help their classmates.

- Learners with development impairment

The teacher should be more patient by giving them extra time to perform some activities. He/She should be clear when giving instructions on a given activity and divide the activity in small steps in order to facilitate learners with memory problem. Learners with this kind of difficulties struggle to make sense of words or understand written work and take longer to read than other learners. The teacher encourages them to pay careful attention during class time and participate, for example by asking questions, answering questions and give them enough practices so that they can make the most understanding of what they hear and observe.

b) Standardization culture

The instructor encourages the learners to pay attention on the manufacturer's instructions/markers given on the clothes label (color, type of fabrics, type of stain, washing, drying, ironing and pressing).

c) Environment sustainability

As the unit deals with the importance of washing linens and clothes in our daily life, the teacher will draw the learners' attention on the hygiene factors which help to live a long time in a healthy environment. For example, used water should be managed efficiently, proper maintenance of hygiene of the washing area and so on.

d) Peace and values education

The teacher should encourage learners to avoid laundry chemical effect to their body (respect using instruction regarding to each laundry chemical)

3.4. Guidance on the introductory activity

For this activity, the teacher forms groups of five students that are as heterogeneous as possible. He/she guide the student to perform the analysis of the situation on page 88 student book. The teacher asks learners to predict what they need to learn in this unit according to the challenges from the picture. The teacher asks randomly representative of two or three groups to present the analysis results, prediction of what they will learn in the current unit, then all the class consolidates/harmonize the analysis findings and students take summery in their notebooks.

3.5. List of lessons

No	Lesson title	Learning objectives	Number of periods
1	Washing linens by hands	Identify laundry materials, tools and equipment and Perform hand laundry procedures	2
2	Washing linens with washing machine	Perform laundry procedures with a washing machine	2
3	Drying of linens	Perform drying procedure of linens using a dryer machine	1
4	Linen Pressing and ironing	select laundry finishing materials, tools and equipment Perform laundry finishing procedures	2
5	Summative assessment	Identify different laundry tools and equipment Apply laundering techniques for different fabrics.	1

Lesson 1: Washing linens by hands

This is the first lesson of unit 3 and is a double lesson. It has two periods (80 minutes). The first lesson also covers the introduction of the whole unit.

a) Pre-requisites Students will learn better the washing linens by hands if they have understanding on: The concept of fibers and their nature, classification of fabrics and characteristics of different fabrics. Show different equipment and tools or draw the pictures to help them on the black board.

b) Teaching resources

Use buckets, basins, liquid soap, pegs and peg holder, hanger, hanging rail and washing machines

c) Learning activities

Before introducing this lesson, you will have to introduce the whole unit. First, let learners therefore attempt activity on page 89 in student book, which help them to predict what they are going to learn in this unit, then activity which leads students to the first lesson of the unit.

Let learners in pairs answer questions in activity in student book page 89. Move around the class, listening to students as they discuss and looking at their answers. Mark their work as they complete each question and make general corrections to the whole class. Have a sample group present their findings to the class. This is diagnostic activity; the next step will greatly depend on your judgment. If your class can not correctly answer the question, extra explanations and exercises are necessary. But if they are correctly answered then the teacher can proceed to the actual content of the lesson.

Answers

- 1) Hand washing tools and materials are: buckets, basins, liquid soap, pegs and peg holder
 - 2) Hanger and hanging rail and washing machine are not hand equipment to use them you connect them to electricity.
- a) **Buckets** It is a container with an open top and a handle, often used for carrying liquids.
- b) **Basins** It is an open round container shaped like a bowl with sloping sides, used for holding liquid.
- c) **Liquid soap** It is a substance used for washing the cloths which is usually liquid, often has a pleasant smell, or a piece of this.
- d) **Pegs** It is a small stick or hook which sticks out from a surface and from which objects, especially clothes, can hang.
- e) **Peg holder** It is a container which is used to carry or hold the pegs.
- f) **Hanger and Hanging rail** It is a curved piece of wire, wood or plastic on which clothes are hung while they are being stored.

After this teacher should tell the learners to bring dirty clothes from their family then help them to apply all laundering procedures. Make a summary of the lesson (short notes) and assess your lesson on practical work done and let students do checking up in student **Answers to checking up** activity in student book page 89. These are the linen hand washing procedures:

1. Collection & Transportation
2. Arrival
3. Sorting
4. Weighing
5. Loading
6. Washing
7. Rinsing

Teacher should supervise the activity from starting to the end and make sure if the activity is done completely.

Lesson 2: Washing linens by washing machine procedures

a) Pre-requisites

Students will learn better the washing linens by washing machine procedures if they have understanding on: mole concept (home science S2 unit 3), covering classification and characteristics of different fabrics.

b) Teaching resources

Washing machines, linens and clothes, laundry detergents.

c) Learning activities

Activity on page 95 of student book

- Before introducing the lesson, let learners therefore attempt activity page 99 student's book which leads students to the second lesson of the unit.
- This activity introduces students to know different linen washing machines and the procedures to follow while using them.

- Divide your class into groups of five students and let students follow the working procedures to obtain the results.
- Let the learners perform the activity using their prior knowledge about types of fabrics as they have studied in S2 unit 3.
- Have sample group to present their work to the class.
- Check learners' responses to review the learners' plans and ideas to continue the discussion with a brief brainstorming of the concepts using learners' work and book.
- Comment on students' responses written in their note books and give them the summary of expected feedback based on their findings.

Answers

1. Two machines.
2. Commercial washing machine and Tunnel Washers
3. a. Linen washing machines are: commercial washing machines and tunnel washers
b. Commercial washing machines: is machine which works by using mechanical energy, thermal energy, and chemical action

Tunnel washers: This is also called batch washer or continuous washer and is in effect a series of inter-connected washer.

d. Application activity 1 (page 100 student book)

The teacher guides students to perform the application activity on washing machine, page 100-101 student book through the following activities: Sorting the linens, selecting the different washing products appropriately and applying the use instructions of the washing machine by respecting the time (40-50 minutes) in terms of the cycle protocol of the washing machine (student book page 100).

Note:

The washing activity for heavily soiled linens requires different activities such as: **Soak › Break › Carryover Suds (Intermediate Rinse) › Intermediate Extract › Starch (Sizing).**

Lesson 3: Drying of linens

a) Prerequisites

Use laundry equipment, tools and materials (performance on unite 3 lesson 1 & 2).

b) Teaching resources

Flat table, hanger, Laundry line, collapsible drying racks or hanging racks and tumble-drying machine.

Home science books, working search engine.

c) Learning activities

The guides students in groups of 4-5 members to perform the learning activity 3.4, page 102 student book. The teacher let students make research on different methods/ techniques of line drying through home science books/search engine. The teacher manages the plenary on linen drying, all the class consolidate and summarize the content.

Answers

- 1) Students observes the picture on methods and techniques of linen drying
- 2) On the left of the picture, the activity ongoing is air drying / dry flat, on the right side, the activity is the line drying
- 3) No, they are other drying methods such as drip drying, drying by machine

Lesson 4: Linen pressing and ironing

a) Prerequisites

Students will learn better the types of linen pressing and ironing methods and tools and equipment to use for each if they have understanding on: linen washing, drying procedures covered (home science S3 unit 3, lesson 1,2,3).

b) Teaching resources

Books of laundry technique, iron box, ironing board, calendar pressing machine with electricity, pressing machine with hand, linen, cloth spraying bottle, flip charts and chalkboard.

c) Learning activities

Activity 3.5

The facilitator displays the different laundry tools/equipment to the students. In groups of 4-5 students, guided by the teacher, categorize the laundry tools/equipment according to the proper usage.

The teacher lets students perform the activity 3.5, page 107 student book. He/she guides students in the plenary and consolidate their findings.

Answer:

1. Students observe and analyze the components of the picture on page 107
2. The picture on the left side is an electrical ironing machine, on the right side is an electrical steam pressing machine.
3. All the tools/equipment on the picture are used to iron linen. The electrical ironing machine is appropriate to all types of linen, the steam pressing machine is appropriate in the ironing of flat linens e.g. towels, bed sheets etc.
4. Non electrical ironing machine
5. The steps in ironing will depend on the type of linen e.g. ironing jacket (page 109-115 student book) is different from trouser ironing but the pressing procedure are of two type pressing with a calendar and pressing linen with a steam pressing machine.

Activity 3.6

The teacher guides students to observe and analyze the picture on page 109 student book.

He/she asks them to fill the table on linen/cloths storage.

Answer

After folding the linen, the next steps must be followed: airing and storage. The storage area must be isolated from the soiled linen and kept clean

Linen store sheet

Type of linen	No	Type of store
Towels	1	Linen shelves
Shirt	2	Hanger
Trouser	3	Hanger
Bed sheets	4	Linen shelves
Lingerie	5	Linen racks
Hosiery	6	Linen line with peg
Jacket	7	Wardrobe /closet
Blouse	8	Hanger
Sweaters	9	Drawers
Dresses	10	Dressers

This is essential prior to storage, especially if the articles are to be stored in closed shelves. It ensures that any moisture that is likely to cause mildew will be got rid of.

Storage should be properly done in a well-designed storage space. Linen should be allowed a rest period to recover before it is used again.

3.6. Summary of the unit

How inviting/attracting is it to climb into a freshly –laundered bed or to wrap yourself up in a clean, fluffy towel after luxuriating in the bath? Isn't it far more appealing to have a freshly-pressed pile of clothes to choose from in the morning instead of pulling on a crumpled shirt of the flour as you rush out the door? These are the easy-to-achieve results that should help transforming your laundry routine from a chore into a pleasure.

With little effort, you can turn your home into a tactile heaven:

Sweet –smelling clothes and linens, piles of folded, fluffy towels and crisply-pressed shirts.

Results that will make you both proud and satisfied.

From washing and drying to ironing, pressing and folding, this book will help you to rediscover these simple pleasures in life.

Bed linen, table linen, towels and clothes

Laundry can seem a never-ending chore. However, if you approach it in a methodical way and have some good accessories to help you, you will start off on the right foot and make the task simple and easier to deal with.

Using the correct tools, materials and equipment, you may have to adapt your washing

methods according to the materials and equipment that are available. Remember different washing linens and respect the rules you may follow

The most delicate fabrics need to be washed by hand instead of a washing machine. Always read the wash care label to check how an item should be washed. It is recommended using a specialized detergent for hand –washing, which will be gentler on delicate fabrics than standard detergents. Such products are readily available from most supermarkets or online.

A washing machine, or washer, is a machine designed to clean laundry, such as clothing, towels and sheets. The term is mostly applied only to machines that use water as the primary cleaning solution, as opposed to dry cleaning (which uses alternative cleaning fluids, and is generally performed by specialist businesses) or even ultrasonic cleaners

Washing is one way of cleaning and washing machine is machine designed to clean laundry, i.e. clothing and other house hold textile such as towels and sheets.

Once you have washed your laundry, spin dry to remove as much water as possible. Line drying will give you the freshest smelling results, but a tumble dryer or drying rack is often most convenient, especially in wet weather.

After washing the linens, you have to dry them in order to remove the residual moisture from clothing or fabrics, generally shortly after being cleaned in a washing or washing/drying machine. Most dryers consist of a rotating drum through which high temperature air is circulated. The hot air removes the moisture from the fabric through evaporation. The drum is rotated relatively slowly in order to create a tumbling effect. In most cases, the drum is belt –driving by an induction motor. There are generally three drying methods: air drying, sunrays drying and drying machine

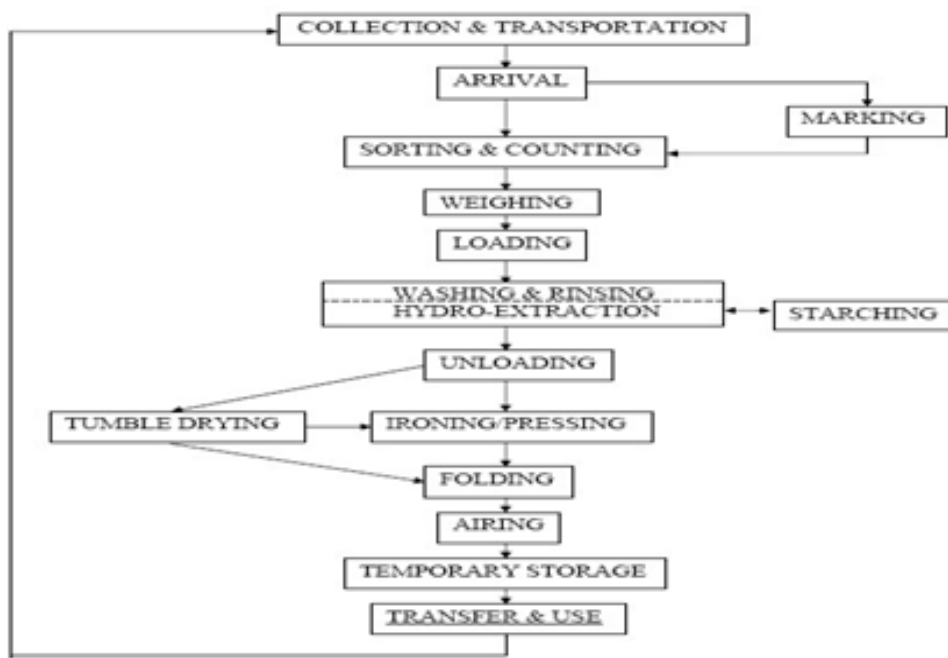
What more pleasing sight is there than a neatly folded pile of freshly –ironed laundry? With pristine clothes in your wardrobe /closet, clean sheets on the bed and fresh bathroom and dish towels on hand, you will feel revived and your home will look luxurious. After drying the linens, to make them smooth you can iron them with ironing box on ironing table or press them with pressing machine.

A little time taken to care for clothes and linens is time well spent. Once they have been washed and ironed, it’s worth folding them correctly so they fit in your drawers, dressers and cupboards easily, without getting crumpled.

3.7. Additional information

Process of laundering

The following flowchart shows the process of laundering in a chronological order:



3.8. Answers of end unit assessment

1. The teacher should tell student to bring dirty clothes from their family and correct others from the school.
2. Tools, materials and machines needed for laundry are: Basin, buckets, jerrican, soap, powder detergents, cloths, cloth line, cloth pegs, iron and ironing board, cloth hangers, washing machines, tunnel washers, tumble drying machine, laundry line, calendar machine, pressing machines, linen store sheet
3. Laundering Techniques
 - a) Washing linen with hand procedures: collection & transportation, arrival, sorting, weighing, loading, washing and rinsing.
 - b) Washing linen with machine procedures: Flush › Suds › Bleach › Rinse › Sour & Soft › Extract

3.9. Additional activities

3.9.1 Remedial Activities

- 1) Outline all tools, material needed for linen hand washing?
- 2) List all procedures needed for linen hand washing

Answers

1. Tools, materials and machines needed for linen hand washing are: Basin, buckets, jerrican, soap, powder detergents and cloths.
2. Procedures needed for linen hand washing are: collection & transportation, arrival, sorting, weighing, loading, washing and rinsing.

3.9.2 Consolidation activities

- 1) Give the names of machines used for linen washing

Answer: Commercial washing machine and tunnel washer machine

- 2) Discuss on linen washing procedures with machine:

Answer: Flush › Suds › Bleach › Rinse › Sour & Soft › Extract

Additional stages in the wash cycle

These are essential where there is a specific type of soiled or the articles are heavily soiled:

Soak › Break › Carryover Suds (Intermediate Rinse) › Intermediate Extract › Starch (Sizing)

- 3) Highlight all methods used for drying linen

Answer

There are 3 methods for drying linen such as air drying, sunrays drying and drying machines.

3.9.3 Extended activities

1) Fill the table below:

Type of linen	No of linens	Type of store
Towels		
Shirt		
Trouser		
Bed sheets		
Lingerie		
Hosiery		
Jacket		
Blouse		
Sweaters		
Dresses		

Answer

Linen store sheet

Type of linen	No	Type of store
Towels	1	Linen shelves
Shirt	2	Hanger
Trouser	3	Hanger
Bed sheets	4	Linen shelves
Lingerie	5	Linen racks
Hosiery	6	Linen line with peg
Jacket	7	Wardrobe /closet
Blouse	8	Hanger
Sweaters	9	Drawers
Dresses	10	Dressers

2) Point out all methods used for folding a pressed shirt

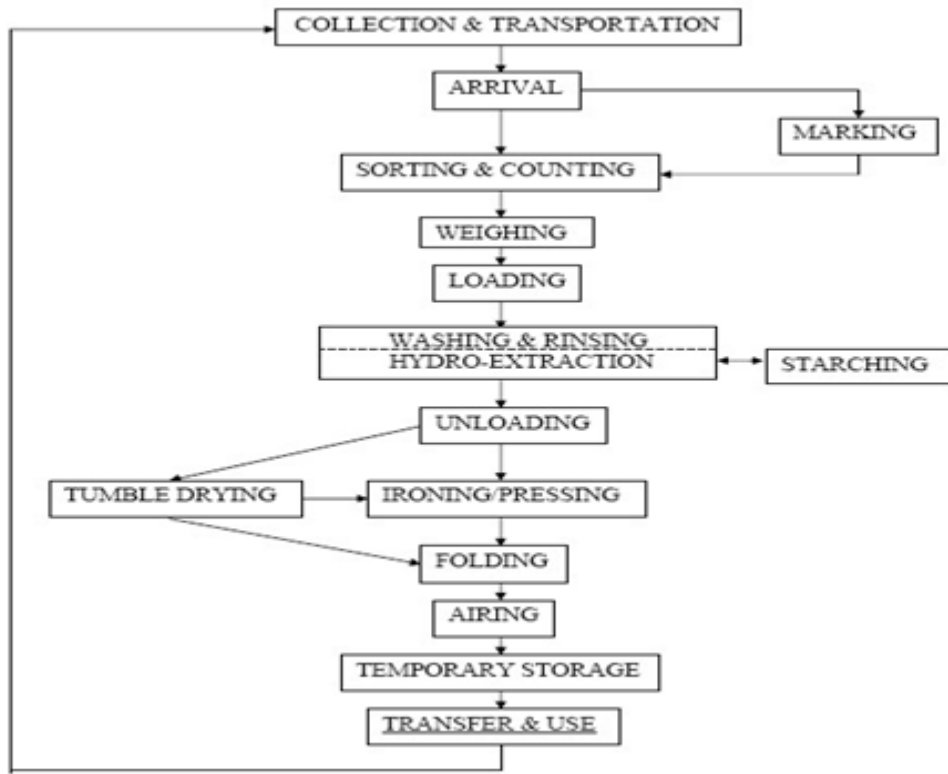
Answer

These are activities for folding a shirt: button the front, turn the front down, place back the shirt board centrally level with shoulder, fold the side of the body to center over board, fold sleeves respectively, fold the tail over cuff if possible, fold body in half, bring the button edge levels with shoulder, turn the shirt front side up, insert collar stiffener and place in the plastic bag, collar facing the end.

3) Design flowchart which shows all laundering process in a chronological order

Answer

The following flowchart shows the process of laundering in a chronological order:



UNIT 4: SEWING MACHINE

4

4.1. Key unit competence

Learners should be able to understand how a sewing machine works and be able to maintain it properly.

4.2. Prerequisite

Students will learn better the parts of sewing machine if they have understood on: open seams, french seams, overlaid, machine fell seam and particularly classifying techniques of seams. The teacher will help learners to recap the concepts above.

4.3. Cross-cutting issues to be addressed

a) Inclusive education

This unit involves a number of description activity and researches on types of seams and practices of techniques of seams. This may be challenging to students with special educational needs especially students with visual impairment or visual difficulties. However, the teacher can make arrangements for them like “grouping students”. Students with special educational needs are grouped with others and assigned roles basing on individual student’s abilities.

