Mathematics

Teacher's Guide

For

Primary

1

Experimental version

Kigali, 2019

FOREWORD

Dear teacher,

Rwanda Basic Education Board is honored to present P1 Mathematics teacher's guide which serves as a guide to competence-based teaching and learning to ensure consistency and coherence in the learning of Mathematics in primary one. 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 the teaching and learning process. Many factors influence what pupils learn, how well they learn and the competences they acquire. Those factors include the relevance of the specific content, the quality of teachers, the assessment strategies and the instructional materials available.

The special attention was paid 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 the regard of competence-based curriculum, learning is considered as a process of active building and developing of knowledge and

skills 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.

The book provides active teaching and learning techniques that engage pupils to develop competences. In view of this, your role is to:

- Plan your lessons and prepare appropriate teaching materials as well as a variety of activities at every topic.
- Organize group discussions for pupils considering the importance of social constructivism suggesting that learning occurs more effectively when pupils works collaboratively with more knowledgeable and experienced people.
- Engage pupils through active learning methods such as inquiry methods, group discussions, research, investigative activities, group and individual work activities.
- Provide supervised opportunities for pupils to develop different competences by giving tasks which enhance critical thinking, problem solving, research, creativity and innovation, communication and coopedifferencen.
- Support and facilitate the learning process by valuing pupils' contributions in the class activities.
- Guide pupils 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 book is self explanatory so that you can easily use it. It is divided in 3 parts:

The part I explain the structure of the teacher's guide and give you the methodological guidance;

The part II gives a sample lesson plan;

The part III details the teaching guidance for each concept given in the pupil's book.

Even though this teacher's guide contains the guidance on how to deliver mathematics lessons, you are requested to plan your lessons before delivering them.

I wish to sincerely express my appreciation to the people who contributed towards the development and the translation of this P1 Mathematics teacher's guide, particularly REB staff who organized the whole process from its inception. Special appreciation goes also to teachers who supported the exercise throughout.

Any comment or contribution would be welcome to the improvement of this teacher's guide for the next versions.

Dr. MBARUSHIMANA Nelson

Director General of REB

ACKNOWLEDGEMENT

I wish to sincerely express my special appreciation to the people who played a major role in development of P1 Mathematics teacher's guide. It would not have been successful without the participation of different education stakeholders to whom I would like to express my deep gratitude.

My thanks first go to the Rwanda Basic Education Board staffs and teachers who were involved in the elabodifferencen of this teacher's guide.

I owe gratitude to UR-CE, Primary and Secodary schools and different organizations that have allowed us to work with their professionals in the elabodifferencen of this teacher's guide.

MURUNGI Joan,

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

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STRUCTURE OF TEACHER'S GUIDE

PART I: GENERAL INTRODUCTION

1.0 About the teacher's guide

This book is a teacher's guide for P1 Mathematics. It is designed to accompany P1 Mathematics Pupil's book and intends to help teachers to plan quality mathematics lessos durig the implementation of competence-based curriculum.

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 of Mathematics content. It will help teachers to understand the different sections of this guide and what they will find in each section.

Overall structure

The whole guide has three main parts as follows:

Part I: General Introduction

This part provides general guidance on how to develop the generic competences,
how to integrate cross cutting issues, how to cater for learners with special educational needs, active methods and techniques of teaching Mathematics in Primary1 and guidance on assessment.

Part II: sample lesson plan

This part provides a sample lesson plan to guide the P 1 Mathematics teacher to plan for other lessons. The teacher should prefer to teach using a given sample lesson plan or he/she should prefer to use it as guidance while planning his/her lessons depending on the nature of the topic to be taught, school environment, teaching aids and level of pupils.

Part III: Unit structure

Each uit is structured as follows:

- **Unit title from the syllabus**

- **Key unit competence from the syllabus**

- **Learning objectives from the syllabus and they are related to different lessons in the unit**
- **Cross- cutting issues to be addressed**

This part provides guidances on cross-cutting issues to be addressed in the unit. A teacher should think about any other cross-cutting issue to be addressed depending on the topic to be taught.

Some crosscutting issues to be addressed are for example gender through assigning leading roles in the management of groups to both girls and boys and providing equal opportunity in the lesson participation and avoid any gender stereotype in the whole teaching and learning process, peace and Values Education through encouraging pupils to develop the culture of tolerance during discussion and respect ideas from others, financial education, inclusive education, and environment and sustainability…

- **Introductory activity**

This part provides guidances on how a teacher should facilitate pupils to discover by themselves different Mathematics concepts to be taught in the whole unit.

- **List of lessons**

This part provides a proposal of all lessons to be covered in every unit, lesson objectives and number of periods for each lesson

- **Methodological guidances on different lessons**

- **End unit assessment**

This part provides a proposal of questions to be used at the end of the unit to test knowledge, skills, attutudes and values of pupils. The proposed questions should be improved or increased by preparing additional activities whith the aim of remediation or reinforcement.

Lesson Structure

Each lesson in this teacher's guide is structured   as follows:

- Lesson title

- Prerequisites

- Teaching aids to be used in the lesson: teachers shoud prefer to use different teaching aids from the proposed ones depending on the school envronnment and the available teaching aids. Pupils may also bring their own teaching aids.

- Teaching and learning activities accompanned by teaching methods, strategies and techniques.

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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 secondary education. This called for changing the way of learning by shifting from teacher centred to a learner centred approach. Teachers are not only responsible for knowledge transfer but also for fostering pupils' learning achievement and creating safe and supportive learning environment. It implies also that pupils have to demonstrate what they are able to transfer the acquired knowledge, skills, values and attitude to new situations.

Teaching Mathematics requires pupils to perform different tasks and activities. 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 learner can do rather than what learner can memorize. Pupils develop competences through discussions in group work activities and the teacher facilitates them to discover new ideas and concepts by providing support where needed. After group discussions, pupils

are given time to present their findings and then with the help of the teacher they harmonize their presentations and finally make a lesson summary.

In addition to the competences related to Mathematics, pupils also develop generic competences which should   promote the development of the higher order thinking skills. Generic competences are developed throughout all units of Mathematics as follows:

Generic competences	Ways of developing generic competences
Critical thinking	For example, all activities that require pupils to critically analyse mathematical word problems , make calculations and providing a correct solution to it have a common factor of developing critical thinking.
Creativity and innovation	All activities that require pupils to explain how to apply mathematical skills in solving daily problems have a common character of developing creativity and innovation.
Research and problem solving	All activities that require pupils to make a research and apply their knowledge to solve problems from the real-life situation have a character of developing research and problem solving skills.
Communication	During Mathematics class, all activities that require pupils to exchange ideas on the lesson learnt have a common character of developing communication skills.
Co-opedifferencen, interpersonal relations and life skills	All activities that require pupils to work in pairs or in groups have character of developing coopedifferencen and life skills.
Lifelong learning	All activities that are connected with research have a common character of developing into pupils a curiosity of applying the knowledge learnt in a range of situations. The purpose of such kind of activities is for enabling pupils to become life-long learners who can adapt to the fast-changing world and the uncertain future by taking initiative to update knowledge and skills with minimum external support.

Among the changes brought by the competence-based curriculum is the integdifferencen 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: *Comprehensive Sexuality Education, Environment and Sustainability, Financial Education, Genocide studies, Gender, Inclusive Education, Peace and Values Education, and Standardization Culture*.

Some cross-cutting issues may seem specific to particular learning areas/subjects but the teacher need to address all of them whenever an opportunity arises. In addition, pupils should always be given an opportunity during the learning process to address these cross-cutting issues both within and out of the classroom.

Below are examples of how some crosscutting issues can be addressed in Mathematics lessons:

Cross-Cutting Issue	Ways of addressing cross-cutting issues
Environment and Sustainability: Integdifferencen of Environment, Climate Change and Sustainability in the curriculum focuses on and advocates for the need to balance economic growth, society well-being and ecological systems. Student-teachers need basic knowledge from the natural sciences, social sciences, and humanities to understand to interpret principles of sustainability.	Through solving word problems involving addition, subtraction…, pupils should be encouraged to discuss effects of environment and sustainability. For example, a Mathematical word problem on planting trees should lead pupils to discuss about fighting agnaist erosion.
Financial Education: The integdifferencen of Financial Education into the curriculum is aimed at a comprehensive Financial Education program as a precondition for achieving financial inclusion targets and improving the financial	Through different examples and calculations in the unit of Rwandan currency, teacher can lead pupils to make appropriate financial decisions. Some examples of making priorities before spending money should be

capability of Rwandans so that they can make appropriate financial decisions that best fit the circumstances of one's life.	used to well address financial education.
Gender: At school, gender will be understood as family complementarities, gender roles and responsibilities, the need for gender equality and equity, gender stereotypes, gender sensitivity, etc.	Mathematics teacher should address gender as cross-cutting issue through assigning leading roles in the management of groups to both girls and boys, providing equal opportunity in the lesson and avoid any gender stereotype in the whole teaching and learning process.
Inclusive Education: Inclusion is based on the right of all children to a quality and equitable education that meets their basic learning needs and understands the diversity of backgrounds and abilities as a learning opportunity.	Firstly, Mathematics teacher need to identify/recognize pupils with special education needs. Then by using adapted teaching and learning resources while conducting a lesson and setting appropriate tasks to the he/she can cater for all pupils.
Peace and Values Education: Peace and Values Education (PVE) is defined as education that promotes social cohesion, positive values, including pluralism and personal responsibility, empathy, critical thinking and action in order to build a more peaceful society.	Through a given Matheamtics lesson, a teacher should: ▪ Set a learning objective which is addressing positive attitudes and values, ▪ Encourage pupils to develop the culture of tolerance during discussion and to be able to instil it in colleagues and cohabitants; ▪ Encourage pupils to respect ideas from others.

Standardization Culture: Standardization Culture in Rwanda will be promoted through formal education and plays a vital role in terms of health improvement, economic growth, industrialization, trade and general welfare of the people through the effective implementation of Standardization, Quality Assurance, Metrology and Testing.	With different activities that aim at promoting health improvement, hygiene and general welfare of the people, standardization culture should be addressed. For example, after manipulations in any Mathematics lesson, pupils may be encouraged to keep their surroundings clean. Again before consuming any juce or mineral water, pupils may be encouraged to check the expilation date.

1.2.2 Guidance on how to help pupils with special education needs

In the classroom, pupils learn in different way depending to their learning pace, needs or any other special problem they might have. However, the teacher has the responsibility to know how to adopt his/her methodologies and approaches in order to meet the learning need of each pupil in the classroom. Also teacher need to understand that pupils with special needs, need to be taught differently or need some accommodations to enhance the learning environment.

Below are general 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 child is unique with different needs and that should be handled differently.

Strategy to help pupils with developmental impairment:
• Use simple words and sentences when giving instructions;
• Use real objects that pupils can feel and handle. Rather than just working abstractly with pen and paper;
• Break a task down into small steps or learning objectives. The learner should start with an activity that she/he can do already before moving on to something that is more difficult;
• Gradually give the learner less help;
• Let the learner with disability work in the same group with those without disability.

Strategy to help pupils with visual impairment:

• Help pupils to use their other senses (hearing, touch, smell and taste) and carry out activities that will promote their learning and development;
• Use simple, clear and consistent language;
• Use tactile objects to help explain a concept;
• If the learner has some sight, ask him/her what he/she can see;
• Make sure the learner has a group of friends who are helpful and who allow him/her to be as independent as possible;
• Plan activities so that pupils work in pairs or groups whenever possible;

Strategy to help pupils with hearing disabilities or communication difficulties

• Always get the learner 's attention before you begin to speak;
• Encourage the learner to look at your face and let them seat near the teacher;
• Use gestures, body language and facial expressions;
• Use pictures and objects as much as possible.
• Keep background noise to a minimum.

Strategies to help pupils with physical disabilities or mobility difficulties:

• Adapt activities so that pupils who use wheel chairs or other mobility aids, can participate.
• Ask parents/caregivers to assist with adapting furniture e.g. the height of a table may need to be changed to make it easier for a learner to reach it or fit their legs or wheelchair under;
• Encourage peer support when needed;
• Get advice from parents or a health professional about assistive devices if the learner has one.

Strategies to help slow learners:

• Make sure the slow learners have active participation in the lesson by allowing them time to share ideas with the whole class;
• Plan activities so that pupils work in pairs or groups with their classmates who understand better.
• Plan additional activities for remediation and reinforcement

1.2.3. Guidance on assessment

Assessment is an integral part of teaching and learning process. The main purpose of assessment is for improvement of learning outcomes. Assessment for learning/ Continuous/ formative assessment intends 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.

Mathematics assessment is composed by the following three main parts

- Assess the mastery of the content.
- Assess the application of mathematics skills in solving real life problems
- Assess students' creativity and critical thinking on finding solutions to the new challenges in Mathematics.

In Mathematics, the assessment tasks and activities should be set in a way that helps learners to demonstrate the acquired mathematical knowledge and skills as well as their creativity and critical thinking. All set tasks and activities should cater for simple to complex activities so that independent learning is also encouraged. While setting assessment tasks and activities, as a teacher you should refer to the assessment guiandance in the syllabus. Every set learning objective should be assessed and the assessment should be continuous in the form of homeworks, competions, end unit test, examination tests…

1.2.4. Additional activities

Additional activities are set to help pupils to deeply understand the lesson by considering the one's special education needs. These activities to be set by the teacher after each assessment are classified into remediation activities, consolidation or reinforcement activities and extended activities.

1.2.5. Different learning styles

To achieve the set objective of the lesson, different learning styles need to be catered for. To select different techniques and methods to be used to deliver a mathematics lesson, a teacher should consider the following: nature of the topic to be taught, objective of the lesson, teaching and learning materials to be used, classroom setting and learning style of every learner.

The following are four different learning styles to be considered in every Mathematics lesson:

- **Visual-spatial:** A visual learner learns best Mathematics by using their eyes to see information. They learn by seeing words in printed form or by using graphics and pictures, observing real objects, and other *visual aids*.

- **Auditory learners:** An auditory learner is someone who learns best Mathematics by listening and talking. They learn by listening to someone who presents information orally (audio) and by being allowed to discuss and ask questions.

- **Tactile learners:** Tactile learners learn best Mathematics through their sense of touch, such as using their hands and fingers. They learn best by writing, drawing, and using hands-on manipulative.

- **Kinesthetic learners:** Kinesthetic learners learn best Mathematics through movement of their large or gross motor muscles. They take in information best while moving and doing, being involved in projects, role playing, learning while standing up and engaging in real life activities.

1.2.6. Teaching methods and techniques that promote active learning

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

a) What is Active learning?

Active learning is a pedagogical approach that engages pupils in doing things and thinking about the things they are doing. Pupils play the key role 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. Thus, in active learning, pupils are encouraged to bring their own experience and knowledge into the learning process.

b) The role of the teacher in active learning

- The teacher engages pupils through active learning methods such as inquiry methods, group discussions, research, investigative activities, 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 pupils to develop different competences by giving tasks which enhance critical thinking, problem solving, research, creativity and innovation, communication and coopedifferencen.
- Teacher supports and facilitates the learning process by valuing pupils' contributions in the class activities

c) The role of pupils in active learning

Pupils are people with ideas, capacity and skills to build on for effective learning. A teacher should cosider their ideas, knowledge, skills, attitudes and values during teachinnng and learnig process.
A learner engaged in active learning:

- Communicates and shares relevant information with peers through presentations, discussions, group work and other learner-centred activities (games, role play, case studies, project work, research and investigation);
- Actively participates and takes responsibility for his/her 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.

1.2.7. 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 pupils are involved in the learning process. Below are those main part and their small steps:

a) 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 pupils 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.

b) Development of the new lesson

The development of a lesson that introduces a new concept will go through the following small steps: discovery activities through engaging activities in pairs or in group, presentation of learners' findings, exploitation, synthesis/summary and application activities.

B1. Discovery activity

Step 1

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

Step 2

- The teacher let pupils work collaboratively on the task;
- He/she then monitors how the pupils are progressing towards the knowledge to be learned and help those who are still behind but without communicating to them the knowledge.

B2. Presentation of learners' findings

- The teacher invites representatives of groups to present their findings.
- After group presentation, the teacher decides to engage the class into exploitation of learners' works.

B3. Exploitation of learners' findings
- The teacher asks learners to evaluate the presented works : which ones are correct, incomplete or false
- Then the teacher leads learners to correct those which are false, complete those which are incomplete, and confirm those which are correct.

B4. Harmonization, summary, conclusion and examples
- The teacher summarizes the learned knowledge and gives examples which illustrate the learned content.

B5. Application activities
- The teacher provides activities or exercises of application related to the learned topic or concepts.
- The application activities or exercises are set by considering the real life contexts of the learners.
- 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 and facilitate learners to come up with the correct solutions.

c) Assessment of the lesson

In this step the teacher asks some questions to assess achievement of instructional objective. During assessment activity, pupils 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 or an assignment.

1.2.8 Stages of concept development in lower primary

There are 3 main stages for concept development in mathematics for lower primary: Concrete stage, semi concrete and abstract stage.
- Concrete stage: In this stage, the teacher begins the lesson by modelling each mathematical concept with concrete materials. In other words, this stage is the

"doing" stage, using concrete objects to model problems. Those materials are real objects that learners manipulate and discuss how to use them for better learning.

- Semi- concrete stage, visualization or representation: In this stage, the teacher transforms the concrete model into a representational (semi-concrete) level, which may involve drawings or pictures; using circles, dots, and tallies; or using pictures for counting. In other words, this is the "seeing" stage that uses representations of the objects to model problems.

- Abstract stage: In this stage, the teacher models the mathematics concept at a symbolic level, using only numbers, notation, and mathematical symbols to represent the number of circles or groups of circles. The teacher uses operation symbols (+, −, x, :) to indicate addition, multiplication, or division. This is the "symbolic" stage, where students are able to use abstract symbols to model problems.

1.2.9 Teaching and learning in the second language
A Rwandan child enters school with the accumulated experience of his/her pre-school years (ECD Centers and Nursery school) in the Kinyarwanda language which is also used at home. The child has already absorbed and processed few amounts of information about the Kinyarwanda language and customs of his/her society and the variety of objects and experiences that his/her environment offers: objects, houses, animals, trees, etc. Other experiences can be gotten "from outside" through the radios or TV and they are equally part of his everyday life.

As the child enters the Primary one (P1), the Kinyarwanda teacher will have to guide the child to deepen this information because the medium of instruction for other subjects is English which is the second language for the child.

The Mathematics teacher is well instructed to use a Mathematics syllabus, He/she will need to reflect to the Rwandan context and use examples and illustrations from real life experience of the child to help this child reflect to his/her environment and motivate him/her to enjoy school at first and to discover new experiences.

This means that the pupil will need to learn the content and the language at the same time where both the subject matter and the foreign language (L2) are

developed simultaneously and gradually, depending on the age of pupil and other variables.

The method related to this way of teaching is called Content and Language Integrated Learning (CLIL) (O'Malley and Chamot, 1990).

As a teacher, the following elements are emphasized during CLIL,

Presentation:
Introduce to the classroom a tangential theme related to the concept you want to discuss. Use graphics, images and multimedia materials and write keywords on the chalk board.

New words and expressions are to be written in colours, circled or underlined on the chalkboard to watch out for.

Communication:
Boost your pupils' ability to communicate while also allowing them to focus on learning the Mathematics concepts. Along the way, you'll build their positive vibes for the target concept and its application in the real life. So, *the best strategy is to aim for communicating rather than accuracy when your pupils exchange ideas during the discussion.*

Feedback and conclusion:
It is sometimes necessary not to interrupt students during activities, even when their language may not be completely accurate. This may break the flow of the activity and may even cause pupils to lose their confidence. Rather, take notes and try to recap each activity by giving pupils language-and content-related feedback. To let them benefit all the pupils, try to give feedback to the entire class rather than to pupils individually.

Later, ask for feedback from pupils, monitor results and adjust accordingly.

Mathematics learning strategies in CLIL
The teacher has to carefully organize good environment where all learning strategies will be catered. For Oxford (1990, p. 8), learning strategies are specific actions taken by the learner to make learning easier, faster, more enjoyable, more self directed, more effective and more transferable to new situations.

Basic classification of learning strategies was provided by O'Malley and Chamot (1990): Cognitive strategies, Meta-cognitive strategies, Social strategies and Affective strategies.

When leaning is done in the second language, the teacher will facilitate the above mentioned learning strategies in the following ways:

1) Cognitive strategies
- *Contextualization*: Placing the task into a meaningful mathematical or real life experiences for the child. For example, the teacher can use word problems involving objects or animals frequently seen by the child in the family.
- *Resourcing:* Using local teaching and learning materials and text books with simplified and adapted activities to the level of understanding for pupils.
- *Elaboration and transfer:* Relating new information to prior knowledge where the new concept must be built basing on the prerequisites, relating new information to the previous ones, making meaningful personal association to information presented where pupils are asked to provide their own examples and point of views.
Therefore, guide the learner to use previously acquired knowledge to facilitate a new task.
- *Substitution: Where necessary, one can s*elect alternative approaches and revise the plan to accomplish a task; For example, the use of induction and recombination.

2) Meta-cognitive strategies
- *Problem identification: for example, in a word problem, help the learner to e*xplicitly identify the central points which need resolution in a task, you can use pictures or highlight key words in the problem.
- *Self-management*: Understanding and arranging for the conditions that help accomplish the task successfully. This requires that after identifying the requested, one organizes data, and thinks of the way of solving towards the solution.
- *Self-monitoring:* Checking, verifying or correcting one's comprehension or performance in the course of problem solving. This requires to verify if the answer you find can justify the mathematics sentence given.

3) Social strategies
- *Cooperation:* Working with others to facilitate problem solving. Learners are facilitated to work in groups where they can feel free to discuss and explain to each other in the simple language.

- *Mediation*: Asking questions for clarification. Learners are given opportunity to feel free to ask questions any time for they need more clarification.

PART II: SAMPLE LESSON PLAN

School Name:XXXXXXX   **Teacher's name**: YYYYYYY

Ter m	Date	Subject	Class	Unit Nᵒ	Lesson Nᵒ	Dudifference n	Class size
III	.../…/2020	Mathematics	P1	12	2	40 min	...

Type of Special Educational Needs to be catered for in this lesson and number of student-teachers in each category	4 slow learners	
Unit title	**Rwandan currency from 1Frw up to 100 Frw**	
Key unit competency:	Differentiate Rwandan currency from 1Frw to 100 Frw and perform exercises involving buying and selling.	
Title of the lesson	Characteristics of Rwandan coins from 1 Frw to 100 Frw	
Instructional Objective	Using different Rwandan coins, pupils will be able to correctly differantiate characteristics of the following coins: 1Frw, 5Frw, 10 Frw, 20 Frw, 50 Frw and 100Frw.	
Plan for this Class (location: in / outside)	The lesson is held indoors, the class is organized into groups, 4 slow learners are scattered in different groups in order to help them to fully participate in all activities.	
Learning Materials (for ALL student teachers)	Different Rwandan coins of 1Frw, 5Frw, 10 Frw, 20 Frw, 50 Frw and 100Frw, P1 Mathematics pupil's book and teacher's guide.	
References	- P1 Mathematics pupil's book and teacher's guide. - Lower primary Mathematics syllabus for Rwandan schools	

Timing for	Description of teaching and learning	Generic

each step	activity		competences and cross cutting issues to be addressed + a short explanation
	By the means of different Rwandan coins of 1Frw, 5Frw, 10 Frw, 20 Frw, 50 Frw and 100Frw, pupils in small groups observe those coins and find out the following characteristics: coat of arm, color, the number written on the coin, and any other characteristic that can differentiate one coin from another. Individually, pupils describe different characteristics of a given coin and find out all features that can differeatiate one coin from another. The role of teacher is to facilitate and help pupils to come up with the correct characteristics using prompting questions.		
	Tutor activities	**Student teacher activities**	
Introduction: 5 minutes	Through a dialogue, discuss with pupils on different activities, services or items they know that require money.	In general, pupils brainstom on different activities, services and items that require people to use money. Examples: - To buy school materials, we need money - To buy clothes, we need money - To buy food, we need money	**Communication skills** is developed through sharing ideas **Financial education** is developed through sharing ideas on the importance and use of money
Development of the lesson 25 minutes			
Discovery activity: **10 minutes**	- Put pupils in 6 different groups - Distribute	Pupils in small groups, they observe different coins and identify	**Communication skills** developed through the presentation and

	different coins of Rwandan francs to all groups so that each group end up by receiving 6 coins - Ask pupils to observe coins, one by one and come up with a list of characteristics for each coin - Lead all pupils to understand the value of each coin	the following: color of the coin, the number written on each coin, and any other characteristic that can differentiate a coin from another - 1st group to find out characteristics of a coin of 1 Frw - 2nd group to find out characteristics of a coin of 5 Frw - 3rd group to find out characteristics of a coin of 10 Frw - 4th group to find out characteristics of a coin of 20 Frw - 5th group to find out characteristics of a coin of 50 Frw - 6th group to find out characteristics of a coin of 100 Frw After observing one coin, pupils may exchange coins so that they work on all 6 coins. They may even refer to the pupil's book where characteristics of different coins are described.	sharing ideas **Gender** is addressed when both girls and boys work together in the same group **Inclusive education** is addressed while providing remedial activities to slow learners

Presentation of learners' findings and exploitation: **15 minutes**	Invite pupils, one by one to present their work findings where they must come up with a list of all identified chracteristics of each coin.	Pupils, one by one give one or two characteristics observed on a given coin. **Expected answers (refer to the pupil's book)**	**Communication skills** developed through the presentation and sharing ideas
Conclusion/ Summary/ Assessment **10 minutes**	- Facilitates pupils to capture the main characteristics of different Rwandan coins - Gives different characteristics of coins and asks pupils to come up with the coin's value - Gives a coin and asks pupils to come up with different characteristics of it.	- Pupils note down main characteristics of different Rwandan coins (they may refer to the pupil's book) - Individually, every pupil works out the following: 1. Which coin has the following characteristics: silver color, maize, and coat of arm 2. What are the characteristics of the coin of 5 Frw 3. Which coin has the following characteristics: copper color, banana, and coat of arm 4. What are the characteristics of the coin of	**Critical thinking and problem solving skills** are developed through analysing different coins and differentiate them by the appropriate characteristics **Gender** is addressed when both girls and boys are given equal opportunities to provide the answers.

		20Frw? 5. What are the characteristics of the coin of 1 Frw? 6. Which coin has the following characteristics: silver and copper color, and coat of arm	
Self assessmennt	To be completed after receiving the feed-back from pupils (what did the pupils liked most, what challenged them, how could a teacher help slow learners…)	

PART III: UNIT DEVELOPMENT

UNIT 1: WHOLE NUMBERS FROM 1 UP TO 5

1.1 Key unit competence

Counting, reading, writing, ordering, compairing, adding and subtracting whole numbers from 1 to 5

1.2 Prerequisite knowledge and skills

Pupils will perform well in this unit if they have knowledge and mastery of the following: English names of different objects to be used in counting, names of domestic animals in English, English vocabuluaries related to family members, English names of different colors…

1.3 Cross-cutting issues to be addressed

Through different tasks and activities, the following cross-cutting issues have to be addressed in this unit:
- Inclusive education: ensure that the selected teaching and learning techniques, teaching aids promote education for all.
- Peace and value Education: encourage learners to respect others' views and thoughts during group works and class discussions

- Gender: ensure the equal opportunity of boys and girls in the lesson participation.
- **Environment and Sustainability:** ensure that pupils are encouraged to discuss effects of environment and sustainability through solving word problems involving addition, subtraction…
- **Financial education**: lead pupils to make appropriate financial decisions through word problems that involving four basic opedifferencens.

1.4. List of lessons

UNIT 1: WHOLE NUMBERS FROM 1 UP TO 5 (48 Periods)			
	Lesson title	**Learning objectives**	**Number of periods**
1	Introductory activity	Arouse the curiosity of learners on the content of this unit and the importance of counting, reading and writing numbers in real life.	1
2	Counting 1 to 2 objects	Understand and discover the concept of numbers from 1 and 2.	1
3	Reading and writing the number 1	Read and write in figure and in word the number 1.	2
4	Reading and writing the numbers 1 and 2	Read and write in figure and in word the numbers 1 and 2.	2
5	Counting 1 to 3 objects	Understand and discover the concept of numbers from 1 to 3.	2
6	Reading and writing the numbers 1, 2 and 3	Read and write in figure and in word the numbers 1, 2 and 3.	3
7	Counting 1 to 4 objects	Understand and discover the concept of numbers from 1 to 4.	2

8	Reading and writing the numbers 1, 2, 3 and 4	Read and write in figure and in word the numbers 1, 2 , 3 and 4.	3
9	Counting 1 to 5 objects	Understand and discover the concept of numbers from 1 to 5.	2
10	Reading and writing the numbers 1, 2, 3, 4 and 5	Read and write in figure and in word the numbers 1, 2 , 3, 4 and 5.	2
11	Comparing numbers of 5 or less than 5 objects	Compare numbers of 5 or less than 5 objects.	2
12	Comparing numbers from 1 to 5	Compare numbers from 1 to 5.	2
13	Ascending order of numbers from 1 to 5	Arrange numbers from 1 to 5 in ascending order (from smaller to bigger number).	2
14	Descending order of numbers from 1 to 5	Arrange numbers from 1 to 5 in descending order (from bigger to smaller number) .	3
15	Sum of whole numbers less than or equal to 5	Find 2 addends of a sum less or equal to 5.	3
16	Addition of numbers whose sum does not exceed 5	Add numbers whose sum does not exceed 5.	2
17	Word problems on addition of numbers whose sum does not exceed 5	Solve word problems involving addition whose sum does not exceed 5.	3
18	Subtraction of numbers less than 5	Subtract 2 numbers less than 5 whose difference is not zero.	3
19	Word problem on subtraction of numbers less than 5	Solve word problems involving subtraction of 2 numbers whose difference is not zero.	3

20	Word problems involving addition and subtraction of numbers whose sum or difference does not exceed 5	Solve word problems involving addition and subtraction of numbers whose sum or difference is not zero or does not exceed 5.	3
21	End unit assessment 1	Count , read , write, compare , order, add and subtract numbers from 1 to 5.	2

Lesson 1: Introductory activity

This lesson is delivered through a conversation between teachers and pupils. The teacher uses pictures in the pupils' book and asks different prompt questions to pupils in order to get their predictions about the unit to be learnt.
Example: the teacher may ask pupils to talk about the names and number of domestic animals they have at home.
Example of questions to be asked basing on the picture in the pupil's book:
- Look at the picture. What do you see?
- How many chirdren do you see on the picture?
- How many chicken do you see on the picture?
- How many small chicken or chicks do you see on the picture?
- On the picture there is a boy and a girl. Who has few chicken? Who has many pens? How many pens do they have altogether? Compare the number of chickens for boy and girl and find out the difference.

As it is at the beginning of the unit, the teacher has to value all answers from pupils. All answers are valid because the aim of the introductory activity is to get from pupils the predictions on the unit to be learnt.

Lesson 2: Counting 1 to 2 objects

a) Prerequisites/Revision/Introduction

Ask pupils to show the following parts of their body: a head, ayes, one arm, 2 arms one ear, 2 ears, touch his/ her legs

The teacher needs to be careful while asking such kind of questions to pupils with physical impairments. For example, a pupil with one leg will no be asked to touch 2 legs.

b) teaching and learning materials:

pineapples, flowers, books, desks, pens, chalks, beans, small stones and any other counters or objects for counting available in the school environment.

c) learning activities

Part 1: counting 1 object

- **Activities for introduction**

Using different counters or counting objects, teacher helps pupils to understand and discover the concept of the number 1.

Examples: How many heads do a person have?
Show 1 pen, 1 notebook, 1 book…
Pick 1 write chalk in the box.

- **Observing the pictures**

Using the picture in pupil's book, teacher leads pupils to look at the pictures, list all observed objects, count and tell the number of objects on the picture.
Examples: How many pineapples do you see on the picture?
How many hens do you see on the picture?
- **Reinforcement activities**
Using different questions, teacher tests if pupils understand the concept on the number 1 and if they can apply it the the real context.

Examples: who can show us 1 pen? who can show us 1 book?
who can bring 1 small stone? who can bring 1 notebook?

- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home. All set activities should provide to every pupil the opportunities to demonstrate and apply the new concept learnt in a range of situations.

Example: asks pupils to bring different objects, one by one.

Part 2: counting 2 objects

- **Activities for introduction**

Using different counters or counting objects or a song teacher helps pupils to understand and discover the concept of the number 2.

Examples: How many eyes do a person have? How many ears do a person have? How many legs do a person have?
Show 2 pens, 2 notebooks, 2 books…
Pick 2 red chalks in the box.

- **Observing the pictures**

Using the picture in pupil's book, teacher leads pupils to look at the pictures, list all observed objects, count and tell the number of objects on the picture.
Examples: How many oranges do you see on the picture?
How many cars do you see on the picture?
- **Reinforcement activities**
Using different questions, teacher tests if pupils understand the concept on the number 2 and if they can apply it the the real context.

Examples: who can show us 2 pens? who can show us 2 books?
who can bring 2 small stones? who can bring 2 notebooks?

- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home. All set activities should provide to every pupil the opportunities to demonstrate and apply the new concept learnt in a range of situations.

Example: asks pupils to bring 2 objects of the same nature (2 pens, 2 notebooks, 2 oranges, 2 beans, 2 small stones…)

Note: The following lessons follow the same teaching and learning methodology but with different numbers.
- *Lesson 2 on counting 1 to 2 objects, lesson 5 on counting 1 to 3 objects, lesson 7 on counting 1 to 4 objects and lesson 9 on counting 1 to 5 objects*
- *To better enhance the concept of counting from 1 to 5, teacher have to start by asking pupils to count objects related to the previously learnt numbers before the introduction of counting the new number of objects.*

Lesson 3: reading and writing the number 1

a) Prerequisites/Revision/Introduction

Ask pupils to show the following: 1 arm or 2 arms, 1 pen, 2 sticks, 2 any other objects in the classroom

The teacher needs to be careful while asking such kind of questions to pupils with physical impairments. For example, a pupil with one arm will no be asked to show 2 arms.

b) teaching and learning materials:
Number cards with numbers 1 to 5, different pictures in the pupil's book, wall charts containing objects and numbers from 1 to 5, chalkboard, chalks, books, notebooks, pens and any other counters or objects for counting available in the school environment.

c) learning activities

- **Activities for introduction**
Using different prompting questions, teacher helps pupils to understand and discover how to read and write the number 1.
Example: use a chart containing 1 object and the number 1 in figure and in word and asks pupls to tell the number of objects they see on the picture.
- **Activities for Demonstdifferencen**
    The teacher leads pupils how to read and write the number 1 through the following steps:
    Step 1: the teacher writes slowly the number 1 on the chackboard by explaining to them different parts of the number 1 (small oblique straight line followed by a verical straigjht line).
    Step 2: teacher asks pupils to imitate how to write the number 1.
    - First, they write the number 1 in the air using their finger,
    - Second, they write the number 1 on their desks using their finger,
    - Third, they individually match dots and make the number on the chalkboard or number card using finger, chalk, marker or pencil (This activity is provided in the pupil's book).
    - Finally, they individually write the number 1 on chalkboard and in their notebooks.

- **Activities for reinforcement**
    - Teacher asks pupils to individually imitate the number 1 written on the chalkboard or on a number card and then write it many times in their notebook using a pen or a pencil.

- Teacher helps pupils with difficulties to well write the number 1 by giving them more time on writing activity. He/ she must use all possible ways to make all pupils successful in reading and writing the number 1.

- **Application activities**

The teacher asks pupils to write the number 1 many times in their notebooks

- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home. All set activities should provide to every pupil the opportunities to demonstrate and apply the new concept learnt in a range of situations.

Example: asks pupils to show where the number 1 is written on different objects, bring an object on which the number 1 is written, write the number 1 in their notebooks or make number card with the number 1.

Note: The following lessons follow the same teaching and learning methodology but with different numbers.

- *Lesson 3 on reading and writing 1 , lesson 4 on reading and writing 1 and 2, lesson 6 on reading and writing 1, 2 and 3, lesson 8 on reading and writing 1, 2, 3, and 4 and lesson 10 on reading and writing 1, 2, 3, 4 and 5.*
- *To better enhance the concept of reading and writing numbers from 1 to 5, teacher have to start by asking pupils to read and write the previously learnt numbers before the introduction of the new number.*
- *To better enhance the concept of reading and writing numbers from 1 to 5, teacher should ask pupils to show where the numbers 1to 5 are written on different objects such as Rwandan coins, in textbooks, on telephones, on a laptop or a computer, on calculator, on television, and so on.*

Lesson 11: Comparing numbers from 1 to 5

a) Prerequisites/Revision/Introduction

Teacher may ask pupils to work out counting activities, reading and writing activities in the pupil's book. He/she can use prompting questions to test if pupils know to count, read and write numbers from 1 to 5.

Example of questions to be asked:
- Read the following numbers: 1, 2, 3, 4 and 5.
- Write the following numbers: 1, 2, 3, 4 and 5

- Show the following objects: 2 pens, 4 books, 2 notebooks, 1 chalk…

b) teaching and learning materials
Chalkboard, chalks, notebooks, pens, pupil's book, charts containing pictures of groups of objects.

c) learning activities
- **Activities for introduction**
Using different prompting questions, teacher helps pupils to understand and discover how to compare numbers from 1 to 5. Pupils may be requested to count objects in different groups and compare the number of objects in two or more groups by showing a group with many or less objects.
Example: by means of two boxes of sweets, where one box contains 3 sweets and another box contains 5 sweets. Pupils may be asked to compare the number of sweets in two boxes by showing the box with many or few sweets.

- Activities for demonstration

In small groups, teacher asks pupils to observe pictures in the pupil's book. Then, he/she asks them to make 2 groups of similar objects but with different number of objects: one group with many objects and another group with few objects as it is shown on the pictures in the pupil's book.

Example:

Pupils may be asked to makes 2 different groups of objects as follows:

- A group of 3 pens and another group of 4 pens

- A group of 2 notebooks and another group of 1 notebook.

Teacher asks pupils to compare the number of objects in 2 different groups by showing which group contains many or few objects and then he/she helps those with difficulties in comparing the number of groups of objects.

- Activities for reinforcement

Teacher draws 2 different groups with different numbers of objects and then he/she asks pupils to compare them by saying which group has many or few objects. Finally, the teacher asks them to write the number of objects in each group and then they compare numbers.

- Application activities

Teacher provides different exercises on comparing groups of objects. Pupils are requested to provide oral answers by telling the group with many or few objects. Pupils may also have requested to compare numbers of objects by writing. Teacher makes a follow up on how best pupils are performing the given tasks and he/she appreciates, encourages and values the pupils' answers.

- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home. He/she provides exercises on comparison of number of 1 to 5 objects. He/ she asks pupils to compare 2 groups of similar objects but with different numbers of objects.

Note: basing on the level of understanding and through examples, teacher may help pupils to know the comparison symbols:

Comparison symbol	Meaning	Mathematical example	How to read
$>$	Greater than	$5 > 4$	5 is **greater than** 4
$<$	Less than	$4 < 5$	4 is **less than** 5
$=$	Equal to	$4 = 4$	4 is **equal to** 4

Lesson 12: Ascending order of numbers from 1 to 5

a) **Prerequisites/Revision/Introduction**

Teacher may ask pupils to work out counting activities, reading and writing activities in the pupil's book. He/she can use prompting questions to test if pupils know to count, read and write, and compare numbers from 1 to 5. Pupils may be requested to compare numbers of groups of objects by telling a group which contains many or few objects (refer to pupil's book activities).

b) **teaching and learning materials**
Chalkboard, chalks, notebooks, pens, pupil's book, charts containing pictures of groups of objects
c) **learning activities**
- **Activities for introduction**
Using different prompting questions, teacher helps pupils to understand and discover how to arrange numbers from 1 to 5 in ascending order (from smaller to bigger number). Pupils may be requested to count objects in different groups

and compare the number of objects in two or more groups by showing a group with many or fewer objects.

Pupils may also be requested to explain how to arrange different groups of objects by starting with a group with less number of objects until they arrive to the group with a big number of objects.

Example: pupils may be asked to explain how to arrange in ascending order the following groups of objects.

- A group of 2 pens, a group of 4 pens, a group of 1 pen, a group of 3 pens.
- A group of 2 spoons, a group of 5 spoons, a group of 3 spoons, a group of 4 spoons, a group of 1 spoon.

- **Activities for demonstration and reinforcement**

In small groups of 5 pupils each, teacher asks pupils to make different groups of 1 to 5 similar objects and arrange in ascending order (from smaller to bigger) the numbers of objects in different groups.

Example: pupils in groups may be asked to make groups of similar objects and arrange the numbers of objects from the smallest to the biggest number.

- Make 4 different groups of beans as follows: a group of 2 beans, a group of 1 bean, a group of 3 beans, a group of 4 beans,

- Arrange in ascending order the following numbers: 2, 1, 3, 4.

- Explain step by step how to arrange numbers in ascending order.

- **Application activities**

Teacher provides activities on arranging numbers from 1 to 5 in ascending order. He/she may ask pupils to explain how they come up with numbers arranged from smaller to bigger number.

Example: individually or in pairs order from smaller to bigger number

Note: application activities may be done individually or in pairs. Teacher ensures that all pupils understand how to make an ascending order of numbers from 1 to 5 and provides help or remedial activities for pupils in difficulties.

- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home.
He/she provides exercises on arranging numbers from 1 to 5 in ascending order.
Examples: arrange the following numbers from the smallest to the biggest
number

1) 3 5 4 2 1

2) 1 3 2 4 5

Lesson 13: Descending order of numbers from 1 to 5

a) **Prerequisites/Revision/Introduction**

Teacher may ask pupils to work out counting activities, reading and writing
activities in the pupil's book. He/she can use prompting questions to test if
pupils know to count, read and write, and compare numbers from 1 to 5. Pupils
may be requested to order numbers of groups of objects in ascending order
(refer to pupil's book activities).

b) **teaching and learning materials**

Chalkboard, chalks, notebooks, pens, pupil's book, wall charts containing
pictures of groups of objects, wall charts of numbers from 1 to 5 in ascending or
descending order.

c) **learning activities**

- **Activities for introduction**

Using different prompting questions, teacher helps pupils to understand and
discover how to arrange numbers from 1 to 5 in descending order (from bigger
to smaller number). Pupils may be requested to count objects in different groups
and compare the number of objects in two or more groups by showing a group
with many or fewer objects.

Pupils may also be requested to explain how to arrange different groups of
objects by starting with a group of many objects until they arrive to the group of
a small number of objects.

Example: pupils may be asked to explain how to arrange in descending order
the following groups of objects.

- A group of 5 books, a group of 4 books, a group of 2 books, a group of 3 books.
- A group of 4 pencils, a group of 1 pencil, a group of 3 pencils, a group of 4 pencils, a group of 2 pencils.

- **Activities for demonstration   and reinforcement**

In small groups of 5 pupils each, teacher asks pupils to make different groups of 1 to 5 similar objects and arrange in descending order (from bigger to smaller) the numbers of objects in different groups.

Example: pupils in groups may be asked to make groups of similar objects and arrange the numbers of objects from the biggest to the smallest number.

- Make 5 different groups of beans as follows: a group of 2 beans, a group of 5 beans, a group of 3 beans, a group of 4 beans, a group of 1 bean.

- Arrange in descending order the following numbers: 2, 5, 3, 4,1.

- Explain step by step how to arrange numbers in descending order.

- **Application activities**

Teacher provides activities on arranging numbers from 1 to 5 in descending order. He/she may ask pupils to explain how they come up with numbers arranged from bigger to smaller number.
Example: individually or in pairs order from bigger to smaller number

Note: application activities may be done individually or in pairs. Teacher ensures that all pupils understand how to make a descending order of numbers from 1 to 5 and provides help or remedial activities for pupils in needs.

- **Assessment activities**
The teacher provides activities to be done by pupils at school or at home. He/she provides exercises on arranging numbers from 1 to 5 in descending order.
Examples: arrange the following numbers from the biggest to the smallest number

Lesson 14: Addends of a sum less or equal to 5

a) Prerequisites/Revision/Introduction

Teacher may ask pupils to work out counting activities, reading and writing activities in the pupil's book. He/she can use prompting questions to test if pupils know to count, read, write and compare numbers from 1 to 5.

b) teaching and learning materials

Chalkboard, chalks, notebooks, pens, pupil's book, charts containing pictures of groups of objects, number cards containing numbers from 1 to 5.

c) learning activities

- **Activities for introduction**

Using different prompting questions, teacher helps pupils to understand and discover how to find addends of a number less than or equal to 5. Pupils may be requested to break down a group of 5 objects into 2 small groups and then count and tell the number of objects in each small group. Teacher leads pupils to discover that a group of 5 objects is made of 2 different groups objects.

- **Activities for demonstration and reinforcement**

In small groups of 5 pupils each, teacher asks pupils to break down a group of 5 or less similar objects into 2 small groups and then write the number of objects in every small group.

Example: pupils in groups may be asked to break down a group of 5 objects into 2 small groups and explain their working steps:

- A group of 5 objects can be breaked down into 2 small groups of 4 and 1 objects.

- A group of 5 objects can be breaked down into 2 small groups of 3 and 2 objects.

Through examples, teacher leads pupils to discover that 2 numbers to be added to get 5 are 3 and 2 or 4 and 1.

- **Application activities**

- **Application activities**
Teacher provides different exercises on finding 2 numbers to be added in order to get the given number.
Example: in pairs pupils may be asked to find 2 numbers to be added in order to get 4, 3 and 2
- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home. He/she provides exercises on addends of a sum less or equal to 5.

Lesson 15: Addition of numbers whose sum does not exceed 5

a) Prerequisites/Revision/Introduction

Teacher may ask pupils to find addends of a sum lessthan or equal to 5.

b) teaching and learning materials
Chalkboard, chalks, notebooks, pens, pupil's book, charts containing pictures of groups of objects, number cards containing numbers from 1 to 5.
c) learning activities
- **Activities for introduction**
Using different prompting questions, teacher helps pupils to understand and discover how to add 2 numbers whose sum does not exceed 5. Pupils may be requested to put together objects from 2 small groups in order to get a number of 5 or less than 5 objects.
Example: by means of two boxes of pens, where one box contains 3 pens and another box contains 2 pens. Pupils may be asked to put all pens together in order to get 5 pens.
- **Activities for demonstration**
1. Concrete activity

Using real objects, teacher asks pupils to make 2 groups of objects as follows: one group of 3 objects and another group of 2 objects. He/she asks pupils to put together all objects in 2 groups and then count them in order to get the sum 5.

