

# **MATHEMATICS**

**PRIMARY**

**1**

**Teacher's Guide**

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## 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 work 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 cooperation.
- 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 explains 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, REB



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**Joan MURUNGI**

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# TABLE OF CONTENT

FOREWORD .....	iii
ACKNOWLEDGEMENT .....	v
STRUCTURE OF TEACHER'S GUIDE .....	ix
PART I: GENERAL INTRODUCTION.....	ix
Part III: Unit development .....	ix
1.0. About the teacher's guide .....	ix
1.1. The structure of the guide .....	ix
1.2. Methodological guidance .....	2
PART II: SAMPLE LESSON PLAN.....	15
PART III: UNITS DEVELOPMENT.....	19
UNIT 1: WHOLE NUMBERS FROM 1 UP TO 5 .....	20
1.1 Key unit competence .....	20
1.2 Prerequisite knowledge and skills.....	20
1.3 Cross-cutting issues to be addressed .....	20
1.4. List of lessons .....	21
UNIT 2: NUMBERS FROM 1 UP TO 9 .....	46
2.1 Key unit competence .....	46
2.2 Prerequisite knowledge and skills.....	46
2.3 Cross-cutting issues to be addressed .....	46
2.4 List of lessons .....	47
UNIT 3: NUMBERS FROM 0 UP TO 10 .....	71
3.1 Key unit competence .....	71
3.2 Prerequisite knowledge and skills.....	71
3.3 Cross-cutting issues to be addressed .....	71
3.4. list of lessons .....	72

UNIT 4: NUMBERS FROM 0 TO 20 .....	95
4.1. Key unit competence .....	95
4.2. Prerequisite knowledge and skills.....	95
4.3. Cross-cutting issues to be addressed .....	95
4.4. List of lessons .....	96
UNIT 5: MULTIPLICATION AND DIVISION BY 2 .....	116
5.1. Key Unit Competence.....	116
5.2. Prerequisite knowledge and skills .....	116
5.3. Cross-cutting issues to be addressed .....	116
5.4. List of lesson.....	117
UNIT 6: NUMBERS FROM 0 UP TO 50 .....	126
6.1. Key unit competence .....	126
6.2. Prerequisite knowledge and skills.....	126
6.3 Cross-cutting issues to be addressed .....	126
6.4. List of lessons .....	127
UNIT 7: NUMBERS FROM 0 TO 100 .....	148
7.1. Key unit competence .....	148
7.2. Prerequisite knowledge and skills.....	148
7.3. Cross-cutting issues to be addressed .....	148
7.4. List of lessons .....	149
UNIT 8: FRACTIONS $\frac{1}{2}$ AND $\frac{1}{4}$ .....	170
8.1. Key unit competence .....	170
8.2. Prerequisite knowledge and skills.....	170
8.3. Cross-cutting issues to be addressed .....	170
8.4. List of lessons .....	171
UNIT 9: NUMBER PATTERNS .....	177
9.1. Key Unit Competence.....	177
9.2. Prerequisite knowledge and skills.....	177
9.3. Cross-cutting issues to be addressed .....	177
9.4. list of lessons .....	178

UNIT 10: MEASURING THE LENGTH LESS THAN OR EQUAL TO 10 m	187
10.1. Key unit competence.....	187
10.2. Prerequisite knowledge and skills.....	187
10.3. Cross-cutting issues to be addressed.....	187
10.4. List of lessons .....	188
UNIT 11: MAIN PARTS OF THE DAY AND 7 DAYS OF THE WEEK.....	205
11.1. Key unit competence.....	205
11.2. Prerequisites .....	205
11.3. Cross cutting issues to be addressed: .....	205
11.4. List of lessons .....	205
UNIT 12: RWANDAN CURRENCY FROM 1Frw UP TO 100Frw.....	211
12.1. Key unity competence.....	211
12.2. Prerequisites .....	211
12.3. Cross cutting issues to be addressed .....	211
12.4. List of lessons .....	212
UNIT 13: LOCATION OF OBJECTS AND TYPES OF LINES .....	219
13.1. Key Unit competence .....	219
13.2. Prerequisites .....	219
13.3. Cross cutting issues to be addressed .....	219
13.4 List of lessons .....	219
UNIT 14: RIGHT ANGLE, SQUARE AND RECTANGLE .....	234
14.1. Key unit competence.....	234
14.2. Prerequisites .....	234
14.3. Cross-cutting issues to be addressed .....	234
14.4. List of lessons .....	234
REFERENCE .....	245
GLOSSARY .....	246

# 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 lessons during 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.

- **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 development

Each unit is structured as follows:

- **Unit title from the syllabus**
- **Key unit competence from the syllabus**
- **Prerequisite knowledge and skills**

- **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...

- **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.

- **Lesson Structure**

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

- Lesson title
- Prerequisites
- Methodological guidance:
  - Teaching aids to be used in the lesson: Teachers should prefer to use different teaching aids from the proposed ones depending on the school environment and the available teaching aids. Pupils may also bring their own teaching aids.
  - Teaching and learning activities accompanied by teaching methods, strategies and techniques.

Guidance on the lesson assessment.

- **End unit assessment**

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

## 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 that 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-operedifferencen, 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
<p><b>Environment and Sustainability:</b> Integrdifferencen 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.</p>	<p>Through solving word problems involving addition, subtraction..., pupils should be encouraged to discuss effects of environment and sustainability.</p> <p>For example, a Mathematical word problem on planting trees should lead pupils to discuss about fighting against erosion.</p>
<p><b>Financial Education:</b></p> <p>The integration 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 capability of Rwandans so that they can make appropriate financial decisions that best fit the circumstances of one's life.</p>	<p>Through different examples and calculations in the unit of Rwandan currency, teacher can lead pupils to make appropriate financial decisions.</p> <p>Some examples of making priorities before spending money should be used to well address financial education.</p>
<p><b>Gender:</b> 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.</p>	<p>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.</p>
<p><b>Inclusive Education:</b> 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.</p>	<p>Firstly, Mathematics teacher needs to identify/recognize pupils with special education needs. Then by using adapted teaching and learning resources while conducting a lesson and setting appropriate tasks he/she can cater for all pupils.</p>

<p>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.</p>	<p>Through a given Mathematics lesson, a teacher should:</p> <p>Set a learning objective which is addressing positive attitudes and values,</p> <p>Encourage pupils to develop the culture of tolerance during discussion and to be able to instil it in colleagues and cohabitants;</p> <p>Encourage pupils to respect ideas from others.</p>
<p>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.</p>	<p>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 juice or mineral water, pupils may be encouraged to check the expiration date.</p>

### 1.2.2 Guidance on how to help pupils with special education needs

In the classroom, pupils learn in different ways depending on 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 needs 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 intend to improve learners' learning and teacher's teaching whereas assessment of learning/summative assessment intends to improve the entire school's performance and education system in general.

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 guidance in the syllabus. Every set learning objective should be assessed and the assessment should be continuous in the form of homeworks, competitions, 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 cooperation.
- 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 consider their ideas, knowledge, skills, attitudes and values during teaching and learning 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, and 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 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.

#### **1. 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.

#### **2. 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.

### 3. 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 (+, −, ×, ÷) 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* select 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* explicitly 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: XXXXXXXX

Teacher's name: YYYYYYYY

Term	Date	Subject	Class	Unit N°	Lesson N°	Duration	Class size
III	.../.../2020	Mathematics	P1	12	2	40 min	...
<b>Type of Special Educational Needs to be catered for in this lesson and number of student in each category</b>				4 slow learners			
<b>Unit title</b>			<b>Rwandan currency from 1Frw up to 100 Frw</b>				
<b>Key unit competency:</b>			Differentiate Rwandan currency from 1Frw to 100 Frw and perform exercises involving buying and selling.				
<b>Title of the lesson</b>			Characteristics of Rwandan coins from 1 Frw to 100 Frw				
<b>Instructional Objective</b>			Using different Rwandan coins, pupils will be able to correctly differentiate characteristics of the following coins: 1Frw, 5Frw, 10 Frw, 20 Frw, 50 Frw and 100Frw.				
<b>Plan for this Class (location: in / outside)</b>			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.				
<b>Learning Materials (for ALL student teachers)</b>			Different Rwandan coins of 1Frw, 5Frw, 10 Frw, 20 Frw, 50 Frw and 100Frw, P1 Mathematics pupil's book and teacher's guide.				
<b>References</b>			P1 Mathematics pupil's book and teacher's guide.  Lower primary Mathematics syllabus for Rwandan schools				

<b>Timing for each step</b>	<b>Description of teaching and learning activity</b>		<b>Generic competences and cross cutting issues to be addressed + a short explanation</b>
	<p>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.</p> <p>Individually, pupils describe different characteristics of a given coin and find out all features that can differeatiate one coin from another.</p> <p>The role of teacher is to facilitate and help pupils to come up with the correct characteristics using prompting questions.</p>		
	<b>Tutor activities</b>	<b>Student activities</b>	
<p><b>Introduction:</b></p> <p>5 minutes</p>	<p>Through a dialogue, discuss with pupils on different activities, services or items they know that require money.</p>	<p>In general, pupils brainstorm on different activities, services and items that require people to use money.</p> <p>Examples:</p> <ul style="list-style-type: none"> <li>• To buy school materials, we need money</li> <li>• To buy clothes, we need money</li> <li>• To buy food, we need money</li> </ul>	<p><b>Communication skills</b> is developed through sharing ideas</p> <p><b>Financial education</b> is developed through sharing ideas on the importance and use of money</p>

## Development of the lesson 25 minutes

<p><b>Discovery activity:</b></p> <p><b>10 minutes</b></p>	<ul style="list-style-type: none"><li>• Put pupils in 6 different groups</li><li>• Distribute different coins of Rwandan francs to all groups so that each group end up by receiving 6 coins</li><li>• Ask pupils to observe coins, one by one and come up with a list of characteristics for each coin</li><li>• Lead all pupils to understand the value of each coin</li></ul>	<p>Pupils in small groups, they observe different coins and identify the following: color of the coin, the number written on each coin, and any other characteristics that can differentiate a coin from another</p> <ul style="list-style-type: none"><li>• 1<sup>st</sup> group to find out characteristics of a coin of 1 Frw</li><li>• 2<sup>nd</sup> group to find out characteristics of a coin of 5 Frw</li><li>• 3<sup>rd</sup> group to find out characteristics of a coin of 10 Frw</li><li>• 4<sup>th</sup> group to find out characteristics of a coin of 20 Frw</li><li>• 5<sup>th</sup> group to find out characteristics of a coin of 50 Frw</li><li>• 6<sup>th</sup> group to find out characteristics of a coin of 100 Frw</li></ul> <p>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.</p>	<p><b>Communication skills</b> developed through the presentation and sharing ideas</p> <p><b>Gender</b> is addressed when both girls and boys work together in the same group</p> <p><b>Inclusive education</b> is addressed while providing remedial activities to slow learners</p>
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<p><b>Presentation of learners' findings and exploitation:</b></p> <p><b>15 minutes</b></p>	<p>Invite pupils, one by one to present their work findings where they must come up with a list of all identified characteristics of each coin.</p>	<p>Pupils, one by one give one or two characteristics observed on a given coin.</p> <p><b>Expected answers (refer to the pupil's book)</b></p>	<p><b>Communication skills</b> developed through the presentation and sharing ideas</p>
<p><b>Conclusion/ Summary/ Assessment</b></p> <p><b>10 minutes</b></p>	<ul style="list-style-type: none"> <li>• Facilitates pupils to capture the main characteristics of different Rwandan coins</li> <li>• Gives different characteristics of coins and asks pupils to come up with the coin's value</li> <li>• Gives a coin and asks pupils to come up with different characteristics of it.</li> </ul>	<ul style="list-style-type: none"> <li>• Pupils note down main characteristics of different Rwandan coins (they may refer to the pupil's book)</li> <li>• Individually, every pupil works out the following: <ol style="list-style-type: none"> <li>1. Which coin has the following characteristics: silver color, maize, and coat of arm</li> <li>2. What are the characteristics of the coin of 5 Frw</li> <li>3. Which coin has the following characteristics: copper color, banana, and coat of arm</li> <li>4. What are the characteristics of the coin of 20Frw?</li> <li>5. What are the characteristics of the coin of 1 Frw?</li> </ol> </li> </ul>	<p><b>Critical thinking and problem solving skills</b> are developed through analysing different coins and differentiate them by the appropriate characteristics</p> <p><b>Gender</b> is addressed when both girls and boys are given equal opportunities to provide the answers.</p>

		6. Which coin has the following characteristics: silver and copper color, and coat of arm	
<b>Self assessment</b>	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: UNITS DEVELOPMENT

### 1.1. Key unit competence

Counting, reading, writing, ordering, comparing, adding and subtracting 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 vocabularies 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 operations.

## 1.4. List of lessons

UNIT 1: NUMBERS FROM 1 UP TO 5 (48 Periods)			Reinforcement and Extension lessons	
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 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 figures and in words the number 1.	1	
4	Reading and writing the numbers 1 and 2	Read and write in figure and in word the numbers 1 and 2.	1	1
5	Counting 1 to 3 objects	Understand and discover the concept of numbers from 1 to 3.	1	1
<b>Remediation</b>			<b>1</b>	
6	Reading and writing the numbers 1, 2 and 3	Read and write in figure and in word the numbers 1, 2 and 3.	2	
7	Counting 1 to 4 objects	Understand and discover the concept of numbers from 1 to 4.	1	1
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.	2	1
<b>Remediation</b>			<b>1</b>	
9	Counting 1 to 5 objects	Understand and discover the concept of numbers from 1 to 5.	1	
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.	1	1
	Comparing numbers from 1 to 5	Compare numbers from 1 to 5.	1	1
<b>Remediation</b>			<b>1</b>	
12	Ascending order of numbers from 1 to 5	Arrange numbers from 1 to 5 in ascending order (from a smaller to a bigger number).	1	
13	Descending order of numbers from 1 to 5	Arrange numbers from 1 to 5 in descending order (from a bigger to a smaller number).	2	1
14	Addition of numbers whose sum is less than or equal to 5	Add numbers whose sum does not exceed 5, the addends being less than 5.	2	1
<b>Remediation</b>			<b>1</b>	
15	Word problems on addition of numbers whose sum does not exceed 5.	Solve word problems involving addends whose sum does not exceed 5.	1	
16	Subtraction of numbers less than 5	Subtract 2 numbers less than 5 whose difference is not zero.	2	1
17	Word problem on subtraction of numbers less than 5	Solve word problems involving subtraction of 2 numbers whose difference is not zero.	2	1
<b>Remediation</b>			<b>1</b>	
18	Word problems involving addition and subtraction of numbers less than or equal to 5.	Solve word problems involving addition and subtraction of numbers less than or equal to 5. The sum does not exceed 5 and the difference is not zero.	2	2
19	End unit assessment 1	Count, read, write, compare, order, add and subtract numbers from 1 to 5.	2	
<b>Remediation</b>			<b>2</b>	
<b>Total number of periods for unit 1</b>			<b>36</b>	<b>12</b>

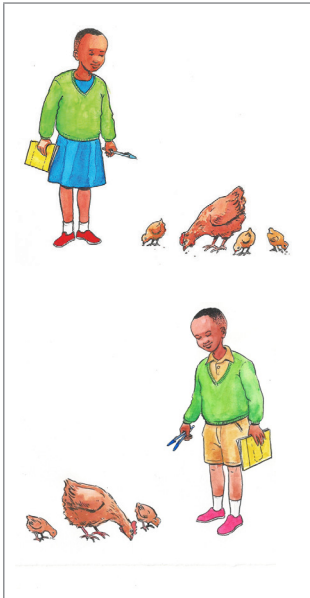
## Lesson 1: Introductory activity

- **Learning objective**

Discuss with pupils on what they already know about the unit to be learnt.

This lesson is delivered through a conversation between teacher and pupils.

- **Observing the pictures**



Use prompt questions to help pupils to get their predictions about the unit to be learnt:

- Look at the picture. What do you see?
- How many children do you see on the picture?
- How many chickens 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 chickens? 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.

The aim of the introductory activity is to get from pupils the predictions about the unit to be learnt and all answers from pupils are valid.

## Lesson 2: Counting 1 to 2 objects

**a) Learning objective:** Understand and discover the concept of numbers 1 and 2

Ask pupils to show the following parts of their body: a head, eyes, one arm, 2 arms, one ear, 2 ears, and touch their 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 not 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

#### i. Activities for introduction

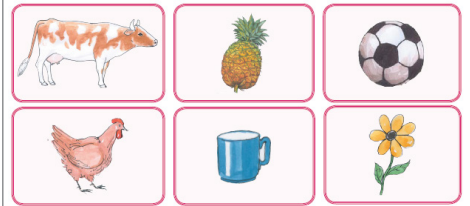
- Use different counters or counting objects,
- Help pupils to understand and discover the concept of the number 1.

**Examples:** How many heads does a person have?

Show 1 pen, 1 notebook, 1 book...

Pick 1 white chalk in the box.

#### Observing the pictures

	<p>Using the questions, teacher leads pupils to:</p> <ul style="list-style-type: none"><li>• look at the pictures,</li><li>• list all observed objects,</li><li>• Count and say the number of objects in the picture.</li></ul> <p><b>Examples of the questions:</b></p> <ul style="list-style-type: none"><li>• How many pineapples do you see in the picture?</li><li>• How many hens do you see in the picture?</li><li>• How many cups do you see in the picture? etc....</li></ul>
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#### ii. Reinforcement activities

Use different questions and test if pupils:

- Understand the concept of the number 1
- Can apply in 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?

### iii. Assessment activities

- Provide activities to be done by pupils at school or at home.
- Set activities that provide to every pupil the opportunities to apply the concept of “number 1” in a range of situations. **Example:** Ask pupils to bring 1 pen, 1 notebook, 1 chalk, ....

## Part 2: counting 2 objects

### i. Activities for introduction

- Use different counters or counting objects or a song
- Help pupils to understand and discover the concept of the number 2.

**Examples:** How many eyes does a person have?

How many ears does a person have? How many legs does a person have?

Show 2 pens, 2 notebooks, 2 books...

Pick 2 red chalks in the box.

### Observing the pictures



Using the questions and leads pupils to:

- look at the pictures,
- list all observed objects,
- Count and say the number of objects in the picture.

#### Examples of some questions:

How many oranges do you see in the picture?

How many cars do you see in the picture?

### i. Reinforcement activities

Use different questions and test if pupils:

- Understand the concept of the number 2
- Can apply the concept of the number 2 in 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?

## ii. Assessment activities

Provide to pupils the activities to be done at school or at home.

Set activities that provide to every pupil the opportunities to apply the concept of number 2 in a range of situations.

### Examples:

- Ask pupils to bring different objects, one by one.
- Ask pupils to bring 2 objects of the same nature (2 pens, 2 notebooks, 2 oranges, 2 beans, 2 small stones...)



- *The following lessons follow the same teaching and learning methodology as lesson 2.*

<b>Lesson 5</b> on counting 1 to 3 objects	<b>Lesson 7</b> on counting 1 to 4 objects
<b>Lesson 9</b> on counting 1 to 5 objects	

- *To enhance the concept of counting from 1 to 5, start by asking pupils to count objects related to the previously numbers before the introduction of the new number.*

## Lesson 3: Reading and writing the number 1

### a) Learning objective

Read and write in figures and in words the number 1.

### 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

#### i. 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
- Asks pupils to say the number of objects they see on the picture.

## **ii. Activities for Demonstration**

Lead pupils to read and write the number 1 through the following steps:

**Step 1:** The teacher writes slowly the number 1 on the chalkboard by explaining to them different parts of the number 1 (dotted oblique straight line followed by a dotted vertical straight 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.

## **iii. Activities for reinforcement**

- Ask pupils to individually imitate the number 1 written on the chalkboard or on a number card.
- Ask pupils to write the number 1 many times in their notebook using a pen or a pencil.
- Help pupils with difficulties to write well the number 1 by giving them more time on writing activity.
- Use all possible ways to make all pupils successful in reading and writing the number 1.

## **iv. Application activities**

Ask pupils to write the number 1 many times in their notebooks.

## **v. Assessment activities**

- Provide activities to be done by pupils at school or at home.
- Set activities that provide to every pupil the opportunities to count, read and write the number 1.

**Example:** Ask 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.


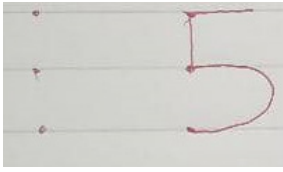


- *The following lessons follow the same teaching and learning methodology as lesson 3.*

<b>Lesson 4</b> on reading and writing 1 and 2	<b>Lesson 6</b> on reading and writing 1, 2 and 3
<b>Lesson 8</b> on reading and writing 1, 2, 3, and 4	<b>Lesson 10</b> on reading and writing 1, 2, 3, 4 and 5.

- *To enhance the concept of reading and writing numbers from 1 to 5, start by asking pupils to read and write the previously learnt numbers before the introduction of the new number.*
- *To enhance the concept of reading and writing numbers from 1 to 5, ask pupils to show where the numbers 1, 2, 3, 4, 5 are written on different objects. Example: at Rwandan coins, in textbooks, on telephones, on a laptop or a computer, on calculator, on television, and so on.*
- *Help pupils to write numbers 1, 2, 3, 4 and 5 through the following steps:*

Numbers	Drawings/designs	Steps in writing numbers
1		<ul style="list-style-type: none"> <li>• Trace 3 horizontal parallel lines;</li> <li>• Place 3 dots on them as indicated left;</li> <li>• Join the dots to obtain number 1.</li> </ul>
2		<ul style="list-style-type: none"> <li>• Trace 3 horizontal parallel lines;</li> <li>• Place 5 dots on them as indicated left;</li> <li>• Join the dots to obtain number 2.</li> </ul>
3		<ul style="list-style-type: none"> <li>• Trace 3 horizontal parallel lines;</li> <li>• Place 3 dots on them as indicated left;</li> <li>• From up, draw a backward curve to the center dot and then draw the second backward curve from the center to the bottom dot to obtain the number 3..</li> </ul>

4		<ul style="list-style-type: none"> <li>• Trace 3 horizontal parallel lines;</li> <li>• Place 4 dots on them as indicated left;</li> <li>• From up, draw a vertical line to the center dot and then draw the straight line to the second center dot. Finally, draw a vertical line passing through the second center dot towards the bottom dot to obtain the number 4.</li> </ul>
5		<ul style="list-style-type: none"> <li>• Trace 3 horizontal parallel lines;</li> <li>• Place 3 dots on them as indicated left;</li> <li>• From up, draw a vertical line to the center dot and then draw a backward curve joining the center dot to the bottom dot and put the short horizontal line above to obtain the number 5.</li> </ul>

## Lesson 11: Comparing numbers less than 5

a) **Learning objective:** Compare numbers of 5 or less than 5 objects.

### b) Teaching and learning materials

Chalkboard, chalks, notebooks, pens, pupil's book, charts containing pictures of groups of objects.

### c) Learning activities

#### i. Activities for introduction

- Use different prompting questions, and helps pupils to understand and discover how to compare numbers from 1 to 5.
- Request pupils 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:

- Given two boxes of sweets, where one box contains 3 sweets and another box contains 5 sweets.
- Ask pupils to compare the number of sweets in two boxes by showing the box with many or few sweets.

## ii. Activities for demonstration

In small groups, asks pupils to:

- Observe pictures in the pupil's book.
- Make 2 groups of similar objects but with different number of objects.
- Compare the number of objects in 2 different groups by showing a group with many or few objects.

### Example:

Pupils make 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.

## iii. Activities for reinforcement

- Draw 2 different groups with different numbers of objects,
- Ask pupils to compare them by saying which group has many or few objects.
- Ask pupils to write the number of objects in each group and then compare numbers.

## iv. Application activities

- Provide different exercises on comparing groups of objects.
- Request pupils to provide oral answers by telling the group with many or few objects.
- Ask pupils to compare numbers of objects by writing.
- Make a follow up on how best pupils are performing the given tasks and appreciate, encourage and value the pupils' answers.

## v. Assessment activities

Provide activities on comparison of 1 to 5 objects to be done at school or at home.



- 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 <b>greater than</b> 4
<	Less than	$4 < 5$	4 is <b>less than</b> 5
=	Equal to	$4 = 4$	4 is <b>equal to</b> 4

## Lesson 12: Ascending order of numbers from 1 to 5

### a) Learning objective

Arrange numbers from 1 to 5 in increasing / ascending order (from smaller to bigger number).

### b) Teaching and learning materials

Chalkboard, chalks, notebooks, pens, pupil's book, charts containing pictures of groups of objects.

### c) Learning activities

#### i. Activities for introduction

- Use different prompting questions, help pupils to understand and discover the increasing / ascending order of numbers from 1 to 5 (from smaller to bigger number).
- Request pupils 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.
- Ask pupils to explain how to arrange different groups of objects by starting with a group with less objects to the group with many objects.

**Example:** Pupils explain how to arrange in increasing/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.

#### ii. Activities for demonstration and reinforcement

In small groups of 5 pupils each,

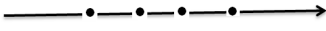

- Ask pupils to make different groups of 1 to 5 similar objects

- Arrange in increasing/ascending order (from smallest to biggest) 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 increasing/ascending order the following numbers: 2, 1, 3, 4.

• **Steps:**

- Find the number of the given numbers: There are 4 numbers
- On the number line, place 4 dots : 
- Place the smallest number above the first dot.
- Repeat the placement of the other numbers according to their ascending order (greatness).
- Finally, we get the following result 

**iii. Application activities**

- Provide activities on arranging numbers from 1 to 5 in increasing/ ascending order.
- Ask pupils to explain how they come up with a list of numbers arranged from smaller to bigger number.

**Example:** Individually or in pairs order from smaller to bigger number



- Application activities are done individually or in pairs.
- Ensure that all pupils understand how to make an increasing/ ascending order of numbers from 1 to 5
- Provide help or remedial activities for pupils in difficulties.

#### iv. Assessment activities

Provide activities on arranging numbers from 1 to 5 in ascending order to be done at school or at home.

**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) Learning objective

Arrange numbers from 1 to 5 in decreasing / descending order ( from bigger to smaller number) .

#### 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

##### i. Activities for introduction

- Use different prompting questions,
- Help pupils to understand and discover how to arrange numbers from 1 to 5 in decreasing/ descending order (from bigger to smaller number).
- Request pupils to count objects in different groups and compare the number of objects in two or more groups by showing a group with many or few objects.
- Ask pupils to explain how to arrange different groups of objects by starting with a group of many objects to the group of a small number of objects.

### Example:

Pupils explain how to arrange in decreasing/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.

### ii. Activities for demonstration and reinforcement

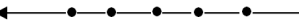
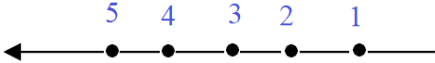
In small groups, ask pupils to:

- Make different groups of 1 to 5 similar objects
- Arrange in decreasing/ descending order (from bigger to smaller) the numbers of objects in different groups.

**Example:** pupils in groups:

- 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 1, 2, 3, 4, 5 in descending order

### Steps:

- On the number line, place 5 dots : 
- Place the number 5 on the first dot.
- Repeat the placement of the other numbers on the 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> dots
- Finally, we get the following result 

### iii. Application activities

- Provide activities on arranging numbers from 1 to 5 in descending order.
- 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





- Application are done individually or in pairs.
- Ensure that all pupils understand how to make a deceasing/descending order of numbers from 1 to 5
- Provide help or remedial activities for pupils in needs.

#### iv. Assessment activities

Provide activities on arranging numbers from 1 to 5 in descending order.to be done at school or at home.

**Examples:** Arrange the following numbers from the biggest to the smallest number.

1) 

3	5	4	2	1
---	---	---	---	---

2) 

1	3	2	4	5
---	---	---	---	---

### Lesson 14: Addition of numbers whose sum is less than or equal to 5

#### a) Learning objective

Add numbers whose sum does not exceed 5, addends being less than 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

##### i. Activities for introduction

- Use different prompting questions, help pupils to understand and discover how to add 2 numbers whose sum does not exceed 5.
- Request pupils to put together objects from 2 small groups in order to get a number of 5 or less than 5 objects.

### Example:

- Given two boxes of pens, where one box contains 3 pens and another box contains 2 pens.
- Ask pupils to put all pens together in order to get 5 pens.

### ii. Activities for demonstration

#### 1. Concrete activity

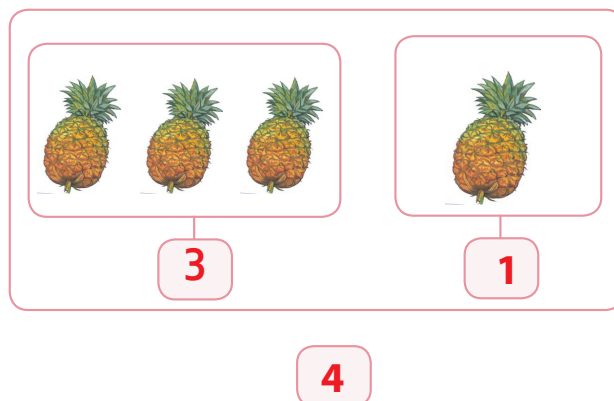
- Use real objects, ask pupils to make 2 groups of objects as follows: one group of 3 objects and another group of 2 objects.
- Ask pupils to put together all objects, count them and get the total number 5.



This activity can be done using different numbers between 1 and 5.

#### 2. Semi-Concrete activity

- Use pictures of groups of objects in the pupil's book, ask pupils to draw 2 groups of similar objects as follows: one group of 3 objects and another group of 1 object.
- Ask pupils to put together all objects from the 2 groups by circling or using a rectangle and then count them in order to get the the total number 4.



This activity can be done using different numbers between 1 and 5.

#### 3. Abstract activity

Help 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*

#### i. Reinforcement activities

- Help pupils to individually add by writing 2 numbers whose sum does not exceed 5.
- Facilitate pupils to correctly read aloud the mathematical sentence on addition of 2 numbers.

### Examples:

$3 + 1 = 4$  is read *3 plus 1 equals 4*

$2 + 2 = 4$  is read *2 plus two equals 4*

#### ii. Application activities

- Ask pupils to work out the addition activities in the pupil's book.
- Request pupils to work out the addition of 2 numbers whose sum does not exceed 5 individually or in pairs.
- 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.

#### iii. Assessment activities

Provide activities on addition of 2 numbers whose sum does not exceed 5 to be done at school or at home.

### Lesson 15: Word problems on addition of numbers whose sum does not exceed 5

#### a) Learning objective

Solve word problems involving addition 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**

#### **i. Activities for introduction**

- Use concrete objects and story telling, teacher helps pupils to add 2 numbers whose sum does not exceed 5.
- Read a short word problems involving addition of 2 numbers and orally pupils give the answer.

**Example:** Kiza has 2 pens. Teacher gives Kiza 1 more pens. How many pens does Kiza have?

#### **ii. Activities for demonstration**

- Read the word problems in the pupil's book
- Ask pupils to give orally the answers for the word problems.

#### **iii. Activities for reinforcement**

Pupils in small groups work out different word problems given by the teacher.

#### **iv. Application activities**

- Read a word problem to the pupils
- Ask them to find out the answer for the word problems on addition of 2 numbers whose sum does not exceed 5 (refer to pupil's book).

#### **v. Assessment activities**

Provide activities on addition of 2 numbers whose sum does not exceed 5 to be done at school or at home.

### **Lesson 16: Subtraction of numbers**

#### **a) Learning objective**

Subtract 2 numbers less than 5 whose difference is not zero.

#### **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

### i. Activities for introduction

Use different prompting questions, help pupils to understand and discover how to subtract 2 numbers less than 5.

**Example:** 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.

### ii. Activities for demonstration

#### 1. Concrete activity

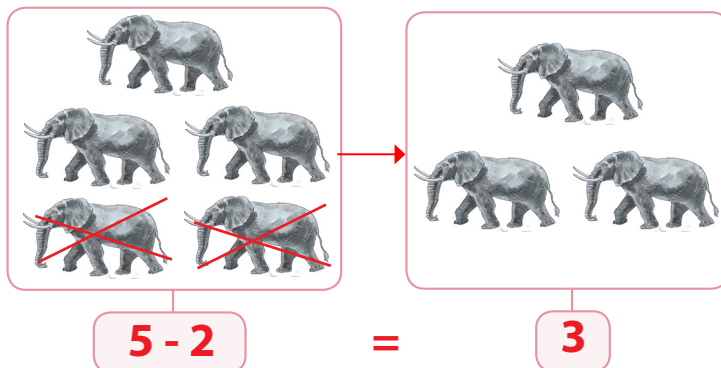
- Use real objects,
- Ask pupils to make a group of 5 objects and then take away 2 objects.
- Ask pupils to count the remaining objects in the group.



This activity can be done using different numbers between 1 and 5.

#### 1. Semi-Concrete activity

- Use pictures of groups of objects in the pupil's book,



- Ask pupils to take away 2 objects by crossing them and count the remaining objects.
- Ask pupils to draw a group of 5 similar objects, and take away 1, 3 and 4 objects respectively.