Visual difficulties

When writing on the blackboard, write in large, clear writing, or provide a copy in big character when it comes to take hand-out notes on subjects. Read out what you are writing, for the benefit of those who are not able to see the blackboard clearly. If learners are sharing textbooks, try to arrange for those with visual difficulties to have their own copies, as far as this is possible.

Give extra time for them to write summary notes or write down observations after experiments.

Every important point is written and spoken loudly. Remember to repeat the main points of the lessons.

For students with visual impairment the teacher can write for them a summary using the braille alphabet if possible.

Mobility difficulties

These include learners in crutches, wheelchairs, or with walking difficulties. The Teacher should encourage students to look out for and help those classmates who are with disabilities. Ask their fellow learners to help them with their notes, if their conditions hinder them from writing well.

b) Gender

During group activities, try to form heterogeneous groups (with boys and girls) or when students start to present their findings encourage both (boys and girls) to practice.

a) Financial education

As the unit deals with the sewing garment in our government policy (made in Rwanda), the teacher will figure out the learners' attention on the economic impact of the sewing garment items applying skills and knowledge of sewing.

F) Peace and values education

During group activities, the teacher will encourage learners to help each other, to respect opinions of colleagues and use safely materials and equipment provided.

4.4. Guidance on the introductory activity

For this activity, the facilitator forms groups of two (pair) students that are as heterogeneous as possible. He/she lets them to do the introductory activity in the student's book on page 124. The facilitator makes sure that each student from each group performs the activity on sewing machine. The facilitator provides a clear sheet for reporting on the main parts of the sewing machine and sewing techniques.

The facilitator asks random representative of two or three groups to present their findings. After presentation the facilitator asks the students to judge the findings from different groups and harmonize their work. And ask them what they predict to learn in the current unit. The teacher summarizes their findings and introduce the new lesson.

4.5. List of lessons

No	Lesson title	Learning objectives	Number of periods:10
1	Basic parts of sewing machine	<p>Identify parts of the sewing machine.</p> <p>Describe parts of the sewing machine</p> <p>Adjust different sewing machine parts accordingly.</p>	2
2	Designing and cutting of laptop bag pieces	<p>Identify different types of seams</p> <p>Explain laptop bag making process</p>	2
3	Making a lap bag (laptop bag)	<p>Make a laptop bag.</p> <p>Ability to make a laptop bag and appreciate the end product</p> <p>Explain maintenance procedures of sewing machine</p> <p>Maintain sewing machine according to maintenance procedures</p> <p>Habit to maintain sewing machine after using it.</p> <p>Maintain sewing machine according to maintenance procedures</p>	2
4	Designing and cutting pencil pocket pieces	<p>Explain a pencil pocket making process</p>	2

5	Making a pencil pocket bag	<p>Make a pencil pocket bag.</p> <p>Ability to make pencil pocket bag and appreciate the end product.</p> <p>Maintain sewing machine according to maintenance procedures</p>	1
6	Assessment		1

Lesson 1: Basic parts of sewing machine

a) Pre-requisites

The concept of the sewing machine

b) Teaching resources

Pictures of the sewing machine, books, flipcharts, blackboard, needle, chalk, and sewing machine tool kit and a sewing machine.

c) Learning activities

The teacher guides students to observe the different parts of the sewing machine using different resources such as physical sewing machine or pictures of sewing machine on page 125 student book or books. The teacher guides students to label the different parts of the sewing machine and make description of each part of the sewing machine by using either books or search engine.

Answer:

1. Observe the parts of the sewing machine on the page 125 student's book
2. The letters correspond with parts of the sewing machine as follows:

A: Balance wheel

B: Sewing thread

C: Face plate

D: Presser bar lifter

E: Stitch regulator

F: Belt

G: Bed slide

The sewing machine is composed by different parts described as follows:

a. Lower parts of sewing machine and their functions

- **Band wheel** leads the balance wheel through the belt connection.
- **Band wheel crank** moves the band wheel.
- **Pitman rod** holds the treadle to band wheel crank.
- **Belt guide** holds the belt to its place.
- **Belt shifter** removes the belt from the wheel.
- **Dress guard** protects the dress from the wheel.
- **Treadle or foot pedal** is where the feet are stationed to drive the band wheel through the pitman rod. It regulates the starting, running, and stopping of the machine
- **Legs** support the cabinet of the machine.

b. Upper parts of sewing machine (function and description)

Bed is the flat portion of the machine and beneath is the feed dog where it is mounted, and the shuttle and lower thread are placed. The role of this part is to stabilize the machine to rest in a permanent place.



Fig4: Bobbin case

Bobbin case is where the bobbin lives. It is a device which holds the bobbin and provides tension to the lower thread. As the needle thread is pulled around bobbin case, it wraps around the bobbin thread, and pulls it up through the needle plate.

Bobbin Cover covers the bobbin and bobbin case in the machine.



Figs: Bobbin winder

Bobbin Winder controls the bobbin while winding thread. A simple mechanism used for winding thread on the bobbin. During bobbin winding should keep medium speed. If it is faster, then it can stretch the thread out or break.



Bobbin is a low spool that provides the lower thread. A stitch is formed by looping the bobbin thread and the needle thread together

Fig6: Bobbin

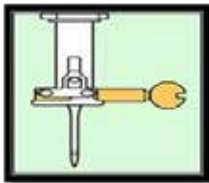
Face plate is a cover which on removal gives access to the oiling points on the needle bar, presser bar and take-up lever.



Feed Dogs are little pieces of textured metal that move the fabric during sewing.

Fig7: Feed dog

Head: The complete sewing machine without cabinet or carry case.
Needle bar is a steel rod to keep the needle at one end with the help of a clamp. Its main function is to give motion to the needle.



Needle Clamp holds and tightens the needle. It holds the needle in its actual place.

Fig8: Needle clamp

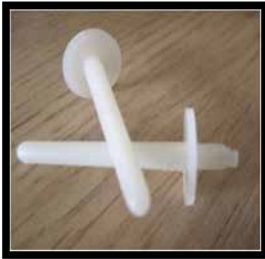


Needle is a very fine slender piece of metal with a point at one end and a hole or eye for thread at the other. Needle is used to form a stitch in the garments.

Fig9: Needle

Stitch selector determines the stitch type such as straight stitches or an embroidery stitch or zigzag.

Presser Foot holds the fabric in place while sewing. Presser foot attach to the machine shank, which is either “High”, “Low”, or “Slant”. Attach the appropriate presser foot for the selected stitching.



Spool pin for bobbin winding

Spool of thread is placed on this at the time of bobbin winding. Spool pin is situated in top of the sewing machine. Main function of spool pin is to hold thread packages. It can be horizontal or vertical in place.

fig 10: spool pin

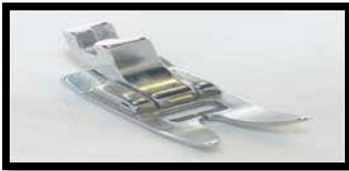


Fig10: Presser Foot

Pressure Foot Lever/Lifter

The primary function of this part is to raise or lower the presser foot. Lowering the foot engages the tension discs around the thread. You can control how much pressure the presser foot exerts by using the machine's pressure adjustment.

Reverse Lever

The lever works to depress the lever which enables the mechanism to move backward or in reverse.

Slide Plate is a movable rectangle plate that covers the bobbin case. which facilitates the removal of the bobbin case without lifting the machine.

Stitch regulator controls the length and width of the stitches on the fabric. This determines how wide or narrow you want your stitch. And how length of stitch you want.



Fig12: Take up Lever

Take up Lever is an important part of threading the sewing machine and knowing the upward position of your sewing machine needle. This lever moves up and down with the needle and keeps the tension correct.

Tension Disc

The two concave discs put together with the convex sides facing each other. The thread passes between the two. Tension disc controls the looseness and tightness of stitches.

Thread cutter

Many modern machines have a tiny blade attached to the left side of the machine to conveniently cut thread tails instead of looking for scissors after every seam. It is kept built-in the machine. It's usually located behind the needle. **Threadguide** keeps the thread in position and guides the thread from the spool to the needle. **Throat plate or needle plate** is a semi-circular disc plate. This metal plate covers the feed dogs and bobbin casing. It typically has markings that can be used to guide the fabric through at a specific seam allowance. The etching helps keep seams straight.

Lesson 2: Designing and cutting of laptop bag pieces

a) Prerequisites

Types and function of seams, seaming techniques (unit 4 S2)

b) Teaching resources

Measurement instrument, material for sewing and cutting tool

c) Application activity

The teacher guides students to perform the application activity 1, page 132-133 student book. The teacher assesses the designing and measuring process and cutting of the cloth material.

Answer to application activity1 (page 132-133 student book)

Designing a lap bag frame involves different activities such as selecting the material, laundering and ironing the fabrics, measuring the size of the laptop, cutting the layers of the cloth and cutting two thickness of quilt batting the size of the smaller piece of material then cutting the layer of the interfacing material.

Lesson 3: Making a lap bag (laptop bag)

a) Prerequisites

Students will learn better the sewing machine if they have understood on the types of seams and techniques of seams (home science unit.4 S2).

Basic sewing materials, tools, equipment and sew basic stitches (home science unit 4 S1)

b) Teaching resources

Sewing machine, sewing supplies, books of designing fashion, flipcharts and blackboard.

c) Application activities

The teacher sets the instructions to follow in making the laptop bag and guides learners to perform the activities of making the exterior of a laptop bag, the interior of the laptop bag, making the handles and assembling the laptop bag.

- Making the exterior of the laptop bag

The teacher guides students to perform making the exterior of the laptop bag through the given steps that are in the student book page 134-135 that help to achieve the goal of the lesson.

- Making the interior of the laptop bag

The teacher guides students to perform making the interior of the laptop bag through the different steps, page 136-139 student book that help to achieve the goal of the lesson

- Making the handles of the laptop bag

The teacher guides students to perform making the handles of the laptop bag through the different steps, page 135-136 student book that help to achieve the goal of the lesson

- Assembling the laptop bag

The teacher guides students to perform assembling the laptop bag through the different steps, page 135-136 student book that help to achieve the goal of the lesson.

After performing all the sewing activities, the teacher guides students to perform the sewing machine maintenance by cleaning (page 142 student book) and oiling (page 144-145 student book) the sewing machine.

Lesson 4: Designing and cutting of pencil pocket bag pieces

a. Pre-requisites

Types and function of seams, seaming techniques (unit 4 S2)

b. Teaching resources

Measurement instrument, material for sewing and cutting tool

c. Application activity

The teacher guides students to perform the application activity 6, page 135-136 student book. The teacher assesses the designing and measuring process and cutting of the

cloth material.

Answer to application activity6 (page 135-136 student book)

Designing a pencil pocket bag frame involves different activities such as deciding the fabric type, deciding upon the size and shape, deciding on which side to put the zipper.

Lesson. 5: Making a pencil pocket bag

a) Prerequisites

Students will learn better the sewing machine if they have understood on types of seams and techniques of seams (home science S2 unit.4).

b) Teaching resources

Sewing supplies, sewing machine, books on design and fashion of a pencil pocket bag, pieces of a pencil pocket bag flame, flipcharts, and blackboard.

c) Application activities

The teacher sets the instructions to follow in making the pencil pocket bag and guides learners to perform the activities of sewing the pencil pocket bag such as: holding the two pieces of fabric in place with sewing pins, attaching the zipper to both pieces of fabric, stitching with hands or machine the remaining sides of the case together, unzipping the zipper then the pen and pencil bag is done.

After performing all the sewing activities, the teacher guides students to perform the sewing machine maintenance by cleaning (page 139 student book) and oiling (page 140 student book) the sewing machine.

4.6. Summary of the unit

A sewing machine is a machine which is mechanically driven needle used to stitch materials together with thread. It is designed to join pieces of fabric or leather by means of either a lockstitch or a chain stitch.

Sewing machine makes a basic running stitch the same way with two sources of thread. The top needle takes the thread down into the fabric. It is caught and loops via the bobbin apparatus and then pulled back up. "The feed dog" moves it along and the next stitch begins.

Making your own **pencil bag** is a great way to use up scrap fabric that you love but that isn't large enough for bigger sewing projects. It's also an eco-friendly option for sewing different small totes and bags and a reflection of your own style.

Note: Sewing a lap bag is the basic project that guide any beginner to sew any other

small patterns like hand bag, bible bags, filing bag, etc.

4.7. Answers of end unit assessment

1) By making a smart phone bag we use different steps such as, preparing and designing a smart phone bag design (frame) and decide the fabric type before (cottons work well), decide upon or design the size and shape, decide on which side you will place a zipper, cut the fabric into two equally sized square or rectangle shapes, hold the two pieces of fabric in place with sewing pins, attach the zipper to both pieces of the fabric, at the side you've chosen to have it, with right sides together, stitch with hands or machine the remaining three sides of the case together, double stitch the seams to ensure strength, unzip the zipper, turn the case right side out and make sure you cannot see the part that you sewed and at this step, now the bag is done.

2) After finishing your sewing project care and maintain your machine by **cleaning** and **oiling** to make sewing machine running smoothly. For getting successful cleaning and oiling work you will apply the following activities: un-plugging the machine, reading the sewing machine user manual for cleaning and oiling, removing the presser foot and needle, removing the throat/needle plate and clean with your brush, remove the bobbin casing and clean with your brush, clean any tough spots with alcohol, replace your light bulb (if necessary), read sewing machine user manual for oiling, replacing the light bulb (if necessary), reassembling the machine. Once you have cleaned and oiled the sewing machine, reassemble your machine. Refer to your manual (photos are helpful) for help with reassembling.

Note: Try a couple runs on a scrap of fabric to make sure everything is running smoothly

3) **Balance wheel:** Balance wheel sets the mechanism in motion. It is used to manually raise and lower the needle. This wheel is driven by the motor but may be turned by hand to adjust sewing needle height.

Bobbin Case: The bobbin case is where the bobbin lives. It is a device which holds the bobbin and provides tension to the lower thread.

Treadle or foot pedal is where the feet are stationed to drive the band wheel through the pitman rod. It regulates the starting, running, and stopping of the machine.

4) Importance of maintaining a sewing machine.

Sewing machine should be maintained to make it run smoothly in all its operations

Maintenance of sewing machine is important because it increase the use life.

Maintenance of sewing machine allows the machine to not ruin the sewing project (work)

5) The advantage of this sewing session in my future:

This lesson will help to self-employ in sewing project that focus empowering made in Rwanda.

I will apply my sewing skills to solve my financial issues and I will sew some garment and hand bags for my family members.

4.8. Additional activities

Extended activities

After finishing your sewing project care and maintain your machine by cleaning and oiling to make sewing machine running smoothly

Answer: For getting successful cleaning and oiling work you will apply steps in student book page 144-145

Consolidation activities

Explain the importance of the following parts of sewing machine you have used (sewing needle, bobbin, balance wheel, treadle or foot pedal).

Answers

Balance wheel: Balance wheel sets the mechanism in motion. It is used to manually raise and lower the needle. This wheel is driven by the motor but may be turned by hand to adjust sewing needle height.

Bobbin Case: The bobbin case is where the bobbin lives. It is a device which holds the bobbin and provides tension to the lower thread.

Treadle or foot pedal is where the feet are stationed to drive the band wheel through the pitman rod. It regulates the starting, running, and stopping of the machine

UNIT 5: FOOD PRESERVATION AND STORAGE

5

5.1. Key unit competence

Learner should be able to understand and comply with food preservation and storage procedures.

5.2. Prerequisite

Students will learn better the food preservation and storage if they have understanding on: The food hygiene and safety techniques, food nutrients selection principles, food safety techniques and food nutrients utility and meal plans. The teacher will help learners to recap the concepts above.

5.3. Cross-cutting issues to be addressed

a) Inclusive education

This unit involves increasing techniques used for preserving and storing all kinds of food appropriately to maintain good attitudes while handling food in real life. It may be challenging to students with special educational needs especially students with visual impairment or visual difficulties. However, the teacher can make some arrangements like:

Grouping students with special education need with others and assign the roles basing on individual student's disabilities

Visual difficulties

When writing on the blackboard teacher writes in large, clear writing, especially when it comes to notice key words. Read out what is being written, for the benefit of those who are not able to see the blackboard clearly. About sharing of the textbooks teacher try to arrange for those with visual difficulties to have their own copies, as far as this is possible and use of braille in case of students with blindness. He/she gives extra time for them to write summary notes or write down observations after experiments. Every important point is written and spoken.

Hearing difficulties

When teaching, speak clearly and ensure that all the learners can hear your voice. Avoid speaking hurriedly as this will make it difficult for learners with hearing difficulties to make sense of what you are saying.

Mobility difficulties

These include learners in supports, wheelchairs, or with walking difficulties. Encourage other learners to look out for and help their classmates.

Reading difficulties

Learners with this kind of difficulties struggle to make sense of words or understand written work and take longer to read than other learners. Encourage them to pay careful attention during class time and participate for example by asking questions, answering questions, so that they can make the most of what they hear and observe. Instead of repeating word for word what is in the textbook, simplify the concepts to ease their understanding, so that when they have already understood.

b) Gender

During group activities try to form heterogeneous groups (with boys and girls) or when students start to present their findings encourage both (boys and girls) to present.

c) Peace and values education

During group activities, the teacher will encourage learners to help one other and to respect opinions of colleagues.

d) Standardization culture

It is intended that the adoption of standardization culture should have an impact upon health improvement, economic growth, industrialization, trade and general welfare of the people. While education is the foundation and strength of our nation, standards are one of the key pillars of sustainable economic development. Food preservation and storage ensures food safeties to lives.

e) Environment sustainability

This unit involves increasing techniques used for preserving and storing all kinds of food appropriately to maintain good attitudes to protect environment while handling food in real life.

5.4. Guidance on the introductory activity

For this activity, the teacher forms groups of 4 to 5 students that are as heterogeneous as possible.

He/she lets them makes the introductory activity, page 148 student book and makes sure that each student from each group participates actively.

After group discussion, the teacher asks randomly representative of all groups to present their findings for any consolidation where it is necessary. All the class, guided by the teacher summarizes the group work findings at the sometime the expectations on what to learn in the current unit is set. Then, the teacher introduces the new lesson.

5.5. List of lessons

#	Lesson title	Learning objectives	Number of periods
1	Receiving food items	Differentiate receiving criteria of foods items Organize different food items according to receiving criteria Appreciate the arrangement of proper receiving of food items	2
2	Preservation and storage of dry goods	Apply storage procedures on dry food items Comply with the dry food items storing procedures	2
3	Preservation and storage of perishable food	Apply storage procedures on perishable food items Comply with the perishable food items storing procedures	2

4	Preservation and storage of frozen food	Apply storage procedures on frozen food items Comply with the frozen food items storing procedures	2
5	Assessment		1

Lesson 1: Receiving food items

This is the first lesson of unit 5 and is a single lesson. That is to say it has only 2 periods (80 minutes). The first lesson also covers the introduction of the whole unit.

a) Prerequisites

Students will learn better the receiving of food items, if they have understanding the matter from the previous class (S1& 2) on: classification of food items, the food hygiene and safety techniques, the food nutrients selection principles, the food safety techniques and the food nutrients utility and meal plans. The concept of three temperature ranges of food items delivery, checking a food delivery.

It will be learned more and take care on good understanding of this lesson.

b) Teaching resources

Utensils, Fridge, Cooking stoves, food selves, food thermometer, food warmers cupboards, stainless working tables, cleaning agents and materials kitchen sanitizer, gloves, cutting boards, hair nets, garbage bags, dust bins, containers and kitchen uniforms.

Use books especially books of home science, flip charts and chalkboard.

c) Learning activities

Before introducing the lesson, teacher will have to introduce the whole unit. Guide learners to attempt learning activity 5.2, page 154 Student book.

