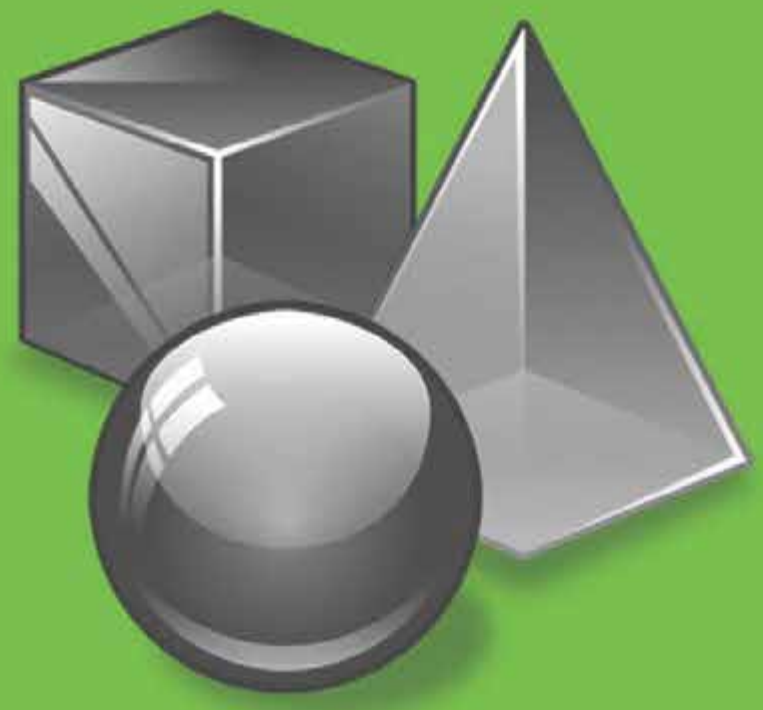
NNF BOOKS

ESSENTIAL Mathematics

Kindergarten 1

Teacher's Guide



Adwoa Nkrumah

NNF BOOKS

ESSENTIAL Mathematics Kindergarten 1

Teacher's Guide

Adwoa Nkrumah

NNF Esquire Limited
P.O. Box AN 8644, Accra - North, Ghana.
024 460 8305
020 211 3117

First published 2020
20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

Printed in Ghana by NNF Esquire Ltd

ISBN 978-9988-8976-2-8 Paperback

Designer:Elvis Klaye

Typsetter: Henry Ahedor

Illustrators: Maxline Kofi Ziddah, Philip Tetteh Nanor, Senyo Adzoro, William Ofori

Author: Adwoa Nkrumah

If you want to know more about this book or any other NNF Esquire Limited publication, phone us at +233 20 211 3117, +233 24 460 8305 or send an e-mail to nnfstareducation@gmail.com

Contents

Contents

TERM 3

Introduction

RATIONALE

The rationale for the Kindergarten Curriculum is to provide through play and use of creative learning and teaching approaches, positive learning experiences to learners at this level so as that they are ready for school. The first eight years in a child's life are the formative and the most critical years and require that the learning to which they are exposed are appropriate in enhancing their curiosity, creativity and critical thinking. The kind of physical and psychological environments that are created, the interactions and the experiences adults have with learners influence and have lasting effects on them. At this stage the child requires basic needs like nutrition, warmth, health, security, interaction and stimulation for social, emotional psychological, physical and cognitive development. It is during this stage that the child establishes learning patterns, attitudes, personality and a sense of being. Learners generally learn by practice and this is done naturally and best through play. They are very active, curious, and explorative and enjoy listening to stories. This natural tendency should be the basis for designing teaching and learning programmes for young learners.

Since learners learn better in a positive learning environment, where they feel emotionally and physically safe to enjoy learning (play-based learning). This curriculum has at its heart practices essential for motivating learners to attend, stay in school and perform better socially and academically. An integrated, inquiry and discovery approach to teaching and learning will foster caring, supportive and committed relationships between teachers and learners, as well as between learners and their peers. Teachers become more confident in their practice, feel trusted by learners, and can develop better classroom management and positive discipline practices. Play-based learning further helps to develop the inherent potential of learners as well as their critical thinking and imagination skills.

PHILOSOPHY

The Kindergarten learning curriculum is informed by three main philosophical ideas namely Brain research, Developmental theory and Social Constructivism. Firstly, the learner's brain from birth to ages eight undergoes maximum development. During this developmental period, the young child's brain is extraordinarily active, developing very fast, and this is the optimal time for learning and development for life. Early years are critical and very important because the experiences a child encounters at that period have a decisive impact on the development of connections in the brain. During this critical and "sensitive period" of the early years, the child develops language and literacy skills, physical, psycho motor, cognitive, emotional control and interpersonal social skills. It is important for every growing child to be exposed to learning experiences that are positive, appropriate and holistic instead of fragmented and compartmentalised.