Note: this activity can be done using a different number between 1 and 5.
2. Semi-Concrete activity

Using pictures of groups of objects in the pupil's book, teacher asks pupils to draw 2 groups of similar objects as follows: one group of 3 objects and another group of 1 objects. He/she asks pupils to put together all objects in 2 groups by circling and then count them in order to get the sum 4.
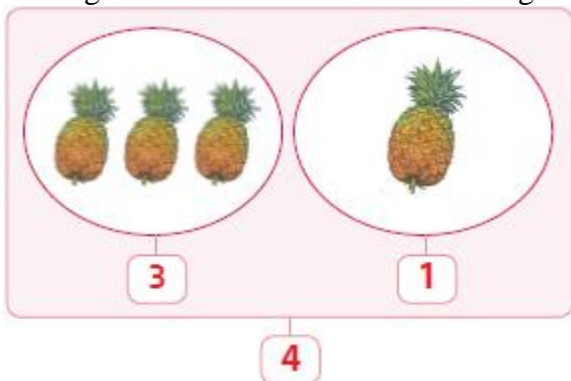
Note: this activity can be done using a different number between 1 and 5.

3. Abstract activity
Teacher helps pupils to write and read aloud a mathematical sentence on addition of 2 numbers whose sum does not exceed 5.
Examples:
- $3 + 1 = 4$, *three plus 1 equals 4*
- $3 + 2 = 5$, *three plus 2 equals 5*

- Reinforcement activities
Teacher helps pupils to individually add by writing 2 numbers whose sum does not exceed 5. He/she facilitate them to correctly read aloud the mathematical sentence on addition of 2 numbers.
Examples:
- $3 + 1 = 4$ is read *three plus 1 equals 4*
- $2 + 2 = 4$ is read *two plus two equals 4*

- Application activities
Teacher asks pupils to work out the addition activities in the pupil's book. He /she requests pupils to individually or in pairs work out the additionof 2 numbers whose sum does not exceed 5.
Application activities may include Concrete, semi-Concrete and abstract activities where pupils are requested to work out addition using real objects, group of objects on pictures, numbers and symbols.

- Assessment activities

The teacher provides activities to be done by pupils at school or at home. He/she provides exercises on addition of 2 numbers whose sum does not exceed 5.

Lesson 16: Word problems on addition of numbers whose sum does not exceed 5

a) Prerequisites/Revision/Introduction

Teacher asks pupils to work out the exercises on addition of 2 numbers whose sum does not exceed 5.

b) teaching and learning materials

Chalkboard, chalks, notebooks, pens, sticks, dices, pupil's book, charts containing pictures of groups of objects, number cards containing numbers from 1 to 5.

c) learning activities

- **Activities for introduction**

Using Concretee objects and story telling, teacher helps pupils to add 2 numbers whose sum does not exceed 5.

Teacher reads a short word problems involving addition of 2 numbers and orally pupils give the answer.

Example: Kiza has 2 pens and his/her teacher gives 1 more pen to him. How many pens does Kiza have altogether?

- **Activities for demonstration**

using real objects / materials or pictures on the chalkboard or notebook, teacher leads pupils to read and analyse a word problems in the pupil's book and then they find out the answer for the word problems. Two or three pupils may solve the word problems by explaining working steps while others are following.

- **Activities for reinforcement**

Pupils in small groups work out different word problems given by the teacher. Pupils are given time to present their working steps to get the answer on word problems involving addition of 2 numbers whose sum does not exceed 5.

- **Application activities**

Teacher asks pupils to use pupil's book and work out the word problems on addition of 2 numbers whose sum is not exceed 5 (refer to pupil's book).
- **Assessment activities**
The teacher provides activities to be done by pupils at school or at home. He/she provides exercises on addition of 2 numbers whose sum does not exceed 5.

Lesson 17: Subtraction of numbers less than 5

a) Prerequisites/Revision/Introduction

Teacher asks pupils to work out the exercises on addition of 2 numbers whose sum does not exceed 5.
b) teaching and learning materials

Chalkboard, chalks, notebooks, pens, sticks, dices, pupil's book, charts containing pictures of groups of objects, number cards containing numbers from 1 to 5.
c) learning activities
- **Activities for introduction**
Using different prompting questions, teacher helps pupils to understand and discover how to subtract 2 numbers less than 5.
Example: teacher may call a group of less than or equal to 5 pupils to come in front of the class and count 5 or less than 5 objects. He/ she requests some pupils to go back to their seats and then he/she asks other pupils to say the number of the remaining pupils in front of the class and those who are back in their seats.

- **Activities for demonstration**
1. Concrete activity

Using real objects, teacher asks pupils to make a group of 5 objects and then take away 2 objects. He/she asks them to count the remaining objects in the group.
Note: this activity can be done using a different number between 1 and 5.
2. Semi-Concrete activity
Using pictures of groups of objects in the pupil's book, teacher asks pupils to draw a group of 5 similar objects. He/she asks pupils to take away 2 objects by crossing them and count the remaining objects in the group.
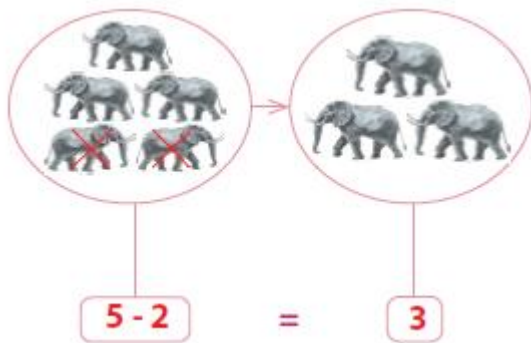
Note: this activity can be done using a different number between 1 and 5.

3. Abstract activity

Teacher helps pupils to write and read aloud a mathematical sentence on subtraction of 2 numbers less than 5.

Examples:

- 5 - 2 = 3, *5 minus 2 equals 3*
- 3 - 2 = 1, *3 minus 2 equals 1*

- **Reinforcement activities**
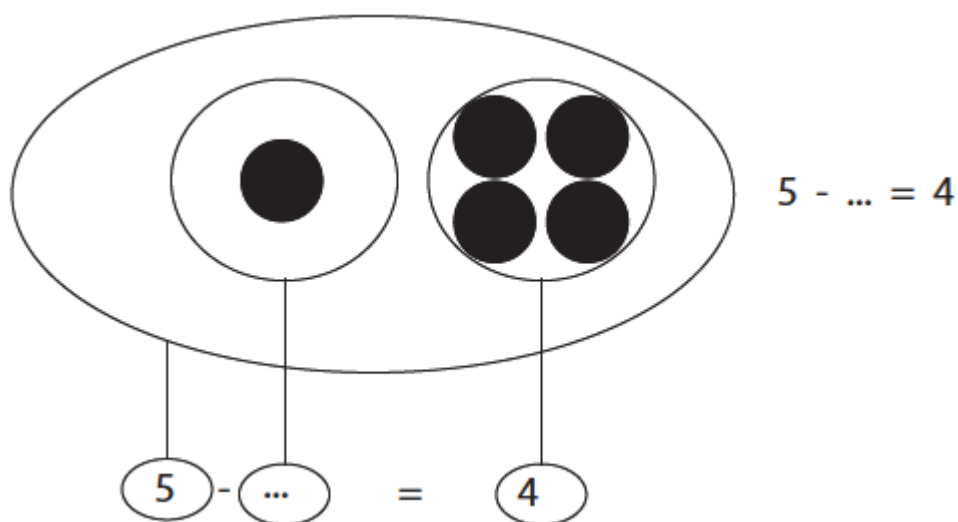
Teacher helps pupils to individually subtract by writing 2 numbers less than 5. He/she facilitate them to correctly read aloud the mathematical sentence on subtraction of 2 numbers (refer to   pupil's book).

Examples:

- 3 - 1 = 2 is read *3 minus 1 equals 2*
- 4 - 3 = 1 is read *4 minus 3 equals 1*

Teacher may vary the reinforcement activities by including activities of this form:

- Assessment activities

The teacher provides activities to be done by pupils at school or at home. He/she provides exercises on subtraction of 2 numbers less than 5 (refer to pupil's book).

Lesson 18: Word problem on subtraction of numbers less than 5

a) Prerequisites/Revision/Introduction

Teacher asks pupils to work out the exercises on subtraction of 2 numbers less than 5.

b) teaching and learning materials

Chalkboard, chalks, notebooks, pens, sticks, dices, pupil's book, charts containing pictures of groups of objects, number cards containing numbers from 1 to 5.

c) learning activities
- Activities for introduction

Using Concrete objects and story telling, teacher helps pupils to subtract 2 numbers less than 5.

Teacher reads a short word problems involving subtraction of 2 numbers and

orally pupils give the answer.

Example: Kiza gets 3 avocadoes from her mother and he gives 2 avocadoes to her sister Mary. How many avocadoes does Kiza remain with?

- **Activities for demonstration**

using real objects / materials or pictures on the chalkboard or notebook, teacher leads pupils to read and analyse a word problems in the pupil's book and then they find out the answer for the word problems. Two or three pupils may solve the word problems by explaining working steps while others are following.

Concrete activity: using real materials or counters, teacher facilitate pupils to work out word problems involving subtraction of 2 numbers less than 5 (refer to pupil's book). He/she may use counters, dices, sticks and helps pupils to solve word problems involving subtraction.

Example: Kamana has 5 oranges and he gives to his brother Manasseh 3 oranges. How many oranges does Kamana remain with?

Working steps 1: Breaking down 5 oranges into 2 groups of 3 oranges for Kamana and 2 oranges for Manasseh
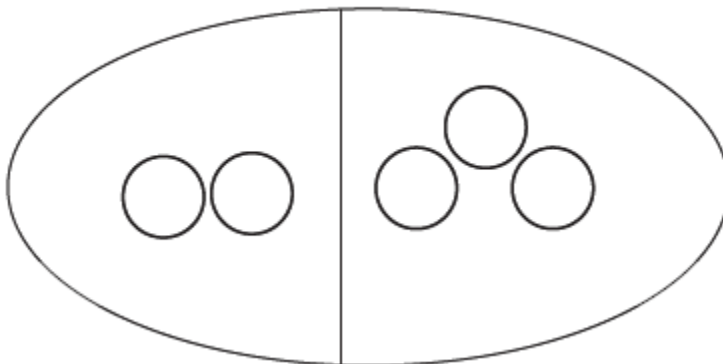
**Working steps 2:** Taking away 3 oranges given to Manasseh from 5 oranges of Kamana

Answer: Kamana remains with 2 oranges

Semi-Concrete activity: using pictures, teacher facilitate pupils to work out word problems involving subtraction of 2 numbers less than 5 (refer to pupil's book).
Example: Kamana has 5 oranges and he gives to his brother Manasseh 3 oranges. How many oranges does Kamana remain with?
Answer: Kamana remains with 2 oranges
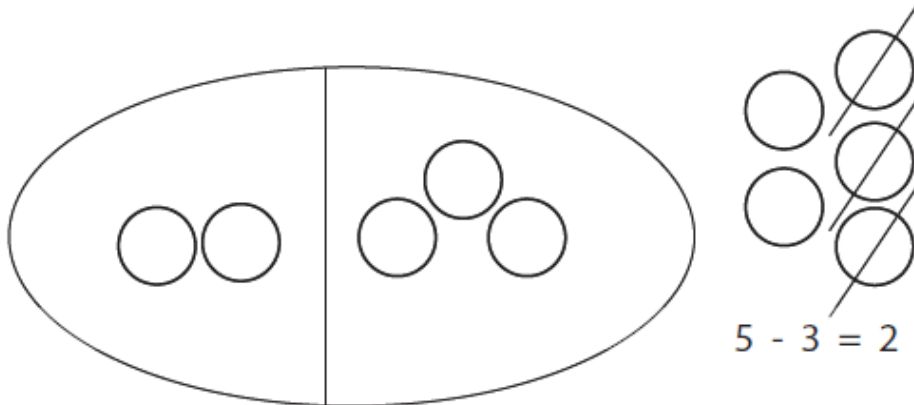
$$5 - 3 = 2$$

Abstract activity: using numbers and symbols, teacher facilitate pupils to work out word problems involving subtraction of 2 numbers less than 5 (refer to pupil's book).
Example: Kamana has 5 oranges and he gives to his brother Manasseh 3 oranges. How many oranges does Kamana remain with?
Answer: $5 - 3 = 2$
    Kamana remains with 2 oranges

- **Activities for reinforcement**
Pupils in small groups work out different word problems given by the teacher. Pupils are given time to present their working steps to get the answer on word problems involving subtraction of 2 numbers less than 5 (refer to pupil's book).

- **Application activities**
Teacher asks pupils to use pupil's book and work out the word problems on subtraction of 2 numbers less than 5.
- **Assessment activities**
The teacher provides activities to be done by pupils at school or at home. He/she provides exercises on subtraction of 2 numbers less than 5.

Lesson 19: Word problems involving addition and subtraction of numbers whose sum or difference does not exceed 5

a) Prerequisites/Revision/Introduction

Teacher asks pupils to work out the exercises on addition and subtraction of 2 numbers whose sum or difference does not exceed 5.

b) teaching and learning materials

Chalkboard, chalks, notebooks, pens, sticks, dices, pupil's book, charts containing pictures of groups of objects, number cards containing numbers from 1 to 5.

c) learning activities

- **Activities for introduction**

Using short story telling and prompting questions, teacher asks pupils to orally solve a given word problem involving both addition and subtraction.

Example: Kiza had 3 eggs and one egg was broken. Mary the sister of Kiza gave to him 2 more eggs. Find the total number of eggs Kiza have now.

- **Activities for demonstration and reinforcement**

using real objects / materials or pictures on the chalkboard or notebook, teacher leads pupils to read and analyse a word problems in the pupil's book and then asks them to solve the word problems.

Concrete activity: using real materials , counters or sticks, teacher facilitate pupils to work out word problems involving both addition and subtraction of 2 numbers whose sum or difference does not exceed 5.

Semi-Concrete activity: using pictures or drawings, teacher facilitate pupils to work out word problems involving both addition and subtraction of 2 numbers whose sum or difference does not exceed 5.

Abstract activity: using numbers and symbols , teacher facilitate pupils to work out word problems involving both addition and subtraction of 2 numbers whose sum or difference does not exceed 5.

Example: solving the following word problems , pupils may use Concrete materials, pictures or drawings or numbers

Kiza had 3 eggs and one egg was broken. Mary the sister of Kiza gave to him 2 more eggs. Find the total number of eggs Kiza have now.
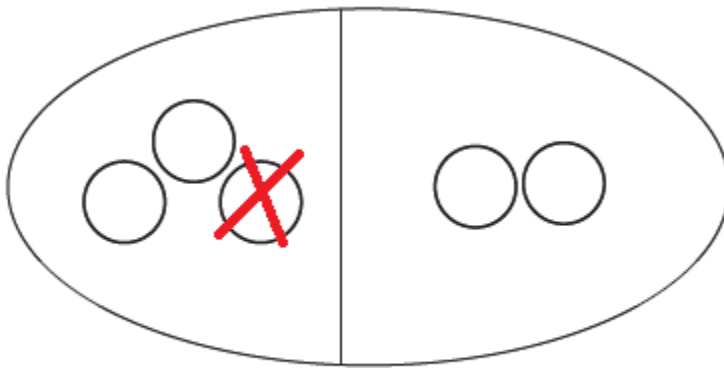
$$3 - 1 = 2 \quad \text{then} \quad 2 + 2 = 4$$

Kiza has 4 eggs

Note: while solving word problems that involving both addition and subtraction helps pupils not to write the following Mathematical sentence $3 - 1 + 2 = 4$, but leads them to do subtraction first : $3 - 1 = 2$ and then do addition: $2 + 2 = 4$

- **Application activities**

In small groups, teacher asks pupils to use pupil's book and work out the word problems involving both addition and subtraction of 2 numbers. He/ she may provide additional word problems related to the real context and the school environment.

Note: helps pupils to use real objects or pictures while they solve word problems and then encourages them mentally find the answer. Finally, leads them to mathematically solve the word problem by writing.

- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home. He/she provides additional word problems on both addition and subtraction of 2 numbers.

Lesson 20: End unit assessment 1

a) Prerequisites/Revision/Introduction

Before the end unit assessment:

- Teacher ensures that pupils master and know how to apply the following: count 1 to 5 objects, read and write numbers from 1 to 5, compare two numbers between 1 and 5, make an ascending or descending order on numbers from 1 to 5, add or subtract 2 numbers between 1 and 5 whose sum or difference does not exceed 5.

- Teacher relates different revision activities to real life situations or pupils'daily life

b) **Examples of end unit assessment questions**

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1. Work out the following exercises

- $3 + 2 = \ldots$
- $5 - 3 = \ldots$
- $1 + 4 = \ldots$
- $4 - \ldots = 3$
- $2 + \ldots = 4$
- $\ldots + 3 = 5$
- $\ldots - 2 = 1$

2. Solve the following word problems

- Musana buys 4 notebooks and he gives 2 notebooks to Mary. How many notebooks does Musana remain with?
- Minani had 2 goats and 1 goat gave birth 2 small goats. How many gots does Minani have altogether?

4. Fiona had 3 trees in her garden. She planted 2 mpor trees, but 1 tree was demaged by a goat and she cutted it off. How many number of trees are remaing in the Fiona's garden?

5. Pupils in pairs or in small groups Discuss and present the importance of counting, addition and subtraction in real life.

Notes:
- Teacher asks pupils to individually or in pairs work out different assessment questions and then he/she make an individual correction.
- Basing on the results from end unit assessment and before starting the new unit , teacher provides remedial or reinforcement activities for pupils in need.

UNIT 2: WHOLE NUMBERS FROM 1 TO 9

2.1 Key unit competence

Counting, reading, writing, ordering, compairing, adding and subtracting whole numbers from 1 to 9

2.2 Prerequisite knowledge and skills

Pupils will perform well in this unit if:

- They have knowledge and mastery of the following: English names of different objects to be used in counting, names of domestic animals in English, English vocaburaries related to family members, English names of different colors…
- They master and know how to apply the following: count 1 to 5 objects, read and write numbers from 1 to 5, compare two numbers between 1 and 5, make an ascending or descending order on numbers from 1 to 5, add or subtract 2 numbers between 1 and 5 whose sum or difference does not exceed 5.

2.3 Cross-cutting issues to be addressed

Through different tasks and activities, the following cross-cutting issues have to be addressed in this unit:

- Inclusive education: ensure that the selected teaching and learning techniques, teaching aids promote education for all.
- Peace and value Education: encourage learners to respect others' views and thoughts during group works and class discussions
- **Gender**: ensure the equal opportunity of boys and girls in the lesson participation.
- **Environment and Sustainability:** ensure that pupils are encouraged to discuss effects of environment and sustainability through solving word problems involving addition, subtraction…
- **Financial education**: lead pupils to make appropriate financial decisions through word problems that involving four basic opedifferencens.

2.4. List of lessons

UNIT 2: WHOLE NUMBERS FROM 1 TO 9 (48 Periods)			
	Lesson title	**Learning objectives**	**Number of periods**
1	Introductory activity	Arouse the curiosity of learners on the content of this unit and the importance of counting, reading and writing numbers in real life.	1

2	Counting 1 to 6 objects	Understand and discover the concept of numbers from 1 to 6.	2
3	Reading and writing the numbers from 1 to 6	Read and write in figure the numbers from 1 to 6.	3
4	Counting 1 to 7 objects	Understand and discover the concept of numbers from 1 to 7.	2
5	Reading and writing the numbers from 1 to 7	Read and write in figure and in word the numbers from 1 to 7.	3
6	Counting 1 to 8 objects	Understand and discover the concept of numbers from 1 to 8.	2
7	Reading and writing the numbers from 1 to 8	Read and write in figure and in word the numbers from 1 to 8.	3
8	Counting 1 to 9 objects	Understand and discover the concept of numbers from 1 to 9.	2
9	Reading and writing the numbers from 1to 9	Read and write in figure and in word the numbers from 1 to 9.	3
10	Comparing numbers of 9 or less than 9 objects	Compare numbers of 9 or less than 9 objects.	3
11	Comparing numbers from 1 to 6	Compare numbers from1 to 6 using >, < and =	1
12	Comparing numbers from 1 to 7	Compare numbers from1 to 7 using >, < and =	1
13	Comparing numbers from 1 to 8	Compare numbers from1 to 8 using >, < and =	1
14	Comparing numbers from 1 to 9	Compare numbers from1 to 9 using >, < and =	1
15	Ascending order of numbers from 1 to 6	Arrange numbers from 1 to 6 in ascending order (from smaller to bigger number).	1
16	Ascending order of numbers from 1 to 7	Arrange numbers from 1 to 7 in ascending order (from smaller to bigger number).	1

17	Ascending order of numbers from 1 to 8	Arrange numbers from 1 to 8 in ascending order (from smaller to bigger number).	1
18	Ascending order of numbers from 1 to 9	Arrange numbers from 1 to 9 in ascending order (from smaller to bigger number).	1
19	Descending order of numbers from 1 to 6	Arrange numbers from 1 to 6 in descending order (from bigger to smaller number).	1
20	Descending order of numbers from 1 to 7	Arrange numbers from 1 to 7 in descending order (from bigger to smaller number).	1
21	Descending order of numbers from 1 to 8	Arrange numbers from 1 to 8 in descending order (from bigger to smaller number).	1
22	Descending order of numbers from 1 to 9	Arrange numbers from 1 to 9 in descending order (from bigger to smaller number).	1
23	Addition of numbers whose sum does not exceed 9	Add numbers whose sum does not exceed 9.	2
24	Word problems on addition of numbers whose sum does not exceed 9	Solve word problems involving addition whose sum does not exceed 9.	2
25	Subtraction of numbers less than 9	Subtract 2 numbers less than 9 whose difference is not zero.	3
26	Word problems on subtraction of numbers less than 9	Solve word problems involving subtraction of 2 numbers less than 9 whose difference is not zero.	3
27	End unit assessment 2	Count , read , write, compare , order, add and subtract numbers from 1 to 9.	2

Lesson 1: Introductory activity

This lesson is delivered through a conversation between teachers and pupils. The teacher uses pictures in the pupils' book and asks different prompting questions to pupils in order to get their predictions about the unit to be learnt.

Example of questions to be asked basing on the picture in pupil's book:
- Look at the picture. What do you see?
- How many chirdren do you see on the picture?
- How many trees do you see on the picture?
- How many goats do you see on the picture?
- How many flowers do you see on the picture?
- How many houses do you see on the picture?
- On the picture there are 3 houses. Which house has few doors? Which house has many doors? How many doors do they have altogether? Compare the number of doors for house 1 and house 2 and find out the difference.
- On the picture there are boys and girls. How many boys are there? How many girls are there? Compare the number of girls boys and find out the difference.

As it is at the beginning of the unit, the teacher has to value all answers from pupils. All answers are valid because the aim of the introductory activity is to get from pupils the predictions on the unit to be learnt.

Lesson 2: Counting 1 to 6 objects

a) Prerequisites/Revision/Introduction

Ask pupils to individually count at least 5 real objects

b) teaching and learning materials:
pineapples, flowers, books, desks, pens, chalks, beans, small stones and any other counters or objects for counting available in the school environment.

c) learning activities

- **Activities for introduction**
  1. **Counting 1 to 6 real objects**
     - Using different counters or counting objects or a song, teacher helps pupils to understand and discover the concept of the number 6.

- Teacher may ask pupils to make two groups of similar objects; one group of 5 objects and another group of 1 object. He/ she asks pupils to put together all objects and count them
- Teacher may ask pupils to individually bring 1 notebook, 2 notebooks, 3 notebooks up to 6 notebooks.

2. Observing pictures and counting 1 to 6 objects

Using pupil's book, teacher leads pupils to look at the pictures, list all observed objects, count and tell the number of objects on the picture.
Examples: How many cows do you see on the picture?
How many flowers do you see on the picture?
How many balls do you see on the picture?
How many chikens do you see on the picture?

c) Demonstration and reinforcement activities
Using different questions, teacher tests if pupils understand the concept on the numbers 1 to 6 and if they can apply it the the real context.

Examples:
- who can show us 4 books? who can show us 5 books? who can show us 6 books?
- who can bring 3 beans? who can bring 6 notebooks? who can bring 2 pens? who can bring 3 notebooks? who can bring 4 sticks?

d) Assessment activities

The teacher provides activities to be done by pupils at school or at home. All set activities should provide to every pupil the opportunities to demonstrate and apply the new concept learnt in a range of situations.

Examples:
- Asks pupils to bring objects of the same nature (2 pens, 3 notebooks, 4 oranges, 6 beans, 5 small stones…)
- Asks pupils to make groups of 1 to 6 similar real objects or using drawings (2 tomatoes, 4 mangoes, 5 bananas, 6 small stones or sticks).

Note: The following lessons follow the same teaching and learning methodology but with different numbers.

- *Lesson 2 on counting 1 to 6 objects, lesson 4 on counting 1 to 7 objects, lesson 6 on counting 1 to 8 objects and lesson 8 on counting 1 to 9 objects*
- *To better enhance the concept of counting numbers from 1 to 9, teacher have to start by asking pupils to count objects related to the previously learnt numbers before the introduction of counting the new number of objects.*

Lesson 3: reading and writing the numbers from 1 to 6

a) Prerequisites/Revision/Introduction

The teacher asks pupils to count objects less than 5 and write number from 1 to 5.

b) teaching and learning materials:
Number cards with numbers 1 to 6, different pictures in the pupil's book, wall charts containing objects and numbers from 1 to 6, chalkboard, chalks, books, notebooks, pens and any other counters or objects for counting available in the school environment.

c) learning activities

- **Activities for introduction**
Using different prompting questions, teacher helps pupils to understand and discover how to read and write the number 6.
Example: use a chart containing 6 objects and the number 6 in figure and asks pupls to count and tell the number of objects they see on the picture.
- **Activities for Demonstration**
The teacher leads pupils how to read and write the number 6 through the following steps:
   Step 1: the teacher writes slowly the number 6 on the chackboard by explaining to them different parts of the number 6.
   Step 2: teacher asks pupils to imitate how to write the number 6.
   - First, they write the number 6 in the air using the finger,
   - Second, they write the number 6 on their desks using finger,
   - Third, they individually match dots and make the number 6 on the chalkboard or number card using finger, chalk, marker or pencil. This activity is provided in the pupil's book.
   - Finally, they individually write the number 6 on chalkboard and in their notebooks.

- **Activities for reinforcement**
  - Teacher asks pupils to individually imitate the number 6 written on the chalkboard or on a number card and then write it many times in their notebook using a pen or a pencil.
  - Teacher helps pupils with difficulties to well write the number 6 by giving them more time on writing activity. He/ she must use all possible ways to make all pupils successful in reading and writing the number 6.
- **Application activities**

The teacher asks pupils to write numbers from 1, 2, 3, 4, 5 and 6 many times in their notebooks, but the emphasis should be given to the number 6 which is new to the pupils.
- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home. All set activities should provide to every pupil the opportunities to demonstrate and apply the new concept learnt in a range of situations.

Examples:
  - Asks pupils to show where the number 6 is written on different objects, bring an object on which the number 6 is written, write the number 6 in their notebooks or make number card with the number 6. To help pupils to more understamd the concept and meaning of numbers from 1 to 6, this activity may be done on numbers previously learnt: 1, 2, 3 , 4 and 5.
  - Write the following numbers in your notebook or on chalkboard

6	6	6	6	6

1	3	5	6	2	4	6

Note: The following lessons follow the same teaching and learning methodology but with different numbers.
  - *Lesson 3 on reading and writing numbers from 1 to 6 , lesson 5 on reading and writing numbers from 1 to 7 , lesson 7 on reading and writing numbers from 1to 8 and lesson 9 on reading and writing numbers from 1to 9.*

- *To better enhance the concept of reading and writing numbers from 1 to 9, teacher have to start by asking pupils to read and write the previously learnt numbers before the introduction of the new number.*
- *To better enhance the concept of reading and writing numbers from 1 to 9, teacher should ask pupils to show where the numbers 1to 9 are written on different objects such as Rwandan coins, in textbooks, on telephones, on a laptop or a computer, on calculator, on television, and so on.*

Lesson 10: Comparing numbers of 9 or less than 9 objects

a) Prerequisites/Revision/Introduction

Teacher may ask pupils to work out counting activities, reading and writing activities in the pupil's book. He/she can use prompting questions to test if pupils know to count, read and write numbers from 1 to 9.

Example of questions to be asked:
- Read the following numbers: 1, 2, 3, 4 , 5, 6, 7, 8 and 9.
- Write the following numbers: 1, 2, 3, 4 , 5, 6, 7, 8 and 9.
- Show the following objects: 2 pens, 4 books, 2 notebooks, 6 chalks, 9 beans, 8 counters, 1 book.

b) teaching and learning materials
Chalkboard, chalks, notebooks, pens, pupil's book, charts containing pictures of groups of objects, number cards of numbers from 1 to 9.

c) learning activities
- **Activities for introduction**
Using different prompting questions, teacher helps pupils to understand and discover how to compare numbers from 1 to 9. Pupils may be requested to count objects in different groups and compare the number of objects in two or more groups by showing a group with many, less or equal objects.
Example: by means of two boxes of pens, where one box contains 8 pens and another box contains 5 pens. Pupils may be asked to compare the number of pens in two boxes by showing the box with many or fewer pens.

- **Activities for demonstration**

In small groups, teacher asks pupils to observe pictures in the pupil's book. Then, he/she asks them to make 2 groups of similar objects but with different

number of objects: one group with many objects and another group with few objects as it is shown on the pictures in the pupil's book.

Example:

Pupils may be asked to makes 2 different groups of objects as follows:

- A group of 3 pens and another group of 5 pens
- A group of 8 notebooks and another group of 7 notebooks.
- A group of 6 sticks and another group of 6 sticks.

Teacher asks pupils to compare the number of objects in 2 different groups by showing which group contains many or fewer objects and then he/she helps those with difficulties in comparing the number of groups of objects. He/ she asks pupils to compare 2 groups of equal and similar objects and let them discover that the 2 groups have equal number of objects.

- Activities for reinforcement

Teacher draws 2 different groups with different numbers of objects and then he/she asks pupils to compare them by circling and saying which group has many or few objects. Finally, the teacher asks them to write and compare the number of objects in each group.

- 6 objects are greater than 4 objects
- 4 objects are less than 6 objects

Note: basing on the level of understanding and through examples, teacher may help pupils to compare numbers by using the comparison vocaburaries: greater than, less tan or equal to :

Meaning	Mathematical example	How to read
Greater than	8 and 7	8 is **greater than** 7
Less than	7 and 8	7 is **less than** 8
Equal to	4 and 4	4 is **equal to** 4

- **Application activities**

  Teacher provides different exercises on comparing groups of objects. Pupils are requested to provide oral answers by telling the group with many or few objects. Pupils may also have requested to compare numbers of objects by writing. Teacher makes a follow up on how best pupils are performing the given tasks and he/she appreciates, encourages and values the pupils' answers.

- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home. He/she provides exercises on comparison of number of 1 to 9 objects. He/ she asks pupils to compare 2 groups of similar objects but with different numbers of objects.

Lesson 11: Comparing numbers from 1 to 9 using symbols

a) Prerequisites/Revision/Introduction

Teacher may ask pupils to work out counting activities, reading and writing activities in the pupil's book. He/she can use prompting questions to test if pupils know to count, read and write numbers from 1 to 9.

Example of questions to be asked:
- Read the following numbers: 1, 2, 3, 4 , 5, 6, 7, 8 and 9.
- Write the following numbers: 1, 2, 3, 4 , 5, 6, 7, 8 and 9.
- Show the following objects: 2 pens, 4 books, 2 notebooks, 6 chalks, 9 beans, 8 counters, 1 book.

b) teaching and learning materials
Chalkboard, chalks, notebooks, pens, pupil's book, charts containing pictures of groups of objects, number cards of numbers from 1 to 9.

c) learning activities
- **Activities for introduction**
Using different prompting questions, teacher helps pupils to understand and discover how to compare numbers from 1 to 9. Pupils may be requested to count objects in different groups and compare the number of objects in two or more groups by showing a group with many , less or equal objects.
Example: by means of two boxes of notebooks, where one box contains 9 notebooks and another box contains 4 notebooks. Pupils may be asked to compare the number of notebooks in two boxes by showing the box with many or fewer notebooks.

- **Activities for demonstration**

In small groups, teacher asks pupils to observe pictures in the pupil's book. Then, he/she asks them to make 2 groups of similar objects but with different number of objects: one group with many objects and another group with few objects as it is shown on the pictures in the pupil's book.

Example:

Pupils may be asked to makes 2 different groups of objects as follows:

- A group of 9 chalks and another group of 7 chalks.
- A group of 9 sticks and another group of 9 sticks.

Teacher asks pupils to compare the number of objects in 2 different groups by showing which group contains many or fewer objects and then compare the two numbers using the comparison symbols ($<$: less than, $>$: greater than, or $=$: equal to). He/she helps those with difficulties in comparing the number of groups of objects. He/ she asks pupils to compare 2 groups of equal and similar objects and let them discover that the 2 groups have equal number of objects.

Comparison symbol	Meaning	Mathematical example	How to read
$>$	Greater than	$9 > 7$	9 is **greater than** 7
$<$	Less than	$7 < 9$	7 is **less than** 9
$=$	Equal to	$9 = 9$	9 is **equal to** 9

- **Activities for reinforcement**

Teacher draws 2 different groups with different numbers of objects and then he/she asks pupils to compare them by saying which group has many or fewer objects. Finally, the teacher asks them to write and compare the numbers of objects using symbols.
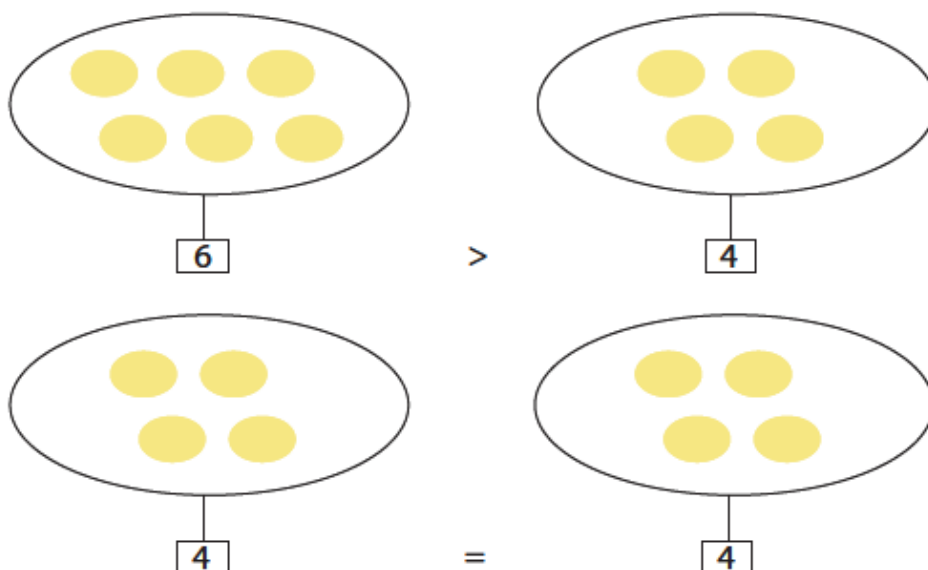
- 6 objects are greater than 4 objects
- 4 objects are less than 6 objects
- 4 objects are equal to 4 objects

Note: basing on the level of understanding and through examples, teacher may help pupils to both know the comparison vocabularies and comparison symbols:

Comparison symbol	Meaning	Mathematical example	How to read
>	Greater than	$6 > 4$	6 is **greater than** 4
<	Less than	$4 < 6$	4 is **less than** 6
=	Equal to	$4 = 4$	4 is **equal to** 4

- **Application activities**

Teacher provides different exercises on comparing 2 numbers using symbols (<, > and =). Pupils are requested to provide written answers. Teacher makes a follow up on how best pupils are performing the given tasks and he/she appreciates, encourages and values the pupils' answers.

- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home. He/she provides exercises on comparison of number from 1 to 9 using symbols (<, > and =).

Lesson 12: Ascending order of numbers from 1 to 9

a) Prerequisites/Revision/Introduction

Teacher may ask pupils to work out counting activities, reading and writing activities in the pupil's book. He/she can use prompting questions to test if pupils know to count, read and write, and compare numbers from 1 to 9. Pupils may be requested to compare numbers of groups of objects by telling a group which contains many or fewer objects (refer to pupil's book activities).

b) teaching and learning materials
Chalkboard, chalks, notebooks, pens, pupil's book, charts containing pictures of groups of objects
c) learning activities
- **Activities for introduction**
Using different prompting questions, teacher helps pupils to understand and discover how to arrange numbers from 1 to 9 in ascending order (from smaller to bigger number). Pupils may be requested to count objects in different groups and compare the number of objects in two or more groups by showing a group with many or fewer objects.
Pupils may also be requested to explain how to arrange different groups of objects by starting with a group of less number of objects until they arrive to the group with a big number of objects.

Example: pupils may be asked to explain how to arrange in ascending order the following groups of objects.
- A group of 4 notebooks, a group of 5 notebooks, a group of 9 notebooks.
- **Activities for demonstration and reinforcement**
In small groups of 5 pupils each, teacher asks pupils to make different groups of 1 to 9 similar objects and arrange in ascending order (from smaller to bigger) the numbers of objects in different groups.

Example: pupils in groups may be asked to make groups of similar objects and arrange the numbers of objects from the smallest to the biggest number.

- Make 8 different groups of beans as follows: a group of 5 beans, a group of 1 bean, a group of 3 beans, a group of 4 beans, a group of 2 beans, a group of 6 beans, a group of 8 beans, a group of 9 beans.

- Make 7 different groups of books as follows: a group of 7 books, a group of 5 books, a group of 3 books, a group of 4 books, a group of 6 books, a group of 8 books, a group of 9 books.

- Arrange in ascending order the following numbers: 5,4,1,3,2,6,8,9 and 7,5,3, 4,6,8,9.

- Explain step by step how to arrange numbers in ascending order.

- **Application activities**

Teacher provides activities on arranging numbers from 1 to 9 in ascending order. He/she may ask pupils to explain how they come up with numbers arranged from smaller to bigger number.
Example: individually or in pairs order from smaller to bigger number

Note: application activities may be done individually or in pairs. Teacher ensures that all pupils understand how to make an ascending order of numbers from 1 to 9 and provides help or remedial activities for pupils in difficulties.

- **Assessment activities**
The teacher provides activities to be done by pupils at school or at home.
He/she provides exercises on arranging numbers from 1 to 9 in ascending order.
Examples: arrange the following numbers from the smallest to the biggest number

Lesson 13: Descending order of numbers from 1 to 9

a) **Prerequisites/Revision/Introduction**

Teacher may ask pupils to work out counting activities, reading and writing activities in the pupil's book. He/she can use prompting questions to test if

pupils know to count, read and write, and compare numbers from 1 to 9. Pupils may be requested to order numbers of groups of objects in ascending order (refer to pupil's book activities).

b) teaching and learning materials
Chalkboard, chalks, notebooks, pens, pupil's book, wall charts containing pictures of groups of objects, wall charts of numbers from 1 to 9 in ascending or descending order.

c) learning activities
- **Activities for introduction**
Using different prompting questions, teacher helps pupils to understand and discover how to arrange numbers from 1 to 9 in descending order (from bigger to smaller number). Pupils may be requested to count objects in different groups and compare the number of objects in two or more groups by showing a group with many or fewer objects.

Pupils may also be requested to explain how to arrange different groups of objects by starting with a group of many objects until they arrive to the group of a small number of objects.

Example: pupils may be asked to explain how to arrange in descending order the following groups of objects.

- A group of 1 pen, a group of 7 pens, a group of 6 pens, a group of 9 pens, a group of 5 pens.
- A group of 3 notebooks, a group of 9 notebooks, a group of 2 notebooks, a group of 1 notebook, a group of 7 notebooks, a group of 8 notebooks.

- **Activities for demonstration and reinforcement**
In small groups of 5 pupils each, teacher asks pupils to make different groups of 1 to 9 similar objects and arrange in descending order (from bigger to smaller) the numbers of objects in different groups.

Example: pupils in groups may be asked to make groups of similar objects and arrange the numbers of objects from the biggest to the smallest number.

- Make 7 different groups of bottle tops as follows: a group of 7 bottle tops, a group of 4 bottle tops, a group of 5 bottle tops, a group of 8 bottle tops, a group of 9 bottle tops, a group of 3 bottle tops, a group of 1 bottle top.

- Arrange in descending order the following numbers: 7, 4, 5, 8, 9, 3, 1.

- Explain step by step how to arrange numbers in descending order.

- **Application activities**

Teacher provides activities on arranging numbers from 1 to 9 in descending order. He/she may ask pupils to explain how they come up with numbers arranged from bigger to smaller number.
Example: individually or in pairs order from bigger to smaller number

Note: application activities may be done individually or in pairs. Teacher ensures that all pupils understand how to make a descending order of numbers from 1 to 9 and provides help or remedial activities for pupils in needs.

- **Assessment activities**
The teacher provides activities to be done by pupils at school or at home. He/she provides exercises on arranging numbers from 1 to 9 in descending order.

Lesson 14: Addition of numbers whose sum does not exceed 9

a) **Prerequisites/Revision/Introduction**

Teacher may ask pupils to find addends of a sum less than or equal to 5. He/ she may test if pupils are able to count, read , write and compare numbers from 1 to 9.

b) **teaching and learning materials**
Chalkboard, chalks, notebooks, pens, pupil's book, charts containing pictures of groups of objects, number cards containing numbers from 1 to 9.
c) **learning activities**
- **Activities for introduction**
Using different prompting questions, teacher helps pupils to understand and discover how to add 2 numbers whose sum does not exceed 9. Pupils may be requested to put together objects from 2 small groups in order to get a number of 9 or less than 9 objects.
Example: by means of two boxes of chalks, where one box contains 5 chalks and another box contains 4 chalks. Pupils may be asked to put all chalks together in order to get 9 chalks.
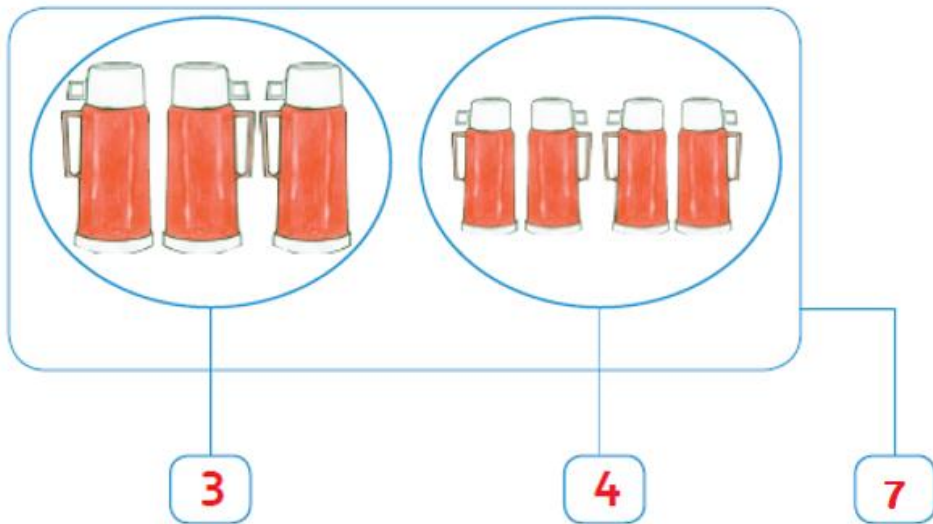- **Activities for demonstration**
1. **Concrete activity**

Using real objects, teacher asks pupils to make 2 groups of objects as follows: one group of 4 objects and another group of 3 objects. He/she asks pupils to put together all objects in 2 groups and then count them in order to get the sum 7.

Note: this activity can be done using a different number between 1 and 9.

2. Semi-Concrete activity

Using pictures of groups of objects in the pupil's book, teacher asks pupils to draw 2 groups of similar objects as follows: one group of 4 objects and another group of 3 objects. He/she asks pupils to put together all objects in 2 groups by circling and then count them in order to get the sum 7.
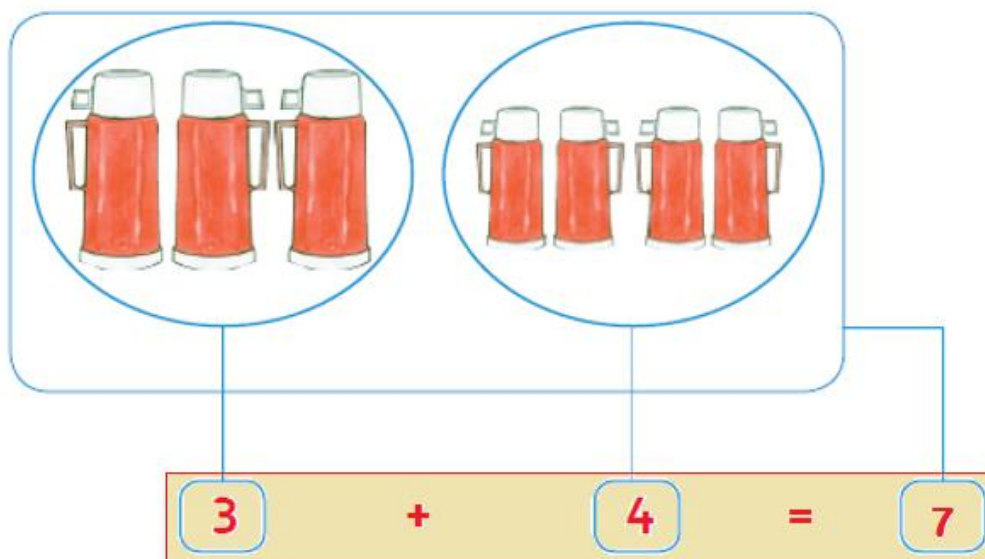

Note: this activity can be done using a different number between 1 and 9.