Teacher asks students in group of 4-5members, carefully to make description of food and storage by respecting the guidelines that are given (page 156, student book).

Teacher invites all groups to present their findings and consolidates them, then records the main points as lesson summary on the chalkboard or flipchart.

Answers to activity 5.1

1. Receiving stock of food

- Food deliveries
- Three temperature ranges of food item delivery
- Checking a food delivery

2. Picture of checking a food delivery

- A. The vehicle delivering the food items (page 149 student book)
- B. The temperature of delivery food items (page 149 student book)
- C. The packaging (page 150 student book)
- Dothan labelling (page 150 student book)

3. Stock rotation (page 150 student book)

4. Types of storage (page 151 student book)

a. Dry store

b. Refrigerator

c) Freezer

5. Stocktaking of food items (page 153 student book)

Lesson 2: Preservation and storage of dry goods

a) Prerequisites

Students will learn better the preservation and storage of dry foods, if they have understood on how to take care of food deliveries, determine three temperature ranges of food item delivery for good verification, checking a food delivery and make control of stock rotation for food (previous lesson of unit 5).

b) Teaching resources

Photo of dry food storeroom, pictures of mise en place of different dry foods, food shelves, kitchen uniform, dry goods containers, containers and labels and stocktaking inventory sheet, books of home science, flip charts and chalkboard.

c) Learning activity

In group of 4-5 members, the teacher guides learners to attempt learning activity 5.2 on page 154 students' book by using home science books or search engine. The facilitator asks learners to present their findings and consolidates them.

Answers to learning activity 5.2

1. Dry foods storage.
2. See the answer on student book page 156-160
3. The most essential points to be observed in the care and control of the dry storeroom are:
 - The area should be dry and cool to prevent spoilage and the consumable of canned goods. The ideal temperature range is 10°C to 15°C (50°F to 70°F).
 - The storeroom should be easy to keep clean and free from rodents and vermin. This means all wall, Ceiling, and floor openings should be sealed and protected to prevent access.
 - It should be designed so it is easy to arrange and rearrange dry goods to facilitate stock rotation
4. The ideal temperature range is 10°C to 15°C (50°F to 70°F).
5. General Recommendations for Dry Storage - “Do’s” and “Don’ts”
 - Provide a building for storage which is secure and can be adequately locked:
 - Ensure that its roof will protect the feed from rain and that surface water cannot enter the store.
 - Provide it with ventilation points (windows are not necessary or recommended).

Ventilation entry points should be low on the side facing the prevailing wind and high on the opposite side.

- Orient the building so that one of the long sides faces the prevailing wind.
- Ensure that all entry points are meshed to prevent entry by birds, rats etc. Do not accept deliveries of raw materials which are visibly damp or moldy or which are obviously infested with insects.

Lesson 3: Preservation and storing perishable food items

a) Prerequisites

The students will learn better preservation and storage of perishable food, if they have understood how to identify dry foods, the most essential points to be observed in the care and control of the dry food storeroom, general recommendations for dry storage - “Do’s” and “Don’ts”, the ideal temperature range for dry goods (previous lesson about preservation and storing dry food items).

b) Teaching resources

Fridge or its photo, pictures of mise en place of different perishable foods, kitchen uniform, perishable food containers, labels and stocktaking inventory sheet. Use them on preserving and storing perishable food accordingly, books of home science, flip charts and chalkboard.

c) Learning activity

The facilitator divides the class into groups of 4-5 members and guides learner(s) to perform the activity 5.3, page 153 student book. The teacher asks learners to present the results from group work activity and consolidates their findings.

Answers to activity 5.3

1. Domestic refrigerators
2. On choosing of refrigerator the following points should be considered:
 - Size and capacity required.
 - Storage arrangements inside the refrigerator.
 - Space available in the kitchen.

- Star rating for frozen food compartment.
- Workmanship on the refrigerator and its finish.
- Additional features, e.g. automatic defrosting, digital temperature display.
- Amount of money available.
- Many people find that a fridge/freezer suits their requirements for cold storage without taking up too much space in the kitchen.

About care of a refrigerator

Defrosting:

- Manual defrosting
- Push-button defrosting
- Automatic defrosting
-

3. Storing food in a refrigerator

It is advisable to wrap food before placing it in the refrigerator, because:

- Food loses moisture as it cools down, so unwrapped food will dry out.
- Some foods absorb odors while others give off odors and this can spoil the flavor of the food.
- Some foods, e.g. meat and fish, should not be wrapped in plastic in the refrigerator as they tend to discolor and develop off flavors and odors without a layer of air surrounding them. Such foods should be stored in a glass or ceramic dish.

Note:

- **Store perishable foods in the refrigerator or freezer.** - Meat, poultry, fish, eggs, and dairy products (milk, cheese, yogurt, etc.) are perishable foods that spoil easily. They should be stored in the refrigerator. But don't expect the refrigerator to prevent spoilage altogether.
- Perishable foods are those likely to spoil, decay or become unsafe to consume if not kept refrigerated at 40 F° (4°C) or below or frozen at 0 F° (-18 °C) or below. Examples of foods that must be kept refrigerated for safety include meat, poultry, fish, dairy products, and all cooked leftovers.

4. For the appropriate storage procedures that can be followed for perishable foods storage. See answer in student book page 161-165.

Lesson 4: Preservation and storage of frozen food items

a) Prerequisites

Students will learn better the preservation and storage of frozen food items, if they have understood the concept of food hygiene and food safety techniques (unit 5 S1 & 2), also previous lessons (2 and 3, unit 5 S3).

b) Teaching resources

Freezer, picture on storage of frozen food items, kitchen uniform, frozen food containers and others containers, labels and stocktaking inventory sheet, books especially books of home science, flip charts and chalkboard.

c) Learning activity

The teacher guides learners to perform the activity 5.4 on page 166 students' book. In group of 4-5 members this activity allows students to identify different frozen food and apply the guidelines on their preservation and storage.

After plenary on preservation and storage of frozen foods the teacher consolidates students' findings and guides all the class to make the summary of the lesson.

Answers

Preserve and store frozen food delivery as frozen chicken, frozen vegetables, frozen fruits and frozen fish:

1. a) The required storage equipment used for preserving and storing frozen food is a freezer

b) The critical control points to remember while storing frozen food are:

- Frozen food must be kept at -18°C or lower to maintain its quality.
- Keep these factors in mind when storing frozen foods:
- Fruits and vegetables that are received frozen will kept for months if they are properly wrapped. Fish and meat properly wrapped also have a relatively longer freezer shelf life.

- Freezing fresh fruits and vegetables on the premises is time consuming and may be too expensive to consider. Fresh fruits must be properly prepared for freezing otherwise it will not be stored well.
- All frozen products that are not properly wrapped will develop freezer burns, which are a loss of moisture that affects both the texture and the flavor of the food. A common sign of freezer burn is a white or grey dry spot developing on the surface of the frozen product. Meat is particularly susceptible to freezer burn.
- Rotating stock is extremely important with frozen foods. Such rotation is difficult in standard chest freezers as it often means that old stock must be removed before new stock is added. The temptation with frozen foods is to develop the unacceptable habit of using the last item bought first, instead of FIFO (first in, first out).

Note: Bacteria, although they are usually the first agents to begin the decomposition process, are the hardest to be detected. Their presence usually only becomes noticeable after decomposition has advanced to the stage where unpleasant odors are produced.

When food is deteriorating, you will notice changes in its color, odor, and taste.

Examples include:

- Fruit goes soft, gets darker, and quickly rots.
- Vegetables start wilting and then become slimy and rotten.
- Butter, cheese, and dairy products get darker and develop a sour smell.
- Meat changes gradually at first, but then becomes darker and begins to smell “off.”
- Slime and mould appear.

2. Choice of food for freezing

Most foods can be frozen, but some are more suitable than others. The length of time that food can be stored varies, and no food can be frozen indefinitely. Once the food has passed its storage life, e. g the length of time it can be kept frozen in perfect condition, chemical changes start to affect the flavor, quality, and edibility of the food.

Some foods which are available for most of the year and have a long storage time in a fresh state are not worth freezing, e .g potatoes.

Some foods react poorly to freezing and are therefore unsuitable. These include:

- **Vegetables**

Lettuce, cucumber, and radish become mushy and discolored on thawing, as their high-water content results in large numbers of ice crystals being formed. These rupture the cells, even if quick-frozen.

Boiled potatoes become leathery when thawed, if frozen whole.

Celery has high water content and loses its structure on thawing, but it can be used as a cooked vegetable in casseroles, soups, etc.

- **Fruit**

Strawberries tend to become mushy on thawing, due to ice crystals rupturing their cells, but they can be used in fruit salads, flans, soufflés, mousses, etc., as their flavor is not impaired.

Banana, avocado and pears turn black if frozen, because of enzyme activity.

Pears tend to lose their texture if frozen, because of the effect of ice crystals on the cells.

- **Dairy products**

Whole pasteurized milk (non-homogenized) separate out when frozen.

Cream with less than 40% fat separates (e.g single cream).Whipping or double cream should be whipped lightly before freezing.

- **Eggs**

Whole fresh eggs crack and becomes gluey. However, egg white and yolks can be frozen separately.

- **Mayonnaise separates**

Corn flour-based soups and stews tend to separate.

Icings (except buttercream) crumble and become soggy /moist.

3. Frozen food

Must be kept at -18°C or lower to maintain its quality.

Keep these factors in mind when storing frozen foods:

- Fruit and vegetables that are received frozen will keep for months if they are properly wrapped. Fish and meat properly wrapped also have a relatively long freezer shelf life.

- Freezing fresh fruits and vegetables on the premises is time consuming and may be too expensive to consider. Fresh fruit must be properly prepared for freezing or it will not store well.
- All freezer products not properly wrapped will develop freezer burn, which are a loss of moisture that affects both the texture and the flavor of the food.
- A common sign of freezer burn is a white or grey dry spot developing on the surface of the frozen product. Meat is particularly susceptible to freezer burn.

Rotating stock is extremely important with frozen foods. Such rotation is difficult in standard chest freezers as it often means that old stock must be removed before new stock is added. The temptation with frozen foods is to develop the unacceptable habit of using the last item bought first, instead of FIFO (first in, first out).

Note: Bacteria, although they are usually the first agents to begin the decomposition process, are the hardest to detect. Their presence usually only becomes noticeable after decomposition has advanced to the stage where unpleasant odors are produced.

When food is deteriorating, you will notice changes in its color, odor, and taste.

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- Butter, cheese, and dairy products get darker and develop a sour smell.
- Meat changes gradually at first, but then becomes darker and begins to smell “off.”
- Slime and mould appear.

4. Setting and using freezer

There are principal basic rules to follow for the successful use of a freezer. Specific rules for freezing individual foods are usually supplied in recipe books.

a) Basic rules are:

Freezer only fresh foods.

- Freeze food when it is at the peak of quality
- e.g. when just ripe or ready for eating.

- Once prepared or harvested, freeze the food quickly to avoid deterioration.
- Handle and freeze the food hygienically.
- Use suitable packaging materials and wrap the food properly.
- 6. Pack food in single or multiple portions according to family size and needs.
- Remove as much air as possible from the package before freezing, e.g. by sucking out the air through a straw, to prevent oxidation of the food during storage.
- Label the packs clearly. Keep a record of what has been frozen and when.
- Chill the food in a refrigerator before freezing so as not to increase the temperature inside the freezer too much
- Use the fast freeze switch to reduce the temperature quickly when freezing fresh food.
- Only freeze food item in the quantities recommended by the manufacturer for the capacity of the freezer.
- Store the food only for the recommended storage time
- Aim to use up stocks of food item before they come into to season again.
- Do not allow the temperature of the freezer cabinet to increase above -18°C.
- A thermometer which can be placed inside the freezer is useful for checking this.
- Never refreeze foods that have been thawed/defrosted, unless they have undergone a process of cooking e. g thawed meat made into a casserole can be frozen.

Keep the freezer at 0°F or colder. Defrost the freezer when ice builds up. Provide sufficient freezer space for food, which includes room for cool air to circulate.

Foods frozen at peak quality will taste better than foods frozen near the end of their useful life, so quickly freeze items you don't plan to use in the next day or two. It is safe to freeze foods in their supermarket wrappings. Use these foods within a month or two. Many supermarket wrappings are air permeable. So, for longer storage, overwrap packages with airtight heavy-duty foil, plastic wrap, or freezer paper, or place packages inside a plastic bag.

Proper packaging helps maintain quality and prevent “freezer burn.” Foods do not last indefinitely in a freezer, so they should be used up quickly after they are frozen. As foods go into the freezer, date the packages, and use the oldest items first when taking them out of the freezer.

If frozen food does get “freezer burn,” it is still safe to eat, but it will be dry in spots. Remove freezer-burned portions either before or after cooking the food.

Siting the freezer

For the freezer to operate efficiently it must be placed in a suitable position. The following points should be considered when choosing a site:

- Dampness may damage the motor and the exterior of the freezer, so the site must be dry.
- If air cannot circulate, heat will not be removed from the condenser so the freezer will not work properly. There must be at least 25mm of space around the freezer.
- It must be kept in a cool place. A site that is always hot will cause the motor to work overtime to maintain the temperature inside the freezer.

Suitable sites include:

A cool dry kitchen, Utility room, a dry garage, conservatory, or outhouse spare living-room or bedroom.

Frozen foods should be stored at -18°C (0°F) or lower. If the temperature rises above -18°C , food can become discolored and lose vitamin content.

Lowering the temperature after it has risen does not correct the damage. Examples of perishable foods:

- Vegetables and fruits,
- Meat, poultry and seafood,
- Dairy products and all cooked leftovers.

All these foods mentioned above must be kept refrigerated for safety. Refrigeration slows bacterial growth and freezing stops it.

There are two completely different families of bacteria that can be on food: Pathogenic bacteria is the kind that cause food-borne illness,

Spoilage bacteria is the kind of bacteria that cause foods to deteriorate and develop unpleasant odors, tastes, and textures.

b. Critical control points while preserving and storing frozen food

- Frozen food must be kept at -18°C or lower to maintain its quality.
- Keep these factors in mind when storing frozen foods:

Fruit and vegetables that are received frozen will keep for months if they are properly wrapped. Fish and meat properly wrapped also have a relatively long freezer shelf life.

- Freezing fresh fruits and vegetables on the premises is time consuming and may be too expensive to consider. Fresh fruit must be properly prepared for freezing or it will not store well.

All freezer products not properly wrapped will develop freezer burn, which are a loss of moisture that affects both the texture and the flavour of the food. A common sign of freezer burn is a white or grey dry spot developing on the surface of the frozen product. Meat is particularly susceptible to freezer burn.

Rotating stock is extremely important with frozen foods. Such rotation is difficult in standard chest freezers as it often means that old stock must be removed before new stock is added. The temptation with frozen foods is to develop the unacceptable habit of using the last item bought first, instead of FIFO (first in, first out).

Note: Bacteria, although they are usually the first agents to begin the decomposition process, are the hardest to detect. Their presence usually only becomes noticeable after decomposition has advanced to the stage where unpleasant odors are produced.

When food is deteriorating, you will notice changes in its color, odor, and taste. Examples include:

- Fruit goes soft, gets darker, and quickly rots.
- Vegetables start wilting and then become slimy and rotten.
- Butter, cheese, and dairy products get darker and develop a sour smell.
- Meat changes gradually at first, but then becomes darker and begins to smell “off.”
- Slime and mould appear.

5.6. Summary of the unit

Preservation and storage of food items

Receive food delivery and check them, inspect their quality and store them separately to consider dry goods on one side in dry store room, the ideal temperature range for dry goods is 10°C to 15°C (50°F to 59°F). On other side store perishable food in refrigerator at 40°F (4°C) or below and frozen food in freezer at 0°F (-18°C) or below. Perishable foods

are those likely to spoil, decay or become unsafe to consume if not kept refrigerated or frozen. Frozen food must be kept at -18°C or lower to maintain its quality.

Receiving flow diagram

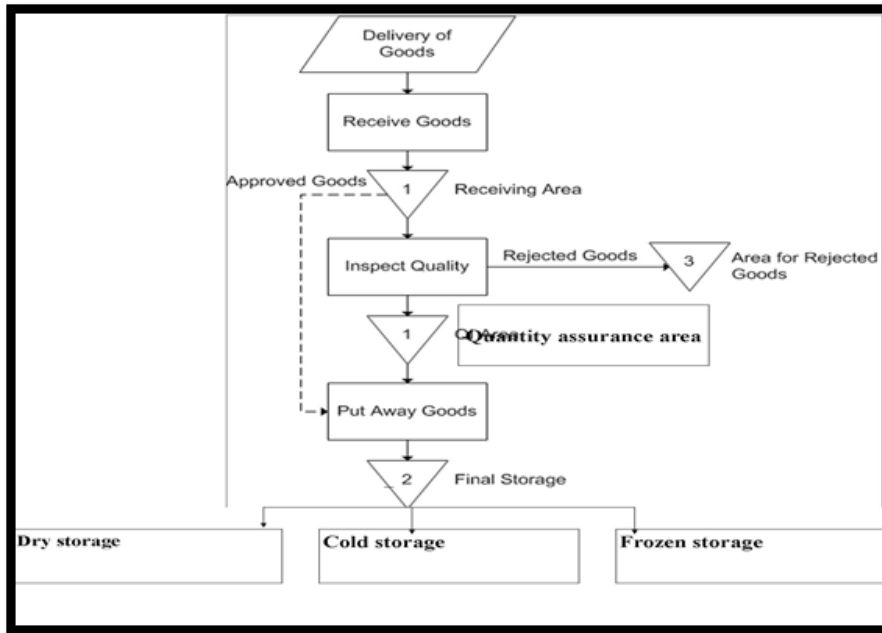


Fig. 5.1: Dry foods in storeroom

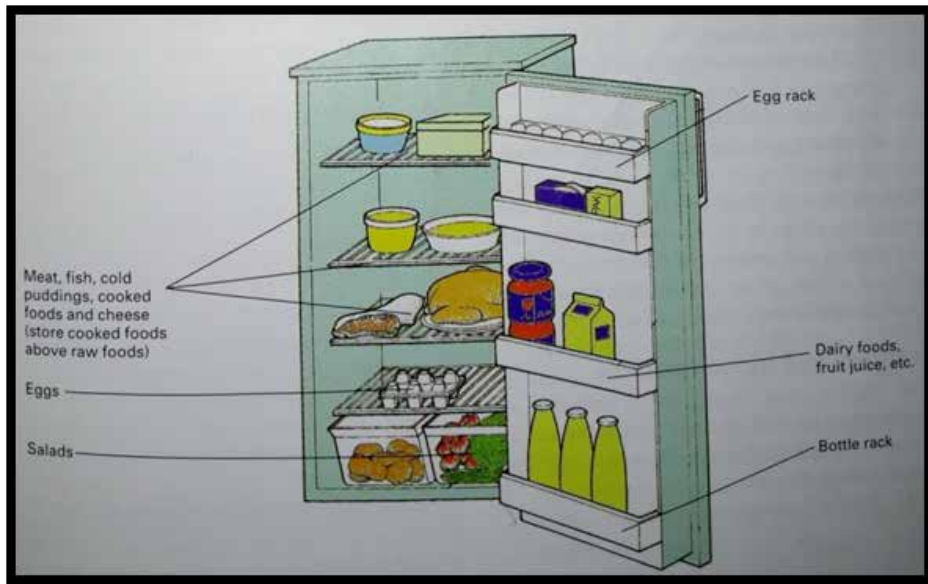


Fig 5.2: Diagram shows the types of food that should be stored in each part of a refrigerator.