LEARNING PHILOSOPHY

Developmental theories affirm that learners go through distinct and unique stages in their development as they move through their early years. Every child is very unique and develops

at their own pace. In language and cognitive skills development, learners go through different stages that are unique. This curriculum identifies the individual differences and variability in a child's development and affirms that the differences would not be seen as deficits or weaknesses, but rather rich and appropriate developmental experiences to help them bridge home and school experiences. This curriculum ensures that classroom experiences are made rich and activities are developmentally appropriate to cater for the different and unique stages.

Further, the current curriculum relies on social constructivist philosophical notions which emphasise that learners learn better when they are actively involved in their own learning: Learning is a social and interactive process. Learners learn better when they interact and share ideas with adults and other knowledgeable peers around them. The typical characteristics of the learners at the early years is that they are active, explorers, builders, also extremely curious and thus learn best when they are involved actively in their own learning process. For such learners, learning and play are inextricably linked and as learners play and interact with their friends, they learn better.

Finally, to promote high quality learning, that is functional, meaningful, and authentic, the growing child needs a safe, warm, nurturing, and welcoming physical, social, emotional and psychological environment. This is vital because research affirms that the type of environment created for the child is key to their successful development and a brighter future.

LEARNING OUTCOMES

Learning outcomes are grade specific. They describe, in observable and measurable terms, what learners must be able to demonstrate, with respect to each of the content standards, to meet grade level expectations.

The learning outcomes for each content standard become progressively more complex as learners move up the grade levels. This is done to ensure that learners become increasingly more proficient in their understandings and their use of these understandings as they move through the grade levels.

It should be noted that learning outcomes define what learners should understand and be able to do. They do not define teaching methods. Teachers are free to select the instructional strategies they feel are most appropriate for ensuring that learners can meet the learning outcomes.

It should be noted that in early primary, learner's learning is focused around a limited number of content standards. By Basic 3, however, learners are expected to be developing understandings with respect to all five standards.

Use of subheadings within content standards

Learning outcomes for a given content standard have sometimes been grouped together under subheadings. For example, the learning outcomes for Standard 1 Number and Number Sense have been grouped under three subheadings:

- Counting
- Representing number quantities in different ways
- Describing relationships between number quantities.

Example of "clustered" learning outcomes, P1

1. Learners will demonstrate a conceptual understanding of addition and subtraction by:
    - Acting out a given story problem presented orally.
    - Indicating if the scenario in a story problem represents an addition or a subtraction and justifying the answer.
    - Creating a story problem for subtraction or addition or for a given number sentence (+ and – within 20).

This has been done to enable teachers to quickly identify the important components of the standards in question.

Use of clustered learning outcomes

To help teachers make connections across learning outcomes within a given standard. In many cases, related learning outcomes have been "clustered", i.e. grouped together under a key idea. The use of clustered learning outcomes allows teachers to quickly recognise the different related understandings or skills learners need to develop in order to achieve full understanding of a key idea.

Order of learning outcomes within a content standard

The content standards themselves, and the learning outcomes for a given content standard, are not necessarily organised sequentially. For example, just because learning outcome A comes before learning outcome B does not mean that learning outcome A should be addressed before learning outcome B. Teachers might want to address learning outcome B before learning outcome A, or address the two learning outcomes at the same time.

The illustrative term and weekly schemes of work provided in this guide serve as examples of how teachers might organise learning for a given grade level.

PERFORMANCE STANDARDS

Although all the learning outcomes for a grade level are important and learners are expected to be able to demonstrate their ability to meet the learning outcomes for their grade level, it is not always feasible to assess and report on learner's progress with respect to each individual learning outcome. At the same time, district officials, head teachers, teachers and parents need to be assured that learners are developing the minimal levels of competency required to be successful in subsequent grade levels. To meet this need, the standards based curriculum defines a series of end of year performance standards for each grade level. Performance standards identify the key learning's that learners must be able to demonstrate, by the end of the school year, if they are to be successful in subsequent grade levels.

The number of performance standards varies by grade level. At some grade levels performance standards have been identified for all five content standards. At other grade levels, in addition to the end of year performance standards intermediary term-specific performance standards have been established. This is done to provide all stakeholders with a clear indication of the pace of learning required to meet end of year performance standards.

Content standards define the five essential learnings for KG mathematics. They describe the overall goals that learners are working towards.

Learning outcomes describe the specific understandings or skills learners must be able to demonstrate, at each grade level, with respect to each of the content standards.

Performance standards are the key measures that stakeholders can use to determine whether learners at a given grade level are progressing as expected.

ASSESSMENT TASKS

Assessment tasks are simple problems or tasks that district staff, head teachers or classroom teachers can use to measure whether learners have met the standards described in the performance standards. Each task has a simple-to-interpret scale to allow teachers to determine whether a given learner is performing at, below or above expectations for their grade levels. Assessment tasks are included for the end of year performance standards.