3. Abstract activity

Teacher helps pupils to write and read aloud a mathematical sentence on addition of 2 numbers whose sum does not exceed 9.

Examples: $3 + 4 = 7$, *three plus 4 equals 7*

- **Reinforcement activities**

Teacher helps pupils to individually add by writing 2 numbers whose sum does not exceed 9. He/she facilitate them to correctly read aloud the mathematical sentence on addition of 2 numbers.

Examples:

- 3 + 6 = 9 is read *three plus 6 equals 9*
- 5 + 2 = 7 is read *five plus two equals 7*

- **Application activities**

Teacher asks pupils to work out the addition activities in the pupil's book. He /she requests pupils to individually or in pairs work out the additionof 2 numbers whose sum does not exceed 9.

Application activities may includes Concrete, semi-Concrete and abstract activities where pupils are requested to work out addition using real objects, group of objects on pictures, numbers and symbols.

Example:

$$6 + 2 = ?$$

////// //

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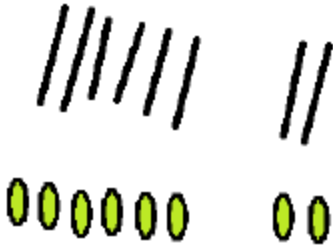
a) 2 + 1 =   e) 3 + 3 =   i) 3 + 4 =   m) 6 + 1 =

b) 1 + 3 =   f) 4 + 4 =   j) 2 + 6 =   n) 4 + 1

c) 3 + 3 =   g) 4 + 5 =   k) 5 + 4 =

d) 2 + 3 =   h) 4 + 2 =   l) 7 + 2 =

- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home. He/she provides exercises on addition of 2 numbers whose sum does not exceed 9.

Lesson 15: Word problems on addition of numbers whose sum does not exceed 9

a) Prerequisites/Revision/Introduction

Teacher asks pupils to work out the exercises on addition of 2 numbers whose sum does not exceed 9.

b) teaching and learning materials

Chalkboard, chalks, notebooks, pens, sticks, dices, pupil's book, charts containing pictures of groups of objects, number cards containing numbers from 1 to 9.

c) learning activities

- **Activities for introduction**
    - Using Concrete objects and story telling, teacher helps pupils to add 2 numbers whose sum does not exceed 9.
    - Teacher reads a short word problems involving addition of 2 numbers and orally pupils give the answer.

- Teacher may ask one pupil to come in front of the class and get 6 counters from others and then teacher gives her / him 2 more counters . teacher asks the whole class the numbers of counters a pupil has and finally the selected pupil count and tell to the class the number of all counters.

- **Activities for demonstration**

using real objects / materials or pictures on the chalkboard or notebook, teacher leads pupils to read and analyse a word problems in the pupil's book and then find out the answer for the word problems. Two or three pupils may solve the word problems by explaining working steps while others are following.

- **Activities for reinforcement**
Pupils in small groups work out different word problems given by the teacher. Pupils are given time to present their working steps to get the answer on word problems involving addition of 2 numbers whose sum does not exceed 9.

- **Application activities**
Teacher asks pupils to use pupil's book and work out the word problems on addition of 2 numbers whose sum is not exceed 9 (refer to pupil's book).
- **Assessment activities**
The teacher provides activities to be done by pupils at school or at home. He/she provides exercises on addition of 2 numbers whose sum does not exceed 9.

Lesson 16: Subtraction of numbers less than 9

a) Prerequisites/Revision/Introduction

Teacher asks pupils to work out the exercises on addition of 2 numbers whose sum does not exceed 9.
b) teaching and learning materials

Chalkboard, chalks, notebooks, pens, sticks, dices, pupil's book, charts containing pictures of groups of objects, number cards containing numbers from 1 to 9.
c) learning activities
- **Activities for introduction**
Using different prompting questions, teacher helps pupils to understand and discover how to subtract 2 numbers less than 9.
Example: teacher may call a group of less than or equal to 9 pupils to come in front of the class. He/ she requests some pupils to go back to their seats and then

he/she asks other pupils to say the number of the remaining pupils in front of the class and those who are back in their seats (*a group of 7 pupils come in front of the class, 2 pupils are back to their seats, 5 pupils are remaning in front of the class).*

- **Activities for demonstration**
  1. **Concrete activity**

Using real objects, teacher asks pupils to make a group of 9 objects / counters and then take away 2 objects/ counters. He/she asks them to count the remaining objects/counters.
Note: this activity can be done using a different number between 1 and 9.
  2. **Semi-Concrete activity**
Using pictures of groups of objects in the pupil's book, teacher asks pupils to draw a group of 7 similar objects. He/she asks pupils to take away 2 objects by crossing them and count the remaining objects in the group.
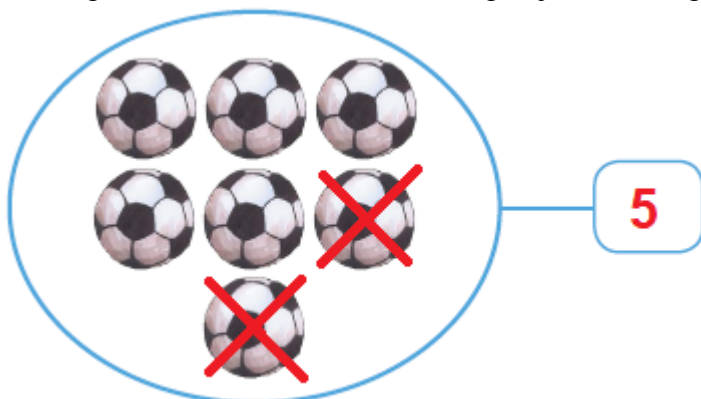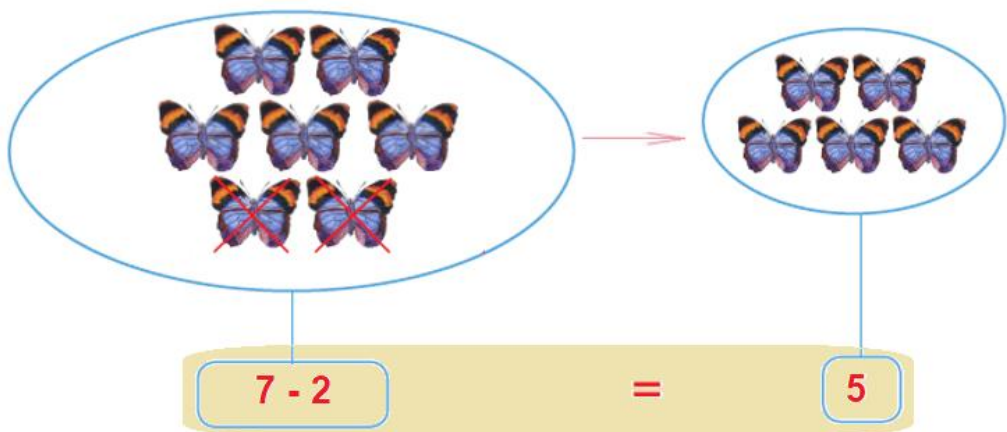

Note: this activity can be done using a different number between 1 and 9.

  3. **Abstract activity**
Teacher helps pupils to write and read aloud a mathematical sentence on subtraction of 2 numbers less than 9.
**Examples:** 7 - 2 = 5, *7 minus 2 equals 5*

- **Reinforcement activities**

Teacher helps pupils to individually subtract by writing 2 numbers less than 9. He/she facilitate them to correctly read aloud the mathematical sentence on subtraction of 2 numbers (refer to pupil's book).

Examples:

- 9 - 4 = …   is read   *9 minus 4 equals ...*
- 8 - 5 = …   is read   *8 minus 5 equals ...*

Teacher may vary the reinforcement activities by including activities of this form:
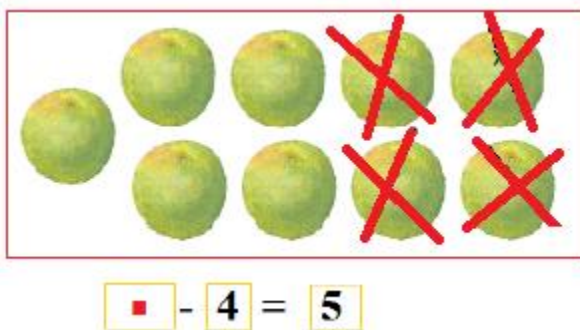
- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home. He/she provides exercises on subtraction of 2 numbers less than 9 (refer to pupil's book).

Lesson 17: Word problem on subtraction of numbers less than 9

a) Prerequisites/Revision/Introduction

Teacher asks pupils to work out the exercises on subtraction of 2 numbers less than 9.

b) teaching and learning materials

Chalkboard, chalks, notebooks, pens, sticks, dices, pupil's book, charts containing pictures of groups of objects, number cards containing numbers from 1 to 9.

c) learning activities

- **Activities for introduction**

Using Concrete objects and story telling, teacher helps pupils to subtract 2 numbers less than 9.

Teacher reads a short word problems involving subtraction of 2 numbers and orally pupils give the answer.

Example: Kiza gets 6 avocadoes from her mother and he gives 2 avocadoes to her sister Mary. How many avocadoes does Kiza remain with?

- Activities for demonstration

using real objects / materials or pictures on the chalkboard or notebook, teacher leads pupils to read and analyse a word problems in the pupil's book and then find out the answer for the word problems. Two or three pupils may solve the word problems by explaining working steps while others are following.

1. Concrete activity:

using real materials or counters, teacher facilitate pupils to work out word problems involving subtraction of 2 numbers less than 9 (refer to pupil's book). He/she may use counters, dices, sticks and helps pupils to solve word problems involving subtraction.

Example: Kiza has 6 avocadoes and he gives to her sister Mary 2 avocadoes. How many avocadoes does Kiza remain with?

Working steps 1: Breaking down 6 avocadoes into 2 groups of 4 avocadoes for Kiza and 2 avocadoes for Mary.
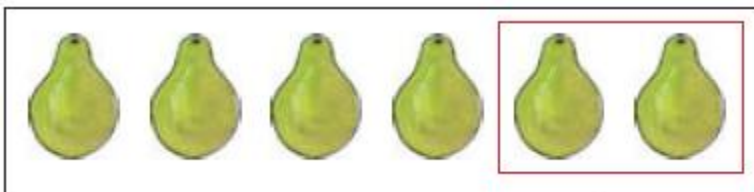
**Working steps 2:** Taking away 2 avocadoes given to Mary from 9 avocadoes of Kiza

Answer: Kiza remains with 4 avocadoes

Semi-Concrete activity: using pictures, teacher facilitate pupils to work out word problems involving subtraction of 2 numbers less than 5 (refer to pupil's book).
Example: Kiza has 6 avocadoes and he gives to her sister Mary 2 avocadoes. How manyavocadoes does Kiza remain with?
Answer: Kiza remains with 4 avocadoes
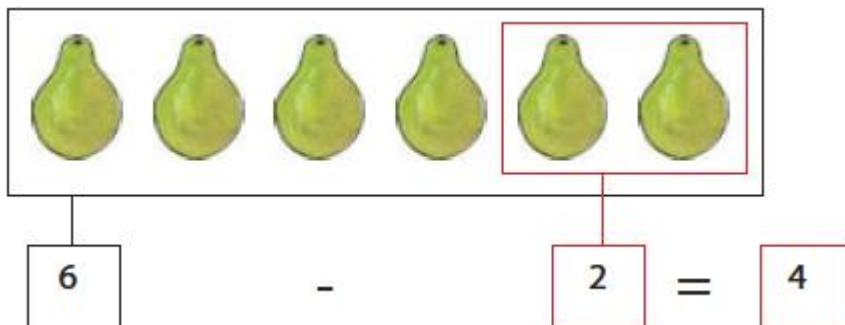
Abstract activity: using numbers and symbols, teacher facilitate pupils to work out word problems involving subtraction of 2 numbers less than 5 (refer to pupil's book).
Example: Kiza has 6 avocadoes and he gives to her sister Mary 2 avocadoes. How manyavocadoes does Kiza remain with?
Answer: $6 - 2 = 4$
        Kiza remains with 4 avocadoes

- **Activities for reinforcement**
Pupils in small groups work out different word problems given by the teacher. Pupils are given time to present their working steps to get the answer on word problems involving subtraction of 2 numbers less than 9 (refer to pupil's book).

- **Application activities**
Teacher asks pupils to use pupil's book and work out the word problems on subtraction of 2 numbers less than 9.
- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home. He/she provides exercises on subtraction of 2 numbers less than 9.

Note: For application activities and homeworks teacher should set additional word problems that involve both addition and subtraction of numbers less than 9 whose sum or difference does not exceed 9.

Lesson 18: End unit assessment 2

a) Prerequisites/Revision/Introduction

Before the end unit assessment:
  - Teacher ensures that pupils master and know how to apply the following: count 1 to 9 objects, read and write numbers from 1 to 9, compare two numbers between 1 and 9, make an ascending or descending order on numbers from 1 to 9, add or subtract 2 numbers between 1 and 9 whose sum or difference does not exceed 9.
  - Teacher relates different revision activities to real life situations or pupils'daily life

b) Examples of end unit assessment questions

1. Count and fill in the boxes with the correct numbers
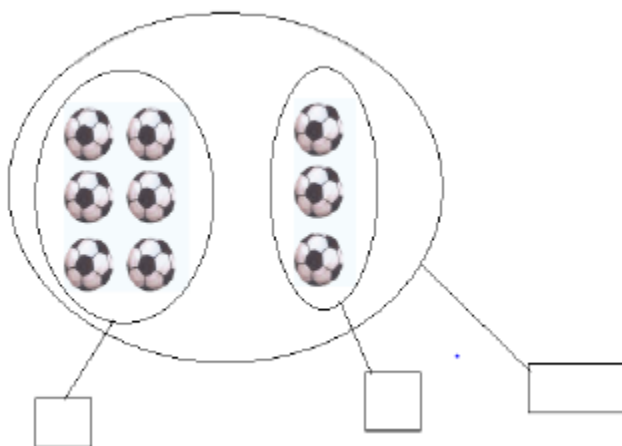
2. Count and complete the boxes with the correct numbers

☐ - ☐ = ☐
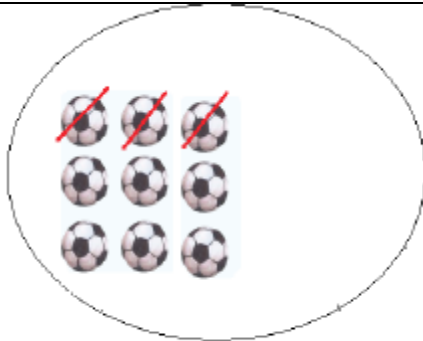
3. **Work out the following exercises**

- **3 + 2 + 3 =**
- **5 + 1 + 2 =**
- **9 – 3 =**
- **7 – 5 =**

4. **Solve the following word problems**

- My mother had 8 potatoes and she gave 5 potatoes to Giramata. How many potatoes does my mother remain with?
- Gasore suffers from malaria and he gets 9 tablets/ capsules from a health center. Immediately, Gasore swallows 3 tablets/ capsules. How many tablets/ capsules does Gasore remain with?
- Gasana buys 7 cars and he sells 5, but immediately Gasana buys 4 more cars. How many cars does Gasana have now ?

5. Pupils in pairs or in small groups Discuss and present the importance of counting, addition and subtraction in real life.

Notes:
- Teacher asks pupils to individually or in pairs work out different assessment questions and then he/she make an individual correction.
- Basing on the results from end unit assessment and before starting unit 3, teacher provides remedial or reinforcement activities for pupils in need.

UNIT 3: WHOLE NUMBERS FROM 0 UP TO 10

3.1 Key unit competence

Counting, reading, writing, ordering, compairing, adding and subtracting whole numbers from 0 to 10

3.2 Prerequisite knowledge and skills

Pupils will perform well in this unit if :

- They have knowledge and mastery of the following: English names of different objects to be used in counting, names of domestic animals in English, English vocabuaries related to family members, English names of different colors…

  - They master and know how to apply the following: count 1 to 9 objects, read and write numbers from 1 to 9, compare two numbers between 1 and 5, make an ascending or descending order on numbers from 1 to 9, add or subtract 2 numbers between 1 and 9 whose sum or difference does not exceed 9.

3.3 Cross-cutting issues to be addressed

Through different tasks and activities, the following cross-cutting issues have to be addressed in this unit:

  - Inclusive education: ensure that the selected teaching and learning techniques, teaching aids promote education for all.
  - Peace and value Education: encourage learners to respect others' views and thoughts during group works and class discussions
  - Gender: ensure the equal opportunity of boys and girls in the lesson participation.
  - **Environment and Sustainability:** ensure that pupils are encouraged to discuss effects of environment and sustainability through solving word problems involving addition, subtraction…
  - **Financial education**: lead pupils to make appropriate financial decisions through word problems that involving four basic opedifferencens.

3.4. list of lessons

	Lesson title	Leaning objectives	Number of periods
UNIT 3: WHOLE NUMBERS FROM 0 UP TO 10 (16 Periods)			
1	Introductory activity	Arouse the curiosity of learners on the content of this unit and the importance of counting, reading and writing numbers in real life.	1
2	Concept of the number 0	Understand and discover the concept of number 0.	1
3	Counting 1 to 10 objects	Understand and discover the concept of number 10.	1
4	Reading and writing the numbers from 0 to 10	Read and write in figure and in word the numbers from 0 to 10.	1
5	Comparing numbers from 1 to 10	Compare numbers from 1 to 10 using >,< and =	2
6	Ascending and descending order of numbers from 0 to 10	Arrange numbers from 0 to 10 in ascending order (from smaller to bigger number or from bigger to smaller number).	2
7	Addition of numbers whose sum does not exceed 10	Add numbers whose sum does not exceed 10.	2
8	Word problems on addition of numbers whose sum does not exceed 10	Solve word problems involving addition whose sum does not exceed 10.	1
9	Subtraction of numbers less than 10	Subtract 2 numbers less than 10 whose difference is not zero.	2
10	Word problems on subtraction	Solve word problems	1

	of numbers less than 10	involving subtraction of 2 numbers less than 10 whose difference is not zero.	
11	End unit assessment 3	Count , read , write, compare , order, add and subtract numbers from 0 to 10.	2

Lesson 1: Introductory activity

This lesson is delivered through a conversation between teachers and pupils. The teacher uses pictures in the pupils' book and asks different prompting questions to pupils in order to get their predictions about the unit to be learnt.

Example of questions to be asked basing on the picture in pupil's book:
- Look at the picture. What do you see?
- How many people do you see on the picture?
- How many bananas does the mother have ?
- How many bananas does the boy have?
- How many bananas does the girl have ?
- On the picture there are a boy, a girl and the mother. Count the number of bananas a boy have , the number of bananas a girl have . Between a boy and a girl who has many bananas? who has few bananas? How many bananas do they have altogether? After that the mother gives all bananas to children, she remains with how many bananas?

As it is at the beginning of the unit, the teacher has to value all answers from pupils. All answers are valid because the aim of the introductory activity is to get from pupils the predictions on the unit to be learnt.

Lesson 2: Concept of the number 0

a) Prerequisites/Revision/Introduction

Ask pupils to individually count at least 9 real objects, read and write numbers from 1 to 9

b) teaching and learning materials:
pineapples, flowers, books, desks, pens, chalks, beans, small stones and any other counters or objects for counting available in the school environment.

c) learning activities

- **Activities for introduction**
  - The teacher takes a certain number of chalks and distributes all of them to 2 pupils. Heshe asks pupils to tell the number of chalks received by each pupil.
  - The teacher asks the number of chalks he/ she remained with and help pupils to discover that there is no chalk or zero chalks remaining in his/ her hands.

- Activities for demonstration

1. Concrete activity

Using real objects:
  - Teacher asks pupils to count 9 objects and put them in a box or any other container.
  - He/ she asks them to remove all objects from the box to another container by counting until the first box is empty.
  - Teacher asks pupils to find out and tell the number of objects remained in the first box or container.

Note: this activity can be done using a different number between 1 and 9.

2. Semi-Concrete activity

Using pictures of players in the pupil's book, teacher asks pupils to count and tell the number of players in 2 different playing grounds.

Example: there is no player in the first playing ground, while there are 10 players in the second playing ground.
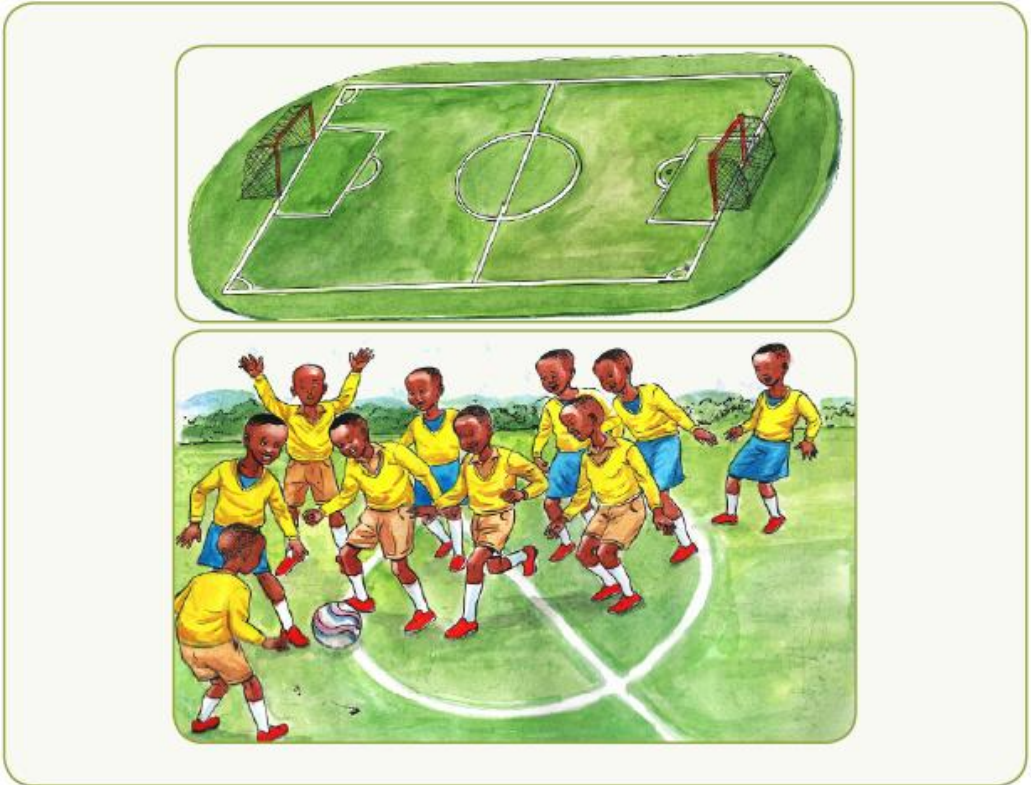
3. Abstract activity

Teacher helps pupils to get the mathematical meaning of empty **playing ground** or **no player** in the playing ground. He/she helps pupils to find out that there are **zero players** in the first playing groung. Pupils are requested to repeat the word **"zero"** many times

- Reinforcement activities

In small groups, teacher helps pupils to work out subtraction activities in the pupil's book, they count, take away, write and tell the number of the remaining objects.
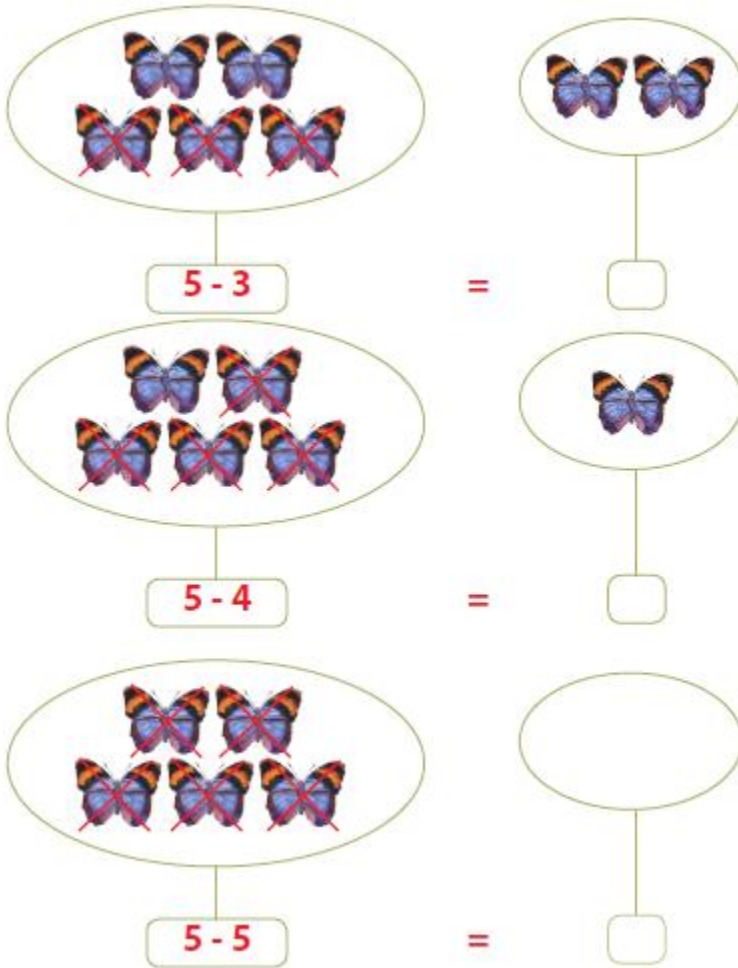
- **Application activities**

Individually or in pairs, pupils may be asked to make a group of a certain number of objects (use numbers from 1 to 9), count objects and remove them from the first group to the second one until they are remained with zero objects in the first group.

- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home. All set activities should help every pupil to deeply understand the concept of the number zero.

Lesson 3: Counting 1 to 10 objects

a) Prerequisites/Revision/Introduction

Ask pupils to individually count at least 9 real objects, read and write numbers from 1 to 9.

b) teaching and learning materials:

pineapples, flowers, books, desks, pens, chalks, beans, small stones and any other counters or objects for counting available in the school environment.

c) learning activities

- **Activities for introduction**
  1. **Counting 1 to 10 real objects**
     - Using different counters or counting objects or a song, teacher helps pupils to understand and discover the concept of the number 10.
     - Teacher may ask pupils to make two groups of similar objects; one group of 9 objects and another group of 1 object. He/ she asks pupils to put together all objects, count them and tell the number.
     - Teacher may ask pupils to individually bring 1 notebook, 2 notebooks, 3 notebooks up to 10 notebooks.

  2. **Observing pictures and counting 1 to 10 objects**

Using pupil's book, teacher leads pupils to look at the pictures of fruits and vegetables, name all observed fruits and vegetables, count and tell the number for each category.
Examples: How many carottes do you see on the picture?
                 How many oranges do you see on the picture?
                 How many tomatoes do you see on the picture?
                 How many avocadoes do you see on the picture?
                 How many bananas do you see on the picture? etc.

- **Demonstration and reinforcement activities**
Using different questions, teacher tests if pupils understand the number concept from 1 to 10 and if they can apply it the the real context.

Examples:
  - who can show us 4 books ? who can show us 5 books? who can show us 10 books?
  - who can bring 10 beans ? who can bring 6 notebooks? who can bring 2 pens? who can bring 7 notebooks? who can bring 10 sticks? Etc.

- **Application and assessment activities**

The teacher provides activities to be done by pupils at school or at home. All set activities should provide to every pupil the opportunities to demonstrate and apply the new concept learnt in a range of situations.

Examples:
- Asks pupils to bring objects of the same nature (3 pens, 10 books, 7 bananas, 10 beans, 10 small stones…)
- Asks pupils to make groups of 1 to 10 similar real objects or using drawings (2 tomatoes, 8 mangoes, 5 bananas, 10 small stones or sticks).

Lesson 4: reading and writing the numbers from 0 and 10

a) Prerequisites/Revision/Introduction

The teacher asks pupils to count objects less than or equal to 10 and write number from 1 to 9.

b) teaching and learning materials:

Number cards with numbers 1 to 9, different pictures in the pupil's book, wall charts containing objects and numbers from 1 to 9, chalkboard, chalks, books, notebooks, pens and any other counters or objects for counting available in the school environment.

c) learning activities

- **Activities for introduction**

Using different prompting questions, teacher helps pupils to understand and discover how to read and write the numbers 0 and 10. Teacher leads pupils to observe picture with empty objects and picture with 10 objects (see for example 2 playing grounds in the pupil's book)

Example:
- use a chart containing 10 objects and the number 10 in figure and asks pupils to count and tell the number of objects they see on the picture.
- Ask pupils to cross all objects on the chart and tell the number of the remaining objects.

- **Activities for demonstration**

The teacher leads pupils how to read and write the number 0 and then the number 10 through the following steps:

Step 1: the teacher writes slowly the number 0 on the chackboard by explaining to pupils how to do it.

Step 2: teacher asks pupils to imitate how to write the number 0.

- First, they write the number 0 in the air using the finger,
- Second, they write the number 0 on their desks using finger,
- Third, they individually match dots and make the number 0 on the chalkboard or number card using finger, chalk, marker or pencil. This activity is provided in the pupil's book.
- Finally, they individually write many times the number 0 on chalkboard and in their notebooks.

Note: the two steps above are used while teaching to write and read the number 10. Teacher explains to pupils that the number 10 is made by two digits 1 and 0.

- **Activities for reinforcement**
  - Teacher asks pupils to individually imitate the numbers 0 and 10 written on the chalkboard or on a number card and then write it many times in their notebook using a pen or a pencil.
  - Teacher helps pupils with difficulties to well write the numbers 0 and 10 by giving them more time on writing activity. He/ she must use all possible ways to make all pupils successful in reading and writing the numbers 0 and 10.

- **Application activities**
  - Individually, teacher asks pupils to write the numbers 0 and 10 many times in their notebooks,
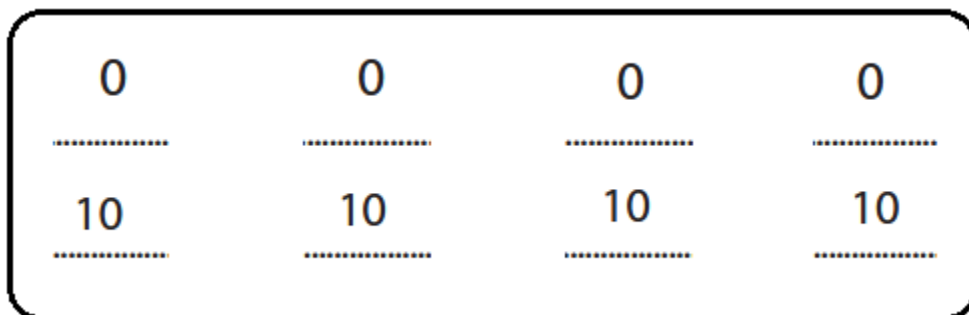
  - In pairs, teacher asks all pupils to write and read the following numbers: the number 6 which is new to the pupils.
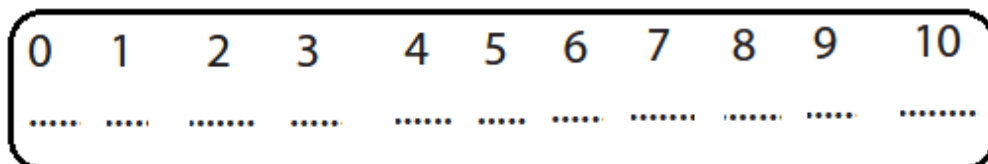
- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home. All set activities should provide to every pupil the opportunities to demonstrate and apply the new concept learnt in a range of situations.

Example: Asks pupils to show where the numbers 0 and 10 are written on different objects, bring an object on which the number 10 is written, write the numbers 0 and 10 in their notebooks or make number card with the numbers 0 and 10. To help pupils to more understamd the concept and meaning of numbers from 0 to 10, this activity may be done on numbers previously learnt: 1, 2, 3 , 4 , 5, 6, 7, 8 and 9.

Lesson 5: Comparing numbers from 0 to 10 using symbols

a) Prerequisites/Revision/Introduction

Teacher can use prompting questions to test if pupils know to compare 2 numbers between 1 to 9 using symbols ($<$ less than, $>$ greater than, = equal to).

b) teaching and learning materials

Chalkboard, chalks, notebooks, pens, pupil's book, charts containing pictures of groups of objects, number cards of numbers from 1 to 9.

c) learning activities
- **Activities for introduction**

Using different prompting questions, teacher helps pupils to understand and discover how to compare numbers from 0 to 10. Pupils may be requested to count objects in different groups and compare the number of objects in two or more groups by showing a group with many , less or equal objects.
Example: by means of two boxes of small stones , where one box contains 3 small stones and another box contains 10 small stones. Pupils may be asked to compare the number of stones in two boxes by showing the box with many or fewer small stones.

- **Activities for demonstration**

  - In small groups, teacher asks pupils to observe pictures in the pupil's book. Then, he/she asks them to make 2 groups of similar objects but with different number of objects: one group with many objects and

another group with few objects as it is shown on the pictures in the pupil's book.

Example: Pupils may be asked to makes 2 different groups of objects as follows: a group of 6 bananas and another group of 10 bananas.

- Teacher asks pupils to compare the number of objects in 2 different groups by showing which group contains many or fewer objects and then compare the two numbers using the comparison symbols ($<$: less than, $>$: greater than, or $=$: equal to). He/she helps those with difficulties in comparing the number of groups of objects. He/ she asks pupils to compare 2 groups of equal and similar objects and let them discover that the 2 groups have equal number of objects.

Comparison symbol	Meaning	Mathematical example	How to read
$>$	Greater than	$10 > 6$	10 is **greater than** 6
$<$	Less than	$6 < 10$	6 is **less than** 10
$=$	Equal to	$4 = 4$	4 is **equal to** 4

- Activities for reinforcement

Teacher draws 2 different groups with different numbers of objects and then he/she asks pupils to compare them by saying which group has many or fewer objects. Finally, the teacher asks them to write and compare the numbers of objects using symbols (**<, >, =)**
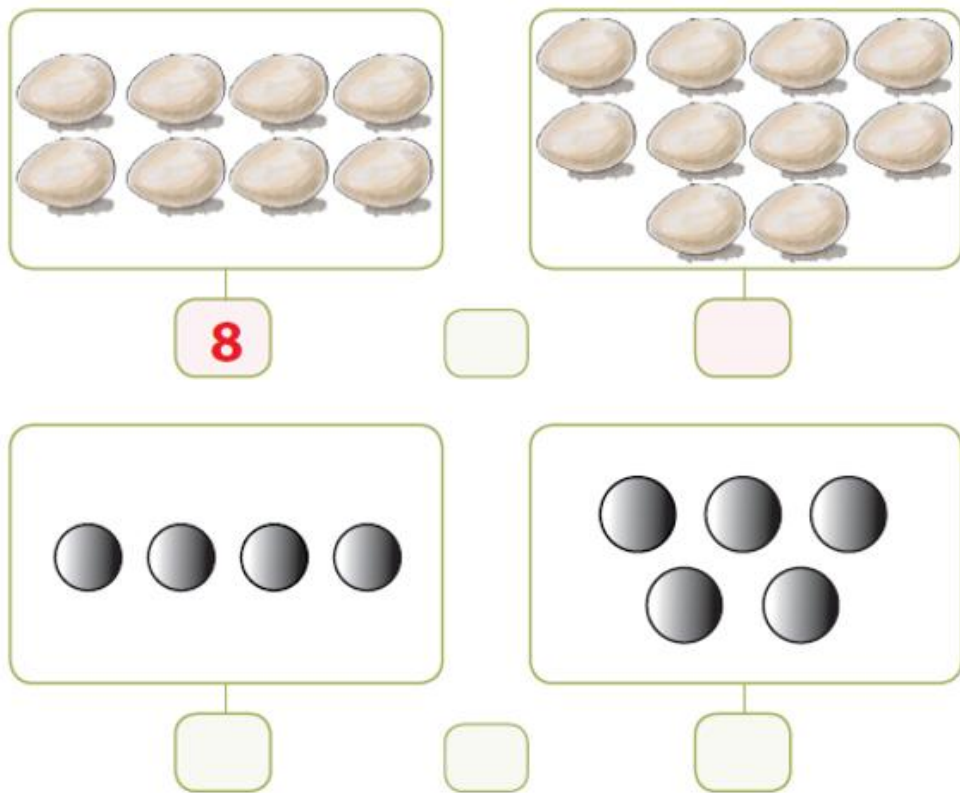
The teacher may ask pupils to compare the numbers of objects completing the sentence using "**greater than, less than or equal to".**

Examples:

- **...** eggs are **greater than** 8 eggs
- 8 eggs are **….**10 eggs
- 4 counters are **….** 5 counters
- 5 counters are **greater than…** counters

- **Application activities**

Teacher provides different exercises on comparing 2 numbers using symbols ($<$, $>$ and $=$). Pupils are requested to provide written answers. Exercises to be given may be in two different types as follows:

1. Exercises with pictures of objects to count and compare. Pupils are requested to count, write the counted numbers and compare using symbols ($<$, $>$ and $=$)

2. Exerices with only 2 numbers to compare using symbols ($<$, $>$ and $=$)

- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home.
He/she provides exercises on comparison of number from 0 to 10 using symbols
($<$, $>$ and $=$).

Lesson 6: Ascending and descending order of numbers from 0 to 10

a) Prerequisites/Revision/Introduction

Teacher may ask pupils to work out counting activities, reading and writing
activities in the pupil's book. He/she can use prompting questions to test if
pupils know to count, read and write, and compare numbers from 0 to 10. Pupils
may be requested to compare 2 numbers between 0 and 10 (refer to pupil's book
activities).

b) teaching and learning materials
Chalkboard, chalks, notebooks, pens, pupil's book, charts containing pictures of groups of objects, number cards with numbers from 0 to 10.

c) learning activities

- **Activities for introduction**

Using different prompting questions, teacher helps pupils to understand and discover how to arrange numbers from 0 to 10 in ascending and descending order (from smaller to bigger number or from bigger to smaller numbers). Pupils may be requested to count objects in different groups and compare the number of objects in two or more groups by showing a group with many or fewer objects.

Example: pupils may be asked to explain how to arrange in ascending or in descending order the following groups of objects.

- 8 notebooks, 7 notebooks, 9 notebooks, 2 notebooks, 10 notebooks, 1 notebook, 7 notebooks, 4 notebooks.
- 4 sticks, 2 sticks, 6 sticks, 9 sticks, 8 sticks, 5 sticks, 10 sticks.

Pupils may also be requested to arrange different groups of objects by starting with a group of less number of objects until they arrive to the group with a big number of objects and vice versa

- **Activities for demonstration and reinforcement**

In small groups of 5 pupils each, teacher asks pupils to make different groups of 1 to 10 similar objects and arrange in ascending or descending order the numbers of objects in different groups.

Activity 1: arrange from the biggest to the smallest number

Example: pupils in groups may be asked to make groups of similar objects and arrange the numbers of objects from the biggest to the smallest number.

- Make 7 different groups of bottle tops as follows: 7 bottle tops, 4 bottle tops, 5 bottle tops, 8 bottle tops, 9 bottle tops, 3 bottle tops, 1 bottle top.

- Arrange in descending order the following numbers: 7, 4, 5, 8, 9, 3, 1.

- Explain step by step how to arrange numbers in descending order.

Teacher leads pupils to read and compare numbers using the following symbol (> greater than) as follow: $9 > 8 > 7 > 5 > 4 > 3 > 1$ which is read as follow: **9 is greater than 8…**

Activity 2: arrange number from the smallest to the biggest

Example: pupils in groups may be asked to make groups of similar objects and arrange the numbers of objects from the smallest to the biggest number.

- Make 7 different groups of bottle tops as follows: 7 bottle tops, 4 bottle tops, 5 bottle tops, 8 bottle tops, 9 bottle tops, 3 bottle tops, 1 bottle top.

- Arrange in ascending order the following numbers: 7, 4, 5, 8, 9, 3, 1.

- Explain step by step how to arrange numbers in ascending order.

Teacher leads pupils to read and compare numbers using the following symbol ($<$ less than) as follow: $1 < 3 < 4 < 5 < 7 < 8 < 9$ which is read as **1 is less than 3…**

Note: teacher gives time to each group to present its work (from two activities) and he/she ensure that all pupils are performing well in ordering numbers.

- **Application activities**

Teacher provides activities on arranging numbers from 1 to 10 in ascending order and then in descending order.

2	9	0	10	6	4
___	___	___	___	___	___
6	8	10	5	7	
___	___	___	___	___	

Note: application activities may be done individually or in pairs. Teacher ensures that all pupils understand how to make an ascending and descending order of numbers from 1 to 10 and provides help or remedial activities for pupils in needs.

- **Assessment activities**
The teacher provides activities to be done by pupils at school or at home. He/she provides exercises on arranging numbers from 0 to 10 in ascending and descending order.
Examples: arrange the following numbers from the smallest to the biggest number and then from the biggest to the smallest number.

Lesson 7: Addition of numbers whose sum does not exceed 10

a) Prerequisites/Revision/Introduction

Teacher may ask pupils to find addends of a sum less than or equal to 9. He/ she may test if pupils are able to count, read, write and compare numbers from 0 to 10.

b) teaching and learning materials
Chalkboard, chalks, notebooks, pens, pupil's book, charts containing pictures of groups of objects, number cards containing numbers from 0 to 10.

c) learning activities

- **Activities for introduction**

Using different prompting questions, teacher helps pupils to understand and discover how to add 2 numbers whose sum does not exceed 10. Pupils may be requested to put together objects from 2 small groups in order to get a number of 10 or less than 10 objects.

Example: by means of two boxes of chalks, where one box contains 6 chalks and another box contains 4 chalks. Pupils may be asked to put all chalks together in order to get 10 chalks.

- **Activities for demonstration**
1. **Concrete activity**

Using real objects, teacher asks pupils to make 2 groups of objects as follows: one group of 3 objects and another group of 7 objects. He/she asks pupils to count and write number of objects in each group and then put together all objects from 2 groups in order to get the sum 10.

Note: this activity can be done using different numbers between 1 and 10, which make 10 as a sum.

2. **Semi-Concrete activity**
Using pictures of groups of objects in the pupil's book, teacher asks pupils to draw 2 groups of similar objects as follows: one group of 3 objects and another group of 7 objects. He/she asks pupils to put together all objects in 2 groups by circling and then count them in order to get the sum 10.
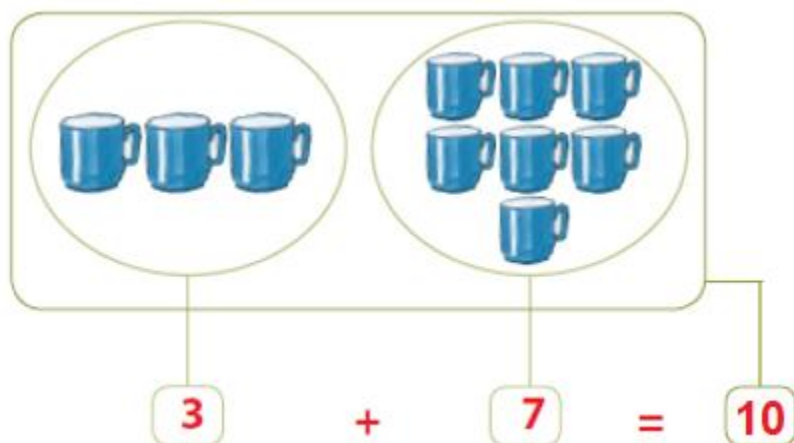
Note: this activity can be done using a different number between 1 and 10. For example pupils may be asked to make 2 groups of 4 and 6 objects, they put them together, they count and write their sum as follow: $6 + 4 = 10$.

3. Abstract activity
Teacher helps pupils to write and read aloud a mathematical sentence on addition of 2 numbers whose sum does not exceed 10.
Examples: $3 + 7 = 10$, *three plus 7 equals 10*

- Reinforcement activities
Teacher helps pupils to individually add by writing 2 numbers whose sum does not exceed 10. He/she facilitate them to correctly read aloud the mathematical sentence on addition of 2 numbers.
Examples:
- $2 + 8 = 10$ is read *2 plus 8 equals 10*
- $5 + 5 = 10$ is read *5 plus 5 equals 10*

- Application activities
Teacher asks pupils to work out the addition activities in the pupil's book. He /she requests pupils to individually or in pairs work out the addition of 2 numbers whose sum does not exceed 10.
Application activities may include Concrete, semi-Concrete and abstract activities where pupils are requested to work out addition using real objects, group of objects on pictures, numbers and symbols.

- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home.
He/she provides exercises on addition of 2 numbers whose sum does not exceed 10.

Lesson 8: Word problems on addition of numbers whose sum does not exceed 10

a) **Prerequisites/Revision/Introduction**

Teacher asks pupils to work out the exercises on addition of 2 numbers whose sum does not exceed 10.

b) **teaching and learning materials**

Chalkboard, chalks, notebooks, pens, sticks, dices, pupil's book, charts containing pictures of groups of objects, number cards containing numbers from 0 to 10.

c) **learning activities**

- **Activities for introduction**
  - Using Concrete objects and story telling, teacher helps pupils to add 2 numbers whose sum does not exceed 10.
  - Teacher reads a short word problems involving addition of 2 numbers and orally pupils give the answer.

  Example: olive gets 8 sweets from her mother and his brother add 2 more seets. How many sweets does olive receive altogether?

- **Activities for demonstration**

using real objects / materials or pictures on the chalkboard or notebook, teacher leads pupils to read and analyse a word problems in the pupil's book and then find out the answer for the word problems. Two or three pupils may solve the word problems by explaining their working steps while others are following.

- **Activities for reinforcement**

Pupils in small groups work out different word problems given by the teacher. Pupils are given time to present their working steps to get the answer on word problems involving addition of 2 numbers whose sum does not exceed 10.

- **Application activities**

Teacher asks pupils to use pupil's book and work out the word problems on addition of 2 numbers whose sum is not exceed 10 (refer to pupil's book).
- **Assessment activities**
The teacher provides activities to be done by pupils at school or at home. He/she provides exercises on addition of 2 numbers whose sum does not exceed 10.