#### 2. Abstract activity

Help 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
- $3 - 1 = 2$ , 3 minus 1 equals 2

### iii. Reinforcement activities

- Help pupils to subtract by writing 2 numbers less than 5 individually.
- Facilitate pupils to correctly read aloud the mathematical sentence on subtraction of 2 numbers (refer to pupil's book).

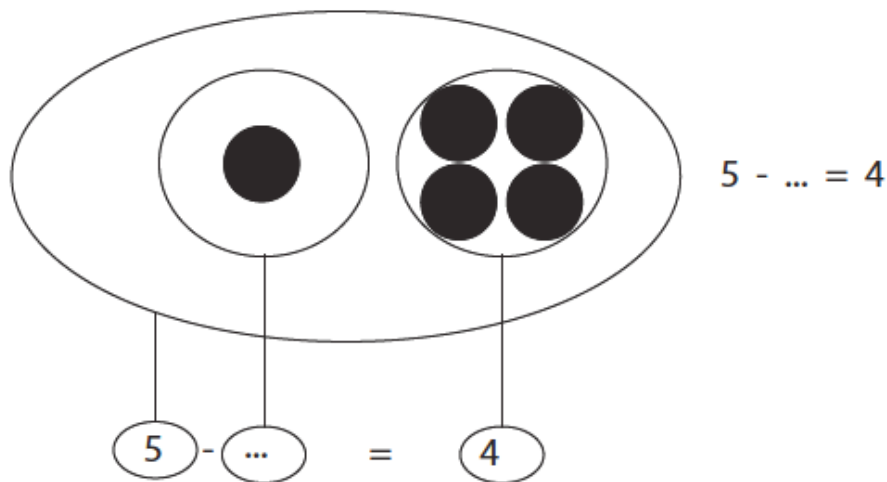
### Examples:

$3 - 1 = 2$  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:



### iv. Assessment activities

Provide activities on subtraction of 2 numbers less than 5 (refer to pupil's book) to be done at school or at home.

## Lesson 17: Word problem on subtraction of numbers less than 5

### a) Learning objective

Solve word problems involving subtraction of 2 numbers less than 5 whose difference is not zero.

## 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

### i. Activities for introduction

- Use concrete objects and story telling,
- Help pupils to subtract 2 numbers less than 5.
- Read a short word problems involving subtraction of 2 numbers
- Ask pupils to orally give the answer.

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

### ii. Activities for demonstration

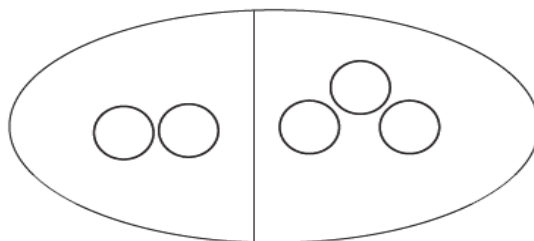
- Use real objects / materials or pictures on the chalkboard or notebook,
- Read a word problem to the pupils and then they find out the answer for the word problems.

### 1. Concrete activity

- Use real materials or counters,
- Facilitate pupils to work out word problems involving subtraction of 2 numbers less than 5 (refer to pupil's book).
- Use counters, dices, sticks and help pupils to solve word problems involving subtraction.

**Example:** Kamana has 5 oranges; he gives 3 oranges to his brother Munezero. How many oranges does Kamana remain with?

**Working steps 1:** Break down 5 oranges into 2 groups of 3 oranges for Kamana and 2 oranges for Munezero.



**Working steps 2:** Take away 3 oranges given to Munezero from 5 oranges of Kamana



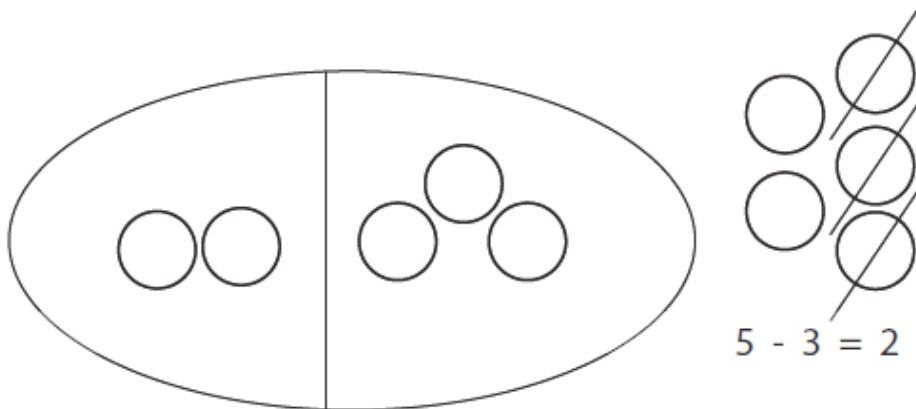
**Answer:** Kamana remains with 2 oranges

## 2. Semi-concrete activity

Use pictures, 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 3 oranges to his brother Munezero. How many oranges does Kamana remain with?

**Answer:** Kamana remains with 2 oranges



## 3. Abstract activity

Use numbers and symbols, 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 3 oranges to his brother Manasseh. How many oranges does Kamana remain with?

**Answer:**  $5 - 3 = 2$ ; Kamana remains with 2 oranges

### iii. Activities for reinforcement

Pupils in small groups work out different word problems given by the teacher. (Refer to pupil's book).

### iv. Application activities

Read word problems to the pupils and then they find out the answer for the word problems on subtraction of 2 numbers less than 5.

### v. Assessment activities

Provide 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 problems involving addition and subtraction of numbers whose sum does not exceed 5 and difference is not zero.**

### a) Learning objective

Solve word problems involving addition and subtraction of numbers whose sum does not exceed 5 and difference is not zero.

### 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

#### i. Activities for introduction

- Use concrete objects, story telling and prompting questions to ask pupils orally.
- Read short word problems involving addition and subtraction of 2 numbers and orally pupils give the answer.

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

#### ii. Activities for demonstration and reinforcement

- Use real objects / materials or pictures on the chalkboard or notebook,
- Read word problems to the pupils
- Ask pupils to find out the answer for the word problems.

### 1. Concrete activity

Use real materials, counters or sticks, facilitate pupils to work out word problems involving both addition and subtraction of 2 numbers whose sum does not exceed 5 and difference is not zero.

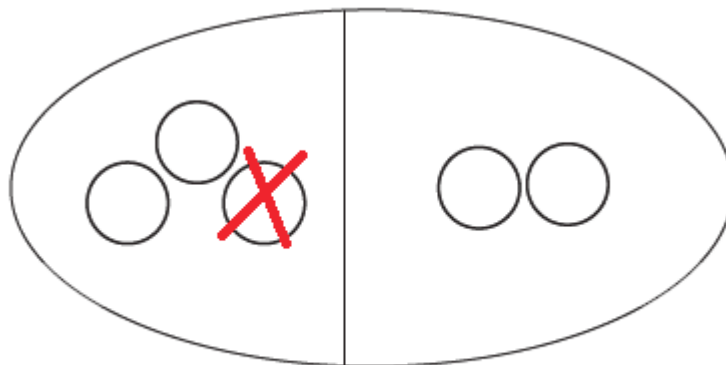
### 2. Semi-concrete activity

Use pictures or drawings, teacher facilitate pupils to work out word problems involving both addition and subtraction of 2 numbers whose sum does not exceed 5 and difference is not zero.

### 3. Abstract activity

Use numbers and symbols, facilitate pupils to work out word problems involving both addition and subtraction of 2 numbers whose sum does not exceed 5 and difference is not zero.

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



$$3 - 1 = 2 \text{ then } 2 + 2 = 4$$

Kiza has 4 eggs



While solving word problems that involving both addition and subtraction, help 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:  $2 + 2 = 4$

### iii. Application activities

- Read in pupils' book word problems involving addition and subtraction as mentioned above
- Ask pupils to solve those problems mentally or/ and writing.
- Provide additional word problems related to the real context and the school environment.

### iv. Assessment activities

Provide word problems on both addition and subtraction of 2 numbers (refer to pupil's book) to be done by pupils at school or at home.

## Lesson 19: End unit assessment 1

**a) Lesson objective:** Count, read, write, compare, order, add and subtract numbers from 1 to 5.

### b) Instructions on End unit assessment



Before the end unit assessment,

- Ensure that pupils understand how to apply the following: Count, read and write the numbers from 1 up to 5; Compare numbers less than or equal to 5; Arrange numbers less than or equal to 5 in ascending or in descending order; Add and subtract numbers less than, the sum being less than or equal to 5 and difference is not equal to zero.
- Ask pupils individually or in pairs to work out different assessment questions and then make an individual correction.
- Basing on the results from end unit assessment and before starting the new unit, provide remedial, reinforcement or extension activities for pupils in need.

### 2.1. Key unit competence

Counting, reading, writing, ordering, comparing, adding and subtracting 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 vocabularies related to family members, English names of different colors...
- They know and master 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 does not exceed 5 and difference is not zero.

### 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 operations.

## 2.4. List of lessons

UNIT 2: NUMBERS FROM 1 TO 9 (48 Periods)			Reinforcement and extension lessons	
	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.	1	
3	Reading and writing the numbers from 1 to 6	Read and write in figure the numbers from 1 to 6.	2	1
4	Counting 1 to 7 objects	Understand and discover the concept of numbers from 1 to 7.	1	1
<b>Remediation</b>			<b>1</b>	
5	Reading and writing the numbers from 1 to 7	Read and write in figure and in word the numbers from 1 to 7.	2	1
6	Counting 1 to 8 objects	Understand and discover the concept of numbers from 1 to 8.	1	1
7	Reading and writing the numbers from 1 to 8	Read and write in figure and in word the numbers from 1 to 8.	2	
<b>Remediation</b>			<b>1</b>	
8	Counting 1 to 9 objects	Understand and discover the concept of numbers from 1 to 9.	1	
9	Reading and writing the numbers from 1 to 9	Read and write in figures and in words the numbers from 1 to 9.	2	

10	Comparing numbers of 9 or less than 9 objects	Compare numbers of 9 or less than 9 objects.	1	1
11	Comparing numbers from 1 to 9	Compare numbers from 1 to 9 using $>$ , $<$ and $=$	1	1
<b>Remediation</b>			<b>1</b>	
12	Ascending order of numbers from 1 to 9	Arrange numbers from 1 to 9 in ascending order (from smaller to bigger number).	2	1
13	Descending order of numbers from 1 to 9	Arrange numbers from 1 to 9 in descending order (from bigger to smaller number).	2	1
14	Addition of numbers whose sum does not exceed 9	Add numbers whose sum does not exceed 9.	1	
<b>Remediation</b>			<b>1</b>	
15	Word problems on addition of numbers whose sum does not exceed 9	Solve word problems involving addition whose sum does not exceed 9.	2	2
16	Subtraction of numbers less than 9	Subtract 2 numbers less than 9 whose difference is not zero.	2	2
17	Word problems on subtraction of numbers less than 9	Solve word problems involving subtraction of 2 numbers whose difference is not zero.	1	1
			1	
18	End unit assessment 2	Count, read, write, compare, order, add and subtract numbers from 1 to 9.	2	
<b>Total number of periods for unit 2</b>			<b>34</b>	<b>14</b>

## Lesson 1: Introductory activity

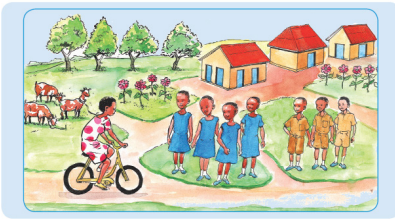
### a) Learning objective

Arouse the curiosity of learners on the content of this unit and the importance of counting, reading and writing numbers in real life.



This lesson is delivered through a conversation between teacher and pupils.

### Observing the pictures



Use prompt questions to help pupils to get their predictions about the unit to be learnt:

- Look at the picture. What do you see?
- How many children do you see on the picture?
- How many trees do you see in the picture?
- How many goats do you see in the picture?
- How many flowers do you see in the picture?
- How many houses do you see in 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 and 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) Learning objective

Understand and discover the concept of numbers from 1 to 6.

### b) Teaching and learning materials

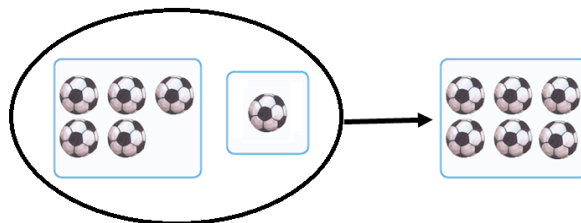
Pineapples, flowers, books, desks, pens, chalks, beans, small stones and any other counters or objects for counting available in the school environment.

### c) Learning activities

#### i. Activities for introduction

##### 1. Counting 1 to 6 real objects

- Use different counters or counting objects or a song, help pupils to understand and discover the concept of the number 6.
- Ask pupils to make two groups of similar objects; one group of 5 objects and another group of 1 object.
- Ask pupils to put together all objects and count them.



- Ask pupils to bring 1 notebook, 2 notebooks, and 3 notebooks up to 6 notebooks individually.

##### 2. Observing pictures and counting 1 to 6 objects

- Use pupil's book, lead pupils to look at the pictures.
- Ask pupils to list all observed objects, count and tell the number of objects in the picture.

**Examples:** How many cows do you see in the picture?

How many flowers do you see in the picture?

How many balls do you see in the picture?

How many chickens do you see in the picture?

## ii. Demonstration and reinforcement activities

Use different questions, test if pupils understand the concept on the numbers 1 to 6 and if they can apply it to 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?

## iii. Assessment activities

- Provide activities to be done by pupils at school or at home.
- Set activities that provide to every pupil the opportunities to demonstrate and apply the new concept learnt in a range of situations.

## iv. Examples:

- Ask pupils to bring objects of the same nature (2 pens, 3 notebooks, 4 oranges, 6 beans, 5 small stones...)
- Ask 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).



- *The following lessons follow the same teaching and learning methodology as lesson 1.*

<b>Lesson 2</b> on counting 1 to 6 objects	<b>Lesson 4</b> on counting 1 to 7 objects
<b>Lesson 6</b> on counting 1 to 8 objects	<b>Lesson 8</b> on counting 1 to 9 objects

- *To enhance the concept of counting numbers from 1 to 9, start by asking pupils to count objects related to the previously learnt numbers before the introduction of the new number.*

## Lesson 3: Reading and writing the number 6

### a) Learning objective

Read and write in figures the number 6

## b) Teaching and learning materials:

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

### i. Activities for introduction

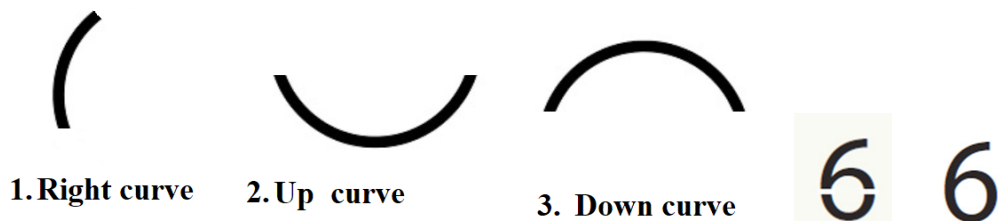
Use different prompting questions, help pupils to understand and discover how to read and write the number 6.

**Example:** Use a chart containing 6 objects and the number 6 in figure and asks pupils to count and tell the number of objects they see on the picture.

### ii. Activities for Demonstration

Lead pupils how to read and write the number 6 through the following steps:

**Step 1:** Write slowly the number 6 on the chalkboard by explaining to pupils different parts of the number 6.



**Step 2:** Ask 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.

### iii. Activities for reinforcement

- Ask pupils to 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.

- Help pupils with difficulties to well write the number 6 by giving them more time on writing activity.

#### iv. Application activities

Ask 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.

#### v. Assessment activities

- Provide activities to be done by pupils at school or at home.
- Set activities that provide to every pupil the opportunities to demonstrate and apply the new concept learnt in a range of situations.

#### Examples:

- Using objects available at school on which the number 6 is written: Ask pupils to show the number 6, write or make number card with the number 6 .
- Write the following numbers in your notebook or on chalkboard

6      6      6      6      6  
 .....  
 1   3   5   6   2   4   6  
 ....



- *The following lessons follow the same teaching and learning methodology as lesson 3:*

<b>Lesson 5</b> on reading and writing numbers from 1 to 7	<b>Lesson 7</b> on reading and writing numbers from 1 to 8
<b>Lesson 9</b> on reading and writing numbers from 1 to 9	

- *To enhance the concept of reading and writing numbers from 1 to 9, teacher should:*
  - *Ask pupils to read and write the previously learnt numbers before the introduction of the new number.*
  - *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) Learning objective

Compare numbers of 9 or less than 9 objects.

### 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

#### i. Activities for introduction

- Use different prompting questions, help pupils to understand and discover how to compare numbers from 1 to 9.
- Request pupils 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:** Using two boxes of pens, where one box contains 8 pens and another box contains 5 pens. Pupils compare the number of pens in two boxes by showing the box with many or few pens.

#### ii. Activities for demonstration

In small groups, ask pupils to observe pictures in their pupil's book and make 2 groups of similar objects but with different number of objects: one group with many objects and another group with few objects (refer to the pupil's book).

#### **Example:**

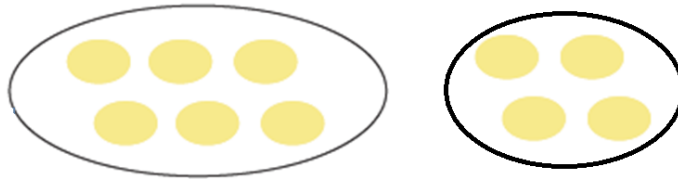
Ask pupils to make 2 different groups of objects as follows:

- 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.

After making groups, pupils compare objects and show where there are equal, many or few objects.

### iii. Activities for reinforcement

- Draw 2 different groups of objects with different numbers
- Ask pupils to compare them by circling and saying which group has many or few objects.
- Finally, ask pupils to write and compare the number of objects in each group.



a) 6 objects are greater than 4 objects

b) 4 objects are less than 6 objects



Through examples, pupils compare numbers by using the comparison terms: greater than, less than or equal to:

Meaning	Mathematical example	How to read
Greater than	8 and 7	8 is <b>greater than</b> 7
Less than	7 and 8	7 is <b>less than</b> 8
Equal to	4 and 4	4 is <b>equal to</b> 4

### iv. Application activities

- Provide different exercises on comparison.
- Pupils provide answers in a written or in oral form.
- Make a follow up, appreciates, encourages and values the pupils' answers and help pupils with difficulties.

### v. Assessment activities

- Provide activities on comparison of numbers from 1 to 9 objects to be done by pupils at school or at home.
- Ask 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) Learning objective

Compare numbers from 1 to 6 using  $>$ ,  $<$  and  $=$

### 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

#### i. Activities for introduction

- Use different prompting questions, help pupils to understand and discover how to compare numbers from 1 to 9.
- Request pupils 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:** Using two boxes of notebooks, where one box contains 9 notebooks and another box contains 4 notebooks. Pupils compare the number of notebooks in two boxes by showing the box with many or few notebooks.

#### ii. Activities for demonstration

In small groups, ask pupils to observe pictures in the pupil's book and 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 make 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.
- After making groups, pupils compare objects using the comparison symbols ( $<$  : less than,  $>$  : greater than, or  $=$  : equal to).
- Ask pupils to compare 2 groups of equal and similar objects and let them discover that 2 groups have equal number of objects.

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

### iii. Activities for reinforcement

- Draw 2 different groups of objects with different numbers
- Ask pupils to compare them by saying which group has many or few objects.
- Finally, ask them to write and compare the numbers of objects using symbols.
  - a) 6 objects are greater than 4 objects
  - b) 4 objects are less than 6 objects
  - c) 4 objects are equal to 4 objects



Through examples, teacher may help pupils to know both the comparison terms and comparison symbols:

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

### iv. Application activities

Provide different exercises on comparison using symbols (<, > and =) and pupils provide written answers.

### v. Assessment activities

Provide activities on comparison of numbers from 1 to 9 using symbols (<, > and =) to be done by pupils at school or at home.

## Lesson 12: Ascending order of numbers from 1 to 9

### a) Learning objective

Arrange numbers from 1 to 9 in ascending order (from smaller to bigger number).

### b) Teaching and learning materials

Chalkboard, chalks, notebooks, pens, pupil's book, charts containing pictures of groups of objects.

### c) Learning activities

#### i. Activities for introduction

Use different prompting questions, help pupils to understand and discover how to arrange numbers from 1 to 9 in ascending order (from smaller to bigger number).

**Example:** Using real objects, pupils may be requested to make different groups with different numbers of objects and then arrange them by starting with a group of less number of objects until they arrive to the group with a big number of objects (in ascending order) as follows:

A group of 4 notebooks, a group of 5 notebooks, a group of 9 notebooks, a group of 6 pens, a group of 3 chalkboard, a group of 2 chalks.

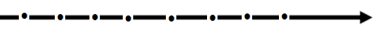
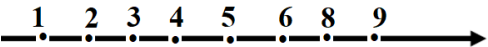
#### ii. Activities for demonstration and reinforcement

In small groups, ask pupils to make different groups of 1 to 9 similar objects and arrange in increasing/ascending order (from smaller to bigger) the numbers of objects in different groups.

**Example:** Pupils in groups make groups of similar objects and arrange the numbers of objects from the smallest to the biggest number.

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

### Steps:

- On the number line, place 8 dots : 
- Place the smallest number above the first dot.
- Repeat the placement of the other numbers according to their increasing/ ascending order.
- Finally, we get the following result 

### iii. Application activities

Provide activities on arranging numbers from 1 to 9 in ascending order.

**Example:** Individually or in pairs order from smaller to bigger number.

9	7	3	1
_____	_____	_____	_____
7	4	2	5
_____	_____	_____	_____



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

### iv. Assessment activities

Provide activities on arranging numbers from 1 to 9 in ascending order to be done by pupils at school or at home.

**Example:** Arrange the following numbers from the smallest to the biggest number.

5 3 4 7 1 6 9 2 8

## Lesson 13: Descending order of numbers from 1 to 9

### a) Learning objective

Arrange numbers from 1 to 9 in descending order from bigger to smaller number.

## 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

### i. Activities for introduction

Use different prompting questions, help pupils to:

- Understand and discover how to arrange numbers from 1 to 9 in descending order (from bigger to smaller number).
- Explain how to arrange numbers 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.


### ii. Activities for demonstration and reinforcement

In small groups, ask pupils to make different groups of 1 to 9 similar objects and arrange in decreasing/descending order (from bigger to smaller) the numbers of objects in different groups.


**Example:** Pupils in groups 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.

### Steps:

- On the number line, place 7 dots : 
- Place the biggest number above the first dot.

- Repeat the placement of the other numbers according to their descending order (greatness).

- Finally, we get the following result 

### iii. Application activities

Provide activities on arranging numbers from 1 to 9 in descending order.

**Example:** Individually or in pairs order from bigger to smaller number whose difference is not zero.



Application activities may be done individually or in pairs. Teacher ensures that all pupils understand how to make a decreasing/descending order of numbers from 1 to 9 and provides help or remedial activities for pupils in need.

### iv. Assessment activities

Provide activities on arranging numbers from 1 to 9 in descending order to be done by pupils at school or at home.

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

### a) Learning objective

Add numbers whose sum does not exceeding 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

#### i. Activities for introduction

- Use different prompting questions, help pupils to understand and discover how to add 2 numbers whose sum does not exceed 9.
- Request pupils to put together objects from 2 small groups in order to get a number of 9 or less than 9 objects.

**Example:** Two boxes of chalks, where one box contains 5 chalks and another box contains 4 chalks.

Pupils put all chalks together in order to get 9 chalks.

## ii. Activities for demonstration

### 1. Concrete activity

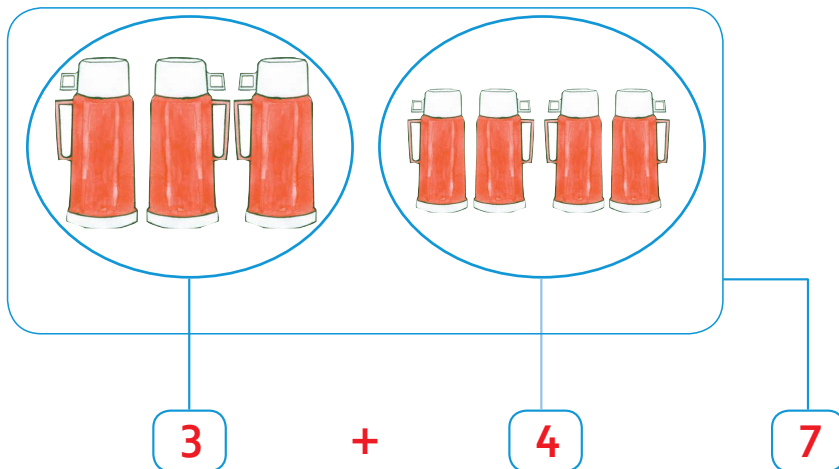
- Use real objects, ask pupils to make 2 groups of objects as follows: one group of 4 objects and another group of 3 objects.
- Ask pupils to put together all objects in 2 groups and then count them in order to get the sum 7.



This activity can be done using different numbers between 1 and 9.

### 2. Semi-Concrete activity

- Use pictures of groups of objects in the pupil's book, ask pupils to draw 2 groups of similar objects as follows: one group of 4 objects and another group of 3 objects.
- Ask pupils to put together all objects in 2 groups by circling and then count them in order to get the sum 7.

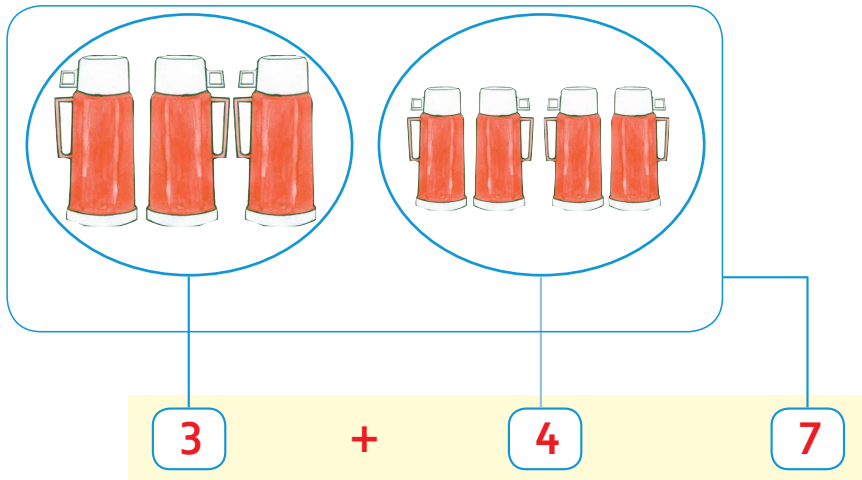


This activity can be done using different numbers between 1 and 9.

### 3. Abstract activity

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

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



### iii. Reinforcement activities

- Help pupils to add by writing 2 numbers whose sum does not exceed 9.
- Facilitate pupils to correctly read aloud the mathematical sentence on addition of 2 numbers.

**Examples:**

- $3 + 6 = 9$  is read 3 plus 6 equals 9
- $5 + 2 = 7$  is read 5 plus two equals 7

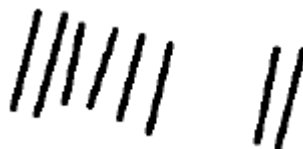
### iv. Application activities

- Ask pupils to work out the addition of 2 numbers whose sum does not exceed 9 in the pupil's book.
- Application activities 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.


**Example:**

**Concrete stage:**

Use of sticks to add 6 and 2



**6 and 2 sticks make 8 sticks**

<p><b>Semi-concrete stage:</b></p> <p>Use of circles to add 6 and 2</p>	 <p><b>6 and 2 circles make 8 circles</b></p>
<p><b>Abstract stage:</b></p> <p>Write addition of 6 and 2 in mathematical sentence.</p>	<p><math>6 + 2 = ?</math></p>

**v. Assessment activities**

Provide activities on addition of 2 numbers whose sum does not exceed 9 to be done by pupils at school or at home.

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

**a) Learning objective**

Solve word problems involving addition 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**

**i. Activities for introduction**

- Using concrete objects and story telling, help pupils to add 2 numbers whose sum does not exceed 9.
- Read a short word problems involving addition of 2 numbers and orally pupils give the answer.
- Ask one pupil to come in front of the class and get 6 counters from others and then give to her / him 2 more counters.
- Ask the whole class to say the numbers of counters a pupil has.

**ii. Activities for demonstration**

Read the word problems in the pupil’s book and then ask pupils to give orally the answers for the word problems.

### iii. Activities for reinforcement

Pupils in small groups work out different word problems given by the teacher.

### iv. Application activities

Read the word problems and ask 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).

### v. Assessment activities

Provide activities on addition of 2 numbers whose sum does not exceed 9 to be done by pupils at school or at home.

## Lesson 16: Subtraction of numbers less than 9

### a) Learning objective

Subtract two numbers less than 9 whose difference is not zero

### 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

#### i. Activities for introduction

Using concrete objects and story telling, help pupils to subtract 2 numbers less than 9.

#### Example:

- Call a group of less than or equal to 9 pupils to come in front of the class.
- Request some pupils to go back to their seats and then other pupils 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 remaining in front of the class*).

#### ii. Activities for demonstration

##### 1. Concrete activity

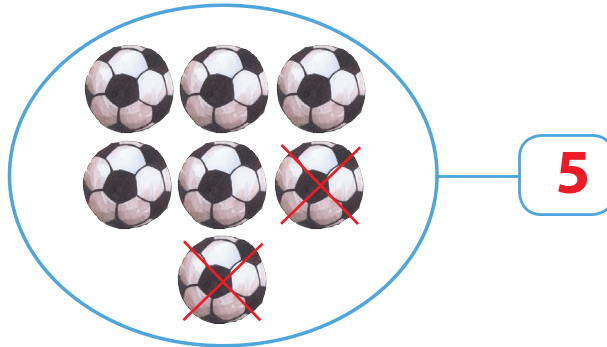
- Using real objects, ask pupils to make a group of 9 objects / counters and then take away 2 objects/ counters.
- Ask them to count the remaining objects/counters.



This activity can be done using different numbers between 1 and 9.

## 2. Semi-Concrete activity

- Using pictures of groups of objects in the pupil's book, ask pupils to draw a group of 7 similar objects.
- Ask pupils to take away 2 objects by crossing them and count the remaining objects in the group.

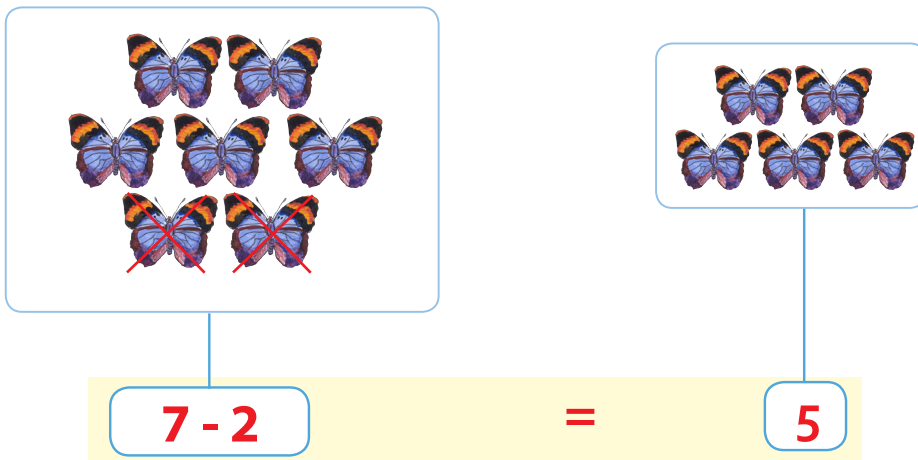


This activity can be done using different numbers between 1 and 9.

## 3. Abstract activity

Help 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

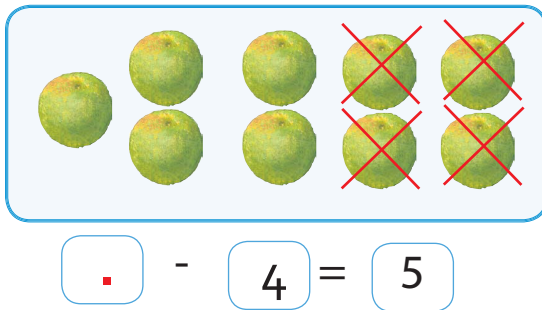


### iii. Reinforcement activities

- Help pupils to subtract by writing 2 numbers less than 9.
- Facilitate them to correctly read aloud the mathematical sentence on subtraction of 2 numbers (refer to pupil's book).