WHAT'S IMPORTANT IN KG1

Young children are naturally curious and develop a variety of mathematical ideas before they enter Kindergarten. Children make sense of their environment through observations and interactions at home, in daycares, in preschools, and in the community. Mathematics learning is embedded in everyday activities, such as playing, reading, beading, baking, storytelling and helping around the home.

Activities can contribute to the development of number and spatial sense in children. Curiosity about mathematics is fostered when children are engaged in, and talk about such activities as comparing quantities, searching for patterns, sorting objects, ordering objects, creating designs and building with blocks.

Positive early experiences in Mathematics are as critical to child development as are early literacy experiences.

In KG1, teaching time focuses on two critical areas:

1. Representing, relating and operating on whole numbers (to 10), initially with objects and eventually with symbols.

   Learners use numbers, and eventually written numerals, to represent quantities and to solve problems involving counting objects (counting out a given number of objects, comparing groups of objects, comparing numerals, joining groups of objects together and counting how many altogether, removing objects from a group and counting how many are remaining.) Although learners may see the teacher write an equivalent addition or subtraction equation for actions of joining or separating groups of objects. Learners in KG1 do not write equations.

   In KG1, learners solve problems daily that involve counting and producing groups of given size, counting the number of objects in combined groups, or counting the number of objects that remain after some have been taken away, and explain how they went about solving the problem.

2. Describing shapes and their position in space.
   Learners describe their physical world using geometric ideas and vocabulary. They name and describe three-dimensional shapes,

such as cubes, cones, cylinders and spheres, and two-dimensional shapes such as squares, circles, triangles and rectangles. They recognise two-dimensional shapes presented in a variety of ways (different sizes and orientations).

[More time in KG1 should be devoted to number than to other content standards. Number and number operations should be the focus of 70 to 80 percent of the teaching time.]

EXPECTATIONS OF KG1 MATHEMATICS LEARNERS

If teachers focus on the two critical areas of the KG1 curriculum, and if they implement the types of learning activities described in the revised syllabus, KG1 mathematics learners will have strong conceptual and procedural understandings of foundations of math and be able to meet the specified standards in the curriculum enlisted below:

CONTENT STANDARD (CS1) NUMBER AND NUMBER SENSE

- Solve problems involving counting or comparing groups of up to 5 objects
- Read and write numerals to 5
- Represent quantities up to 5 in multiple ways
- Identify number that are 1 more than or less than numbers up to 5

CONTENT STANDARD (CS2) NUMBER OPERATIONS

- Use counters to solve addition and subtraction problems.

CONTENT STANDARD (CS3) PATTERNS AND RELATIONSHIPS

- Sort small collections of objects into groups by a single feature (size, colour, shape)
- Identify the sorting rule used to sort a small collection of common objects

CONTENT STANDARD (CS4) SHAPE, SPACE AND MEASUREMENT

- Use everyday language to describe common 3D shapes.
- Use direct comparison to compare the length, mass, or capacity of common objects; order a collection of objects by their length, mass or capacity.
- Describe the position of objects using simple language like “beside, next to, under, on top of, etc.”

TEN EXPECTATIONS OF KG1 TEACHERS

If learners are to meet the expectations of the KG1 syllabus, teachers will need to:

1. Use concrete objects effectively and accurately (accurate physical models) in the classroom so their learners develop strong conceptual understandings of counting up to 10, and of basic addition and subtraction, and be able to connect their understandings of procedures for basic operations.

2. Have all learners use concrete objects to explore math concepts or solve math problems each day, (as opposed to watching the teacher use them). This means ensuring that each child comes to class with a collection of counters to use for counting or for solving problems.

3. Manage concrete objects effortlessly. Teachers need to put in place classroom management strategies to ensure the learners stay focused on learning when using concrete objects.

4. Develop learners' mental math skills by devoting 5 minutes at the beginning of each class to the development of mental math games and activities linked to the learning outcomes of the curriculum; for example:
    - Counting quickly from 1 to 10.
    - Quickly naming a numeral from 1 to 10 when they see it.
    - Quickly identifying the number of objects in a group of 1-5 objects without counting them.

5. Encourage inquiry and mathematical reasoning by:
    - Providing learners with rich tasks or problems to explore
    - Encouraging them to represent their understandings in different ways.

6. Encourage math talk in the classroom by having learners share their thinking or how they got solutions, inviting them to comment on the thinking of others and having learners work in pairs to explore math ideas or solve problems.

7. Talk and do less than the learners. Teachers need to listen more. Spend more of the time in the classroom having the child explain or do (as opposed to teacher explaining or doing), or having them work with a partner to figure things out.

8. Have learners use math textbooks and notebooks every day. Teachers need to ensure that their learners have a dedicated notebook for Mathematics and give them problems or questions to do in their notebook each day (either from the textbook or the board or with the support of a partner, if necessary) that require them to apply or practice understandings. Teachers also need to walk around and check what learners write in their notebooks.