Lesson 9: Subtraction of numbers less than 10

a)   Prerequisites/Revision/Introduction

Teacher asks pupils to work out the exercises on addition and subtraction of 2 numbers less than 9.

b) **teaching and learning materials**

Chalkboard, chalks, notebooks, pens, sticks, dices, pupil's book, charts containing pictures of groups of objects, number cards containing numbers from 0 to 10.

c) learning activities
- **Activities for introduction**
Using different prompting questions, teacher helps pupils to understand and discover how to subtract 2 numbers less than 10.
Example: teacher may give 10 chalks to Anitha and the he/she requests Anitha to give 6 chalks to Manzi. He/ she asks other pupils to say the number of chalks that Anitha remains with.

- **Activities for demonstration**
  1. **Concrete activity**

Using real objects, teacher asks pupils to make a group of 10 objects / counters and then take away 2 objects/ counters. He/she asks them to count and write the remaining objects/counters.
Note: this activity can be done using a different number between 1 and 10.
  2. **Semi-Concrete activity**
Using pictures of groups of objects in the pupil's book, teacher asks pupils to draw a group of 10 similar objects. He/she asks pupils to take away 3 objects by crossing them and count the remaining objects in the group.
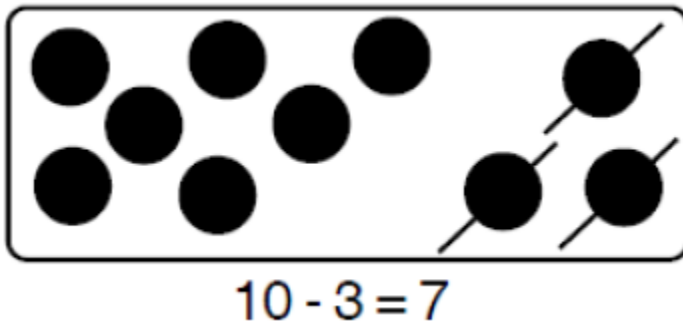
$$10 - 3 = 7$$

Note: this activity can be done using a different number between 1 and 10.

3. Abstract activity

Teacher helps pupils to write and read aloud a mathematical sentence on subtraction of 2 numbers less than 10.

Examples: 10 - 3 = 7, *10 minus 3 equals 7*

- **Reinforcement activities**

Teacher helps pupils to individually subtract by writing 2 numbers less than 10. He/she provides a veriety of exercises and facilitates them to correctly read aloud the mathematical sentence on subtraction of 2 numbers (refer to pupil's book).

Examples:

- 10 - 4 = …   is read   *10 minus 4 equals …*
- 10 - 8 = …   is read   10 *minus 8 equals …*
- 5 – 5 =…   is read   5 *minus 5 equals …*

Teacher may vary the reinforcement activities by including activities of this form:

$$\boxed{\blacksquare} - \boxed{8} = \boxed{2}$$

- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home.
He/she provides exercises on subtraction of 2 numbers less than 10 (refer to pupil's book).

Lesson 10: Word problem on subtraction of numbers less than 10

a) Prerequisites/Revision/Introduction
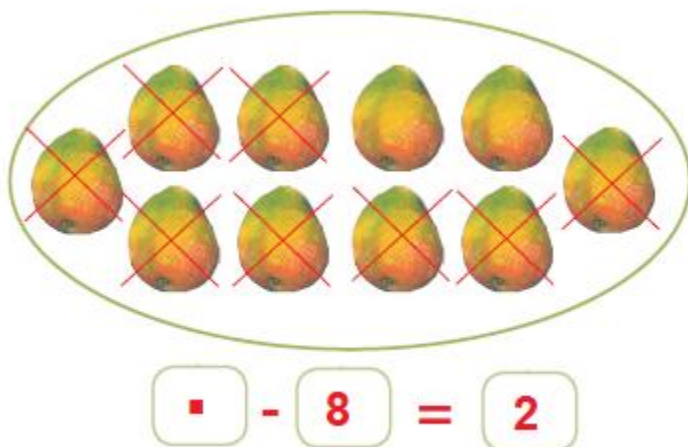
Teacher asks pupils to work out the exercises on subtraction of 2 numbers less than 10.

b) teaching and learning materials

Chalkboard, chalks, notebooks, pens, sticks, dices, pupil's book, charts containing pictures of groups of objects, number cards containing numbers from 0 to 10.

c) learning activities

- **Activities for introduction**

Using Concrete objects, games or story telling, teacher helps pupils to subtract 2 numbers less than 10.

Teacher reads a short word problems involving subtraction of 2 numbers and orally pupils give the answer.

Example: Oliva gets 10 sweets fro her mother and she gives 2 sweets to her borther. How many sweets does Oliva remain with?

- Activities for demonstration

using real objects / materials or pictures on the chalkboard or notebook, teacher leads pupils to read and analyse a word problems in the pupil's book and then find out the answer for the word problems. Two or three pupils may solve the word problems by explaining working steps while others are following.

1. Concrete activity:

Using real materials (counters, sticks, chalks) teacher facilitate pupils to work out word problems involving subtraction of 2 numbers less than 10 (refer to pupil's book).

Example: Teacher takes 10 chalks and he/she gives 3 chalks to one pupil. Then he/she asks other pupils the number of chalks he/she remained with.

Answer: teacher remains with 7 chalks

2. Semi-Concrete activity:

Using pictures, teacher facilitate pupils to work out word problems involving subtraction of 2 numbers less than 10 (refer to pupil's book).

Example: look at the picture and fill in the box with the correct number

Abstract activity: using numbers and symbols, teacher facilitate pupils to work out word problems involving subtraction of 2 numbers less than 10 (refer to pupil's book).

Example: Teacher takes 10 chalks and he/she gives 3 chalks to one pupil. How many chalks does teacher remain with?

Answer: $10 - 3 = 7$

          Teacher remains with 7 chalks

- Activities for reinforcement and application

Pupils in small groups work out different word problems given by the teacher. Pupils are given time to present their working steps to get the answer on word

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problems involving subtraction of 2 numbers less than 10 (refer to pupil's book).

- Assessment activities
The teacher provides activities to be done by pupils at school or at home.
He/she provides exercises on subtraction of 2 numbers less than 10.

Note: For reinforcement activities, application activities and homeworks teacher should set additional word problems that involve both addition and subtraction of numbers less than 10 whose sum or difference does not exceed 10.

Lesson 11: End unit assessment 3
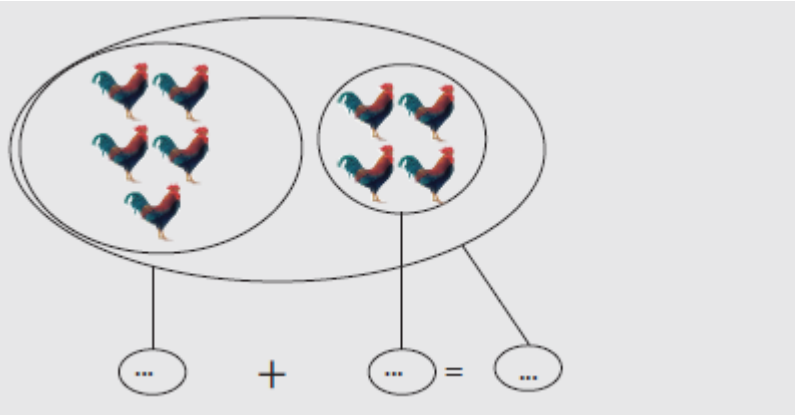
a) Prerequisites/Revision/Introduction

Before the end unit assessment:
  - Teacher ensures that pupils master and know how to apply the following: count 1 to 10 objects, read and write numbers from 0 to 10, compare two numbers between 1 and 10, make an ascending or descending order on numbers from 0 to 10, add or subtract 2 numbers between 1 and 10 whose sum or difference does not exceed 10.
  - Teacher relates different revision activities to real life situations or pupils'daily life

b) Examples of end unit assessment questions

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1. Count and fill in the boxes the missing numbers

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2. **Work out the following exercises**

i) $6 - 5 =$ iii) $5+1=$

ii) $10 - 3 =$ iv) $...+3+ 10$

3. **Fill in the box with the correct number**

$$8 \quad - \quad ... \quad = \quad 5$$
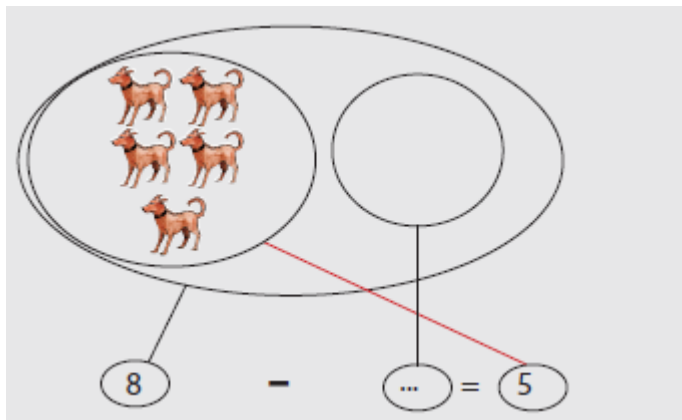
4. **Complete with the missing number**

i) $6 - ... = 2$ iii) $4 + ... = 6$

ii) $... - 3 = 7$ iv) $... + 3 = 10$

5. **Work out the following word problems**
   - Rebero have 10 goats and he gives 4 goats to Kabera. How many goats does Rebero remain with?
   - Janet has 10 notebooks. She gives 3 notebooks to Macumi and 5 notebooks to Odile. How many notebooks does Janet remain with?
   - Mukabagire went to sell 7 pineapples to the market and Kanobana gives to her 3 more pineapples. How many pinepples does Mukabagire take to the market?
   - Mutesi have 9 beads and she looses 6 beads. Kayitesi gives 5 more beads to Mutesi. Find the total number of beads Mutesi have now?

Notes:
   - The end unit assessment is obligatory done at school.
   - Teacher asks pupils to individually or in pairs work out different assessment questions and then he/she make an individual correction.
   - Basing on the results from end unit assessment and before starting unit 4, teacher provides remedial or reinforcement activities for pupils in need.

UNIT 4: WHOLE NUMBERS FROM 0 TO 20

4.1 Key unit competence

Counting, reading, writing, ordering, comparing, adding and subtracting whole numbers from 0 up to 20

4.2 Prerequisite knowledge and skills

Pupils will perform well in this unit if:

- They have knowledge and mastery of the following: English names of different objects to be used in counting, names of domestic animals in English, English vocabularies related to family members, English names of different colors…

  - They master and know how to apply the following: count 1 to 10 objects, read and write numbers from 0 to 10, compare two numbers between 1 and 10, make an ascending or descending order on numbers from 1 to 10, add or subtract 2 numbers between 1 and 10 whose sum or difference does not exceed 10.

4.3 Cross-cutting issues to be addressed

Through different tasks and activities, the following cross-cutting issues have to be addressed in this unit:

- **Inclusive education:** ensure that the selected teaching and learning techniques, teaching aids promote education for all.
- **Peace and value Education**: encourage learners to respect others' views and thoughts during group works and class discussions
- **Gender:** ensure the equal opportunity of boys and girls in the lesson participation.
- **Environment and Sustainability:** ensure that pupils are encouraged to discuss effects of environment and sustainability through solving word problems involving addition, subtraction…
- **Financial education**: lead pupils to make appropriate financial decisions through word problems that involving four basic opedifferencens.

4.4. List of lessons

UNIT 4: WHOLE NUMBERS FROM 0 TO 20 (24 Periods)			
	Lesson title	**Learning objectives**	**Number of periods**
1	Introductory activity	Arouse the curiosity of learners on the content of this unit and the importance of counting, reading and writing numbers in real life.	1
2	Counting 1 to 20 objects	Understand and discover the concept of numbers from 1 to 20.	2
3	Reading and writing the numbers from 0 to 20	Read and write in figure the numbers from 0 to 20.	2
4	Decomposition of numbers from 10 to 20 into ones and tens	Decompose a number between 10 and 20 into ones and tens.	3
5	Comparing numbers from 0 to 20	Compare numbers between 0 and 20 using >,< and =	2
6	Ascending and descending order of numbers from 0 to 20	Arrange numbers from 0 to 20 in ascending and descending order (from smaller to bigger number and vice versa).	2
7	Addition of numbers whose sum does not exceed 20	Add 2 numbers whose sum does not exceed 20.	2
8	Word problems on addition of numbers whose sum does not exceed 20	Solve word problems involving addition whose sum does not exceed 20.	2
9	Subtraction of numbers less than 20	Subtract 2 numbers less than 20.	2
10	Word problem on subtraction of numbers less than 20	Solve word problems involving subtraction of 2 numbers.	2
11	Addition and subtraction of 2 numbers less than 20	Add and subtract numbers less than 20.	2

12	End unit assessment 4	Count , read , write, compare , order, add and subtract numbers from 1 to 20.	2

Lesson 1: Introductory activity

This lesson is delivered through a conversation between teachers and pupils. The teacher uses pictures in the pupils' book and asks different prompting questions to pupils in order to get their predictions about the unit to be learnt.

Example of questions to be asked basing on the picture in pupil's book:
- Look at the picture. What do you see?
- How many teams do you see on the picture?
- How many old people do you see on the picture?
- How many children do you see on the picture?
- Count and tell the number of players in each team.
- How many players are in both teams?
- If   we add 3 more players to one team, what will be the total number of players?

As it is at the beginning of the unit, the teacher has to value all answers from pupils. All answers are valid because the aim of the introductory activity is to get from pupils the predictions on the unit to be learnt.

Lesson 2: Counting 1 to 20 objects

a) Prerequisites/Revision/Introduction

Ask pupils to individually count at least 10 real objects, read and write numbers from 1 to 10.

b) teaching and learning materials:
Books, desks, pens, chalks, beans, small stones and any other counters or objects for counting available in the school environment.

c) learning activities

- **Activities for introduction**
    - Using different counters or counting objects, teacher helps pupils to understand and discover the concept of the numbers from 10 to 20.

- Teacher may ask pupils to make a group of 10 similar objects and add 1 more object until they have 20 objects. He/ she asks pupils to put together all objects and count them

- **Demonstration activities**

  - Using different counters or objects, teacher asks pupils to make a group of 10 objects and then they add 1 more object until they get 20 objects.
  - Teacher asks pupils to count objects in each group from 10 up to 20 objects
  - Teacher helps pupils to understand that adding 1 more object to a group of 10 objects, we get 11 objects, and so on until we make a group of 20 objects.
  - In small groups, pupils look at the pictures in the pupil's book and count objects.

- **Reinforcement activities**
  - In pairs, teacher asks pupils to make groups of similar 10 to 20 objects, count them and tell the number of objects in each group.
  - Individually, teacher asks pupils to count a given number of objects to test if they understand the concept of numbers between 10 and 20
  Example: count 12 notebooks, count 15 pens, count 20 sticks, count 13 mangoes…

- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home. All set activities should provide to every pupil the opportunities to demonstrate and apply the new concept learnt in a range of situations.

Examples:
  - Asks pupils to bring objects of the same nature (20 sticks, 13 notebooks, 14 oranges, 16 beans, 19 small stones…)
  - Asks pupils to make groups of 1 to 20 similar real objects or using drawings (12 tomatoes, 14 mangoes, 15 bananas, 16 small stones or sticks…).

Lesson 3: reading and writing the numbers from 0 to 20

a) Prerequisites/Revision/Introduction

The teacher asks pupils to count objects less than 20 and write number from 1 to 10.

b) teaching and learning materials:
Number cards with numbers 1 to 20, different pictures in the pupil's book, wall charts containing objects and numbers from 0 to 20, chalkboard, chalks, books, notebooks, pens and any other counters or objects for counting available in the school environment.

c) learning activities

- **Activities for introduction**
Using different prompting questions, teacher helps pupils to understand and discover how to read and write the numbers from 11 to 20.
Example: use a chart containing 10 to 20 objects and the numbers 10 to 20 in figure and asks pupils to count and tell the number of objects they see on the picture.
- **Activities for Demonstration**
The teacher leads pupils how to read and write a 2-digit number from 10 to 20 through the following steps:
   Step 1: the teacher writes slowly , one by one, the numbers 10, 11, 12…until 20 on the checkboard by explaining to them different digits of each number from 10 to 20.
   Step 2: teacher asks pupils to imitate how to write, one by one, the numbers 10, 11, 12,13, 14, 15, 16, 17, 18, 19, 20 on the checkboard.
   Step 3: teacher asks pupils to write, one by one, the numbers 10, 11, 12,13, 14, 15, 16, 17, 18, 19, 20 in their notebooks.

- **Activities for reinforcement**
   • Teacher asks pupils to individually imitate the 2-digit numbers from 11 to 20 written on the chalkboard or on a number card and then write them many times in their notebook using a pen or a pencil.
   • Teacher helps pupils with difficulties to well write the 2-digit numbers by giving them more time on writing activity. He/ she must use all possible ways to make all pupils successful in reading and writing the given 2-digit numbers.
- **Application activities**
The teacher asks pupils to correctly read and write 2-digit numbers from 11 to 20 many times in their notebooks.
- **Assessment activities**

The teacher provides activities to be done by pupils at home. All set activities should provide to every pupil the opportunities to demonstrate and apply the new concept learnt in a range of situations.

Examples:
- Asks pupils to show where 2-digit numbers from 11 to 20 are written on different objects, bring an object on which 2-digit numbers from 11 to 20 are written.
- Write the following 2-digit numbers: 11, 12, 13, 14, 15, 16, 17, 18, 19, 20.

Lesson 4: Decomposition of numbers from 10 t0 20 into ones and tens

a) Prerequisites/Revision/Introduction

Teacher may ask pupils to reading and writing 2 digit numbers from 10 to 20.

b) teaching and learning materials
Chalkboard, chalks, notebooks, pens, pupil's book, charts containing pictures of groups of objects, number cards of numbers from 0 to 20, abacus, and table of place values on manila paper.

c) learning activities
- **Activities for introduction**
    - Teachers may use prompting questions to make pupils discover and understand the new concept to be learnt.
    - Pupils may be requested to count objects between 11 and 20, and then make 2 groups of similar objects or counters so that the first group is made by 10 objects while the second group is made by less than 10 objects.

Example: from 17 small stones or sticks, pupils may make a group of 10 stones or sticks and another group of 7 stones or sticks.
- **Demonstration activities**
1. **Concrete activity**

Using real objects, teacher asks pupils to make 2 groups of objects as follows: from 16 objects make one group of 10 objects and another group of 6 objects. He/she explains to pupils that the number 16 is made by 1tens and 6 ones.

Note:

- This activity can be done, in small groups, using a different number between 11 and 20. Teacher helps pupils to discover and understand that a 2-digit number between 11 and 20 is composed by 1 ten and another number less than 10.
- Teacher can use abacus to demonstrate how to decompose a 2- digit number into tens and ones

2. Semi-Concrete activity

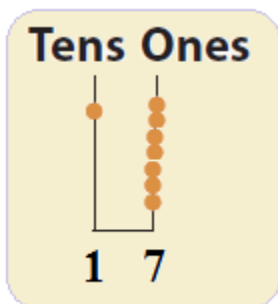Using pictures of groups of objects in the pupil's book, teacher asks pupils to decompose 17 into 2 groups of 10 and 7 objects.
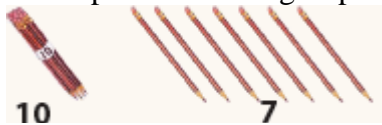
Note: this activity can be done using a different number between 11 and 20. Teacher can use pictures of decomposing a 2-digit number on abacus.

3. Abstract activity

Using abacus or a table of place value, teacher helps pupils to decompose a 2-digit number between 11 and 20 into tens and ones. He/she helps them to write and read aloud a mathematical sentence on decomposition of a 2-digit number between 11 and 20 into tens and ones.

Example: Using a table of place value, teacher helps pupils to decompose the number 17 into tens and ones. He/ she leads them to find out that 17 is composed by 1 tens and 7 ones.

Tens	Ones
1	7

17 = 1Tens 7Ones

- **Reinforcement activities**

Teacher helps pupils to individually or in pairs decompose a 2-digit numbers into tens and ones. He/she facilitates them to correctly decompose 15 into 1 tens and 5 ones using table of place value or an abacus.

- Application activities

Using pupil's book, teacher asks pupils to work out the activities on decomposition of 2- digit numbers between 11 and 20 individually or in pairs.

Application activities may include a variety of activities where pupils are requested to decompose a 2-digit number using abacus and table of place values.

Examples:

- 12 = …tens …ones (decompose 12 into tens and ones)
- 1 tens 8 ones =….(find the number which has been decomposed into tens and ones)

- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home. He/she provides exercises on decomposition of 2-digit numbers between 10 and 20 into tens and ones.

Lesson 5: Comparing numbers from 0 to 20 using symbols

a) Prerequisites/Revision/Introduction

Teacher may ask pupils to work out counting activities, reading and writing activities in the pupil's book. He/she can ask questions to test if pupils know to

count, read and write numbers from 1 to 20. He/she can ask questions to test if pupils know to compare and order numbers from 1 to 10

b) teaching and learning materials
Chalkboard, chalks, notebooks, pens, pupil's book, charts containing pictures of groups of objects, number cards of numbers from 1 to 20.

c) learning activities
- **Activities for introduction**
Using different prompting questions, teacher helps pupils to understand and discover how to compare numbers from 0 to 20. Pupils may be requested to count objects in different groups and compare the number of objects in two or more groups by showing a group with many, less or equal objects.
Example: by means of two boxes of notebooks , where one box contains 12 notebooks and another box contains 18 notebooks. Pupils may be asked to compare the number of notebooks in two boxes by showing the box with many or fewer notebooks.

- **Activities for demonstration**

In small groups, teacher asks pupils to observe pictures in the pupil's book. Then, he/she asks them to make 2 groups of similar objects but with different number of objects: one group with many objects and another group with few objects as it is shown on the pictures in the pupil's book.

Example:

Pupils may be asked to makes 2 different groups of objects as follows: a group of 12 bottles and another group of 19 bottles.

Teacher asks pupils to compare the number of objects in 2 different groups by showing which group contains many or fewer objects and then compare the two numbers using the comparison symbols ($<$: less than, $>$: greater than, or $=$: equal to). He/she helps those with difficulties in comparing the number of groups of objects. He/ she asks pupils to compare 2 groups of equal and similar objects (like 2 groups of 17 beads each) and let them discover that the 2 groups have equal number of objects.

Comparison symbol	Meaning	Mathematical example	How to read
$>$	Greater than	$19 > 12$	19 is **greater than** 12
$<$	Less than	$12 < 19$	12 is **less than** 19
$=$	Equal to	$17 = 17$	17 is **equal to** 17

- Activities for reinforcement

Teacher draws 2 different groups with different numbers of objects and then he/she asks pupils to compare them by saying which group has many or fewer objects. Finally, the teacher asks them to write and compare the numbers of objects using symbols (refer to pupil's book).
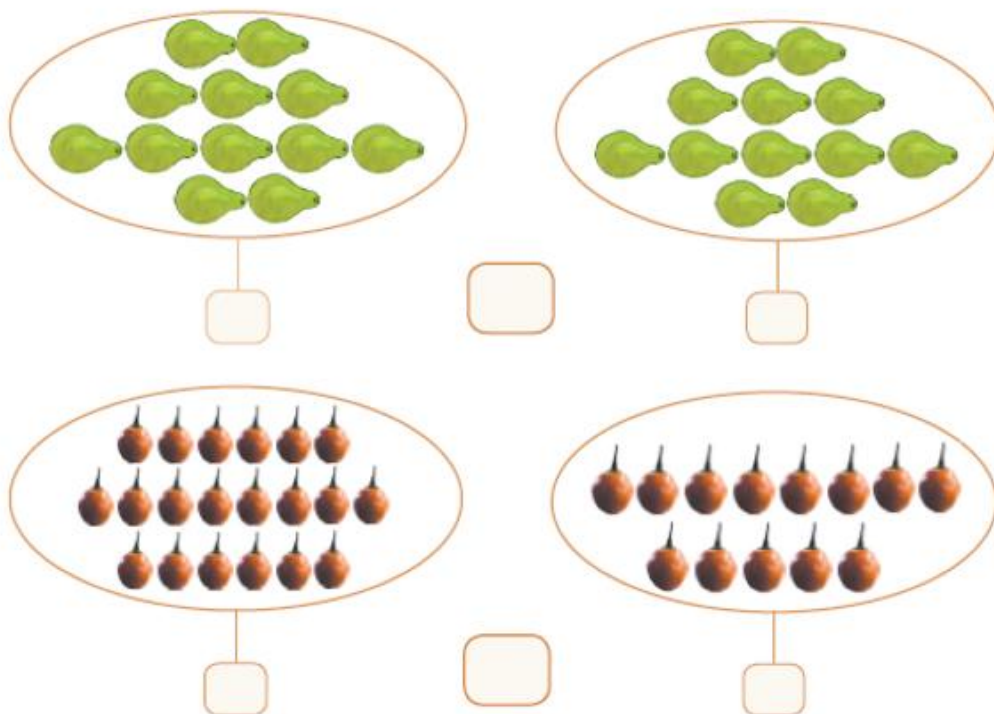
- Application activities

Teacher provides different exercises on comparing 2 numbers between 1 and 20 using symbols ($<$, $>$ and $=$). Pupils are requested to provide written answers. Teacher makes a follow up on how best pupils are performing the given tasks and he/she appreciates, encourages and values the pupils' answers.

- Assessment activities

The teacher provides activities to be done by pupils at school or at home. He/she provides exercises on comparison of number from 1 to 20 using symbols ($<$, $>$ and $=$).

Lesson 6: Ascending and descending order of numbers from 0 to 20

a) Prerequisites/Revision/Introduction

Teacher may ask pupils to work out counting activities, reading and writing activities in the pupil's book. He/she can use prompting questions to test if pupils know to count, read and write, and compare numbers from 0 to 20. Pupils may be requested to compare 2 numbers between 0 and 20 (refer to pupil's book activities).

b) teaching and learning materials

Chalkboard, chalks, notebooks, pens, pupil's book, charts containing pictures of groups of objects, number cards with numbers from 0 to 20.

c) learning activities

- **Activities for introduction**

Using different prompting questions, teacher helps pupils to understand and discover how to arrange numbers from 0 to 20 in ascending and descending order (from smaller to bigger number or from bigger to smaller numbers). Pupils may be requested to count objects in different groups and compare the number of objects in two or more groups by showing a group with many or fewer objects.

Example: pupils may be asked to explain how to arrange in ascending or in descending order the following groups of objects.

- 18 notebooks, 17 notebooks, 19 notebooks, 12 notebooks, 10 notebooks, 11 notebooks, 7 notebooks, 4 notebooks.
- 14 sticks, 12 sticks, 16 sticks, 19 sticks, 8 sticks, 5 sticks, 10 sticks.

Pupils may also be requested to arrange different groups of objects by starting with a group of less number of objects until they arrive to the group with a big number of objects and vice versa

- **Activities for demonstration and reinforcement**

In small groups of 5 pupils each, teacher asks pupils to make different groups of 10 to 20 similar objects, write the number of objects in each group and arrange in ascending or descending order those numbers.

Activity 1: arrange from the biggest to the smallest number

Example: pupils in groups may be asked to make groups of similar objects and arrange the numbers of objects from the biggest to the smallest number.

- Make 5 different groups of beans as follows: 10 beans, 14 beans, 15 beans, 18 beans, 20 beans.

- Arrange in descending order the following numbers: 10, 14, 15, 18, 20.

- Explain step by step how to arrange numbers in descending order.

Teacher leads pupils to read and compare numbers using the following symbol (> greater than) as follow: $20 > 18 > 15 > 14 > 10$ which is read as follow: **20 is greater than 18…**

Activity 2: arrange number from the smallest to the biggest

Example: pupils in groups may be asked to make groups of similar objects and arrange the numbers of objects from the smallest to the biggest number.

- Make 5 different groups of beans as follows: 10 beans, 14 beans, 15 beans, 18 beans, 20 beans.

- Arrange in ascending order the following numbers: 10, 14, 15, 18, 20.

- Explain step by step how to arrange numbers in ascending order.

Teacher leads pupils to read and compare numbers using the following symbol (< less than) as follow: $10 < 14 < 15 < 18 < 20$ which is read as **10 is less than 14…**

Note: teacher gives time to each group to present its work (from two activities) and he/she ensure that all pupils are performing well in ordering numbers.

- **Application activities**

Teacher provides activities on arranging numbers from 1 to 20 in ascending order and then in descending order.

Note: application activities may be done individually or in pairs. Teacher ensures that all pupils understand how to make an ascending and descending order of numbers from 1 to 20 and provides help or remedial activities for pupils in needs.

- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home. He/she provides exercises on arranging numbers from 0 to 20 in ascending and descending order.

Examples: arrange the following numbers from the smallest to the biggest number and then from the biggest to the smallest number.

| 1 | 15 | 13 | 14 | 7 | 11 | 6 | 17 | 9 | 20 | 8 | 10 | 16 |

Lesson 7: Addition of numbers whose sum does not exceed 20

a) Prerequisites/Revision/Introduction

Teacher may ask pupils to find addends of a sum less than or equal to 9. He/ she may test if pupils are able to count, read, write and compare numbers from 1 to 20. He/ she may test if pupils are able to add and subtract numbers between 0 and 10.

b) teaching and learning materials

Chalkboard, chalks, notebooks, pens, pupil's book, charts containing pictures of groups of objects, number cards containing numbers from 0 to 20.

c) learning activities

- **Activities for introduction**

Using different prompting questions, teacher helps pupils to understand and discover how to add 2 numbers whose sum does not exceed 20. Pupils may be requested to put together objects from 2 small groups in order to get 20 or less than 20 objects.

Example: by means of two boxes of chalks, where one box contains 15 chalks and another box contains 5 chalks. Pupils may be asked to put all chalks together in order to get 20 chalks.

- **Activities for demonstration**

1. Concrete activity

Using real objects, teacher asks pupils to make 2 groups of objects as follows: one group of 11 objects and another group of 8 objects. He/she asks pupils to put together all objects in 2 groups and then count them in order to get the sum 19.

Note:
- This activity can be done using a different number between 1 and 20, but be sure that the sum does not exceed 20.
- Teacher may also make two groups of 11 and 8 pupils and ask other pupils to count and tell the number of pupils in the 2 groups.

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2. Semi-Concrete activity
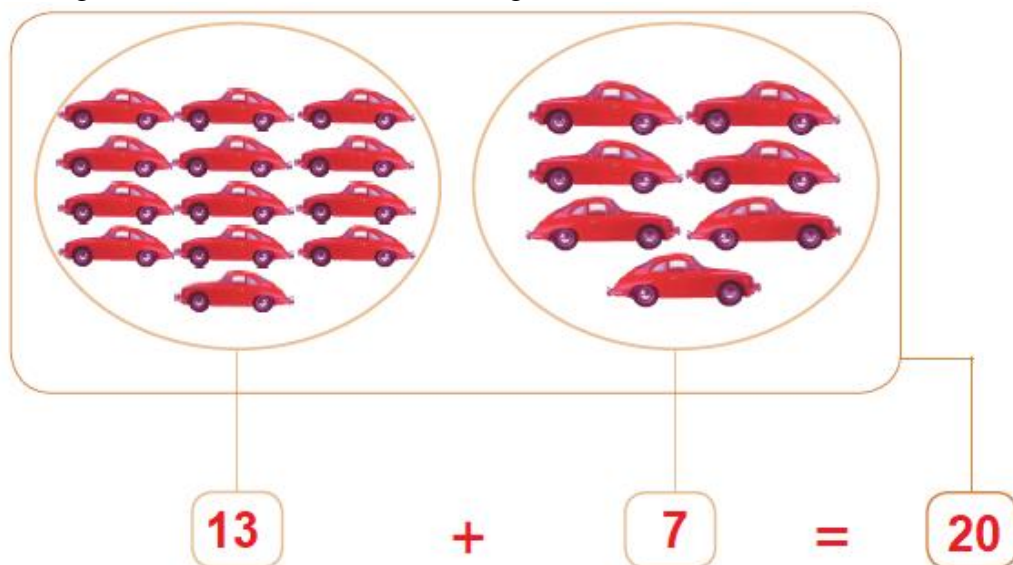
Using pictures of groups of objects in the pupil's book, teacher asks pupils to draw 2 groups of similar objects as follows: one group of 13 objects and another group of 7 objects. He/she asks pupils to put together all objects in 2 groups by circling and then count them in order to get the sum 20.

Note: this activity can be done using a different number between 1 and 20.

3. Abstract activity

Teacher helps pupils to write and read aloud a mathematical sentence on addition of 2 numbers whose sum does not exceed 20.
Examples: 13 + 7 = 20, *13 plus 7 equals 20*

- Reinforcement activities

Teacher helps pupils to individually or in pairs add by writing 2 numbers whose sum does not exceed 20. He/she facilitate them to correctly read aloud the mathematical sentence on addition of 2 numbers.
Examples:
- 13 + 6 = 19 is read *13 plus 6 equals 19*
- 15 + 2 = 17 is read *15 plus 2 equals 17*

- Application activities

Teacher asks pupils to work out the addition activities in the pupil's book. He /she requests pupils to individually or in pairs work out the addition of 2 numbers whose sum does not exceed 20.

Example:

$18 + 1 = \boxed{}$	$2 + 14 = \boxed{}$	$17 + \boxed{} = 20$
$2 + 14 = \boxed{}$	$14 + 4 = \boxed{}$	$\boxed{} + 6 = 10$
$14 + 4 = \boxed{}$	$18 + 1 = \boxed{}$	$\boxed{} + 14 = 20$
$12 + 7 = \boxed{}$	$13 + 5 = \boxed{}$	$8 + 0 = \boxed{}$

- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home.
He/she provides exercises on addition of 2 numbers whose sum does not exceed 20.

Lesson 8: Word problems on addition of numbers whose sum does not exceed 20

a) Prerequisites/Revision/Introduction

Teacher asks pupils to work out the exercises on addition of 2 numbers whose

sum does not exceed 20.

b) teaching and learning materials

Chalkboard, chalks, notebooks, pens, sticks, dices, pupil's book, charts containing pictures of groups of objects, number cards containing numbers from 1 to 20.

c) learning activities

- **Activities for introduction**
  - Using Concrete objects and story telling , teacher helps pupils to add 2 numbers whose sum does not exceed 20.
  - Teacher reads a short word problems involving addition of 2 numbers and orally pupils give the answer.

Example: Olive gets 16 sweets from her mother and her brother add 2 more sweets. How many sweets does Olive have altogether?

- **Activities for demonstration**

- Using sticks, teacher asks one pupil to take 16 sticks and he/she request another pupil to add 2 more sticks. He/she asks the class to tell the number of all sticks.
- Using pupil's book, teacher asks pupils to observe the pictures of goats, count all goats and find the total number of them. He/she may request pupils to use sticks or draw sticks in order to find the correct answer.

- **Activities for reinforcement**

Pupils in small groups work out different word problems given by the teacher. Pupils are given time to present their working steps to get the answer on word problems involving addition of 2 numbers whose sum does not exceed 20.

- **Application activities**

Teacher asks pupils to use pupil's book and work out the word problems on addition of 2 numbers whose sum is not exceed 20 (refer to pupil's book).

- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home. He/she provides exercises on addition of 2 numbers whose sum does not exceed 20.

Lesson 9: Subtraction of numbers less than 20

a) Prerequisites/Revision/Introduction

Teacher asks pupils to work out the exercises on reading and writing numbers from 0 to 20, subtraction of 2 numbers less than 20.

b) teaching and learning materials

Chalkboard, chalks, notebooks, pens, sticks, dices, pupil's book, charts containing pictures of groups of objects, number cards containing numbers from 1 to 20.

c) learning activities

- **Activities for introduction**

Using different prompting questions, teacher helps pupils to understand and discover how to subtract 2 numbers less than 20.

Example: teacher may ask one pupil to count 12 notebooks and take away 5 notebooks. He/ she asks other pupils to tell the number of the remaining notebooks.

- **Activities for demonstration**

1. Concrete activity

Using real objects, teacher asks pupils to make a group of 19 chalks and then take away 7 chalks. He/she asks them to count, tell and write the number of the remaining chalks.

Note: this activity can be done using a different number between 1 and 20.

2. Semi-Concrete activity

Using pictures of groups of objects in the pupil's book, teacher asks pupils to draw a group of 19 sticks/ objects. He/she asks pupils to take away 14 sticks/ objects by crossing them and then count, tell and write number of the remaining objects.

19 - 14   =

Note: this activity can be done using a different number between 1 and 20.

3. Abstract activity

Teacher helps pupils to write and read aloud a mathematical sentence on subtraction of 2 numbers less than 20.

Examples: 19 - 14 = 5, *19 minus 14 equals 5*

-   Reinforcement and application activities

Teacher helps pupils to individually subtract by writing 2 numbers less than 20. He/she facilitate them to correctly read aloud the mathematical sentence on subtraction of 2 numbers (refer to   pupil's book).

Examples:

$$18 - 2 = \boxed{}$$
$$9 - 7 = \boxed{}$$
$$17 - 1 = \boxed{}$$
$$19 - 4 = \boxed{}$$
$$15 = \boxed{} - 5$$

$$18 - 17 = \boxed{}$$
$$18 - \boxed{} = 7$$
$$\boxed{} - 1 = 14$$
$$17 - \boxed{} = 14$$

Teacher may vary the reinforcement activities by including activities of this form:

$$\boxed{\blacksquare} - \boxed{4} = \boxed{14}$$

- Assessment activities
The teacher provides activities to be done by pupils at school or at home.
He/she provides exercises on subtraction of 2 numbers less than 20 (refer to pupil's book).

Lesson 10: Word problem on subtraction of numbers less than 20

a) Prerequisites/Revision/Introduction

Teacher asks pupils to work out the exercises on subtraction of 2 numbers less than 20.

b) teaching and learning materials

Chalkboard, chalks, notebooks, pens, sticks, dices, pupil's book, charts containing pictures of groups of objects, number cards containing numbers from 1 to 20.

c) learning activities

- **Activities for introduction**

Using Concrete objects, story telling or games, teacher helps pupils to subtract 2 numbers less than 20.

Teacher reads a short word problems involving subtraction of 2 numbers and orally pupils give the answer.

Example: Marc gets 12 notebooks from her / his teacher and he gives 4 notebooks to Mutesi. How many notebooks does Marc remain with?

- **Activities for demonstration**

- Using counters, teacher facilitate pupils to work out word problems involving subtraction of 2 numbers less than 20
- Using real objects / materials or pictures, teacher leads pupils to read and analyze a word problems in the pupil's book and then find out the answer for the word problems (refer to pupil's book). He/she may use counters, dices, sticks and helps pupils to solve word problems involving subtraction.

Example: Kiza has 18 counters and he takes away 6 counters. How many counters does Kiza remain with?

Answer: $18 - 6 = 12$

Kiza remains with 12 counters

- **Activities for reinforcement and application**

Pupils in small groups work out different word problems given by the teacher. Pupils are given time to present their working steps to get the answer on word problems involving subtraction of 2 numbers less than 20 (refer to pupil's book).

- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home. He/she provides exercises on subtraction of 2 numbers less than 20.

Note: For application activities and home works teacher should set additional word problems that involve both addition and subtraction of numbers less than 20 whose sum or difference does not exceed 20.

Note: the lesson 11 on both addition and subtraction of 2 numbers less than 20 follow the same methodology as lessons 8 and 10 on word problems. In this lesson teacher has to set simple word problems that involve both addition and subtraction

Example: Gasana buys 17 cars and he sells 15, but immediately Gasana buys 14 more cars. How many cars does Gasana have now?

Lesson 12: End unit assessment 4

a) Prerequisites/Revision/Introduction

Before the end unit assessment:
  - Teacher ensures that pupils master and know how to apply the following: count 1 to 20 objects, read and write numbers from 1 to 20, compare two numbers between 1 and 20, make an ascending or descending order on numbers from 1 to 20, add or subtract 2 numbers between 1 and 20 whose sum or difference does not exceed 20.
  - Teacher relates different revision activities to real life situations or pupils' daily life

b) Examples of end unit assessment questions

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1. **Work out the following addition and subtraction activities**

   i) $15 - 8 =$

   ii) $20 - 5 =$

   iii) $15 + 5 =$

   iv) $9 + 8 =$

   v) $18 - 6 =$

2. **Complete with the missing numbers**

   i) $19 - .... = 11$

   ii) $7 + ... = 16$

   iii) $0 + ... = 13$

3. **Solve the following word problems**

   - Kamana, Kabatesi and Kanamugire have a cooperative of growing

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goats. Kamana brings 7 goats, Kabatesi brings 8 goats and Kanamugire brings 5 goats. Find the total number of goats in the cooperative.

- Kagabo planted 20 flower trees in the garden, next day 8 trees were broken and did not grow up. A volunteer pupil planted 5 new trees and they well grew up. Find the number of trees which are growing well in the garden.

- Mugeni has 8 bananas and she gets 5 more bananas from her father. Mugene gives 6 bananas to her brother Bonny. How many bananas does Mugeni remain with?

4. Pupils in pairs or in small groups Discuss and present about the following:

- The importance of addition and subtraction in real life.

- With examples, make a list of objects or materials that have numbers written on them.

Notes:
- Teacher asks pupils to individually or in pairs work out different assessment questions and then he/she make an individual correction.
- Basing on the results from end unit assessment and before starting unit 5, teacher provides remedial or reinforcement activities for pupils in need.

UNIT 5: MULTIPLICATION AND DIVISION BY 2

5.1 Key Unit Competence
Multiplication by 2 with the product does not exceed 20 and division by 2 with the quotient less than or equal to 10.

5.2 Prerequisite knowledge and skills
Pupils will perform well in this unit if they master and know how to apply the following: count 1 to 20 objects, read and write numbers from 0 to 20, compare two numbers between 1 and 20, make an ascending or descending order on numbers from 1 to 20, add or subtract 2 numbers between 1 and 20 whose sum or difference does not exceed 20.

5.3 Cross-cutting issues to be addressed

Through different tasks and activities, the following cross-cutting issues have to be addressed in this unit:

- Inclusive education: ensure that the selected teaching and learning techniques, teaching aids promote education for all.
- Peace and value Education: encourage learners to respect others' views and thoughts during group works and class discussions
- Gender: ensure the equal opportunity of boys and girls in the lesson participation.
- **Environment and Sustainability:** ensure that pupils are encouraged to discuss effects of environment and sustainability through solving word problems involving multiplication and division
- **Financial education**: lead pupils to make appropriate financial decisions through word problems that involving four basic opedifferencens.

5.4. List of lesson

UNIT 5: MULTIPLICATION AND DIVISION BY 2 (8 Periods)			
No	Lesson title	Learning objectives	Number of periods
1	Introductory activity	Arouse the curiosity of learners on the content of this unit and the importance of multiplication and division in real life.	1
2	Concept of multiplying by 2 and multiples of 2	Understand the concept of multiplying by 2 Understand the concept of multiplying by 2 .	2
3	Exact division by 2 with the quotient not exceed 10	Divide numbers by 2 with the quotient not exceed 10.	2
4	Word problems on multiplication by 2	Solve word problems that involving multiplication	1
5	Word problems on division by 2	Solve word problems that	1

6	End unit assessment 5	Multiply numbers by 2, the product does not exceed 20 and divide by 2, the quotient is less than or equal to 10.	1
		involving division.	

Lesson 1: Introductory activity

- Teacher asks pupils to look at the picture of children who are plannting trees in pupil's book. Leads pupils to discover that every child has 2 trees in both hands and 2 children are planting 4 trees while the remaining 8 children have 16 trees to be planted.

- This lesson is delivered through a conversation between teachers and pupils. The teacher uses pictures in the pupils' book and asks different prompting questions to pupils in order to get their predictions about the unit to be learnt.

Example of questions to be asked basing on the picture in pupil's book:
- Look at the picture. What do you see?
- How many children do you see on the picture?
- How many trees does every child have in her/ his hands?
- How many trees do two children have?
- How many trees do four children have?
- Count and tell the number of trees for all children on the picture.
- How could you find the number of trees for 3 children? 4children?, 5 children?, 6 children?, 7 children?, 8 children?, 9 children?, 10 children?
- How many children who have 8 trees? How many children who have 18 trees?
- How could you find the number of children who planted 16 trees?

- As it is at the beginning of the unit, the teacher has to value all answers from pupils. All answers are valid because the aim of the introductory activity is to get from pupils the predictions on the unit to be learnt.

Lesson 2: The concept of multiplying by 2 and multiples of 2

a) Prerequisites/Revision/Introduction

Ask pupils to individually add numbers from 1 to 20. The teacher provides addition activites on numbers whose sum does not exceed 20.

b) teaching and learning materials:
Books, desks, pens, chalks, beans, small stones and any other counters or objects for counting available in the school environment.
**c) learning activities**

- **Activities for introduction**
  - Teachers may use prompting questions to make pupils discover and understand the new concept to be learnt.
  - Pupils may be requested to make 3 groups of 2 beans each and then count and tell the number of all beans in 3 groups.

- Demonstration activity
1. Concrete activity
Pupils in small groups are given real objects or counters less than or equal to 20 and they are requested to make groups of 2 objects or counters each group. Teacher asks them to count and tell the number of groups of 2 objects/ counters they make. pupils make groups of 2 objects/ counters in the following way:
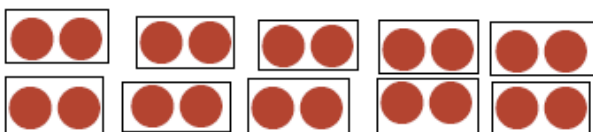
2. Semi-Concrete activity

Using pictures of groups of objects in the pupil's book, teacher asks pupils to make groups of 2 objects / counters each.

Example: by drawing, pupils may be asked to make 1 group of 2 beans, 2 groups of 2 objects in each group and then 3 groups of 2 objects in each group.