#### Examples:

- $9 - 4 = \dots$  is read *9 minus 4 equals ...*
- $8 - 5 = \dots$  is read *8 minus 5 equals ...*
  - Vary the reinforcement activities by including tasks of this form:



### iv. Assessment activities

Provide activities on subtraction of 2 numbers less than 9 (refer to pupil's book) to be done by pupils at school or at home.

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

### a) Learning objective

Solve word problems involving subtraction of 2 numbers less than 9 whose difference is not zero.

### 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

#### i. Activities for introduction

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

- Read a short word problems involving subtraction of 2 numbers and pupils give the answers orally.

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

## ii. Activities for demonstration

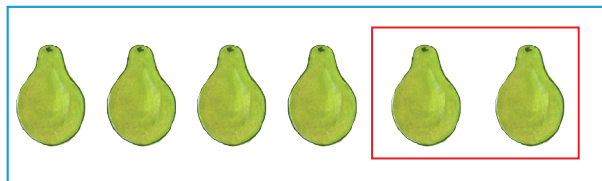
Read the word problems in the pupil's book and then ask pupils to give the answers orally for the word problems.

### 1. Concrete activity

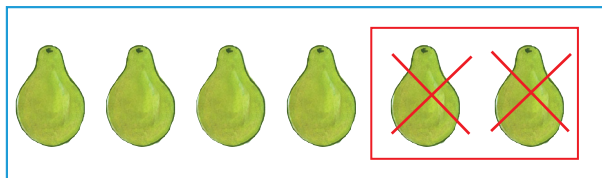
- Using real materials or counters, facilitate pupils to work out word problems involving subtraction of 2 numbers less than 9 (refer to pupil's book).
- Use counters, dices, sticks and help pupils to solve word problems involving subtraction.

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

**Working steps 1:** Breaking down 6 avocados into 2 groups of 4 avocados for Kiza and 2 avocados for Mary.



**Working steps 2:** Taking away 2 avocados given to Mary from 9 avocados of Kiza



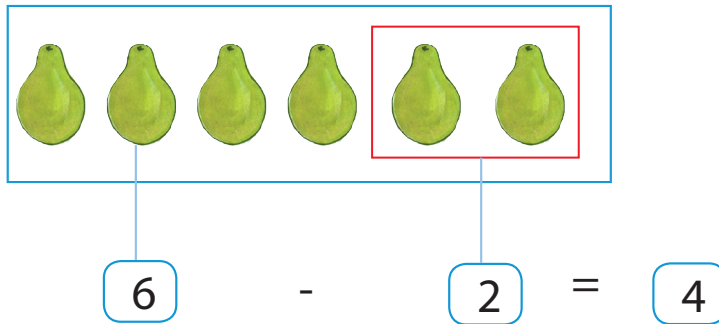
**Answer:** Kiza remains with 4 avocados

### 2. Semi-concrete activity

Using pictures, facilitate pupils to work out word problems involving subtraction of 2 numbers less than 5 (refer to pupil's book).

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

**Answer:** Kiza remains with 4 avocados



### 3. Abstract activity

Using numbers and symbols, facilitate pupils to work out word problems involving subtraction of 2 numbers less than 9 (refer to pupil's book).

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

**Answer:**  $6 - 2 = 4$

Kiza remains with 4 avocados

### iii. Activities for reinforcement

Pupils in small groups work out different word problems given by the teacher. (refer to pupil's book).

### iv. Application activities

Read the word problems and asks pupils to use pupil's book and work out the word problems on subtraction of 2 numbers less than 9 (refer to pupil's book).

### v. Assessment activities

Provide activities on subtraction of 2 numbers less than 9 to be done by pupils at school or at home.



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) **Learning objective:** Count, read, write, compare, order, add and subtract numbers from 1 to 9.

### b) Instructions on End unit assessment



Before the end unit assessment:

- Ensure 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 does not exceed 9 and difference is not zero.
- Relate different revision activities to real life situations or pupils'daily life.
- Ask pupils to work out different assessment questions individually or in pairs and make an individual correction.
- Basing on the results from end unit assessment, provide remedial or reinforcement activities for pupils in need before starting unit 3.

### 3.1. Key unit competence

Counting, reading, writing, ordering, comparing, adding and subtracting 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 vocabulary 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 operations .

### 3.4. list of lessons

UNIT 3: NUMBERS FROM 0 UP TO 10 (16 Periods)			Reinforcement and extension lessons	
	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	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	1
5	Comparing numbers from 1 to 10	Compare numbers from 1 to 10 using $>$ , $<$ and $=$	1	1
	<b>Remediation</b>		1	
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).	1	
7	Addition of numbers whose sum does not exceed 10 and word problems	Add numbers whose sum does not exceed 10 Solve word problems involving addition whose sum does not exceed 10.	1	1
8	Subtraction of numbers less than 10 and word problems	Subtract 2 numbers less than 10 whose difference is not zero Solve word problems involving subtraction of 2 numbers less than 10 whose difference is not zero.	1	2

9	End unit assessment 3	Count, read, write, compare, order, add and subtract numbers from 0 to 10.	1	
	<b>Remediation</b>		1	
<b>Total number of periods for unit 3</b>			11	5

## Lesson 1: Introductory activity

### a) Learning objective

Arouse the curiosity of learners on the content of this unit and the importance of counting, reading and writing numbers in real life.



This lesson is delivered through a conversation between teacher and pupils.

### Observing the pictures



Use prompt questions to help pupils to get their predictions about the unit to be learnt:

- Look at the picture. What do you see?
- How many people do you see in the picture?
- How many bananas does the mother have?
- How many bananas does the boy have?
- How many bananas does the girl have?
- Who has more / many bananas?
- Who has less/ few bananas?
- On the picture there is a boy, a girl and the mother. Count the number of bananas a boy has, the number of bananas a girl has? 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, how many bananas does the mother remain with?

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 the predictions from pupils on the unit to be learnt.

## Lesson 2: Concept of the number 0

### a) Learning objective

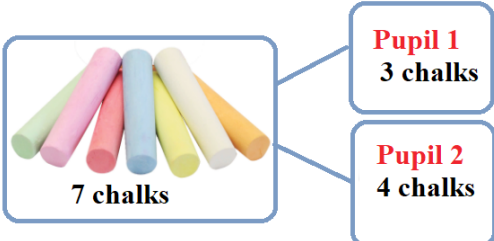
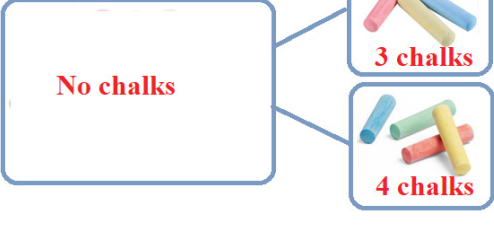
Understand and discover the concept of number 0.

### 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

#### 1. Activities for introduction

 <p>7 chalks</p> <p>Pupil 1 3 chalks</p> <p>Pupil 2 4 chalks</p>	<ul style="list-style-type: none"><li>• Take a certain number of chalks and distribute all of them to 2 pupils.</li><li>• Ask pupils to say the number of chalks received by each pupil.</li></ul>
 <p>No chalks</p> <p>3 chalks</p> <p>4 chalks</p>	<ul style="list-style-type: none"><li>• Asks pupils to say the number of chalks remained with the teacher</li><li>• Help pupils to discover that there is no chalk or zero chalks remaining in the hands of the teacher.</li></ul>

#### ii. Activities for demonstration

##### 1. Concrete activity

Using real objects:

- Ask pupils to count 9 objects and put them in a box or any other container.
- Ask them to remove all objects from the box to another container by counting until the first box is empty.
- Ask pupils to find out and say the number of objects remained in the first box or container.

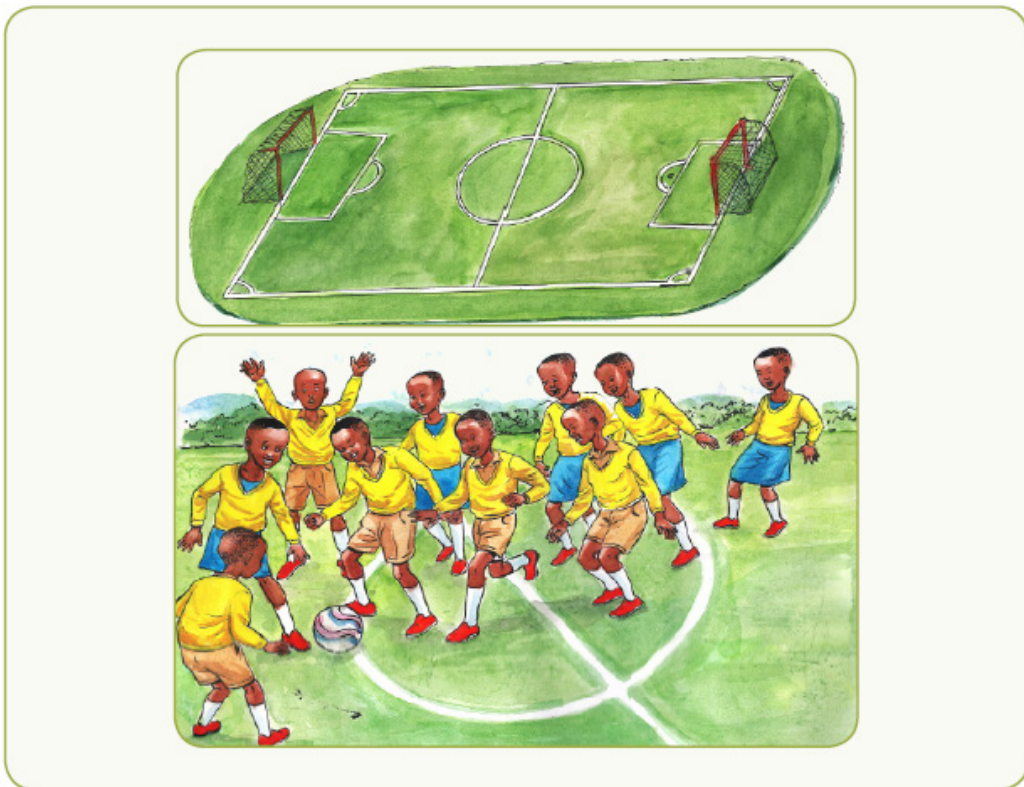


This activity can be done using different numbers between 1 and 9.

## 2. Semi-Concrete activity

Using pictures of players in the pupil's book, ask pupils to count and say the number of players in 2 different football playing grounds.

**Example:** There is no player in the first football playing ground, while there are 10 players in the second football playing ground.

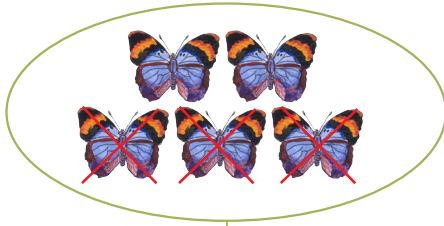


## 3. Abstract activity

- Help pupils to get the mathematical meaning of empty **playing ground** or **no player** in the playing ground.
- Help pupils to find out that there are **zero players** in the first playing ground.
- Pupils repeat the word "**zero**" many times.

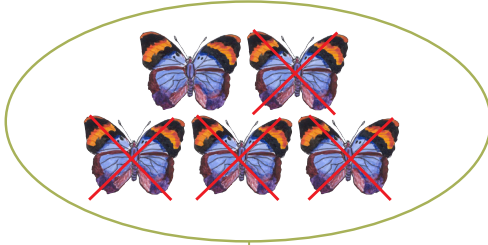
### iii. Reinforcement activities

In small groups, help pupils to work out subtraction activities in the pupil's book, they count, take away, write and say the number of the remaining objects.



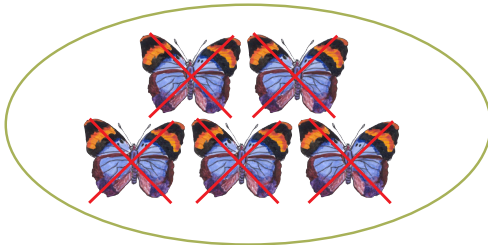
$5 - 3$

=



$5 - 4$

=



$5 - 5$

=



#### iv. Application activities

Individually or in pairs, ask pupils to use a box of a certain number of objects (use numbers from 1 to 9) and another box without objects count objects and remove them from the first box to the second one until they remained with zero objects in the first box.

#### v. Assessment activities

- Provide activities to be done by pupils at school or at home.
- Set activities that help every pupil to understand deeply the concept of the number zero.

## Lesson 3: Counting 1 to 10 objects

### a) Learning objective

Understand and discover the concept of number 10.

### b) Teaching and learning materials

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

### c) Learning activities

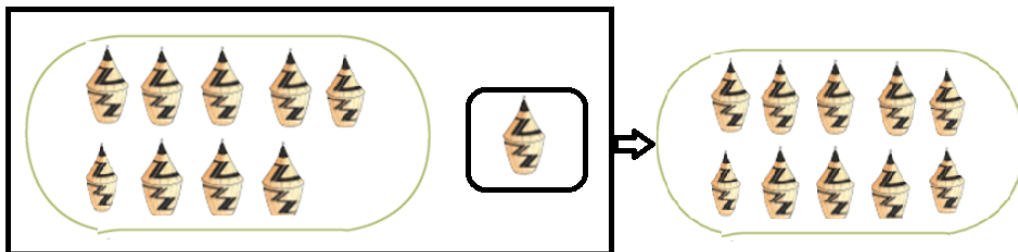
#### i. Activities for introduction

- **Counting 1 to 10 real objects**

Using different counters or counting objects or a song, help pupils to understand and discover the concept of the number 10.

Example of a counting song	Counting Songs
<a href="https://www.youtube.com/watch?v=Otf4_UEvQ8">https://www.youtube.com/watch?v=Otf4_UEvQ8</a>	One, two buckle my shoe Three, four knock on the door Five, six pick-up sticks Seven, eight lay them straight Nine, ten a big fat hen!

- Ask pupils to make two groups of similar objects; one group of 9 objects and another group of 1 object.
- Ask pupils to put together all objects, count them and say the number.



- Ask pupils to bring 1 notebook, 2 notebooks, 3 notebooks up to 10 notebooks individually.

- **Observing pictures and counting 1 to 10 objects**

Using pupil's book, lead pupils to look at the pictures of fruits and vegetables, name all observed fruits and vegetables, count and say the number for each category.

**Examples:** How many carottes do you see in the picture?

How many oranges do you see in the picture?

How many tomatoes do you see in the picture?

How many avocados do you see in the picture?

How many bananas do you see in the picture? etc.

## **ii. Demonstration and reinforcement activities**

Using different questions, test if pupils understand the concept of numbers from 1 to 10 and if they can apply it in 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.

## **iii. Application and assessment activities**

- Provide activities to be done by pupils at school or at home.
- Set activities that provide to every pupil the opportunities to demonstrate and apply the new concept learnt in a range of situations.

**Examples:**

- Ask pupils to bring objects of the same nature (3 pens, 10 books, 7 bananas, 10 beans, 10 small stones...)
- Ask 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 to 10

### a) Learning objective

Read and write in figure and in words the numbers from 0 to 10.

### b) Teaching and learning materials

Number cards with digit 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

#### i. Activities for introduction

- Lead pupils to observe picture with empty objects and picture with 10 objects (see for example 2 trays of eggs).



- Facilitate them to discover the concept of the numbers 0 and 10
- Use different prompting questions and help pupils to understand and discover how to read and write the numbers 0 and 10.

#### Examples:

1. Use a chart containing 10 objects and the number 10 in figure and ask pupils to count and say the number of objects they see in the picture.



10 chairs

2. Ask pupils to cross all objects on the chart and tell the number of the remaining objects.

## ii. Activities for demonstration

Lead pupils to read and write the number 0 and then number 10 through the following steps:

**Step 1:** Write slowly the number 0 on the chalkboard by explaining to pupils how to do it.

**Step 2:** Ask 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, using the right curve and left curve, they individually join 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, individually they write many times the number 0 on chalkboard and in their notebooks.



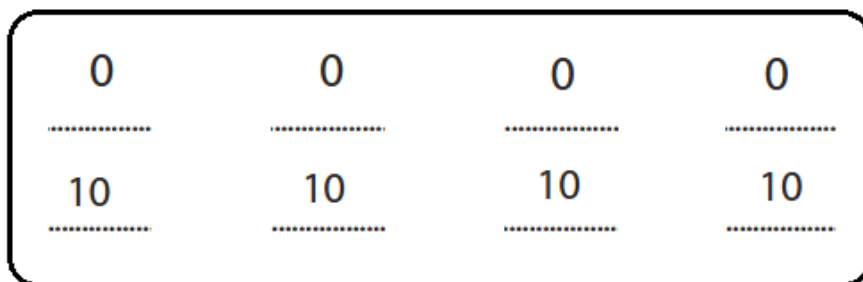
The two steps above are used while teaching to write and read the number 10. Teacher explains to pupils that number 10 is made by two digits 1 and 0.

## iii. Activities for reinforcement

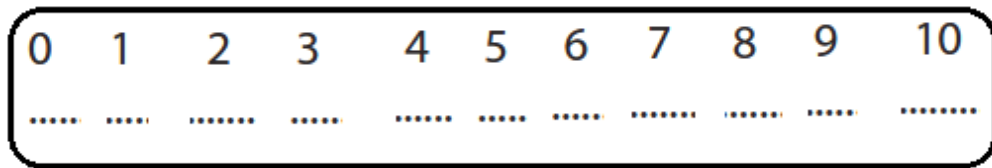
- Individually, ask pupils to imitate the numbers 0 and 10 written on the chalkboard or on a number card and then write it many times in their notebook using a pen or a pencil.
- Help pupils with difficulties to write well the numbers 0 and 10 by giving them more time on writing activity.

## iv. Application activities

- Individually, ask pupils to write the numbers 0 and 10 many times in their notebooks,



- In pairs, ask all pupils to write and read the following numbers:



#### v. Assessment activities

- Provide activities to be done by pupils at school or at home.
- Set activities that provide to every pupil the opportunities to demonstrate and apply the new concept learnt in a range of situations.

#### Examples:

- Ask 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.

### Lesson 5: Comparing numbers from 0 to 10 using symbols

#### a) Learning objective

Compare numbers between 1 and 10 using  $>$ ,  $<$  and  $=$

#### 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

##### i. Activities for introduction

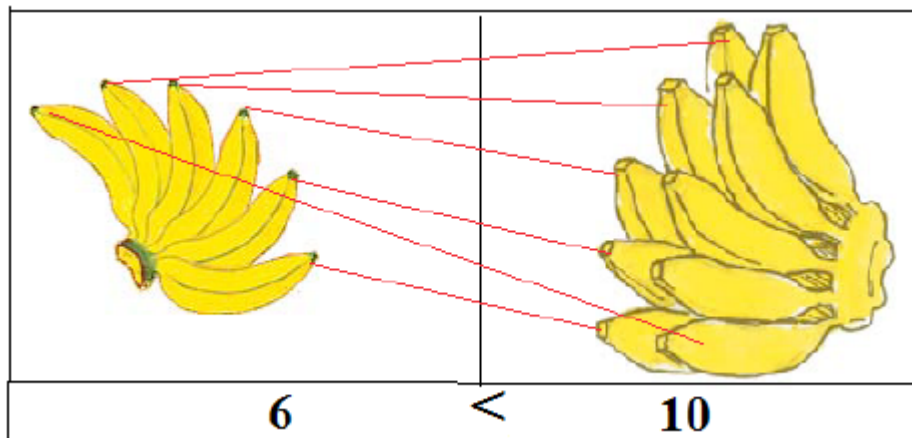
- Use different prompting questions, help pupils to understand and discover how to compare numbers from 0 to 10.
- Request pupils to count objects in different groups and compare the number of objects in two or more groups by showing a group with many, less or equal objects.

**Example:** Using two boxes of small stones, where one box contains 3 small stones and another box contains 10 small stones. Pupils compare the number of stones in two boxes by showing the box with many or few stones.

### ii. Activities for demonstration

- Pupils make 2 different groups of similar objects

**Example:** A group of 6 bananas (few objects) and another group of 10 bananas (many objects).



- Ask pupils to orally compare the number of objects in 2 different groups by using the comparison symbols (<: less than, >: greater than, or =: equal to), showing which group contains many or few objects.
- Help those with difficulties in comparing the number of groups of objects.

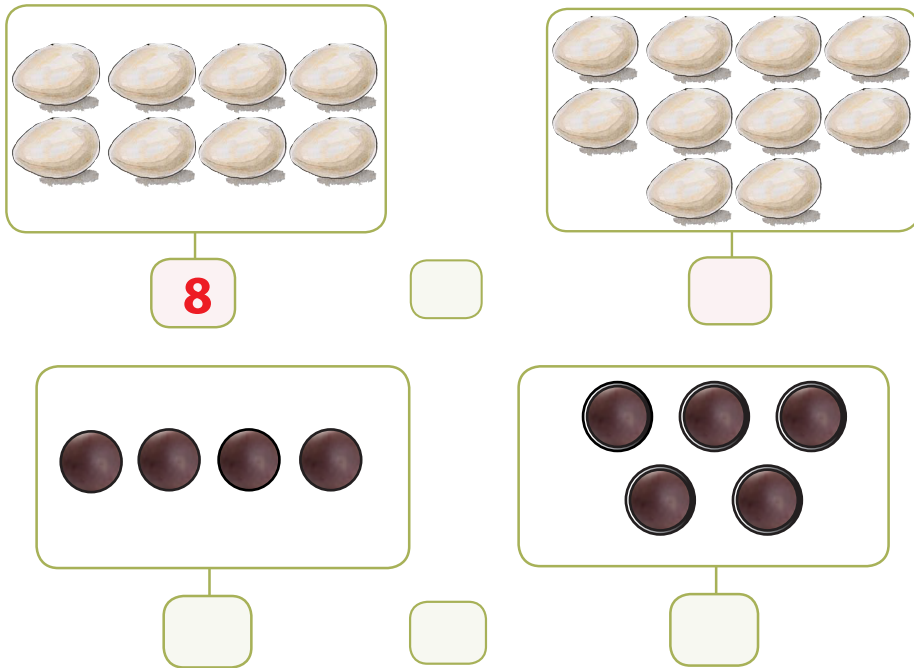


Comparison symbol	Meaning	Mathematical example	How to read
>	Greater than	$10 > 6$	10 is <b>greater than</b> 6
<	Less than	$6 < 10$	6 is <b>less than</b> 10
=	Equal to	$4 = 4$	4 is <b>equal to</b> 4

### iii. Activities for reinforcement

- Draw 2 different groups with similar objects but with different numbers of objects

- Ask pupils to compare them by saying which group has many or few objects.
- Finally, ask them to write and compare the numbers of objects using symbols (<, >, =)



- Ask pupils to orally compare the numbers of objects by completing the sentence using “**greater than, less than or equal to**”.

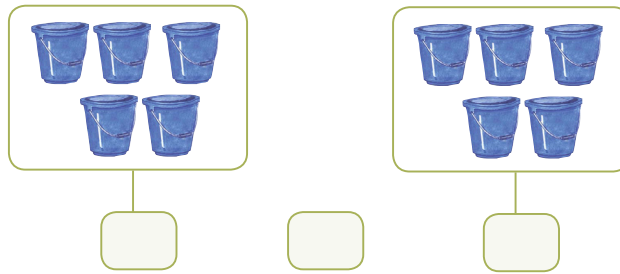
**Examples:**

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

**iv. Application activities**

- Provide different exercises on comparing 2 numbers using symbols <, > and =.
- Request pupils 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. Exercises with only 2 numbers to compare using symbols ( $<$ ,  $>$  and  $=$ )

10 <input type="text"/>	7	0 <input type="text"/>	1
8 <input type="text"/>	10	3 <input type="text"/>	0
10 <input type="text"/>	10	1 <input type="text"/>	10

#### v. Assessment activities

Provide activities on comparison of number from 0 to 10 using symbols  $<$ ,  $>$  and  $=$  to be done by pupils at school or at home.

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

#### a) Learning objective

Arrange numbers from 0 to 10 in increasing/ ascending order (from smaller to bigger number) and in decreasing/ descending order (from bigger to smaller number).

#### 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

##### i. Activities for introduction

- Use different prompting questions, help 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).

**Example:** Pupils explain how to arrange in increasing/ ascending or in decreasing / descending order the following numbers 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 arrange different numbers 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.

## ii. Activities for demonstration and reinforcement

In small groups, ask 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

- a) 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.
- b) Arrange in descending order the following numbers: 7, 4, 5, 8, 9, 3, 1.
- c) Explain step by step how to arrange numbers in descending order.

**Step 1:** Choose the biggest number and cross it from the sequence. Re-write it;

**Step 2:** Choose again another biggest number and cross it from the sequence, Rewrite it.

**Step 3:** Continue the process until all numbers are crossed in the sequence.

- The result will be the arrangement from the biggest to the smallest number.
- Lead 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 follows: **9 is greater than 8, 8 is greater than 7 and so on...**

### Activity 2: Arrange number from the smallest to the biggest

**Example:**

- a) 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.

- b) Arrange in ascending order the following numbers: 7, 4, 5, 8, 9, 3, 1.
- c) Explain step by step how to arrange numbers in ascending order.

**Step 1:** Choose the smallest number and cross it from the sequence. Rewrite it;

**Step 2:** Choose again another smallest number and cross it from the sequence, Rewrite it.

**Step 3:** Continue the process until all numbers are crossed in the sequence.

- The result will be the arrangement from the smallest to the biggest number.
- Lead pupils to read and compare numbers using the following symbol “< less than” as follows:  $1 < 3 < 4 < 5 < 7 < 8 < 9$  which is read as **1 is less than 3, 3 is less than 4, 4 is less than 5 and so on...**

### iii. Application activities

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

Increasing / ascending order	Decreasing / descending order
<p>9      0      3      10</p> <p>Example: <input type="text" value="0"/>    <input type="text" value="3"/>    <input type="text" value="9"/>    <input type="text" value="10"/></p> <p>7      4      10      5</p> <p><input type="text"/>    <input type="text"/>    <input type="text"/>    <input type="text"/></p>	<p>2      9      0      10      6      4</p> <p>Example: <input type="text" value="10"/> <input type="text" value="9"/> <input type="text" value="6"/> <input type="text" value="4"/> <input type="text" value="2"/> <input type="text" value="0"/></p> <p>6      8      10      5      7</p> <p><input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/></p>



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 0 to 10 and provides help or remedial activities for pupils in need.

### iii. Assessment activities

Provide activities on arranging numbers from 0 to 10 in ascending and descending order to be done by pupils at school or at home.

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

## Lesson 7: Addition of numbers whose sum does not exceed 10 and word problems

### Part 1: Addition of numbers

#### a) Learning objective

Add numbers whose sum does not exceed 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

##### i. Activities for introduction

- Use real objects and help pupils to understand and discover how to add 2 numbers whose sum does not exceed 10.
- Pupils put together objects from 2 small groups in order to get a number of 10 or less than 10 objects.

**Example:** Two boxes of chalk, where one box contains 6 chalks and another box contains 4 chalks. Pupils put all chalks together in order to get 10 chalks.

##### ii. Activities for demonstration

###### 1. Concrete activity

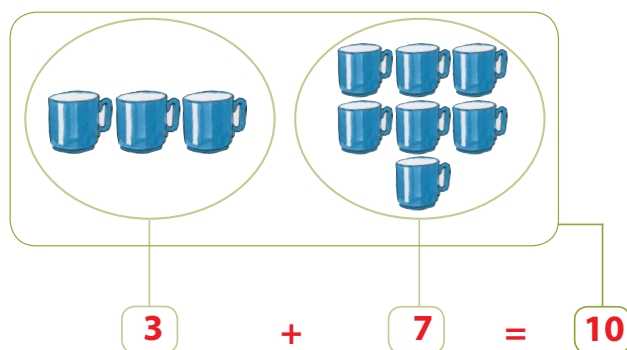
- Using real objects, ask pupils to make 2 groups of objects as follows: one group of 3 objects and another group of 7 objects.
- Ask pupils to count and write number of objects in each group and then put together all objects from 2 groups in order to get the sum 10.



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

###### 2. Semi-Concrete activity

- Using pictures in the pupil's book, ask pupils to draw 2 groups of similar objects as follows: one group of 3 objects and another group of 7 objects.
- Ask pupils to put together all objects in 2 groups by circling and then count them in order to get the sum 10.



This activity can be done using a different number between 1 and 10. For example pupils make 2 groups of 4 and 6 objects, put them together, count and write their sum as follow:  $6 + 4 = 10$ .

### 3. Abstract activity

Help pupils to write and read aloud a mathematical sentence on addition of 2 numbers whose sum does not exceed 10.

**Examples:**  $3 + 7 = 10$ , 3 plus 7 equals 10

#### iii. Reinforcement activities

- Help pupils to add by writing 2 numbers whose sum does not exceed 10.
- 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

#### iv. Application activities

- Ask pupils to work out the addition activities in the pupil's book.
- Individually or in pairs, request pupils to 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, pictorials, numbers and symbols.

## **v. Assessment activities**

Provide activities on addition of 2 numbers whose sum does not exceed 10 to be done by pupils at school or at home.

## **Part 2: Word problems on addition of numbers**

### **a) Learning objective**

Solve word problems involving addition of numbers whose sum does not exceed 10.

### **b) Teaching and learning materials**

Chalkboard, chalk, 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**

#### **i. Activities for introduction**

- Use concrete objects and story telling, help pupils to add 2 numbers whose sum does not exceed 10.
- Read a short word problems involving addition of 2 numbers and pupils give the answer orally.

**Example:** Olive gets 8 sweets from her mother and his brother adds 2 more sweets. How many sweets does Olive receive altogether?

#### **ii. Activities for demonstration**

Read the word problems in the pupil's book and ask pupils to give the answers orally for the word problems.

#### **iii. Activities for reinforcement**

- Pupils in small groups work out different word problems given by the teacher.
- Pupils are given time to practically show how they get the answer on word problems involving addition of 2 numbers whose sum does not exceed 10.

#### **iv. Application activities**

Read the word problems and ask pupils to give the answer orally.

## **v. Assessment activities**

Provide activities on addition of 2 numbers whose sum does not exceed 10 to be done by pupils at school or at home.

## **Lesson 8: Subtraction of numbers less than 10 and word problems**

### **Part 1: Subtraction of numbers**

#### **a) Learning objective**

Subtract 2 numbers less than 10

#### **b) Teaching and learning materials**

Chalkboard, chalk, 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**

##### **i. Activities for introduction**

Use different prompting questions, help pupils to understand and discover how to subtract 2 numbers less than 10.

##### **Example**

- In front of the classroom, give 10 chalks to one pupil.
- Request that pupil to give 6 pieces of chalk to another pupil.
- Ask other pupils in the classroom to say the number of chalk that the first pupil remains with.

##### **ii. Activities for demonstration**

###### **1. Concrete activity**

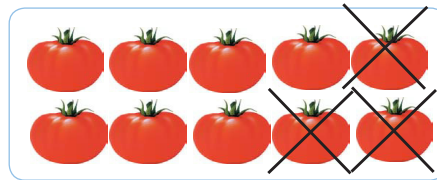
- Use real objects, ask pupils to make a group of 10 objects / counters and then take away 2 objects/ counters.
- Ask them to count and write the remaining number of objects/counters.



This activity can be done using different numbers between 1 and 10.

## 2. Semi-Concrete activity

Use pictures in the pupil's book, ask pupils to draw a group of 10 similar objects, take away 3 objects by crossing them and count the remaining objects.



$$10 - 3 = 7$$



This activity can be done using different numbers between 0 and 10.

## 3. Abstract activity

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

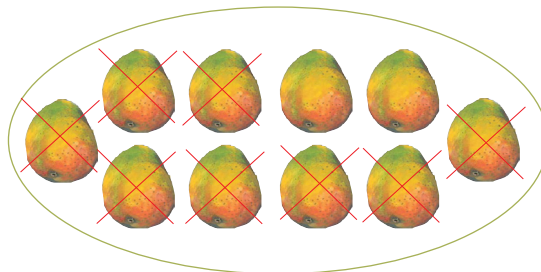
**Example:**  $10 - 3 = 7$ , 10 minus 3 equals 7

### iii. Reinforcement activities

- Help pupils to subtract by writing 2 numbers less than 10.
- Provide a variety of exercises and facilitate pupils to correctly read aloud the mathematical sentence on subtraction of 2 numbers (refer to pupil's book).

### Examples:

- $10 - 4 = \dots$  is read 10 minus 4 equals ...
- $10 - 8 = \dots$  is read 10 minus 8 equals ...
- $5 - 5 = \dots$  is read 5 minus 5 equals ...
- Vary the reinforcement activities by including activities of this form:



$$\square - 8 = 2$$

#### **iv. Assessment activities**

Provide activities on subtraction of 2 numbers less than 10 (refer to pupil's book) to be done by pupils at school or at home.

### **Part 2: Word problem on subtraction of numbers less than 10**

#### **a) Learning objective**

Solve word problems involving subtraction of 2 numbers.