9. Pace learning appropriately, both during class time and in monthly, weekly and term plans by following the proposed term and weekly schemes of work.

10. Create a classroom learning environment that
    - Communicates to learners that their teacher likes mathematics;
    - Communicates to learners that they have the ability to be successful math learners
    - Fosters risk taking by not punishing or demeaning learners who makes mistakes,
    - Fosters an enjoyment of mathematics by:
        * Encouraging all learners, regardless of their abilities.
        * Providing opportunities each week for strong learners to work with and support struggling learners, and reward them for doing so.
        * Providing opportunities each week for strong learners to work together, while teacher/facilitator works with struggling learners.

CORE COMPETENCIES

Core competencies describe a body of skills that teachers at all levels should seek to develop in their learners. The competencies presented here describe a connected body of core

skills that are acquired throughout the processes of teaching and learning. Core competencies include the following:

Critical thinking and Problem solving (CP)

Developing in learners' cognitive and reasoning abilities to enable them to analyse and solve problems. Learners will be able to analyse and find solutions to problems using their own experiences. This will allow learners to embrace the problem and take responsibility for their own learning.

Creativity and Innovation (CI)

This competency will help learners to develop entrepreneurial skills that require imagination, (ingenuity of ideas, arts, technology and creativity. Learners will be able to think independently and create solutions to address problems.

Communication and Collaboration (CC)

Learners will be able to use languages, symbols and texts to exchange information about themselves and their experiences. Learners will actively participate in sharing ideas and engage in dialogues. This will be able to boost their listening and speaking skills. They will also learn to listen, respect, value other people's views and be able to work together with their peers.

Cultural identity and Global Citizenship (CG)

This competency grooms learners to put country and service first by making them understand what it means to be active citizens, inculcating in them a strong sense of environmental, social, and economic awareness, with emphasis on protecting the environment. Learners make use of the knowledge, skills, attitudes acquired to contribute effectively towards the socioeconomic development of the country and on the global stage. Build skills to critically analyse cultural trends, identify and contribute to the global world.

Personal Development and Leadership (PL)

Improving self-awareness, health, building self-esteem; identifying and developing talents, skills, of self and dreams and aspirations. It involves recognising the importance of values such as honesty and empathy; seeking the well-being of others; distinguishing between right and wrong; fostering perseverance, resilience, and self-confidence; exploring leadership, self-regulation and responsibility, and developing love for lifelong learning.

Digital Literacy (DL)

Developing learners to discover, acquire and communicate through ICT to support their learning and make use of digital media responsibly.

SUGGESTED TIME ALLOCATION

On an average two to three hours per sitting, depending on the age and level of learners, each period consisting of thirty minutes, is allocated to the teaching relevant physical play-based activities with equal participation, co-ordination of each learner to develop their cognitive skills at the preschool level.

Rhymes and songs

I'm counting one

I'm counting one, what is one? one is one alone, alone it shall be.
I'm counting two, what is two? two pair, two pair, Come pair, let us pair, one is one alone, alone it shall be.

I'm counting three, what is three, **"three is turn around",** two pair, two pair come pair, let us pair, one is one alone, alone it shall be.

I'm counting four, what is four, **"four is follow me",** three is turn around, two pair two pair come pair let us pair, one is one alone, alone it shall be.

I'm counting five what is five, **"five is fire",** four is follow me, three is turn around, two pair, two pair come pair let us pair, one is one alone, alone it shall be.

I'm counting six, what is six, **"six is sister",** five is fire, four is follow me, three is turn around, two pair, two pair come pair let us pair, one is one alone, alone it shall be.

I'm counting seven, what is seven, **"seven is savior",** six is sister, five is fire, four is follow me, three is turn around, two pair, two pair come pair, let us pair, one is one alone, alone is shall be.

I'm counting eight, what is eight, **"eight is "eat more fruits",** seven is savior, six is sister, five is fire, four is follow me, three is turn around, two pair, two pair come pair, let's us pair, one is one alone, alone it shall be.

I'm counting nine, what is nine, **"nine is Nana Yaw",** eight is eat more fruits, seven is savior, six is sister, five is fire, four is follow me, three is turn around, two pair, two pair come pair lets us pair, one is one alone, alone it shall be.

I'm counting ten, what is ten, ten is **"thank your God."**…

A circle is a shape

A circle is a shape 2x
It has no corner 2x
But it can roll roll.
A square is a shape 2 x
It has four corners 2x
But it cannot roll.
A square is a shape 2x
It has four corners 2x
But it cannot roll.
A triangle is a shape 2x
It has three corners 2x
But it cannot roll.
A rectangle is a shape 2x
It has four corners 2x
But it can not roll.

Can you count 123?