Fig 5.3: Freezer and storage of frozen food items in freezer

Freezers and fridge-freezers

The choice, care, and use of freezers are most discussed above. All fridge-freezers are required by law to have a label to indicate how much energy they use.

5.7. Additional information for teachers

Correct delivery and storage of all foods is required under the HACCP (hazards analysis critical control points) procedures and appropriate records should be kept, for example, of temperatures always on delivery.

Some businesses ensure stock rotation of short life items by marking the item with a colored sticker to indicate the day of delivery. This encourages the use of food in the correct order.

Benefits of milk and other dairy products

Milk and dairy products are the major food source of calcium and protein in most developed countries, including Australia.

One litre of milk can provide approximately 1200 mg of calcium, representing more than the daily requirement for calcium. Calcium in milk is in a bio available form and is readily absorbed. The absorption of calcium is enhanced by vitamin A and lactose.

Adequate intake of calcium is necessary for growth in childhood, and for the prevention of diseases like osteoporosis in adulthood. Osteoporosis is characterized by reduced bone mass and deterioration of bone architecture, resulting in bone fragility and subsequently increased risk of fractures. With osteoporosis the bone is normal in composition, but deficient in quantity, quality and structural integrity”.

Calcium is also needed in the diet to control hypertension. The most powerful research strategy is the randomized controlled trial. Findings from such clinical trials indicate that an increased calcium intake lowers blood pressure and the risk of hypertension.

Despite its nutritional value, some people are unconvinced of milk consumption, mainly because of the fat and cholesterol content, and the risk of atherosclerosis (clogging of the arteries) or coronary heart disease.

However, there is insufficient scientific evidence to support this caution. In 2004, Dairy Australia Seminar Series, a review of the epidemiological evidence on milk and cardiovascular disease presented by Professor Peter C Elwood, showed that milk drinkers have a reduced risk of cardiovascular disease compared to those who drink little or no milk, despite the fact that most of the milk drunk was regular fat milk.

Cardiovascular disease (Heart and blood vessel disease) means: also called heart disease includes numerous problems related to the heart and blood vessel diseases are called atherosclerosis.

A heart attack occurs when the blood flow to a part of the heart is blocked by a blood clot.

An ischemic stroke (the most common type) happens when a blood vessel that feeds the brain gets blocked, usually from a blood clot.

Heart failure: This doesn't mean that the heart stops beating. Heart failure, sometimes called congestive heart failure, means the heart isn't pumping blood as well as it should.

Arrhythmia: This is an abnormal rhythm of the heart.

Heart valve problems: When heart valves don't open enough to allow the blood to flow through as it should, it's called stenosis.

Setting and using refrigerator

- Set the refrigerator temperature between 34°F and 38°F to keep food safe.
- Use a refrigerator thermometer (or even a metal-stem thermometer) to check the refrigerator's temperature.
- Place the thermometer in the warmest location of the refrigerator, which is usually towards the front of the unit.
- If raw meat, chicken, or seafood juices spill/fall in the refrigerator, clean them up with soapy water, rinse, then sanitize with a solution of one capful of unscented bleach per gallon of warm (not hot) water.
- The sanitizing solution does not need to be wiped off.

Freezer

- How often the door or lid is opened.
- How much food is stored in the freezer; leaving large gaps increases running costs as the motor has to operate more often to maintain the temperature.

Costs of freezers

The main factors help to determine the running costs of the freezer, including:

- The size and type of freezer
- How often the freezer is defrosted, if too much ice is allowed to build up the work of the motor will be increased.
- Where the freezer is kept, and the climate; more electricity will be used in warm
- Weather to maintain the temperature.
- How often fresh food is frozen, food to be frozen raises the temperature of the freezer and causes the motor to work more often.

To find the storage times for foods, go to the Food Marketing Institute's Web site at food storage information.

5.8. Answers of end unit assessment

1. Receiving stock of food deliveries

a) While receiving the food delivery at your place you need to check the following

The vehicle delivering the food items

- Is it suitable?
- Is it clean inside?
- Is it refrigerated for the delivery of chilled food items?

The temperature of delivery food items

- Are chilled food items below 5°C
- Is frozen produce kept below -10°C?

Note: If the temperature is too high reject the food items.

The packaging

- Is it clean and undamaged?
- Is there any sign of mould or other spoilage?
- Are any containers dented, distended or leaking?
- Are the food labelled appropriately?

The Labelling

Components information of label:

- The name of the concern?
- Description of the food?
- Product code?
- Food list?
- Use by date?
- Weight?

Is the best before or use by date still several days in the future?

Do the food delivered match the delivery note provided in terms of amounts of each food item? (e. g 1 x 25kg container) Specification of each food item? (e.g. King Edward potatoes)

Note:

- While rejecting a delivery make sure the delivery person has agreed to return the food to the supplier.
- The food being returned is recorded on either the delivery note or a separate return do if request slip.
- The delivery person signs the delivery note or return slip, as you may do if requested.
- Giving a copy of the delivery note or return slip to the supervisor as soon as possible. Make sure that the employer does not pay for goods that have been rejected and returned.
- All deliveries should be checked against the delivery note the moved to the appropriate storage area as soon as possible and chilled /frozen food within 15 minutes of delivery .
- Use a probe to check the temperature of food deliveries: chilled food should be below 5°C;
- Frozen foods should be at or below -18°C.
- Many supplies will now provide a print-out of temperatures at which food was delivered.
- Dry goods should be in undamaged packaging, well within best before dates, be completely dry and in perfect condition on delivery.

b) Temperatures ranges for food deliveries are:

1. Ambient: room temperature for fresh dried or tinned food items.
2. Chilled: refrigerator temperature for high-risk fresh or processed foods.
3. Frozen freezer temperature for high-risk food items that are in longer term storage.

c) The stock rotation

It is very important to use food items in the same order that they have been delivered. This is because:

- Food loses quality the longer it is kept
- Food will have to be wasted if it is not used by the best before date
- Food thrown away is money wasted for the business.

Storage systems must ensure that stock is used in the correct rotation .When putting food away it is very important that:

- Older stock of the same item is moved to the front so that it is used first
- New stock is never mixed up with old stock on shelves or in containers.
- One way of remembering stock rotation is to think FIFO (First In FIRST Out) food that is put into storage first should be used first as policy to use older stock first and observe storage dates
- (Best before) on packaged food.
- Best before dates are provided for other items not needing refrigerated storage.
- Use –by dates are given for perishable foods that need refrigeration (this must be observed by the law).
- LIFO (Last In First Out) food that is put into storage last should be used first
- Packaged items should have storage instructions included on the label. These should be followed exactly.

d) The storing of food items

All the methods of storing food are intended to keep the food safe from contamination and to reduce the speed at which spoilage occurs .When storing food ,it must be kept covered, cool and dry.

Types of storage

These may be free-standing or walk-in units. There are three main areas where food is stored:

- Dry store
- Refrigerator
- Freezer.

In general food storage rules are:

- Always protect food from contamination by keeping it in suitable containers.

- Store all food items off the floor on shelves or pallets.
- Do not overload shelves.
- Leave space between items for air to circulate.
- Keep storage areas clean, dry and free from debris at all times.
- Rotate stock correctly.
- Report any signs of pest infestation

Storing stock

A delivery must be put into the appropriate storage as soon as possible after arrival.

Frozen and chilled items must be put away first. Prompt storage is necessary because:

Frozen items must not be left in warm conditions where they could start defrosting

Chilled items must not be allowed to warm to an unsafe temperature at which bacteria could grow. This is especially important with ready-to-eat items, e. g salads.

Fresh food items must be put into cool storage to preserve their quality ready for preparation.

Dry goods should be taken to the store area where they should be entered on to the stock record to prevent theft.\)

Coding system of items delivered.

A date sticker may have to be attached to the items as they are put away. As you put new stock away, move the old stock to a position where it will be used first. This is called stock rotation. Handle all items carefully .Do not attempt to lift heavy items on your own to avoid any risk of hazard. Some items may need to be removed from the original external packaging before storage, e .g if cardboard box is breaking or there is not enough space to store an item in its full packaging.

d) The stock-taking or “inventory checking”

Is the physical verification of the quantities and condition of items held in an inventory or a warehouse? This may be done to provide an audit of existing stock. It is also the source of stock discrepancy information.

Stock-taking may be performed weekly; monthly or annual, procedures may be done continuously by means of a cycle count.

It is recommended that do not enter any new stock transactions during this process (especially from step 4 onwards). If this is unavoidable, make sure that the counted quantities in take the new stock transactions into account.

2. Preserving and storing dry goods

a) **Identification of dry goods** as dried beans, onions, rice, salsa, ketchup etc. storage area and the most essential points to be observed in the care and control are the following:

The storeroom for dry foods should be located near the receiving area and close to the kitchen. Unfortunately, the storeroom for dry foods is often are consideration in food service facility designs, and the area designated for storage is sometimes in an inconvenient location.

Most essential points to be observed in the care and control of the dry storeroom

The area should be dry and cool to prevent spoilage and the consumable of canned goods. The ideal temperature range is 10°C to 15°C (50°F to 59°F).

The storeroom should be easy to keep clean and free from rodents and vermin. This means all wall, ceiling, and floor openings should be sealed and protected to prevent access.

It should be designed so it is easy to arrange and rearrange dry goods to facilitate stock rotation.

The best arrangement is to have shelves situated in the middle of the room so they can be stocked from both sides.

This allows you to rotate stock by simply pushing out old stock by sliding new stock in from the other side of the shelf.

This guarantees that first items received will be the first items used, or the “first in, first out” (FIFO) concept in stock rotation.

The area should be well lit, shelving must be at least 15 cm above the floor. Do not store items right on the floor.

Passageways should be wide enough to allow room for carts or playthings, which should be used to prevent possible injuries from lifting.

Food and supply storage areas should be kept under locked. Food storage control is an important step in the overall control of food costs.ck and key to prevent pilferage (a recurrent theft of small items of little value)

All storerooms should be considered to be like bank safes where the assets of the operation are being stored. This may mean that more valuable commodities such as liquor and wine should be stored and locked inside a larger storage area, such as the dry food storage area.

b) Give general recommendations to be respected

General Recommendations for Dry Storage - “Do’s” and “Don’ts”

For simplicity, this section of the manual has been arranged in the form of a series of instructions:

- Provide a building for storage which is secure and can be adequately locked. Ensure that its roof will protect the feed from rain and that surface water cannot enter the store.
- Provide it with ventilation points (windows are not necessary or recommended).
- Ventilation entry points should be low on the side facing the prevailing wind and high on the opposite side. Orient the building so that one of the long sides faces the prevailing wind.
- Ensure that all entry points are meshed to prevent entry by birds, rats etc. The drier and cooler you can keep this store the better your feed quality will be.
- Do not accept deliveries of raw materials which are visibly damp or moldy or which are obviously infested with insects.
- Plan your ingredient purchases carefully so that you do not need to keep too great a quantity in stock.

Obviously you will want to store greater quantities of seasonally cheap or scarce materials but do not be tempted to buy a year’s supply just because they are cheap now. It may prove very expensive indeed if half of them have to be thrown away.

As a general rule, don't keep longer than the following guidelines:

Ground ingredients e .g nuts flour	Tropical zone	Temperate zone
		1-2 months
Whole grain and oilcakes e .g sunflower oil	3-4 months	5-6 months
Compounded Dry Feeds e .g sosoma	1-2 months	1-2 months
Vitamin and Protein Mixes e .g yogurt (kept cool etc.)	6 months	6 months
Wet ingredients e.g dough	2-3 hours	2-3 hours
Frozen ingredients e.g fishes	2-3 months	2-3 months

Always keep the store clean. Floors and walls should be regularly swept. Spilled material must be removed and the contents of broken bags or containers used first. Cleared areas of the store must always be cleaned before new materials are placed there.

Arrange your store so that new deliveries are not put in front of old stocks. The oldest materials must be used first.

The small stacks which are used rapidly are better than large ones which remain stagnant for long periods. If possible, raise the sacks off the ground by stacking them on wooden pallets (platforms).

Ensure that ingredients are clearly and indelibly labeled so that those drawing from the store are sure that they are drawing the correct ingredient (some look very similar when ground) from the oldest batch.

Note:

- Don't walk on the stacks of compounded feeds unnecessarily. This will break the pellets on the surface and lead to the production of a lot of wasteful fines (dust).
- Don't allow sacks to rest against the outer walls of the store - leave a space between the stacks and the wall.
- Don't allow staff to sleep or eat in the feed store nor, preferably, to smoke.

3 .Preserving and storing perishable food

a) Storage equipment and fixed available temperature

The refrigerator is an appliance or compartment which is artificially kept cool and used to store perishable food and drink. The refrigeration is important in food storage and in the prevention of food poisoning.

The liquids contained in tubes at the back of the unit are called refrigerants and used to remove heat from the inside of the refrigerator. There is growing concern about the effect of refrigerants on the environment.

Note: The chlorofluorocarbons (CFCS) have traditionally been used as refrigerants, but they are now known to damage the protective ozone layer above the earth and so are being withdrawn. Research into suitable environmentally friendly refrigerants continues.

Temperature distribution

The domestic refrigerators are designed to keep the temperature inside below 7° C although it varies in different areas of the cabinet. Some fridges have an ice box which is normally marked with a star rating to indicate the length of time that frozen food may be stored in it. It is not designed to freeze food, only to store it once frozen.

Choosing a refrigerator

When deciding on which type and size of refrigerator to buy, the following points should be considered.

- Size and capacity required.
- Storage arrangements inside the refrigerator.
- Space available in the kitchen.
- Star rating for frozen food compartment.
- Workmanship on the refrigerator and its finish.
- Additional features, e.g. automatic defrosting, digital temperature display.
- Amount of money available.

Many people find that a fridge/freezer suits their requirements for cold storage without taking up too much space in the kitchen.

b) Storing perishable food

Take care of a refrigerator

- **Defrosting**

Moisture is drawn from the air and food inside a refrigerator, and it freezes on the surface of the ice box or heat-exchange panel. If this layer of the ice box or heat-exchange panel. If this layer of ice becomes more than 6mm thick, it will lower the efficiency of the refrigerator and should be removed by defrosting. Refrigerators can be defrosted in one of three ways.

1. Manual defrosting

The refrigerator should be switched off, and the food removed and kept in a cool place. The water collected from the melting ice is collected in a tray underneath the ice box, and removed. Once all the ice has gone, the cabinet should be washed out with a solution of bicarbonate of soda in water (1 tablespoon to 575ml), which will not leave a smell. Once dry, the refrigerator can be refilled and reconnected.

2. Push-button defrosting

Some models have a button which when pressed stops the refrigeration process and allow the ice to melt. When this has occurred, the refrigeration process starts up again.

3. Automatic defrosting

Other models defrost automatically when the ice reaches a certain thickness, so that there is no need to check this, and food need not be removed.

It is important the refrigerator should be kept clean and hygienic inside at all times.

4. Preserving and storing frozen food

a) The choice of food required for freezing

Most foods can be frozen, but some are more suitable than others. The length of time that food can be stored varies, and no food can be frozen indefinitely. Once a food has passed its storage life, e. g the length of time it can be kept frozen in perfect condition, chemical changes start to affect the flavor, quality, and edibility of the food.

Some foods which are available for most of the year and have a long storage time in a fresh state are not worth freezing, e .g potatoes.

Some foods react poorly to freezing and are therefore unsuitable. These include: vegetables, lettuce, cucumber, and radish become mushy and discolored on thawing, as their high water content results in large numbers of ice crystals being formed. These rupture the cells, even if quick-frozen.

Boiled potatoes become leathery when thawed, if frozen whole. Celery has a high water content and loses its structure on thawing, but it can be used as a cooked vegetable in casseroles, soups, etc. Fruit such as strawberries tend to become mushy on thawing, due to ice crystals rupturing their cells, but they can be used in fruit salads, flans, soufflés, mousses, etc., as their flavor is not impaired. **Banana** and **avocado** pears turn black if frozen, because of enzyme activity.

Pears tend to lose their texture if frozen, because of the effect of ice crystals on the cells.

Dairy products

Whole pasteurized **milk** (non-homogenized) separates out when frozen.

Cream with less than 40% fat separates (e.g. single cream). Whipping or double cream should be whipped lightly before freezing. **Eggs** whole fresh crack and become gluey. However, egg white and yolks can be frozen separately. **Mayonnaise** separates. **Corn flour**-based soups and stews tend to separate. **Icings** (except buttercream) crumble and become soggy /moist.

b) The storage equipment required for frozen food

Refrigerator/freezers usually consist of two separate cabinets, joined together with separate doors. The freezer is a refrigerated cabinet or room for preserving food at very low temperatures

Normally, the freezer compartment is below the refrigerator. It may operate independently or in conjunction with the refrigerator. These models are particularly useful to single people or small families, and there is a range of sizes available.

The advantages and disadvantages are similar to those for the upright models, although the refrigerator/freezer may be slightly more economical to run.

It is often possible to buy second-hand conservators from shops or ice cream manufactures. These are not designed to freeze food, only to store foods which are already frozen at -18°C. They should not be considered if food is to be frozen at home. Appliances that are suitable for freezing food will carry the symbol:



Fig.5.5: symbol of appliances that are suitable for freezing

Three types of freezers

- Chest freeze (left)
- Upright freezer (center)
- Refrigerator/freezer (right)



Fig.5.4: types of freezers

c) The basic rules for siting freezer are:

1. Freezer only fresh foods.
2. Freeze food when it is at the peak of quality e.g when just ripe or ready for eating.
3. Once prepared or harvested, freeze the food quickly to avoid deterioration.
4. Handle and freeze the food hygienically.
5. Use suitable packaging materials and wrap the food properly.
6. Pack food in single or multiple portions according to family size and needs.
7. Remove as much air as possible from the package before freezing, e.g by sucking out the air through a straw, to prevent oxidation of the food during storage.
8. Label the packs clearly .Keep a record of what has been frozen and when.
9. Chill the food in a refrigerator before freezing so as not to increase the temperature inside the freezer too much

10. Use the fast freeze switch to reduce the temperature quickly when freezing fresh food.
11. Only freeze food item in the quantities recommended by the manufacturer for the capacity of the freezer.
12. Store the food only for the recommended storage time
13. Aim to use up stocks of food item before they come into to season again.
14. Do not allow the temperature of the freezer cabinet to increase above -18°C.
15. Never refreeze foods that have been thawed/defrosted, unless they have undergone a process of cooking, e. g thawed meat made into a casserole can be frozen.

Keep the freezer at 0°F or colder. Defrost the freezer when ice builds up. Provide sufficient freezer space for food, which includes room for cool air to circulate.

The foods frozen at peak quality will taste better than foods frozen near the end of their useful life, so quickly freeze items you don't plan to use in the next day or two. It is safe to freeze foods in their supermarket wrappings. Use these foods within a month or two. For longer storage, overwrap packages with airtight heavy-duty foil, plastic wrap, or freezer paper, or place packages inside a plastic bag. Proper packaging helps maintain quality and prevent "freezer burn."

Foods do not last indefinitely in a freezer, so they should be used up quickly after they are frozen. As foods go into the freezer, date the packages, and use the oldest items first when taking them out of the freezer.

If frozen food does get "freezer burn," it is still safe to eat, but it will be dry in spots. Remove freezer-burned portions either before or after cooking the food.

Storage times for frozen food

Different foods will keep for different lengths of time in the freezer, and it is important not to exceed storage times .The following list gives storage times for foods stored at -18°C.