#### **b) Teaching and learning materials**

Chalkboard, chalk, 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**

##### **i. Activities for introduction**

- Use concrete objects, games or story telling, help pupils to subtract 2 numbers less than 10.
- Read a short word problems involving subtraction of 2 numbers and pupils give the answer orally.

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

##### **ii. Activities for demonstration**

Read the word problems in the pupil's book and then ask pupils to give the answers orally.

#### **1. Concrete activity**

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

**Example:** Take 10 chalks and give 3 chalks to one pupil. Then ask other pupils the number of chalks you remained with.

**Answer:** Teacher remains with 7 chalks

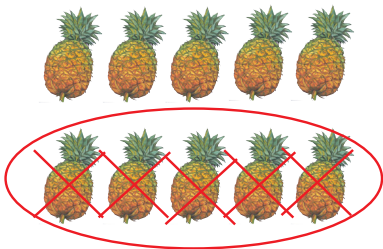
## 2. Semi-concrete activity

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

**Example:** Look at the pictures and fill in the box with the correct number



- Ripe bananas are.....
- Unripe bananas are .....
- All bananas are .....



- David has 10 pineapples .
- He sells 5 pineapples.
- David remains with ..... pineapples

## 3. Abstract activity

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

**Example:** Take 10 chalks and give 3 chalks to one pupil. Then ask other pupils the number of chalks you remained with.

**Answer:**  $10 - 3 = 7$

Teacher remains with 7 chalks.

### iii. Activities for reinforcement and application

- Pupils in small groups work out different word problems given by the teacher.
- Pupils are given time to practically show how they get the answer on word problems involving subtraction of 2 numbers less than 10 (refer to pupil's book).

### iv. Assessment activities

Provide activities on subtraction of 2 numbers less than 10 to be done by pupils at school or at home.



For reinforcement activities, application activities and home works, the 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 9: End unit assessment 3**

**a) Learning objective:** Count, read, write, compare, order, add and subtract numbers from 0 to 10.

#### **b) Instructions on End unit assessment**



Before the end unit assessment:

- Ensure that pupils know, and master 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.
- Relate different revision activities to real life situations or pupils'daily life.
- The end unit assessment is obligatorily done at school.
- Ask pupils individually or in pairs to work out different assessment questions and then he/she makes an individual correction.
- Basing on the results from end unit assessment, teacher provides remedial or reinforcement activities for pupils in need before starting unit 4.

## 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:

- a) 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...
- b) 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 2 numbers whose sum does not exceed 10 and subtract 2 numbers between 0 and 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 involve four basic operations.

#### 4.4. List of lessons

UNIT 4: NUMBERS FROM 0 TO 20 (24 Periods)			Reinforcement and extension lessons	
	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.	1	
3	Reading and writing the numbers from 0 to 20	Read and write in figure the numbers from 0 to 20.	1	
4	Decomposition of numbers from 10 to 20 into ones and tens	Decompose a number between 10 and 20 into ones and tens.	1	1
5	Comparing numbers from 0 to 20	Compare numbers between 0 and 20 using $>$ , $<$ and $=$	1	1
	<b>Remediation</b>		<b>1</b>	
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).	1	
7	Addition of numbers whose sum does not exceed 20	Add 2 numbers whose sum does not exceed 20.	1	
8	Word problems on addition of numbers whose sum does not exceed 20	Solve word problems involving addition whose sum does not exceed 20.	1	1

9	Subtraction of numbers less than 20	Subtract 2 numbers less than 20.	2	1
	<b>Remediation</b>		<b>1</b>	
10	Word problem on subtraction of numbers less than 20	Solve word problems involving subtraction of 2 numbers.	1	2
11	Addition and subtraction of 2 numbers less than 20	Add and subtract numbers less than 20.	2	1
12	End unit assessment 4	Count, read , write, compare , order, add and subtract numbers from 1 to 20.	1	
	<b>Remediation</b>		<b>1</b>	
<b>Total number of periods for unit 4</b>			17	7

## Lesson 1: Introductory activity

### a) Learning objective

Arouse the curiosity of learners on the content of this unit and the importance of counting, reading and writing numbers in real life.



This lesson is delivered through a conversation between the teacher and pupils.

### Observing the pictures



Use prompt questions to help pupils to get their predictions about the unit to be learnt:

- Look at the football play ground.
- What do you see in the play ground?
- How many teams do you see ?
- How many people are on the playground?
- How many players are 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) Learning objective**

Understand and discover the concept of numbers from 1 to 20.

### **b) Teaching and learning materials:**

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

### **c) Learning activities**

#### **i. Activities for introduction**

- Use different counters or counting objects, help pupils to understand and discover the concept of the numbers from 10 to 20.
- Ask pupils to make a group of 10 similar objects and add 1 more object until they have 20 objects.
- Ask pupils to put together all objects and count them

#### **ii. Demonstration activities**

- Use different counters or objects, ask pupils to make a group of 10 objects and then add 1 more object until they get 20 objects.
- Ask pupils to count objects in each group from 10 up to 20 objects
- Help 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.

#### **iii. Reinforcement activities**

- In pairs, ask pupils to make groups of similar 10 to 20 objects, count them and say the number of objects in each group.
- Individually, ask pupils to count a given number of objects to test if they understand the concept of numbers between 10 and 20.

**Examples:** Count 12 notebooks, count 15 pens, count 20 sticks, count 13 mangoes...

#### **iv. Assessment activities**

- Provide 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:**

- Ask pupils to bring objects of the same nature (20 sticks, 13 notebooks, 14 oranges, 16 beans, 19 small stones...)
- Ask 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) Learning objective**

Read and write in figure the numbers from 0 to 20.

#### **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**

##### **i. Activities for introduction**

Use different prompting questions and help 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 ask pupils to count and tell the number of objects they see on the picture.

##### **ii. Activities for Demonstration**

Lead pupils to read and write in figure 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.

### **iii. Activities for reinforcement**

- Individually, ask pupils to 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.
- Help pupils with difficulties to write the 2-digit numbers by giving them more time on writing activity.

### **iv. Application activities**

Ask pupils to correctly read and write 2-digit numbers from 11 to 20 many times in their notebooks.

### **v. Assessment activities**

- Provide 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**

- Ask 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 to 20 into ones and tens**

### **a) Learning objective**

Decompose a number between 10 and 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 20, abacus, and table of place values on manila paper.

## c) Learning activities

### i. Activities for introduction

- Use prompting questions to make pupils discover and understand the new concept to be learnt.
- Request pupils 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.

### ii. Demonstration activities

#### 1. Concrete activity

- Use real objects, ask pupils to make 2 groups of objects as follows: from 16 objects make one group of 10 objects and another group of 6 objects.
- Explain to pupils that the number 16 is made by 1 tens and 6 ones.



- This activity will be done, in small groups, using different numbers 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.

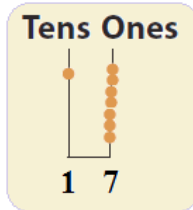


#### 2. Semi-Concrete activity

- Use pictures in the pupil's book, ask pupils to breakdown 17 into 2 groups of 10 and 7 objects.



- Use pictures of abacus to show how to break down a 2-digit number.



This activity will be done using different numbers between 11 and 20.

### 3. Abstract activity

- Using abacus or a table of place value, help pupils to breakdown a 2-digit number between 11 and 20 into tens and ones.
- Help pupils to write and read aloud a mathematical sentence on of a 2-digit number between 11 and 20 into tens and ones.

### Example

Using a table of place value, teacher helps pupils to breakdown 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

$$17 = 1 \text{ Tens } 7 \text{ Ones}$$

### iii. Reinforcement activities

- Individually or in pairs, help pupils to breakdown a 2-digit number into tens and ones.
- Guide them to correctly breakdown 15 into 1 tens and 5 ones using table of place value or an abacus.

### iv. Application activities

- Using pupil's book, ask pupils to work out the activities on breakdown 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/ breakdown a 2-digit number using abacus and table of place values.

### **Examples:**

- $12 = \dots$ tens  $\dots$ ones (decompose/ breakdown 12 into tens and ones)
- 1 tens 8 ones =  $\dots$ (find the number which has been decomposed into tens and ones)

### **v. Assessment activities**

Provide activities on decomposition/ breakdown of 2-digit numbers between 10 and 20 into tens and ones to be done by pupils at school or at home.

## **Lesson 5: Comparing numbers from 0 to 20 using symbols**

### **a) Learning objective**

Compare numbers between 0 and 20 using  $>$ ,  $<$  and  $=$ .

### **b) Teaching and learning materials**

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

### **c) Learning activities**

#### **i. Activities for introduction**

- Using different prompting questions, help pupils to understand and discover how to compare numbers from 0 to 20.
- Request pupils 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:** Using two boxes of notebooks, where one box contains 12 notebooks and another box contains 18 notebooks. Pupils compare the number of notebooks in two boxes by showing the box with many or few notebooks.

#### **ii. Activities for demonstration**

In small groups, ask pupils to observe pictures in the pupil's book. Then, make 2 groups of similar objects but with different number of objects: one group with many objects and another group with few objects.

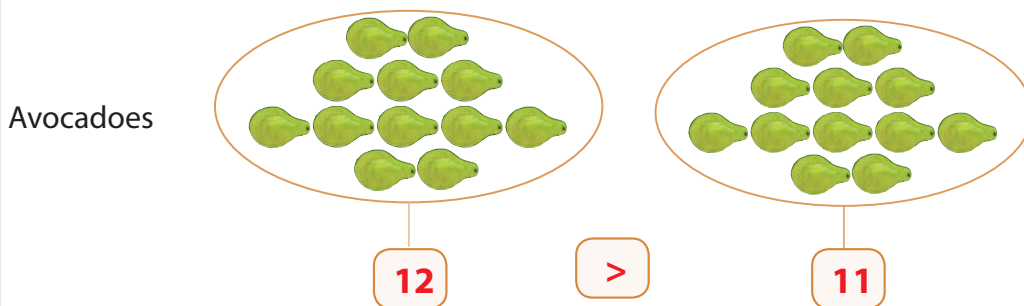
## Example

- Pupils make 2 different groups of objects as follows: a group of 12 bottles and another group of 19 bottles.
- Pupils compare the number of objects in 2 different groups by showing which group contains many or few objects and then compare the two numbers using the comparison symbols ( $<$  : less than,  $>$  : greater than, or  $=$  : equal to).
- Pupils 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 <b>greater than</b> 12
$<$	Less than	$12 < 19$	12 is <b>less than</b> 19
$=$	Equal to	$17 = 17$	17 is <b>equal to</b> 17

### iii. Activities for reinforcement

- Draw 2 different groups with different numbers of objects and then ask pupils to compare them by saying which group has many or few objects.
- Finally, ask them to write and compare the numbers of objects using symbols (refer to pupil's book).



### iv. Application activities

- Provide different exercises on comparing 2 numbers between 1 and 20 using symbols ( $<$ ,  $>$  and  $=$ ).
- Make a follow up on how pupils are performing the given tasks and appreciate, encourage and value the pupils' answers.

## **v. Assessment activities**

Provide activities on comparison of numbers from 1 to 20 using symbols (<, > and =) to be done by pupils at school or at home.

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

### **a) Learning objective**

Arrange numbers from 0 to 20 in ascending and descending order (from smaller to bigger number and vice versa).

### **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**

#### **i. Activities for introduction**

Using different prompting questions, help 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).

#### **Examples:**

1. Pupils explain how to arrange in ascending or in descending order the following numbers 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.
2. Pupils 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

#### **ii. Activities for demonstration and reinforcement**

In small groups, ask 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:

- a) Make 5 different groups of beans as follows: 10 beans, 14 beans, 15 beans, 18 beans, 20 beans.
- b) Arrange in descending order the following numbers: 10, 14, 15, 18, and 20.
- c) Explain step by step how to arrange numbers in descending order.
  - **Step 1:** Choose the biggest number and cross it from the sequence. Re-write it;
  - **Step 2:** Choose again another biggest number and cross it from the sequence, re-write it.
  - **Step 3:** Continue the process until all numbers are crossed in the sequence.
  - The result will be the arrangement from the biggest to the smallest number: 20 ,18, 15, 14, 10
  - Lead 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, 18 is greater than 15 and so on...**

## Activity 2: Arrange number from the smallest to the biggest

### Example:

Pupils in groups make groups of similar objects and arrange the numbers of objects from the smallest to the biggest number:

- a) Make 5 different groups of beans as follows: 10 beans, 14 beans, 15 beans, 18 beans, 20 beans.
- b) Arrange in ascending order the following numbers: 18, 10, 14, 20, 15.
- c) Explain step by step how to arrange numbers in ascending order.
  - **Step 1:** Choose the smallest number and cross it from the sequence. Re-write it;
  - **Step 2:** Choose again another smallest number and cross it from the sequence, re-write it.

- **Step 3:** Continue the process until all numbers are crossed in the sequence.
- The result will be the arrangement from the smallest to the biggest number: 10, 14, 15, 18, and 20.
- Lead 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, 14 is less than 15 and so on...**

### iii. Application activities

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



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 gives help or remedial activities for pupils with difficulties.

### iv. Assessment activities

Provide/ give activities on arranging numbers from 0 to 20 in ascending and descending order to be done by pupils at school or at home.

**Example:** 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) Learning objective

Add two numbers whose sum does not exceed 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 20.

### c) Learning activities

#### i. Activities for introduction

- Using different prompting questions, help pupils to understand and discover how to add 2 numbers whose sum does not exceed 20.

- Pupils put together objects from 2 small groups in order to get 20 or less than 20 objects.

**Example:** Using two boxes of chalks, where one box contains 15 chalks and another box contains 5 chalks. Pupils put all chalks together in order to get 20 chalks.

## ii. Activities for demonstration

### 1. Concrete activity

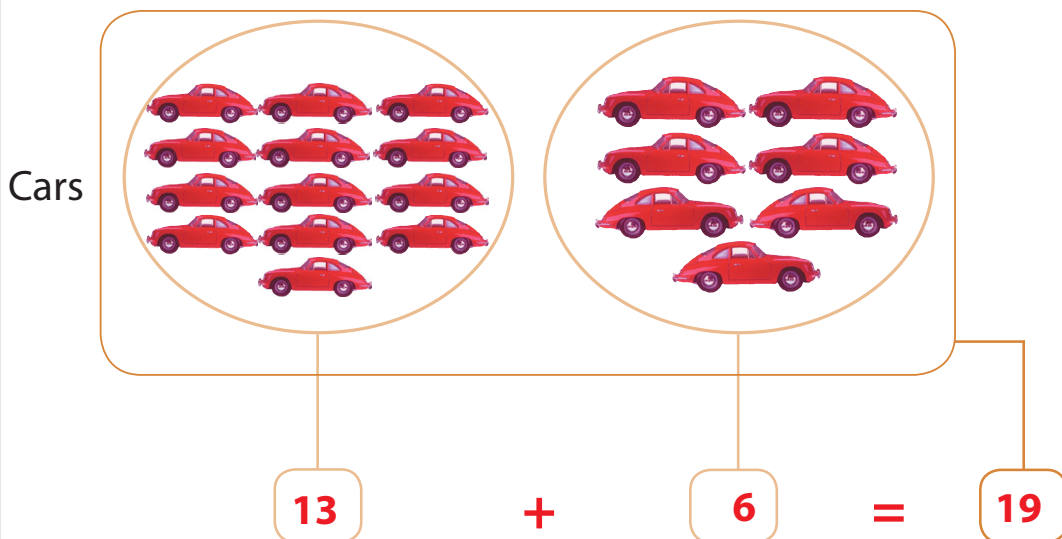
- Use real objects, ask pupils to make 2 groups of objects as follows: one group of 11 objects and another group of 8 objects.
- Ask pupils to put together all objects in 2 groups and then count them in order to get the sum 19.



This activity will be done using different numbers between 1 and 20, but be sure that the sum does not exceed 20.

### 2. Semi-concrete activity

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





This activity can be done using different numbers between 1 and 20.

### 1. Abstract activity

Help pupils to write and read aloud a mathematical sentence on addition of 2 numbers whose sum does not exceed 20.

**Example:**  $13 + 7 = 20$ , *13 plus 7 equals 20*

### iii. Reinforcement activities

- Individually or in pairs, help pupils to add by writing 2 numbers whose sum does not exceed 20.
- Guide 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*

### iv. Application activities

Ask pupils to work out the addition of 2 numbers whose sum does not exceed 20 individually or in pairs.

#### Examples:

$$18 + 1 = \square$$

$$2 + 14 = \square$$

$$14 + 4 = \square$$

$$12 + 7 = \square$$

$$2 + 14 = \square$$

$$14 + 4 = \square$$

$$18 + 1 = \square$$

$$13 + 5 = \square$$

$$17 + \square = 20$$

$$\square + 6 = 10$$

$$\square + 14 = 20$$

$$8 + 0 = \square$$

### v. Assessment activities

Provide activities on addition of 2 numbers whose sum does not exceed 20 to be done by pupils at school or at home.

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

### a) Learning objective

Solve the word problems involving addition whose sum does not exceed 20.

### b) Teaching and learning materials

Chalkboard, chalk, 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

#### i. Activities for introduction

- Use concrete objects and story telling, help pupils to add 2 numbers whose sum does not exceed 20.
- Read a short word problems involving addition of 2 numbers and pupils give the answer orally.

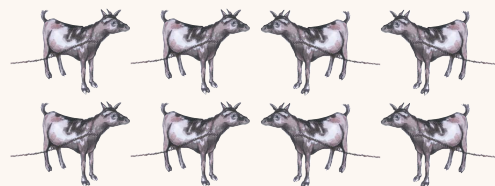
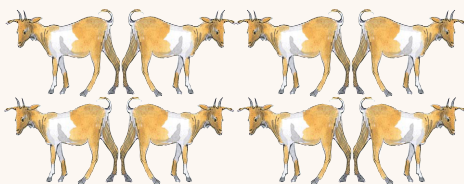
**Example:** Olive gets 16 sweets from her mother and her brother add 2 more sweets. How many sweets does Olive have altogether?



#### ii. Activities for demonstration

- Using sticks, ask one pupil to take 16 sticks and another pupil to add 2 more sticks. Ask the class to say the number of all sticks.
- Using pupil's book, ask pupils to observe the pictures of goats, count all goats and find the total number of them.

Muhire has 8 goats



Keza gives to him 8 more goats

Muhire has  goats all together

- Request pupils to use sticks or draw sticks in order to find the correct answer.

### iii. Activities for reinforcement

Pupils in small groups work out different word problems involving addition of 2 numbers whose sum does not exceed 20 given by the teacher.

### iv. Application activities

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

### v. Assessment activities

Provide activities on addition of 2 numbers whose sum does not exceed 20 to be done by pupils at school or at home.

## Lesson 9: Subtraction of numbers less than 20

### a) Learning objective

Subtract 2 numbers less than or equal to 20.

### b) Teaching and learning materials

Chalkboard, chalk, 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

#### i. Activities for introduction

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

**Example:** Ask one pupil to count 12 notebooks and take away 5 notebooks and then ask other pupils to say the number of the remaining notebooks.

#### ii. Activities for demonstration

##### 1. Concrete activity

Using real objects, ask pupils to make a group of 19 chalks and then take away 7 chalks. Ask them to count, say and write the number of the remaining chalks.

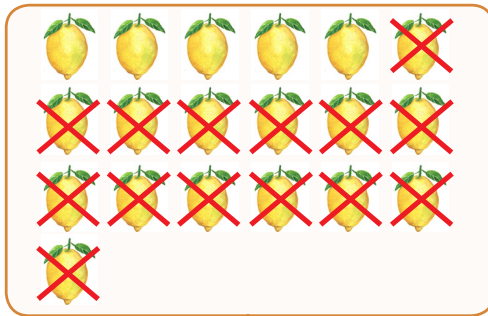


This activity is done using different numbers between 1 and 20.

## 2. Semi-concrete activity

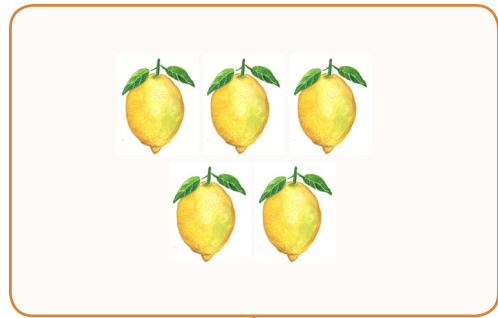
Using pictures in the pupil's book, ask pupils to draw a group of 19 sticks/ objects and then they take away 14 sticks/ objects by crossing them, count, say and write the number of the remaining objects.

Lemon fruits



$$19 - 14$$

=



This activity can be done using different numbers between 1 and 20.

## 3. Abstract activity

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

**Example:**  $19 - 14 = 5$ , *19 minus 14 equals 5*

### iii. Reinforcement and application activities

- Help pupils to subtract by writing 2 numbers less than 20.
- Guide them to correctly read aloud the mathematical sentence on subtraction of 2 numbers (refer to pupil's book).

### Examples

$$18 - 2 = \square$$

$$9 - 7 = \square$$

$$15 = \square - 5$$

$$17 - 1 = \square$$

$$19 - 4 = \square$$

$$\square - 1 = 14$$

$$18 - 17 = \square$$

$$18 - \square = 7$$

$$17 - \square = 14$$

- Vary the reinforcement activities by including activities of this form:



$$18 - 4 = 14$$

#### iv. Assessment activities

Provide activities on subtraction of 2 numbers less than 20 (refer to pupil's book) to be done by pupils at school or at home.

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

##### a) Learning objective

Solve word problems involving subtraction of 2 numbers less than or equal to 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

###### i. Activities for introduction

- Using concrete objects, story telling or games, help pupils to subtract 2 numbers less than 20.
- Read 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?

###### ii. Activities for demonstration

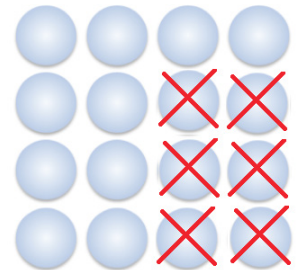
- Using counters, guide pupils to work out word problems involving subtraction of 2 numbers less than 20

- Read a word problem in the pupil's book and then ask pupils to answer orally (refer to pupil's book).
- Use counters, dices, sticks and help 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



### iii. Activities for reinforcement and application

Pupils in small groups work out different word problems involving subtraction of 2 numbers given by the teacher (refer to pupil's book).

### iv. Assessment activities

Provide activities on subtraction of 2 numbers less than 20 to be done by pupils at school or at home.



For application activities and home works, teacher should set additional word problems that involve addition of 2 numbers whose sum does not exceed 20 and subtraction of 2 numbers less than or equal to 20.



**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) Learning objective

Count, read, write, compare, order, add and subtract 2 numbers from 0 and 20.

### b) Instructions on End unit assessment



Before the end unit assessment:

- Ensure 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.
- Relate different revision activities to real life situations or pupils' daily life.
- Ask pupils individually or in pairs to work out different assessment questions and then he/she makes an individual correction.
- Basing on the results from end unit assessment, teacher provides remedial or reinforcement activities for pupils with in need before starting unit 5.

### 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 know and master 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 2 numbers whose sum does not exceed 20 and subtract 2 numbers less than or equal to 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 involve four basic operations.

## 5.4. List of lesson

UNIT 5: MULTIPLICATION AND DIVISION BY 2 (8 Periods)			Reinforcement and extension lessons	
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 a number less than or equal to 10.	1	
3	Exact division by 2 with the quotient not exceed 10 and word problems	Divide by 2 a number less than or equal to 20.	1	1
4	Word problems on multiplication by 2	Solve word problems involving multiplication and division by 2.	1	1
5	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	
	<b>Remediation</b>		<b>1</b>	
<b>Total number of periods for unit 5</b>			<b>6</b>	<b>2</b>

## Lesson 1: Introductory activity

### a) Learning objective

Arouse the curiosity of learners on the content of this unit and the importance of multiplication and division in real life.



This lesson is delivered through a conversation between teacher and pupils.



Use prompt questions to help pupils to get their predictions about the unit to be learnt:

- Look at the picture. What do you see?
- How many children do you see in 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 in the picture.
- How could you find the number of trees for 3 children? 4 children? 5 children? 6 children? 7 children? 8 children? 9 children? 10 children?
- How many children have 8 trees?
- How many children 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 the predictions from pupils on the unit to be learnt.

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

### a) Learning objective

Understand the concept of multiplying by 2 a number less than or equal 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

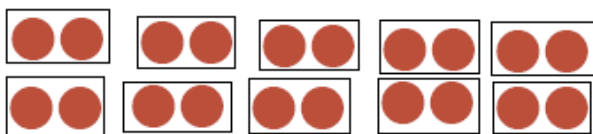
#### i. Activities for introduction

Pupils make 3 groups of 2 beans each and then count and say the number of all beans.

#### ii. Demonstration activity

##### 1. Concrete activity

- Pupils in groups are given real objects less than or equal to 20.
- They are requested to make groups of 2 objects each group.
- Ask them to count and say the number of groups they make and then the number of all objects contained in all groups.
- They observe that *the number of objects in all groups is equal to **two times** the number of groups.*
- Pupils make groups of 2 objects in the following way:



We have 10 groups and 20 objects.

##### 2. Semi-concrete activity

- Ask pupils 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.
- Ask pupils, one by one, to count objects in each group of objects;
- Lead them to use the following vocabulary “**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

- Help pupils to read and write mathematically the given sentences:
  - 1 times 2 or 1 group of 2 objects is written:  $1 \times 2$
  - 2 times 2 or 2 groups of 2 objects each is written:  $2 \times 2$
  - 3 times 2 or 3 groups of 2 objects each is written:  $3 \times 2$
- Ask pupils to count beans in different groups and help them to read and write:
  - 1 times 2 is equal to 2 and it is written as follows:  $1 \times 2 = 2$ , we read 1 multiply by 2 equals 2.
  - 2 times 2 are equal to 4 and it is written as follows:  $2 \times 2 = 4$ , we read 2 multiply by 2 equals 4.
  - 3 times 2 is equal to 6 and it is written as follows:  $3 \times 2 = 6$ , we read 3 multiply by 2 equals 6.



Inform 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 numbers from 1 to 10 are multiplied by 2.

### iii. Reinforcement activities

- Individually or in pairs, help pupils to make different groups of 2 objects in each group and then find the total number of objects in each group either by multiplication or addition as illustrated in the following picture.

$1 \times 2 = 2$		$2$
$2 \times 2 = 4$		$2 + 2 = 4$
$3 \times 2 = 6$		$2 + 2 + 2 = 6$
$4 \times 2 = 8$		$2 + 2 + 2 + 2 = 8$
$5 \times 2 = 10$		$2 + 2 + 2 + 2 + 2 = 10$
$6 \times 2 = 12$		$2 + 2 + 2 + 2 + 2 + 2 = 12$
$7 \times 2 = 14$		$2 + 2 + 2 + 2 + 2 + 2 + 2 = 14$
$8 \times 2 = 16$		$2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 = 16$
$9 \times 2 = 18$		$2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 = 18$
$10 \times 2 = 20$		$2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 = 20$

- Help pupils to memorize the multiplication table of 2 individually.

#### iv. Application activities

Using pupil's book, ask pupils to work out the activities on multiplication by 2 individually or in pairs.

$2 = 1 \times 2$ $10 = \square \times 2$ $8 = \square \times 2$	$16 = 8 \times \square$ $12 = 6 \times \square$ $4 = \square \times 2$	$20 = \square \times 2$ $18 = \square \times 2$
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#### v. Assessment activities

- Provide activities on multiplication of numbers less than 10 by 2 to be done by pupils at school or at home.
- Activity to be done at school
- Activity to be done at home

x 2	1	7	9	8	4	2	3	6	5	10
	2	14	.	.	.	4	.	.	.	.



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

- Grey hat
- Blue hat
- Orange hat
- Green hat
- Yellow hat
- Black hat

### Lesson 3: Exact division by 2

#### Learning objective

Divide by 2 a number less than or equal to 20.

#### a) 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.

#### b) Learning activities

##### i. Activities for introduction

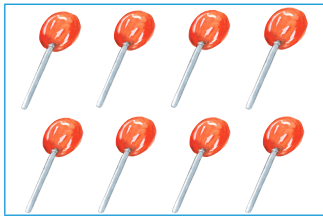
- Using different prompting questions or a short story, help pupils to understand and discover how to divide a number less than 20 by 2.
- Pupils make a group of even number of objects and then divide them equally into 2 small groups.

**Example:** Share equally 10 sweets to 2 children; every one will get 5 sweets

## ii. Demonstration activity

### 1. Concrete activity

Using 8 objects/counters, ask pupils to make groups of 2 objects/ counters in each group and then say the number of objects in each group.











With 8 sweets , we make 4 groups of 2 sweets in each group

### 2. Semi-concrete activity

Use pictures in the pupil's book, ask pupils to share objects equally to 2 children and find out the share of each child.

#### Example:

- Equally share 2 mangoes, 4 pens, 6 hens, 10 sweets to 2 children.
- What will be the share of every child?

number of objects	equal shares	Division by 2
 2 mangoes		$2 \div 2 = 1$
 4 pens		$4 \div 2 = \dots$
 6 hens		$6 \div 2 = \dots$
 10 sweets		$10 \div 2 = \dots$

### 3. Abstract activity

- Help pupils to write and read mathematical sentences about division by 2.
- Write on chalkboard the following  $8 \div 2 = 4$  and helps them to read “8 divide by 2 equals 4”.



Teacher helps pupils to master the multiplication by 2 because it is a good foundation for mastering the division by 2.

## iii. Reinforcement and application activities

Using an even number of less than 20 objects/counters, ask pupils to make groups of 2 objects/ counters in each group and then say the number of objects in each group.

### 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

Provide activities on division of numbers by 2

$2 \div 2 = $ <input type="text" value="1"/>	$8 \div 2 = $ <input type="text"/>	$10 \div 2 = $ <input type="text"/>
$12 \div 2 = $ <input type="text"/>	$18 \div 2 = $ <input type="text"/>	$20 \div 2 = $ <input type="text"/>

### iv. Assessment activities

- Provide activities on division of numbers less than 20 by 2 to be done by pupils at school or at home.
- Activity to be done at school
- Activity to be done at home

$\div 2$	4	6	12	8	14	20	16	18	2	10
	2	.	.	.	.	10	.	.	.	.



Look at the example. Match the question with the answer.

1	$12 \div 2 =$	4
6	$10 \div 2 =$	5
10	$8 \div 2 =$	2
7	$2 \div 2 =$	3
9	$6 \div 2 =$	8
	$20 \div 2 =$	
	$4 \div 2 =$	
	$14 \div 2 =$	
	$16 \div 2 =$	
	$18 \div 2 =$	

## Lesson 4: Word problems on multiplication and division by 2

### a) Learning objective

Solve word problems involving 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

#### i. Activities for introduction

- Using concrete objects, story telling or games, help pupils to multiply or divide even numbers by 2.
- Read short word problems involving multiplication or division by 2 and pupils give the answer orally.

**Example:** Marc divides 12 notebooks to 2 pupils equally. How many notebooks does every pupil get?

#### ii. Activities for demonstration

- Using counters, facilitate /guide 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 the chalks got by all 3 pupils.
  2. Teacher gives 6 counters to a pupil and requests her/ him to equally share them to 3 pupils. He / she asks the class the number of all chalks got by each pupil.
- Using counters, lead pupils to read and analyze word problems in the pupil's book and then find out the answer for the word problems (refer to pupil's book).
  - Use counters, dices, sticks and help pupils to solve word problems involving division.

### iii. Activities for reinforcement and application

Pupils in small groups work out a word problem involving division by 2 (refer to pupil's book).

#### **Example:**

Mummy has 6 eggs.

My mammy shares them equally to 2 children.

Every child gets.....eggs.



### iv. Assessment activities

Provide activities on multiplication and division by 2 to be done by pupils at school or at home.

## Lesson 5: End unit assessment 5

### a) Learning objective

Multiply numbers by 2, the product does not exceed 20 and divide by 2, the quotient is less than or equal to 10.

### b) Instructions for End unit assessment



#### **Before the end unit assessment:**

- Ensure 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. Multiply and divide numbers by 2.
- Relate different revision activities to real life situations or pupils' daily life.

### 6.1. Key unit competence

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

### 6.2. Prerequisite knowledge and skills

Pupils will perform well in this unit if they know and master 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 2 numbers whose sum does not exceed 20 and subtract 2 numbers less than or equal to 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 operations ..