Can you count 123?
Can you count 234?
Can you count345?
Yes I can count 2x

I have two eyes

I have two eyes. They are the same, same, same.
I have two ears. They are the same, same, same.
I have two buttocks. They are the same, same, same.
I have to legs. They are the same, same, same.
I have two hands. They are the same same, same.
I have two breasts. They are the same, same, same.

TERM ONE

1

Strand:

Number

Strand 1: Number

Sub-strand 1: Whole Numbers Counting, representation and cordiality

WB: pages 2-5

LESSON 1: Counting to find out how many (1-5)

Content standard
KG1.1.1.1: Describe numbers and the relationship between numbers 1 to 5.

Indicator
KG1.1.1.1.1: Use number names, counting sequences and how to count to find out "how many?" up to 5.

Learning outcome: Learners will be able to count to find how many.

Essential for learning: Learners can identify the parts of their bodies that are one and two.

New words: Count, how many.

Resources: bottle caps, straws, numeral cards (1-9).

Core competencies: Learners develop
Problem Solving Skills:
Critical Thinking:
Collaborative learning.

Warming up

Have learners sing the song "I am counting one."

Main activities

Activity 1

- Call out a girl and a boy to the front of the class.
- Ask the learners to call out the parts which are one on the girl's body. (head, nose, mouth, neck, stomach). Let the boy move forward.
- The class call out the parts of the boy, which are two (eyes, ears, hands, legs, buttocks).
- Have learners sing the song "I have two eyes; they are the same, same".

Activity 2

- Call five boys to come and line up in front of the class.
- Let the girls count and tell how many they are. Do the same for the girls.

Activity 3

- Have learners work in groups of three. Give them 8 bottle caps. They line them up and count them to tell how many.

a) 8 bottle caps

b) seven straws

- Give them straws.
- Call out a number and learners count straws to represent that number.

Activity 4

- Pair learners.
- Give them numeral cards (1-5) call out a number say 2, learners count objects and match it with the numeral card.
- Repeat this activity several times with learners.

Review exercises

Slow learners: Have learners work in pairs. Give them six straws, five bottle caps, and they count each to find 'how many?'

Fast learners: Let them draw two groups of objects of their choice and count to find 'how many?' (make sure their drawings do not exceed five).

Assessment for learning

Refer learners to practices 1 to 4 on page 2-5 of their workbook for exercises.

Suggested homework

Count the number of people in your house. Learners report to the class the next day.

Answers to workbook

Practice 1

Learners to colour nose, mouth and neck.

Practice 2

Learners to colour eyes, ear, legs and hands.

Practice 3

Learners to colour only 1 object in each diagram.

Practice 4

Learners to colour only 2 objects in each diagram.

LESSON 2: Counting to find how many? (1-5) (2)

WB: pages 6-10

Content standard
KG1.1.1.1: Describe numbers and the relationship between numbers 1 to 5.

Indicator
KG1.1.1.1.1: Use number names, counting sequences and how to count to find out "how many?" up to 5.

Learning outcome: Learners will be able to count to find how many? (up to 5).

Essential for learning: Learners can count from 1 up to 9.

New words: count, how many.

Resources: bottle caps, straws, numeral cards (1-9).

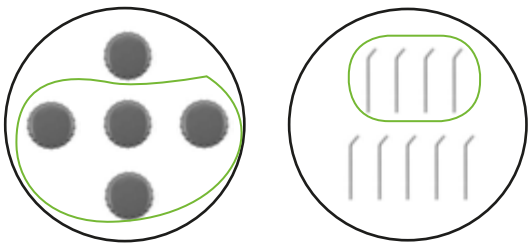
Core competencies: Learners develop
Problem Solving Skills:
Critical Thinking:
Collaborative learning.

Warming up
Have learners sing the song "I am counting one."

Main activity

Activity 1
Call five learners to the front of the class. Let learners count them and tell 'how many?' Repeat this activity with learners until they count up to 9.

Activity 2
Put learners into groups of four. Give them chalk, bottle caps and straws. (not more than 9).
Now ask them to count 4 and circle them.



Repeat by counting and circling different numbers.

Activity 3
- Give learners numeral cards.
- Have them work in pairs.
- One calls out a number, the other count objects to represent it and matches it with a numeral card.

Review exercise
Slow learners: Give them numeral cards (1-5) and five straws. One picks a numeral card, the other count objects to represent it and calls 'how many'.

Fast learners: Let them work in pairs. Give them straws, bottle caps, pebbles, seeds. They count and say how many for each.

Assessment for learning
Refer learners to practices 1 to 5 on pages 6-10 of their workbook for exercises.

Suggested homework

Count the number of cooking utensils in your home and write it.
Count the number of spoons in your home and write it.
Report to the class the next day.