Food	Storage time
Vegetables	12 months
Fruit	12 months
Raw meat:	12 months
beef and lamb	2 months
mince and offal	9 months
pork	6 weeks
unsmoked bacon	6 weeks
sausages	4 weeks
smoked bacon	3 months
vacuum-packed rashers	3 months
Bacon joints	3 months
Poultry	12 months
Chicken	6 months
Duck	8 months
Fish	4 months
White, filleted	2 months
Oily	3 months
Shellfish	6 months
Whipped cream	4 months
Hard cheese	3 months
Cakes	6 months
Fatless	4 months
With fat	6 months
Pastry	3 months
Cooked	3 months
Uncooked	3 months
Bread	4 months
Soups, sauces	2 months
Stews	1 month
Meat loaves, pâtés	3 months
Ice cream	

d) Frozen food must be kept at -18°C or lower to maintain its quality. However, four critical control points to remember for maintenance quality of frozen food. These are factors for storing frozen foods:

1. Fruit and vegetables that are received frozen will keep for months if they are properly wrapped. Fish and meat properly wrapped also have a relatively long freezer shelf life.
2. Freezing fresh fruits and vegetables on the premises is time consuming and may be too expensive to consider. Fresh fruit must be properly prepared for freezing or it will not store well.
3. All freezer products not properly wrapped will develop freezer burn, which is a loss of moisture that affects both the texture and the flavour of the food. A common sign of freezer burn is a white or grey dry spot developing on the surface of the frozen product. Meat is particularly susceptible to freezer burn.
4. Rotating stock is extremely important with frozen foods. Such rotation is difficult in standard chest freezers as it often means that old stock must be removed before new stock is added. The temptation with frozen foods is to develop the unacceptable habit of using the last item bought first, instead of FIFO (first in, first out).

Note: Bacteria, although they are usually the first agents to begin the decomposition process, are the hardest to detect. Their presence usually only becomes noticeable after decomposition has advanced to the stage where unpleasant odours are produced.

When food is deteriorating, you will notice changes in its color, odor, and taste.

Examples include:

- Fruit goes soft, gets darker, and quickly rots.
- Vegetables start wilting and then become slimy and rotten.
- Butter, cheese, and dairy products get darker and develop a sour smell.
- Meat changes gradually at first, but then becomes darker and begins to smell “off.”
- Slime and mould appear.

5.9. Additional activities

5.9.1 Remedial Activity

Differentiate dry goods, perishable foods and frozen foods and determine their appropriate storage areas and talk about it or write your answer.

Answer of remedial activity

Dry foods: are sugar, coffee, rice and other solid foods which are dry and could be transported, stored without immediate danger of spoiling.

The storeroom should be easy to keep clean and free from rodents and vermin. This means all wall, ceiling, and floor openings should be sealed and protected to prevent access.

A perishable food is also a type of food with a limited shelf life if it's not refrigerating e.g.: vegetables, fruits, meat, fish and dairy products.

Dairy products are also foods or drinks that are created from cow's milk. On the other hand, they can also be produced using buffalo's milk, goat's milk, or even sheep's milk.

Frozen food is a type of food that has been subjected to rapid freezing and is kept frozen until used. Store at a very low temperature as a means of preservation. Frozen food are preferred to be stored in freezer

5.9.2 Consolidation activity

Describe the care can you take of a refrigerator

Answer

Defrosting: Moisture is drawn from the air and food inside a refrigerator, and it freezes on the surface of the ice box or heat-exchange panel. If this layer of the ice box or heat-exchange panel. If this layer of ice becomes more than 6mm thick, it will lower the efficiency of the refrigerator and should be removed by defrosting. Refrigerators can be defrosted in one of three ways.

Manual defrosting: The refrigerator should be switched off, and the food removed and kept in a cool place. The water collected from the melting ice is collected in a tray underneath the ice box and removed. Once all the ice has gone, the cabinet should be washed out with a solution of bicarbonate of soda in water (1 tablespoon to 575ml), which will not leave a smell. Once dry, the refrigerator can be refilled and reconnected.

Push-button defrosting: Some models have a button which when pressed stops the refrigeration process and allow the ice to melt. When this has occurred, the refrigeration process starts up again.

Automatic defrosting: Other models defrost automatically when the ice reaches a certain thickness, so that there is no need to check this, and food need not be removed.

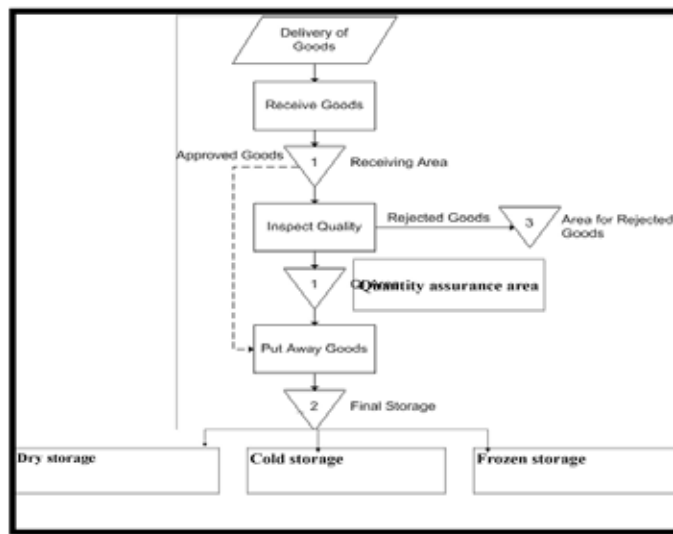
It is important the refrigerator should be kept clean and hygienic inside at all times.

5.9.3 Extended activity

1. Draw receiving flow diagram of food deliveries to demonstrate the way is used when the three activities as receiving goods, inspection of quality and final storage are performed as separate steps after one another and can involve different people and roles within the organization.

Answer

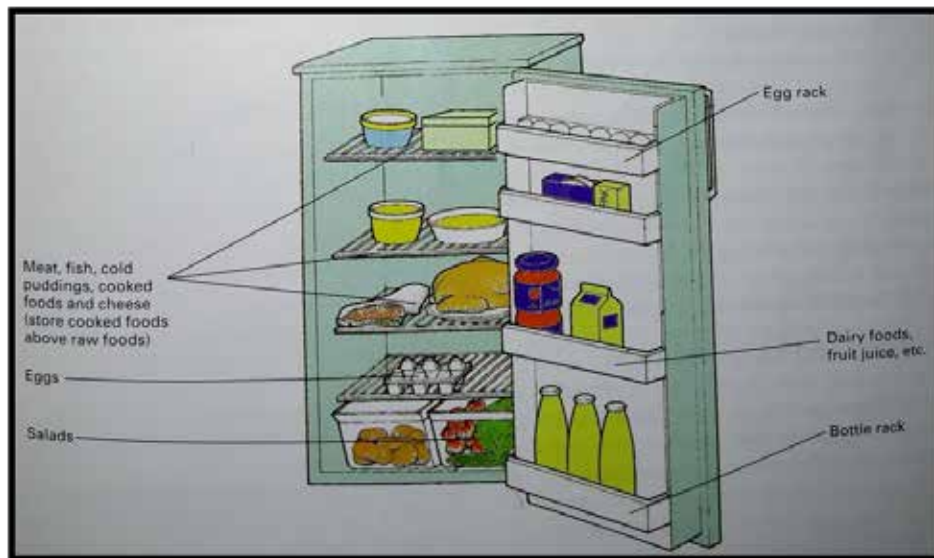
Receiving flow diagram



2. Design the diagram for showing the types of food that should be stored in each part of a refrigerator:

Answer

The diagram shows the types of food that should be stored in each part of a refrigerator



UNIT 6: NUTRITIONAL DEFICIENCY AND HEALTH DISORDERS

6

6.1. Key unit competence

Learner should be able to understand that nutritional deficiency can cause health disorder.

6.2. Prerequisite

Students will learn better the nutritional deficiency diseases and health disorders if they have understood the food nutrients selection principles and food nutrients utility and meal plans (S2 unit 6).

6.3. Cross-cutting issues to be addressed

a) Inclusive education

This unit involves a number of description activities and researches on nutritional deficiency and health disorders. This may be challenging to students with special educational needs especially students with visual impairment or visual difficulties. Students with special educational needs are grouped with others and assigned roles basing on individual student's abilities.

Visual difficulties

When writing on the blackboard, write in large, clear writing, or provide a copy in big character when it comes to take handout notes on subjects. Read out what you are writing, for the benefit of those who are not able to see the blackboard clearly.

While learners are sharing textbooks, try to arrange for those with visual difficulties to have their own copies, as far as this is possible. Give extra time for them to write summary notes or write down observations after experiments. Every important point is written and spoken loudly.

For students with visual impairment teacher can write of them a summary using the braille alphabet if possible.

Mobility difficulties

These include learners in crutches, wheelchairs, or with walking difficulties. Encourage other learners to look out for and help their classmates. Ask their fellow learners to help them with their notes, if their conditions hinder them from writing well.

b) Gender

During group activities try to form heterogeneous groups (with boys and girls) or when students start to present their findings encourage both (boys and girls) to practice.

c) Peace and values education

During group activities, the teacher will encourage learners to help each other and to respect opinions of colleagues.

6.4. Guidance on the introductory activity

For this activity, the facilitator groups students in pairs that are as heterogeneous as possible. He/she guides them to attempt the introductory activity, on page 176 student book. After group discussion, the learners present their findings including the challenges to perform this activity. The facilitator asks them to predict what they are going to learn in the current unit, then from that prediction the teacher introduces the first lesson.

6.5. List of lessons

#	Lesson title	Learning objectives	Number of periods
1	Treatment and prevention of kwashiorkor and marasmus	<p>Explain the types of nutritional deficiency.</p> <p>Describe the causes of kwashiorkor and marasmus.</p> <p>Measure and prepare the proper food nutrients according to kwashiorkor and marasmus</p> <p>Appreciate the value of preventing the causes of kwashiorkor and marasmus and contribute to the society.</p> <p>Maintain a positive attitude of nutrition related to kwashiorkor and marasmus and make a contribution to society.</p>	2
2	Treatment and prevention of anemia, goiter and obesity	<p>Describe the causes and types of anemia, goiter and obesity.</p> <p>Measure and prepare the proper food nutrients according to anemia, goiter and obesity</p> <p>Appreciate the value of preventing the causes anemia, goiter and obesity and contribute to the society.</p> <p>Maintain a positive attitude of nutrition related to anemia, goiter and obesity and make a contribution to society.</p>	1

3	Treatment and prevention of diabetes	<p>Explain the types of diabetes</p> <p>Describe the causes and types of diabetes.</p> <p>Measure and prepare the proper food nutrients according to diabetes and nutritional deficiency.</p> <p>Appreciate the value of preventing the causes of diabetes and contribute to the society.</p> <p>Maintain a positive attitude of nutrition related to diabetes and make a contribution to society.</p>	2
4	Treatment and prevention of heart diseases	<p>Explain the types of heart diseases.</p> <p>Measure and prepare the proper food nutrients according to the heart diseases</p> <p>Appreciate the value of preventing the causes of heart diseases and contribute to the society.</p> <p>Maintain a positive attitude of nutrition related to heart diseases and make a contribution to society.</p>	2

5	Treatment and prevention of breast and prostate cancer	Describe the causes of breast and prostate cancer Measure and prepare the proper food nutrients according to the breast and prostate cancer Appreciate the value of preventing the causes of breast and prostate cancer and contribute to the society. Maintain a positive attitude of nutrition related to the breast and prostate cancer and make a contribution to society.	1
	Assessment		1

Lesson 1: Treatment and prevention of kwashiorkor and marasmus

a) Prerequisites

The food nutrients selection principles (home science unit.6 S1) and food nutrients utility and meal plans (home science unit.6 S2) are main prerequisite to perform the treatment and prevention of nutritional deficiency disease (kwashiorkor and marasmus) .

b) Teaching resources

Pictures related to kwashiorkor and marasmus diseases, books related to nutrition and nutritional deficiency disease, working internet connection, flipcharts, and blackboard.

c) Learning activities

By introducing the lesson, teacher display the picture on activity 6.1, page 177 students' book. In group of 4-5 members the learners observe the two groups of children and make description about their wellness.

The teacher as facilitator guides learners through various activities such as the brainstorming on how is the state of each group of learners, group discussion and research on the causes of kwashiorkor or marasmus diseases

This activity makes students competent to identify treatment diet and prevention of kwashiorkor and marasmus diseases.

Answers to activity 6.1

- Learners observed the picture
- No they are not in the same life conditions because some they look rich and others they look poor.
- Some are happy in classroom and they look healthy to be performer whereas others are not happy they are poor and look unhealthy that conditions cannot allow them to be performers as expected and show lower level of understanding things.
- Some look healthy as if they take balance diet that includes proteins, carbohydrate, vitamins and minerals. But others they really look unhealthy as if they take unbalanced diets which not rich in protein and minerals.

Lesson 2: Treatment and prevention of obesity, anemia and goiter

a) Prerequisites

Food nutrients selection principles (home science unit.6 S1)

Food nutrients utility and meal plans (home science unit.6 S2).

b) Teaching resources

Pictures of persons with obesity disease, books related to nutrition and nutritional disease, internet connection, flipcharts, blackboard.

c) Learning activities

The teacher displays the picture of the activity 6.2 page 188 student book. The learners observe the two different people and describe the healthy conditions. He / she guides learners to brainstorm on how is the look of the persons in the picture. In group of 4-5 members, he /she guides learners to research using a visit study, handout, books or search engine and discuss on the causes of the situations displayed in the picture of the activity 6.2, page 188 student book.

Answers to activity 6.2

1. What did you get from your observation?

Here there is someone at the right side who is healthy and looks physically fit and another one at the left side is over weighted and looks unable to practice body exercises.

2. Can those people have the performance in physical exercises on the same level?

No they cannot have the same performance because the first looks healthy and able to practice any exercises, his body nutrition is balanced where as other one is fat means over weighted he cannot jump or practice any exercise because of high fat content.

3. Explain the reasons why people having the health conditions as for these in figure are safe or at high risk.

People who are over weighted are at high risk due to malnutrition that shows that his daily diet include high quantity of fat, protein and carbohydrates in inactive body.

People are not at high risk they take a balanced in their daily meal containing protein, carbohydrates, vitamins and minerals and practice body exercises that make them looking fit and healthy.

Lesson 3: Treatment and prevention of diabetes

a) Prerequisites

Food nutrients selection principles (home science unit.6 S1)

Food nutrients utility and meal plans (home science unit.6 S2).

b) Teaching resources

Pictures of persons with nutritional disease, books related to nutrition and nutritional disease, internet connection, flipcharts, blackboard.

c) Learning activities

The teacher guides learners to brainstorm about lifestyle of the people in our society through the activity 6.3 on page 193 student book. In group of 6 members, teacher facilitates learners to search using books or search engine and discuss on the lifestyle tips to avoid diabetes, the cause of diabetes and individual practice on preparing food nutrients according to diabetes might be applied. The presentation of the findings may be consolidated by the facilitator.

Answers to learning activities

Activity 6.3

1. What are the advices you getting from there?

- Avoid excess weight
- Making exercises

- Avoid a less-than healthy diet
- Avoid smoking
- Abstaining from alcohol

2. The letters which is indicating what is coming to solve problems of the society as follow:

- A: regular physical exercises,
- B: eat right
- C: shed some weight
- D: no smoking
- E: don't drink alcohol
- F: get support

Lesson 4: Treatment and prevention of the common heart diseases

a) Prerequisites

Food nutrients selection principles (home science unit.6 S1)

Food nutrients utility and meal plans (home science unit.6 S2).

b) Teaching resources

Books /newspaper related to heart disease, books related to nutrition and nutritional disease, internet connection, flipcharts, blackboard.

c) Learning activities

The teacher facilitates learners to analyze the case study 1 on page 194-195 student book. In group of 6 members, using a handout on heart diseases, learners guided by teacher discuss on the case study1 and respond to the questions related to it. The representative of each group presents the findings which will be consolidated by the teacher.

This activity will make learners competent to identify heart diseases causes and know the prevention procedures of heart diseases.

Answers to questions on case study¹

1. Which of these women is at greatest risk for heart disease?

All five of these women have risk factors for heart disease. However, Patients J and D possess three of the most significant cardiovascular risk factors: cigarette smoking, diabetes, and hyperlipidemia. Therefore, based on the data available in the vignettes, Patients J and D are at greatest risk for coronary heart disease. If further information was available about each woman's cardiac risk factor profiles, we might be able to differentiate even further to determine which of these two women is at greater risk.

2. Who is at least risk?

Patient F appears to be in the best cardiovascular state among the group. Her mild hypertension is well controlled; she is not overweight, eats a sensible diet, and sees that she gets some form of aerobic exercise at least three times a week.

3. What specific recommendations would you make in counseling each woman about her cardiovascular health?

Patient S

Counseling recommendations for Patient S would primarily focus on cardiac nutrition aspects and developing an exercise program for cardiovascular fitness. Because she is more than 30% overweight, she is at a tremendously increased risk of coronary heart disease due to the added stress on her heart and the changes that occur in lipid metabolism when fat is distributed in the abdominal versus gluteal region.

Therefore, patient teaching should emphasize good nutrition and reading nutrition labels to manage caloric intake, as well as limiting intake of fat and cholesterol. In addition to changes in diet, Patient S should be counseled on incorporating some form of aerobic exercise, such as walking, three to five times a week to achieve cardiovascular fitness. The exercise will also have the added benefit of helping her modify her weight level.

Patient J

Two major concerns become evident in assessing Patient J's health status—her smoking history and her hyperlipidemia. Recommendations would focus on encouraging and motivating the patient to quit smoking, through the use of the nicotine patch or gum with the additional support of bupropion and/or a smoking cessation program to increase her chances of successfully quitting. These programs are essential because they teach the patient behavioral and psychologic techniques to utilize at various stages of the quitting process and help the person identify specific problem situations and how these can be realistically managed. Patient J's lipid profile should be closely monitored to determine the effectiveness of gemfibrozil in lowering her LDL levels. In

addition, patient teaching should focus on the deleterious effects of smoking on lipid profiles, specifically HDL levels. Smoking tends to decrease levels of HDL, which could be used as another health information tidbit to motivate Patient J to quit smoking.

Patient V

Recommendations for cardiac health for Patient V would primarily focus on the alterable factors rather than her significant family history, which cannot be changed. As a result, patient teaching and counseling would be geared toward getting her weight into a more desirable range by paying attention to nutrition and getting some form of regular aerobic exercise. Patient V would also benefit from more health teaching regarding alcohol consumption. While a moderate intake of alcohol may be associated with positive antioxidant effects that can impart some protection against the development of heart disease, the key is moderation. One drink per day is the recommendation for alcohol consumption in women.

Patient D

In assessing Patient D's health history, her diabetes and smoking habit are big concerns. In terms of her diabetes, she is in need of strict control to prevent further progression and significant complications associated with the disease, such as coronary heart disease. Another major factor that would help prevent a major cardiac event is for her to quit smoking. Remember that many cardiovascular risk factors are synergistic. In other words, risk factors work together in increasing an individual's risk of developing coronary heart disease. Cigarette smoking and diabetes are both powerful independent risk factors for heart disease, and together, they significantly elevate the chances of developing the disease.

Patient F

Patient counseling recommendations for Patient F are twofold: continued control of her hypertension and stress management. Patient F and all of the women should be applauded regarding the positive habits they have incorporated into their lifestyle. In this patient's case, these positive aspects include attention to nutrition, aerobic exercise, and staying away from smoking or alcohol use. She does, however, need assistance with stress management. While her regular exercise program is most likely one avenue for her to deal with this stress, it obviously is not singly effective. In other words, additional stress management strategies could be added to her repertoire.