## 6.4. List of lessons

UNIT 6: NUMBERS FROM 0 TO 50 (28 periods)			Reinforcement and extension lessons	
	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 0 to 30.	1	
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.	1	
	<b>Remediation</b>		<b>1</b>	
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.	1	
8	Decomposition of numbers from 10 to 50 into ones and tens	Decompose a number between 10 and 50 into ones and tens.	2	1
9	Comparing numbers from 0 to 50	Compare numbers from 0 to 50 using $>$ , $<$ and $=$	1	1
	<b>Remediation</b>		<b>1</b>	

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).	1	1
11	Addition of numbers whose sum does not exceed 50	Add 2 numbers whose sum does not exceed 50.	2	
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	
	<b>Remediation</b>		<b>1</b>	
13	Subtraction of numbers less than 50	Subtract 2 numbers less than 50.	1	1
14	Word problem on subtraction of numbers less than 50	Solve word problems involving subtraction of 2 numbers less than or equal to 50	1	1
15	End unit assessment 6	Count, read, write, compare, order, add and subtract numbers from 1 to 50.	1	1
	<b>Remediation</b>		<b>1</b>	
<b>Total number of periods for unit 6</b>			<b>22</b>	<b>6</b>

## Lesson 1: Introductory activity

### a) Learning objective

Arouse the curiosity of learners on the content of this unit and the importance of counting, reading and writing numbers in real life.



This lesson is delivered through a conversation between teacher and pupils.



Use prompt questions to help pupils to get their predictions about the unit to be learnt:

- Look at the picture.
- What do you see?
- How many bars of soap are in the shop?
- How many note books are in the shop?
- How many people 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 the predictions from pupils on the unit to be learnt.

## Lesson 2: Counting 1 to 30 objects

### a) Learning objective

Understand and discover the concept of numbers from 1 to 30.

### b) Teaching and learning materials:

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

### c) Learning activities

#### i. Activities for introduction

- Ask pupils to make a group of 20 similar objects and add 1 more object until they have 30 objects.
- Ask pupils to put together all objects and count them.

## ii. Demonstration activities

- Help 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).

## iii. Reinforcement activities

- In pairs, ask pupils to make similar groups of 10 to 30 objects, count them and say the number of objects in each group.
- Individually, ask pupils to count a given number of objects to test if they understand the concept of numbers between 10 and 30

**Examples:** Count 22 notebooks, count 25 pens, count 30 sticks, count 33 mangoes...

## iv. Assessment activities

- Provide activities to be done by pupils at school or at home.
- All set activities should provide 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...).



*The following should be taken into account:*

- a) The lessons 4 and 6 on counting from 1 to 40 and from 1 to 50 respectively follow the same teaching and learning methodology as lesson 2.*
- b) To enhance the concept of counting numbers from 1 to 50, teacher has 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) Learning objective

Read and write in figure and in word the numbers from 0 to 30.

### 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

#### i. Activities for introduction

Using different prompting questions, help 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 ask pupils to count and say the number of objects they see on the picture.

#### ii. Activities for Demonstration

Lead pupils 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 numbers 21, 21, and 22...until 30 on the chalkboard 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 chalkboard.

**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.

#### iii. Activities for reinforcement

- Ask pupils to 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.

- Help pupils with difficulties to write well the 2-digit numbers by giving them more time on writing activity.

#### **iv. Application activities**

Ask pupils to read and write 2-digit numbers from 21 to 30 many times in their notebooks.

#### **v. Assessment activities**

- Provide 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.

**Example:** Ask 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, and 30.



*The following should be taken into account:*

- a) The lessons 5 and 7 on reading and writing numbers from 30 to 40 and from 40 to 50 respectively follow the same teaching and learning methodology as lesson 3.*
- b) To 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.*

### **Lesson 8: Decomposition/breaking down of 2-digit numbers less than 50 into ones and tens**

#### **a) Learning objective**

Decompose a number between 10 and 50 into ones and tens.

#### **b) Teaching and learning materials**

Chalkboard, chinks, 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

### i. Activities for introduction

- Use prompting questions to make pupils discover and understand the new concept to be learnt.
- Request 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...

### ii. Demonstration activities

#### 1. Concrete activity

- Using real objects, ask pupils to make groups of objects as follows: from 21 objects make 2 groups of 10 objects each and another group of 1 object.
- Explain to pupils that number 21 is made by 2 tens and 1 one.



- This activity can be done, in small groups, using different numbers 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 break down a 2-digit number into tens and ones.

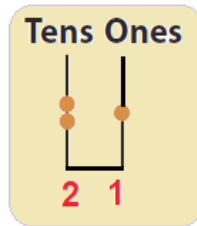
#### 2. Semi-Concrete activity

Using pictures in the pupil's book, ask pupils to break down 21 into 2 groups of 10 and 1 objects.

Pineapples	Number of tens	Single pineapples
<p>10      10      1</p>	2 Tens	1 pineapple
<p>10      10      10      1</p>	.....Tens	.....pineapple



This activity can be done using different numbers between 21 and 50. Teacher can use pictures of **breaking down** a 2-digit number on abacus.



### 3. Abstract activity

- Using abacus or a table of place value, help pupils to decompose a 2-digit number between 21 and 50 into tens and ones.
- Help them to write and read aloud a mathematical sentence on **breaking down** of a 2-digit number between 21 and 50 into tens and ones.

#### Example:

- Using a table of place value, help pupils to breakdown the number 21 into tens and ones.
- Lead them to find out that 21 is composed by 2 tens and 1 ones.

Tens	Ones
2	1

$$21 = 2\text{Tens } 1 \text{ Ones}$$

#### iii. Reinforcement activities

- Individually or in pairs, help pupils to breakdown a 2-digit numbers into tens and ones.
- Guide them to correctly breakdown 35 into 3 tens and 5 ones using table of place value or an abacus.

#### iv. Application activities

- Using pupil's book, ask pupils to work out the activities on breakdown 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:

- $38 = \dots\text{tens } \dots\text{ones}$  (breakdown 38 into tens and ones)

- 4 tens 1 ones = ... (find the number which has been decomposed/brokedown into tens and ones)
- 45 = ...tens ...ones (breakdown 45 into tens and ones)
- 3 tens 2 ones = ... (find the number which has been decomposed into tens and ones)

#### v. Assessment activities

Provide activities on decomposition/breakdown of 2-digit numbers between 10 and 50 into tens and ones to be done by pupils at school or at home.

### Lesson 9: Comparing numbers from 0 to 50 using symbols

#### a) Learning objective

Compare numbers from 0 to 50 using  $>$ ,  $<$  and  $=$

#### 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

##### i. Activities for introduction

- Use different prompting questions, help pupils to understand and discover how to compare numbers from 0 to 50.
- Pupils 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:** Using two boxes of notebooks, where one box contains 22 chalks and another box contains 28 chalks. Pupils compare the number of chalks in two boxes by showing the box with many or fewer chalks.

##### ii. Activities for demonstration

- In small groups, ask pupils to observe pictures in the pupil's book.
- Ask 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 are shown on the pictures in the pupil's book. **Example:** Pupils may be asked to make 2 different groups of objects as follows: a group of 28 notebooks and another group of 43notebooks.

- Ask pupils to compare the number of objects in 2 different groups by showing which group contains many or few objects and then compare the two numbers using the comparison symbols (<: less than, >: greater than, or =: equal to).
- Help those with difficulties in comparing the number of groups of objects.
- Ask 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 <b>greater than</b> 28
<	Less than	$28 < 43$	28 is <b>less than</b> 43
=	Equal to	$27 = 27$	27 is <b>equal to</b> 27



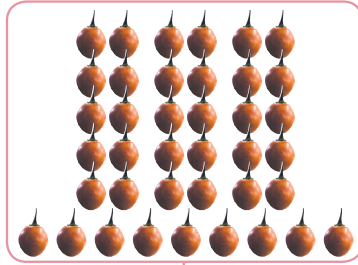
#### **Teacher helps pupils to discover the following:**

- If 2-digits numbers are compared, the number with a greater digit in the place value of tens is the greatest number, eg: 57 and 47 , 5 is greater than 4 so, 57 is greater than 47;
- If 2-digits numbers are compared, the number with a smaller digit in the place value of tens is the smallest number, eg: 37 and 57, 2 is less than 5 , so 37 is less than 57;
- 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. eg 46 and 42: 6 is greater than 2, so 46 is greater than 42.

#### **iii. Activities for reinforcement**

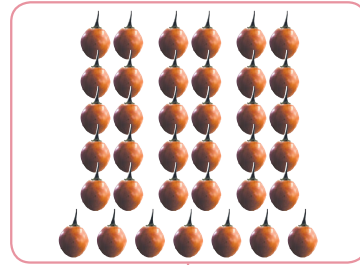
- Draw 2 different groups with different numbers of objects
- Ask pupils to compare them by saying which group has many or few objects.
- Finally, ask pupils to write and compare the numbers of objects using symbols (refer to pupil's book).

Tomato trees



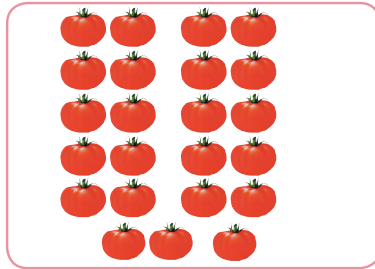
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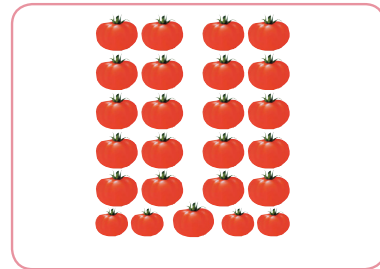


37

Tomatoes



23



25

#### iv. Application activities

- Provide different exercises on comparing 2 numbers between 1 and 50 using symbols (<, > and =). Pupils provide written answers.
- Make a follow up on how pupils are performing the given tasks and appreciate, encourage and value the pupils' answers.

#### Example:

35	<	36	37		23	24		34	24		34
48	>	42	31		47	50		46	50		46
29	=	29	23		23	45		31	45		31

#### v. Assessment activities

Provide activities on comparison of number from 1 to 50 using symbols (<, > and =) to be done by pupils at school or at home.

## Lesson 10: Ascending and descending order of numbers from 0 to 50

### a) Learning objective

Arrange numbers from 0 to 50 in ascending and descending order (from smaller to bigger number and vice versa).

### 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

#### i. Activities for introduction

- Using different prompting questions, help 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 number).
- Pupils count objects in different groups and compare the number of objects in two or more groups by showing a group with many or few objects.

#### Example

Pupils explain how to arrange in ascending or in descending order the following number 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 arrange number 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

#### Activity 2: Arrange numbers from the smallest to the biggest

#### Example

Pupils in groups make groups of similar objects and arrange the numbers of objects from the smallest to the biggest number.

- a) Make 5 different groups of beans as follows: 18 beans, 20 beans, 22 beans, 29 beans, 30 beans, 40 beans, 45 beans, 50 beans.

- b) Arrange in ascending order the following numbers: 18, 20, 22, 29, 30, 40, 45, and 50.
- c) Explain step by step how to arrange numbers in ascending order.
- **Step 1:** Choose the smallest number and cross it from the sequence. Re-write it;
  - **Step 2:** Choose again another smallest number and cross it from the sequence, re-write it.
  - **Step 3:** Continue the process until all numbers are crossed in the sequence.
  - The result will be the arrangement from the smallest to the biggest number.
- Lead 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, 20 is less than 22 and so on...**

## ii. Application activities

Provide activities on arranging numbers from 1 to 50 in ascending order and then in descending order.



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.

## iii. Activities for demonstration and reinforcement

- In small groups, ask 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

- a) Make 5 different groups of beans as follows: 18 beans, 20 beans, 22 beans, 29 beans, 30 beans, 40 beans, 45 beans, 50 beans.
- b) Arrange in descending order the following numbers: 18, 20, 22, 29, 30, 40, 45, and 50.
- c) Explain step by step how to arrange numbers in descending order.

- **Step 1:** Choose the biggest number and cross it from the sequence. Re-write it;
  - **Step 2:** Choose again another biggest number and cross it from the sequence, re-write it.
  - **Step 3:** Continue the process until all numbers are crossed in the sequence.
  - The result will be the arrangement from the biggest to the smallest number.
- Lead 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, 45 is greater than 40 and so on...**

#### **iv. Assessment activities**

Provide activities on arranging numbers from 0 to 50 in ascending and descending order to be done by pupils at school or at home.

### **Lesson 11: Addition of numbers whose sum does not exceed 50**

#### **a) Learning objective**

Add 2 numbers whose sum does not exceed 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 50.

#### **c) Learning activities**

##### **i. Activities for introduction**

- Using different prompting questions, help pupils to understand and discover how to add 2 numbers whose sum does not exceed 50.
- Pupils 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.

## ii. Activities for demonstration

### 1. Concrete activity

- Ask pupils to make 2 groups of real objects as follows: one group of 23 objects and another group of 25 objects.
- Ask pupils to put together all objects in 2 groups and then count them in order to get the sum 48.



This activity can be done using different numbers between 1 and 50, but be sure that the sum does not exceed 50.

### 2. Semi-Concrete activity

- Using pictures in the pupil's book, ask pupils to draw 2 groups of similar objects as follows: one group of 23 objects and another group of 25 objects.
- Ask pupils to put together all objects in 2 groups by circling and then count them in order to get the sum 48.

Tomatoes

$23 + 25 = 48$

	<b>Tens</b>	<b>Ones</b>
	2	3
+	2	5
	4	8

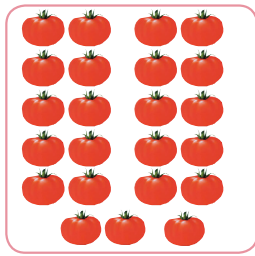


Use different numbers between 1 and 50 and ensure that all provided exercises on addition should not include addition with carrying because this will be learnt in P2.

### 3. Abstract activity

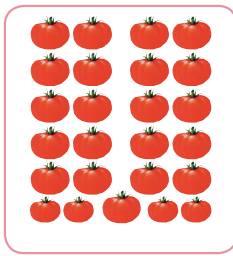
Help pupils to write and read aloud a mathematical sentence on addition of 2 numbers whose sum does not exceed 50.

**Examples:**  $23 + 25 = 48$ , *23 plus 25 equals 48*



23

+



25

=

48

+

Tens	Ones
2	3
2	5
4	8



When adding 2-digit numbers, it is better to use a table of place values and arrange numbers in a vertical order by putting ten in the first column and ones in the second column. To add 2-digit numbers, we start by adding ones and then add tens.

### iii. Reinforcement activities

- Individually or in pairs, help pupils to add by writing 2-digit numbers whose sum does not exceed 50.
- Facilitate them to read aloud the mathematical sentence on addition of 2-digit numbers.

### iv. Application activities

- Ask pupils to work out the addition activities in the pupil's book.
- Request pupils individually or in pairs to work out the addition of 2 numbers whose sum does not exceed 50.

### Example:

$$28 + 1 = \square$$

$$22 + 17 = \square$$

$$30 = 27 + \square$$

$$8 + 14 = \square$$

$$33 + 15 = \square$$

$$\square + 15 = 25$$

$\begin{array}{r} 14 \\ +10 \\ \hline \square \end{array}$	$\begin{array}{r} 25 \\ +24 \\ \hline \square \end{array}$
--	--

### v. Assessment activities

Provide activities on addition of 2 numbers whose sum does not exceed 50 to be done by pupils at school or at home.

$14 + 10 = \square$
$17 + \square = 22$
$25 + 24 = \square$

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) Learning objective

Solve word problems involving addition 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

#### i. Activities for introduction

- Using concrete objects and story telling, help pupils to add 2 numbers whose sum does not exceed 50.
- Read a short word problems involving addition of 2 numbers and pupils give the answer orally.

**Example:** Torero planted 32 trees in his garden and next day he planted 6 more trees. How many trees did Torero plant altogether?

#### ii. Activities for demonstration

Using sticks or counters, ask 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 and application**

Read the word problems involving addition of 2 numbers whose sum does not exceed 50 as provided in Pupils'Book and ask pupils in small groups to give the answers orally.

- **Assessment activities**

Provide activities on addition of 2 numbers whose sum does not exceed 50 to be done by pupils at school or at home.

Kayitesi buys 40 notebooks for Kayisire and 10 notebooks for Keza.



40 notebooks for Kayisire

Kayitesi buys .....notebooks altogether.



10 notebooks for Keza

### Lesson 13: Subtraction of numbers less than 50

#### a) Learning objective

Subtract 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

##### i. Activities for introduction

Using different prompting questions, help 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?

##### ii. Activities for demonstration \

###### 1. Concrete activity

Using real objects, ask pupils to make a group of 37 chalks and then take away 13 chalks.

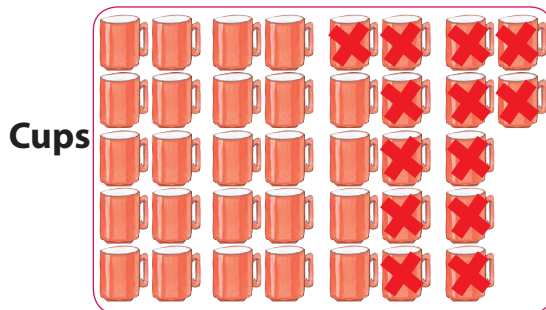
Ask them to count, say and write the number of the remaining chalks.



This activity will be done using different numbers between 1 and 50.

## 1. Semi-concrete activity

- Using pictures in the pupil's book, teacher asks pupils to draw a group of 37 sticks/ objects.
- Ask pupils to take away 13 sticks/ objects by crossing them and then count, say and write number of the remaining objects.



$$37 - 13 = 24$$

	Tens	Ones
	3	7
-	1	3
	2	4

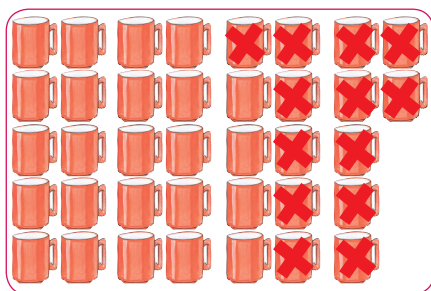


This activity will be done using different numbers between 1 and 50.

## 2. Abstract activity

Help 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

	Tens	Ones
	4	7
-	.	.
	2	4



Ensure that all set activities on subtraction should not include subtraction with borrowing because this will be learnt in P2.

## iii. Reinforcement and application activities

- Help pupils to subtract by writing 2 numbers less than 50.

- Guide them to read correctly and aloud the mathematical sentence on subtraction of 2 numbers (refer to pupil's book).

**Examples:**

$$28 - 2 = \square$$

$$29 - 17 = \square$$

$$49 - 4 = \square$$

37	48
-10	-17
<div style="border: 1px solid black; border-radius: 10px; width: 60px; height: 20px; margin: 0 auto; display: flex; justify-content: space-around;"> <span style="color: red;">•••••</span> </div>	<div style="border: 1px solid black; border-radius: 10px; width: 60px; height: 20px; margin: 0 auto; display: flex; justify-content: space-around;"> <span style="color: red;">•••••</span> </div>

**iv. Assessment activities**

Provide activities on subtraction of 2 numbers less than 50 (refer to pupil's book) to be done by pupils at school or at home.

**Examples:**

$49 - 4 = \square$ $38 - \square = 28$ $45 = \square - 5$	-	<table style="border-collapse: collapse; width: 100%;"> <thead> <tr> <th style="padding: 2px 5px;">Tens</th> <th style="padding: 2px 5px;">Ones</th> </tr> </thead> <tbody> <tr> <td style="text-align: center; padding: 2px 5px;">4</td> <td style="text-align: center; padding: 2px 5px;">7</td> </tr> <tr> <td style="text-align: center; padding: 2px 5px;">2</td> <td style="text-align: center; padding: 2px 5px;">3</td> </tr> <tr> <td style="text-align: center; padding: 2px 5px;">.</td> <td style="text-align: center; padding: 2px 5px;">.</td> </tr> </tbody> </table>	Tens	Ones	4	7	2	3	.	.	-	<table style="border-collapse: collapse; width: 100%;"> <thead> <tr> <th style="padding: 2px 5px;">Tens</th> <th style="padding: 2px 5px;">Ones</th> </tr> </thead> <tbody> <tr> <td style="text-align: center; padding: 2px 5px;">2</td> <td style="text-align: center; padding: 2px 5px;">5</td> </tr> <tr> <td style="text-align: center; padding: 2px 5px;">2</td> <td style="text-align: center; padding: 2px 5px;">2</td> </tr> <tr> <td style="text-align: center; padding: 2px 5px;">.</td> <td style="text-align: center; padding: 2px 5px;">.</td> </tr> </tbody> </table>	Tens	Ones	2	5	2	2	.	.	-	<table style="border-collapse: collapse; width: 100%;"> <thead> <tr> <th style="padding: 2px 5px;">Tens</th> <th style="padding: 2px 5px;">Ones</th> </tr> </thead> <tbody> <tr> <td style="text-align: center; padding: 2px 5px;">4</td> <td style="text-align: center; padding: 2px 5px;">0</td> </tr> <tr> <td style="text-align: center; padding: 2px 5px;">2</td> <td style="text-align: center; padding: 2px 5px;">0</td> </tr> <tr> <td style="text-align: center; padding: 2px 5px;">.</td> <td style="text-align: center; padding: 2px 5px;">.</td> </tr> </tbody> </table>	Tens	Ones	4	0	2	0	.	.
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**Lesson 14: Word problem on subtraction of numbers less than 50**

**a) Learning objective**

Solve word problems involving subtraction of 2 numbers less than or equal 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**

**i. Activities for introduction**

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

**Example:** Aline had 30 hoes in her shop and one day after she sold 20 hoes. How many hoes did Aline remain with?

## ii. Activities for demonstration

After reading the word problems and using counters, guide pupils to find out the answers for the word problems involving subtraction of 2 numbers less than 50.

## iii. Activities for reinforcement and application

In small groups, pupils find out the answers for different word problems involving subtraction of 2 numbers less than 50 given by the teacher (refer to pupil's book)..

## iv. Assessment activities

Provide activities on subtraction of 2 numbers less than 50 to be done by pupils at school or at home.

### Example:

1. Gakuru and gato plant 34 trees and 24 trees grow up.  
The number of trees that grow up is .....
2. Lazaro buys 42 chickens for selling. He went to the market and sells only 30 chickens. The number of remaining chickens is.....



For application activities and homeworks, teacher should set additional word problems that involve both addition and subtraction of numbers less than 50.

## Lesson 15: End unit assessment 6

### a) Learning objective

Count, read, write, compare, order, add and subtract numbers from 1 to 50.

### b) Instructions for end unit assessment



#### Before the end unit assessment:

- Ensure that pupils know and master 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.
- Relate different revision activities to real life situations or pupils' daily life.
- Ask pupils individually or in pairs to 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.

### 7.1. Key unit competence

Counting, reading, writing, ordering, comparing, adding and subtracting numbers from 0 up to 99

### 7.2. Prerequisite knowledge and skills

Pupils will perform well in this unit if they know and master 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.

### 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 operations.

## 7.4. List of lessons

UNIT 7: NUMBERS FROM 0 TO 100 (28 Periods)			Reinforcement and extension lessons	
	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.	1	
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.	1	1
			1	
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.	1	1
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	

			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.	1	1
13	Comparing numbers from 1 to 99	Compare numbers from 1 to 99 using $>$ , $<$ and $=$	1	1
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).	1	1
15	Addition of numbers whose sum does not exceed 99	Add 2 numbers whose sum does not exceed 99.	1	1
			1	
16	Word problems on addition of numbers whose sum does not exceed 99	Solve word problems involving addition whose sum does not exceed 99.	1	
17	Subtraction of numbers less than 99 and word problems	Subtract 2 numbers less than 99. Solve word problems involving subtraction of 2 numbers.	1	
18	End unit assessment 7	Count, read, write, compare, order, add and subtract numbers from 1 to 99.	1	
	Remediation		1	
<b>Total number of periods for unit 7</b>			22	6

## Lesson 1: Introductory activity

### a) Learning objective

Arouse the curiosity of learners on the content of this unit and the importance of counting, reading and writing numbers in real life.

### Observing the pictures



Use prompt questions to help pupils to get their predictions about the unit to be learnt:

- 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 bundles?

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 a box can contain many pencils in bundles.

## Lesson 2: Counting 1 to 60 objects

### a) Learning objective

Understand and discover the concept of numbers from 1 to 60.

### 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

### i. Activities for introduction

- Use different counters or counting objects, help pupils to understand and discover the concept of the numbers from 50 to 60.
- 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.

### ii. Demonstration activities

- Use different counters or objects, ask pupils to make a group of 50 objects and then they add 1 more object until they get 60 objects.
- Ask pupils to count objects in each group from 50 up to 60 objects
- Help 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).

### iii. Reinforcement activities

- In pairs, ask pupils to make groups of similar 50 to 60 objects, count them and tell the number of objects in each group.
- Individually, ask 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...

### iv. Assessment activities

- Provide activities to be done by pupils at school or at home.
- Set activities that provide to every pupil the opportunities to demonstrate and apply the new concept learnt in a range of situations.

### Examples:

- Ask pupils to bring objects of the same nature (60 sticks, 53 sticks, 54 beans, 56 beans, 59 small stones...)
- Ask 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...).



The following lessons follow the same teaching and learning methodology as lesson 2:

<b>Lesson 4</b> on counting numbers from 1 to 70	<b>Lesson 6</b> on counting numbers from 1 to 80
<b>Lesson 8</b> on counting numbers from 1 to 90	<b>Lesson 10</b> on counting numbers from 1 to 100

- To enhance the concept of counting numbers from 1 to 100, 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) Learning objective**

Read and write in figure and in word the numbers from 0 to 60.

#### **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**

##### **i. Activities for introduction**

Using different prompting questions, help pupils to understand and discover how to read and write the numbers from 51 to 60.

##### **Example:**

- Use a chart containing 51 to 60 objects and the numbers 51 to 60 and ask pupils to count and say the number of objects they see in the picture.
- Pupils write the numbers 51,52,53,54,55,56,57,58, 59.

##### **ii. Activities for demonstration**

Lead pupils 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 pupils 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, 60 in their notebooks.

Using abacus or a table of place values, help pupils to discover that all numbers between 51 and 59 have the same numbers of tens (5 tens) with different values of ones.

### **iii. Activities for reinforcement**

- Individually, ask pupils to 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.
- Help pupils with difficulties to write well the 2-digit numbers by giving them more time on writing activity.

### **iv. Application activities**

Ask pupils to read correctly and write 2-digit numbers from 51 to 60 many times in their notebooks.

### **v. Assessment activities**

- Provide 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:

- Ask 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.



The following lessons follow the same teaching and learning methodology as lesson 3:

<b>Lesson 5</b> on reading and writing numbers from 60 to 70	<b>Lesson 7</b> on reading and writing from 70 to 80
<b>Lesson 9</b> on reading and writing numbers from 80 to 90.	<b>Lesson 11</b> on reading and writing numbers from 90 to 99.

- To enhance the concept of reading and writing numbers from 50 to 99, start by asking pupils to read and write the previously learnt numbers before the introduction of the new number.
- To enhance the concept of reading and writing numbers from 10 to 99, 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.
- Use abacus and the table of place values and help pupils to understand the concept of tens and ones in a 2-digit number.

## **Lesson 12: Breakdown a 2-digit numbers less than 99 into ones and tens**

### **a) Learning objective**

**Breakdown** a 2- digit number between 10 and 99 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**

#### **i. Activities for introduction**

- Use prompting questions and help pupils to discover and understand the new concept to be learnt.
- Request pupils 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 make 9 groups of 10 stones or sticks each and another group of 7 stones or sticks...

## ii. Breakdown activities

### 1. Concrete activity

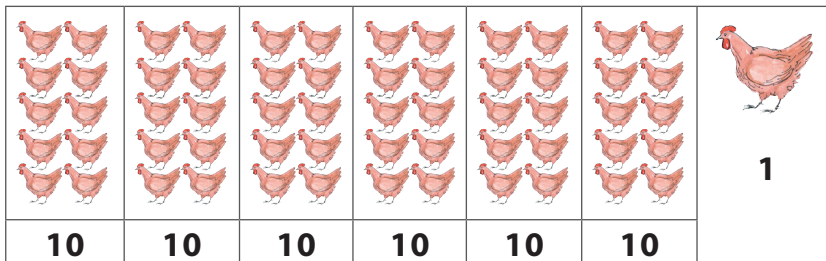
- Using real objects, ask pupils to make groups of objects as follows: from 61 objects make 6 groups of 10 objects each and another group of 1 object.
- Explain to pupils that the number 61 is made by 6 tens and 1 ones.



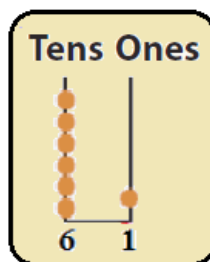
- This activity will be done, in small groups, using different numbers between 51 and 99. Help pupils to discover and understand that a 2-digit number between 51 and 99 is composed by tens and ones.
- Use abacus to demonstrate how to **breakdown** a 2- digit number into tens and ones

### 2. Semi-Concrete activity

Using pictures of groups of objects in the pupil's book, ask pupils to **breakdown** 61 into 6 groups of 10 and 1 object.



- This activity is done using different numbers between 51 and 99.
- Use pictures of **breakingdown** a 2-digit number on abacus.



### 3. Abstract activity

- Using abacus or a table of place value, helps pupil to **breakdown** a 2-digit number between 51 and 99 into tens and ones.
- Help pupils to write and read aloud a mathematical sentence on **breakdown** of a 2-digit number between 51 and 99 into tens and ones.

#### Example

- Using a table of place value, help pupils to **breakdown** the number 61 into tens and ones.
- Lead pupils to find out that 61 is composed by 6 tens and 1 ones.

Tens	Ones
6	1

$$61 = 6\text{Tens } 1 \text{ Ones}$$

#### iii. Reinforcement activities

- Individually or in pairs, help pupils to **breakdown** a 2-digit numbers into tens and ones.
- Facilitate pupils to **breakdown** correctly 85 into 8 tens and 5 ones using table of place value or an abacus.

#### iv. Application activities

- Using pupil's book, ask pupils to work out the activities on **breakdown** 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:

- $78 = \dots$ tens  $\dots$ ones (**Breakdown** 78 into tens and ones)
- 5tens 1 ones =  $\dots$ (find the number which has been decomposed/ brokendown into tens and ones)
- $65 = \dots$ tens  $\dots$ ones (**Breakdown** 65 into tens and ones)
- 9 tens 9 ones =  $\dots$ (find the number which has been decomposed into tens and ones)

## v. Assessment activities

Provide activities on **breakdown** of 2-digit numbers between 10 and 99 into tens and ones. to be done by pupils at school or at home.

## Lesson 13: Comparing numbers from 0 to 99 using symbols

### a) Learning objective

Compare numbers from 1 to 99 using  $>$ ,  $<$  and  $=$

### 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

#### i. Activities for introduction

- Using different prompting questions, help pupils to understand and discover how to compare numbers from 0 to 99.
- Request pupils 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:** Using two boxes of notebooks, where one box contains 72 chalks and another box contains 27 chalks. Pupils compare the number of chalks in two boxes by showing the box with many or few chalks.

#### ii. Activities for demonstration

- In small groups, ask 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 make 2 different groups of objects as follows: a group of 98 notebooks and another group of 89 counters or sticks.

- Ask pupils to compare the number of objects in 2 different groups by showing which group contains many or few objects and then compare the two numbers using the comparison symbols ( $<$  : less than,  $>$ : greater than, or  $=$  : equal to).
- Ask 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 <b>greater than</b> 89
<	Less than	$89 < 98$	89 is <b>less than</b> 98
=	Equal to	$77 = 77$	77 is <b>equal to</b> 77

- Help 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.

**Eg:** 81 and 69 because 8 is greater than 6, this means that 81 is also greater than 69.

Tens	Ones
8	1
6	9

- If 2-digits numbers are compared, the number with a smaller digit in the place value of tens is the smallest number.

**Eg:** 49 and 71 because 4 is less than 7, this means that 49 is also less than 71.

Tens	Ones
4	9
7	1

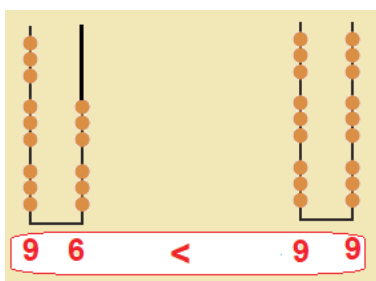
- If 2-digits numbers of the same digit of tens are compared, the greatest number is the one with the greater number in the place value of ones.

**Eg:** 48 and 45 because 8 is greater than 5, this means that 48 is also greater than 45.

Tens	Ones
4	8
4	5

### iii. Activities for reinforcement

Ask pupils to use abacus or table of place values and compare the following numbers using comparison symbols (<, > and =).



### Examples

61	=	61
81	<	87
95	>	91

96	<input type="text"/>	99
74	<input type="text"/>	88
85	<input type="text"/>	71

#### iv. Application activities

- Provide different exercises on comparison of 2 numbers between 1 and 99 using comparison symbols (<, > and =).
- Pupils are requested to provide written answers and teacher makes a follow up on how pupils are performing and then he/she appreciates, encourages and values the pupils' answers.

58	<input type="text"/>	58
54	<input type="text"/>	45
65	<input type="text"/>	65

77	<input type="text"/>	83
50	<input type="text"/>	66

#### v. Assessment activities

Provide additional activities on comparison of number from 1 to 99 using symbols (<, > and =) to be done by pupils at school or at home.