Teacher asks pupils, one by one, to count objects in each group of objects; 1 group of 2 objects, 2 groups of 2 objects each , 3 groups of 2 objects each and then he/she leads pupils to use the following vocabularies " **times and number of groups"**

  - 2 times 1 or 1 group of 2 objects
  - 2 times 2 or 2 groups of 2 objects each
  - 2 times 3 or 3 groups of 2 objects each.
3. Abstract activity

Teacher helps pupils to read and mathematically write the given sectences:

- 2 times 1 or 1 group of 2 objects is written: 2 x 1
- 2 times 2 or 2 groups of 2 objects each is written: 2 x 2
- 2 times 3 or 3 groups of 2 objects each is written: 2 x 3

Teacher asks pupil to count beans in different groups and he/she helps them to read and write them:

- 2 times 1 is equal to 2 and it is written as foollow: 2 x 1 = 2, we read 2 multply by 1 equals 2.
- 2 times 2 is equal to 4 and it is written as foollow: 2 x 2 = 4, we read 2 multply by 2 equals 4.
- 2 times3 is equal to 6 and it is written as foollow: 2 x 3 = 6, we read 2 multply by 3 equals 6.

Note: Teacher explains to pupils that the following sign **"x"** is called the **multiplication sign** and that the **multiples of 2** are **2, 4, 6, 8, 10, 12, 14, 16, 18, 20,** when 2 is multiplied by numbers from 1 to 10.

- **Reinforcement activities**
  - Teacher helps pupils to individually or in pairs make different groups of 2 objects in each group and then they find the total number of objects in each group either by multiplication or addition as illustrated by the following picture.

2 x 1 =2	\\	2
2 x 2=4	\\ \\	2+2=4
2 x 3=6	\\ \\ \\	2+2+2=6
2 x 4=8	\\ \\ \\ \\	2+2+2+2=8
2 x 5=10	\\ \\ \\ \\ \\	2+2+2+2+2=10
2 x 6=12	\\ \\ \\ \\ \\ \\	2+2+2+2+2+2=12

2 x 7=14	\\ \\ \\ \\ \\ \\ \\	2+2+2+2+2+2+2=14
2 x 8=16	\\ \\ \\ \\ \\ \\ \\ \\	2+2+2+2+2+2+2+2=16
2x9=18	\\ \\ \\ \\ \\ \\ \\ \\ \\	2+2+2+2+2+2+2+2+2=18
2x10=20	\\ \\ \\ \\ \\ \\ \\ \\ \\ \\	2+2+2+2+2+2+2+2+2+2=20

- Teacher asks pupils to individually memorize the multiplication table of 2.
- **Application activities**
Using pupil's book, teacher asks pupils to work out the activities on multiplication by 2 individually or in pairs.

2 = 2 x 1	16 = ☐ x 8
10 = 2 x ☐	12 = ☐ x 6
8 = 2 x ☐	20 = 2 x ☐
4 = 2 x ☐	18 = 2 x ☐

- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home.
He/she provides exercises on multiplication of numbers less than 10 by 2.

X 2	1	7	9	8	4	2	3	6	5	10
	2	.	.	.	.	.	.	.	.	.
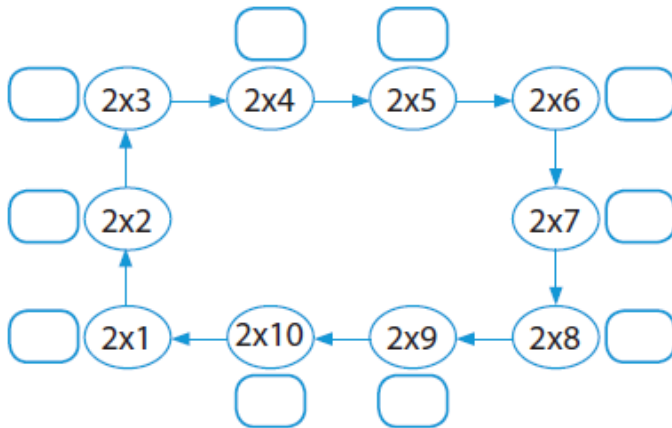
Lesson 3: Exact division by 2 with the quotient not exceed 10

a) Prerequisites/Revision/Introduction

Teacher can ask questions to test if pupils know to multiply by 2 and find out all multiples of 2 less than or equal to 20

b) teaching and learning materials

Chalkboard, chalks, notebooks, pens, pupil's book, charts containing pictures of groups of objects, number cards of numbers from 1 to 20.

c) learning activities
- **Activities for introduction**

Using different prompting questions or a shrt story, teacher helps pupils to understand and discover how to divide a number less than 20 by 2. Pupils may be requested to make a group of even objects and then divide them equally into 2 small different groups.

Example: share equally 10 sweets to 2 children, every one will get 5 sweets

- **Demonstration activity**
1. Concrete activity

Using 8 objects/counters, teacher asks pupils to make groups of 2 objects/ counters in each group and then they tell the number of groups they have.
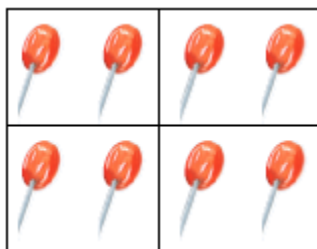
Using 8 objects/ counters, we make 4 groups of 2 objects in each group.

2. Semi-Concrete activity
Using pictures of groups of objects in the pupil's book, teacher asks pupils to equally share objects in each group to 2 children and find out the share of each child.

Examples: equally share 2 mongoes, 4 pens, 6 hens, 10 sweets
to 2 children. what will be the share of every child?

3. Abstract activity
Teacher helps pupils to write and read mathematical sentences about division by 2. He/ she write on chalkboard the following **8 : 2 = 4** and helps them to read "**8 divide by 2 equals 4".**
Note: Teacher explains to pupils that division by 2 is well done if they muster how to find multiples of 2 as shown by the table below:

x 2	1	2	3	4	5	6	7	8	9	10	: 2
	2	4	6	8	10	12	14	16	18	20	

- **Reinforcement and application activities**

Using an even number of less than 20 objects/counters, teacher asks pupils to make groups of 2 objects/ counters in each group and then they tell the number of groups they have.

Examples:

- Using 12 counters, pupils make 6 groups of 2 counters in each group and find out that 12 : 2 = 6

- Using 16 counters, pupils make 8 groups of 2 counters in each group and find out that 16 : 2 = 8

- Using 14 counters, pupils make 7 groups of 2 counters in each group and find out that 14 : 2 = 7, etc

Teacher provides activities on division of numbers by 2

$$2 \div 1 = 2$$

$$12 \div 2 = \square$$

$$18 \div 2 = \square$$

$$8 \div 2 = \square$$

$$10 \div 2 = \square$$

$$18 \div 2 = \square$$

$$20 \div 2 = \square$$

- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home.
He/she provides exercises on division of numbers less than 20 by 2.

÷2	4	6	12	8	14	20	16	18	2	10
	2	.	.	.	.	10	.	.	.	.

Lesson 4: Word problems on multiplication and division by 2

a) Prerequisites/Revision/Introduction

Teacher asks pupils to work out the exercises on multiplication and division by 2.

b) teaching and learning materials

Chalkboard, chalks, notebooks, pens, sticks, dices, pupil's book, charts containing pictures of groups of objects, number cards containing numbers from 1 to 20.

c) learning activities

- **Activities for introduction**

Using Concrete objects, story telling or games, teacher helps pupils to multiply or divide even numbers by 2.

Teacher reads a short word problems involving multiplication or division by 2 and orally pupils give the answer.

Example: Marc divides equally 12 notebooks to 4 pupils. How many notebooks does evey pupil receive?

- Activities for demonstration

- Using counters, teacher facilitate pupils to work out word problems involving multiplication or division by 2.

Examples:
1. Teacher gives 2 chalks to 3 pupils each and he/she asks the class the number of all chalks recived by all 3 pupils.
2. Teacher gives 6 counters to a pupil and request her/ him to equally share them to 3 pupils. He / she asks the class the number of all chalks recived by each pupil.

- Using counters, teacher leads pupils to read and analyze a word problems in the pupil's book and then find out the answer for the word problems (refer to pupil's book). He/she may use counters, dices, sticks and helps pupils to solve word problems involving division.

- **Activities for reinforcement and application**

Pupils in small groups work out different word problems given by the teacher. Pupils are given time to present their working steps to get the answer on word problems involving multiplication or division by 2 (refer to pupil's book).

- Assessment activities

The teacher provides activities to be done by pupils at school or at home. He/she provides exercises on multiplication and division by 2.

Lesson 5: End unit assessment 5

a) Prerequisites/Revision/Introduction

Before the end unit assessment:
- Teacher ensures that pupils muster and know how to apply the following: count 1 to 20 objects, read and write numbers from 1 to 20, compare two numbers between 1 and 20, make an ascending or descending order on numbers from 1 to 20, add or subtract 2 numbers between 1 and 20 whose sum or difference does not exceed 20. Multiply and divide numbers by 2
- Teacher relates different revision activities to real life situations or pupils' daily life

b) Examples of end unit assessment questions

1. work out the following multiplication and division activities

a) 2 x 3 =

b) 2 x 8 =

c) 10÷2 =

d) 18÷2=

2. Solve the following word problems

i) 9 students planted trees and every one planted 2 trees. How many trees do they plant altogether?

ii) Mico has 16 oranges and he equally divides them to 2 students. How many oranges does every student get?

3. Pupils in pairs or in small groups do following:

i) Compose a word problem in daily context that involves multiplication and division by 2.

ii) Discuss and present about the importance of multiplication and division in real life.

Notes:
- Teacher asks pupils to individually or in pairs work out different assessment questions and then he/she make an individual correction.
- Basing on the results from end unit assessment and before starting unit 5, teacher provides remedial or reinforcement activities for pupils in need.

UNIT 6: WHOLE NUMBERS FROM 0 TO 50

6.1.   Key unit competence

Counting, reading, writing, ordering, comparing, adding and subtracting whole numbers from 0 up to 50

6.2.   Prerequisite knowledge and skills

Pupils will perform well in this unit if   they master and know how to apply the following: count 1 to 20 objects, read and write numbers from 0 to 20, compare two numbers between 1 and 20, make an ascending or descending order on numbers from 1 to 20, add or subtract 2 numbers between 1 and 20 whose sum or difference does not exceed 20.

6.3 Cross-cutting issues to be addressed

Through different tasks and activities, the following cross-cutting issues have to be addressed in this unit:

- Inclusive education: ensure that the selected teaching and learning techniques, teaching aids promote education for all.
- Peace and value Education: encourage learners to respect others' views and thoughts during group works and class discussions
- Gender: ensure the equal opportunity of boys and girls in the lesson participation.
- **Environment and Sustainability:** ensure that pupils are encouraged to discuss effects of environment and sustainability through solving word problems involving addition, subtraction…
- **Financial education**: lead pupils to make appropriate financial decisions through word problems that involving four basic opedifferencens.

6.3.   List of lessons

UNIT 6: WHOLE NUMBERS FROM 0 TO 50 (28 periods)		
Lesson title	**Learning objectives**	**Number of periods**

1	Introductory activity	Arouse the curiosity of learners on the content of this unit and the importance of counting, reading and writing numbers in real life.	1
2	Counting 1 to 30 objects	Understand and discover the concept of numbers from 1 to 30.	1
3	Reading and writing the numbers from 0 to 30	Read and write in figure and in word the numbers from 0to 30.	2
4	Counting 1 to 40 objects	Understand and discover the concept of numbers from 1 to 40.	1
5	Reading and writing the numbers from 0 to 40	Read and write in figure and in word the numbers from 0 to 40.	2
6	Counting 1 to 50 objects	Understand and discover the concept of numbers from 1 to 50.	1
7	Reading and writing the numbers from 0 to 50	Read and write in figure and in word the numbers from 0 to 50.	2
8	Decomposition of numbers from 10 to 50 into ones and tens	Decompose a number between 10 and 50 into ones and tens.	3
9	Comparing numbers from 0 to 50	Compare numbers from 0 to 50 using >,< and =	3
10	Ascending and descending order of numbers from 0 to 50	Arrange numbers from 0 to 50 in ascending and descending order (from smaller to bigger number and vice versa).	2
11	Addition of numbers whose sum	Add 2 numbers whose sum	2

		does not exceed 50	does not exceed 50.	
12	Word problems on addition of numbers whose sum does not exceed 50	Solve word problems involving addition whose sum does not exceed 50.	2
13	Subtraction of numbers less than 50	Subtract 2 numbers less than 50.	2
14	Word problem on subtraction of numbers less than 50	Solve word problems involving subtraction of 2 numbers.	2
15	End unit assessment 6	Count , read , write, compare , order, add and subtract numbers from 1 to 50.	2

Lesson 1: Introductory activity

This lesson is delivered through a conversation between teachers and pupils. The teacher uses pictures in the pupils' book and asks different prompting questions to pupils in order to get their predictions about the unit to be learnt.

Example of questions to be asked basing on the picture in pupil's book:
- Look at the picture. What do you see?
- Can you find the number of notebooks which are in the shop?
- Can you find the number of pencils which are in the shop?

As it is at the beginning of the unit, the teacher has to value all answers from pupils. All answers are valid because the aim of the introductory activity is to get from pupils the predictions on the unit to be learnt.

Lesson 2: Counting 1 to 30 objects

a) Prerequisites/Revision/Introduction

Ask pupils to individually count at least 20 real objects, read and write numbers from 1 to 20.

b) teaching and learning materials:

Books, desks, pens, chalks, beans, small stones and any other counters or objects for counting available in the school environment.

c) learning activities

- **Activities for introduction**
    - Using different counters or counting objects, teacher helps pupils to understand and discover the concept of the numbers from 20 to 30.
    - Teacher may ask pupils to make a group of 20 similar objects and add 1 more object until they have 30 objects. He/ she asks pupils to put together all objects and count them

- **Demonstration activities**

    - Using different counters or objects, teacher asks pupils to make a group of 20 objects and then they add 1 more object until they get 30 objects.
    - Teacher asks pupils to count objects in each group from 20 up to 30 objects
    - Teacher helps pupils to understand that adding 1 more object to a group of 20 objects, we get 21 objects, and so on until we make a group of 30 objects.
    - In small groups, pupils look at the pictures in the pupil's book and count different objects (from 20 to 25 and from 26 to 30).

- **Reinforcement activities**
    - In pairs, teacher asks pupils to make groups of similar 10 to 30 objects, count them and tell the number of objects in each group.
    - Individually, teacher asks pupils to count a given number of objects to test if they understand the concept of numbers between 10 and 30
    Example: count 22 notebooks, count 25 pens, count 30 sticks, count 33 mangoes…

- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home. All set activities should provide to every pupil the opportunities to demonstrate and apply the new concept learnt in a range of situations.

Examples:
    - Asks pupils to bring objects of the same nature (30 sticks, 33 notebooks, 24 oranges, 26 beans, 29 small stones…)

- Asks pupils to make groups of 20 to 30 similar real objects or using drawings (22 tomatoes, 24 mangoes, 25 bananas, 26 small stones or sticks…).

Note: The following lessons follow the same teaching and learning methodology but with different numbers.

- *Lesson 2 on counting 1 to 30 objects, lesson 4 on counting 1 to 40 objects and lesson 6 on counting 1 to 50 objects .*
- *To better enhance the concept of counting numbers from 1 to 50, teacher have to start by asking pupils to count objects related to the previously learnt numbers before the introduction of counting the new number of objects.*

Lesson 3: reading and writing the numbers from 0 to 30

a) Prerequisites/Revision/Introduction

The teacher asks pupils to count objects less than 30 and write number from 1 to 20.

b) teaching and learning materials:
Number cards with numbers 1 to 30, different pictures in the pupil's book, wall charts containing objects and numbers from 0 to 30, chalkboard, chalks, books, notebooks, pens and any other counters or objects for counting available in the school environment.

c) learning activities

- **Activities for introduction**
Using different prompting questions, teacher helps pupils to understand and discover how to read and write the numbers from 21 to 30.
Example: use a chart containing 21 to 30 objects and the numbers 21 to 30 in figure and asks pupils to count and tell the number of objects they see on the picture. Pupils may be asked to write the number 20.
- **Activities for Demonstration**
The teacher leads pupils how to read and write a 2-digit number from 21 to 30 through the following steps:
   Step 1: the teacher writes slowly, one by one, the numbers21, 21, 22…until 30 on the checkboard by explaining to them different digits of each number from 21 to 30.
   Step 2: teacher asks pupils to imitate how to write, one by one, the numbers 21, 22, 23, 24, 25, 26, 27, 28, 29, 30 on the checkboard.

Step 3: teacher asks pupils to write, one by one, the numbers 21, 22, 23, 24, 25, 26, 27, 28, 29, 30 in their notebooks.

- **Activities for reinforcement**
    • Teacher asks pupils to individually imitate the 2-digit numbers from 21 to 30 written on the chalkboard or on a number card and then write them many times in their notebook using a pen or a pencil.
    • Teacher helps pupils with difficulties to well write the 2-digit numbers by giving them more time on writing activity. He/ she must use all possible ways to make all pupils successful in reading and writing the given 2-digit numbers.
- **Application activities**

The teacher asks pupils to correctly read and write 2-digit numbers from 21 to 30 many times in their notebooks.

- **Assessment activities**

The teacher provides activities to be done by pupils at home. All set activities should provide to every pupil the opportunities to demonstrate and apply the new concept learnt in a range of situations.

Examples:
    • Asks pupils to show where 2-digit numbers from 21 to 30 are written on different objects, bring an object on which 2-digit numbers from 11 to 20 are written.
    •   Write the following 2-digit numbers: 21, 22, 23, 24, 25, 26, 27, 28, 29, 30.

Note: The following lessons follow the same teaching and learning methodology but with different numbers.
    • *Lesson 3 on reading and writing numbers from 20 to 30 , lesson 5 on reading and writing numbers from 30 to 40 and lesson 7 on reading and writing numbers from 40 to 50.*
    • *To better enhance the concept of reading and writing numbers from 20 to 50, teacher have to start by asking pupils to read and write the previously learnt numbers before the introduction of the new number.*
    • *To better enhance the concept of reading and writing numbers from 20 to 50, teacher should ask pupils to show where the numbers 20 to 50 are written on different objects such as Rwandan coins, in textbooks, on calendar and so on.*

Lesson 8: Decomposition of 2-digit numbers less than 50 into ones and tens

a) Prerequisites/Revision/Introduction

Teacher may ask pupils to reading and writing 2-digit numbers from 10 to 50. Pupils should be able to decompose numbers from 10 to 20 into ones and tens

b) teaching and learning materials

Chalkboard, chalks, notebooks, pens, pupil's book, charts containing pictures of groups of objects, number cards of numbers from 0 to 50, abacus, and table of place values on manila paper.

c) learning activities

- **Activities for introduction**
  - Teachers may use prompting questions to make pupils discover and understand the new concept to be learnt.
  - Pupils may be requested to count objects between 20 and 50, and then make 2 groups of similar objects or counters so that the first groups are made by 10 objects while the last group is made by less than 10 objects.

Example: from 27 small stones or sticks, pupils may make 2 groups of 10 stones or sticks each and another group of 7 stones or sticks…

- **Demonstration activities**

1. **Concrete activity**

Using real objects , teacher asks pupils to make groups of objects as follows: from 21 objects make 2 groups of 10 objects each and another group of 1 object. He/she explains to pupils that the number 21 is made by 2 tens and 1 ones.

Note:
  - This activity can be done, in small groups, using a different number between 21 and 50. Teacher helps pupils to discover and understand that a 2-digit number between 21 and 50 is composed by tens and ones.
  - Teacher can use abacus to demonstrate how to decompose a 2- digit number into tens and ones

2. **Semi-Concrete activity**

Using pictures of groups of objects in the pupil's book, teacher asks pupils to decompose 21 into 2 groups of 10 and 1 objects.
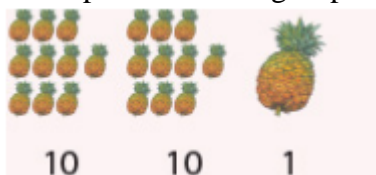
Note: this activity can be done using a different number between 21 and 50. Teacher can use pictures of decomposing a 2-digit number on abacus.
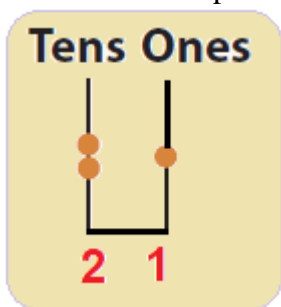
3. Abstract activity

Using abacus or a table of place value, teacher helps pupils to decompose a 2-digit number between 21 and 50 into tens and ones. He/she helps them to write and read aloud a mathematical sentence on decomposition of a 2-digit number between 21 and 50 into tens and ones.

Example: Using a table of place value, teacher helps pupils to decompose the number 21 into tens and ones. He/ she leads them to find out that 21 is composed by 2 tens and 1 ones.

Tens	Ones
2	1

21 = 2Tens 1 Ones

- **Reinforcement activities**

Teacher helps pupils to individually or in pairs decompose a 2-digit numbers into tens and ones. He/she facilitates them to correctly decompose 35 into 3 tens and 5 ones using table of place value or an abacus.

- **Application activities**

Using pupil's book, teacher asks pupils to work out the activities on decomposition of 2- digit numbers between 21 and 50 individually or in pairs.

Application activities may include a variety of activities where pupils are requested to decompose a 2-digit number using abacus and table of place values.

Examples:
- 38 = …tens …ones (decompose 38 into tens and ones)
- 4 tens 1 ones =….(find the number which has been decomposed into tens and ones)
- 45 = …tens …ones (decompose 45 into tens and ones)

- 3 tens 2 ones =….(find the number which has been decomposed into tens and ones)

- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home.
He/she provides exercises on decomposition of 2-digit numbers between 10 and 50 into tens and ones.

Lesson 9: Comparing numbers from 0 to 50 using symbols

a) Prerequisites/Revision/Introduction

Teacher may ask pupils to work out counting activities, reading and writing activities in the pupil's book. He/she can ask questions to test if pupils know to count, read , write and decompose numbers from 10 to 50. He/she can ask questions to test if pupils know to compare and order numbers from 1 to 20

b) teaching and learning materials
Chalkboard, chalks, notebooks, pens, pupil's book, charts containing pictures of groups of objects, number cards of numbers from 1 to 50.

c) learning activities
- **Activities for introduction**

Using different prompting questions, teacher helps pupils to understand and discover how to compare numbers from 0 to 50. Pupils may be requested to count objects in different groups and compare the number of objects in two or more groups by showing a group with many, less or equal objects.
Example: by means of two boxes of notebooks, where one box contains 22 chalks and another box contains 28 chalks. Pupils may be asked to compare the number of chalks in two boxes by showing the box with many or fewer chalks.

- **Activities for demonstration**

In small groups, teacher asks pupils to observe pictures in the pupil's book. Then, he/she asks them to make 2 groups of similar objects but with different number of objects: one group with many objects and another group with few objects as it is shown on the pictures in the pupil's book.

Example:

Pupils may be asked to makes 2 different groups of objects as follows: a group of 28 notebooks and another group of 43notebooks.

Teacher asks pupils to compare the number of objects in 2 different groups by showing which group contains many or fewer objects and then compare the two numbers using the comparison symbols (< : less than, >: greater than, or = : equal to). He/she helps those with difficulties in comparing the number of groups of objects. He/ she asks pupils to compare 2 groups of equal and similar objects (like 2 groups of 27 beads each) and let them discover that the 2 groups have equal number of objects.

Comparison symbol	Meaning	Mathematical example	How to read
>	Greater than	$43 > 28$	43 is **greater than** 28
<	Less than	$28 < 43$	28 is **less than** 43
=	Equal to	$27 = 27$	27 is **equal to** 27

Teacher helps pupils to discover the following:
- If 2-digits numbers are compared, the number with a greater digit in the place value of tens is the greatest number.
- If 2-digits numbers are compared, the number with a smaller digit in the place value of tens is the smallest number.
- If 2-digits numbers of the same digit of tens are compared, the greatest number is the one with the greater number in the place value of ones.

- Activities for reinforcement

Teacher draws 2 different groups with different numbers of objects and then he/she asks pupils to compare them by saying which group has many or fewer objects. Finally, the teacher asks them to write and compare the numbers of objects using symbols (refer to pupil's book).

- **Application activities**

Teacher provides different exercises on comparing 2 numbers between 1 and 50 using symbols (<, > and =). Pupils are requested to provide written answers. Teacher makes a follow up on how best pupils are performing the given tasks and he/she appreciates, encourages and values the pupils' answers.

37	☐	23
31	☐	47
23	☐	23

24	☐	34
50	☐	46
45	☐	31

- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home.
He/she provides exercises on comparison of number from 1 to 50 using symbols (<, > and =).

24	☐	34
50	☐	46
45	☐	31

Lesson 10: Ascending and descending order of numbers from 0 to 50

a) Prerequisites/Revision/Introduction

Teacher may ask pupils to work out counting activities, reading and writing activities in the pupil's book. He/she can use prompting questions to test if pupils know to count, read and write, and compare numbers from 0 to 50. Pupils may be requested to compare 2 numbers between 0 and 20 (refer to pupil's book activities).

b) teaching and learning materials

Chalkboard, chalks, notebooks, pens, pupil's book, charts containing pictures of groups of objects, number cards with numbers from 0 to 50.

c) learning activities

- **Activities for introduction**

Using different prompting questions, teacher helps pupils to understand and discover how to arrange numbers from 0 to 50 in ascending and descending order (from smaller to bigger number or from bigger to smaller numbers). Pupils may be requested to count objects in different groups and compare the number of objects in two or more groups by showing a group with many or fewer objects.

Example: pupils may be asked to explain how to arrange in ascending or in descending order the following groups of objects.

- 38 notebooks, 17 notebooks, 29 notebooks, 22 notebooks, 20 notebooks, 41 notebooks, 47 notebooks, 34 notebooks.
- 24 sticks, 22 sticks, 36 sticks, 39 sticks, 48 sticks, 25 sticks, 50 sticks.

Pupils may also be requested to arrange different groups of objects by starting with a group of less number of objects until they arrive to the group with a big number of objects and vice versa

- **Activities for demonstration and reinforcement**

In small groups of 5 pupils each, teacher asks pupils to make different groups of 1 to 50 similar objects, write the number of objects in each group and arrange in ascending or descending order those numbers.

Activity 1: arrange from the biggest to the smallest number

Example: pupils in groups may be asked to make groups of similar objects and arrange the numbers of objects from the biggest to the smallest number.

- Make 5 different groups of beans as follows: 18 beans, 20 beans, 22 beans, 29 beans, 30 beans, 40 beans, 45 beans, 50 beans.

- Arrange in descending order the following numbers: 18, 20, 22, 29, 30, 40, 45, 50.
- Explain step by step how to arrange numbers in descending order.

Teacher leads pupils to read and compare numbers using the following symbol (> greater than) as follow: $50 > 45 > 40 > 30 > 29 > 22 > 20 > 18$ which is read as follow: **50 is greater than 45…**

Activity 2: arrange number from the smallest to the biggest

Example: pupils in groups may be asked to make groups of similar objects and arrange the numbers of objects from the smallest to the biggest number.

- Make 5 different groups of beans as follows: 18 beans, 20 beans, 22 beans, 29 beans, 30 beans, 40 beans, 45 beans, 50 beans.
- Arrange in ascending order the following numbers: 18, 20, 22, 29, 30, 40, 45, 50.
- Explain step by step how to arrange numbers in ascending order.

Teacher leads pupils to read and compare numbers using the following symbol (< less than) as follow: $18 < 20 < 22 < 29 < 30 < 40 < 45 < 50$ which is read as **18 is less than 20…**

Note: teacher gives time to each group to present its work (from two activities) and he/she ensure that all pupils are performing well in ordering numbers.

- **Application activities**

Teacher provides activities on arranging numbers from 1 to 50 in ascending order and then in descending order.

Note: application activities may be done individually or in pairs. Teacher ensures that all pupils understand how to make an ascending and descending order of numbers from 1 to 50 and provides help or remedial activities for pupils in needs.

- **Assessment activities**
The teacher provides activities to be done by pupils at school or at home. He/she provides exercises on arranging numbers from 0 to 50 in ascending and descending order.

Lesson 11: Addition of numbers whose sum does not exceed 50

a) Prerequisites/Revision/Introduction

Teacher may may test if pupils are able to count, read, write and compare numbers from 1 to 50. He/ she may test if pupils are able to add and subtract numbers between 0 and 20.

b) teaching and learning materials
Chalkboard, chalks, notebooks, pens, pupil's book, charts containing pictures of groups of objects, number cards containing numbers from 0 to 50.

c) learning activities

- **Activities for introduction**

Using different prompting questions, teacher helps pupils to understand and discover how to add 2 numbers whose sum does not exceed 50. Pupils may be requested to talk about their favorite football teams, the number of players in each football match and the number of all players in 2 teams in each football match.

- **Activities for demonstration**
  1. **Concrete activity**

Using real objects, teacher asks pupils to make 2 groups of objects as follows: one group of 23 objects and another group of 25 objects. He/she asks pupils to put together all objects in 2 groups and then count them in order to get the sum 48.

Note: This activity can be done using a different number between 1 and 50, but be sure that the sum does not exceed 50.

  2. **Semi-Concrete activity**

Using pictures of groups of objects in the pupil's book, teacher asks pupils to draw 2 groups of similar objects as follows: one group of 23 objects and another group of 25 objects. He/she asks pupils to put together all objects in 2 groups by circling and then count them in order to get the sum 48.
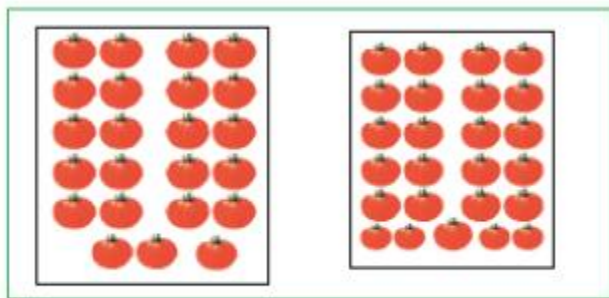
$$23 + 25 = 48$$

Note: this activity can be done using a different number between 1 and 50. Teacher may ensure that all set activities for addition should not include addition with carrying because it will be learnt in P2.

3. Abstract activity

Teacher helps pupils to write and read aloud a mathematical sentence on addition of 2 numbers whose sum does not exceed 50.

Examples: 23 + 25 = 48, *23 plus 25 equals 48*
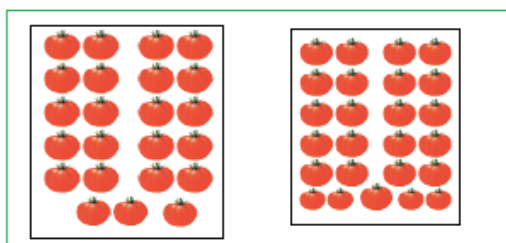
$$23 + 25 = 48$$

Tens	Ones
+ 2	3
2	5
4	8

Note: When adding 2-digit numbers, it is better to use a table of place values and arrange numbers by putting ones together and tens together in a vertical order. To add 2- digit numbers, we start by adding ones and then add tens

- **Reinforcement activities**

Teacher helps pupils to individually or in pairs add by writing 2-digit numbers whose sum does not exceed 50. He/she facilitate them to correctly read aloud the mathematical sentence on addition of 2-digit numbers.

- **Application activities**

Teacher asks pupils to work out the addition activities in the pupil's book. He /she requests pupils to individually or in pairs work out the addition of 2 numbers whose sum does not exceed 50.

Example:

$$28 + 1 = \boxed{}$$
$$22 + 17 = \boxed{}$$
$$30 = 27 + \boxed{}$$

$$8 + 14 = \boxed{}$$
$$33 + 15 = \boxed{}$$
$$\boxed{} + 15 = 25$$

Tens	Ones
1	8
+ 2	1
.	.

- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home.
He/she provides exercises on addition of 2 numbers whose sum does not exceed
50.

$$14 + 10 = \boxed{}$$
$$17 + \boxed{} = 22$$
$$25 + 24 = \boxed{}$$

Tens	Ones
3	2
+ 1	6
.	.

Tens	Ones
2	4
+ 2	1
.	.

Tens	Ones
3	0
+ 1	5
.	.

Lesson 12: Word problems on addition of numbers whose sum does not exceed 50

a) Prerequisites/Revision/Introduction

Teacher asks pupils to work out the exercises writing numbers from 1 to 50 and addition of 2 numbers whose sum does not exceed 50.

b) teaching and learning materials

Chalkboard, chalks, notebooks, pens, sticks, dices, pupil's book, charts containing pictures of groups of objects, number cards containing numbers from 1 to 50.

c) learning activities

- **Activities for introduction**
  - Using Concrete objects and story telling , teacher helps pupils to add 2 numbers whose sum does not exceed 50.
  - Teacher reads a short word problems involving addition of 2 numbers and orally pupils give the answer.

Example: Torero planted 32 trees in his garden and next day he planted 6 more trees. How many trees did Torero plant altogether?

- **Activities for demonstration**

Using sticks or counters, teacher asks pupils to work out the word problems on addition of 2 numbers whose sum does not exceed 50 (see pupil's book).
- **Activities for reinforcement**

Pupils in small groups work out different word problems given by the teacher. Pupils are given time to present their working steps to get the answer on word problems involving addition of 2 numbers whose sum does not exceed 50.

- **Application activities**

Teacher asks pupils to use pupil's book and work out the word problems on addition of 2 numbers whose sum is not exceed 50 (refer to pupil's book).
- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home. He/she provides exercises on addition of 2 numbers whose sum does not exceed 50.

Lesson 13: Subtraction of numbers less than 50

a) Prerequisites/Revision/Introduction

Teacher asks pupils to work out the exercises on , reading and writing numbers from 0 to50, subtraction of 2 numbers less than 20.

b) teaching and learning materials

Chalkboard, chalks, notebooks, pens, sticks, dices, pupil's book, charts containing pictures of groups of objects, number cards containing numbers from 1 to 50.

c) learning activities
- **Activities for introduction**

Using different prompting questions, teacher helps pupils to understand and discover how to subtract 2 numbers less than 50.
Example: Edina has 30 chalks and she gives 10 chalks to Ella. How many chalks does Edina remain with?
- **Activities for demonstration**
1. Concrete activity

Using real objects, teacher asks pupils to make a group of 37 chalks and then take away 13 chalks. He/she asks them to count, tell and write the number of the remaining chalks.
Note: this activity can be done using a different number between 1 and 50.
2. Semi-Concrete activity

Using pictures of groups of objects in the pupil's book, teacher asks pupils to draw a group of 37 sticks/ objects. He/she asks pupils to take away 13 sticks/ objects by crossing them and then count, tell and write number of the remaining objects.
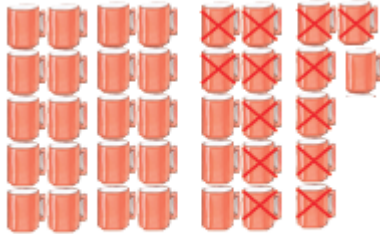
$$37 - 13 = 24$$

Note: this activity can be done using a different number between 1 and 50.

3. Abstract activity
Teacher helps pupils to write and read aloud a mathematical sentence on subtraction of 2 numbers less than 50.
Examples: 37 - 13 = 24, *37 minus 13 equals 24*
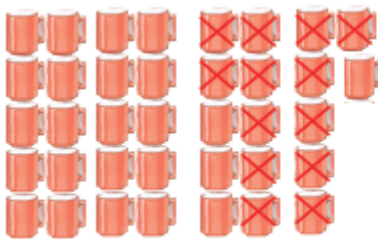
$$37 - 13 = 24$$

Tens	Ones
3	7
- 1	3
2	4

Note: Teacher may ensure that all set activities on subtraction should not include subtraction with borrowing because it will be learnt in P2.

- Reinforcement and application activities
Teacher helps pupils to individually subtract by writing 2 numbers less than 50. He/she facilitate them to correctly read aloud the mathematical sentence on subtraction of 2 numbers (refer to   pupil's book).
Examples:

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28 - 2 = ☐	37 - 10 = ☐	**Tens**	**Ones**
29 - 17 = ☐	48 - 17 = ☐	4	6
☐ - 10 = 14	47 - ☐ = 34	− 2	2
		.	.

Panel 1:
28 - 2 = ☐
29 - 17 = ☐
☐ - 10 = 14

Panel 2:
37 - 10 = ☐
48 - 17 = ☐
47 - ☐ = 34

Panel 3:

Tens	Ones
4	6
− 2	2
.	.

- Assessment activities

The teacher provides activities to be done by pupils at school or at home. He/she provides exercises on subtraction of 2 numbers less than 50 (refer to pupil's book).

49 - 4 = ☐
38 - ☐ = 28
45 = ☐ - 5

Tens	Ones
4	7
− 2	3
.	.

Tens	Ones
2	5
− 2	2
.	.

Tens	Ones
4	0
− 2	0
.	.

Lesson 14: Word problem on subtraction of numbers less than 50

a) Prerequisites/Revision/Introduction

Teacher asks pupils to work out the exercises on counting, reading, writing numbers from 1 to 50 and addition or subtraction of 2 numbers less than 50.

b) teaching and learning materials

Chalkboard, chalks, notebooks, pens, sticks, dices, pupil's book, charts containing pictures of groups of objects, number cards containing numbers from 1 to 50.

c) learning activities

- Activities for introduction

Teacher reads a short word problems involving subtraction of 2 numbers and orally pupils give the answer.

Example: Aline had 30 hoes in her shop and one day after she sold 20 hoes. How many hoes did Aline remain with?

- Activities for demonstration

- Using counters, teacher facilitate pupils to work out word problems involving subtraction of 2 numbers less than 50

- Using real objects / materials or pictures, teacher leads pupils to read and analyze a word problems in the pupil's book and then find out the answer for the word problems (refer to pupil's book). He/she may use counters, dices, sticks and helps pupils to solve word problems involving subtraction.

- **Activities for reinforcement and application**

Pupils in small groups work out different word problems given by the teacher. Pupils are given time to present their working steps to get the answer on word problems involving subtraction of 2 numbers less than 50 (refer to pupil's book).

- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home. He/she provides exercises on subtraction of 2 numbers less than 50.

Note: For application activities and homeworks, teacher should set additional word problems that involve both addition and subtraction of numbers less than 50 whose sum or difference does not exceed 50.

Lesson 15: End unit assessment 6

a) Prerequisites/Revision/Introduction

Before the end unit assessment:
- Teacher ensures that pupils master and know how to apply the following: count 1 to 50 objects, read and write numbers from 1 to 50, compare two numbers between 1 and 50, make an ascending or descending order on numbers from 1 to 50, add or subtract 2 numbers between 1 and 50 whose sum or difference does not exceed 50.
- Teacher relates different revision activities to real life situations or pupils' daily life

b) Examples of end unit assessment questions

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1. Work out the following addition and subtraction activities

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i) $22 + 17 =$

ii) $.... + 20 =$

iii) $23 + ... = 45$

iv) $37 - 21 =$

v) $45 - .... = 32$

vi) $.... - 28 = 22$

2. **Solve the following word problems**

- Habibu got 35 marks in one test, and 12 marks in another test. How many marks did he get in 2 tests?
- Joriji buys 50 notebooks and he gives 16 notebooks to Anitha. How many notebooks does Joriji remain with?
- Aline had 30 hoes in her shop and one day after she sold 20 hoes. How many hoes did Aline remain with?
- Mutesi has 39 beads and she loses 6 beads. Kayitesi gives 12 more beads to Mutesi. Find the total number of beads Mutesi have.

3. **Using the table of place values, explain if the comparison of numbers is correct.**

i) $36 > 28$

ii) $45 = 45$

iii) $27 < 29$

Notes:
- Teacher asks pupils to individually or in pairs work out different assessment questions and then he/she make an individual correction.
- Basing on the results from end unit assessment and before starting unit 5, teacher provides remedial or reinforcement activities for pupils in need.

UNIT 7: WHOLE NUMBERS FROM 0 TO 100

7.1 Key unit competence

Counting, reading, writing, ordering, comparing, adding and subtracting whole numbers from 0 up to 99

7.2 Prerequisite knowledge and skills
Pupils will perform well in this unit if they master and know how to apply the following: count 1 to 50 objects, read and write numbers from 0 to 50, compare two numbers between 1 and 50, make an ascending or descending order on numbers from 1 to 50, add or subtract 2 numbers between 1 and 50 whose sum or difference does not exceed 50.

7.3 Cross-cutting issues to be addressed
Through different tasks and activities, the following cross-cutting issues have to be addressed in this unit:
- Inclusive education: ensure that the selected teaching and learning techniques, teaching aids promote education for all.
- Peace and value Education: encourage learners to respect others' views and thoughts during group works and class discussions
- Gender: ensure the equal opportunity of boys and girls in the lesson participation.
- **Environment and Sustainability:** ensure that pupils are encouraged to discuss effects of environment and sustainability through solving word problems involving addition, subtraction…
- **Financial education**: lead pupils to make appropriate financial decisions through word problems that involving four basic opedifferencens.

7.4 List of lessons

UNIT 7: WHOLE NUMBERS FROM 0 TO 100 (28 Periods)			
	Lesson title	**Learning objectives**	**Number of periods**
1	Introductory activity	Arouse the curiosity of learners on the content of this unit and the importance of counting, reading and writing numbers in real life.	1

2	Counting 1 to 60 objects	Understand and discover the concept of numbers from 1 to 60.	1
3	Reading and writing the numbers from 0 to 60	Read and write in figure and in word the numbers from 0 to 60.	2
4	Counting 1 to 70 objects	Understand and discover the concept of numbers from 1 to 70.	1
5	Reading and writing the numbers from 0 to 70	Read and write in figure and in word the numbers from 0 to 70.	2
6	Counting 1 to 80 objects	Understand and discover the concept of numbers from 1 to 80.	1
7	Reading and writing the numbers from 0 to 80	Read and write in figure and in word the numbers from 0 to 80.	1
8	Counting 1 to 90 objects	Understand and discover the concept of numbers from 1 to 90.	2
9	Reading and writing the numbers from 0 to 90	Read and write in figure and in word the numbers from 0 to 90.	1
10	Counting 1 to 100 objects	Understand and discover the concept of numbers from 1 to 100.	1
11	Reading and writing the numbers from 0 to 99	Read and write in figure and in word the numbers from 0 to 99.	1
12	Decomposition of 2-digit numbers from 10 to 99 into ones and tens	Decompose a 2- digit number between 10 and 99 into ones and tens .	2
13	Comparing numbers from 1 to 99	Compare numbers from1 to	2

		99 using >,< and =	
14	Ascending and descending order of numbers from 1 to 99	Arrange numbers from 1 to 99 in ascending and descending order (from smaller to bigger number and vice versa).	2
15	Addition of numbers whose sum does not exceed 99	Add 2 numbers whose sum does not exceed 99 .	2
16	Word problems on addition of numbers whose sum does not exceed 99	Solve word problems involving addition whose sum does not exceed 99.	2
17	Subtraction of numbers less than 99	Subtract 2 numbers less than 99.	1
18	Word problem on subtraction of numbers less than 99	Solve word problems involving subtraction of 2 numbers.	1
19	End unit assessment 7	Count , read , write, compare , order, add and subtract numbers from 1 to 99.	2

Lesson 1: Introductory activity

This lesson is delivered through a conversation between teachers and pupils. The teacher uses pictures in the pupils' book and asks different prompting questions to pupils in order to get their predictions about the unit to be learnt.

Example of questions to be asked basing on the picture in pupil's book:
- Look at the picture. What do you see?
- Can you find the number of pencils which are in the box?
- Can you find the number of all pencils which are on the picture?
- How many bundles of pencils are there on the picture?
- If 10 pencils are in each bundle, how many pencils are in all bundle?

As it is at the beginning of the unit, the teacher has to value all answers from pupils. All answers are valid because the aim of the introductory activity is to

get from pupils the predictions on the unit to be learnt. Teacher end the conversation by telling pupils that a box can contain many pencils in bundles.

Lesson 2: Counting 1 to 60 objects

a) Prerequisites/Revision/Introduction

Ask pupils to individually count at least 50 real objects, read and write numbers from 1 to 50.

b) teaching and learning materials:
Books, desks, pens, chalks, beans, small stones and any other counters or objects for counting available in the school environment.

c) learning activities

- **Activities for introduction**
  - Using different counters or counting objects, teacher helps pupils to understand and discover the concept of the numbers from 50 to 60.
  - Teacher may ask pupils to make a group of 50 similar objects and add 1 more object until they have 60 objects. He/ she asks pupils to put together all objects and count them

- **Demonstration activities**

  - Using different counters or objects, teacher asks pupils to make a group of 50 objects and then they add 1 more object until they get 60 objects.
  - Teacher asks pupils to count objects in each group from 50 up to 60 objects
  - Teacher helps pupils to understand that adding 1 more object to a group of 50 objects, we get 51 objects, and so on until we make a group of 60 objects.
  - In small groups, pupils look at the pictures in the pupil's book and count different objects (from 50 to 60).

- **Reinforcement activities**
  - In pairs, teacher asks pupils to make groups of similar 50 to 60 objects, count them and tell the number of objects in each group.
  - Individually, teacher asks pupils to count a given number of objects to test if they understand the concept of numbers between 50 and 60

Example: count 52 sticks, count 55 sticks, count 60 sticks, count 53 sticks…

- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home. All set activities should provide to every pupil the opportunities to demonstrate and apply the new concept learnt in a range of situations.

Examples:
- Asks pupils to bring objects of the same nature (60 sticks, 53 sticks, 54 beans, 56 beans, 59 small stones…)
- Asks pupils to make groups of 50 to 60 similar real objects or using drawings (52 tomatoes, 54 mangoes, 55 bananas, 56 small stones or sticks…).

Note: The following lessons follow the same teaching and learning methodology but with different numbers.
- *Lesson 2 on counting 1 to 60 objects, lesson 4 on counting 1 to 70 objects, lesson 6 on counting 1 to 80 objects, lesson 8 on counting 1 to 90 objects, lesson 10 on counting 1 to 100 objects.*
- *To better enhance the concept of counting numbers from 1 to 100, teacher have to start by asking pupils to count objects related to the previously learnt numbers before the introduction of counting the new number of objects.*

Lesson 3: reading and writing the numbers from 0 to 60

a) Prerequisites/Revision/Introduction

The teacher asks pupils to count objects less than 60 and write number from 1 to 50.

b) teaching and learning materials:
Number cards with numbers 1 to 60, different pictures in the pupil's book, wall charts containing objects and numbers from 0 to 60, chalkboard, chalks, books, notebooks, pens and any other counters or objects for counting available in the school environment.

c) learning activities

- **Activities for introduction**
Using different prompting questions, teacher helps pupils to understand and discover how to read and write the numbers from 51 to 60.