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Lesson 5: Treatment and prevention of the breast and prostate cancer

a) Prerequisites

Students will learn better the treatment and prevention of nutritional deficiency common disease (breast and prostate cancer) if they have understood on food nutrients selection principles (home science unit.6 S1) and food nutrients utility and meal plans (home science unit.6 S2).

b) Teaching resources

Reference pictures, books related to nutrition and nutritional disease, flipcharts and blackboard.

c) Learning activities

By delivering this lesson, teacher brainstorms the learners about breast cancer disease and its causes. Other activities like research activity on the causes of breast and prostate cancer and individual practice on preparing food nutrients according to treatment of breast and prostate cancer. The individual presentation of the findings from research activity will be consolidated by the teacher.

6.6. Summary of the unit

Treatment and prevention of nutritional deficiency disease (Kwashiorkor and marasmus)

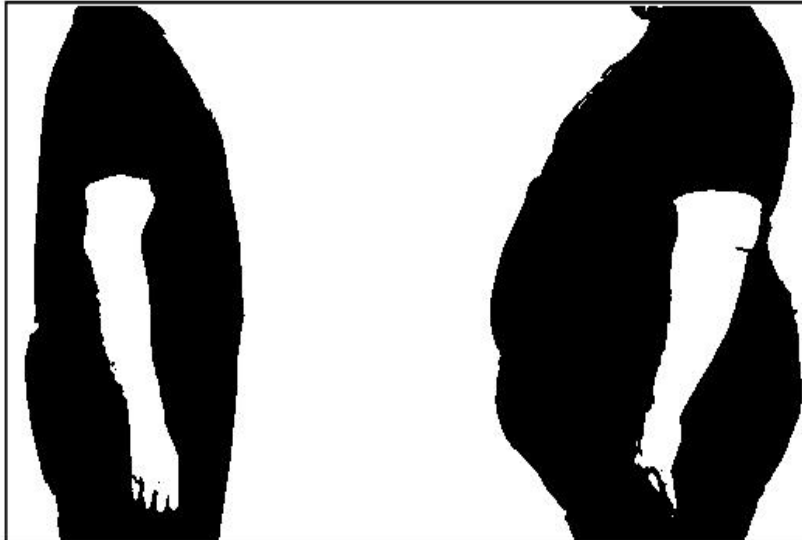
Kwashiorkor, also known as “**oedematous malnutrition**” because of its association with oedema (fluid retention), is a nutritional disorder most often seen in regions experiencing famine. It is a form of malnutrition caused by a lack of protein in the diet.

It's most common in developing countries with a limited food supply, poor hygiene, and a lack of education about the importance of giving babies and children an adequate diet.

Marasmus is another type of malnutrition that can affect young children in regions of the world where there is an unstable food supply. Signs of marasmus include thinness and loss of fat and muscle without any tissue swelling (oedema). Marasmus can be life-threatening, but you can get treatment for it.

Treatment and prevention of nutritional deficiency disease (Anemia, goiter and obesity)

Obesity is a condition in which you have a body mass index (BMI) higher than 30. BMI is used to estimate body fat and can help determine if you are at a healthy body weight for your size. BMI is not a perfect measurement but it does help give a general idea of ideal weight ranges for height.



A **goiter** (GOI-tur) is an abnormal enlargement of your thyroid gland. Your thyroid is a butterfly-shaped gland located at the base of your neck just below your Adam's apple. Although goiters are usually painless, a large goiter can cause a cough and make it difficult for you to swallow or breathe.

Treatment and prevention of nutritional deficiency common disease (diabetes)

Diabetes is a disease that affects your body's ability to produce or use insulin. Insulin is a hormone. When your body turns the food you eat into energy (also called sugar or glucose), insulin is released to help transport this energy to the cells. Insulin acts as a "key." Its chemical message tells the cell to open and receive glucose.

Treatment and prevention of nutritional deficiency common disease (heart)

Heart disease (cardiovascular disease) can refer to different heart or blood vessel problems, the term is often used to mean damage to your heart or blood vessels by atherosclerosis, a build-up of fatty plaques in your arteries.

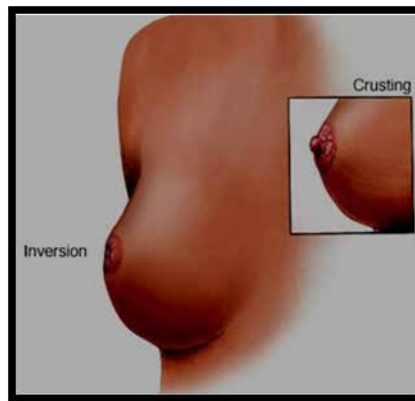
Heart diseases also called **heart and blood vessel disease or cardiovascular diseases** includes numerous problems, many of which are related to a process called atherosclerosis.

Atherosclerosis is a condition that develops when a substance called plaque builds up in the walls of the arteries. This buildup narrows the arteries, making it harder for blood to flow through. If a blood clot forms, it can stop the blood flow. This can cause a heart attack or stroke.

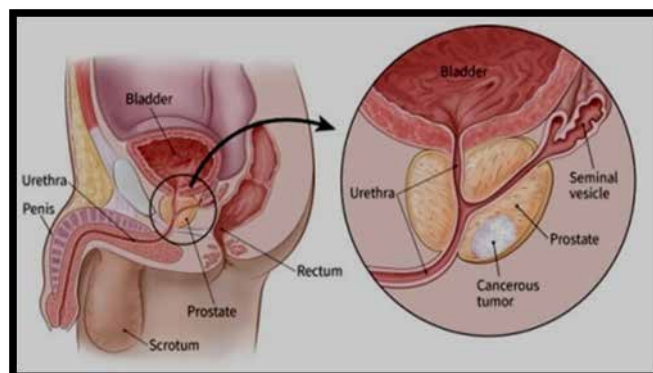
Treatment and prevention of nutritional deficiency common disease (breast and prostate cancer)

Breast cancer is cancer that forms in the cells of the breasts. After skin cancer, breast cancer is the most common cancer diagnosed in women in the world wide. Breast cancer can occur in both men and women, but it's far more common in women.

Substantial support for breast cancer awareness and research funding has helped create advances in the diagnosis and treatment of breast cancer. Breast cancer survival rates have increased, and the number of deaths associated with this disease is steadily declining, largely due to factors such as earlier detection, a new personalized approach to treatment and a better understanding of the disease.



Prostate cancer is the most common cancer in men, the chances of developing prostate cancer increase as you get older. Most cases develop in men aged 50 or older.



The main function of the prostate is to help in the production of semen. It produces a thick white fluid that is mixed with the sperm produced by the testicles, to create semen.

Prostate cancer usually develops slowly, so there may be no signs you have it for many years.

6.7. Additional information

- **Risk factors for developing heart disease include**

- Age

Aging increases your risk of damaged and narrowed arteries and weakened or thickened heart muscle.

- Sex

Men are generally at greater risk of heart disease. However, women's risk increases after menopause.

- Family history

A family history of heart disease increases your risk of coronary artery disease, especially if a parent developed it at an early age (before age 55 for a male relative, such as your brother or father, and 65 for a female relative, such as your mother or sister).

- Smoking

Nicotine constricts your blood vessels, and carbon monoxide can damage their inner lining, making them more susceptible to atherosclerosis. Heart attacks are more common in smokers than in nonsmokers.

- Certain chemotherapy drugs and radiation therapy for cancer

Some chemotherapy drugs and radiation therapies may increase the risk of cardiovascular disease.

- Poor diet

A diet that's high in fat, salt, sugar and cholesterol can contribute to the development of heart disease.

- High blood pressure

Uncontrolled high blood pressure can result in hardening and thickening of your arteries, narrowing the vessels through which blood flows.

High blood cholesterol levels

High levels of cholesterol in your blood can increase the risk of formation of plaques and atherosclerosis.

- Diabetes

Diabetes increases your risk of heart disease. Both conditions share similar risk factors, such as obesity and high blood pressure.

- Obesity

Excess weight typically worsens other risk factors.

- Physical inactivity

Lack of exercise also is associated with many forms of heart disease and some of its other risk factors, as well.

- Stress

Unrelieved stress may damage your arteries and worsen other risk factors for heart disease.

- **Poor hygiene**

Not regularly washing your hands and not establishing other habits that can help prevent viral or bacterial infections can put you at risk of heart infections, especially if you already have an underlying heart condition. Poor dental health also may contribute to heart disease.

- Causes

There are two types of high blood pressure:

- Primary (essential) hypertension

For most adults, there's no identifiable cause of high blood pressure. This type of high blood pressure, called primary (essential) hypertension, tends to develop gradually over many years.

- Secondary hypertension

Some people have high blood pressure caused by an underlying condition. This type of high blood pressure, called secondary hypertension, tends to appear suddenly and cause higher blood pressure than does primary hypertension. Various conditions and medications can lead to secondary hypertension, including:

- Obstructive sleep apnea

- Kidney problems
- Adrenal gland tumors
- Thyroid problems
- Certain defects in blood vessels you're born with (congenital)
- Certain medications, such as birth control pills, cold remedies, decongestants, over-the-counter pain relievers and some prescription drugs
- Illegal drugs, such as cocaine and amphetamines
- Alcohol abuse or chronic alcohol use
- Low blood pressure
- Low blood pressure is not always a sign of a problem. But if you have symptoms of low blood pressure, your doctor can diagnose the condition and uncover the cause.

Symptoms of dizziness and lightheadedness when you stand up from sitting or lying down with a decrease in your blood pressure may indicate a condition called postural hypotension.

A wide range of underlying conditions may also cause your symptoms. It's important to identify the cause of low blood pressure so appropriate treatment can be given.

The doctor will look at your medical history, age, specific symptoms, and the conditions under which the symptoms occurred. He or she will do a physical exam and may repeatedly check your blood pressure and pulse rate after you've been lying down for a few minutes, right after you stand up, and within a few minutes after you stand quietly.

6.8. Answers of end unit assessment

Answer true or false

Kwashiorkor is heart disease caused by malnutrition. **False**

Kwashiorkor is nutritional deficiency disease. **True**

Marasmus is the same as kwashiorkor. **False**

Marasmus has some symptoms as for kwashiorkor. **True**

Obesity is caused by malnutrition. **True**

Obesity can lead to heart disease. **True**

Match the columns A and B

A goiter		This illness means you have a lower than normal red blood cell (RBC) counts
Anemia		It is an abnormal enlargement of your thyroid gland.
Marasmus		It is a nutritional disorder most often seen in regions experiencing famine. It is a form of malnutrition caused by a lack of protein in the diet.
Kwashiorkor		is another type of malnutrition that can affect young children in regions of the world where there is an unstable food supply
Obesity		It is a disease that affects your body's ability to produce or use insulin.
Diabetes		It is a condition in which you have a body mass index (BMI) higher than 30.

It can be differentiated from kwashiorkor in that kwashiorkor is protein deficiency with adequate energy intake whereas marasmus is inadequate energy intake in all forms, including protein.

The people with obesity should change their eating habits and increase daily activity level.

People should also take strategy to maintain their weights as they age, increase time for exercises and considering eating balanced diets (planning meal).

The major causes of heart disease and obesity are:

- Diet
- Lack of exercise
- Factors in a person's environment, and genetics.

6.9. Additional activities

6.9.1 Consolidation activity

Relationship between obesity and heart attack: Obesity is when body has body mass index higher than 30 means body has a high fat content and over weighted this can lead to heart attack.

Heart attack occurs when the blood flow to a part of the heart is blocked by a blood clot.

Extended activity

What is the difference between hypertension and hypotension?

Answer

Hypotension, also called as “low blood pressure (LBP), is blood pressure low enough that the flow of blood to the organs of the body is inadequate and symptoms and/or signs of low blood flow develop shock whereas hypertension also known as high blood pressure (HBP) is when your blood pressure, the force of your blood pushing against the walls of your blood vessels, is consistently too high.

UNIT 7: BASIC DISHES AND SERVICE

7

7.1. Key unit competence

Learners should be able to prepare and serve a variety of basic dishes and service.

7.2. Prerequisite

Students will learn better basic dishes and service if they have understood on food nutrients selection principles (unit.6 S1) ; occupation and kitchen unit (unit.7 S1); food nutrients utility and meal plans (unit 6 S2) and food safety techniques and cooking methods. (unit.7 S2). The teacher will help learners to recap the concepts above.

7.3. Cross-cutting issues to be addressed

a) Inclusive education

This unit involves a number of description activities and researches on preparation and service of basic dishes. This may be challenging to students with special educational needs especially students with visual impairment or visual difficulties. However, the teacher can make some arrangements to group students with special educational needs with others and assign roles basing on individual student's abilities.

Visual difficulties

When writing on the blackboard teacher writes in large, clear writing, or provides a copy in big character when it comes to take handout notes on subjects. Read out what have been writing, for the benefit of those who are not able to see the blackboard clearly.

When learners are sharing textbooks, teacher tries to arrange for those with visual impairment to have their own copies, as far as this is possible and gives extra time for them to write summary notes or write down observations after experiments. For students with visual difficulties they can write the summary using the Braille alphabet if possible. Every important point is written and spoken loudly.

Mobility difficulties

These include learners in crutches, wheelchairs, or with walking difficulties. Encourage other learners to look out for and help their classmates. Ask their fellow learners to help them with their notes, if their conditions hinder them from writing well.

b) Gender

During group activities try to form heterogeneous groups (with boys and girls) or when students start to present their findings encourage both (boys and girls) to practice.

c) Peace and values education

During group activities, the teacher will encourage learners to help each other and to respect opinions of colleagues.

c) Financial education

As the unit deals with the importance of cooking in modern life, the teacher will draw the learners' attention on the economic impact of cooking common or international dishes using culinary arts skills.

7.4. Guidance on the introductory activity

For this activity, the facilitator forms groups of two (pair) students that are as heterogeneous as possible. He/she let them to perform experiments described in the activity 7.1 page 206 student book and makes sure that each student from each group performs. The facilitator provides a clear sheet for reporting and write on highlighted comments of activity.

The facilitator asks randomly representative of two or three groups to present their findings then after presentation the facilitator consolidates with all class members the findings from different groups. He/she finally asks them to predict what they are going to learn in the current unit and introduces the heading of the new unit.

7.5. List of lessons

No	Lesson title	Learning objectives	Number of periods 12
1	Preparation of salad	<ul style="list-style-type: none">• Prepare the salad dishes using basic cooking methods• Appreciate salad dishes towards cooking methods related to different recipes.	2
2	Preparation of eggs	<ul style="list-style-type: none">• Prepare the eggs dishes using basic cooking methods• Appreciate the eggs dishes towards cooking methods related to different recipes.	2

3	Preparation of sandwiches	<ul style="list-style-type: none"> • Prepare the sandwiches dishes using basic cooking methods • Appreciate the sandwiches dishes towards cooking methods related to different recipes. 	2
4	Preparation of fruits and vegetables	<ul style="list-style-type: none"> • Prepare the fruits and vegetables dishes using basic cooking methods • Appreciate the fruits and vegetables dishes towards cooking methods related to different recipes. 	2
5	Preparation of sauces and soups	<ul style="list-style-type: none"> • Prepare the sauces and soups dishes using basic cooking methods • Appreciate the sauces and soups dishes towards cooking methods related to different recipes. 	2
6.	Presentation and Service of Basic Dishes	<ul style="list-style-type: none"> • Categorize food presentation techniques • Contrast basic food services techniques • Apply food presentation techniques on different dishes • Perform food service techniques • Pay attention to food service techniques related serving • Participate willingly and comply with principles on serving dishes 	1
	Assessment		1

Lesson 1: Preparation of salad

a) Prerequisites

Students will learn better the preparation of salad if they have understood on food nutrients selection principles; food nutrients utility and meal plans (unit 6 S2) and food safety techniques and cooking methods. (unit.7 S2).

b) Teaching resources

Pictures on food preparation, recipe book, flipcharts, blackboard, cooking tools and equipment.

c) Learning activity

By introducing the lesson, teacher display pictures on introductory activity, page 207 student book, describing different kind of dishes. Teacher as facilitator guides learners to compare with justification each pair of dishes. He/she brainstorms students on how to prepare a salad. In group discussion the students describe what is ongoing on each picture of activity 7.1, page 207 student book and make presentation of their findings.

Answers to activity 7.1

1. Students observe from the picture 1 to 6.
2. The activity 1 is cutting cabbages into juliennes, 2 is cutting green pepper into juliennes, 3 is mixing cabbage, pepper and carrot juliennes into the bowl, 4 is making dressing, 5 is pouring dressing with vegetables, finally picture number 6 is finished salad.
3. Attention on use of a knife, care to avoid cutting yourself.
4. When plating a salad do not handle salad with hands, use service tongs or wear glove for food safety purpose.

d) Application activities

This activities concerns making of **coleslaw**, **potato** and **cucumber** salad, page 209-214 student book. The teacher as facilitator guide learners to make a salad (coleslaw salad, cucumber salad and potato salad) through different steps (see procedures for making salad).

Lesson 2: Preparation of eggs

a) Prerequisites

Students will learn better the preparation of Salsa Omelet if they have understood on food nutrients selection principles; food nutrients utility and meal plans (unit 6 S2) and food Safety techniques and cooking methods. (unit.7 S2).

b) Teaching resources

Pictures on food preparation, recipe book, flipcharts, blackboard, cooking tools and equipment.

c) Learning activities

The teacher as facilitator, he/she is expected to guide learners through the activities on freshness test of egg:

- Brainstorming on freshness of egg , page 214 student book
- Group discussion on freshness of egg
- Search activity on freshness of egg and presentation of the findings.

This activities makes students competent to select fresh egg to be used in preparation of various preparations and test egg for freshness level without cracking them.

Answers to the activity 7.2, page 214 student book

1. Learners observe the pictures for egg testing:

Bowl 1 from the left: egg immediately sinks to the bottom of bowl of water

Bowl 2: egg floats in fresh water

Bowl 3: egg doesn't immediately sink in fresh water

2. In bowl 1 from the left side, the egg lies flat on its side. The egg is fresh (good). In bowl 2&3 egg doesn't lie flat on their side because they are not fresh.

Note:

- Fresh egg will sink (go downward) to the bottom of the bowl and probably lie on their sides;
- Slightly older eggs (about 1week)will lie on the bottom but bob (dance, move up and down)
- Eggs that float at the surface are bad and should not be consumed
- If the egg lays upright (straight) on the bottom, it is still fine to eat, but should be eaten very soon, or hard boiled.
- When you shake the egg and you listen for sloshing, if you can hear the distinct sloshing sound, the egg is best to be consumed but you better crack it for further testing.
- If you can't hear anything, the egg is likely fine
- If you hear distinct sound like water, discard the egg because that should not be consumed

d) Application activities (1, 2 &3), page 216-219 student book

- Practical exercises on preparation of Omelet (60min)

The teacher as facilitator guides students to apply procedures/steps on how to make omelet (a salsa omelet; plain omelet and scrambled egg),

Lesson 3: Preparation of sandwiches

a) Prerequisites

Students will learn better the preparation of sandwiches if they have understood on food nutrients selection principles; food nutrients utility and meal plans (unit 6, S2); food safety techniques and cooking methods. (unit.7, S2); pastry and bakery products (unit.8, S1) and bread making techniques (unit.8, S3).

b) Teaching resources

Reference pictures, reference cookbooks, flipcharts, blackboard, cooking tools and equipment.

c) Application activities

Practical exercises on preparation of sandwiches (**ham and cheese sandwich, grilled sandwich and veggie cheese sandwich**), page 220-225 student book.

Teacher display the ham and cheese recipe and ask learners to observe and describe where they should pay attention for making a quality ham and cheese sandwich. As teacher you are required to guide learner to accomplish the activity given.

Note: Be careful on last step because when you overload or stuff the sandwich will get damaged.