### Lesson 14: Ascending and descending order of numbers from 0 to 99

#### a) Learning objective

Arrange numbers from 1 to 99 in ascending and descending order (from smaller to bigger number and vice versa).

#### 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

### i. Activities for introduction

- Using different prompting questions, help 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 number).
- Pupils count objects in different groups and compare the number of objects in two or more groups by showing a group with many or few objects.

**Example:** Pupils compare and say which group with many or few objects.

- 38 notebooks and 17 notebooks,
- 59 notebooks, 95 notebooks,
- 24 sticks and 22 sticks,
- 86 sticks and 68 sticks etc.

### ii. Activities for demonstration and reinforcement

In small groups, ask 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

- a) Make 4 different groups of beans as follows: 60beans, 58 beans, 89 beans, and 72 beans.
- b) Arrange in descending order the following numbers: 60, 58, 89, 72.
- c) Explain step by step how to arrange numbers in descending order (refer to activity 1 of lesson 10, unit 6).

Lead pupils to read and compare numbers using the following symbol (> greater than) as follow:  $89 > 72 > 60 > 58$  which is read as follows: **89 is greater than 72, 72 is greater than 60 and so on...**

#### Activity 2: Arrange number from the smallest to the biggest

- a) Make 4 different groups of beans as follows: 60beans, 58 beans, 89 beans, and 72 beans.
- b) Arrange in ascending order the following numbers: 60, 58, 89, and 72.

- c) Explain step by step how to arrange numbers in ascending order (refer to activity 2 of lesson 10, unit 6).

Lead pupils to read and compare numbers using the following symbol ( $<$  less than) as follow:  $58 < 60 < 72 < 89$  which is read as **58 is less than 60, 60 is less than 72 and so on ...**

### iii. Application activities

Provide activities on arranging numbers from 1 to 99 in ascending order and then in descending order (see pupil's book).

89	87	80	81
80	.....	.....	.....



Application activities may be done individually or in pairs. Ensure that all pupils understand how to make an ascending and descending order of numbers from 1 to 99 and provide remedial activities for pupils in needs.

### iv. Assessment activities

Provide activities on arranging numbers from 0 to 99 in ascending and descending order to be done by pupils at school or at home.

99	59	79	89	69
99	.....	.....	.....	.....

## Lesson 15: Addition of numbers whose sum does not exceed 99

### a) Learning objective

Add 2 numbers whose sum 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

### i. Activities for introduction

- Using different prompting questions, help pupils to understand and discover how to add 2 numbers whose sum does not exceed 99.
- Ask pupils to count and say the number of all girls in a classroom, then the number of boys in a classroom.
- Finally, ask pupils to say the total number of all students in a classroom (both girls and boys).

### ii. Activities for demonstration

#### 1. Concrete activity

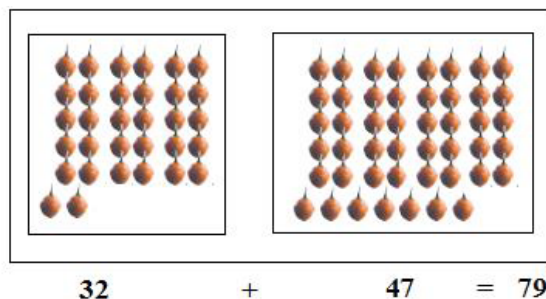
- Ask pupils to make 2 groups of real objects as follows: one group of 32 pens and another group of 47 notbooks.
- Ask pupils to put together all objects in 2 groups and then count them in order to get the sum 79.



This activity is done using different numbers between 1 and 99, but make sure that the sum does not exceed 99.

#### 2. Semi-Concrete activity

- Using pictures of groups of objects in the pupil's book, ask pupils to draw 2 groups of similar objects as follows: one group of 32 objects and another group of 47 objects.
- Ask pupils to put together all objects in 2 groups by using a big rectangle and then count them in order to get the sum 79.

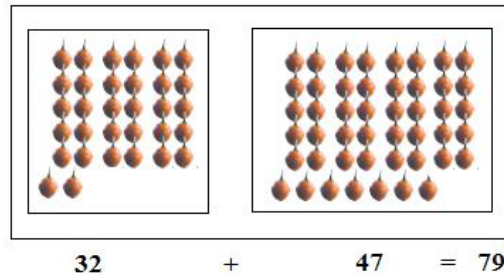


This activity is done using different numbers between 1 and 99. Teacher may ensure that all set activities for addition should not include addition with carrying because this will be learnt in P2.

### 3. Abstract activity

Help 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



	Tens	Ones
	3	2
+	4	7
	7	9



When adding 2-digit numbers, it is better to use a table of place values and arrange numbers in a vertical order by putting tens in the first column and ones in the second column. To add 2-digit numbers, we start by adding ones and then add tens.

#### iii. Reinforcement activities

- Individually or in pairs, help pupils to add by writing 2-digit numbers whose sum does not exceed 99.
- Guide pupils to read aloud the mathematical sentence on addition of 2-digit numbers.

#### iv. Application activities

Individually or in pairs, ask pupils to work out the addition of 2 numbers whose sum does not exceed 99 in the pupil's book.

$14 + 50 = \square$   
 $87 + \square = 90$   
 $34 + 35 = \square$

	Tens	Ones
	3	5
+	2	2
	.	.

	Tens	Ones
	7	7
+	2	0
	.	.

## v. Assessment activities

Provide activities on addition of 2 numbers whose sum does not exceed 99 to be done by pupils at school or at home.

$88 + 1 = \square$	$6 + 52 = \square$	<table border="1"><thead><tr><th>Tens</th><th>Ones</th></tr></thead><tbody><tr><td>6</td><td>4</td></tr><tr><td>3</td><td>2</td></tr><tr><td>.</td><td>.</td></tr></tbody></table>	Tens	Ones	6	4	3	2	.	.
Tens	Ones									
6	4									
3	2									
.	.									
$32 + 47 = \square$	$63 + 35 = \square$									
$60 = 47 + \square$	$\square + 15 = 55$									

## Lesson 16: Word problems on addition of numbers whose sum does not exceed 99

### a) Learning objective

Solve word problems involving addition 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

#### i. Activities for introduction

- Using concrete objects and story telling, help pupils to add 2 numbers whose sum does not exceed 99.
- Read a short word problems involving addition of 2 numbers and pupils give the answer orally.

**Example:** Karisa bought 40 notebooks and the following day his father bought to him 25 more notebooks. How many notebooks did Karisa have altogether?

#### ii. Activities for demonstration

Using sticks or counters, ask pupils to work out the word problems on addition of 2 numbers whose sum does not exceed 99 (see pupil's book).

### iii. Activities for reinforcement and application

Read the word problems involving addition of 2 numbers whose sum does not exceed 99 as provided in Pupils' Book and ask pupils in small groups to give the answers orally.

### iv. Assessment activities

Provide activities on addition of 2 numbers whose sum does not exceed 99 to be done by pupils at school or at home.

## Lesson 17: Subtraction of numbers less than 99 and word problems

### Part 1: Subtraction of numbers less than 99

#### a) Learning objective

Subtract 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

##### i. Activities for introduction

Using different prompting questions, help 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?

##### ii. Activities for demonstration

#### 1. Concrete activity

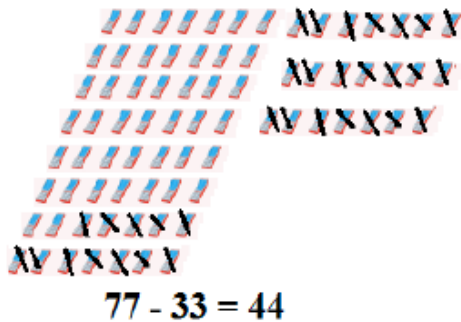
- Using counters, ask pupils to make a group of 77 counters and then take away 33 counters.
- Ask them to count, say and write the number of the remaining counters.



This activity is done by using different numbers between 1 and 99.

## 1. Semi-Concrete activity

- Using pictures of groups of objects in the pupil's book, ask pupils to draw a group of 77 counters.
- Ask pupils to take away 33 counters by crossing them and then count, say and write number of the remaining counters.

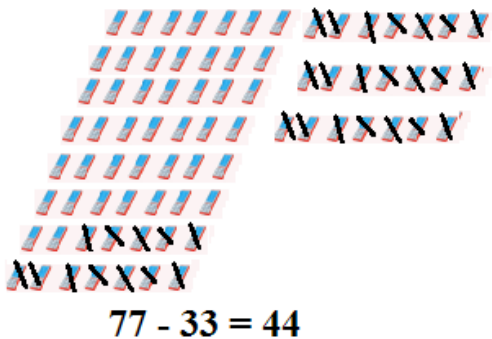


This activity is done by using different numbers between 1 and 99.

## 2. Abstract activity

Help pupils to write and read aloud a mathematical sentence on subtraction of 2 numbers less than 99.

**Example:**  $77 - 33 = 44$ , 77 minus 33 equals 44



	Tens	Ones
	7	7
-	3	3
	4	4



Make sure that all set activities on subtraction should not include subtraction with borrowing because this will be learnt in P2.

## iii. Reinforcement activities

- Individually, help pupils to subtract by writing 2 numbers less than 99.
- Facilitate pupils to read aloud the mathematical sentence on subtraction of 2 numbers (refer to pupil's book).

Tens	Ones
6	7
2	3
.	.

Tens	Ones
9	8
2	3
.	.

$$89 - 40 = \square$$

$$38 - \square = 28$$

$$5 = \square - 85$$

Tens	Ones
9	8
.	.
6	2

Tens	Ones
.	.
4	1
3	7

#### iv. Assessment activities

Provide activities on subtraction of 2 numbers less than 99 (refer to pupil's book) to be done by pupils at school or at home.

$$80 - 10 = \square$$

$$59 - 17 = \square$$

$$90 - \square = 70$$

$$67 - 15 = \square$$

$$68 - 57 = \square$$

$$\square - 10 = 40$$

Tens	Ones
8	4
2	4
.	.

Tens	Ones
9	8
4	7
.	.

### Part 2: Word problem on subtraction of numbers less than 99

#### a) Learning objective

Solve word problems involving subtraction of 2 numbers.

#### 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

##### i. Activities for introduction

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

**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?

##### ii. Activities for demonstration

- Using counters, guide pupils to work out word problems involving subtraction of 2 numbers less than 99
- Using real objects / materials or pictures, lead pupils to read and analyze word problems in the pupil's book and then find out the answer for the word problems (refer to pupil's book).

- Use counters, dices, sticks and helps pupils to solve word problems involving subtraction.

### iii. Activities for reinforcement and application

Read the word problems involving subtraction of 2 numbers less than 99 as provided in Pupils'Book and ask pupils in small groups to give the answers orally.

### iv. Assessment activities

Provide activities on subtraction of 2 numbers less than 99 to be done by pupils at school or at home.



For application activities and home works, teacher should set additional word problems that involve both addition and subtraction of numbers less than 99.

## Lesson 19: End unit assessment 7

### a) Learning objective

Count, read, write, compare, order, add and subtract numbers from 1 to 99.

### b) Instructions on End unit assessment



#### Before the end unit assessment:

- Relate different revision activities to real life situations or pupils' daily life.
- Basing on the results from end unit assessment and before starting unit 8, Provide remedial or reinforcement activities for pupils in need.

## 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 know and master how to apply the following:

- Count 1 to 100 objects read and writes 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 and knows well that a whole can be divided into different parts, and are able to show the parts of a fraction for a whole.

## 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 $\frac{1}{2}$ AND $\frac{1}{4}$ (8 Periods)			Reinforcement and extension lessons	
	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 $\frac{1}{2}$ and different parts of $\frac{1}{2}$	Understand the meaning of $\frac{1}{2}$ . Differentiate the numerator from the denominator of a fraction	1	1
3	Concept of $\frac{1}{4}$ and different parts of $\frac{1}{4}$	Understand the meaning of $\frac{1}{4}$ . Differentiate the numerator from the denominator of a fraction.	2	1
4	End unit assessment 8	Show , write $\frac{1}{2}$ and $\frac{1}{4}$ of a whole and tell different parts of a fraction.	1	
	Remediation		1	
<b>Total number of periods for unit 8</b>			6	2

### Lesson 1: Introductory activity

#### a) Learning objective

Arouse the curiosity of learners on the content of this unit and its importances in real life.



This lesson is delivered through a conversation between teachers and pupils.

#### Observing the pictures



Use prompt questions to help pupils to get their predictions about the unit to be learnt:

- Look at the picture.
- What do you see?
- How many full oranges do you see?
- How many parts oranges do you see?

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 the predictions from pupils on the unit to be learnt. Teacher end the conversation by telling pupils that an orange can be divided into 2 or 4 equal parts so that 2 or 4 children can equally share an orange.

## **Lesson 2: Concept and different parts of a fraction $\frac{1}{2}$**

### **a) Learning objective**

Understand the meaning of  $\frac{1}{2}$  and differentiate the numerator from the denominator of a fraction.

### **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.

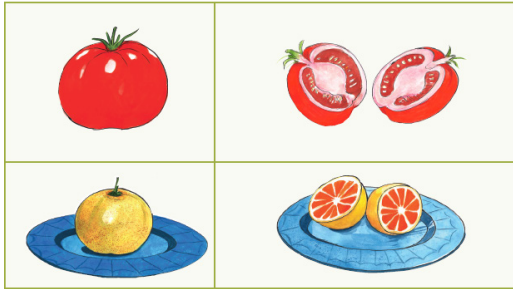
### **c) Learning activities**

#### **i. Activities for introduction**

- Using different objects for cutting, help pupils to understand and discover that a whole can be divided into 2 equal parts.
- Ask 2 pupils to share equally 2 oranges and then ask other pupils to find a share of each pupil.
- Ask 2 pupils to share equally 1 orange and then ask other pupils to find a share of each pupil.

#### **ii. Demonstration activities**

- Using cut outs of a circle on different papers, ask pupils to find out 2 different parts which can be put together to make a circle.
- Then, ask pupils to compare the 2 parts and discover that they are all equal.
- Ask pupils to fold a paper and divide it into 2 equal parts and then compare the 2 parts in order to find that the 2 parts are equal.
- Lead pupils to find out that one **part is a half of a whole** or **1 part out of 2 equal parts**.
- Ask pupils to observe different pictures in the pupil's book and explain how a whole is divided into 2 equal parts.

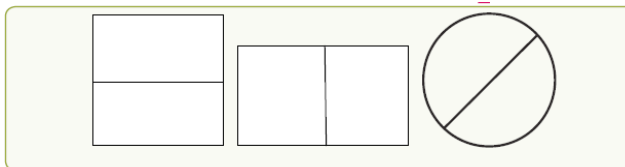


- Lead pupils on how to write and read the fraction  $\frac{1}{2}$ .
- Invite pupils to read and write  $\frac{1}{2}$  on chalkboard and then in their notebooks.
- Help pupils to understand that  $\frac{1}{2}$  is a fraction made by 2 parts which are numerator and denominator.

**Example:** In the fraction  $\frac{1}{2}$ , the numerator is 1 and the denominator is 2

### iii. Reinforcement activities

- In pairs, ask pupils to use real objects like : oranges, avocados, papers, etc ,to divide them into 2 equal parts and then show a half of a whole or  $\frac{1}{2}$  of a whole.
- Use drawings of different shapes (rectangle, square...) divided into 2 equal parts and ask pupils to shade a half or  $\frac{1}{2}$ .



### iv. Assessment activities

- Provide 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.
- Ask pupils to write and read the fraction  $\frac{1}{2}$  or find out where the fraction  $\frac{1}{2}$  is written on different materials.

### Lesson 3: Concept and different parts of a fraction $\frac{1}{4}$

#### a) Learning objective

Understand the meaning of  $\frac{1}{4}$

#### 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.

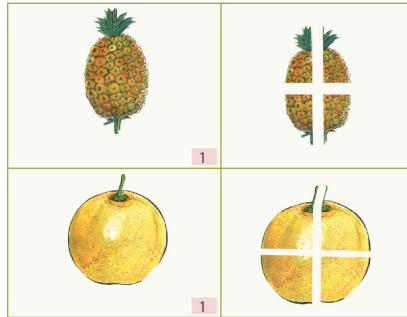
#### c) Learning activities

##### i. Activities for introduction

- Using different objects for cutting, help pupils to understand and discover that a whole can be divided into 4 equal parts.
- Divide an orange into 4 equal parts and then show pupils how 4 equal parts can be put together to make a full orange or a whole.
- Invite 4 pupils to share equally 1 orange and then ask other pupils to find a share of each pupil.
- Explain to pupils that each part is a **quarter** or **1 part out of 4 equal parts** of an orange.

##### ii. Demonstration activities

- Using cut outs of a square on different papers, ask pupils to find out 4 different parts which can be put together to make a square.
- Ask pupils to compare the 4 parts and discover that they are all equal.
- Invite 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.
- Lead pupils to find out that one **part is a quarter of a whole** or **1 part out of 4 equal parts**.
- Ask 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.

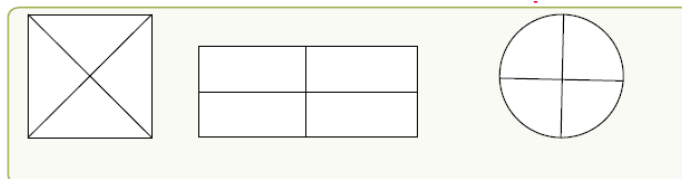


- Lead pupils on how to write and read the fraction  $\frac{1}{4}$ .
- Help them to read and write  $\frac{1}{4}$  on chalkboard and then in their notebooks.
- Help pupils to understand that  $\frac{1}{4}$  is a fraction made by 4 parts which are numerator and denominator.

**Example:** In the fraction  $\frac{1}{4}$ , the numerator is 1 and the denominator is 4

### iii. Reinforcement activities

- In pairs, ask pupils to use real objects like : oranges, avocados, papers, etc , divide them into 4 equal parts and then show a half of a whole or  $\frac{1}{4}$  of a whole.
- Use drawings of different shapes (rectangle, square...) divided into 4 equal parts and asks pupils to shade individually a half or  $\frac{1}{4}$  of a shape.



### iv. Assessment activities

- Provide activities to be done by pupils at school or at home.
- Set activities that provide to every pupil the opportunities to demonstrate and apply the new concept learnt in a range of situations.
- Ask pupils to write and read the fraction  $\frac{1}{4}$  or find out where the fraction  $\frac{1}{4}$  is written on different materials.

## Lesson 4: End unit assessment 8

### a) Learning objective

Show, write  $\frac{1}{2}$  and  $\frac{1}{4}$  of a whole and tell different parts of a fraction.

### b) Instructions on End unit assessment



#### Before the end unit assessment:

- Ensure 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.
- Relate different revision activities to real life situations or pupils' daily life.
- Individually or in pairs, ask pupils to 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 9, provide remedial or reinforcement activities for pupils in need.

### 9.1. Key Unit Competence

Finding the missing number in a number pattern and in 1-digit number or in 2-digit number.

### 9.2. Prerequisite knowledge and skills

Pupils will perform well in this unit if they know and master 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, breakdown/expand 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 finding missing numbers in number patterns, in addition or in subtraction.
- **Financial education:** Lead pupils to make appropriate financial decisions through word problems that involving four basic operations.

## 9.4. list of lessons

UNIT 9: NUMBER PATTERNS(8 Periods)			Reinforcement and extension lessons	
	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 and common difference in 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	1
		Find the difference between 2 consecutive numbers in number patterns that involve addition.		
3	Concept of a number pattern and common difference in 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.	2	1
		Find the difference between 2 consecutive numbers in number patterns that involve subtraction.		
4	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	
5	Remediation		1	
<b>Total number of periods for unit 9</b>			<b>6</b>	<b>2</b>

## Lesson 1: Introductory activity

### a) Learning objective

Arouse the curiosity of learners on the content of this unit.



This lesson is delivered through a conversation between teacher and pupils.

### Observing the pictures



Use prompt questions to help pupils to get their predictions about the unit to be learnt:

- Look at the picture.
- What do you see?
- How many avocados are on each row?
- Write the numbers in figure.
- Arrange the number of avocados 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 ends 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) Learning objective

- Make number patterns with a constant difference / interval and find a missing number in number patterns that involve addition.
- Find the difference between 2 consecutive numbers in number patterns that involve addition.

### 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

### i. Activities for introduction

- Pupils are put in small groups numbered from 1 to 6, ask each group to make group of real objects (small stones, beans, bottle tops,...) in the following manner: 1<sup>st</sup> group collects 3 objects, 2<sup>nd</sup> group collects 2 more objects than the 1<sup>st</sup> group, 3<sup>rd</sup> group collects 2 more objects than the 2<sup>nd</sup> and so on until the 6<sup>th</sup> group.
- Ask all groups to write the number of objects they collected and then order those numbers from 3 to 13

### ii. Activities for demonstration

#### 1. Concrete activity

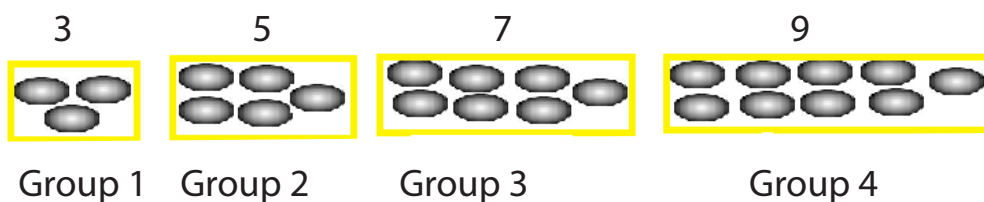
- Using real objects, show how to make a number pattern by adding a constant term called **common difference**.
- Use an example of beans and help pupils to make different groups of beans by adding 2 more beans to the first group.

#### Examples:

- Groups of beans by adding 2 to the first group we get: 2, 4, 6, 8, 10, 12...
- Starting at 3 and make a new sequence by adding 2 we get: 3, 5, 7, 9, 11, 13, 15

#### 2. Semi-Concrete activity

- Using pictures of groups of objects in the pupil's book, ask pupils to count and write the number of objects in each group.
- Help pupils to find out that between every 2 consecutive numbers there is a common difference.
- Finally, invite pupils to make a number pattern by arranging those numbers from the smallest to the biggest number which is less than 99.



This activity can be done using different numbers between 1 and 99, but with 2 the common difference between the 2 consecutive numbers.

### 3. Abstract activity

Help 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

#### i. Reinforcement activities

- In pairs, ask pupils to make 7 groups of objects. Give them the number of objects in the first group and the number of objects to be added to the 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup>, 6<sup>th</sup> and 7<sup>th</sup> group.
- Pupils are requested to write the number of objects in each group and then make an order starting from the smallest number.
- Individually, give to the pupils the first number and the common number to be added or pattern to get the 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup>... and ask pupils to find out the following 4 or 5 terms of the number sequence.

#### Examples:

1. The first number of the consecutive terms of the sequence is 20 and by adding 3 to the first term, one can find out 5 consecutive terms of the sequence as follows: 20, 23, 26, 29, 32 and 35
2. Ask pupils to work out activities on finding the missing numbers in a number sequence in their pupil's book.



#### Example: **add 1**

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	...	...	...	76	75	...	...	...	80
...	82	...	84	...	...	87	...	...	...
91	...	...	...	...	...	...	...	...	100

## ii. Application activities

Using pupil's book, ask pupils to work out the activities on number sequence and finding the missing numbers individually or in pairs.

**Example:** Make addition and fill in the missing numbers in the following tables.

	1	2	3	4	5	6	7	8	9	10	
	3	4	5	6	.	.	.	.	.	.	
	20	22	24	26	28	30	32	34	36	38	40
	23	.	.	.	.	.	.	.	.	.	.

## iii. Assessment activities


- Provide activities to be done by pupils at school or at home.
- Set activities that provide to every pupil the opportunities to demonstrate and apply the new concept learnt.

### Examples:

1. Given 12 as the first number of the number sequence and by adding 2 on the first term of the sequence, find out 5 consecutive terms of that sequence.
2. Observe the common difference between consecutive numbers, find the number pattern, and 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 below. 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) Learning objective

- Make number patterns with a constant difference between 2 consecutive numbers and find a missing number in number patterns that involve subtraction.
- Find the difference between 2 consecutive numbers in number patterns that involve subtraction.

### 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

#### i. Activities for introduction

- Pupils are put in small groups numbered from 1 to 5, ask pupils to make groups of real objects (small stones, beans, bottle tops,...) in the following manner: 1<sup>st</sup> group collects 30 objects, 2<sup>nd</sup> group collects 2 less objects than the 1<sup>st</sup>, 3<sup>rd</sup> group collects 2 less objects than the 2<sup>nd</sup> and so on until the 5<sup>th</sup> group.
- Ask each group to write the number of objects it collected and then order those numbers from 30 to 22

#### ii. Activities for demonstration

##### 1. Concrete activity

- Using real objects, show how to make a number sequence by subtracting a constant term called common **difference**.
- Use 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...

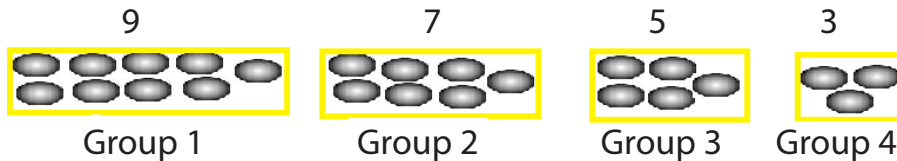


This activity can be done using different numbers to be subtracted.

**Example:** Using 2 to make a new sequence 30, 28, 26, 24, 22, 20... Help pupils 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, ask pupils to count and write the number of objects in each group.
- Help pupils to find out that between every 2 consecutive numbers there is a common difference.
- Finally, help pupils to make a number pattern by arranging those numbers from the biggest to the smallest number which is less than 99.



This activity can be done using different numbers between 1 and 99, with 2 as the common difference.

## 3. Abstract activity

Help pupils to write and read aloud a mathematical sentence on number patterns less than 99.

**Examples:** 9, 7, 5 and 3, is a number pattern or a number sequence

### iii. Reinforcement activities

- In pairs, ask pupils to make 7 groups of objects.
- Give pupils the number of objects in the first group and the number of objects to be subtracted from the 1<sup>st</sup> and then from the 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup>, 6<sup>th</sup> and 7<sup>th</sup> group.
- Pupils are requested to write the number of objects in each group and then make an order starting from the biggest number.
- Individually, give to the pupils the first number and the common number to be subtracted to get the 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup>... and ask pupils to find out the following 4 or 5 terms of the number sequence.

### Example

The first number of the consecutive terms of the sequence is 50 and by subtracting 3 from the first term, one can find out 5 consecutive terms of the sequence as follows: 50, 47, 44, 41, 38 and 35

- Ask pupils to work out activities on finding the missing numbers in a number sequence in their pupil's book.

### Example: Subtract 1

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	...	...

### iv. Application activities

Using pupil's book, ask pupils to work out the activities on number sequence and finding the missing numbers individually or in pairs.

### Examples

- Given 40 as the first number of the number sequence and by subtracting 2 on the the first term of the sequence, find out 5 consecutive terms of that sequence.
- Fill in the blanks with the missing numbers

60	55	...	45	...	35	...	25	...	15
----	----	-----	----	-----	----	-----	----	-----	----

- Make subtraction and fill in the missing numbers in the following tables

	20	30	40	50	60	70	80	90
	10	.	.	.	50	.	.	.

	14	24	34	44	54	64	74	84	94
	10	.	.	.	.	.	.	.	90

## v. Assessment activities

- Provide activities to be done by pupils at school or at home.
- Set activities that 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 subtracted number to get the number sequence.



14	24	34	44	54	64	74	84	94
10	.	.	.	.	.	.	.	90

## Lesson 4: End unit assessment 9

### a) Learning objective

Make number patterns with a constant difference between 2 consecutive numbers and find a missing number in number patterns that involve addition or subtraction.

### b) Instructions for End unit assessment



- Individually or in pairs, ask pupils to work out different assessment questions and then make an individual correction.
- Basing on the results from end unit assessment and before starting unit 10, provide remedial or reinforcement activities for pupils in need.

# MEASURING THE LENGTH LESS THAN OR EQUAL TO 10 m

## UNIT

## 10

### 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 Measurements.

### 10.2. Prerequisite knowledge and skills

Pupils will perform well in this unit if they know and master 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.

### 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

UNIT 10: MEASURING THE LENGTH LESS THAN OR EQUAL TO 10 m (16 Periods)			Reinforcement and extension lessons	
	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 length measurements in real life.	1	1
2	Concept of lengths	Estimate the lengths of objects in meter.	1	
3	Lengths measurement tools	Enumerate different standards and non standards tools used to measure lengths.	1	
4	Reading and writing meter "m"	Read and write length of 1 meter "1 m".	1	
5	Measuring lengths of 10 m using a meter ruler	Measure lengths less or equal to 10 m.	1	
	<b>Remediation</b>		<b>1</b>	
6	Comparing lengths less than 10 m	Compare lengths of 2 objects less than 10 m.	1	
7	Addition of lengths whose sum does not exceed 10 m and word problems	Add 2 or more lengths whose sum does not exceed 10 m. Solve word problems involving addition of lengths whose sum does not exceed 10 m	1	
8	Subtraction of lengths whose difference does not exceed 10 m and word problems	Subtract 2 lengths less than 10 m. Solve word problems involving subtraction of lengths less than 10 m.	1	
9	End unit assessment 10	Measure , write, read, compare, add and subtract lengths less or equal to 10 m.	1	
	<b>Remediation</b>		<b>1</b>	
<b>Total number of periods for unit 10</b>			<b>11</b>	<b>5</b>

## Lesson 1: Introductory activity

### Learning objective

Arouse the curiosity of learners on the content of this unit and the importance of length measurements in real life.

### Observing the pictures



Use prompt questions to help pupils to get their predictions about the unit to be learnt:

- Look at the picture.
- What do you see?
- How many children do you see?
- What are the children doing?
- What do the children have in their hands?
- Do you think all sides of the classroom have the same lengths?
- 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) Learning objective**

Estimate the lengths of objects in meter.

### **b) Teaching and learning materials:**

Chalkboard, chalks, sticks of different lengths, long ropes, notebooks, pens, pupil's book, and charts containing pictures of lengths of objects.

### **c) Learning activities**

#### **i. Activities for introduction**

- Talk about different lengths of objects and different distances between places.
- Help pupils to compare lengths or distances using the following words: far, near, shorter, longer, and taller.

#### **Example**

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, lead pupils to observe and compare objects or distances of different lengths. It is not good to compare heights of pupils;
  - Outside the classroom, Pupils play a jumping game in pairs by showing who jumped shorter or longer distance.

#### **ii. Demonstration activities**



##### **1. Concrete activity**

- In small groups, distribute to pupils sticks of equal or different lengths. Then pupils arrange them from the shortest to the longest stick.

- Help pupils to use the following words : “shorter than”, “ longer than”
- Use sticks of the same lengths and invite pupils to compare them using the following words: two sticks have equal lengths or the length of 2 sticks is the same.
- Take two sticks of the same or different lengths in hands and ask pupils to show which stick is short or long.
- Ask pupils to compare distance from their school with the other neighboring schools by telling the school which is near or far.

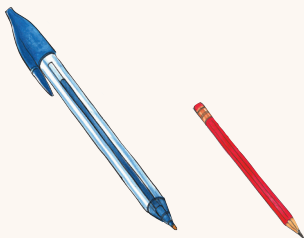
### iii. Reinforcement activities


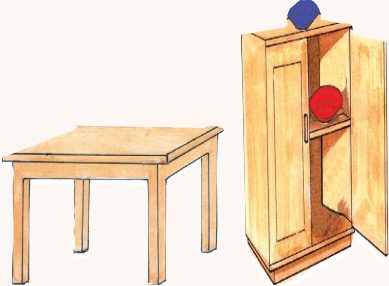
By means of the pupil’s book, lead pupils to observe pictures and find out which object is shorter or taller.

	<p>The tree is <b>tall</b></p> <p>The maize is <b>short</b></p>
	<p>The flat is <b>long</b></p> <p>The house is <b>.....</b></p>

### iv. Application and assessment activities

- Provide activities to be done by pupils at school or at home.
- Use a pupil’s book, ask pupils to observe and compare pictures by telling which is shorter or taller.

	<p>A pencil is <b>short</b></p> <p>A blue pen is <b>tall</b></p>
---	--

	<p>A flask is .....</p> <p>A cup is .....</p>
	<p>A table is .....</p> <p>A cupboard is .....</p>

### Lesson 3: Lengths measurement tools

#### a) Learning objective

Enumerate different standards and non standards tools used to measure lengths.

#### b) Teaching and learning materials:

Chalkboard, chalks, sticks of different lengths, long ropes, tape measure, folding meter, meter ruler, notebooks, pens, pupil's book, and charts of objects with different lengths.

#### c) Learning activities

##### i. Activities for introduction

Outside the classroom, ask pupils in pairs to use steps of legs, measure and say the number of steps between 2 pupils or 2 objects.