Example: use a chart containing 51 to 6objects and the numbers 51 to 60 in figure and asks pupils to count and tell the number of objects they see on the picture. Pupils may be asked to write the numbers 51,52,53,54,55,56,57,58, 59. Teacher may help pupils to discover that all numbers between 51 and 59 have the same numbers of tens (5 tens) with different values of ones.

- **Activities for demonstration**

The teacher leads pupils how to read and write a 2-digit number from 51 to 60 through the following steps:

Step 1: the teacher writes slowly , one by one, the numbers 51, 52, 53…until 60 on the checkboard by explaining to them different digits of each number from 51 to 60.

Step 2: teacher asks pupils to imitate how to write, one by one, the numbers 51, 52, 53, 54, 55, 56, 57, 58, 59, 60 on the checkboard.

Step 3: teacher asks pupils to write, one by one, the numbers 51, 52, 53, 54, 55, 56, 57, 58, 59, 60in their notebooks.

Using abacus or a table of place values, Teacher may help pupils to discover that all numbers between 51 and 59 have the same numbers of tens (5 tens) with different values of ones.

- **Activities for reinforcement**
  - Teacher asks pupils to individually imitate the 2-digit numbers from 51 to 60 written on the chalkboard or on a number card and then write them many times in their notebook using a pen or a pencil.
  - Teacher helps pupils with difficulties to well write the 2-digit numbers by giving them more time on writing activity. He/ she must use all possible ways to make all pupils successful in reading and writing the given 2-digit numbers.

- **Application activities**

The teacher asks pupils to correctly read and write 2-digit numbers from 51 to 60 many times in their notebooks.

- **Assessment activities**

The teacher provides activities to be done by pupils at home. All set activities should provide to every pupil the opportunities to demonstrate and apply the new concept learnt in a range of situations.

Examples:
  - Asks pupils to show where 2-digit numbers from 51 to 60 are written on different objects, bring an object on which 2-digit numbers from 51 to 60 are written.
  - Write the following 2-digit numbers: 51, 52, 53, 54, 55, 56, 57, 58, 59, 60.

Note: The following lessons follow the same teaching and learning methodology but with different numbers.

- *Lesson 3 on reading and writing numbers from 50 to 60 , lesson 5 on reading and writing numbers from 60 to 70 , lesson 7 on reading and writing numbers from 70 to 80, lesson 9 on reading and writing numbers from 70 to 90,and lesson 11 on reading and writing numbers from 90 to 99 .*

- *To better enhance the concept of reading and writing numbers from 50 to 99, teacher have to start by asking pupils to read and write the previously learnt numbers before the introduction of the new number.*
- *To better enhance the concept of reading and writing numbers from 10 to 99, teacher should ask pupils to show where the numbers 10 to 99 are written on different objects such as Rwandan coins, in textbooks, on calendar and so on. He / she may use abacus and the table of place values to help pupils understand the concept of tens and ones in a 2-digit number.*

Lesson 12: Decomposition of 2-digit numbers less than 99 into ones and tens

a) **Prerequisites/Revision/Introduction**

Teacher may ask pupils to reading and writing 2-digit numbers from 10 to 99. Pupils should be able to decompose numbers from 10 to 50 into ones and tens

b) **teaching and learning materials**
Chalkboard, chalks, notebooks, pens, pupil's book, charts containing pictures of groups of objects, number cards of numbers from 0 to 99, abacus, and table of place values on manila paper.

c) **learning activities**
- **Activities for introduction**
    - Teachers may use prompting questions to make pupils discover and understand the new concept to be learnt.
    - Pupils may be requested to count objects between 10 and 99, and then make 2 groups of similar objects or counters so that the first groups are made by 10 objects while the last group is made by less than 10 objects.

Example: from 97 small stones or sticks, pupils may make 9 groups of 10 stones or sticks each and another group of 7 stones or sticks…

- **Demonstration activities**
1. **Concrete activity**

Using real objects, teacher asks pupils to make groups of objects as follows: from 61 objects make 6 groups of 10 objects each and another group of 1 object. He/she explains to pupils that the number 61 is made by 6 tens and 1 ones.

Note:
- This activity can be done, in small groups, using a different number between 51 and 99. Teacher helps pupils to discover and understand that a 2-digit number between 51 and 99 is composed by tens and ones.
- Teacher can use abacus to demonstrate how to decompose a 2- digit number into tens and ones

2. **Semi-Concrete activity**

Using pictures of groups of objects in the pupil's book, teacher asks pupils to decompose 61 into 6 groups of 10 and 1 objects.
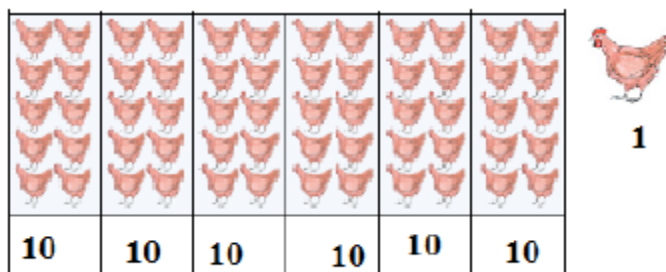
Note: this activity can be done using a different number between 51 and 99. Teacher can use pictures of decomposing a 2-digit number on abacus.
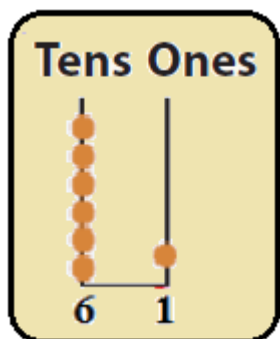
3. **Abstract activity**

Using abacus or a table of place value, teacher helps pupils to decompose a 2-digit number between 51 and 99 into tens and ones. He/she helps them to write and read aloud a mathematical sentence on decomposition of a 2-digit number between 51 and 99 into tens and ones.

Example: Using a table of place value, teacher helps pupils to decompose the number 61 into tens and ones. He/ she leads them to find out that   61 is composed by 6tens and 1ones.

Tens	Ones
6	1

61 = 6Tens 1 Ones
- **Reinforcement activities**
Teacher helps pupils to individually or in pairs decompose a 2-digit numbers into tens and ones. He/she facilitates them to correctly decompose 85 into 8 tens and 5 ones using table of place value or an abacus.

- **Application activities**
Using pupil's book, teacher asks pupils to work out the activities on decomposition of 2- digit numbers between 11 and 99 individually or in pairs.

Application activities may include a variety of activities where pupils are requested to decompose a 2-digit number using abacus and table of place values.
Examples:
- 78 = …tens …ones (decompose 78 into tens and ones)
- 5tens 1 ones =….(find the number which has been decomposed into tens and ones)
- 65 = …tens …ones (decompose 65 into tens and ones)
- 9 tens 9 ones =….(find the number which has been decomposed into tens and ones)

- **Assessment activities**
The teacher provides activities to be done by pupils at school or at home. He/she provides exercises on decomposition of 2-digit numbers between 10 and 99 into tens and ones.

Lesson 13: Comparing numbers from 0 to 99 using symbols

a) **Prerequisites/Revision/Introduction**

Teacher may ask pupils to work out counting activities, reading and writing activities in the pupil's book. He/she can ask questions to test if pupils know to count, read , write and decompose numbers from 0 to 99. He/she can ask questions to test if pupils know to compare and order numbers from 1 to 50

b) teaching and learning materials

Chalkboard, chalks, notebooks, pens, pupil's book, charts containing pictures of groups of objects, number cards of numbers from 1 to 99.

c) learning activities

- **Activities for introduction**

Using different prompting questions, teacher helps pupils to understand and discover how to compare numbers from 0 to 99. Pupils may be requested to count objects in different groups and compare the number of objects in two or more groups by showing a group with many, less or equal objects.

Example: by means of two boxes of notebooks, where one box contains 72 chalks and another box contains 27 chalks. Pupils may be asked to compare the number of chalks in two boxes by showing the box with many or fewer chalks.

- **Activities for demonstration**

In small groups, teacher asks pupils to make 2 groups of similar objects but with different number of objects: one group with many objects and another group with few.

Example:

Pupils may be asked to makes 2 different groups of objects as follows: a group of 98 notebooks and another group of 89 counters or sticks.

Teacher asks pupils to compare the number of objects in 2 different groups by showing which group contains many or fewer objects and then compare the two numbers using the comparison symbols ($<$: less than, $>$: greater than, or $=$: equal to). He/she helps those with difficulties in comparing the number of groups of objects. He/ she asks pupils to compare 2 groups of equal and similar objects (like 2 groups of 77 beads each) and let them discover that the 2 groups have equal number of objects.

| Comparison symbol	Meaning	Mathematical example	How to read
>	Greater than	98 > 89	98 is **greater than** 89
<	Less than	89 < 98	89 is **less than** 98
=	Equal to	77 = 77	77 is **equal to** 77

Teacher helps pupils to discover the following:
- If 2-digits numbers are compared, the number with a greater digit in the place value of tens is the greatest number.

- If 2-digits numbers are compared, the number with a smaller digit in the place value of tens is the smallest number.
- If 2-digits numbers of the same digit of tens are compared, the greatest number is the one with the greater number in the place value of ones.

- Activities for reinforcement

Teacher asks pupils to use abacus or table of place values and compare the following numbers using symbols (refer to pupil's book).
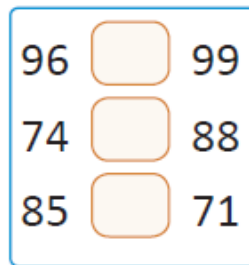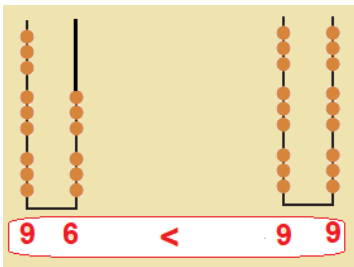
- Application activities
Teacher provides different exercises on comparing 2 numbers between 1 and 99 using symbols (<, > and =). Pupils are requested to provide written answers. Teacher makes a follow up on how best pupils are performing the given tasks and he/she appreciates, encourages and values the pupils' answers.
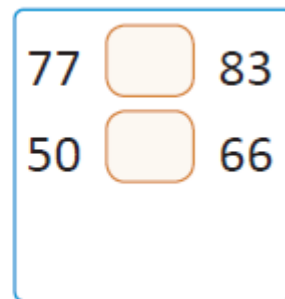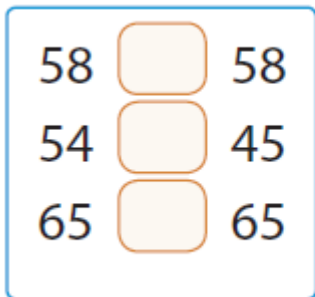
- Assessment activities

The teacher provides additional activities to be done by pupils at school or at home. He/she provides exercises on comparison of number from 1 to 99 using symbols (<, > and =).

Lesson 14: Ascending and descending order of numbers from 0 to 99

a) Prerequisites/Revision/Introduction

Teacher may ask pupils to work out counting activities, reading and writing activities in the pupil's book. He/she can use prompting questions to test if pupils know to count, read and write, and compare numbers from 0 to 99. Pupils may be requested to compare 2 numbers between 0 and 50 (refer to pupil's book activities).

b) teaching and learning materials

Chalkboard, chalks, notebooks, pens, pupil's book, charts containing pictures of groups of objects, number cards with numbers from 0 to 99.

c) learning activities

-   Activities for introduction

Using different prompting questions, teacher helps pupils to understand and discover how to arrange numbers from 0 to 99 in ascending and descending order (from smaller to bigger number or from bigger to smaller numbers). Pupils may be requested to count objects in different groups and compare the number of objects in two or more groups by showing a group with many or fewer objects.

Example: pupils may be asked to tell which group with many or fewer objects.

- 38 notebooks and 17 notebooks,
- 59 notebooks, 95 notebooks,
- 24 sticks and 22 sticks,
- 86 sticks   and 68 sticks etc.

-   Activities for demonstration and reinforcement

In small groups of 5 pupils each, teacher asks pupils to make different groups of 1 to 99 similar objects, write the number of objects in each group and arrange those numbers in ascending or descending order.

Activity 1: arrange from the biggest to the smallest number

Example: pupils in groups may be asked to make groups of similar objects and arrange the numbers of objects from the biggest to the smallest number.

- Make 4 different groups of beans as follows: 60beans, 58 beans, 89 beans, and 72 beans.

- Arrange in descending order the following numbers: 60, 58, 89, 72.

- Explain step by step how to arrange numbers in descending order.

Teacher leads pupils to read and compare numbers using the following symbol (> greater than) as follow: 89 > 72 > 60 > 58 which is read as follow: **89 is greater than 72…**

Activity 2: arrange number from the smallest to the biggest

Example: pupils in groups may be asked to make groups of similar objects and arrange the numbers of objects from the smallest to the biggest number.

- Make 4 different groups of beans as follows: 60beans, 58 beans, 89 beans, and 72 beans.

- Arrange in ascending order the following numbers: 60, 58, 89, 72.

- Explain step by step how to arrange numbers in ascending order.

Teacher leads pupils to read and compare numbers using the following symbol (< less than) as follow: 518 < 60 < 72 < 89 which is read as 5**8 is less than 60…**

Note: teacher gives time to each group to present its work (from two activities) and he/she ensure that all pupils are performing well in ordering numbers.

- **Application activities**

Teacher provides activities on arranging numbers from 1 to 99 in ascending order and then in descending order (see pupil's book).

89	87	80	81
_____	_____	_____	_____
98	64	52	75
_____	_____	_____	_____

Note: application activities may be done individually or in pairs. Teacher ensures that all pupils understand how to make an ascending and descending order of numbers from 1 to 99 and provides help or remedial activities for pupils in needs.

- **Assessment activities**
The teacher provides activities to be done by pupils at school or at home. He/she provides exercises on arranging numbers from 0 to 99 in ascending and descending order (see   pupil's book).

99	59	79	89	69
___	___	___	___	___
66	58	79	95	85
___	___	___	___	___

Lesson 15: Addition of numbers whose sum does not exceed 99

a) Prerequisites/Revision/Introduction

Teacher may test if pupils are able to count, read, write and compare numbers from 1 to 99. He/ she may test if pupils are able to add and subtract numbers between 0 and 50.

b) teaching and learning materials
Chalkboard, chalks, notebooks, pens, pupil's book, charts containing pictures of groups of objects, number cards containing numbers from 0 to 99.
c) learning activities
- **Activities for introduction**
Using different prompting questions, teacher helps pupils to understand and discover how to add 2 numbers whose sum does not exceed 99. He/she asks pupils to count and tell the number of all girls in a classroom, then the number of boys in a classroom. Finally the teacher asks pupils to tell the total number of all students in a classroom (both girls and boys).

- **Activities for demonstration**
1. Concrete activity

Using real objects, teacher asks pupils to make 2 groups of objects as follows: one group of 32 objects and another group of 47 objects. He/she asks pupils to put together all objects in 2 groups and then count them in order to get the sum 79.

Note: This activity can be done using a different number between 1 and 99, but be sure that the sum does not exceed 99.

2. Semi-Concrete activity

Using pictures of groups of objects in the pupil's book, teacher asks pupils to draw 2 groups of similar objects as follows: one group of 32 objects and another group of 47 objects. He/she asks pupils to put together all objects in 2 groups by circling and then count them in order to get the sum 79.

$$32 \quad + \quad 47 \quad = \quad 79$$
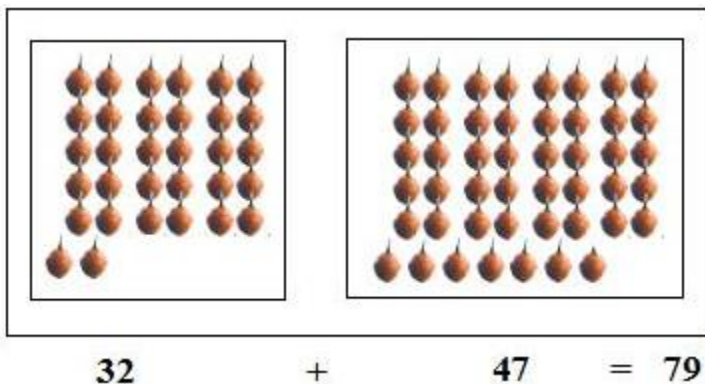
Note: this activity can be done using a different number between 1 and 99. Teacher may ensure that all set activities for addition should not include addition with carrying because it will be learnt in P2.

3. Abstract activity
Teacher helps pupils to write and read aloud a mathematical sentence on addition of 2 numbers whose sum does not exceed 99.
Examples: 32 + 47 = 79, *32 plus 47 equals 79*

$$32 \quad + \quad 47 \quad = \quad 79$$

	Tens	Ones
	3	2
+	4	7
	7	9

Note: When adding 2-digit numbers, it is better to use a table of place values and arrange numbers by putting ones together and tens together in a vertical order. To add 2- digit numbers, we start by adding ones and then add tens

- **Reinforcement activities**
Teacher helps pupils to individually or in pairs add by writing 2-digit numbers whose sum does not exceed 99. He/she facilitate them to correctly read aloud the mathematical sentence on addition of 2-digit numbers.

- **Application activities**

Teacher asks pupils to work out the addition activities in the pupil's book. He /she requests pupils to individually or in pairs work out the addition of 2 numbers whose sum does not exceed 99.

Example:

$14 + 50 = \boxed{}$

$87 + \boxed{} = 90$

$34 + 35 = \boxed{}$

Tens	Ones
3	5
+ 2	2
.	.

Tens	Ones
7	7
+ 2	0
.	.

- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home. He/she provides exercises on addition of 2 numbers whose sum does not exceed 99.

$88 + 1 = \boxed{}$

$32 + 47 = \boxed{}$

$60 = 47 + \boxed{}$

$6 + 52 = \boxed{}$

$63 + 35 = \boxed{}$

$\boxed{} + 15 = 55$

Tens	Ones
6	4
+ 3	2
.	.

Lesson 16: Word problems on addition of numbers whose sum does not exceed 99

a) **Prerequisites/Revision/Introduction**

Teacher asks pupils to work out the exercises writing numbers from 1 to 99 and addition of 2 numbers whose sum does not exceed 99.

b) **teaching and learning materials**

Chalkboard, chalks, notebooks, pens, sticks, dices, pupil's book, charts containing pictures of groups of objects, number cards containing numbers from 1 to 99.

c) learning activities
- **Activities for introduction**
  - Using Concrete objects and story telling, teacher helps pupils to add 2 numbers whose sum does not exceed 99.
  - Teacher reads a short word problems involving addition of 2 numbers and orally pupils give the answer.

Example: Karisa bought 40 notebooks and the following day his father bought to him 25 more notebooks. How many notebooks did Karisa have altogether?

- Activities for demonstration

Using sticks or counters, teacher asks pupils to work out the word problems on addition of 2 numbers whose sum does not exceed 99 (see pupil's book). He/she helps them to analyze the word problem by identifying what is given, what is requested and how to find the answer.

- Activities for reinforcement

Pupils in small groups work out different word problems given by the teacher. Pupils are given time to present their working steps to get the answer on word problems involving addition of 2 numbers whose sum does not exceed 99.

- Application activities

Teacher asks pupils to use pupil's book and work out the word problems on addition of 2 numbers whose sum is not exceed 99 (refer to pupil's book).

- Assessment activities

The teacher provides activities to be done by pupils at school or at home. He/she provides exercises on addition of 2 numbers whose sum does not exceed 99.

Lesson 17: Subtraction of numbers less than 99

a) Prerequisites/Revision/Introduction

Teacher asks pupils to work out the exercises on , reading and writing numbers from 0 to 99, subtraction of 2 numbers less than 50.

b) teaching and learning materials

Chalkboard, chalks, notebooks, pens, sticks, dices, pupil's book, charts containing pictures of groups of objects, number cards containing numbers from 1 to 99.

c) learning activities
- **Activities for introduction**

Using different prompting questions, teacher helps pupils to understand and discover how to subtract 2 numbers less than 99.

Example: Kamana has 64 chalks and she gives 32 chalks to Bella. How many chalks does Kamana remain with?

- **Activities for demonstration**

1. Concrete activity

Using counters, teacher asks pupils to make a group of 77 counters and then take away 33 counters. He/she asks them to count, tell and write the number of the remaining counters.

Note: this activity can be done using a different number between 1 and 99.

2. Semi-Concrete activity

Using pictures of groups of objects in the pupil's book, teacher asks pupils to draw a group of 77 counters. He/she asks pupils to take away 33 counters by crossing them and then count, tell and write number of the remaining counters.
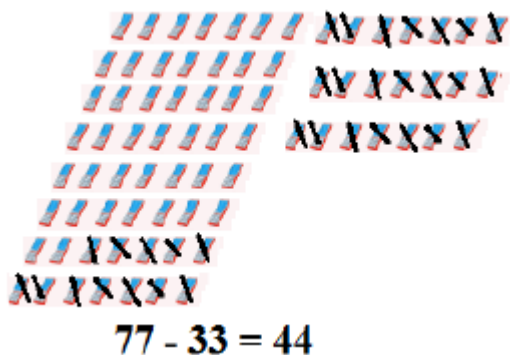
$$77 - 33 = 44$$

Note: this activity can be done using a different number between 1 and 99.

3. Abstract activity

Teacher helps pupils to write and read aloud a mathematical sentence on subtraction of 2 numbers less than 99.

Examples: 77 - 33 = 44, *77 minus 33 equals 44*

Tens	Ones
7	7
- 3	3
4	4

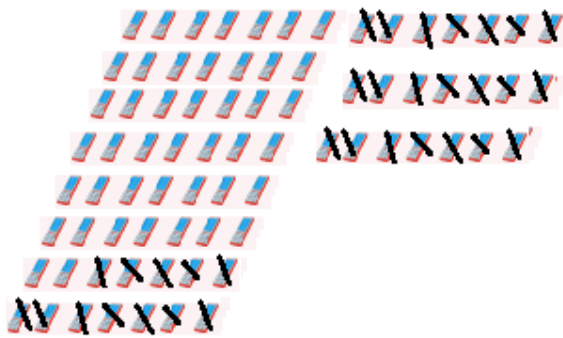$77 - 33 = 44$

Note: Teacher may ensure that all set activities on subtraction should not include subtraction with borrowing because it will be learnt in P2.

- **Reinforcement activities**

Teacher helps pupils to individually subtract by writing 2 numbers less than 99. He/she facilitate them to correctly read aloud the mathematical sentence on subtraction of 2 numbers (refer to pupil's book).

Examples:

Tens	Ones
6	7
- 2	3
.	.

Tens	Ones
9	8
- 2	3
.	.

$89 - 40 = \boxed{}$

$38 - \boxed{} = 28$

$5 = \boxed{} - 85$

- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home. He/she provides exercises on subtraction of 2 numbers less than 99 (refer to pupil's book).

$80 - 10 = \boxed{}$

$59 - 17 = \boxed{}$

$90 - \boxed{} = 70$

$67 - 15 = \boxed{}$

$68 - 57 = \boxed{}$

$\boxed{} - 10 = 40$

Tens	Ones
8	4
- 2	4
.	.

Tens	Ones
9	8
- 4	7
.	.

Lesson 18: Word problem on subtraction of numbers less than 99

a) Prerequisites/Revision/Introduction

Teacher asks pupils to work out the exercises on counting, reading, writing numbers from 1 to 99 and addition or subtraction of 2 numbers less than 99.

b) teaching and learning materials

Chalkboard, chalks, notebooks, pens, sticks, dices, pupil's book, charts containing pictures of groups of objects, number cards containing numbers from 1 to 99.

c) learning activities

- **Activities for introduction**

Teacher reads a short word problems involving subtraction of 2 numbers and orally pupils give the answer.

Example: Aline has a notebook of 98 pages and 52 pages among them are full of content while other pages are empty. How many pages are empty?

- **Activities for demonstration**

- Using counters, teacher facilitate pupils to work out word problems involving subtraction of 2 numbers less than 99
- Using real objects / materials or pictures, teacher leads pupils to read and analyze a word problems in the pupil's book and then find out the answer for the word problems (refer to pupil's book). He/she may use counters, dices, sticks and helps pupils to solve word problems involving subtraction.

- **Activities for reinforcement and application**

Pupils in small groups work out different word problems given by the teacher. Pupils are given time to present their working steps to get the answer on word problems involving subtraction of 2 numbers less than 99 (refer to pupil's book).

- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home. He/she provides exercises on subtraction of 2 numbers less than 99.

Note: For application activities and home works, teacher should set additional word problems that involve both addition and subtraction of numbers less than 99 whose sum or difference does not exceed 99.

Lesson 19: End unit assessment 7

a) Prerequisites/Revision/Introduction

Before the end unit assessment:

- Teacher ensures that pupils master and know how to apply the following: count 1 to 99 objects, read and write numbers from 1 to 99, compare two numbers between 1 and 99, make an ascending or descending order on numbers from 1 to 99, add or subtract 2 numbers between 1 and 99 whose sum or difference does not exceed 99.
- Teacher relates different revision activities to real life situations or pupils' daily life

b) **Examples of end unit assessment questions**

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1. **Work out the following addition and subtraction activities**

   i) $34 + 21 =$

   ii) $63 + \boxed{} = 99$

   iii) $87 - 41 =$

   v) $55 - \boxed{} = 32$

   vi) $\boxed{} - 24 = 35$

2. **Complete with the correct symbol (<, >, =)**

   i) $61 \ \boxed{} \ 57$

   ii) $12 + 24 \ \boxed{} \ 36$

3. **Order from smaller to bigger number**

   60; 35; 51; 75

4. **Decompose the following numbers into ones and tens**

   i. $76 = \dots$ tens $\dots$ ones

---

ii. 5 tens 3 ones = …

5. **Solve the following word problems**

- Muneza planted 45 trees and the following day he planted 23 trees. How many trees did he planted in 2 days?
- Judith buys 58 eggs to be cooked in her children's birthday and she used only 25 eggs. How many eggs does she remain with?
- Grandfather Mugabo gave 34 bananas to his grandchildren and during the evening their father brought 31 more bananas. Only 34 bananas were eaten by all children. Find the total number of the remaining bananas.

Notes:
- Teacher asks pupils to individually or in pairs work out different assessment questions and then he/she make an individual correction.
- Basing on the results from end unit assessment and before starting unit 5, teacher provides remedial or reinforcement activities for pupils in need.

UNIT8: FRACTIONS ½ AND ¼

8.1 Key unit competence
Showing a half and a fourth/quarter of a whole
8.2 Prerequisite knowledge and skills
Pupils will perform well in this unit if they master and know how to apply the following: count 1 to 100 objects, read and write numbers from 0 to 99, compare two numbers between 1 and 99, make an ascending or descending order on numbers from 1 to 99, add or subtract 2 numbers between 1 and 99 whose sum or difference does not exceed 99. He/she differentiates a whole from fractioned object.

8.3 Cross-cutting issues to be addressed

Through different tasks and activities, the following cross-cutting issues have to be addressed in this unit:

- Inclusive education: ensure that the selected teaching and learning techniques, teaching aids promote education for all (tictile materials, big print handouts, manipulatives...)
- Peace and value Education: encourage learners to respect others' views and thoughts during group works and class discussions
- Gender: ensure the equal opportunity of boys and girls in the lesson participation.
- **Environment and Sustainability:** ensure that pupils are encouraged to discuss effects of environment and sustainability through activities involving fraction…
- **Financial education**: lead pupils to make appropriate financial decisions through word problems that involving and fractions.

8.4. List of lessons

UNIT8: FRACTIONS ½ AND ¼ (8 Periods)			
	Lesson title	**Learning objectives**	**Number of periods**
1	Introductory activity	Arouse the curiosity of learners on the content of this unit and its importances in real life .	1
2	Concept of $\frac{1}{2}$	Understand the meaning of $\frac{1}{2}$.	2
3	Different parts of $\frac{1}{2}$	Differenciate the numerator from the denominator of a fraction.	2
4	Concept of $\frac{1}{4}$	Understand the meaning of $\frac{1}{4}$.	1
5	Different parts of $\frac{1}{4}$	Differentiate the numerator from the denominator of a fraction.	2
6	End unit assessment 8	Show , write $\frac{1}{2}$ and $\frac{1}{4}$ of a whole and tell different parts of a fraction.	1

Lesson 1: Introductory activity

This lesson is delivered through a conversation between teachers and pupils. The teacher uses pictures in the pupils' book and asks different prompting questions to pupils in order to get their predictions about the unit to be learnt. Example of questions to be asked basing on the picture in pupil's book:
- Look at the picture. What do you see?
- How many oranges do you see on the picture?
- A whole orange has been divided into   how many parts?
- Two children have shared an orange. The orange   is divided ito how many parts?
- What do you   think   about puttig together all parts of   an   orange?

As it is at the beginning of the unit, the teacher has to value all answers from pupils. All answers are valid because the aim of the introductory activity is to get from pupils the predictions on the unit to be learnt. Teacher end the conversation by telling pupils that an orange can bbe divided into 2   or   4 equal parts   so that 2 or 4   children can equally share a orange .

Lesson 2: Concept and different parts of a fraction $\frac{1}{2}$

a) Prerequisites/Revision/Introduction

Ask pupils to individually divide a whole into 2 equal parts.

b) teaching and learning materials:
Chalkboard, chalks, sticks, orange, pineapple, knife, paper, pair   of scissors, pupil's book drawings   and any other material for cutting available in the school environment.

c) learning activities

- **Activities for introduction**
    - Using different objects for cutting, teacher helps pupils to understand and discover that a whole can be divided into 2 equal parts.
    - Teacher may ask 2 pupils to equally share   2 oranges and then asks other pupils to find a share of each pupil.

- Teacher may ask 2 pupils to equally share 1 orange and then asks other pupils to find a share of each pupil.

- **Demonstration activities**

  - Using cut outs of a circle on different papers, teacher asks pupils to find out 2 different parts which can be putted together to make a circle. Then, he/she asks pupils to compare the 2 parts and discover that they are all equal.

  - Teacher asks pupils to fold a paper and then divide it into 2 equal parts and then compare the 2 parts in order to find that the 2 parts are equal. He/she leads pupils to find out that one **part is a half of a whole** or **1 part out of 2 equal parts.**

  - Teacher asks pupils to observe different pictures inn the pupil's book and explain how a whole is divided into 2 equal parts.
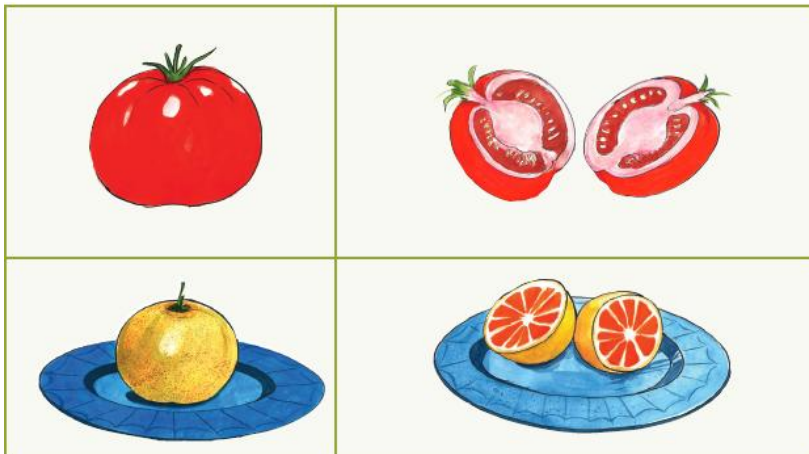
 - Teacher leads pupils on how to write and read the fraction $\frac{1}{2}$. He/shehelps them to read and write $\frac{1}{2}$ on chalkboard and then I their notebooks.

- Teacher helps pupils to understand that $\frac{1}{2}$ is a fraction made by 2 parts which are numerator and deomiator.

Example: In the fraction $\frac{1}{2}$, the numerator is 1 and the denominator is 2

- **Reinforcement activities**
  - In pairs, teacher asks pupils to use real objects like : oranges, avocadoes, papers, etc , divide them into 2 equal parts and then show a half of a whole or $\frac{1}{2}$ of a whole.
  - Teacher can use drawinngs of different shapes(rectangle, square…) divided into 2 equal parts and asks pupils to individually shade a half or $\frac{1}{2}$ of a shape.
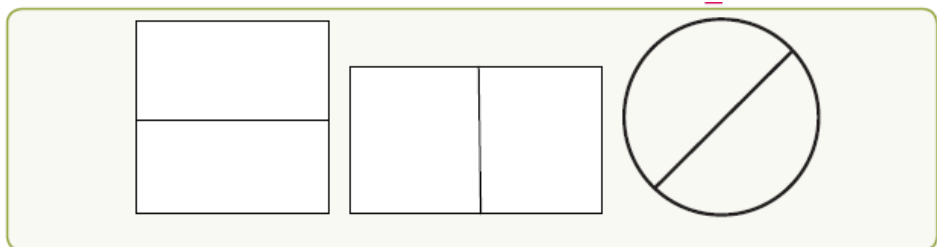
- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home. All set activities should provide to every pupil the opportunities to demonstrate and apply the new concept learnt in a range of situations. Teacher can asks pupils to write and read the fraction $\frac{1}{2}$ orfind out wherethe fraction $\frac{1}{2}$ is written on different materials .

Lesson 3: Concept and different parts of a fraction $\frac{1}{4}$

a) Prerequisites/Revision/Introduction

Ask pupils to individually divide a whole into 2 equal parts. Write and read a fraction $\frac{1}{2}$, differentiate a numerator from a deomiator in the fraction $\frac{1}{2}$.

b) teaching and learning materials:

Chalkboard, chalks, sticks, orange, pineapple, knife, paper, pair of scissors, pupil's book drawings and any other material for cutting available in the school environment.

c) learning activities

- **Activities for introduction**
  - Using different objects for cutting, teacher helps pupils to understand and discover that a whole can be divided into 4 equal parts.
  - Teacher may divide an orange into 4 equal parts and then show pupils how 4 equal partscan be putted together to make a full orange or a whole.
  - Teacher may ask 4 pupils to equally share 1 orange and then asks other pupils to find a share of each pupil. He/ she explains to pupils that each part is **a quarter** or **1 part out of 4 equal parts** of an orange.

- **Demonstration activities**

  - Using cut outs of a square on different papers, teacher asks pupils to find out 4 different parts which can be putted together to make a square. Then, he/she asks pupils to compare the 4 parts and discover that they are all equal.

  - Teacher asks pupils to fold a paper and then divide it into 4 equal parts and then compare the 4 parts in order to find that the 4 parts are equal. He/she leads pupils to find out that one **part is aquarter of a whole** or **1 part out of 4 equal parts.**

  - Teacher asks pupils to observe different pictures in the pupil's book, explain how a whole is divided into 4 equal parts and show $\frac{1}{4}$ of a whole.
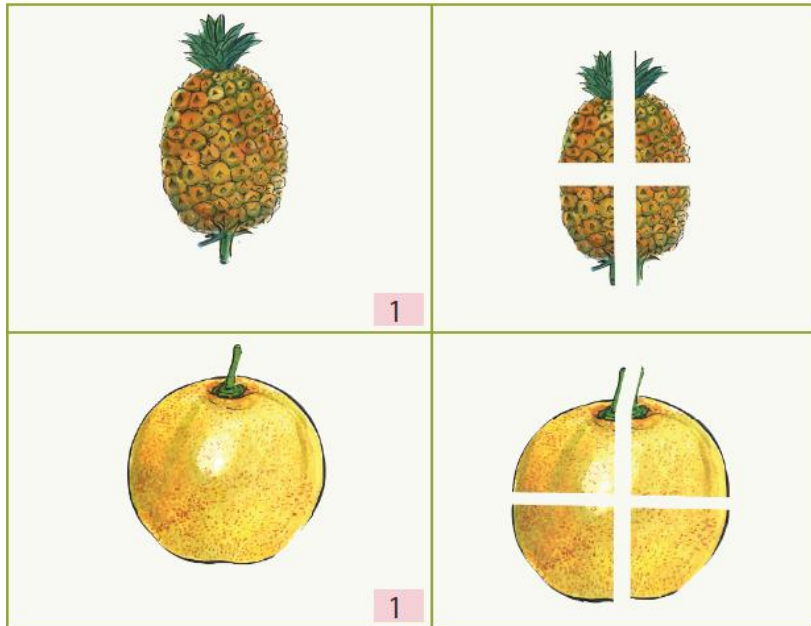
- Teacher leads pupils on how to write and read the fraction $\frac{1}{4}$.

  He/shehelps them to read and write $\frac{1}{4}$ on chalkboard and then I their notebooks.

- Teacher helps pupils to understand that $\frac{1}{4}$ is a fraction made by 2 parts which are numerator and deomiator.

Example: In the fraction $\frac{1}{4}$, the numerator is 1 and the denominator is 4

- **Reinforcement activities**
  - In pairs, teacher asks pupils to use real objects like : oranges, avocadoes, papers, etc , divide them into 4 equal parts and then show a half of a whole or $\frac{1}{4}$ of a whole.
  - Teacher can use drawinngs of different shapes(rectangle, square…) divided into 4 equal parts and asks pupils to individually shade a half or $\frac{1}{4}$ of a shape.
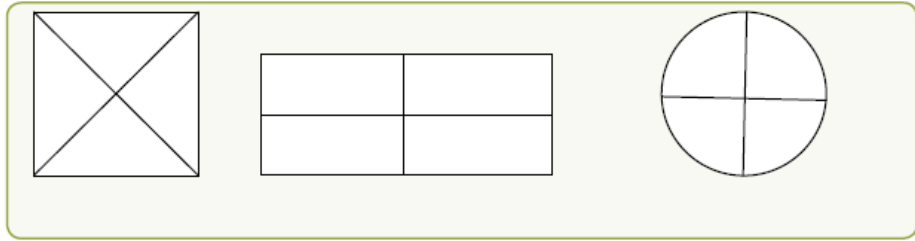
- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home. All set activities should provide to every pupil the opportunities to demonstrate and apply the new concept learnt in a range of situations. Teacher can asks pupils to write and read the fraction $\frac{1}{4}$ orfind out wherethe fraction $\frac{1}{4}$ is written on different materials .

Lesson 4: End unit assessment 8

a) Prerequisites/Revision/Introduction

Before the end unit assessment:

- Teacher ensures that pupils master the following: concept of fractions $\frac{1}{2}$ and $\frac{1}{4}$, write and read the fractions $\frac{1}{2}$ and $\frac{1}{4}$. Divide a whole into equal parts and show a half or a quarter of a whole.
- Teacher relates different revision activities to real life situations or pupils' daily life

b) Examples of end unit assessment questions

1. **Shade and show a fraction $\frac{1}{2}$ on the following shapes**
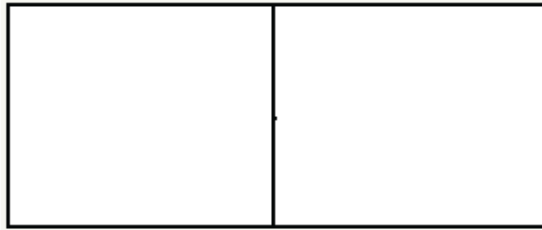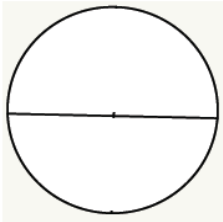
2. Write a fraction which matches with the shaded part in yellow.
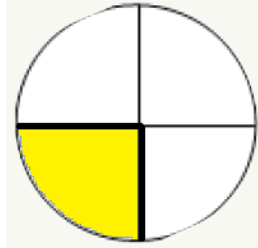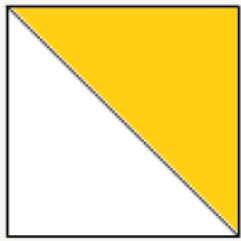
3. Look at the two girls Josiane and Marthe. Explain how they can equally share one pineapple. Use a fraction to write a share of every one.

4. Pupils in small groups of 4, are given a paper and then asked to divide it into 4 equal parts. Every pupil in groups take 1 part out of 4 equal parts and write on it a fraction $\frac{1}{4}$.

Notes:
  - Teacher asks pupils to individually or in pairs work out different assessment questions and then he/she make an individual correction.
  - Basing on the results from end unit assessment and before starting unit 5, teacher provides remedial or reinforcement activities for pupils in need.

UNIT 9: NUMBER PATTERNS

9.1 Key Unit Competence

Finding the missing number in a number pattern and in 1-digit numberor in 2-digit number.

9.2 Prerequisite knowledge and skills

Pupils will perform well in this unit if they master and know how to apply the following: count 1 to 100 objects, read and write numbers from 0 to 99, compare two numbers between 1 and 99, make an ascending or descending order on numbers from 1 to 99, decompose a 2-digit numbers into ones and tens, add or subtract 2 numbers between 1 and 99 whose sum or difference does not exceed 99.

9.3 Cross-cutting issues to be addressed

Through different tasks and activities, the following cross-cutting issues have to be addressed in this unit:
- Inclusive education: ensure that the selected teaching and learning techniques, teaching aids promote education for all.
- Peace and value Education: encourage learners to respect others' views and thoughts during group works and class discussions
- Gender: ensure the equal opportunity of boys and girls in the lesson participation.
- **Environment and Sustainability:** ensure that pupils are encouraged to discuss effects of environment and sustainability through solving problems involving fiding missing numbers in a number patterns, in addition or in subtraction.
- **Financial education**: lead pupils to make appropriate financial decisions through word problems that involving four basic opedifferencens.

9.4. list of lessons

UNIT 9: NUMBER PATTERNS(8 Periods)		
Lesson title	**Learning objectives**	**Number of**

			periods
1	Introductory activity	Arouse the curiosity of learners on the content of this unit.	1
2	Concept of a number pattern involving addition	Make number patterns with a constant difference / interval and find a missing number in number patterns that involve addition.	1
3	Common difference in a number pattern involving addition	Find the difference between 2 consecutive numbers in number patterns that involve addition.	2
4	Concept of a number pattern involving subtraction	Make number patterns with a constant difference between 2 consecutive numbers and find a missing number in number patterns that involve subtraction.	1
5	Common difference in a number pattern involving subtraction	Find the difference between 2 consecutive numbers in number patterns that involve subtraction.	2
6	End unit assessment 9	Make number patterns with a constant difference between 2 consecutive numbers and find a missing number in number patterns that involve addition or subtraction.	1

Lesson 1: Introductory activity

This lesson is delivered through a conversation between teachers and pupils. The teacher uses pictures in the pupils' book and asks different prompting questions to pupils in order to get their predictions about the unit to be learnt.

Teacher asks pupils to observe a picture in their pupil's book and find out that avocadoes are arranged as follow: 1, 3, 5,7,9, ...

Example of questions to be asked basing on the picture in pupil's book:
- Look at the picture. What do you see?

- How many avocadoes are on each row? Write the numbers inn figure.
- From one raw to another, how many avocadoes of difference or more added?
- Is the difference in avocadoes or the number of avocadoes to be added from one raw to another raw   rest the same?
- Arrange the number of avocadoes   from the smallest to the biggest number and vice versa.

As it is at the beginning of the unit, the teacher has to value all answers from pupils. All answers are valid because the aim of the introductory activity is to get from pupils the predictions on the unit to be learnt. Teacher end the conversation by telling pupils that one can make   a number pattern by adding or subtracting a common difference   on the first number.

Lesson 2: Concept   of a number pattern and common difference in a number pattern involving addition

a) Prerequisites/Revision/Introduction

Teacher may test if pupils are able to count, read, write and compare numbers from 1 to 99. He/ she may test if pupils are able to add and subtract numbers between 0 and 99 whose sum and difference   does not exceed 99.

b) teaching and learning materials
Chalkboard, chalks, notebooks, pens, pupil's book, charts containing pictures of groups of objects, number cards containing numbers from 0 to 99.
c) learning activities
- **Activities for introduction**
In 6 small groups numbered from 1 to 6, teacher asks pupils to make groups of real objects (small stones, beans, bbottle tops,…) in the following manner: 1st group collect 3 objects, 2nd group collect 2 more objects than the 1st , 3rd group collect 2 more   objects than the 2nd and so on until the 6th group.

Teacher   asks all groups to write the number of objects they collected and then order those numbers from 3 to 13

- **Activities for demonstration**
1.   Concrete activity

Using real objects, teacher shows how to make a number pattern by adding a constant term called **common difference** .

Teacher uses an example of beans and help pupils to make different groups of beans by adding 2 more beans to the first group.

Example: groups of beans by adding 2 to the first group 2, 4, 6, 8, 10, 12…

Note: This activity can be done using a different number to be added, example 3 and make a new sequence 3, 5, 7, 9, 11, 13,15

2. Semi-Concrete activity

Using pictures of groups of objects in the pupil's book, teacher asks pupils to count and write the number of objects in each group. He/ she help them to find out that between every 2 consecutive numbers there is a common difference. Finally, teacher helps pupils to make a number pattern by arranging those numbers from the smallest to the biggest number which is less than 99.
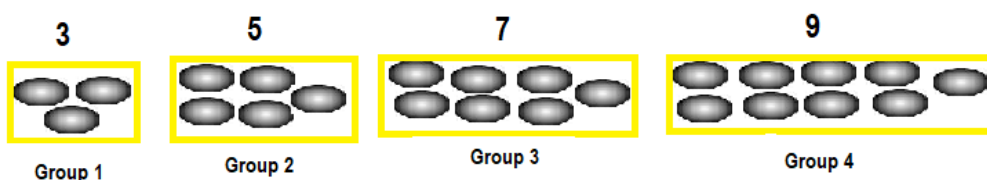
Note: this activity can be done using a different number between 1 and 99, but with common difference between 2 consecutive numbers. The common difference between the 2 consecutive number is 2.

c) Abstract activity

Teacher helps pupils to write and read aloud a mathematical sentence on number patterns less than 99.

Examples: 3 5 7 9 , is a number pattern or a number sequence

- **Reinforcement activities**
  - In pairs, teacher asks pupils to make 7 groups of objects given the number of objects in the first group and the number of objects to be added to the 2nd, 3rd, 4th, 5th, 6th and 7th group.
  - Pupils are requested to write the number of objects in each group and then make an order starting to the smallest number.
  - Individually, teacher gives to the pupils the fist number and the common number to be added or pattern to get the 2nd, 3rd, 4th, 5th… and asks pupils to find out the following 4 or 5 terms of the number sequence.