Lesson 4: Preparation of fruits and vegetables

a) Prerequisites

Students will learn better the preparation of fruits and vegetables if they have understood on food nutrients selection principles; food nutrients utility and meal plans (unit 6, S2) and food Safety techniques and cooking methods. (unit.7, S2).

b) Teaching resources

Pictures on preparation of fruits and vegetables, cookbooks of fruits and vegetables, flipcharts, blackboard, cooking tools and equipment.

c) Application activity

- Practical exercises on preparation of vegetables, page 226-230 students' book. This activity makes students competent on **cooking spiced potatoes, buttered peas and carrots, roasted carrots and sweet potatoes wedges**. As a teacher you are required to guide learners to accomplish the activity given. Learners observe the pictures and cook vegetables.

Note: Attention while blanching potatoes because when potatoes are overcooked, the spiced potato recipe will not have a complete standard it will be mushy.

- Practical exercises on preparation of fruits, page 230-234 students' book. This activity makes students competent on **making fruits salad and yoghurt fruit**. As a teacher you are required to guide learners to accomplish the activity given step by step.

Lesson 5: Preparation of sauces and soups

a) Prerequisites

Food nutrients selection principles,

Food nutrients utility and meal plans (unit 6, S2),

Food safety techniques and cooking methods (unit.7, S2).

b) Teaching resources

Pictures of preparation of sauce and soups, cookbooks of preparation of sauce and soups, flipcharts, blackboard, cooking tools and equipment.

c) Learning activities

The teacher guides learners to observe, describe and distinguish sauce and soup their roles in our daily through the activity 7.3, page 234 students' book.

d) Application activity

By introducing the lesson, teacher display pictures, page 235-238 students' book, describing the recipes that can guide students on how to *prepare sauces and soups* and think about the recipe.

- **Practical exercises on preparation of soups**

The teacher / facilitator asks students to follow step by step while preparing béchamel sauce, mayonnaise sauce, velouté sauce and tomato sauce recipe; guidance on page 220-223 students' book (procedures with instructions).

- Practical exercises on preparation of sauces

The teacher / facilitator asks students to follow step by step while preparing cooking creamed of carrot soup, mushroom soup and potage st Germain, guidance on page 223-230 students' book (procedures with instructions).

Answers to activity 7.3 (page 234 students' book)

1. Learners observe the picture displayed on page 220 students book.
2. The picture shows a sauce and soup
3. a. **Use of sauce :**
 - To moisten the food
 - To flavour the food
- b. **Use of soup**
 - To stimulate appetite
4. Sauce is a thickened liquid preparation from different food used to moisten and flavour the meal whereas soup is a thin liquid preparation from different food consumed to before main meal to stimulate appetite.

Lesson 6: Presentation and service of basic dishes

a) Prerequisites

Students will learn better the presentation and service of basic dishes if they have understood on food nutrients selection principles, food nutrients utility and meal plans (unit 6, S2) and food Safety techniques and cooking methods. (unit.7, S2).

b) Teaching resources

Reference pictures, reference cookbooks, food and beverage service books, flipcharts, blackboard, kitchen and restaurant materials, tools and equipment.

c) Learning activities

The teacher / facilitator guides learners through activity 7.4. This activity makes students competent to make plate of food to be attractive.

d) Application activity

Practical exercises on presentation and services of basic dishes

The teacher/ facilitator asks learners to observe and appreciate the pictures on page 247-249 students' book and guides them to apply garnishing technics (classic French garnishes) on page 248-249 and basic table service method on page 238 students' book. The food looks attractive when is well plated and garnished to stimulate appetite and people who eat will enjoy the food.

7.6. Summary of the unit

Preparation of basic dishes

Preparation of salad

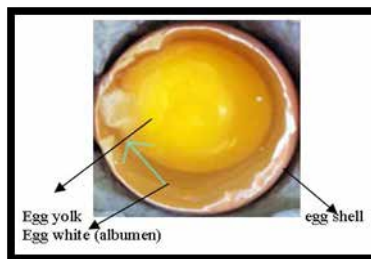
Salad is any of various dishes consisting of foods, as vegetables, meat, seafood, eggs, pasta, or fruit, prepared singly or combined, usually cut up, mixed with a dressing, and served cold.

Examples: chicken salad; potato salad.

Preparation of eggs

The eggs make a valuable contribution to a healthy, balanced diet. Eggs provide protein, vitamin A, riboflavin, and other vitamins and minerals. Eggs are an excellent source of high-quality protein and are far less expensive than most other animal-protein foods.

a. Structure of egg



b. Cooking of eggs dishes

Cooked eggs are a very good inexpensive source of high quality protein, either you cook them as omelets, hard boiled or soft boiled, scrambled, etc.

Preparation of Sandwiches

A **sandwich** is a food typically consisting of vegetables, sliced cheese or meat, placed on or between slices of bread, or more generally any dish wherein two or more pieces of bread serve as a container or wrapper for another food type. The bread can be either

plain, or coated with condiments such as mayonnaise or mustard, to enhance its flavor and texture

Making of ham and cheese sandwich

A grilled cheese sandwich (1 serve)

Preparation of vegetable dishes

The term vegetable means all plants which are used for human nutrition. It can be eaten raw, cooked or preserved.

Preparation of fruit dishes

Most fresh fruits are considered at their best when are raw. However, cooking can intensify flavors and create appealing textures, especially in unripe fruit. Cooked fruits can be served as side dishes, desserts, sauces, compotes or main dish components.

Fruit salad is a delicious dessert that you can make in less than ten minutes and one that you can enjoy without gaining weight. Fruit salad can also be a perfect way to start your morning, a great side dish at a daytime picnic or party, or the perfect snack during any time of day.

Preparation of soups

Soup is a liquid dish, typically savory and made by boiling meat, fish, or vegetables etc. in stock or water that is served warm or hot (but may be cool or cold).It is basically composed by the following main ingredients (Seasonings, liquids, thickening agents and garnishes)

Preparation of sauce

A sauce is a thin or partially thickened liquid compounded from various foods and used as an accompaniment to enhance the flavour of the food and exciting the appetite.

Main composition of a sauce

The sauce is basically composed by the following items;

- a. Flavoring and seasoning agents:** herbs, spices, peppers, peppers, mirepoix, salt...
- b. Thickening agents:** liaison (egg yolk+ cream), vegetable puree, corn starch, rice starch, cream, roux.
- c. Liquids:** stock, tomato puree, water, beure meniere, milk... a basic ingredient.

Note:

- All thickened sauces should be smooth, light in texture and definite in taste
- Most of the hot basic sauces use stock as
- There are varieties of sauces which are prepared in different ways.

Food presentation Techniques**a. Importance of food presentation**

The **food presentation** is the art of modifying, processing, arranging, or decorating food to enhance its aesthetic appeal. In order for food to be appreciated and enjoyed, the appetite must be stimulated before a meal.

The way the food looks on the plate is what tempts the eyes and makes you want to taste it.

The presentation of plating makes an impression, even a promise, with the viewer. The gourmet (connoisseur) is attracted by the food when the artistic plating has done its job well. Dish looks good, you wish to have it.

Types of garnishes

Garnishing food is as simple as a single fruit slice or as complicated as flying birds carved from vegetables. Whether you choose the former or attempt the latter, keep the garnish related to the dish. Add the garnish at the last minute for hot foods. Fruits, herbs, vegetables and edible flowers add color to food and tempt the appetite.

7.7. Additional information

Preparing fruits and vegetables

Fruits and vegetables require proper handling, preparation and storage in order to take full advantage of their many nutrients.

Rinsing all produce in potable water is the first important step. “Even fruits and vegetables with skins, like bananas or oranges, should be washed in order to remove any bacteria, pesticides or insects,” says Ellen Muehlhoff, a senior nutrition officer in FAO’s Food and Nutrition Division. Soaking fruits and vegetables, however, is never a good idea. “Water can dissolve a number of key nutrients, like vitamin C”

Cooking, on the other hand, can help break down plant cell walls and make certain nutrients more available. “Steaming is actually one of the best ways to prepare fruits and vegetables, since vitamins don’t come into direct contact with the water”

Cutting produce into large pieces (or cooking them whole) can also reduce the loss of nutrients by limiting the surface area. “As a rule, try to minimize the time, temperature and amount of water used when cooking fruits and vegetables” Wash all fruits and vegetables except mushrooms, and bananas. Soak vegetables, such as cauliflower, broccoli, cabbage and Brussels sprouts, 30 minutes in cold water containing a tablespoon of salt per gallon to loosen soil and remove insects. Since the majority of fruits and vegetables have short growing seasons, processing and preserving techniques can be used to make produce last longer.

7.8. Answers to end unit assessment

Standard performance

Prepare a three course menu including starter, main course and dessert from available ingredients in the store and serve at 12h30.

Dishes are:

Starter: Tomato and onions salad



Ingredients

- 1 onion, thinly sliced
- 4 tomatoes sliced
- ½ cucumber, sliced (optional)
- 1 green chilli, deseeded and finely chopped
- garlic cloves, finely chopped
- tbsp white malt vinegar
- 1 tsp caster sugar

Method

- Pour boiling water over the onion and leave for 10 mins.
- Arrange the tomatoes and cucumber (if using) on a plate, then scatter over the drained onions.
- Mix the chilli and garlic with the vinegar and sugar, then season with salt. Drizzle over the salad just before serving.
- This can be prepared and chilled up to 1 hr ahead, but dress just before serving.

Main course: Sautéed beef, plain rice and tomato sauce

Sautéed beef

Ingredients

1/2 lb boneless sirloin steak
(preferably top butt; about 1 inch
thick)
1 tablespoon all-purpose flour
4 tablespoons olive oil, divided
4 garlic cloves, thinly sliced
1 1/2 tablespoons chopped rosemary
2/3 cup dry white wine

Preparation

Trim excess fat, and then thinly slice
steak. Toss with flour, 3/4 teaspoon
salt, and 1/2 teaspoon pepper.
Heat 1 1/2 tablespoons oil in a 12-inch
heavy skillet over medium-high
heat. Sauté steak in 2 or 3 batches
until no longer pink on the outside,
about 2 minutes per batch, adding 1
1/2 tablespoons more oil as needed.
Transfer to a plate.
Sauté garlic and rosemary in
remaining tablespoon oil over
medium-high heat until golden,
1 to 2 minutes. Add wine and 1/2
teaspoon each of salt and pepper
and boil, scraping up brown bits,
until reduced by half. Return beef
with juices to skillet and warm
through.

Follow These Steps to prepare plain rice
Boil water and add salt. Pour water (for
every cup of rice, use 1¾ cups of water) into
a large saucepan with a tight-fitting lid. ...
Pour in rice. Add it to the boiling water.
Stir once, or just enough to separate the rice.
...
Cover the pot and simmer. ...
Fluff rice with a fork.

See tomato sauce on page 233
See the carrot cake on page (.....)

Dessert: carrots cake

7.9. Additional activities

7.9.1 Remedial activities

After cooking you will present and serve our guest in a restaurant in the following ways:

Step1. Great, escorting the guest

Step2. Seating the guest in polite manner with happy face

Step3. Placing napkin on lap of customer

Step4. Taking order by describing the specials

Step5. Suggesting aperitif beverages meanwhile waiting for the order

Step6. Service of meal

Step7. Presenting the check and thanking the guest for ordering.

Step8. Warm farewell

7.9.2 Consolidation activities

Prepare salad, meat and dessert for 1 guest from MINEDUC; you are required to prepare a three course menu including salad, meat course and dessert from displayed ingredients and serve at 1h00PM.

7.9.3 Extended activities

After cooking and serving the menu learners should take note and serve guest following service sequence. See service sequence on page (233-234 student book).

UNIT 8: BASIC PRINCIPLES OF PREPARING CAKE

8

8.1. Key unit competence

Learners should be able to prepare and bake a variety of basic cakes

8.2. Prerequisite

Students will learn better the basic principles of preparing cakes if they have knowledge, skills and attitudes of food nutrients utility and meal plans on meal courses, cooking methods and bread making techniques.

8.3. Cross-cutting issues to be addressed

Below are examples on how crosscutting issues can be addressed in this unit:

Standardization culture

Some lessons involve carrying out practical activities of preparing cake. Instructions should be clear for learners to always check if they are not using expired ingredients.

In addition, when performing practical activities of preparing cake learners have to use required measurements.

For tasks regulation heat according, the kind of food in which the learner is asked to cook, they have to always present accurate measurements and quantity. For example, on the activity of preparing carrot cakes.

Gender

Gender while creating groups, in the way that each group is composed by girls and boys to have heterogeneous group.

Involve both girls and boys in all activities: No activity is reserved only to girls or boys.

Teachers should ensure equal participation of both girls and boys during lesson activities as well as during food preservation and storage. For example, on the activity of preparing carrot cake.

Inclusive education

All Rwandans have the right to access education regardless of their different needs. The possibility of this assumption is the focus of special needs education. The critical issue is that we have persons/ learners who are totally different in their ways of living and learning as opposed to the majority. The difference can either be emotional, physical, sensory and intellectual learning challenged traditionally known as mental retardation.

These learners equally have the right to benefit from the free and compulsory basic education in the nearby ordinary/mainstream schools. The teacher therefore is requested to consider each learner's needs during teaching and learning process. Assessment strategies and conditions should also be standardized to the needs of these learners. Detailed guidance for each category of learners with special education needs is provided for in the guidance for teachers. Involve all learners in all activities without any bias.

E.g.

1. Using gestures and signs to help learners with hearing difficulties to understand the instructions.

For example on the activity write the procedures to follow while making carrot cakes

Using these ingredients and materials make a carrot cake.

Environment and sustainability

Basic principles of preparing cakes is including in environment and sustainability because environment may be the place where they are preparing cakes and the ingredients to use are coming from the environment.

In home science teachers must use this cross-cutting issue by showing the learners how to sustain the environment,

For example, tell them to clean the class after studying by removing and collecting the wastage that are in the kitchen after preparing cakes. For example in the lesson of preparing banana cake.

Financial Education

When performing practical activity of home science, learners avoid waste the ingredients to prepare cakes, they have to use the quantity of ingredients that are just required.

E.g.: For in the lesson of preparing muffin cakes.

Inclusive education

This unit involves a number of experiments on the properties of metals and ionic compounds. The experiments require assembling of apparatus and observation of the results. This may be challenging to students with special educational needs especially children with visual impairment. However, the teacher can make some arrangements like:

Grouping students. Students with special educational needs are group with others and assigned roles basing on individual student's abilities.

Providing procedure earlier before the experiment so that students get familiar with them. They can be written on the chalkboard or printed depending on available resources. If you have children with low vision remember to print in appropriate fonts.

Every important point is written and spoken. The written points help students with hearing impairment and speaking aloud helps students with visual impairment

Remember to repeat the main points of the lessons.

8.4. Guidance on the introductory activity

For this activity, the facilitator forms groups of five students that are as heterogeneous as possible. He/she guides them to analyze the components as displayed in a and b on the picture, page 256 student book.

The facilitator makes sure that each student contributes on the discussion activity and provides a clear sheet for reporting. He/she asks randomly representative of two or three groups to present their findings. During the plenary session, the facilitator consolidates the findings from different groups and harmonizes/ summarizes the whole work. He/ she asks students to predict what to learn in the current unit, and introduces the new unit.

8.5. List of lessons

#	Lesson title	Learning objectives	Number of periods 15
1	Preparation of carrot cake	<p>Distinguish type of carrot cake</p> <p>Explain the steps in making carrot cake</p> <p>Make carrot cake</p> <p>Perform appropriate steps used in baking carrot cake</p> <p>Ability to make carrot cake following all the steps</p> <p>Appreciate the end results of carrot cake product</p>	2
2	Preparation of apple pie cake	<p>Distinguish type of apple pie cake</p> <p>Explain the steps in making apple pie cake</p> <p>Make apple pie cake</p> <p>Perform appropriate steps used in baking apple pie cake</p> <p>Ability to make apple pie cake following all the steps</p> <p>Appreciate the end results of the apple pie cake product</p>	2

3	Preparation of muffin cake	<p>Distinguish type of muffin cake</p> <p>Explain the steps in making muffin cake</p> <p>Make muffin cake</p> <p>Perform appropriate steps used in baking muffin cake</p> <p>Ability to make muffin cake following all the steps</p> <p>Appreciate the end results of muffin cake product</p>	3
4	Preparation of Queen cake	<p>Distinguish type of queen cake</p> <p>Explain the steps in making queen cake</p> <p>Make queen cake</p> <p>Perform appropriate steps used in baking queen cake</p> <p>Ability to make queen cake following all the steps</p> <p>Appreciate the end result of queen cake product</p>	2
5	Preparation of banana cake	<p>Distinguish type of banana cake</p> <p>Explain the steps in making banana cake</p> <p>Make banana cake</p> <p>Perform appropriate steps used in baking banana cake</p> <p>Ability to make banana cake following all the steps</p> <p>Appreciate the end results of the banana cake product</p>	2

6	Finishing by frosting a cake	Distinguish types of finishing cakes Explain the steps in making frosting and finishing Make different types of finishing cakes Perform appropriate steps used in frosting and finishing cakes Ability to make frosting and finishing following all the steps Appreciate the end results of frosting and finishing the products	2
7	Assessment		2

Lesson 1: Preparation of carrot cake

a) Prerequisites

Students will learn better the preparation of carrot cake if they have understood on food nutrients selection principles; food nutrients utility and meal plans (unit 6 S2); food Safety techniques and cooking methods. (unit.7 S2) and cooking methods (unit.7 S2).

b) Teaching resources

Baking materials tools and equipment different pastry and bakery ingredients for making carrot cake, walls clocks, measuring tools and materials, weighing scales , different ingredients for finishing a cake, utensils, regular internet, audio visual images, pictures flip charts, projector, reference pictures, pastry and bakery books.

c) Learning activities

By introducing the 1st lesson of this unit, teacher display pictures on the introductory activity and ask students to identify the elements on picture a and b. The teacher guides on research activity to know principles behind the making of cake and the types of cake from ingredients set of each picture (a and b) on page 256 students book. As facilitator you are required to guide learners in the following activities:

- Brainstorming on ingredients to make carrot cake
- Group discussion on carrot cake preparation
- Research activity on carrot cake preparation and presentation of findings.

d) Application activity

Practical exercises on preparation of carrot cake. Activity 8.1, (tube) on page 262 students' book, As a facilitator, teacher gives and explains clearly the tips and remarks of making baking cakes. The teacher asks learners to follow steps and clear instructions while making carrot cake.

Lesson 2: Preparation of apple pie cake

a) Prerequisites

Students will learn better the preparation of apple pie cake if they have understood on food nutrients selection principles; food nutrients utility and meal plans (unit 6 S2); food Safety techniques and cooking methods. (unit.7 S2) and cooking methods (unit.7 S2).

b) Teaching resources

Baking materials tools and equipment of different pastry and bakery ingredients for making apple pie cake, walls clocks ,measuring tools and materials, weighing scales , different ingredients for finishing a cake ,utensils, regular internet, audio visual images, pictures flip charts, projector ,reference pictures, pastry and bakery books.

c) Learning activities

By introducing the lesson, teacher display pictures describing procedures of how to make cake (apple pie cake) so that learners observe. As facilitator teacher is required to guide learners in the following activities:

- Brainstorming on apple pie cake preparation
- Group discussion on apple pie cake preparation
- Research activity on apple pie cake preparation and presentation of findings on apple pie cake preparation.

d) Application activity

Practical exercises on preparation of apple pie cake.

The facilitator asks learners to apply steps with instructions respect while making apple pie cake, page 264-269 students' book.