Answers to workbook

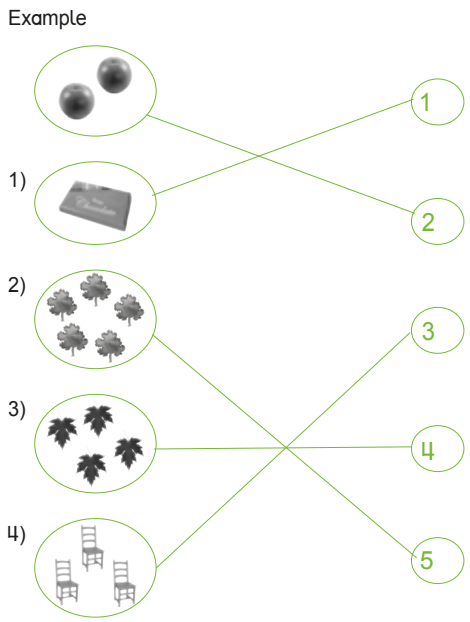
Practice 1

Learners to circle three objects in each diagram.

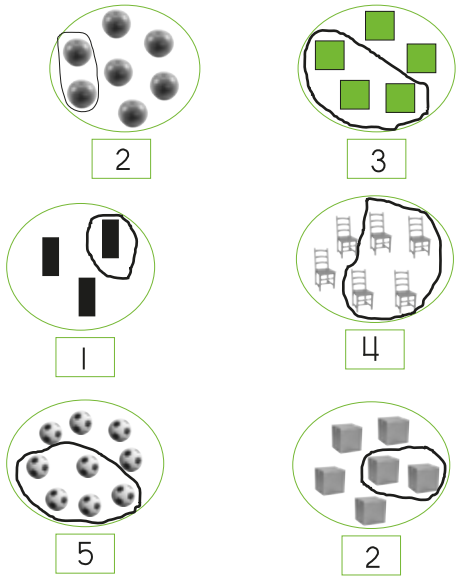
Practice 2

Learners to cross four objects in each diagram.

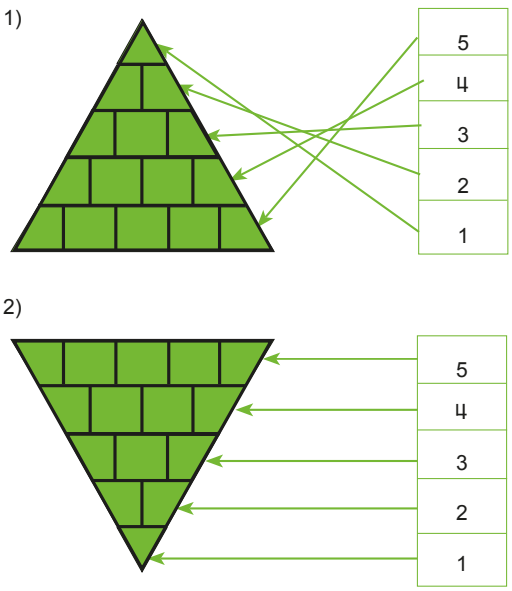
Practice 3



Practice 4



Practice 5



LESSON 3: Writing numerals 1-5

WB: pages 11-12

Content standard
KG1.1.1.1: Describe numbers and the relationship between numbers 1 to 5.

Indicator
KG1.1.1.2.3: Read, write and represent whole numbers from 0 to 9 with or without objects and pictures.

Learning outcome: Learners will be able to count numbers from 1 to 5.

Essential for learning: Learners can count objects from 1 to 9.

New words: Numeral, number.

Resources: numeral cards (1-5), crayons, chalk, bottle caps, straws.

Core competencies: Learners develop
Problem Solving Skills:
Critical Thinking:
Justification of ideas:

Warming up
Play: "How many fingers up". Show some fingers and learners call out the number.

Main activities

Activity 1
- Ask every learner to pick a straw.
- Let them make strokes in the air several times.
- Again, let them write '1' on their table with their finger. Give them numeral card 1 to trace.

Activity 2
- Let them count two straws and two bottle caps.
- They call the name 'two' any time they pick an object. Stand with your back facing them and write the numeral 2 in the air.
- Have learners write the numeral 2 in the air, on their tables and in a sand tray.
- Call out some learners to write the numeral 2 on the board.

Activity 3
- Repeat the above activity for numerals cards 3,4, and 5.
- Give out numeral cards 3,4, and 5 for learners to use their fingers to trace it.

Note: Do not teach all the five numerals at a time. Make sure learners can write a numeral before moving on to the next number.

Review exercises
Slow learners: Have learners trace the numerals 1 to 3 in their books.

Fast learners: Have learners write the numeral 1 to 5 in their books.

Assessment for learning
Refer learners to practices 1 and 2 on pages 11-12 of their workbook for exercises.

Answers to workbook
Practice 1
Learners to trace numerals 1, 2 and 3.

Practice 2
Learners to trace numerals 1 - 5.