##### ii. Demonstration activities

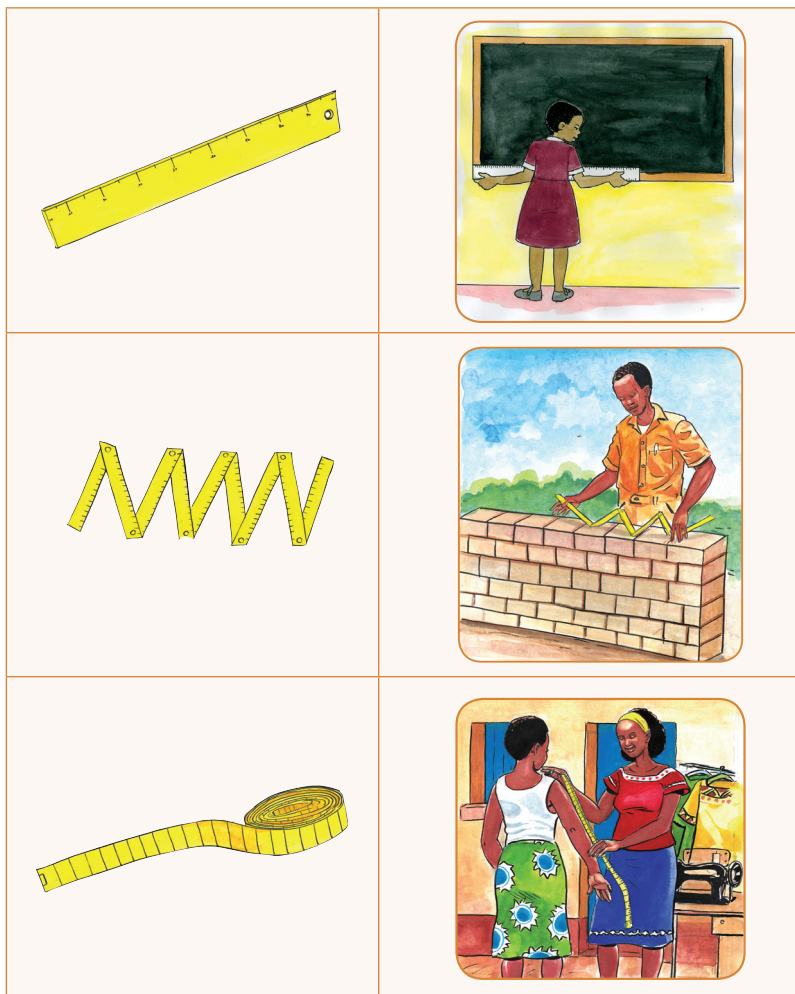
##### 1. Concrete activity

- In small groups or in pairs, ask 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.
- Ask 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 shorter or longer.

- Ask 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 shorter or longer.
- Ask pupils to list other length measuring materials or tools they know and 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 everyday life to measure the standardized lengths.

## 2. Semi- Concrete activity

- Lead pupils to observe people using different length measuring tools in the pupil's book.
- Ask them to name each measuring tool.



### **iii. Reinforcement activities**

- In small groups, ask 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.
- Request one pupil from each group to record the number of measured hand spans, steps of legs, feet and meters.
- Finally, help pupils to understand that hand spans, steps of legs, feet, sticks, ropes are non-standard length measuring tools while a tape measure, folding meter and meter ruler are standards tools to measure lengths.

### **iv. Application and assessment activities**

- Provide 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.
- Pupils measure the length of a table, chalkboard, window...

## **Lesson 4: Reading and writing meter “m”**

### **a) Learning objective**

Measure, read and write length of “1 m ”

### **b) Teaching and learning materials:**

Chalkboard, chalks, sticks of different length, long ropes, tape measure, folding meter, meter ruler, notebooks, pens, pupil’s book, and charts of objects of different length.

### **c) Learning activities**

#### **i. Activities for introduction**

- Ask pupils to measure a rope using a meter ruler and tell the number of meter ruler they found.
- 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.

## ii. Demonstration activities

### 1. Concrete activity

- Use a meter ruler to measure a length of 5m.
- Ask pupils to observe and count the number of times a meter ruler is used while measuring length of 5m.
- 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**

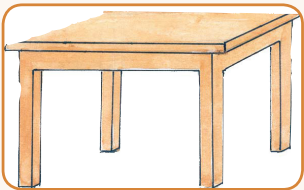
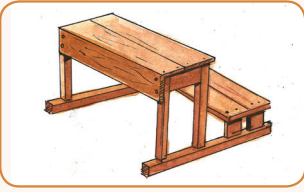
### 2. Semi-Concrete activity

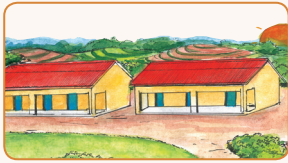
Help pupils to read and write the lengths in meters as follows:

How to mathematically write lengths in meters	How to read lengths in meters
5 m	5 meters
8 m	8 meters
3 m	3 meters

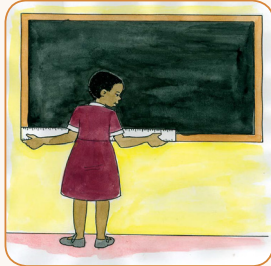
## iii. Reinforcement activities

Using pupil's book, ask pupils to talk about lengths of different objects, write and read those lengths 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

#### iv. Application activities

- Invite pupils to measure lengths of familiar objects at school and record the measured lengths in meters.
- Ask 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 meters	7 ...
8 meters	8 m
9 meters	9 ...
10 meters	... m

## **v. Assessment activities**

- Provide activities to be done by pupils at school or at home.
- Ask pupils to measure the length of their house at home using steps of legs and record the number of steps they measured.
- 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) Learning objective**

Measure, read and write lengths less or equal to 10 m.

### **b) Teaching and learning materials:**

Chalkboard, chinks, sticks with different lengths, long ropes, meter ruler, notebooks, pens, pupil's book, and charts of objects with different lengths.

### **c) Learning activities**

#### **i. Activities for introduction**

Through prompting questions, ask pupils to talk about the length of the 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 cloth?

#### **ii. Demonstration activities**

##### **1. Concrete activity**

- In small groups, ask 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.
- Ask pupils to measure the length of the classroom using measuring tool and then they say the number of times they find.

##### **2. Semi-Concrete activity**

- Ask at least 2 pupils to measure the length of 10 m using a meter ruler and they write the number of times they find.

- Individually, ask pupils to measure 10 m using his/ her measuring tool (rope or stick of 1 meter) and write the number of times they find.
- Explain to pupils that a **meter** is a **standard** unit of length measurements.
- Explain that 1 meter measured using a meter ruler is the same as 1 meter measured using a folding meter or a tape meter.

### iii. Application activities

In small groups, ask 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.

### iv. Assessment activities

- Provide activities to be done by pupils at school or at home.
- Ask them to measure the length of their house at home using a meter ruler and record the measured length in meters.
- Ask pupils to measure lengths of different objects less or equal to 10 meters.

## Lesson 6: Comparing lengths less than or equal to 10 m

### a) Learning objective

Compare lengths of 2 objects less than 10 m.

### b) Teaching and learning materials


Chalkboard, chinks, sticks with different lengths, long ropes, and rope of 1 meter, tape measure, folding meter, meter ruler, notebooks, pens, pupil's book, and charts of objects with different lengths.

### c) Learning activities

#### i. Activities for introduction

- In small groups, give to pupils 2 ropes of 5 meters and 3 meters and ask them compare them by showing which rope is taller than the other or which rope is shorter than the other.
- Ask pupils to measure the lengths of the 2 ropes using a meter ruler and then write the measured lengths.
- Finally, ask pupils to compare 5 m and 3 m using the following comparison symbols:  $>$ ,  $<$  or  $=$

3 m 

5 m 

$$5\text{ m} > 3\text{ m}$$

## ii. Demonstration activities

- Ask pupils to measure lengths of different objects (lengths less or equal to 10 m) and then ask 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  
( $4\text{ m} < 6\text{ m}$  or  $6\text{ m} > 4\text{ m}$ )

## iii. 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
-------------	------------	--------------

## iv. Application activities

Individually, pupils work out the activities on lengths comparison in the pupil's book.

4 m	<input type="text"/>	8 m
8 m	<input type="text"/>	7m
10 m	<input type="text"/>	4m

8 m	<input type="text"/>	4 m
7 m	<input type="text"/>	8 m
4 m	<input type="text"/>	10 m

## v. Assessment activities

Individually, pupils are given activities on lengths comparison to be done at school and at home (see pupil's book).

7 m	<input type="text"/>	3 m
1 m	<input type="text"/>	4 m
6 m	<input type="text"/>	6 m

6 m	<input type="text"/>	9 m
10 m	<input type="text"/>	6 m
5 m	<input type="text"/>	9 m

## **Lesson 7: Addition of lengths whose sum does not exceed 10 m and solving related word problems**

### **a) Learning objective**

- Add 2 or more lengths whose sum does not exceed 10 m.
- Solve word problems involving addition of lengths whose sum does not exceed 10 m

### **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**

#### **i. Activities for introduction**

- Ask 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, ask 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.
- Ask the third group to measure the length between the first and the third pupil.
- Finally, Ask pupils to add the following:  $3\text{ m} + 5\text{ m}$  and compare the sum with the measures from the 3<sup>rd</sup> group.

#### **ii. Demonstration activities**

##### **1. Concrete activity**

- Help pupils to measure lengths accurately using a meter ruler, a rope or a stick of 1 meter.
- Ask pupils to measure 2 consecutive lengths and then record their measures and make the sum.

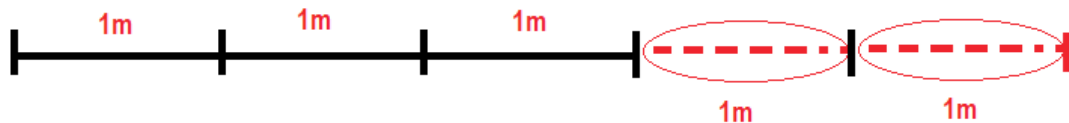
**Example:** Pupils measure length of 3 meters (3m) first and then 2 meters (2 m). Finally, they make a sum:  $3\text{ m} + 2\text{ m}$

## 2. Semi-Concrete activity

By drawing, help pupils to add lengths in meters

### Example

$$3 \text{ m} + 2 \text{ m} = 5 \text{ m}$$



## 3. Abstract activity

- Write on the chalkboard  $3 \text{ m} + 2 \text{ m} = 5 \text{ m}$ .
- Explain that adding lengths measurements, we add numbers and write length unit (m).

### iii. Reinforcement activities

- Ask pupils to solve a word problem involving addition of length measurements in meters.
- Pupils try to solve it by showing their working steps on chalkboard.
- Help pupils to accurately add length measurements in meter and find the correct answers.

### iv. Application activities

Individually, ask pupils to work out addition activities and word problems involving addition on length measurements (see pupil's book).

### Examples:

#### 1. Make addition

$$1 \text{ m} + 1 \text{ m} = \text{...} \text{ m}$$

$$1 \text{ m} + 2 \text{ m} = \text{...} \text{ m}$$

$$3 \text{ m} + 4 \text{ m} = \text{...} \text{ m}$$

$$5 \text{ m} + 5 \text{ m} = \text{...} \text{ m}$$

$$2 \text{ m} + 3 \text{ m} = \text{...} \text{ m}$$

$$2 \text{ m} + 4 \text{ m} = \text{...} \text{ m}$$

$$1 \text{ m} + 5 \text{ m} = \text{...} \text{ m}$$

$$6 \text{ m} + 3 \text{ m} = \text{...} \text{ m}$$

$$9 \text{ m} + 1 \text{ m} = \text{...} \text{ m}$$

$$8 \text{ m} + 2 \text{ m} = \text{...} \text{ m}$$

$$3 \text{ m} + 5 \text{ m} = \text{...} \text{ m}$$

$$5 \text{ m} + 4 \text{ m} = \text{...} \text{ m}$$

$$2 \text{ m} + 4 \text{ m} = \text{...} \text{ m}$$

## 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?

### v. Assessment activities

- Provide activities to be done at school or at home.
- Prepare word problems related to real life situations.

### Examples:

#### 1. Make addition of the following

$$8 \text{ m} + 2 \text{ m} = \boxed{\dots} \text{ m} \quad 5 \text{ m} + 4 \text{ m} = \boxed{\dots} \text{ m} \quad 2 \text{ m} + 4 \text{ m} = \boxed{\dots} \text{ m}$$

$$3 \text{ m} + 5 \text{ m} = \boxed{\dots} \text{ m} \quad 7 \text{ m} + 3 \text{ m} = \boxed{\dots} \text{ m} \quad 2 \text{ m} + 5 \text{ m} = \boxed{\dots} \text{ m}$$

## 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 altogether?

## Lesson 8: Subtraction of lengths less than or equal to 10 m and solving related word problems.

### a) Learning objective

Subtract 2 lengths less than or equal to 10 m and solve related word problems.

### 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 of objects with different lengths.

### c) Learning activities

#### i. Activities for introduction

- In small groups, Give 2 ropes of different lengths less than 10 meters to pupils.
- Ask 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).
- Ask them to measure the 2 ropes using a meter ruler, to compare their lengths and then to find out their difference.

## ii. Demonstration activities

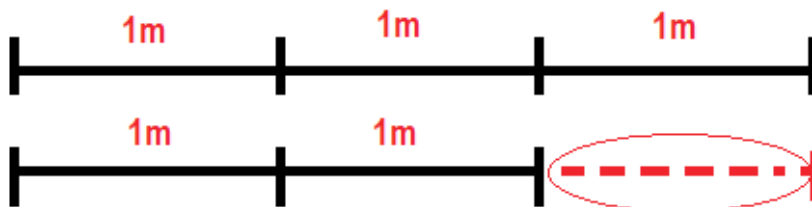
### 1. Concrete activity

- Help pupils to discover, by measuring, that a rope of 9 meters (9m) is longer than a rope of 3 meters (3m) and the difference in lengths is 6 meters (6m).
- Using a pair of scissors, ask pupils to cut out 3 meters from 9 meters of rope and ask them to measure the remaining length of the rope which is 6 meters (6 m).

### 2. Semi-concrete activity

- Using a meter ruler, pupils measure, draw and write 3 meters on the chalkboard, and then measure, draw and write 2 meters on the chalkboard.
- Ask pupils to find the difference between the 2 lengths which is 1 meter.

$$3 \text{ m} - 1 \text{ m} = 2 \text{ m}$$



### 3. Abstract activity

Help pupils to make subtraction of length measurements:

- $9 \text{ m} - 3 \text{ m} = 6 \text{ m}$
- $3 \text{ m} - 2 \text{ m} = 1 \text{ m}$

Give additional subtraction activities

- $5 \text{ m} - 2 \text{ m} = \dots$
- $9 \text{ m} - 1 \text{ m} = \dots$

### iii. Reinforcement activities

In small groups, ask pupils to work out subtraction activities and solve word problems that involving subtraction of length measurements in meters.

#### Examples:

#### 1. Make subtraction of the following

$$4 \text{ m} - 1\text{m} = \boxed{\dots} \text{ m}$$

$$7 \text{ m} - 2\text{m} = \boxed{\dots} \text{ m}$$

$$5 \text{ m} - 5\text{m} = \boxed{\dots} \text{ m}$$

$$6 \text{ m} - 3\text{m} = \boxed{\dots} \text{ m}$$

$$8 \text{ m} - 4\text{m} = \boxed{\dots} \text{ m}$$

$$9 \text{ m} - 1\text{m} = \boxed{\dots} \text{ m}$$

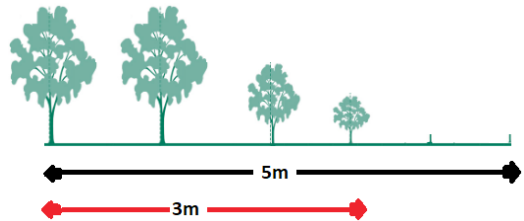
$$5 \text{ m} - 4\text{m} = \boxed{\dots} \text{ m}$$

$$7 \text{ m} - 3\text{m} = \boxed{\dots} \text{ m}$$

$$4 \text{ m} - 4\text{m} = \boxed{\dots} \text{ m}$$

#### 2. Solve the word problem:

- At school, children want to plant trees on a line of 5 meters.
- Children plant trees on a line of 3 meters.
- How many meters are remaining?



### iv. Application and assessment activities

Individually, give activities on subtraction and word problems involving subtraction of length measurements (see pupil's book). The provided activities should be done at school or at home.

$$5 \text{ m} - 4\text{m} = \boxed{\dots} \text{ m}$$

$$7 \text{ m} - 3\text{m} = \boxed{\dots} \text{ m}$$

$$4 \text{ m} - 4\text{m} = \boxed{\dots} \text{ m}$$

### Lesson 9: End unit assessment 10

#### a) Learning objective

Measure, write, read, compare, add and subtract lengths less than or equal to 10 m.

#### b) Instructions on End unit assessment



Basing on the results from end unit assessment and before starting unit 11, teacher provides remedial or reinforcement activities for pupils in need.

# MAIN PARTS OF THE DAY AND 7 DAYS OF THE WEEK.

## UNIT

## 11

### 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

Pupils will perform well in this unit if they know and master to count from 1 to 10 objects, read and write numbers from 0 to 10 and distinguish the day to night.

### 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

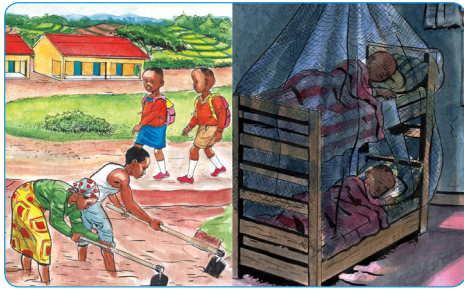
UNIT 11: MAIN PARTS OF THE DAY AND 7 DAYS OF THE WEEK ( 8 Periods )			Reinforcement and extention lessons	
	Lesson title	Learning objectives	Number of periods	
1	Introductory activity	Arouse the curiosity of learners on the content of this unit.	1	
2	Main parts of the day and characteristics	Differentiate correctly main parts of the day and specific characteristics.	3	
3	Days of a week and daily activities	List appropriately days of the week.  Give examples of the main activities done specifically for each day of the week.	3	
	<b>Remediation</b>		<b>1</b>	
4	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 undertaken respectively.	2	
	<b>Remediation</b>		<b>2</b>	
<b>Total number of periods for unit 11</b>			<b>12</b>	

## Lesson 1: Introductory activity

### Learning objective

Arouse the curiosity of learners on the content of this unit.

### Observing the pictures



Use prompt questions to help pupils to get their predictions about the unit to be learnt:

- Look at the picture?
- How many people do you see?
- What are the people doing?
- What time is it now?
- Is it in the morning or in the evening?
- What do you do in the morning?
- What do you do in the evening?
- 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) Learning objective

Differentiate correctly main parts of the day and specific characteristics.

### b) Teaching aids

Pictures of sun, moon, stars, electric lamps, chalks, Chalkboard, notebooks, books, pens, pupils' books, drawings/pictures from the pupil's books.

### c) Learning activities

#### i. Activities for introduction

- Read/tell a story or show a video in light to the main parts of the day (morning, noon, evening and night).

- Then, ask pupils to state what they have listened to, or seen/watched from the movie.
- At this step, ask pupils to share ideas on their daily activities.
- Tell pupils to arrange logically their daily activities: to wake up, put on clothes, take shower/bathing, make up, brush teeth, comb hair and take tea.

## ii. Demonstration activities

- Call upon pupils to observe attentively pictures in their books on the page related to the lesson.
- Ask various questions that lead to the lesson on the parts of the day and their characteristics.
- In accordance to the pupils' observations from pictures, ask them when every activity is carried out: Morning, noon, Evening or night.

## Practical activity

Put pupils into different groups and discuss on the following:

- What activities do you carry out every morning?
- What activities do you carry out at noon?
- What activities do you carry out in the evening?
- Etc,.....

At this level, guide pupils to discuss the characteristics of all parts of the day as follows:

- What is the difference between the "**morning**" and "the **evening**"?
- List down characteristics of the noon/day?
- List down characteristics of the night?

After listening to different pupils' views, put 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

### **iii. Application and assessment activities**

**Ask pupils to describe different parts of the day and their specific characteristics.**

- Show pupils pictures for matching activities undertaken and correct the part of the day related.
- Give 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.
- Give homework to pupils for asking their parents characteristics of the morning, the day, and the night.

In accordance to the pupil's feedback, give more works/tasks so that pupils acquire skills and knowledge targeted.

## **Lesson 3: Days of a week and daily activities**

### **a) Learning objective**

- List appropriately days of the week.
- Give examples of main activities done specifically for each day of the week.

### **b) Teaching aids**

Calendar, counters, cards of number from 1-7, drawings prepared by the teacher, pictures in the pupils' books.

### **c) Learning activities**

#### **i. Revision activity**

Ask pupils different parts of the day and when the day ends up:

- The day ends or starts in the night?
- When do you go to the church?
- When do you go to the school/market?Etc.

## ii. Demonstration activities

- Assist pupils to sing a song containing 7 days of the week ([https://www.youtube.com/watch?v=IPgTdgvj\\_jc](https://www.youtube.com/watch?v=IPgTdgvj_jc)).
- Ask pupils, on which day do they go to the church/market/school?
- Remind pupils that a week has 7 days in total from MONDAY up to SUNDAY.
- Guide pupils to keep in mind that they study from MONDAY up to FRIDAY, and invite them to list down all activities undertaken by other people.
- At this level, remind pupils that they normally do not go to school on SATURDAY and SUNDAY (even though some have special individual coaching at home).
- Call 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, demonstrate to pupils how to read the calendar in comprehensive way.

## iii. Practical activity

- Invite pupils to observe attentively pictures in their books on the page related to the lesson.
- Ask various questions related to 7 days of the week and specific daily activities done.
- As per the pictures; ask pupils what they can observe/see as activities undertaken from MONDAY to SUNDAY.
- Ask pupils questions about the song related to 7 days of the week.

## Examples

- On which days of the week do you go to school?
- When does your mother/father go to the work?
- Give more exercises/tasks while asking pupils activities carried out by different people during 7 days of the week.

## iv. Application and assessment activities

- Ask pupils to state 7 days of the week and specific daily activities conducted from MONDAY up to SUNDAY.

- Give 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) Learning objective**

Perform well end unit assessment on ordering and comparing main parts of the day, days of the week and key activities undertaken respectively.

##### **b) Instructions on End unit assessment**



Basing on the results from end unit assessment and before starting unit 12, teacher provides remedial or reinforcement activities for pupils in need.

### 12.1. Key unity competence

Distinguish Rwandan currency from 1Frw up to 100Frw 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, add and subtract numbers from 0 up to 100.

### 12.3. 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;
- **Financial education:** Ensure that the selected activities in this unit promote the culture of valueing money, saving and investing in simple income generating projects that are on the level of P1 pupils.

## 12.4. List of lessons

UNIT 12: RWANDAN CURRENCY FROM 1Frw UP TO 100Frw (16 Periods)			Reinforcement and extension lessons	
	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 money in real life.	1	1
2	Rwandan Coins and their values and features	Distinguish the Rwandan currency from 1Frw up to 100Frw.	1	2
3	Exchange of Rwandan currency from 1Frw up to 100Frw	Exchange Rwandan currency from 1Frw up to 100Frw.	1	2
4	Addition , Substraction , word problems and use of money up to 100 Frw	Solve problems related to the Rwandan currency in buying and selling	2	2
		List different uses of money and select items to buy with a certain amount of money.		
5	Unit assessment 12	Perform well the activities related to the use of Rwandan currency up to 100Frw.	1	2
	Remediation		1	
<b>Total number of periods for unit 12</b>			<b>7</b>	<b>9</b>

### Lesson 1: Introductory activity

#### a) Learning objective

Arouse the curiosity of learners on the content of this unit and the importance of money in real life.

#### b) Learning activities

- This lesson will be taught in the form of a dialogue.
- Invite pupils to observe a picture in their textbooks and then answer the following questions:

## Examples of some questions that can be asked

- a) What do you see on this picture?
  - b) How many people are there?
  - c) What are people doing?
  - d) What can you see in this shop?
  - e) What is the man holding in his hands?
  - f) The man has 100Frw, what do you think will happen if he buys only one pen?
  - g) Have you ever seen some Rwandan francs? Which ones?
- Conclude the lesson by helping pupils to find out that people need money to buy different items like a pen, a notebook, a rubber, soap, etc.

## Lesson 2: Rwandan currency from 1Frw up to 100Frw and their specific characteristics

### a) Objectives

Distinguish the Rwandan currency from 1Frw up to 100Frw.

### b) Teaching aids

Chalkboard, chalks, notebooks and pens, a set of different Rwandan coins, pictures/ drawings/ charts of Rwandan coins , pupils books.

### c) Learning activities

- **Activities for introduction**

- Tell to pupils the following short story related to the use of money in real life.

**Example:** Anitha has 100Frw. Anitha buys 2 pens for her kids. The kids are happy. The kids work well in class. Ask the following question related to the story on the importance of money. What can you buy with money?

- **Demonstration activities**

#### 1. Concrete activity

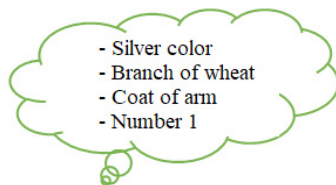
- Invite pupils to observe Rwandan coins from 1Frw to 100 Frw.
- Show to pupils the value of different coins one by one.

- 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

- Ask pupils to deeply observe all coins, and describe characteristics of each coin.

## 2. Semi-concrete activity

- Using the pupil's book, help pupils to talk about the values of the Rwandan coins.
- Ask pupils to talk about the characteristics 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

### • Reinforcement and application activities:

- Ask pupils to observe different Rwandan coins and talk about the characteristics of each coin.
- Give to pupils pictures of various Rwandan coins and ask them to match each picture with its value.

### • Assessment activities

Ask pupils to talk about different items that they can buy with 5 Frw, 10Frw, 20 Frw, 50Frw or 100Frw.

## Lesson 3: Exchange of Rwandan currency from 1Frw up to 100Frw

### a) Objective

Exchange Rwandan currency from 1Frw up to 100Frw.

### b) Teaching aids

Chalkboard, chalks, notebooks and pens, different Rwandan coins, pictures/ drawings/ charts that show exchange of big coins into smaller ones, pupils' books.

### c) Learning activities

#### • Revision activity



Give to pupils 2 types of coins and ask them to put together small coins in order to make a big coin.

#### Example:

A coin of 20 is made by 2 coins of 10 or 4 coins of 5.

#### • Demonstration activities

##### 1. Concrete activity

Give to pupils coins of different values and ask them to make a collection of coins that make 50Frw or 100Frw.

#### Examples:

- Put together 3 coins of 10 Frw and 1 coin of 20Frw to make 50 Frw.
- Put together 1 coin of 10 Frw and 2 coins of 20 Frw to make 50 Frw.

##### 1. Semi-concrete activity

Show to pupils the pictures or charts that illustrate how a big coin is exchanged into small coins.

Ask pupils to exchange 50 Frw into small coins.

### Example:



#### • Reinforcement and application activity

Invite pupils to make a collection of coins in order to find a given total sum of money.

**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?

**Example:** Using your own thinking, put together various coins for making the total sum of 100Frw.

#### • Assessment activities

Ask pupils to use their own thinking and put together various coins for making the total sum of 100Frw.

### Lesson 4: Addition and Subtraction of Rwandan currency not exceeding 100Frw

#### a) Objective

- Solve problems related to the Rwandan currency in buying and selling.
- List different uses of money and select items to buy with a certain amount of money.

#### b) Teaching aids

Chalkboard, chalks, notebooks and pens, different Rwandan coins, counters, pictures/drawings/charts of the coins of the Rwandan coins.

### c) Learning activities

#### • Revision activity

Give exercises to the pupils on exchanging Rwandan coins. Use the following coins: 1Frw, 5Frw, 10Frw, 20Frw, 50Frw, 100Frw and ask pupils to exchange a big coin into small ones and tell the number of coins for each type.

#### • Demonstration activities

##### 1. Concrete activity

**Addition:** Take 2 coins of 50Frw and ask pupils to find out and say the total number the 2 coins make. Let the pupils find out that 2 coins of 50 Frw make 100 Frw.

**Subtraction:** Give to pupils 5 coins of 10Frw, ask them to say the total amount they make. Also ask pupils to take away 2 coins and ask them to say the remaining amount.

##### 2. Semi- concrete activity

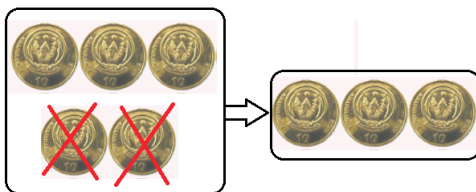
**Addition:** Use drawings / pictures / charts show pupils how 2 coins of 50 Frw each make a total sum of 100Frw. Use 2 different small coins and make a big coin.



The answer has to be always less than 100 Frw.

**Example:** 2 coins of 5Frw make 1 coin of 10Frw

#### Subtraction:



Use drawings/ pictures / charts of 5 coins of 10 Frw, ask pupils to cross 2 of them and say the remaining total amount.

##### 3. Abstract

Help pupils to add and subtract Rwandan money. Give the following examples:

- $5\text{Frw} + 5\text{Frw} = 10\text{Frw}$
- $50\text{Frw} + 50\text{Frw} = 100\text{Frw}$
- $50\text{Frw} - 20\text{Frw} = 30\text{Frw}$
- $100\text{Frw} - 20\text{Frw} = 80\text{Frw}$

#### **d) Reinforcement and application activity-**

- Give pupils activities related to addition and subtraction of the Rwandan currency where the sum or difference is less or equal to 100Frw.
- Ask pupils to work out different exercises in the pupil's book on addition and subtraction of Rwandan money.
- Give to pupils different activities related to buying and selling using Rwandan coins.
- Make a list of items to buy with Rwandan coins and ask pupils to match each item with the related value or coin.

#### **e) Assessment activities**

Ask pupils to do exercises on addition and subtraction of money and these activities can be reflecting the real life context of the pupils.

### **Lesson 5: End unit assessment**

#### **a) Learning Objective**

Perform well the activities related to the use of Rwandan currency up to 100Frw.

#### **b) Instructions on End unit assessment**



Basing on the results from end unit assessment and before starting unit 13, teacher provides remedial or reinforcement activities for pupils in need.

# LOCATION OF OBJECTS AND TYPES OF LINES

## UNIT

## 13

### 13.1. Key Unit competence

Locate objects and name and draw types of lines

### 13.2. Prerequisites

For easy understanding of this unit, pupil should be able to:

- Count, read, write, compare numbers up to 100
- Locate and determine the location of a given object.

### 13.3. 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.

### 13.4. List of lessons

UNIT 13: LOCATION OF OBJECTS AND TYPES OF LINES(16 Periods)			Reinforcement and extension lessons	
	Lesson title	Learning objectives	Number of periods	
1	Introductory activity	Arouse the curiosity of learners on the content of the unit.	1	
2	Location: In front of, between, behind/ back of	Use correctly the following words "In front of, between, behind" in a real context.	1	
3	Location: on, above.	Use correctly the following words "on, above " in a real context.	1	1

4	Location: left side, right side, between.	Use correctly the following words “left side, right side, between” in a real context.	1	1
5	Location: near, beyond.	Use correctly the following words “near, beyond” in a real context.	1	
	<b>Remediation</b>		<b>1</b>	
6	Location of objects	Locate an object using appropriate direction words.	1	1
7	Horizontal, vertical and oblique straight lines and curved lines	Identify and draw horizontal, vertical and oblique straight lines and curved lines	1	
8	Closed, open and zigzag lines	Identify and draw closed, open lines and Zigzag lines.	1	1
9	Dots located on; inside and outside of a closed line	Identify and locate dots on; inside and outside of a closed line.	1	
10	End unit assessment 13	Perform well the location of different objects using appropriate vocabulary.	1	
	<b>Remediation</b>		<b>1</b>	
<b>Total number of periods for unit 13</b>			<b>12</b>	<b>4</b>

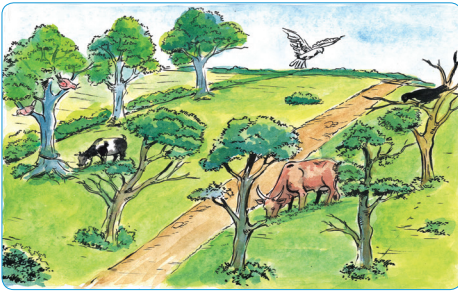
## Lesson 1: Introductory activity

### a) Learning objective

Arouse the curiosity of learners on the content of the unit.

### b) Learning activities

Help pupils to come up with the following: On the top of trees there are birds, there is an eagle flying around/ near the trees. There is a road in the middle of the farm. Under trees there is a goat. There is a cow beside / near the road.