Lesson 3: Preparation of muffin cake

a) Prerequisites

Students will learn better the preparation of apple pie cake if they have understood on food nutrients selection principles; food nutrients utility and meal plans (unit 6 S2); food Safety techniques and cooking methods. (unit.7 S2) and cooking methods (unit.7 S2).

b) Teaching resources

Baking materials tools and equipment 's different pastry and bakery ingredients for making muffin cake, walls clocks ,measuring tools and materials, weighing scales , different ingredients for finishing a cake ,utensils, regular internet, audio visual images, pictures flip charts, projector ,reference pictures, pastry and bakery books.

c) Learning activities

The teacher display pictures describing procedures on how to make muffin cake. As facilitator teacher is required to guide learners in the following activities :

- Brainstorming on making a cake,
- Research activity on muffin cake preparation and presentation of findings,
- Group discussion on muffin cake preparation.

d) Application activity

Practical exercises on preparation of muffin cake. The teacher asks students to apply steps and instructions while making muffin cake as given on page 269-270 students' book. Teacher guide learners to make muffin cakes in the activity with procedures provided.

Note: Care to be taken because muffins get burnt when they are bake on high temperature. Time and temperature during muffin cake baking is compulsory.

Lesson 4: Preparation of queen cake

a) Prerequisites

Students will learn better the preparation of queen cake if they have understood on food nutrients selection principles; food nutrients utility and meal plans (unit 6 S2); food Safety techniques and cooking methods. (unit.7 S2) and cooking methods (unit.7 S2).

b) Teaching resources

Baking materials tools and equipment 's different pastry and bakery ingredients for making queen cake, walls clocks ,measuring tools and materials, weighing scales , different ingredients for finishing a cake ,utensils, regular internet, audio visual images, pictures flip charts, projector ,reference pictures, pastry and bakery books.

c) Learning activities

By introducing the lesson, teacher display pictures describing procedures of how to make cake (Queen Cake). As facilitator teacher is required to guide learners in the following activities:

Brainstorming on making cake

Group discussion on queen cake preparation

Research activity on queen cake preparation and presentation of findings on queen cake preparation

d) Application activity

Practical exercises on preparation of queen cake. The teacher asks students to apply steps and instructions while making queen cake as given on page 271-273 students' book. Teacher guides learners to make queen cake in the learning activity with instructions clarified.

Note: An advantage of spreading oil or spraying oil on cake tins is to prevent the cake from sticking and be easy to remove cake from the tins after baking.

When pouring the dough in the tin never overfill the tin leave 1/3 where the cake will rise. In case you over fill the tin the cake will rise up and the result will not be good.

Lesson 5: Preparation of banana cakes

a) Prerequisites

Students will learn better the preparation of banana cake if they have understood on food nutrients selection principles; food nutrients utility and meal plans (unit 6 S2); food Safety techniques and cooking methods (unit.7 S2) and cooking methods (unit.7 S2).

b) Teaching resources

Baking materials tools and equipment 's different pastry and bakery ingredients for banana cakes, walls clocks ,measuring tools and materials, weighing scales , different ingredients for finishing a cake ,utensils, regular internet, audio visual images, pictures flip charts, projector ,reference pictures, pastry and bakery books.

c) Learning activities

As facilitator the teacher guides students in the following activities:

- Brainstorming on making of cake
- Group discussion on banana cake preparation
- Research activity on banana cake preparation and presentation of findings on banana cake preparation.

c) Application activity

Practical exercises on preparation of basic banana cake . The facilitator display pictures describing procedures of how to make banana cake on page 273-275 students' book. He/she supervise/guide students for making of banana cake.

Note: When 1st step doesn't take place means there is no banana cake. But if bananas are not mashed adequately the cake will not be smooth and will become dense in texture.

If the temperature control ignored, the cake should be overcooked (burnt) or will not raise because of insufficient temperature.



Lesson 6: Finishing the cake by frosting

a) Prerequisites

Students will learn better finishing the cake by frosting if they have understood on food nutrients selection principles; food nutrients utility and meal plans (unit 6 S2); food Safety techniques and cooking methods. (unit.7 S2); cooking methods (unit.7 S2) and Preparations of cakes (unit8 S3).

Food presentation techniques to consider the importance of food presentation, the types of garnishing, techniques of making and using garnishes.

b) Teaching resources

Baking materials tools and equipment: different pastry and bakery ingredients, walls clocks, measuring tools and materials, weighing scales, different ingredients for finishing a cake, utensils, regular internet, audio visual images, pictures flip charts, projector, reference pictures, pastry and bakery books.

c) Learning activities

- As facilitator the teacher guides students in the following activities:
- Brainstorming on making cake,
- Group discussion on finishing the cake by frosting,
- Research activity on finishing the cake by frosting and presentation of findings on finishing the cake by frosting.

d) Application activity

Practical exercises on finishing the cake by frosting. Teacher guides students to know the procedures for finishing a cake by frosting. He/she display pictures describing how to make finishing the cake by frosting to students. Learner observes the pictures that can guide them to apply procedures on page 273-275 students' book.

e.g. The carrot cake is finished by frosting using descriptive procedures and cake finishing principles guided by the teacher with recipe instructions



8.6. Summary of the unit

- **Prepare cake**

You've baked cake. You've let the layers cool. But before you can cover them with a moist layer of frosting, you need to get your cake ready. Make sure the layers have cooled for a couple of hours after they come out of the oven, or even overnight in the refrigerator. When you're ready to frost, follow these steps.

1. How to prepare a cake for frosting

These steps below are specific to layer cakes, but you can use the basic information to get the most out of frosting pound cakes and bunt cakes, too (although you might consider glazing those, and we'll help you with that).

Cut three or four parchment or wax paper strips to place under the cake. Then, use a serrated knife to trim off any peaks from the tops of the cakes so they lie flat and even (eat these trimmings as your reward for having baked the cake in the first place).

Place the paper strips on the edges of a serving plate and invert one cake layer onto it so cut side is facing down; this helps minimize crumbs.

8.7. Additional Information for teachers

1. Variations of banana cakes

A. Easy rise banana cake

Ingredients

3 cups self-rising flour
2 cups sugar
7/8 cup butter
4 ripe bananas, mashed
1 cup milk
2 eggs
1 teaspoon vanilla extract

B. Very moist banana cake

Ingredients

1 ½ cups very ripe bananas
2 teaspoons fresh lemon juice
3 cups all-purpose flour
1 ½ teaspoons baking soda
¼ teaspoon salt
¾ cup butter, softened to room temperature
2 cups fine sugar
3 large eggs
1 teaspoon vanilla extract
1 ½ cups buttermilk
Cream cheese frosting

C. Lemon banana cake

Ingredients

3 ripe bananas
1 teaspoon lemon juice
1 teaspoon lemon juice
1 teaspoon sugar
4 oz. butter or margarine
1 teaspoon lemon rind, finely grated

¾ cup sugar
2 eggs
1 teaspoon baking soda
1 tablespoon milk
2 cups self-rising flour
Walnut halves
Lemon icing (optional)

Method One of Three: Making an Easy Rise Banana Cake



1. Preheat the oven: The oven should be preheated to 350°F (177°C). Do this before you begin mixing the ingredients so the oven will be ready when you want to put the cake inside.

Grease a pan. You can use a variety of pans, but common sizes are 9-inch round pans or 9x13 baking pans.



2. Heat a saucepan on the stove: Use it to melt the sugar and butter. Keep your heat medium or lower. Avoid overheating your pan and burning the butter and sugar. Turn off heat and remove pan from the eye.



3. Puree the bananas: The bananas need to be smooth and creamy. You can puree bananas with a fork, a potato masher, or a food processor. If you are pureeing bananas with a fork or masher, put them in a large mixing bowl first. When using a food processor, pour the banana puree into the mixing bowl.

Pour in the butter and sugar mixture from the pan and mix together. Make sure your bananas are ripe. Ripe bananas are softer and easier to puree. Choose a bowl that is large enough to mix all ingredients for the cake into.



4. Prepare the eggs: Crack the two eggs into a separate bowl before slightly beating them. Slightly beaten eggs are beaten with a fork or whisk until the yolk and white are mixed into a uniform consistency.

When baking, eggs should be at room temperature for the best results. To warm your eggs to room temperature, take them out of the refrigerator 10-15 minutes before you begin baking.



5. Mix the eggs into bowl: Pour the eggs on top of the butter, sugar, and banana mixture and then gently mix together with a spatula or spoon.

Make sure that the butter and sugar have cooled significantly before pouring in your eggs. Pouring eggs into a hot mixture can cook the eggs. To avoid unwanted scrambled

eggs, wait until the mixture is cool.



6. Mix in the remaining ingredients: first, mix in the wet ingredients. you can mix them separately, or mix the milk first and the vanilla extract second. After you have added the wet ingredients, add the flour to the batter.

Stir well, making sure all the ingredients are blended. If mixing with a spoon or spatula is too difficult, use a hand mixer.



7. Pour the mix into the greased baking dish: Then, place the pan into the preheated oven. Bake for 40 minutes.

Many factors, such as the material of the pan, can influence cooking time. Keep a careful eye on your cake, checking it as it nears 40 minutes. The cake may be finished a few minutes early, or it may need to cook a little longer.

Insert a toothpick, fork, or knife into the center to check if the cake is done. If it comes out clean, the cake is fully cooked.



8. **Take the cake out of oven when finished:** Let the cake cool completely before cutting. Serve cake slices with choice garnish.

Method two of three: making a very moist banana cake with cream cheese frosting.



1. **Preheat the oven to 275° F:** Grease a 9x11-inch loaf or cake pan. Alternatively, use a 10-inch round cake pan.



2. **Mash banana in small bowl:** To do this, use a fork or potato masher. If you prefer, place the bananas in a food processor. When the bananas are mashed to a creamy, smooth consistency, put the bowl to one side.

Add the lemon juice while mashing, to prevent browning.

Make sure to use ripe bananas



3. Mix the dry ingredients: Place the flour and baking soda into a mixing bowl. Add the salt. Stir with a whisk to combine. When the dry ingredients have been mixed well set the bowl aside.

4. Add the butter and sugar to another mixing bowl: Cream until light and fluffy.

The butter should be softened before beginning this step. Softened butter is easier to mix with other ingredients. To soften butter, remove the butter from the refrigerator 30-60 minutes before you begin.

Creaming butter and sugar is a type of mixing method. Start with room temperature butter. Using a hand or stand mixer, beat the butter on low until it is creamy. Add the sugar and mix on high until the butter and sugar is a whipped grainy consistency. The color should be a very light yellow or ivory. Don't forget to scrape the sides of the bowl while mixing.



5. Beaten the eggs: Add the eggs one at a time into the butter and sugar mixture. Using a hand mixer beat the eggs until completely mixed into the batter.

Add the vanilla extract after you have added the eggs. Stir into the mixture



6. Mix in the flour and buttermilk: Starting with the flour pour a small amount into the mixture and beat in with a hand mixer. Then add in a small amount of buttermilk also beating it into the batter with a hand mixer. Continue this gradually, alternating between the flour and the buttermilk. Make sure to stir each time you add the ingredients.

When all the flour and buttermilk has been added stir in the mashed bananas.



7. Pour the cake batter into the greased pan: Measure the batter s distributed evenly throughout the pan. Place the pan in the preheated oven. Bake for 1 hour 15 minutes.

Check the cake periodically while cooking. Use a toothpick for or knife to check to see f the cake is done. If the toothpick comes out clean when inserted into the cake, the cake is done.



8. Remove the cake from the oven: Place straight into the freezer. Leave in the freezer for 45 minutes.

This step is very important because it increases the moisture content of the cake.

Place the cake pan on top of something like a bread board lined with silicone sheet to avoid melting freezer plastic.

Frost with cream cheese frosting after removing from the freezer.



9. Serve: Cut the cake and serve. If you are not serving immediately, keep refrigerated until you are ready to do so.

Method three of three: Making a lemon banana cake



1. Preheat the oven to 350°F: Butter a 9-inch round pan or a 9x13 baking pan, and line the baking pan with parchment paper.



2. Prepare the bananas: Mash the bananas until pureed well. You can mash them with a fork or a potato masher, or you can place the bananas into a food processor. Pour lemon juice over the banana mash to prevent them from turning brown. Sprinkle 1 teaspoon of sugar over the bananas. Set aside for now.



3. Cream the butter and sugar: first, using a hand or stand mixer, beat the butter on low until it is creamy. During this step, beat the lemon rind into the butter. Then, add the sugar to the lemon rind butter, mixing on high until the butter and sugar is light and fluffy. Don't forget to scrape the sides of the bowl while mixing.

The butter should be softened before beating with the lemon rind, because softened butter makes it easier to mix with other ingredients. Remove the butter from the refrigerator 30-60 minutes before you begin so it will be soft enough.



4. Add the eggs to the butter and sugar mix:

Use a hand mixer when beating each egg into the batter. Add them into the mixture one at a time.

Make sure the eggs are at room temperature. Take them out of the refrigerator 10-15 minutes before you begin mixing ingredients.

Add the mashed bananas to the batter. Then add the milk. Mix through well with a mixer or spoon.



5. Add the dry ingredients: Add the baking soda and flour into a sifter. Then, sift the dry ingredients to the batter. Mix through with a hand or standing mixer until all ingredients are blended.



6. Pour the batter into the cake pan: Place the cake in the preheated oven for 50 minutes, or until a skewer or toothpick inserted into the middle of the cake comes out clean.



7. Remove from the oven: Allow to cool for a few minutes in the baking pan. Then turn the pan upside down onto a wire cooling rack, remove from the pan, and allow to cool completely.



8. Spread the icing over the cooled cake:

Make sure the cake is completely cooled before icing. Arrange the walnuts on the cake in any way you prefer.

The walnuts are optional. You can add different nuts or a different topping. Try mixing toppings for different flavors.



9. **Serve:** Cut the cake and place onto plates to serve. The cake is best served fresh. If you need to store it, keep it in airtight container in a cool place.

Lemon banana cake is ready

source: <https://www.google.com/search?q=making+lemon+banana+cake/steps>

2. Butter cream variations

Make buttercream filling.

By changing the ratio of butter to confectioner's sugar, you can create a buttercream more suitable for filling cakes and cookies. It's a little lighter than buttercream frosting and can be flavoured in any way you like. Here's how to make it:

- Beat 1 cup of softened butter until fluffy.
- Add 1/2 cup shortening and beat well.
- Add 1 pound of confectioner's sugar and 1/4 teaspoon salt and keep beating (icing sugar).
- Add 1/2 cup milk and 1/2 teaspoon vanilla. Beat until creamy and spreadable.

Make buttercream fondant.

If you are looking for a frosting more stable and sturdier than buttercream, but with the same rich flavour, buttercream fondant is for you. It's made with marshmallows and butter flavouring, so it emulates the flavour of buttercream, but it won't melt as easily. Here's how to make it:

- Microwave 8 cups mini marshmallows, 2 teaspoons clear vanilla extract and 2 teaspoons butter extract until the ingredients are melted together.
- In a separate bowl, beat 2 pounds confectioner's sugar, 1/2 teaspoon salt, 2 tablespoons water and 1 tablespoon white corn syrup.
- Combine the marshmallow mixture and the sugar mixture in a mixing bowl and beat until fluffy.
- Turn the dough onto a nonstick surface and knead for 10 minutes. Grease your hands with vegetable shortening to keep the dough from sticking.
- Wrap the dough in plastic wrap and let it rest for an hour before rolling it out and using it.



8.8. Answers of end unit assessment

Making and finishing muffin cake

Ingredients and procedures for making and finishing muffin cake

Ingredients

113g of butter

113g sugar

113g self-rising flour

4 eggs

1/2 tsp of vanilla essence

1 tsp baking powder

Steps



Step.1 Set the oven to 190 °C (374 °F). Put the bun cakes in the bun tin.



Step.2 Sift the flour into a bowl with the sugar and baking powder. Add in the butter, eggs and pour in the vanilla.



Step.3. Beat it all together until you have a soft creamy mixture.



Step.4. Using 2 spoons put the mixture into the bun cakes and put the tins in the oven.

Step.5 Bake for 20 - 25 minutes until it is a golden color.



Step.6 cake is ready and let cool.

Step 7: Make the icing

For perfect chocolate butter icing you will need for finishing:

100g icing sugar;

100g dark chocolate (melted); and

100g butter (it must be real butter, don't be tempted to use spread!)

Whisk the icing sugar and butter together (being careful not make your kitchen look like it has been in a blizzard) until really smooth and creamy, then add the melted dark chocolate (milk chocolate would be too sickly sweet) and whisk again. Use an electric whisk for best results.



Step 8: Decorate

Pipe the icing onto your cake in swirls and add any decorations you wish. You can always just spread the icing on if you don't have a piping set. I decorated my cakes with freeze-dried strawberries as they add great colour and taste delicious too. Don't forget to lick the bowl!



Step 9: Enjoy

Muffin cakes are served as desserts.

source: <https://www.google.com/search?q=making+muffin+cake>

8.9. Additional activities

8.9.1 Remedial activities

Summarize the activities on how can prepare a cake what for frosting any cake.

Answer

Prepare a cake for frosting

These steps below are specific to layer cakes, but you can use the basic information to get the most out of frosting pound cakes and bunt cakes, too (although you might consider glazing those, and we'll help you with that).

Cut three or four parchment or wax paper strips to place under the cake. Then, use a serrated knife to trim off any peaks from the tops of the cakes so they lie flat and even. (Eat these trimmings as your reward for having baked the cake in the first place.)

Place the paper strips on the edges of a serving plate and invert one cake layer onto it so cut side is facing down; this helps minimize crumbs.

8.9.2: Consolidation activities

Make a lemon banana cake by using method three of three and follow the bellow instructions of steps:



1. **Preheat the oven to 350°F:** Butter a 9-inch round pan or a 9x13 baking pan, and line the baking pan with parchment paper.



2. Prepare the bananas: Mash the bananas until pureed well. You can mash them with a fork or a potato masher, or you can place the bananas into a food processor. Pour lemon juice over the banana mash to prevent them from turning brown. Sprinkle 1 teaspoon of sugar over the bananas. Set aside for now.



3. Cream the butter and sugar: first, using a hand or stand mixer, beat the butter on low until it is creamy. During this step, beat the lemon rind into the butter. Then, add the sugar to the lemon rind butter, mixing on high until the butter and sugar is light and fluffy. Don't forget to scrape the sides of the bowl while mixing.

The butter should be softened before beating with the lemon rind, because softened butter makes it easier to mix with other ingredients. Remove the butter from the refrigerator 30-60 minutes before you begin so it will be soft enough.



4. Add the eggs to the butter and sugar mix: Use a hand mixer when beating each egg into the batter. Add them into the mixture one at a time.

Make sure the eggs are at room temperature. Take them out of the refrigerator 10-15 minutes before you begin mixing ingredients.

Add the mashed bananas to the batter. Then add the milk. Mix through well with a mixer or spoon.



5. Add the dry ingredients: Add the baking soda and flour into a sifter. Then, sift the dry ingredients to the batter. Mix through with a hand or standing mixer until all ingredients are blended.



6. Pour the batter into the cake pan: Place the cake in the preheated oven for 50 minutes, or until a skewer or toothpick inserted into the middle of the cake comes out clean.



7. Remove from the oven: Allow to cool for a few minutes in the baking pan. Then turn the pan upside down onto a wire cooling rack, remove from the pan, and allow to cool completely.



8. Spread the icing over the cooled cake: Make sure the cake is completely cooled before icing. Arrange the walnuts on the cake in any way you prefer.

The walnuts are optional. You can add different nuts or a different topping. Try mixing toppings for different flavors.



9. Serve: Cut the cake and place onto plates to serve. The cake is best served fresh. If you need to store it, keep it in airtight container in a cool place.

Lemon banana cake is ready



Answer of consolidation activity is respect of steps above from the 1 to 9 (see on p.g...) of teacher guide

8.9.3 Extended activity Flavor and color the butter cream with red food color and strawberry flavors of muffin cakes. After flavoring the butter cream, decorate.

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