LESSON 4: Counting forwards by 1s (1-5)

WB: pages 13-16

Content standard
KG1.1.1.1: Describe numbers and the relationship between numbers 1 to 5**.**

Indicator
KG1.1.1.2.4: Count forwards and backwards whole numbers up to 9.

Learning outcome: Learners will be able to count forwards by 1s up to 5.

Essential for learning: Learners can write the numerals 1 to 5.

New words: count, forward, number, missing.

Resources: counters, straws, numeral cards (1-5).

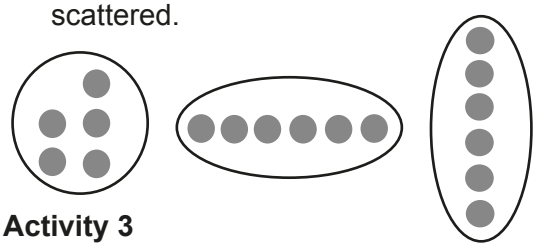
Core competencies: Learners develop
Problem Solving Skills:
Critical Thinking:
Collaborative learning.

Warming up
Play: "How many fingers up".

Main activities

Activity 1
- Call out five learners to the front of the class (three boys and two girls).
- Let them line up, and the class count them together. Put four books on your table. Call a learner to come and count them.
- Later let him /her count them with the class. 1,2,3,4.

Activity 2
- Have learners work in groups of two.
- Let them create and count objects up to 5 arranged in a line, in a circle or scattered.



Activity 3
- Have learners work in pairs.
- One says 1, the other says 2, they alternate until they get to 5.
- Let them go round the class and count their chairs one to five.
- They restart from one when they get to five.

Review exercises
In pairs have learners count forward by 1s up to 5. Let them start from 1,2,3,4 and 5.

Assessment of learning
Refer learners to practices 1 to 5 on pages 13-16 of their workbook for exercises.

Suggested homework
Write the numerals from 1 to 5.

Answers to workbook
Practice 1
Learners to trace the lines from 1 to 5.

Practice 2
Missing numbers --- 2, 4, 5.

Practice 3

1) = 1
2) = 2
3) = 3
4) = 4
5) = 5

Practice 4

1) = 1
2) = 2
3) = 3
4) = 4
5) = 5

Practice 5

1) 3, 4.
2) 1,2, 5
3) 3, 5 4) 2, 3, 4, 5

LESSON 5: Counting backwards by 1s (5-1).

WB: pages 17-19

Content standard
KG1.1.1.1: Describe numbers and the relationship between numbers 1 to 5.

Indicator
KG1.1.1.2.4: Count forwards and backwards whole numbers up to 9.

Learning outcome: Learners will be able to count backwards from 5 to 1.

Essential for learning: Learners can count forward by 1s up to 5.

New word: backwards, count.

Resources: bottle caps, straws, numeral cards.

Core competencies: Learners develop
Problem Solving Skills:
Critical Thinking:
Collaborative learning.

Warming up
Play “clap my number” call out a number and learners clap that number of times.

Main activities

Activity 1
- Call out three girls and two boys to the front of the class.
- Give them the numeral cards.

1	2	3	4	5

- Ask the fifth person to call his number, followed by the fourth, and so on.

5	4	3	2	1

- Repeat this activity with different learners.

Activity 2
- Hang numeral cards 1 to 5 on the wall.
- Point to the numerals starting from 5 up to 1, and the class calls out the numerals.

Activity 3
- Have learners work in pairs. Give them numeral cards 1 to 5.
- Let them arrange them on their table and count from 5, 4, 3, 2 and 1.

Review exercises
Slow learners: Let them work in pairs. Give them numeral cards 1 to 5. They count backwards starting from 5.

Fast learners: Working in pairs. Let learners count backwards by 1s starting from 3,2,4 and 5

Assessment for learning
Refer learners to practices 1 to 3 on pages 17-19 of their workbook for exercises.

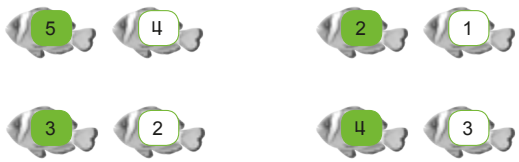
Suggested homework
Write from 5 up to 1
Fill the missing numbers:
5, _____ 3, _____ 1

Answers to workbook

Practice 1

1) Missing numbers 4,2,1.

2)



Practice 2

1) 4
2) 5
3) 3
4) 1
5) 2

Practice 3

1) → 5
2) → 4
3) → 3
4) → 2
5) → 1

LESSON 6: Counting to find "how many" (6-9)

WB: pages 20-23

Content standard
KG1.1.1.1: Describe numbers and the relationship between numbers 1 to 5.

Indicator
KG1.1.1.2.4: Count forwards and backwards whole numbers up to 9.

Learning outcome: Learners will be able to count to find how many from 6 to 9.