Invite pupils to observe pictures in the textbook and answer the following questions:

- What do you see on this picture?
- What do you see on one side of the road?
- What do you see on another side of the road?
- Where are eagles/kites?
- Where are goats?
- Where is the cow?
- How many cows do you see?
- How many birds do you see ?
- How many goat do you see ?
- How many crows do you see?
- How many trees do you see?
- How many eagles do you see?

Conclude the lesson by telling pupils that the next lessons will focus on location of objects and types of lines.

## **Lesson 2: Location: In front of, between, behind**

### **a) Learning Objective**

Use correctly the following words “In front of, between, behind” in a real context.

### **b) Teaching aids**

Chalkboard, chalks, notebooks, pens, books, pictures/drawings/charts of types of lines, desks, table and objects that have various shape or forms (horizontal straight lines, vertical straight lines, oblique straight lines, curved lines, etc)

### c) c) Learning activities

- **Activities for introduction**

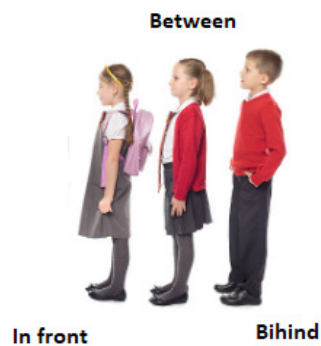
**Proceed with a game:** Invite only 3 pupils to line-up in front of the class and ask the class to say the name of a pupil who is in front of, between and behind others.

- **Demonstration activities**

#### 1. Concrete activity

Using 3 pupils on a line, help the class to correctly use the location words “in front of, Between, Behind”. Based on the line-up of other new 3 pupils (Paul, Mary and Lewis), the teacher asks the class: Use the following questions to help every pupil to understand the meaning of the new vocabulary:

- a) Who is in the front of others?
- b) Who is behind others?
- c) Who is between others?



Invite more new pupils to line- up as per the following instructions: The first pupil “in **front**”, the second pupil to be “**between**” and the third pupil to be “**behind**” others on the line. **Guide** pupils to understand that each position depends on the given **direction**.

Ask the same pupils to change the direction and ask the class who is in front of, between and behind others on the line.

#### 1. Semi-Concrete activity

Show pupils pictures in their book and then ask the location of a cat, a goat and a cock.

- **Reinforcement and application activities**

**Instruct 3 pupils to line-up:** the first one in the front of the line, another one at the back/ behind and the last one in the middle/ between. Ask the class to select the name of a pupil and say his / her position on the line.

- **Assessment activities**

Using 3 different objects, or using pictures / drawings ask pupil to arrange them on the same line. Let them select an object and tell its position on the line.

Ask pupils to draw 2 trees on a sheet of paper, and 2 kids on another paper and ask them to post their drawings on the walls of the classroom as follows: drawing of trees in front of the classroom and drawing of kids at the back / behind the classroom.

### **Lesson 3: Location: on, above.**

#### **a) Learning Objective**

Use correctly the following words “**on, above**” in a real context.

#### **b) Teaching aids**

Chalk board, chalks, notebooks, pens, books, chairs and other objects in the classroom, pictures/drawings/charts of objects, pupils’ book etc.

#### **a) Learning activities**

##### **i. Activities for introduction**



In the form of a game, ask pupils to put a ball on a table and then lift it by using their hands.

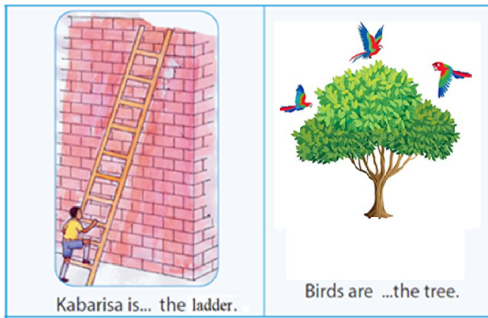
##### **ii. Demonstration activities**

###### **1. Concrete activities**

Tell pupils to put a math book on their table and ask them to repeat the following sentence: The math book is **on** the table.

Put a piece of paper **on** the table/chair then let the wind lift the paper or use a hand to lift it. Tell the pupils that the paper is **above** the table.

## 2. Semi-Concrete activities



Tell pupils to observe pictures in their book. They observe birds that are above the top of the tree, a kid that on the ladder and repeat the following sentences:

- Kabarisa is **on** the ladder,
- Birds are **above** the tree.

### iii. Reinforcement and application activities

- Put a ball or other objects **on** or **above** the chair and ask pupils to say their location by using a full sentence.
- Show pupils different pictures that are describing the words "**on** and **above**" and ask them to locate objects orally.
- Use pictures/drawings of different objects and asks pupils to locate them according to their position using the words: **On, Under, in front, at the back/ behind and between.**

### iv. Assessment activities

Ask pupils to draw 2 trees on a sheet of paper, and 2 kids on another paper and then tell them to put their drawings on the table. Invite pupils to go outside of the classroom and observe different objects that above/ on the top of trees, and tell them in complete sentences.

## Lesson 4: Location: left side, right side, between.

### a) Learning Objective

Use correctly the following words "left side, right side, between" in a real context.

### b) Teaching aids

Chalkboard, chalks, notebooks, pens, books, chairs and other objects in the classroom, pictures/drawings that show location of objects.

### c) Learning activities

#### i. Activity for introduction

Invite pupils to make a line and play the game of: "**left and right**".

## ii. Demonstration activities

### 1. Concrete activity

Invite pupils to do the following:

- Raise the left hand
- Show the left ear

Put pencils and books on a table; ask a pupil to make 2 groups of them and stand between the 2 groups.



Let other pupils say the following sentences:

- Pencils are on the left side of ....
- Books are on the right side of....

### 2. Semi-Concrete activity



Using a picture in the pupils' book and help pupils to use the following vocabulary in a full sentence: **left side**; **right side** and **between**.

Muneza is on the ..... of Giraneza  
Giraneza is ..... Muneza and Kaneza  
Kaneza is on the of ..... Giraneza

## iii. Reinforcement and application activities

Invite pupils to form groups and instruct them to help each other to locate a number of items that are at the left and right sides of them.

#### iv. Assessment activities

**Invite 3 volunteers:** the first pupil sits on the chair in the front of the classroom; the 2<sup>nd</sup> one stands at the right side of the 1<sup>st</sup> one and; the 3<sup>rd</sup> one stands at the left side of the 1<sup>st</sup> one.

Ask pupils to name pupils at the right or left side and between the 2 pupils.

#### 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.

#### Lesson 5: Location: near, beyond.

##### a) Learning Objective

Use correctly the following words “near, beyond” in a real context.

##### b) Teaching aids

Chalkboard, chalks, notebooks, pens, books, chairs, pictures/drawings/ charts that show near and beyond.

##### c) Learning activities

###### i. Activity for introduction

Invite pupils to go out of the classroom and tell them to come closer to her/him or to move far away from him/her. Help pupils to say the following sentences:

- I am near my teacher;
- I am far from my teacher.

###### ii. Demonstration activity

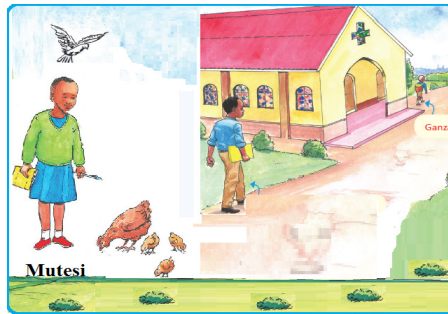
###### 1. Concrete activity

Through observation, help pupils to realise that all objects that are in a classroom are **near** them while all objects that are outside the classroom are **beyond** them.

- Asks pupil to name objects **beyond** their classroom
- Asks pupil to name objects near them in the classroom

## 2. Semi-Concrete activity

Using the picture that illustrates beyond and near of a given object, helps pupils to use the vocabulary “**beyond** and **near**” in a real context.



**Kamana says:** Dear Mutesi, near you there is a hen and 3 chicks while beyond the church there is Ganza.

Using the same picture, assist pupils to use the vocabulary: “**near**” and “**beyond**” in full sentences.

### iii. Reinforcement and application activities

Ask pupils to give examples of objects that are near them and objects that are beyond them. Guide the pupils to use the words “near and beyond” correctly.

### iv. Assessment activities

Give tasks to the pupils:

In a playground, request some pupils to go beyond and near their fellows. In the classroom, ask pupils to put some of their materials beyond or near the table.

## Lesson 6: Location of objects

### a) Learning Objective

Locate an object using appropriate direction words.

### b) Teaching aids

Chalkboard, chalks, notebooks, pens, books, chairs and other objects in the classroom, pictures/drawings/charts that show the location of objects.

## c) Learning activities

### i. Activities for introduction



Put different items in different places within the classroom and; asks pupils to locate them respectively.

### ii. Demonstration activity

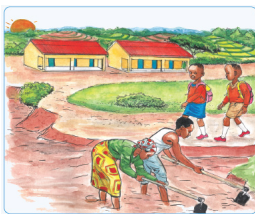
#### 1. Concrete activity

Put objects on a table or around the pupils on a desk and invite the class to say the location of each object using the terms: "left side", "right side"; "beyond", "near", "in front of", "at the back / behind"; etc

#### 2. Semi-Concrete activity

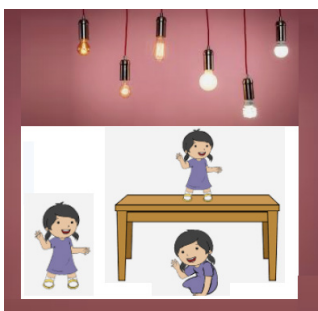
Use pictures/ drawings/ charts to help pupils to locate different objects by applying the following key words: "**left side**", "**right side**"; "**beyond**", "**near**", "**in front of**", "**at the back / behind**"

### iii. Reinforcement and application activities



Invite a pupil to put an object on, near, under, or far away of a given place (table or desk) and ask the class to locate them accordingly.

### iv. Assessment activities



Ask pupils to name objects that are beyond, near, **on the right side** " and "on the left side of a given object.

#### Example:

- A girl is on the table
- A girl is near the table
- A girl is under the table
- Bulbs are above the girl on the table, etc

## Lesson 7: Horizontal, vertical and oblique straight lines and curved lines

### a) Learning Objective

Identify and draw horizontal, vertical and oblique straight lines and curved lines

### b) Teaching aids

Chalkboard, chalks, notebooks, pens, a small and big ruler, string, books, pictures/ drawings/ charts of horizontal, vertical, oblique and curved lines, pupils' book.

### c) Learning activities

#### i. Activity for introduction

- Ask pupils to talk about different parts of the following numbers: 1, 5 and 7.
- Let them find out that:
  - the number 1 is formed by oblique and vertical lines;
  - number 5 is formed by horizontal, vertical and curved lines;
  - Number 7 is formed by horizontal and vertical lines.

#### ii. Demonstration activities

##### 1. Concrete activity

Show to the pupils the string and request 2 pupils to hold it in their hands by making a straight string.

Explain to the pupils that they make a **straight line**.

Invite pupils to observe a ruler and find out that its sides are straight lines.

In addition to this, ask pupils to draw straight lines on a chalkboard using a ruler.

Let them know that there are 3 types of straight lines:

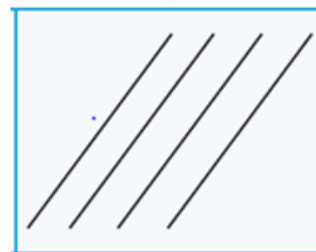
Horizontal straight lines.



Vertical straight lines.



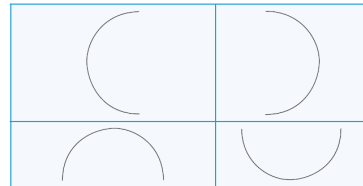
Oblique straight lines.



## 2. Semi-Concrete activity

- Help pupils to draw horizontal, vertical or oblique straight lines on the chalkboard using a ruler.
- Ask and assist pupils to draw horizontal, vertical or oblique straight lines using small rulers in their notebooks.

- Refer to the pupils' book , assist pupils to draw different curved lines by considering 4 directions ( left, right, up and down)



### iii. Reinforcement and application activities

Ask pupils to give examples of objects that have straight (horizontal, vertical or oblique) lines: notebooks tables, ruler .....

Also, ask pupils also to give other examples of objects that have curved lines: number 2 and 3, edges of round table, leaves, horns of cows, etc

Ask pupils to draw straight (horizontal, vertical, oblique) lines and curved lines in their notebooks.

### iv. Assessment activities

Ask pupils to select straight (horizontal, vertical and oblique) and curved lines from different given set of lines.

## Lesson 8: Closed, open and zigzag lines

### a) Learning Objective:

Identify and draw closed, open lines and Zigzag lines.

### b) Teaching aids

Chalkboard, chalks, notebooks, books, pens, compass, ruler, drawings/ charts of closed, open and zigzag lines, pupils 'books.

### c) Learning activities

#### i. Activity for introduction

Ask pupils to explain how to write the following numbers: 0, 9 and 8 which are formed by different types of lines (curved and closed lines).

Ask pupils to observe letters: W, Z, M, and N which are formed by straight and cutting lines.

## ii. Demonstration activities

### 1. Concrete activity

Show to the pupils the string and, request 2 pupils to hold it in their hands by making a closed string or a circle. Explain to the pupils that they make a **closed line**.

Invite pupils to use sticks and make a zigzag line as follows:



### 2. Semi-Concrete activity

Based on the picture/drawings charts of closed and zigzag lines, help pupils to draw closed and open lines.

Ask pupils to draw closed, open and zigzag lines in their notebooks with the use of pencils and a ruler.

## iii. Reinforcement and application activities

Ask pupils to:

- Draw closed and zigzag lines and;
- Select closed and zigzag lines from a set of various types of lines (Vertical, Horizontal and oblique lines, curved lines, closed lines, zigzag, etc).
- Identify letters (**W, Z, M, and N**) that are in zigzag or cutting lines from a set of English or Kinyarwanda alphabets.

## iv. Assessment activities

Ask pupils to draw closed lines and select closed lines from a set of various types of lines.

Ask pupils to draw a zigzag/ cutting lines and select them from a set of various types of lines.

## Lesson 9: Dots located inside, outside and on a closed line.

### a) Learning Objective

Identify and locate dots on; inside and outside of a closed line.

### b) Teaching aids

Chalkboard, chalks, circle, compass, notebooks, books, pens, pupils' book and drawings/pictures/charts of circle with dots inside, out side or on the circle.

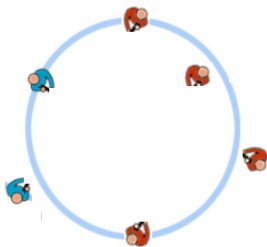
### c) Learning activities

#### i. Activity for introduction

Play with pupils the game of jumping in and out side of the circle. This game is a good introduction of inside and out side.

#### ii. Demonstration activities

##### 1. Concrete activity



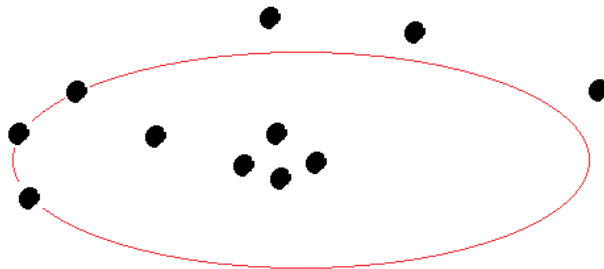
Make a circle of 6 pupils in the front of the class: one pupil go inside the circle while another one is outside the circle and 4 pupils remain on the circle.

Ask pupils to say 'in a full sentence' the name of pupils on the circle, pupils inside the circle and pupils outside the circle.

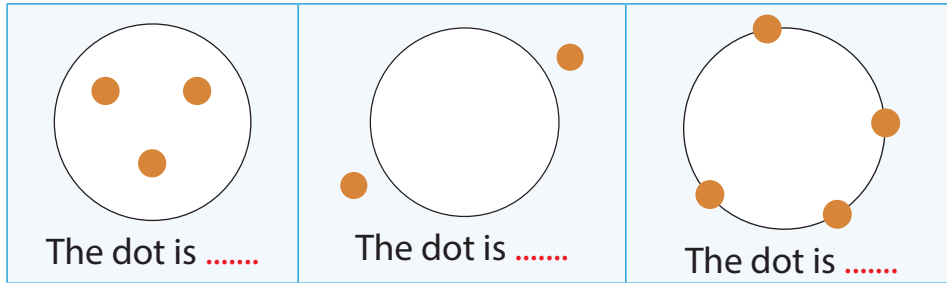
- A pupil xxx is outside the circle.
- A pupil yyy is inside the circle.
- Pupils X Y Z are on the circle.

##### 2. Semi-Concrete activity

Use the picture/drawing of a closed line and assist pupils to put dots on the closed line, inside and out side of the circle.



Use the pupils' book and ask pupils to indicate the position of dots by using the following word in a full sentence.



### iii. Reinforcement and application activities

Put pupils into groups and give them a picture/drawing/ chart of dots on a closed line, outside and inside the closed line and ask them to find out the number of dots that are on the closed line, dots that are inside and outside of the circle.

Ask 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 closed line.

### iv. Assessment activities

Ask pupils to draw a closed line and put 2 dots on it, 3 dots inside and 1 dot outside.

## Lesson 10: End unit assessment

### a) Learning Objective

Perform well the location of different objects using appropriate vocabulary.

### b) Instructions on End unit assessment



Basing on the results from end unit assessment and before starting unit 14, teacher provides remedial or reinforcement activities for pupils in need.

### 14.1. Key unit competence

Discover the right angle, square and rectangle from other figures and draw them appropriately.

### 14.2. Prerequisites

In order to understand well this new unit, pupils should be able to draw straight vertical, horizontal or oblique lines.

### 14.3. 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.

### 14.4. List of lessons

UNIT 14: RIGHT ANGLE, SQUARE AND RECTANGLE (14 Periods)			Reinforcement and extension lessons	
	Lesson title	Learning objectives	Number of periods	
1	Introductory activity	Arouse the curiosity of learners on the content of this unit.	1	
2	Right angle and its characteristics	Identify the right angle on different objects and areas (places).	1	
3	Drawing the Right angle	Draw the Right angle using squared shape object.	1	
4	A square and its characteristics	Define a square and identify it from different shapes.	2	

	<b>Remediation</b>		<b>1</b>	
5	Drawing a square	Draw appropriately a square with the use of squared shape object.	2	1
6	A rectangle and its characteristics	Define a rectangle and identify it from different shapes	2	1
7	Drawing a rectangle	Draw appropriately a rectangle with the use of squared shape object.	1	
	<b>Remediation</b>		<b>1</b>	
8	End unit Assessment 14	Identify and draw a right angle, a square and a rectangle.	2	
<b>Total number of periods for unit 14</b>			<b>14</b>	<b>2</b>

### Lesson 1: Introductory activity

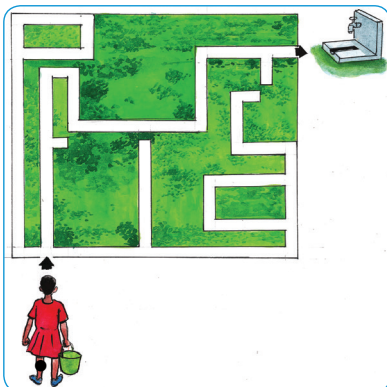
#### a) Learning objective

Arouse the curiosity of learners on the content of this unit.

#### b) Teaching aids

Square and rectangle shape objects: ruler, T-square, square notebook: pens, objects that have right angles.

#### c) Learning activities



In the picture, there are:

- A kid who is going to fetch water;
- A path to the water in square and rectangle form;

Invite pupils to observe the picture carefully and answer the related questions.

- What do you see on this picture?
- Show the path that the kid uses for fetching water?
- Which objects that border the kid's path?
- What is the shape of the kid's path?

- Do you know an angle?
- Are all blocks of land equal in size?
- Are all sides of all blocks equal in size?

Conclude this lesson by telling pupils that the next lessons will focus on identify right angles, square and rectangle.

## Lesson 2: Right angle and its characteristics

### a) Learning objective

Identify the right angle on different objects and areas /places.

### b) Teaching aids

Ruler, T-square, square notebook, pens, objects that have right angles.

### c) Learning activities

#### i. Activity for introduction

Based on the squared shape objects like a squared notebook, requests. Ask pupils to show horizontal and vertical lines on the notbook, and then ask them the following question:

- Draw the horizontal and vertical lines form an angle when they meet?
- At this stage, show pupils that two straight intersecting lines form a right angle.

#### ii. Demonstration activities

Draw a squared shape on the blackboard or on the chart, and use a ruler or T-square to show an angle resulting from two straight intersecting lines.

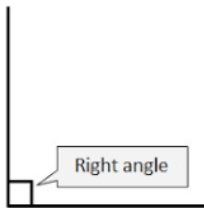
#### 1. Concrete activity



- Ask pupils to identify 2 objects within the classroom that have a right angle.
- Ask pupils to make a right angle on Geoboard.

## 2. Semi-Concrete activity

Present to the pupils the drawing or picture that illustrate/show the right angle and its characteristics.



- Help pupils to draw a right angle using a T-square or a square ruler.
- Help pupils to find out that the right angle is formed by 2 intersecting vertical and horizontal lines.

## iii. Reinforcement activity



Give more different angles and; ask pupils to only pick the correct right angles.

## iv. Application activities

- Ask pupils to select a right angle among other angles and give some examples of objects that have right angles.
- Ask pupils to make a right angle on Geoboard or to identify right angles on shape that are on Geoboard or on charts.

## v. Assessment activities

Ask pupils to select right angles among other angles in different shapes.

## Lesson 3: Drawing the right angle

### a) Learning objective

Draw the Right angle using squared shape object.

### b) Teaching aids

Different pictures/drawings of square shape, ruler, T-square, squared notebook, pens, objects that have right angles,

## c) Learning activities

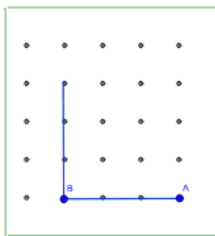
### i. Activity for introduction

Ask pupils to draw intersecting horizontal and vertical straight lines in their squared notebook.

Use a square ruler or a T square to prove that lines of the square shape /objects form a right angle.

### ii. Demonstration activity

#### 1. Concrete activity

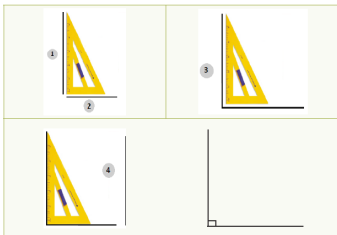


Show pupils how to draw right angles starting from a small square on a geoboard or by using a ruler.

Then, invite some pupils to do the same on the blackboard.

At this stage, show pupils how to draw right angle by using a ruler

#### 2. Semi-concrete activity



- Guide pupils to draw a right angle by using a ruler or square shape objects like a T- square, a square or rectangular book, etc.
- Explain to the pupils that the 2 intersecting lines (straight horizontal and vertical lines) form an angle named “right angle.

- Ask pupils to use their books and see how to draw a right angle.

### iii.Reinforcement activity

Guide pupils to use both a ruler and T-square in order to draw a right angle in their notebooks.

### iv. Application activity

Give exercises of drawing a right angle to pupils.

### v. Assessment activity

Give a class work or homework on:

- Drawing a right angle,

- Identifying right angles from different set of angles or on different shapes.
- Giving examples of objects that have a right angle in their shape.

## Lesson 4: A square and its characteristics

### a) Learning objective

Define a square and identify it from different shapes.

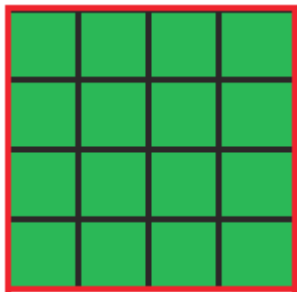
### b) Teaching aids

Different pictures/drawings of squared objects, ruler, pens and other objects that have right angles,

### c) Learning activities

#### i. Activity for introduction

Ask pupils to observe the drawing of a red square which is made by small squares.



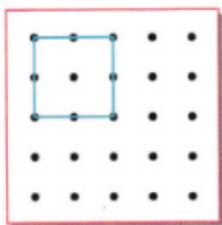
Ask pupils different questions that help them to discover the concept of a square.

- How many red straight lines do you see on this picture?
- How many right angles are formed by the red lines?
- How many small squares are on horizontal lines?
- How many small squares are on vertical lines?

#### ii. Demonstration activities

##### 1. Concrete activity

Use a Geoboard and make a square of 2 small squares on one side. Ask pupils to make squares of their choice. Based on the made squares on a Geoboard, show pupils to understand the meaning of a square and its characteristics.



- A square that has 4 equal sides is justified by measuring the size of each side or counting all small squares at each side and find out that all sides are equal in size.
- Show pupils that the square has 4 equal right angles by using a T-square.

## **2. Semi- Concrete activity**

Present charts of a square or draw a square on the chalkboard and ask pupils to say the number of sides and right angles.

### **iii. Reinforcement activity**

Ask pupils to observe the pictures of squares that are in their books and talk about their characteristics: number of sides and right angles. Invite pupils to give examples of materials that have a square shape or look like a square.

### **iv. Application activity**

Give pupils different exercises to:

- Observe the square and show 4 right angles and 4 equal sides,
- Select a square from a set of many other different shapes,
- Give examples of objects that have a square shape.

### **v. Assessment activity**

Give pupils different exercises in form of class work or homework. Ask pupils to make or draw a square on a geoboard, on a paper.

## **Lesson 5: Drawing a square**

### **a) Learning objective**

Draw appropriately a square with the use of squared shape object.

### **b) Teaching aids**

Different pictures/drawings of squared shapes, ruler, squared notebooks, pens and other objects that have squared shapes.

### **c) Learning activities**

#### **i. Activity for introduction**

Give pupils squared objects and T-square to identify right angles from different angles.

## **ii. Demonstration activities**

### **1. Concrete activity**

Invite pupils to observe how to draw a square using a ruler and a T-square; with more emphasis on the utilization of the squared objects, T- square.

Use a squared piece of paper and show to pupils that all sides have equal sizes.

### **2. Semi-Concrete activity**

Help pupils to observe the pictures of squares in their textbooks and find out the properties/ characteristics of a square basing on the number of angles and number of small squares on each side. Show pupils how to draw a square in their notebooks.

### **i. Reinforcement activity**

Ask pupils to work in group and draw squares in their notebooks with the use of set-square or a ruler.

Ask pupils to explain why their drawings are squares. Let them point out that a square has 4 equal sides and 4 right angles.

## **ii. Application activities**

Ask pupils to draw a square in their notebook individually.

## **iii. Assessment activities**

Give pupils different exercises as class work or homework: draw squares with different size, select squares from a set of different shapes; bring different objects that are squared in shape and others that are not squared. Ask pupils to identify the squared ones and explain why?

## **Lesson 6: A rectangle and its characteristics**

### **a) Learning Objective**

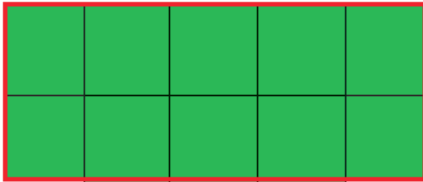
Define a rectangle and identify it from different shapes

### **b) Teaching aids**

Different pictures/drawings of squared shapes, ruler, squared notebooks, pens and other objects that have right angles.

## c) Learning activities

### i. Activities for introduction



Ask pupils to observe the drawing of a red square which is made by small squares

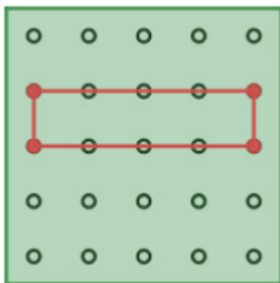
Ask pupils different questions that help them to discover the concept of a rectangle.

- How many red straight lines do you see on this picture?
- How many right angles are formed by the red lines?
- How many small squares are on horizontal lines?
- How many small squares are on vertical lines?

### ii. Demonstration activities

#### 1. Concrete activity

Use a Geoboard and make a rectangle of 4 small squares on horizontal side and 1 small square on the vertical side. Ask pupils to make rectangles of their choice. Based on the made rectangles on a Geoboard, show pupils to understand the meaning of a rectangle and its characteristics.



- A rectangle that has 4 sides is justified by measuring the size of each side or counting all small squares at each side and find out that 2 parallel sides are equal in size.
- Show pupils that the rectangle has 4 equal right angles by using of a T-square.

#### 2. Semi-Concrete activity

Present charts of a rectangle or draw a rectangle on the chalkboard and ask pupils to say the number of sides and right angles.

### iii. Reinforcement activities

Ask pupils to observe the pictures of rectangles that are in their books and talk about their characteristics: number of sides and right angles. Invite pupils to give examples of materials that have a rectangle shape or look like a rectangle.

#### **iv. Application activities**

Give pupils exercises of identifying rectangle among a set of different shapes. Ask pupils to give examples of things that are rectangular in shape.

#### **v. Assessment activities**

Give pupils different exercises as class work or homework: draw rectangles with different size, select rectangles from a set of different shapes; bring different objects in rectangular shape and others that are not rectangles and ask pupils to identify the rectangle ones and explain why.

### **Lesson 7: Drawing a rectangle**

#### **a) Learning Objective**

Draw appropriately a rectangle with the use of squared shape object.

#### **b) Teaching aids**

Different pictures/drawings of rectangular shape, ruler, notebooks, pens, T-square and objects that are shaped like rectangle.

#### **c) Learning activities**

##### **i. Activity for introduction**

Give pupils rectangular objects and T-square to identify right angles from different angles.

##### **ii. Demonstration activities**

###### **1. Concrete activity**

Invite pupils to observe how to draw a rectangle using a ruler and a T-square; with more emphasis on the utilization of the rectangular objects and T- squares.

Use a rectangular piece of paper and show to pupils that 2 opposite sides have equal sizes.

###### **2. Semi-Concrete activity**

Help pupils to observe the pictures of rectangles in their textbooks and find out the properties/ characteristics of a rectangle basing on the number of angles and number of small squares on each side. Show pupils how to draw a rectangle in their notebooks.

### **iii. Reinforcement activity**

Ask pupils to work in group and draw rectangles in their notebooks with the use of T-squared or a ruler.

Ask pupils to explain why their drawings are rectangles. Let them point out that a rectangle has 4 sides and 4 right angles, where 2 opposite sides are equals.

### **iv. Application activities**

Ask pupils to draw a rectangle in their notebook individually.

### **v. Assessment activities**

Give pupils different exercises as class work or homework: draw rectangles with different size, select rectangles from a set of different shapes; bring different objects that are rectangles in shape and others that are squared. And ask pupils to identify the rectangles ones and explain why

## **Lesson 9: End unit assessment**

### **a) Objective**

Identify and draw a right angle, a square and a rectangle.

### **b) Instructions on End unit assessment**



Basing on the results from end unit assessment, teacher provides remedial or reinforcement activities for pupils in need.

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## GLOSSARY

1. **Addition / plus:** Mathematical operation of finding a sum of numbers
2. **Angle:** is a figure which is formed by intersection of two straight lines
3. **Ascending order:** when numbers are arranged from the smallest to the biggest
4. **Coin:** is a small, usually round and flat piece of metal used primarily as a medium of exchange.
5. **Compare:** find similarity or difference between two numbers or objects
6. **Currency:** Money in the form of paper or coins, issued by a government and accepted at face value,
7. **Curved line:** A curved line is a line that is not straight and is bent.
8. **Descending order:** when numbers are arranged from the biggest to the smallest
9. **Difference:** the result of subtracting one number from another
10. **Equal:** Having the same value
11. **Exceed:** to be greater than a value or a quantity. For example, if a number "x" exceeds another number "y," it means that x is greater than y.
12. **Exchange:** to convert from one unit of money to another
13. **Horizontal:** a line perpendicular to a surface or to another line considered as a base
14. **Length:** measurement of how long something / object is
15. **Meter:** A meter is the standard unit of measuring length in the International System of Units (SI)
16. **Money:** coins and notes used to pay for goods and services
17. **Multiple:** is the number you get when you multiply a certain number by an integer. For example, multiples of 5 are: 10, 15, 20, 25, and 30...etc. Multiples of 7 are: 14, 21, 28, 35, 42, and 49...etc.

18. **Multiplication:** is a method of finding the product of two or more numbers;
19. **Number pattern:** A number pattern is a series of numbers that follow a certain rule or order in mathematics;
20. **Order:** to arrange things according to a certain rule;
21. **Place value:** is the position of a digit in a number that determines its value;
22. **Remaining:** Continuing to exist or be left after other parts or things have been used or taken away;
23. **Sequence:** is an ordered list of numbers or objects
24. **Subtraction / minus:** Mathematical operation taking one number away from another;
25. **Take away / to subtract:** To take some objects from a set of many objects;
26. **To shade:** is to hide partly by or as if by a shadow;
27. **Vertical line:** a straight line which goes from top to bottom and bottom to top;
28. **Word problem:** Mathematical problems written in words rather than symbols;