Example: the first number of the number sequence is 20 and by adding 3 the the first term, one can find out 5 consecutive terms of the sequence as follow: 20, 23, 26, 29, 32 and 35

- Teacher asks pupils to work out activities on finding the missing numbers in a number sequence in their pupil's book.

1	2	3	4	5	6	7	8	9	10
11	12	...	...	15	16	...	...	...	20
21	...	23	...	...	...	...	28	...	30
31	...	...	...	...	...	...	...	39	40
41	42	43	44	45	...	...	...	...	50
51	52	53	54	55	...	...	...	...	...
61	...	...	...	...	...	...	...	...	70
71	...	...	75	...	...	...	...	...	80
...	82	...	84	...	...	87	...	...	...
91	...	...	...	...	...	...	...	...	100

- **Application activities**

Using pupil's book, teacher asks pupils to individually or in pairs work out the activities on number sequence and finding the missing numbers.
Example: Make addition and fill in the missing numbers in the tables

- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home. All set activities should provide to every pupil the opportunities to demonstrate and apply the new concept learnt.

Examples:

1. Given the first number 12 of the number sequence and by adding 2 on the the first term, find out 5 consecutive terms of the sequence.

2. Observe the common difference between consecutive numbers, find the number pattern, fill in the missing numbers

2	4	...	8	...	...	14	16	...	20
5	8	11	...	17	20	...	...	29	32
5	10	...	20	...	30	35	...	...	50
10	20	30	40	...	...	...	...	...	100

3. Observe the given numbers in the table and find out the common difference or common added term to get the number sequence.

20	25	30	35	40	45	50	55	60	65	70
25	30	35	40	45	50	55	60	65	70	75

Lesson 3: Concept   of a number pattern and common difference in a number pattern involving subtraction

a) Prerequisites/Revision/Introduction

Teacher may test if pupils are able to count, read, write and compare numbers from 1 to 99. He/ she may test if pupils are able to add and subtract numbers between 0 and 99 whose sum and difference   does not exceed 99.

b) teaching and learning materials
Chalkboard, chalks, notebooks, pens, pupil's book, charts containing pictures of groups of objects, number cards containing numbers from 0 to 99.
c) learning activities
-   **Activities for introduction**
In 5 small groups numbered from 1 to 5, teacher asks pupils to make groups of real objects (small stones, beans, bbottle tops,…) in the following manner: 1st group collect 30 objects, 2nd group collect 2 less objects than the 1st , 3rd group collect 2 less objects than the 2nd and so on until the 5th group.

Teacher   asks all groups to write the number of objects they collected and then order those numbers from 30 to 22

- **Activities for demonstration**
1. **Concrete activity**

Using real objects, teacher shows how to make a number sequence by subtracting a constant term called **common difference** .
Teacher uses an example of beans and help pupils to make different groups of beans by subtracting 3 beans from the first group.
 **Example**: groups of beans by subtracting 3 from the first group 45, 42, 39, 36, 33, 30…

Note: This activity can be done using a different number to be subtracted, example 2 and make a new sequence 30 , 28, 26, 24, 22, 20… He/ she help them to find out that between every 2 consecutive numbers there is a common difference

2. **Semi-Concrete activity**
Using pictures of groups of objects in the pupil's book, teacher asks pupils to count and write the number of objects in each group. He/ she help them to find out that between every 2 consecutive numbers there is a common difference. Finally, teacher helps pupils to make a number pattern by arranging those numbers from the biggest to the smallest number which is less than 99.
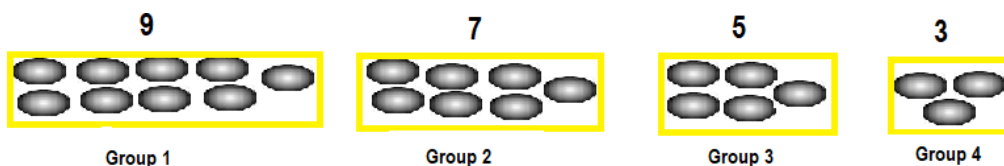
Note: this activity can be done using a different number between 1 and 99, but with common difference between 2 consecutive numbers. The common difference between the 2 consecutive number is 2.

3. **Abstract activity**
Teacher helps pupils to write and read aloud a mathematical sentence on number patterns less than 99.
Examples: 9   7 5   3 , is a number pattern or a number sequence

- **Reinforcement activities**
  - In pairs, teacher asks pupils to make 7 groups of objects given the number of objects in the first group and the number of objects to be subtracted form the 1st and then from the 2nd, 3rd, 4th, 5th, 6th and 7th group.

- Pupils are requested to write the number of objects in each group and then make an order starting to the biggest number.
- Individually, teacher gives to the pupils the fist number and the common number to be subtracted to get the 2nd, 3rd, 4th, 5th… and asks pupils to find out the following 4 or 5 terms of the number sequence.

Example: the first number of the number sequence is 50 and by subtracting 3 from the first term, one can find out 5 consecutive terms of the sequence as follow: 50, 47, 44, 41, 38 and 35

- Teacher asks pupils to work out activities on finding the missing numbers in a number sequence in their pupil's book.

10	9	8	7	6	5	4	3	2	1
20	19	...	...	16	15	...	...	...	11
30	...	28	...	...	...	24	23	...	21
40	...	...	37	...	...	...	...	32	31
50	49	48	...	46	...	44	...	...	41
60	59	...	57	56	...	...	...	...	...
70	...	...	...	...	...	...	...	...	61
80	...	...	...	76	75	...	...	...	...
90	89	...	87	...	...	84	...	82	...
100	...	98	...	...	...	...	93	...	...

- **Application activities**

Using pupil's book, teacher asks pupils to individually or in pairs work out the activities on number sequence and finding the missing numbers.

Examples:

1. Given the first number 40 of the number sequence and by subtracting 2 on the the first term, find out 5 consecutive terms of the sequence.

2. Fill in the blancks with the missing numbers

60	55	...	45	...	35	...	25	...	15

3. Make subtraction and fill in the missing numbers in the tables

-10	20	30	40	50	60	70	80	90
	10	.	.	.	50	.	.	.

14	24	34	44	54	64	74	84	94
10	.	.	.	.	.	.	.	90

- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home. All set activities should provide to every pupil the opportunities to demonstrate and apply the new concept learnt.

Examples:

1. Observe the common difference between consecutive numbers, find the number pattern, fill in the missing numbers

30	29	28	27	...	...	24	...	...	21
40	38	36	...	32	30	...	...	24	22
50	47	...	41	38	...	32	29	...	23
60	55	...	45	...	35	...	25	...	15
90	...	70	...	...	40	30	...	...	0

2. Observe the given numbers in the table and find out the common difference or common substracted number to get the number sequence.

14	24	34	44	54	64	74	84	94
10	.	.	.	.	.	.	.	90

Lesson 4: End unit assessment 9

a) Prerequisites/Revision/Introduction

Before the end unit assessment, teacher ensures that pupils master and know how to find the missing number and the common difference in a number sequence.

b) Examples of end unit assessment questions

1. Fill in the blancks with the missing numbers

a)

10	…	30	…	50	…	70	…	90

b)

90	…	80	..	70	65	….	….	…	45

2. Ana has 10 bananas and she has 2 more bananas than Monica, How many bananas does Monica have? If Monica has 2 more bananas than Sara , how many bananas does Sara have?

3. Find the common difference between every two consecutive numbers in the following sequence 80; 70; 60; 50...

4. Make 10 groups of beans so that the 1st group is composed by 2 beans, the 2nd group composed by 4 beans and so on until to the 10 th group of beans. The common difference between 2 consecutive numbers is 2.

Notes:
- Teacher asks pupils to individually or in pairs work out different assessment questions and then he/she make an individual correction.
- Basing on the results from end unit assessment and before starting unit 10, teacher provides remedial or reinforcement activities for pupils in need.

UNIT 10: MEASURING THE LENGTH LESS THAN OR EQUAL TO 10 m

10.1 Key unit competence
Measuring, comparing length of various objects having the length not exceeding 10 m, working out exercises on addition and subtraction of length Measuments.

10.2 Prerequisite knowledge and skills
Pupils will perform well in this unit if they master and know how to apply the following: count 1 to 100 objects, read and write numbers from 0 to 99, compare two numbers between 1 and 99, make an ascending or descending order on numbers from 1 to 99, add or subtract 2 numbers between 1 and 99 whose sum or difference does not exceed 99.

10.3 Cross-cutting issues to be addressed

Through different tasks and activities, the following cross-cutting issues have to be addressed in this unit:
- Inclusive education: ensure that the selected teaching and learning techniques, teaching aids promote education for all.
- Peace and value Education: encourage learners to respect others' views and thoughts during group works and class discussions
- Gender: ensure the equal opportunity of boys and girls in the lesson participation.
- **Environment and Sustainability:** ensure that pupils are encouraged to discuss effects of environment and sustainability through solving word problems involving addition and subtraction of length measurements

10.4. List of lessons

<table>
<tr><td colspan="4">UNIT 10: MEASURING THE LENGTH LESS THAN OR EQUAL TO 10 m (16 Periods)</td></tr>
<tr><td></td><td>Lesson title</td><td>Learning objectives</td><td>Number of periods</td></tr>
<tr><td>1</td><td>Introductory activity</td><td>Arouse the curiosity of learners on the content of this unit and the importance of length measurements in real life.</td><td>1</td></tr>
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<tr><td>4</td><td>Reading and writing meter "m"</td><td>Read and write length of 1 meter "1 m".</td><td>1</td></tr>
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</table>

	does not exceed 10 m	sum does not exceed 10 m.	
8	Word problems on addition of lengths whose sum does not exceed 10 m	Solve word problems involving addition of lengths whose sum does not exceed 10 m.	1
9	Subtraction of lengths whose difference does not exceed 10 m	Subtract 2 lengths whose defference does not exceed 10 m.	2
10	Word problems on subtraction of lengths whose difference does not exceed 10 m	Solve word problems involving subtraction of lengths whose defference does not exceed 10 m.	1
11	End unit assessment 10	Measure , write, read, compare, add and subtract lengths less or equal to 10 m.	2

Lesson 1: Introductory activity

This lesson is delivered through a conversation between teachers and pupils. The teacher uses pictures in the pupils' book and asks different prompting questions to pupils in order to get their predictions about the unit to be learnt.

Example of questions to be asked basing on the picture in pupil's book:
- Look at the picture. What do you see?
- What do pupils are doing?
- What do pupils are using to measure lengths of the garden? school?
- Do you think all sides of the classroom have the same lengths? Which side is longer? Which side is shorter?
- Which material or tool can be used to find the shortest or the longest length of the classroom?
- Can you use span of hand, steps of legs or feet to measure the length of the classroom?
- Can you use ropes, steps of legs, or sticks to measure the length of the garden?

As it is at the beginning of the unit, the teacher has to value all answers from pupils. All answers are valid because the aim of the introductory activity is to get from pupils the predictions on the unit to be learnt. Teacher ends the conversation by telling pupils that lengths of objects are measured to differentiate the shortest from the longest or the shortest from the tallest object.

Lesson 2:   Concept of lengths

a) Prerequisites/Revision/Introduction

Teacher may ask pupils to reading and writing numbers from 1 to 99 and compare 2 groups of objects by showing a group with many or less objects.

b) teaching and learning materials:

Chalkboard, chalks, sticks with different lengths, long ropes , notebooks, pens, pupil's book, charts containing pictures of lengths of objects.

c) learning activities

- **Activities for introduction**
  - Teacher talk about different lengths of objects and different distances between place. He/she helps them to compare lengths or distances using the   following words: far, near, shorter, longer, taller

  Example: teacher can ask pupils to talk about the distance from home to school, distance from home to the market, distance from home to   the church and compare those lengths or distances using the following words: shorter, longer, taller
  1. The market is near our home
  2. The school is far from our home
  3. The distance from home to market is shorter than the   distance from home to the school
  4. The distance from home to school is longer than the   distance from home to the market.

  - Outside the classroom, teacher may leads   pupils   to   observe and compare   objects or distances with different lengths. It is not good to compare heights of pupils
  - Outside the classroom, Pupils may play a jumping game in pairs by showing who jumped a short or a long distance.
- **Demonstration activities**

Concrete activity :
  - In small groups, teacher distributes to pupils sticks of equal or different lengths. Then pupils are asked to arrange them from the shortest to the longest stick.

- Teacher helps them to use the following words : "shorter than", " longer than"

- Teacher uses sticks of the same lengths and helps pupils to compare them using the following words: two sticks have equal lengths or the length of 2 sticks is the same.

- Teacher may take two sticks of the same or different lengths in hands and asks pupils to show which stick is shor or long.

- Teacher may ask pupils to compare distance from their school with the other neighboring schools by telling the schoo which is near or far.
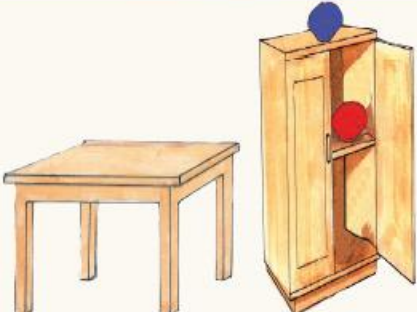
- **Reinforcement activities**

By means of the pupil's book, teacher leads pupils to observe pictures and find out which object is shorter or taller.

The tree is taller
The maize is shorter

The flat is taller
The house is...

- **Application and assessment activities**

The teacher provides activities to be done by pupils at school or at home. He / she uses a pupil's book and ask pupils to obseve and compare pictures by telling which is shorter or taller.

	A pincil is .... A blue pen is ....
	A flask is .... A cup is ....
	A table is......... A cupbord is ....

Lesson 3: Lengths measurement tools

a) Prerequisites/Revision/Introduction

Pupils may be asked to estimate, measure, tell and compare lengths of different objects or distances by showing which object is shorter or taller than the other and objects with equal lengths.

b) teaching and learning materials:

Chalkboard, chalks, sticks with different lengths, long ropes, tape measure, folding meter, meter ruler notebooks, pens, pupil's book, charts containing pictures of lengths of objects.

c) learning activities

- **Activities for introduction**

Outside rhe classroom, teacher asks pupils in pairs to use steps of legs measure and tell the number of steps between 2 pupils or 2 objects.

- **Demonstration activities**
  1. **Concrete activity**
  - In small groups or in pairs, teacher asks pupils to measure 2 sticks of equal or different lengths using hand span and then they write the number of hand spans they measured on each stick.
  - Teacher asks pupils to measure the length and the width of the classroom using steps of legs and then they write and compare the number of steps they measured on each side by showing which side is short or long.
  - Teacher asks pupils to measure the length and width of the classroom using a meter ruler or a rope of 1 meter and then they write and compare the number of meters they measured on each side by showing which side is short or long.
  - Teacher asks pupils to list other length measuring materials or tools they know and he/she help them to come up with the following :
    tape meter used by tailors to make sized clothes , folding meter used by carpenters to make sized wooden tools, meter ruler used in everday life to measure the standardized lengths.
  2. **Semi- Concrete activity**

Teachers leads pupils to observe the pictures of people using different length measuring tools in the pupil's book. He/ she asks them to name each measuring tool.
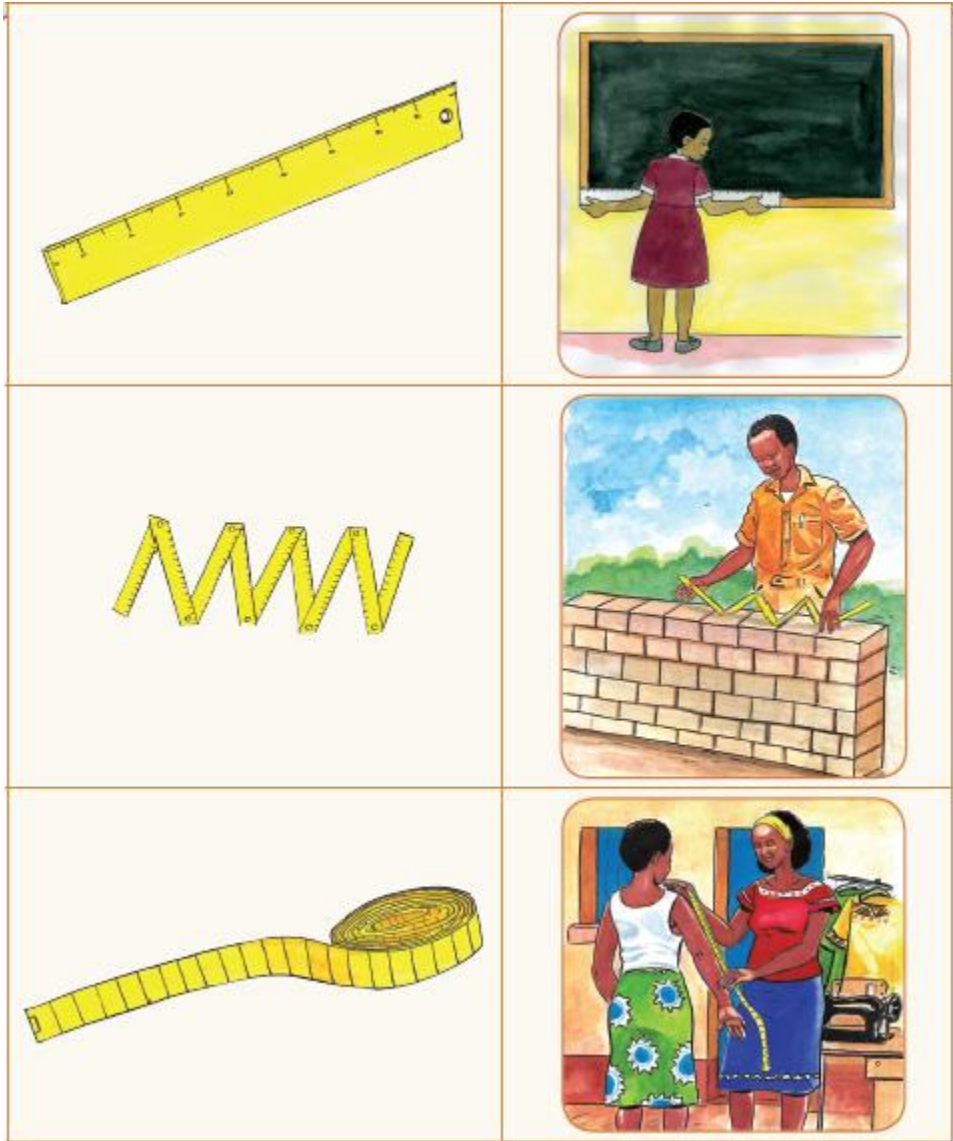
- **Reinforcement activities**

In small groups, teacher asks pupils to measure length of different objects using hand spans, steps of legs, feet, a rope or a stick of 1 meter, a meter ruler. He/she requests one pupil from each group to record the number of measured hand spans, steps of legs, feet and meters.

Finally, teacher helps pupils to understand that hand spans, steps of legs, feet, sticks, ropes are non-standard length measuring tools while a tape meter, folding meter and meter ruler are standards tools to measure lengths.

- **Application and assessment activities**

The teacher provides activities to be done by pupils at school or at home. Pupils may be asked to measure and record the measured lengths less or equal to 10 meters by using steps of legs and meter ruler. They may be asked to measure the length of a table, chalkboard, window…

Lesson 4: Reading and writing meter "m"

a) Prerequisites/Revision/Introduction

Pupils are asked to measure lengths using different tools and write the number of steps, sticks, meter ruler they found after measuring.

b) teaching and learning materials:
Chalkboard, chalks, sticks with different lengths, long ropes, tape measure, folding meter, meter ruler notebooks, pens, pupil's book, charts containing pictures of lengths of objects.

c) learning activities

- **Activities for introduction**

Teacher asks pupils to measure a rope using a meter ruler and tell the number of meter ruler they found after measuring. This activity can be done outside the classroom by measuring the distance between 2 pupils or 2 objects, the length of a playground, using steps of legs, a rope or a stick of 1 meter, a meter ruler.

- **Demonstration activities**
  1. **Concrete activity**

Teacher use a meter ruler to measure a length of 5m. He/ she asks pupils to observe and count the number of times a meter ruler is used while measuring length of 5m.

He/she write on chalkboard different measured lengths in meters and explain to pupils how to write meters "**m"** while measuring using a meter ruler:

- Measuring lengths using a meter ruler one time, you write 1 **m**
- Measuring lengths using a meter ruler two times, you write 2 **m**
- Measuring lengths using a meter ruler three times, you write 3 **m**
- Measuring lengths using a meter ruler four times, you write 4 **m**
- Measuring lengths using a meter ruler ten times, you write 10 **m**

  2. **Semi-Concrete activity**

Teacher helps pupils to read and write the lengths in meters as follows:

How to mathematically write lengths in meters	Hoew to read lengths in meters
5 m	5 meters
8 m	8 meters
3 m	3 meters

- **Reinforcement activities**

By means of pupil's book, teacher asks pupils to talk about lengths of different objects, write and read lengths of objects in meters.

A table has **1 meter** of lengths

A desk has **1 meter** of lengths

A classroom has **8 meters** of lengths

	A blackboard has **6 meters** of lengths
	A rope has **10 meters** of lengths

- **Application activities**

In small groups or in pairs, teacher asks pupils to estimate the lengths of different objects less or equal to 10 m before they measure them using a meter ruler. He/she requests them to measure lengths of familiar objects at school (length of and record the measured lengths in meters. He / she asks pupils to work out activities on reading and writing meters in the pupil's book.

Read	Write
1 meter	1 m
2 meters	2 m
3 meters	3...
4 meters	... m
5 meters	... m
6 meters	6 m
7...	7 m
8 meters	8 m
9...	9 m
10 meters	...m

- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home. He/she can ask them to measure the length of their house at home using steps of legs

and record the number of steps they measured. He/she may ask pupils to write and read lengths less or equal to 10 m.

Lesson 5: Measuring lengths of 10 m using a meter ruler

a) Prerequisites/Revision/Introduction

Pupils should be able to measure 10 m or less than 10 m on different objects using a meter ruler.

b) teaching and learning materials:
Chalkboard, chalks, sticks with different lengths, long ropes, tape measure, folding meter, meter ruler notebooks, pens, pupil's book, charts containing pictures of lengths of objects.

c) learning activities

- **Activities for introduction**
Through prompting questions, teacher asks pupils to talk about the length measuring tools.

Examples: which measuring tool a carpenter is using to measure the length of a desk, table? Which measuring tool a tailor is using to take measures of a person before tailoring a dress or any clothe?

- **Demonstration activities**

1. **Concrete activity**
In small groups, teacher asks pupils to measure a stick or a rope of 1 meter using a meter ruler, so that every one in group have a measuring tool of 1 meter.

He/she asks pupils to measure the length of the classroom using his /her measuring tool and then they say the number of times they find after measuring.

2. **Semi-Concrete activity**
Teacher asks at least 2 pupils to measure the length of 10 m using a meter ruler and they write the number of times they find after measuring.

Individually, teacher asks every pupil to measure 10 m using his/ her measuring tool (rope or stick of 1 meter) and write the number of times they find after measuring.

Teacher explains to pupils that a **meter** is a **standard** unit of length measurements. He /she explains that 1 meter measured using a meter ruler is the same as 1 meter measured using a folding meter or a tape meter.

Note: before measuring lengths using standard tools like a meter ruler, teacher has to encourage pupils to make estimations first.

- **Application activities**

In small groups, teacher asks pupils to estimate a length of 10 meters in the playing ground and then measure the estimated distance or length using a meter ruler to find the exact length of 10 m.

- **Assessment activities**

The teacher provides activities to be done by pupils at school or at home. He/she can ask them to measure the length of their house at home using a meter ruler and record the measured length in meters. He/she may ask pupils to measure lengths of different objects less or equal to 10 meters.

Lesson 6: Comparing lengths less or equal to 10 m

a) Prerequisites/Revision/Introduction

Pupils should be able to measure lengths of objects less or equal to 10m using a meter ruler. They are also be able to comapere numbers from 0 to 99.

b) teaching and learning materials:

Chalkboard, chalks, sticks with different lengths, long ropes, rope of 1 meter, tape measure, folding meter, meter ruler, notebooks, pens, pupil's book, charts containing pictures of lengths of objects.

c) learning activities

- **Activities for introduction**

In small groups, teacher gives to pupils 2 ropes of 5 meters and 3 meters and asks them compare them by showing which rope is taller than the other or which rope is shorter than the other. He /she asks them to measure the lengths of the 2 ropes using a meter ruler and then write the measured lengths.

Finally, Teacher asks pupils to compare 5 m and 3 m using the following comparison symbols: >, < or =

3 m ●————●————●————●

5 m ●————●————●————●————●

5 m > 3 m

- **Demonstration activities**

Teacher asks pupils to measure lengths of different objects (lengths less or equal to 10 m) and then asks them to compare them using " less than or greater than". Finally, they compare lengths using comparison symbols.

Example: 4 meters are **less than** 6 meters or 6 meters are **greater than** 4 meters (4m < 6m or 6 m > 4m)

- **Reinforcement activities**
In small groups, pupils work out the activities on lengths comparison in the pupil's book.

Example: Fill in the blanks with: >; < or =

5m….. 7 m	9m….. 4m	8 m….. 8 m

- **Application activities**
Individually, pupils work out the activities on lengths comprison in the pupil's book.

4 m ☐ 8 m	8 m ☐ 4 m
8 m ☐ 7 m	7m ☐ 8 m
10m ☐ 4 m	4 m ☐ 10m

Individually, pupils are given activities on lengths comprison to be done at school and at home (see pupil's book).

| 7 m ☐ 3 m |
| 1 m ☐ 4 m |
| 6 m ☐ 6 m |

| 6 m ☐ 9 m |
| 10m ☐ 6 m |
| 5 m ☐ 9 m |

Lesson 7: Addition of lengths whose sum does not exceed 10 m and word problems

a) Prerequisites/Revision/Introduction

Pupils should be abble to measure (10 m or less than 10 m) lengths of objects using a meter ruler. Also, they should be able to add 2 numbers from 1 to 99 whose sum does not exceed 99.

b) teaching and learning materials:
Chalkboard, chalks, sticks with different lengths, long ropes, rope of 1 meter, stick of 1 meter, tape measure, folding meter, meter ruler, notebooks, pens, pupil's book, charts containing pictures of lengths of objects.

c) learning activities

- **Activities for introduction**
Teacher asks 3 pupils to make a straight line by creating a distance between them. From the first pupil to the second there is a distance of 3 meters (3m) and from the second pupil to the third there is a distance of 5 meters (5 m).

Using a meter ruler, teacher asks a group of pupils to measure the length between the first and the second pupil and another group of pupils to measure the length between the second and the third pupil. He/she asks the third group to measure the length between the first and the third pupil. Finally, teacher asks pupils to add   the following: 3 m + 5m and compare the sum with the measures from the 3rd group.

- **Demonstration activities**

1. Concrete activity

Teacher helps pupils to accurately measure lengths using a meter ruler, a rope or a stick of 1 meter. He /she asks pupils to measure 2 consecutive lengths and then record their measures and make the sum.

Example: pupils may be asked to measure length of 3 meters (3m) first and then 2 meters (2 m). finally, they are requested to make a sum: 3 m + 2 m

2. Semi-Concrete activity

By drawing, teacher helps pupils to add lengths in meters
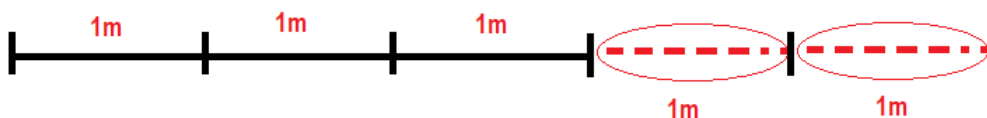
3. Abstract activity

Teacher write on the chalkboard **3 m + 2 m = 5 m**, He/ she explains that adding lengths measurements, we add numbers and write length unit (m).

- **Reinforcement activities**

Teacher asks pupils to solve a word problem that involing addition of length measurements in meters and individually, pupils try to sove it by showing their working steps on chalkboard. Teacher helps them to accurately add length measurements in meter and find the correct answer.

- **Application activities**

Individually, teacher asks pupils to work out addition activities and word problems involving addition on length measurements (see pupil'book).

Examples:

1. Make addition

1 m+ 1 m= (...) m   3 m+ 4 m= (...) m   2 m+ 3 m= (...) m

1 m+ 2 m= (...) m   5 m+ 5 m= (...) m   2 m+ 4 m= (...) m

1 m+ 5 m= (...) m   6 m+ 3 m= (...) m   9 m+ 1 m= (...) m

2. Solve the word problem:

Keza needs 4 m of piece of clothes for tailoring shorts and 5 m for tailoring dresses. How many meters Keza needs for both shorts and dresses?

- **Assessment activities**

Teacher provides activities to be done at school or at home. He/ she prepare word problems related to real life situations.

Examples:

1. Make addition

8 m+ 2 m= (...) m   5 m+ 4 m= (...) m   2 m+ 4 m= (...) m

3 m+ 5 m= (...) m   7 m+ 3 m= (...) m   2 m+ 5 m= (...) m

2. Solve the word problem:

Samson plants trees on 6 m. Simon plants trees on 3 m. Samson and Simon plant trees on how many meters all together?

Lesson 8: Subtraction of lengths whose defference does not exceed 10 m

a) Prerequisites/Revision/Introduction

Pupils should be able to measure and add length measurements whose sum does not exceed 10 meters. They should be able to subtract 2 numbers between 1 and 99.

b) teaching and learning materials:

Chalkboard, chalks, sticks with different lengths, long ropes, rope of 1 meter, stick of 1 meter, tape measure, folding meter, meter ruler, notebooks, pens, pupil's book, charts containing pictures of lengths of objects.

c) learning activities

- **Activities for introduction**

In small groups, teacher gives to pupils 2 ropes of different lengths and which are less than 10 meters. He/ she asks them to measure and record their lengths in meters.

Example: one group of pupils can be given a rope of 9 meters (9m) and another rope of 3 meters (3m). teacher asks them to measure the 2 ropes using a meter ruler, compare their lengths and then find out the difference in lengths.

- **Demonstration activities**

1. Concrete activity

Teacher helps pupils to discover, by measuring, that a rope of 9 meaters (9m) is longer than a rope of 3 meters (3m) and the difference in lengths is 6 meters (6m).
Using a pair of scissors, teacher may ask pupils to cut out 3 meters from 9 meters of rope and then measure the length of the remaining rope which is 6 meters (6 m).

2. Semi-Concrete activity
Using a meter ruler, pupils may be asked to measure, draw and write 3 meters on the chalkboard, and then measure, draw and write 2 meters on the chalkboard. Teacher asks them to find the difference between the 2 lengths which is 1 meter.
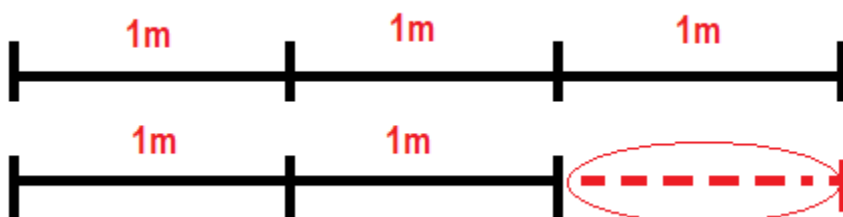
3. Abstract activity
Teacher helps them to mathematically make subtraction of length measurements:
  - $9 \text{ m} - 3 \text{ m} = 6 \text{ m}$
  - $3 \text{ m} - 2 \text{ m} = 1 \text{ m}$

Teacher gives additional subtraction activities
  - $5 \text{ m} - 2 \text{ m} = \ldots$
  - $9 \text{ m} - 1 \text{ m} = \ldots$

- **Reinforcement activities**
In small groups, teacher asks pupils to work out subtraction activities and solve word problems that involing subtraction of length measurements in meters by showing their working steps on chalkboard. Teacher helps them to accurately subtract length measurements in meters and find the correct answers (see pupil's book)

Examples:

1. Make subtraction

4 m - 1 m = (...) m   5 m - 5 m = (...) m   8 m - 4 m = (...) m

7 m - 2 m = (...) m   6 m - 3 m = (...) m   9 m - 1 m = (...) m

2. Solve the word problem:

At school, they request us to plant trees on 5 meters. We planted trees on 3 meters, how many meters remained for us to plant all trees?

-         **Application and assessment activities**

Individually, teacher gives subtraction activities and word problems involving subtraction of length measurements (see pupil's book). The provided activities shoul be done at school or at home.

5 m - 4 m = (...) m   7 m - 3 m = (...) m   4 m - 4 m = (...) m

Lesson 9: End unit assessment 10

a) Prerequisites/Revision/Introduction

Pupils should be able to measure lengths less or equal to 10 m, add and subtract length measurements as well as solving word problems that involving addition and subtraction of length measurements in meters.

b) teaching and learning materials:

A meter ruler, a rope or a stick of 1 meter, notebooks, pens and chalkboard, …

c) Examples of end unit assessment questions

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1. work out the following addition and subtraction exercises:

  • 6 m + 4 m = ….

  • 10 m – 4 m=….

  • 6 m +…m = 9 m

2. Solve the following word problems

  • Mary needs 4m of clothes for tailoring shorts and 5 m of clothes for tailoring a coat. How many meters of clothes does she buy?

- John bought a rope of 10 m and he shared it with Mary. Now john has 4 m only. How many meters of rope does john give to Mary?

3. In pairs, mearure and record the length of your classroom in meters, using a meter ruler

4. In pairs, discuss and find out 3 examples on the importance of length measurements in your every day life.

Notes:
- Teacher asks pupils to individually or in pairs work out different assessment questions and then he/she make an individual correction.
- Basing on the results from end unit assessment and before starting unit 11, teacher provides remedial or reinforcement activities for pupils in need.

UNIT 11: MAIN PARTS OF THE DAY AND 7 DAYS OF THE WEEK.

11.1 Key unit competence
Order and compare main parts of the day, days of the week and; key activities undertaken on daily basis.

11.2 Prerequisites
At the end of this unit, pupil will be able to count, read, write, compare, analyze, add and; subtract numbers from 0 up to 99

11.3 Cross cutting issues to be addressed:
Promote the culture of peace building, gender equity, environment protection, economic education and; education for all.

11.4. List of lessons

UNIT 11: MAIN PARTS OF THE DAY AND 7 DAYS OF THE WEEK (8 Periods)		
	Lesson title	**Learning objectives**	**Number of periods**
1	Introductory activity	Arouse the curiosity of learners on the content of this unit.	1

2	Main parts of the day and characteristics	Differentiate correctly main parts of the day and specific characteristics.	2
3	Days of the week	List appropriately days of the week.	2
4	Key activities carried out every day.	Give examples of main activities done specifically for each day of the week.	2
5	End unit assessment 11	Perform well end unit assessment on ordering and comparing main parts of the day, days of the week and key activities ndertaken respectively.	1

Lesson 1: Introductory activity

a) The teacher invites pupils to attentively observe the given picture and its components, and then answer related questions: School environment including: Pupils heading to the school from 2 different roads and; mountains next to the school with the sun rise and, 2 farmers (male & Female) near the said roads. On the other side of the school, there is a baby who is asleep and; covered by a mosquito net with a calendar located on the wall.

b) The teacher asks some questions while pupils are still observing the given picture

Some examples of questions that can be asked by the teacher:
- o What do you see on this given picture?
- o How many people do you see?
- o What does every person do?
- o What time is it now?
- o Is it in the morning or in the evening?
- o On which day?
- o Why?
- o What do you do in the morning?
- o What do you do in the evening?
- o When do you go to the church?

The teacher concluded the lesson while telling the pupils that people sleep during the night while they carry out different activities during the day. Some people go to the church on Sunday while others go there on Friday or Saturday and perform other tasks in other days of the week such as: studying, digging, selling, work in offices or factories, etc.

Lesson 2: Main parts of the day and their characteristics

a) Prerequisites

Pupils should be able to distinguish "day" and "night" based on different activities carried out in their daily life respectively. The teacher can ask some question to pupils for assessing the pupils' prerequisites.

b) Teaching aids
Pictures of sun, moon, stars, electric lumps, chalks, black board**,** notebooks, books, pens, pupils' books, drawings/pictures from the pupil's books.

c) Learning activities

- Activities for introduction

The teacher can read/tell story or show a video in light to the core parts of the day (morning, noon, evening and night). Then he/she can ask pupils to state what they have listened to, or seen/watched from the movie.
At this step, the teacher asks pupils to share ideas on their daily operations/activities. He/she can tell pupils to logically arrange their daily activities: to wake up, put on clothes, take shower/bathing, make up, brush teeth,

- Demonstration activities

The teacher calls up on pupils to observe attentively pictures located in their books on the page…….Then, he/she asks various questions that lead to the lesson of the parts of the day, characteristics. In accordance to the pupils' observations from pictures, the teacher asks them when every activity is carried out: Morning, noon, Evening or night.

 Practical activity

The teacher puts pupils into different groups and; discuss on the following:
- o   What activities do you carry every morning?
- o   What activities do you carry at noon?
- o   What activities do you carry in the evening?
- o   Etc

At this level, the teacher facilitates pupils to discuss the characteristics of all parts of the day as follows:
- o   What is the difference between the "***morning*** "and "the ***evening"***?
- o   List down characteristics of the noon/day?
- o   List down characteristics of the night?

After listening to different pupils view points, he/she puts emphasis on the correct answers so that the pupils acquire the knowledge and skills related to the daily lesson.

Main characteristics of the Morning: moisture, clouds, chilly/cool, sunrise, time for carrying some activities like: schooling, farming, going to the duty, time to seek food or fodder

Main characteristics of the day: sunny time, clean sky, people performing different tasks, noisy of different things (people, vehicles, motorcycles, break and people resume their works, etc

Main characteristics of the evening: closure of all activities, pupils go back home, many people go back home from their different duties, sun set, chilly/freezing, darkness, lighting, diminution of noise

Key characteristics of the night: total darkness, stars, lighting, moon, time to sleep, significant reduction of noise, etc

Application and assessment activities

The teacher asks pupils to describe different parts of the day and their specific characteristics.
- o   He/she can show pupils pictures for matching activities undertaken and correct the part of the day related.
- o   The teacher gives a homework to ask their parents or family members various activities that they carry out in the morning, during the day, and in the evening

o The teacher gives homework to pupils for asking their parents
characteristics of the morning, the day, and the night.

In accordance to the pupil's feedback, the teacher can give more works/tasks so that pupils acquire skills and knowledge targeted.

Lesson 3: Days of a week and daily activities

a) Prerequisites

The pupils should be able to distinguish different parts of the day with the consideration of the start and the end of the day.

b) Teaching aids

Calendar, counters, cards of number from 1-7, drawings prepared by the teacher, pictures in the pupils 'books.

c) Learning activities

- **Revision activity**

The teacher asks pupils parts of the day and when the day ends:
   o The day ends or starts in the night?
   o When do you go to the church?
   o When do you go to the school/market?
   o Etc.

   Demonstration activities
   o The teacher can assist pupils to sing a song of containing 7days of the week and specific daily activities
   o He/she can ask pupils on which day they go to the church/market/school?
   o He reminds them that a week has 7days in total from MONDAY up to SUNDAY.

The teacher facilitates pupils to keep in mind that they study from MONDAY up to FRIDAY, and invite them to list down of activities undertaken by other people. At this level, he/she reminds pupils that they normally do not go to school on SATURDAY and SUNDAY (even though some have special individual coaching at home). He/she calls up on them to discuss different activities that are carried out on SATURDAY and SUNDAY: parents do not go to their duties and; Adventists go to the church on Saturday and Catholics and other remaining religions go to the church on SUNDAY. Finally, the teachers demonstrates pupils how to read the calendar in comprehensive way.

Practical activity

- The teacher invites pupils to observe attentively pictures located in their books on the page…….Then, he/she asks various questions related to 7days of the week and specific daily activities done.
- As per the pictures; the teacher asks pupils what they can observe/see as activities undertaken from MONDAY to SUNDAY.
- He/she asks pupils question about the song related to 7days of the week.

Examples
  o On which days of the week do you go to school?
  o When does your mother/father go to the duty?
  o What is the day of the week for the marker closer to your habitation/home?

– The teacher gives more exercises/tasks while asking pupils activities carried out by different people during 7days of the week.

- The teachers facilitate pupils' discussions into groups about their various daily activities.

Application and assessment activities
  o The teachers asks pupils to state 7days of the week and specific daily activities conducted from MONDAY up to SUNDAY.
  o He/she gives homework to the pupils for asking their parents which tasks they perform on daily basis   from MONDAY up to SUNDAY and connect them to the calendar.

Lesson 4: End unit assessment

a) Prerequisites

The pupils should be able to arrange and compare key parts of the days, 7 days of the week and different activities carried out every day. They must be able to read the calendar and indicate the current day. The teacher can asks technically different questions for cementing/ enhancing related skills and knowledge desired.

b) Examples of evaluation questions

1) The teacher calls pupils to pay attention and, then reads the following story many times. Se/she ends up asking them some soft questions related.
Note: Alternatively, the teacher can redesign and adapt the story to the level of pupils' capacity
At this step, pupils can then individually respond to the asked questions by

writing responses in their notebooks.

Alice goes to the market on Monday for shopping various food items, on Tuesday until Friday she goes to the duty. On Saturday; she cleans her home and goes to the church on Sunday with her husband and their 2 children.

Note: The teacher can design the said story while using a frame that contains the numbers from 1 up to 7.

Respond the following questions verbally:

 What does Alice do on Monday?
   o   What does Alice do on Tuesday?
   o   What does Alice do on Wednesday?
   o   What does Alice do on Thursday?
   o   What does Alice do on Friday?
   o   What does Alice do on Saturday?
   o   What does Alice do on Sunday?

2) List down the agenda of your activities from MONDAY up to SUNDAY:

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

3. Matching each activity undertaken and its corresponding day

Activity		Day
Picture of children going to school		6 & 7
Picture of priest & Christians within the church		1, 2, 3, 4&5
Picture of wedding ceremony/party		7

Note: On the question three; the teacher must take into consideration that pupils can come up with different authentic solutions according to the given context. However, the teacher has to get clear associated reason/rationale if need be.

UNIT 12: RWANDAN CURRENCY FROM 1Frw UP TO 100Frw

12.1 Key unity competence

Distinguish Rwandan currency from 1F up to 100F and solve various exercises on buying and selling items.

12.2 Prerequisites

For easy understanding of this unit, pupil should be able to count, read, write, compare, analyze, add and subtract number from 0 up to 100.

12.3 Cross cutting issues to be addressed

Promote the culture of peace building, gender equity, environment protection, economic education and; education for all.

12.4. List of lessons

	Lesson title	Learning objectives	Number of periods
UNIT 12: RWANDAN CURRENCY FROM 1Frw UP TO 100Frw (16 Periods)			
1	**Introductory activity**	Arouse the curiosity of learners on the content of this unit and the importance of money in real life.	2
2	Rwandan Coins and their values	Distinguish the Rwandan currency from 1Frw up to 100Frw.	2
3	Rwandan Coins and their features	Be able to distinguish Rwandan coins and their features.	2
4	Exchange of Rwandan currency from 1Frw up to 100Frw	To be able to exchange Rwandan currency from fro 1Frw up to 100Frw.	2
5	Addition of Rwandan currency from 1Frw up to 100Frw	Correctly add Rwandan currency from 1Frw up to 100Frw.	2
6	Subtraction of Rwandan currency from 1Frw up to 100Frw	Correctly subtract Rwandan currency from 1Frw up to 100Frw.	2
7	Word problems involving addition and subtraction of	Solve problems related to the Rwandan currency value, and	1

	Rwandan currency from 1Frw up to 100Frw.	give examples based on how the said currency is applied in buying and selling goods or services not exceeding 100Frw.	
8	The use of money.	Listing different uses of money.	1
9	Selecting items to buy from the given table	Be able to select items to buy from the given table.	1
10	Unit assessment 12	Perform well the use/application of Rwandan currency from 1Frw up to 100Frw.	1

Lesson 1: Introductory activity

This lesson will be taught in the form of a dialogue.

a) The teacher invites pupils to observe all components of the given picture and then answer questions related: Sequence of coins of 1, 5,10,20,50, 100 on the table and a Lady's shop and a man who is shopping and holding some money in his hands.

b) As pupils attentively observe the picture, the teacher asks them some questions and must be ready to get different insights from every pupil.

Examples of some questions that can be asked

What can you see on this picture? How many people are there? What is everybody doing? What can you see in this shop? What is the client holding in his hands? What is the need/desire of the seller? The client has got 100Frw in total-What do you think will happen if he buys only one pen?
Have you ever seen Some Rwandan francs? Who can tell the class their characteristics?

The teachers concluded the lesson of the day by enhancing the clear understanding that everyone has to give money to the seller in order to obtain the needed items. For being able to buy a pen, a notebook, a rubber, soap, etc. It is a condition to have cash with you.

Lesson 2: Rwandan currency from 1Frw up to 100Frw and their specific characteristics

a) Prerequisites

For easy understanding of this lesson, pupil should be able to count, read, write, compare, analyze, add and subtract number from 0 up to 100. The teacher asks some questions for assessing the pupils' level before the start of the new lesson.

b) Teaching aids: Chalk board, chalks, notebooks and pens, a set of different Rwandan currency coins, pictures/drawings prepared by the teacher, pupils books.

c) learning activities

- **Activities for introduction**

The teacher facilitates to discuss on the importance of the currency in their daily life.

Anitha has got 100Frw and went to the shop for buying 2 pens for her school going children. The kids were so happy and excited. They then went to the class and performed so well in school activities.

The teacher asks different questions related to the story with more emphasis on the importance of the currency as strategy to discover the new lesson by themselves.

- Demonstration activities

Visible example

At this step, pupils are assembled into small groups. The teacher shows the pupils the value of different coins from 1F up to 100Frw. At the same time, the teacher continuously writes on the chalkboard the value of every coin. Then; He/she distributes all coins to them for observations and manipulations as well as checking the value of each coin.

   Coin of one franc: 1Frw
   Coin of five francs: 5Frw
   Coin of ten francs: 10Frw
   Coin of twenty francs: 20Frw
   Coin of fifty francs: 50Frw
   Coin of one hundred francs: 100Frw

The teacher invites pupils to deeply observe all coins, and describe characteristics of each coin from 1Frw up to 100Frw.

After the tangible observation of all coins, the teacher asks pupils to attentively pictures of all coins of Rwandan currency in their books on page…and state the value of each coin.

Practical activity:

The teacher groups pupils into different groups; he/she then gives them various coins of Rwandan francs. Pupils observe them and discuss about all features of each given coin: size, engraved designs, colour and written number from 1Frw up to 100Frw

Application activities

In group discussions, the teacher gives pictures of various coins of Rwandan currency and; invite them to match the picture with its value respectively. Pupils do self-evaluation under the discussion facilitated by the teacher in order to understand well different attributes of Rwandan currency coins from 1F to 100Frw.

Assessment activities
The teacher gives pupils the class work or a home work. For the home work, the teacher tells pupils to ask parents examples of items that are equivalent to 100Frw.

Lesson 3: Exchange of Rwandan currency from1Frw up to 100Frw

a) Prerequisites

For easy understanding of this lesson, pupil should be able to correctly identify all coins of Rwandan currency from 1F up to 100F. In addition to this, Pupil should be able to add and subtract number of items not exceeding 100. The teacher can ask some questions for assessing pupils' level before proceeding to the new lesson.

b) Teaching aids

Chalk board, chalks, notebooks and pens, different Rwandan currency coins, pictures/drawings prepared by the teacher, of them and pupils books.

c) Learning activities

- **Revision activity**

The teacher gives tasks to pupils to assemble the coins (1Frw, 5Frw,10Frw, 20Frw,50Frw,100Frw) of the same value in the same package. The teacher asks pupils to put together different coins so as to have the total sum of 100Frw, 50Frw, 10Frw using all possible options.

- **Demonstration activities**

1. Concrete activity

The following activities are carried out into group works. Pupils share their findings together under the facilitation of the teacher before going to the next activity.

The teacher gives to pupils coins of the same value and ask them to make the total sum of 100Frw, 50Frw etc.

Example: Put together only coins of 20Frw so that you obtain 100Frw in total. How many coins of 20Frw have you used?

The teacher invites pupils to mix all given coins for making any given sum of money in total.

Example: Put together coins of 10Frw, 5Frw and 20Frw so that you obtain the sum of 50 Frw in total. How many coins did you use at each type?

The teacher randomly selects a coin and gives it to the pupils. At this step; he/she asks pupils to use their own ways to arrange different coins so as to have the same total value of the teacher's coin.

Example: Using your own thinking, put together various coins for making the total sum of 100Frw.

2. Semi-Concrete activity

The teacher shows pupils pictures that are in their books, that illustrate people that are exchanging money any given sum of money while using one type of coin.

- **Reinforcement activity**

The teacher gives pupils different sum of money to exchange using given coins. The teacher facilitates pupils' discussions how to precede once they have that cash with them.

- **Appplication activities**

The teacher gives pupils exercises of exchanging money that is not exceeding 100Frw, and show the balance once they buy items with the value that is less

than 100Frw. The teacher calls pupils to explain the Rwandan monetary importance in their daily life (from 1Frw up to 100Frw).

- **Assessment activities**

The teacher gives pupils the class work or homework. In addition; the teacher can give more related exercises to pupils that can enhance their deep understanding on Rwandan monetary importance (from 1Frw up to 100Frw).For example: buy food, clothes, schools materials……

Lesson 4: Addition and Subtraction of Rwandan currency not exceeding 100Frw

a) Prerequisites

For easy understanding of this lesson, pupil should be able to correctly identify all coins of Rwandan currency from 1Frw up to 100Frw. Exchange the sum of money in Rwandan currency not exceeding 100 Frw. In addition to this, Pupil should be able to add and subtract numbers from 1 up to 99.

b) Teaching aids

Chalk board, chalks, notebooks and pens, different Rwandan currency coins, counters, pictures/drawings of the coins of the Rwandan currency.

c) Learnning activities

- **Revision activity**

The teacher gives exercises to the pupils centered on exchanging Rwandan currency not exceeding 100Frw that done in group works. They use the following coins: 1Frw, 5Frw, 10Frw, 20Frw, 50Frw, 100Frw. The teacher gives pupils various coins (with different value) and; invites them to state total sum of money accordingly.

- **Demonstration activities**

1. Concrete activity

The teacher can take 2 coins of 50Frw and; then asks pupils how much does he/she have in total? One pupil can do this while writing on chalkboard: 50Frw +50Frw = 100Frw

2. Semi- Concrete activity

The teacher shows pupils how 2 or 3 coins that are put together can generate another big sum of money with same value as the big existing coin's value; and other options subtracting money are also applicable.

Note: The response has to be always less than 100 Frw in this context.

Example:

5Frw + 5Frw = 10Frw

1 Frw + 1 Frw = 2Frw

50 Frw + 50 Frw = 100Frw

50 Frw - 20 Frw = 30Frw

100 Frw -20 Frw = 80Frw

The teacher calls pupils to discuss the importance of adding and subtracting money with more focus on the correct balance to receive if need be. They also stipulate challenges that may be potentially faced by a person who is ignorant in counting money. **Example:** An ignorant kid who has got 100Frw in total and is going to buy a pen of 50Frw.

- **Reinforcement activity**

The teacher calls pupils to take their books on page…...He/she then invites them to observe all pictures that illustrate addition and subtraction of the sums of money in Rwandan currency that not exceeding 100 Frw and; solve related exercises. The teacher verbally designs many other similar problems on addition and subtraction with the connection to the daily life of pupils and pupils solve them accordingly. At this level of mastering the addition and subtraction challenges, the teacher facilitates pupils' debates on the monetary importance and what they can buy when they have got a certain sum of money not exceeding 100Frw.

- **Application and assessment activities**

The teacher gives individual tasks and, make correction accordingly. Finally, he/she can give another extra class work or homework. The said exercise should

comprise problems on addition and subtraction of money that capture the pupils' real life context.

Lesson 5: End unit assessment

a) Prerequisites

Before proceeding to the new lesson, pupils should be able to exchange the sums of money not exceeding 100Frw and also; performing well in exercises related to the addition & subtraction for certain sums of money as mentioned. The teacher can ask various questions for assessing pupils' skills and knowledge before moving forward.

b) Teaching aids
Notebooks, pens, different Rwandan currency coins, pictures/drawings of the coins of the Rwandan currency, pupils' book.

c) Examples of end unit assessment questions

Activity: List down coins of the Rwandan currency from 1Frw up to 100Frw; add and subtract the sum of the said money from 1Frw up to 100Frw, exchange them and highlight their importance.

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1) **Based on the collection of all coins on the table, pick and show the following coin:**

Coin of Five   Rwandan francs: 5Frw

Coin of ten Rwandan francs: 10Frw

Coin of hundred Rwandan francs: 100Frw

Coin of twenty Rwandan francs: 20Frw

Coin of fifty Rwandan francs: 50Frw

2) Define different options of exchanging the coin of 100Frw while using different smaller coins.

3) Find the correct answer

i) 50Frw - 20 Frw= …Frw

ii) 10Frw + 20 Frw= …Frw

iii) 50 Frw + 50 Frw = …Frw

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4) Fill in the missing money

i) 100 Frw = 50 Frw+ 30Frw + …Frw

ii) 50Frw = 20Frw + 10Frw + ….Frw

iii) 20 Frw= 10Frw+ 5 Frw+ ….Frw

5) Solve the following problems on the use of Rwandan currency

a) Muhire has got one coin of 100Frw in total and; what will be the balance Muhire will receive if he buys only biscuits of 50Frw?

b) Mukamana has got 100Frw in total and; she bought banana of 20Frw; a box of biscuits of 50Frw and then she bought a match box of 10Frw. How much money did she spend? How about her balance?

c) If you have a coin of 100Frw, determine the checklist of various items and tariff that you can buy without exceeding the said sum of money.

UNIT 13: LOCATION OF OBJECTS AND TYPES OF LINES
13.1 Key Unit competence
Locating objects and defining types of lines

13.2 Prerequisites
For easy understanding of this unit, pupil should be able to count, read, write, compare numbers that are not exceeding 100 and should be able to determine the location of a given place. The teacher can ask some related questions for studying the capacity of pupils before going ahead.
13.3 Cross cutting issues to be addressed
Promote the culture of peace building, gender equity, environment protection, economic education and; education for all.

13.4 List of lessons

UNIT 13: LOCATION OF OBJECTS AND TYPES OF LINES(16 Periods)		
Lesson title	Learning objectives	Number of perio

			ds
1	Introductory activity	Arouse the curiosity of learners on the content of this unit.	1
2	Front and back of an object	Determine the front and back of an object.	1
3	Top of and under of an object	Determine the top of and under of an object.	1
4	Right and left sides of an object	Determine the Right and left sides of an object.	1
5	Beyond and next to or near of an object	Determine Beyond and next to or near of an object.	1
6	Location of an object	Define the location of an object using appropriate directions.	1
7	Straight and curved lines	Show, draw straight and curvy lines and give examples of cases where they can be found.	2
8	Closed and open lines	Show, draw closed and open lines and give examples of cases where to find closed lines.	2
9	Broken lines	Show, draw Broken lines and give examples of cases where to find broken lines.	2
10	Dots located on; inside and outside of a closed line	Put dots located on; inside and outside of a closed line.	2
11	End unit assessment 13	Perform well the evaluation in relation to the location of different objects with the use of various types of lines.	2

Lesson 1: Introductory activity

a) The teacher invites pupils to thoroughly observe features of the given pictures and answer questions related: Trees were planted on the perimeter of a plot of land (broken lines, curvy lines and straight lines). On the top of trees there are birds and kites/eagles (some birds are on one tree, others are flying around at the top of the other tree).In the middle; of the said plot there is road.Under one of the trees on the left side of the road there is a goat while there is a cow on the right side of the road.

b) At this step when pupils are still observing the given picture, the teacher asks them some questions at the same time.

Examples of questions to be asked:

- o What do you see on this picture?
- o What is on the right side of the road?
- o What is on the left side of the road?
- o Where are eagles/kites?
- o Where are goats?
- o Where is the cow?
- o Trees were planted on which types of lines?
- o What are shapes of road lines?
- o Is there anybody who has ever seen the circle before?
- o Give examples of objects that are circle like in shape?
- o How many classrooms are there?
- o Are all classrooms close together?

The teacher concludes the lesson by telling pupils that next lessons will focus on location of objects and types of lines

Lesson 2: To show front, middle and back

a) Prerequisite

For easy understanding of this lesson, pupil should be able to line-up together on a straight line and recognize the fellow who does not do it properly. The teacher should organize pupils to do the said exercise for enhancing pupils 'ability. On the same line-up, the teacher asks pupils to mention the person who is in the front and at the back of them.

b) Teaching aids: Chalk board, chalks, notebooks, pens, books, pictures/drawings, desks, table and other things with various types shape or forms (straight, curvy lines and other items with circle like in shape)

c) Learning activities

- Activities for introduction

The teacher proceeds with the use of a game: he/she invites only 3 pupils (Keza,Kariza & Mariza) to line-up and then, asks the class who is in the front and at the back

Keza   Kariza   Mariza

- **Demonstration activities**

1. Concrete activity
Based on the line-up of other new 3 pupils (Paul, Mary and Lewis), the teacher asks the class: who is in the front? Who is at the back? Who is in the middle/centre? The teacher helps every pupil to understand the meaning of the new term "**middle/centre".**

At this step, the teacher invites more new pupils to line- up as per the following instructions: Paul in "**front", Lewis** in the **"middle"** and **Mary "at the back".** He/she then, asks the class if the exercise was correctly done by fellows. The teacher facilitates them to understand that each position depends up on the given *DIRECTION.* Consequently, the teacher asks the same pupils to change the direction and; asks the class who is in the front and at the back in this new exercise.

2. Semi-Concrete activity

The teacher shows pupils pictures in their book and then asks the location of a cat, a goat and a cock .

- **Reinforcement and application activities**

The teacher puts pupils into groups and; instructs them how to line-up: one in the front, another one at the back and last one in the middle. He/she then tell them to select one pupil among them as an instructor and; pupils continuously play the same game of locating fellows on the line as per the given DIRECTION. After this exercise, the teacher gives them exercises available in pupils' book. The pupils determine the location of each object as per the direction and the teacher corrects them when needed.

-    **Assessmennt activities**

The teacher gives different exercises to the pupils with different arranged tangible things or using pictures/drawings and calls them to determine what is located in the front, in the middle and at the back. He/she can also tell pupils to draw 2 trees on a sheet of paper, and 2 kids on another paper. Finally, he/she can tell pupils to hang drawings of trees in the front of the classroom and drawings of kids at the back of the classroom. The teacher assesses the level of pupils' comprehension of the lesson.

Lesson 3: To Locate the top and under

a) Prerequisites

For easy understanding of this lesson, pupil should be able differentiate "front" and "back" and, "top" and "under.The teacher asks pupils some questions to pupils to check their knowledge and skills related.

b) Teaching aids: Chalk board, chalks, notebooks, pens, books, chairs and other objects with the classroom, pictures/drawings, pupils' book and trees in school compound/garden.

c) Learning activities

- **Activities for introduction**
In the form of a game, the teacher requests pupils to look up and then look down.

- **Demonstration activities**
1. Concrete activities
   - The teacher tells pupils to put a math book on their table and ask them to repeat the following sentence: the math book is on the table.
   - The teacher puts other objects under the table/chair then asks pupils to locate them accordingly.
   - The teacher assists pupils to understand well the terms "ON" and "UNDER"

2. Semi-Concrete activities
The teacher tells pupils to attentively observe pictures in their book. They observe birds that are on the top of the tree, a kid that sits under the roof of the house and comment on them.

- **Reinforcement and application activities**

The teacher uses a ball or other objects and; gives pupils various exercises to locate them on or under the table.
The teacher uses also pictures/drawings and presents them to the pupils. At this level, the teacher asks pupils to locate different objects according to their position: On, Under, in front, at the back and in the middle

- **Assessment activities**

The teacher gives different exercises to pupils, and then he/she facilitates the final correction. The teacher gives more different exercises to the pupils for using the terms "*ON , in the and UNDER*".As an example, he/she can tell pupils to draw 2 trees on a sheet of paper, and 2 kids on another paper. At the end, he/she can tell pupils to put drawings of trees under the table and drawings of kids at on the table. The teacher monitors pupils' activities in order to assess the understanding of the new lesson. In addition, the teacher calls pupils to go outside of the classroom and invite them to observe different objects that for example on the top of trees, under the tree, the house, etc.

Lesson 4: To locate the left and right sides

a) Prerequisites

For easy understanding of this lesson, pupil should be able to differentiate "front" and "back" "on" and "under" and also "On the object" and "under the object. The teacher gives exercise to the pupils for checking their knowledge and skills related.

b) Teaching aids: Chalk board, chalks, notebooks, pens, books, chairs and other objects with the classroom, pictures/drawings, pupils' book,

c) Learning activities

- **Revision activity**

The teacher calls pupils to move out of the classroom and line-up and sing: "left, right" and then ask them to raise their right or left hand vice versa and so on.

- **Demonstration activities**
1. **Concrete activity**

The teacher invites pupils to do the following:
- To raise their left hand
- To show their left ear
- To show their right eye
- To show their left leg
- To show their right cheek

Finally the teacher invites one volunteer to stand in the middle of the classroom and then ask him/her to raise his/her right hand and asks the class to identify all objects that are on his/her right and left sides.

2. Semi-Concrete activity

The teacher can utilize a picture that illustrates people and other objects that are near them (at the left and right sides) .Then, he can ask the class to locate the said things.
Using the same pictures; the teacher helps pupils to kwon and indicate their left hand; left leg; left eye and ear of the people on the given picture.

- **Reinforcemennt and application activities**

The teacher invites pupils to form groups and instructs them to help each other to locate a number of items that are at the left and right sides.

- **Assessment activities**

The teacher invites 3 volunteers: the first pupil sits in the front of the classroom; the 2nd one stands at the right side of the 1st one and; the 3rd one stands at left side of the 1st one. The teacher gives exercises that enable every pupil to easily locate objects that are at his/her right or left sides and other positions previously learnt.

Example:
- In the play ground, the teacher asks pupils to line up and go to: the right, left, back and go forward, to touch their heads…
- In the classroom, the teacher asks pupils to put given objects under or on the chair or in the chair.

Lesson5: Indicate beyond and near

a) Prerequisites

For easy understanding of this lesson, pupil should be able locate objects while using "front of" and "back of " and, "top of " and "under the ", "right" and "left " .The teacher asks some questions to pupils to check their knowledge and skills related.

b) Teaching aids: Chalk board, chalks, notebooks, pens, books, chairs and other objects with the classroom, pictures/drawings and; pupils' book.

c) learning activities

- Activity for introduction

The teacher invites pupil to go out of the classroom and tell them to come closer to her/him or to move far away from him/her location.

- Demonstration activity

1. Concrete activity

The teacher shows pupils a tangible object that serves as a reference of them and asks them to indicate "beyond" and "near" of that object.

- Asks pupil to indicate beyond the classroom
- Asks pupil to indicate near the classroom
- Asks pupil to indicate beyond the church
- Asks pupil to indicate near the church

The teacher can also invite 3 volunteers: Mark, Kamana, and Munezero to stand on the same line and then asks the class to locate everybody (who is beyond or near of the one and another depending up on their respective positions)

Mark   Kamana   Munezero
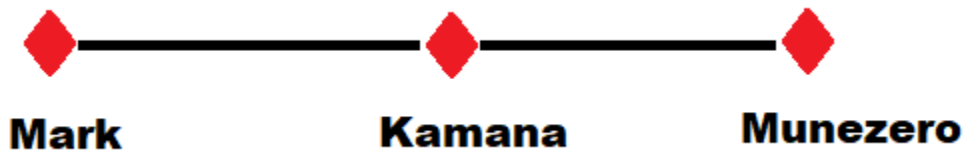
2. Semi-Concrete activity

Using the picture that illustrates beyond and near of a given object, the teacher helps pupils to comprehend beyond and near terms depending on the location of a given object.

Kamana   **Mutesi**

Kamana says: Dear Mutesi, near you there are a hen and 2 chicks while beyond you there is only one chick.

Using the same above picture, the teacher assists pupils to master: NEAR and BEYOND.

The teacher discusses with pupils about pictures that are in their book page…….

- **Reinforcement and application activities**

The teacher gives exercises to the pupils that are in practical and others that they do based on pictures and drawings.

Example: Invite 3 volunteers: the 1st one sits beyond others and, the 2nd one sits near them.

- **Assessment activities**

The teacher gives tasks to the pupils:

In play ground, the teacher requests some pupils to go beyond and near their fellows, to go back, go forward, etc. In the classroom, the teacher can ask pupils to put some of their objects beyond or near the table.

Lesson 6: Locating a direction of an object

a) Prerequisites

For easy understanding of this lesson, pupil should be able to locate an object using the terms "front" and "back"; "on" and "under"; "left" and "right" and also "beyond" and "near. The teacher gives exercise to pupils for checking if they mastered well said terms before moving forward.

b) Teaching aids: Chalk board, chalks, notebooks, pens, books, chairs and other objects with the classroom, pictures/drawings, pupils' book.

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c) learning activities
- **Activities for introduction**

The teacher puts different items in different places within the classroom and; asks pupils to locate them respectively.
- **Demonstration activity**
1. **Concrete activity**

The teacher can consider only one pupil amongst other who is sitting on a given desk. The teacher invites the class to appropriately locate the said pupil using the terms: "left", "right"; "beyond", "near", front", "back"; etc

2. Semi-Concrete activity
The teacher uses pictures for helping pupils to understand and indicate location of a given object. Finally, he/she uses pictures that are in the pupils' book.

- Reinforcement and application activities

The teacher gives exercises to work on and correct them individually. The teacher can call a pupil to put an object on a given site and ask the class to locate it accordingly. In addition to this, he/she can also give pupils exercises located in their books on page….

- Assessment activities

The teacher calls pupils to go to the play ground for exercising the location of different given objects. He/she can ask pupils to list down objects that are beyond, near right" and "left; higher up and below of the school. At the end, the teacher gives the homework for locating their homes as per objects surrounding it respectively.

Lesson 7: Straight and curvy lines

a) Prerequisites

For easy understanding of this lesson, pupil should be able to write the number: 1, 2, 4, 5, 6, 7, 9, 0 using different types of lines as they initially proceeded while learning how to write the given numbers. The teacher asks diverse questions to pupils for checking if they mastered well said prerequisites before going ahead.

b) Teaching aids: Chalk board, chalks, notebooks, pens, a small and big ruler, string, books, pictures/drawings, pupils' book

c) Learning activities:
- **Activity for introduction**

The teacher asks pupils how they write the following numbers: 1, 5 and 7as they are normally formed by different types of lines and, invites pupils types of lines that characterize each number.
- **Demonstration   activities**
1. Concrete activity

The teacher shows the pupils the straight string and, then request about 2 or 3 pupils   to draw the said string on the chalk board. At this level, the teacher explains to the pupils that they have drawn a *STRAIGHT LINE.*
In addition to this, the teacher can invite pupils to write some number they know:

- To state and indicate lines that form the number 1
- To state and indicate lines that form the number 5
- To state and indicate lines that form the number 7

2.   Semi-Concrete activity

The teacher use drawing to help pupils to draw a straight line, horizontal, vertical or oblic lines while using the big ruler. At the end the teacher assist pupils how to appropriately draw a straight line using their small rulers.

- **Reinforcement activities**

The teacher invites pupils to give diverse examples of objects that have straight lines at their knowledge: note books edges, tables, line in the tarmac roads…..
The teacher asks pupils also to give other examples of objects that have curved lines: number 2 and 3, edges of a table, leaves, horns of cows, etc
.
At this stage, the teacher requests pupils to separately draw straight and curved lines in their individual notebooks.
The teacher asks pupil to put more emphasis on straight lines vertical, horizontal and oblic lines.

- **Applicationn activities**

The teacher gives pupils exercises one by one to solve and then he/she facilitates the correction related. The teacher can ask pupils to draw straight lines vertical, horizontal, oblic and curved lines

Also, the teacher gives pupils more exercises to indicate straight and curved lines or he/she can request them to give examples of objects that have similar leant lines in their shape.

- **Assessment activities**

The teacher gives pupils exercises to draw straight and curved lines and select such lines from others in a given set of lines.
More class work and homework are required so that pupils internalize well the l

Lesson 8: Closed and open lines

a) Prerequisites:

The pupils should be able to differentiate and draw straight and curved lines. The teacher asks pupils various questions to verify their knowledge and skills related.

b) Teaching aids: Chalkboard, chalks, notebooks, books, pens, compass, big ruler, drawings, pupils 'books.
c) Learning activities
- **Activity for introduction**
 The teacher asks pupils to explain how to write the following numbers: 0, 9 and 8 as they are normally formed by different types of lines including curved in the given numbers. The teacher then, invites pupils to indicate and say curved lines that characterize each number. The teacher can present to them a circle and request them to draw it individually.

- **Demonstration activities**
1. Concrete activity
Based on different pupils' answers, the teacher assists pupils to distinguish closed lines from open lines. He/she asks examples of objects that are have similar lines in their shapes.
- To request pupils to state and indicate lines that form the number 0
- To request pupils to state and indicate lines that form the number 8
- To request pupils to state and indicate lines that form the number 9

2.   **Semi-Concrete activity**

Based on the picture/drawing, the teacher helps pupils to draw closed and open lines. At the end, the teacher request pupils to separately draw closed and open lines in their notebooks with use of their hands through their respective groups. Finally, a very group representative goes to the chalk board to do the same exercise and share with the class the achievements.
The teacher presents to the class the particular close line entitled a CIRCLE and draw it on the chalkboard using a compass. He also shows them the closed and broken lines and; other curvy closed and open lines.

-   **Reinforcement and application activities**

The teacher asks pupils to draw closed straight or broken lines and; select closed straight or broken lines from a set of various types of lines as well as drawing closed lines.

-   **Assessment activities**

The teacher asks pupils to work exercises of sketching closed liens and select closed straight or broken lines another set of various types of lines. The teacher has to make sure that pupils have more class work and homework related to this lesson.

Lesson 9: Broken lines

a) Prerequisites

Before the start of the new lesson pupils should be able to write some letters that are characterized by broken lines such as: W, Z, M, N. The teacher asks pupils to highlight how the said letters are normally written and describes types of lines that portray the said letters.

b) Teaching aids: Chalkboard, chalks, notebooks, books, pens, compass, big ruler, big shapes of letters: Z, N, M and W, carpentry broken meter and pupils' books.

c) Learning activities
-   **Activity for introduction**

The teacher requests pupils to write the following letter: Z, W, M and others that are characterized by broken lines. He/she also invite them to observe the carpentry broken meter.

- **Demonstration activity**
1. **Concrete activity**
Based on the pupils' answers, the teacher invites pupils to attentively observe how to sketch broken lines and call them to repeat its nomination. He/she deeply assists them to understand well the characteristics of the subject line. More emphasis is put on the broken line that turns up or down and left and right and so on.

2. **Semi-Concrete activity**
Referring to a drawing, the teacher helps pupils to sketch broken lines starting from the chalk board and then do individually the same exercise in their notebook while using the ruler.
- **Reinforcemennt and application activities**

The teacher gives tasks to pupils of indicating broken lines and requests them to sketch them in their notebooks. The teacher gives more exercise to pupils related to the lesson while using the pupil books and; prepare more others as well.

- **Assessment activity**
The teacher gives more class work to the pupils as well as homework.

 Lesson 10: Dots located inside, outside and on a closed line.

a) Prerequisites
The pupils should be able to write a dot and distinguish inside from outside of an object. The teacher gives exercises to pupils in order to assess their knowledge and skills related.

b) Teaching aids:
 Chalkboard, chalks, circle, compass, notebooks, books, pens, pupils' book and drawings/pictures of circle.

c) Learning activities
- Activity for introduction

The teacher requests pupils to form a big circle as a class and sketch on the ground. The teacher tells them to play the jumping game in out of water body in circle shape like. After this stage, the teacher asks pupils who the letter **"i"** is normally written, its details with emphasis on the dot at the said letter's top.

- **Demonstration activities**
1. **Concrete activity**

The teacher sketches as circle on the blackboard using a compass and asks the pupils the type of line drawn. The teacher uses a colour chalk and invite some pupils to come to the blackboard and write a dot of the letter **"i"** inside of the circle (referring to the example of water game).
The teacher invites other pupils to come to the black board and draw dots outside of the circle (always referring to the example of water game).

The teacher helps pupils to understand the position of dots as per the circle line**: inside, on and outside**

2. **Semi-Concrete activity**
The teacher uses the picture/drawing to assist pupils to write a dot on the closed line, inside and out of it.
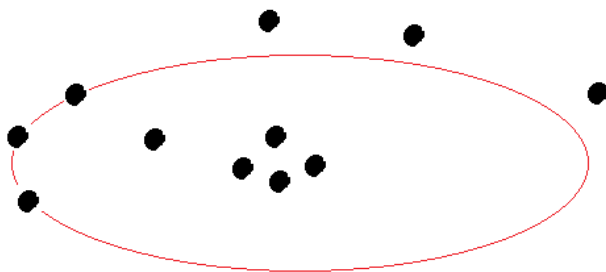
- **Reinforcement activity**
The teacher put pupils into group work and gives them a picture/drawing and invites them to discuss about it especially on the number of dots that are on the closed line, dots inside and outside of the said line.

He teacher requests pupils to draw a closed line in their notebooks and; put 2 dots inside, 3 dots on the closed line and 1 dot outside of the circle line. At this stage, every group presents to the fellows that they have achieved and teacher facilitate the process of internalizing the new acquired skills and knowledge.

- **Application activities**

The teacher gives pupils exercises for indicating the position of dots as per the circle closed line**.**
The teacher uses the pupils' book and pupils indicate the position of dots as per the circle closed line**.**

- **Assessment activities**
The teacher gives class work and homework to pupils: The teacher request pupils to do exercises of drawing closed lines and put a dot in and outside of the lines. The teacher gives exercises to pupils for locating the position of dots as per the drawn closed lines.

Lesson 11: End unit assessment

a) Prerequisites
The pupils should be able to locate objects' position, draw different lines and write a dot on a closed line and inside and outside of the said line.

b) Teaching aids:
Notebooks, pens, drawings prepared by the teacher that contains a set of different objects and different types of lines, pupils' book.

c) Example of end unit assessment questions
Activities: To specify locations of different objects, draw the closed lines, to identity the types of drawn line and, puts a dot on the closed line, as well as inside and outside.

1) Situate birds and the cat.

2) Situate the position of the chair in comparison to the table's location within the classroom

3) Draw a closed line and; put 1 dot inside,2 dots on the closed line and 3 dot outside of the line.

4) Give examples of 3 objects that have curved lines like shape (**Answer:** moon, horns, ear…)

UNIT 14: RIGHT ANGLE, SQUARE AND RECTANGLE
14.1 Key unit competence
Discover the right angle, square and rectangle from other figures and appropriately drawing them respectively.

14.2 Prerequisites
In order to understand well this new unit, pupils should be able to sketch straight, vertical, horizontal or oblic lines. T he teacher will give different exercises related for assess pupils knowledge and skills before moving forward.

14.3 Cross-cutting issues to be addressed
Promote the culture of peace building, gender equity, environment protection, economic education and; education for all.

14.4 List of lessons

UNIT 14: RIGHT ANGLE, SQUARE AND RECTANGLE (16 Periods)			
	Lesson title	**Learning objectives**	**Number of periods**
1	Introductory activity	Arouse the curiosity of learners on the content of this unit.	2
2	Right angle and its characteristics	Identify the right angle on different objects and areas (places).	2
3	Drawing the Right angle	Sketching the Right angle using squared shape object.	2
4	A square and its characteristics	Define a square and identify it from shapes of other different objects.	2
5	Drawing a square	Sketching appropriately a square with the use of squared shape object.	2
6	A rectangle and its characteristics	Define a rectangle and identify it from shapes of other different objects.	2
7	Drawing a rectangle	Sketching appropriately a rectangle with the use of squared shape object.	2
	End unit Assessment 14	Identify and sketch a right angle , a square and a rectangle.	2

Lesson1: Introductory activity

a) The teacher invites pupils to attentively observe features of the picture of the theme and answer questions related.
A kid who is going to fetch water and, uses path that borders gardens. The later, have right angles where some of them are squares and rectangular in shape. The said path is open at a certain point.

b) **Teaching aids:**

Different pictures/drawings of a square shape object, ruler, square ruler, square notebook, pens, objects that have right angles, objects that are square and rectangle in shape like**.**

While the pupils observe the given picture, the teacher can ask them some related questions.

c) Examples of some questions for pupils

- o   What do you see on this picture?
- o   Show the path that the kid uses for fetching water?
- o   Which objects that border the kid's path?
- o   What is the shape of the kid's path?
- o   What is the name of the intersection of the said lines?
- o   Do you know an angle?
- o   Are all blocks of land equal in size?
- o   Are all sides of all blocks equal in size?

The teacher concludes this lesson by telling pupils that in next lessons they will study how to identify right angles, and various drawings of gardens seen on the previous picture.

Lesson 2: Right angle and its characteristics

a) Prerequisites

The pupils should be able to draw straight vertical horizontal and closed lines. The teacher asks pupils various questions to verify if they have acquired enough knowledge and skills related before starting the new lesson.

b) Teaching aids: Different pictures/drawings of square shape objects, ruler, square ruler, square notebook, pens, objects that have right angles.

c) learning activities
-   **Activity for introduction**

Based on the squared shape objects located in pupil squared notebooks, the teacher requests pupils to draw 2 intersecting straight vertical and horizontal lines. The teacher asks pupils some questions related to the said/drawn lines: the way they see their forms and angles. At this stage, the teacher shows pupils that two straight intersecting lines generate a right angle.

-   **Demonstration activities**
The teacher presents the drawing of square shape object (on the blackboard), and typically demonstrates how to use a square ruler to verify/measure an angle resulting from two straight intersecting lines.

1.   **Concrete activity**

The teacher asks pupils to identify 2 objects within the classroom that have a right angle from two straight intersecting lines in shape. Then after, he/she requests them to give more examples of objects that are out of the classroom walls.

2. Semi-Concrete activity

The teacher presents to the pupils the prepared drawing or picture available in their book that illustrates the right angle and its characteristics.

The teacher shows them how to verify/measure a right angle using a square ruler. The teacher asks pupils to use their books for defining main characteristics of a right angle and where to find it

- **Reinforcement activity**

The teacher facilitates pupils how to verify/measure a right angle on the chalkboard and do the same exercise in pupils' notebook at the end. The teacher asks pupils to use their books for observing and comprehend characteristics of a right angle. Finally, the teacher gives more different angles and; ask pupils to only pick the correct right angles.

- **Application activities**

In pupils' groups; the teacher gives pupils exercises to verify/measure a right angle, define its characteristics and; select it among other angles and give some examples of objects and areas shaped like.

- **Assessment activities**

The teacher gives pupils the class work and other exercises in the form of homework. Pupils are supposed to select the right angle among other angles and give also other examples of other objects and areas shaped like.

Lesson 3: To draw a right angle

a) Prerequisites

The pupils should be able to identify the right angles in a given set of various angles and give examples of objects that have right angles in their shape. The teacher asks pupils various exercises to verify if pupils have initially acquired enough knowledge and skills related before starting the new lesson.

b) Teaching aids:
Different pictures/drawings of square shape objects, ruler, square ruler, squared notebook, pens, objects that have right angles,

c) Learning activities

- **Activity for introduction**
The teacher asks pupils to sketch intersecting horizontal and vertical straight lines in their squared notebook.
The teacher shows them the prepared square shape objects on the black board and; uses a square ruler so that pupils prove or not if lines of the square shape objects form a right angle.

1. Concrete activity

The teacher shows pupils how to draw right angles starting from a small square shape objects and a ruler. Then after, he/she invites some pupils to do the same on the blackboard. At this stage, the teacher shows pupils how to draw right angle starting while only using a ruler and teacher invites some kids to do the same on the blackboard.

2. Semi-concrete activity

The teacher facilitates pupils how to uses both a ruler and square shape objects in their respective notebooks or with a square ruler only for drawing right angles.

The teacher presents and explains to the pupils where 2 straight horizontal and vertical lines intersect and form an angle named "right angle. After, the teacher asks pupils to use their books for observing a right angle and how to sketch it properly.

- **Reinforcement activity**

The teacher facilitates pupils to describe how to use both a ruler and square ruler in their respective notebooks.
The teacher asks pupils to use their books and invite them to attentively observe and how to correctly sketch a right angle.

- **Application activity**

The teacher gives pupils exercises of drawing a right angle while using only a square ruler or square shape objects in their notebooks and a ruler.

- **Assessment activity**

The teacher gives a class work or homework centered on: Sketching a right angle, right angle identification from different set of many objects that have the said angle. He/she can also give more related work for giving examples of objects with a right angle in their shape.

Lesson 4: A square and its characteristics

a) Prerequisites

The pupils should be able to identify and sketch a right angle and give examples of objects that have right angles in their shape. The teacher gives pupils various exercises to verify if pupils have initially acquired enough knowledge and skills related before starting the new lesson.
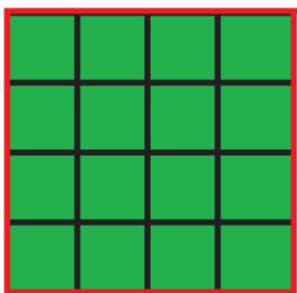
b) Teaching aids:

Different pictures/drawings of square shape objects, ruler, squared notebooks, pens and other objects that have right angles,

c) Learning activities

- **Activity for introduction**

The teacher tells pupils to attentively observe the given drawing of square shape object of a square in such way that the lines that border it are in a separate color.

- o The teacher asks pupils different questions that help the class to discover the topic of the day
- o How many read straight lines do you see on this picture?
- o How many right angles formed by these lines?

     o How many squares on horizontal lines?
     o How many squares on vertical lines?

- **Demonstration activities**
1. **Concrete activity**

Based on the above square shape object and pupils' answers, the teacher shows another drawing of a square and facilitate pupils to see and understand properly the square and its characteristics.

- To present a square that has 4 equal sides and; this is justified by the measurement of the size of every side or counting all small squares at each square side so that pupils make sure that all sides are equal in size.
- To show pupils that the square has 4 equal right angles with the use of a square ruler

2. **Semi- Concrete activity**

-The teacher presents the square picture on the chalkboard using a ruler and a square ruler.
-The teacher asks pupils to use their books and discuss on the picture of a square and its characteristics.

- **Reinforcement activity**

The teacher asks pupils to attentively observe the pictures of squares that are in their books and discuss their characteristics in a group work. Finally; the teacher invites pupils to give examples of materials that have square shape or look like.

- **Application activity**

The teacher gives pupils different exercises to study the square: show 4 right angles and 4 equal side and, select square from a set of many other different shapes, give examples of objects that have square shape or look like.

- **Assessment activity**
The teacher gives pupils different exercises in the form of class work or homework

Lesson 5: To sketch a square

a) Prerequisites

The pupils should be able to identify and sketch vertical and horizontal straight lines and; identify a square and its characteristics. The teacher gives pupils various exercises to verify if pupils have initially acquired enough knowledge and skills related in the previous lessons.

b) Teaching aids:
Different pictures/drawings of squared shape object, ruler, squared notebooks, pens and other objects that have square shapes like

c) Learning activities
Notice: Referring to the class size, pupils will learn how to sketch a square using squared shape object in their squared notebook and ruler, but they will verifier right angles using the square ruler.

- **Activity for introduction**

A teacher gives pupils squared shape objects drawings and square ruler or they can also use small squared shape object in their squared notebooks for measuring angles with a square ruler and check if angles formed by vertical and horizontal lines are right angles.
- **Demonstration activities**

1. Concrete activity
The teacher invites pupils to attentively observe how to properly sketch a square while using a ruler and a square ruler; with more emphasis on the utilization of the squared shape object, square ruler and a ruler as materials for P1 pupils.
Referring to a piece of paper that is square in shape like, the teacher can fold its axis and show pupils that all sides are all equal in size.

2. Semi-Concrete activity

The teachers help pupils to attentively observe the pictures of square which is the squared shape object in their books and they observe and prove if it is a square based on the number of its angles and number of small squares at each side of it. At the end, with the use of the same above said picture; the teacher shows pupils how to correctly sketch a square in their squared notebooks.

- **Reinforcement activity**

The teacher puts pupils in group works and draw square in the squared notebook with the use of squared ruler and a ruler.

Finally, every group gets a chance to present to the rest of the class work done and explain the reason why their drawings are genuine squares in shape. The teacher facilitates the entire class to internalize the new acquired skills and knowledge.

- **Application activities**

The teachers give pupils different individual exercises related to the sketching of the square using a ruler in every kid's square notebook.

- **Assessment activities**

The teachers give pupils different exercises as class work or homework: sketch squares with different size, select squares from a set of different shapes; bring different objects that are squares like in shape: pieces of paper, piece of boxes, pieces of wood etc.

Lesson 7: A rectangle and its characteristics

a) **Prerequisites**

The pupils should be able show and draw right angles and give examples of objects that have right angles in their shapes. The teacher gives pupils various exercises to verify if pupils have appropriately acquired enough knowledge and skills in light to the previous lessons.
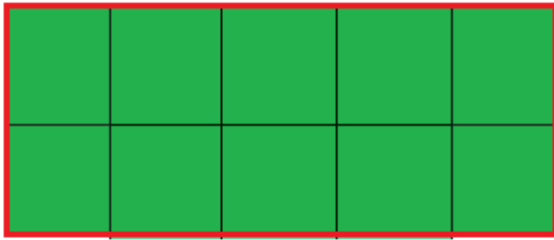
b) **Teaching aids:**
Different pictures/drawings of squared shape object, ruler, squared notebooks, pens and other objects that have right angles.

c) **lrarning activities**

- **Activities for introduction**

The teacher tells pupils to attentively observe the given drawing of square shape object of a rectangle in such way that the lines that border it are in a separate color.

The teacher asks pupils different questions that help the class to discover the topic of the day

- o How many red straight lines do you see on this picture?
- o How many right angles formed by these lines?
- o How many squares on horizontal lines?
- o How many squares on vertical lines?

- **Demonstration activities**

1. Concrete activity

Based on the above square shape object and pupils' answers, the teacher shows another drawing of a rectangle and facilitate pupils to see and understand properly the rectangle and its main characteristics.

To present a drawing that has 4 sides and; 2 by 2 opposite sides are equal. This is justified by the measurement of the size of every side or counting all small squares at each side so that pupils make sure that 2 opposite sides are equal in size.
To show pupils that the square has 4 equal right angles with the use of a square ruler

2. **Semi-Concrete activity**

The teacher shows a picture of a rectangle on the blackboard using a ruler and a square ruler.

The teacher asks pupils to use their books and discuss on the shape of a rectangle there and its characteristics.

- **Reinforcement activities**

The teacher asks pupils to use their books on page….and attentively observe the rectangle and; discuss its characteristics through exchange of ideas amongst the pupils.
The teacher asks pupils to give different examples of objects that are rectangular in shape

-   **Application activities**

The teacher gives pupils exercises of study the rectangle: Show 4 right angles, 2 by 2 opposite sides   that are equal , identify rectangle among a set of different shapes and give examples of things that are rectangular in shape; notebook, a sheet of paper, plots of houses, table, laptop, etc.

-   **Assessment activities**

The teachers give pupils different exercises as class work or homework on:

Lesson 8: To sketch a rectangle

a) Prerequisites

The pupils should be able to sketch straight vertical and horizontal lines and to identify the rectangle and define its characteristics. The teacher gives pupils various exercises to verify if pupils have acquired enough knowledge and skills related in the previous lessons.

b) Teaching aids:

Different pictures/drawings of squared shape objects, ruler, squared notebooks, pens, square ruler and objects that are shaped like rectangle.

c) learning activities

Notice: Referring to the class size, pupils will learn how to sketch a rectangle using squared shape object in their squared notebook and ruler, but they will verifier right angles using the square ruler.

-   **Activity for introduction**

A teacher gives pupils squared shape objects drawings and square ruler or they can also use a small squared shape object in their squared notebooks for measuring angles with a square ruler and check if angles formed vertical and horizontal lines are right angles

-   **Demonstration activities**
    1. **Concrete activity**

The teacher invites pupils to attentively observe how to properly sketch a rectangle while using a ruler and a square ruler; with more emphasis on the

utilization of the squared shape object, square ruler and a ruler as materials for P1 pupils.

Referring to a sheet of paper that is rectangle in shape like, the teacher can fold its axis and show pupils that 2 by 2 opposite sides are all equal in size. He/she uses a square ruler in their notebooks to indicate that all 4 right angles are equal.

2. Semi-Concrete activity

The teachers help pupils to attentively observe the pictures of a rectangle which is the squared shape object in their books and they observe and prove if it is a rectangle based on the number of its angles and number of small squares at each side of it. At the end, with the use of the same above said picture; the teacher shows pupils how to correctly sketch a rectangle in their squared notebooks.

- **Reinforcement activity**

The teacher puts pupils into different groups and; draw a rectangle in their squared notebooks. The drawn rectangles should have different dimensions of sides. Pupils will use square ruler or only a ruler in order to perform this work.

After this stage, every group will get a chance to present to the rest of the class the work done and convincingly explain the reason why their drawings are fully rectangle in shape. The teacher will facilitate pupils' comprehension of this topic.

- **Application activities**

The teacher gives pupils individual exercises to sketch a rectangle with the use of a ruler in their squared notebooks, and make correction.

- **Assessment activities**

The teacher gives pupils different exercises in the form of class work or homework: to sketch rectangles with different dimensions, select rectangles from a set of various shapes and carry different objects shaped like a rectangle such as: pieces of papers, pieces of boxes, pieces of wooden objects, etc

Lesson 9: End unit assessment

a) Prerequisites

The pupils should be able to discover right angle, square and rectangle from different shapes. The pupils should also be able to appropriately sketch rectangle, square and, easily identify objects that have the said shapes.

b) Teaching aids: Squared notebooks, pens, square ruler, ruler,

c) Example of assessment questions

1) Using your finger, point the right angles that are in this picture?
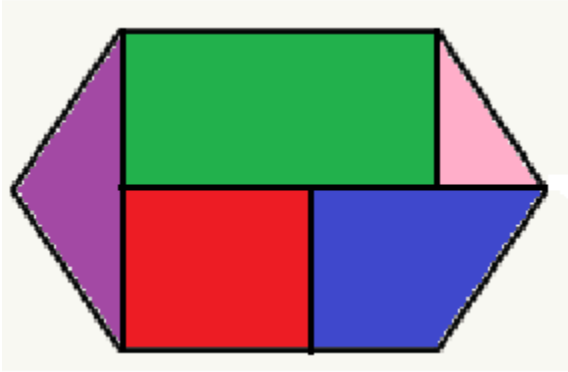
1) Which color that represents the rectangle?

2) Sketch a square that has 6 small squares at each side?

3) Give examples of objects that are rectangular in shape.

4) Observe the following pictures and answer the questions related
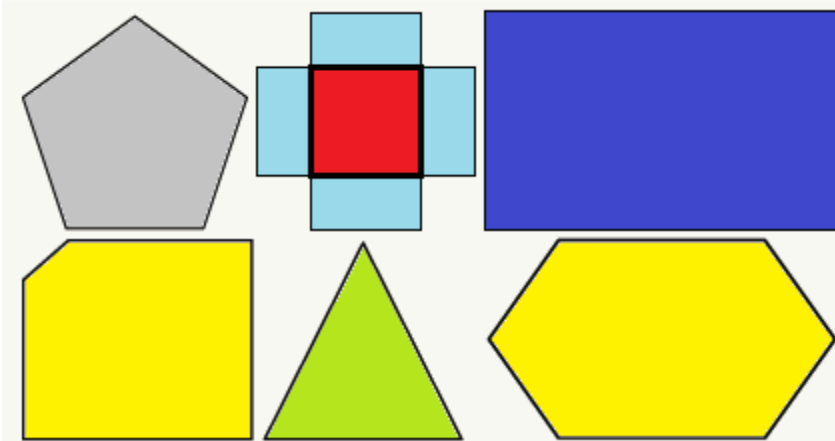
The square is colored by ………..

The rectangle is colored by ……..

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