Essential for learning: Learners can count to find how many up to 5.

New words: count, how many, match.

Resources: bottle caps, straws, numeral cards (1-9).

Core competencies: Learners develop
Problem Solving Skills:
Critical Thinking:
Justification of ideas:
Collaborative learning.

Warming up
Play "clap my number" call out a number and learners clap that number of times.

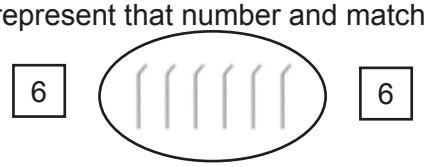
Main activities

Activity 1
- Put eight books on the table. Call a boy to the front of the class. Let the boy count the books with the whole class.
- Let them tell you the total number of books. Collect six bags from learners. Put them on the table.
- Call a girl to count with the class and tell how many.

Activity 2
- Call nine boys to the front of the class. Let the girls count them and tell the class how many boys.
- Have eight girls go to the front of the class and the boys count them to find how many?

Activity 3
- Have learners work in pairs. Give them numeral cards 1 to 9 and 9 straws.
- One learner picks a numeral card and the other counts the straws to represent that number and match it.

E.g.



- Have learners work in turns.

Review exercise
Slow learners: Have learners work in pairs. Give them numerals cards (6-7). Let one call a number from 6 - 8 and the other count objects to represent the number called.

Fast learners: Have them work in pairs. Give them a numeral card (6-9). One counts some counters and the other picks a numeral card to represent it.

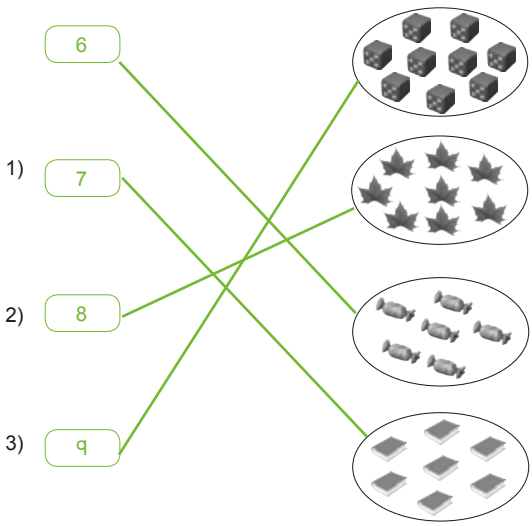
Assessment for learning
Refer learners to practices 1- 4 on pages 20-23 of their workbook for exercises.

Answers to workbook

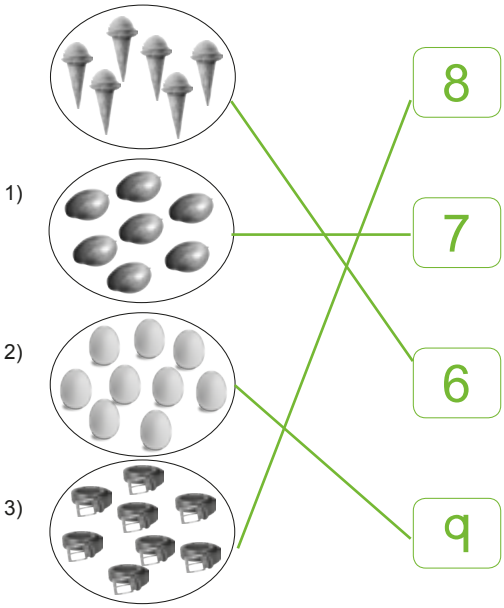
Practice 1

Learners to circle only 6 objects in each diagram

Practice 2



Practice 3



Practice 4

Learners to draw objects to match the number below each circle.

LESSON 7: Writing numerals (6-9)

WB: pages 24-26

Content standard
KG1.1.1.2: Describe numbers and the relationship between numbers 0, 6 to 9.

Indicator
KG1.1.1.2.3: Read, write and represent whole numbers from 0 to 9 with or without objects and pictures.

Learning outcome: Learners will be able to write numerals from (6-9).

Essential for learning: Learners can write numerals 1 to 5.

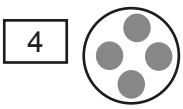
New words: numerals, numbers.

Resources: numeral cards, crayons, pencils, chalk, sand tray.

Core competencies:
Learners develop Problem Solving Skills:
Critical Thinking:
Collaborative learning.

Warming up:

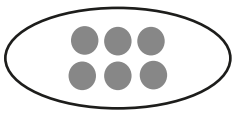
Play: "Make and count this number". Write a numeral on the board". Learners use their counters to make a set with that number of objects. E.g.



Main activities

Activity 1

- Pick a numeral card 6, have learners count objects for that number.
- Stand in front of the class with your back facing the class.
- Write the numeral 6 in the air and on the board with objects



6.

- Have learners do the same.
- Call out about four learners to come and write the number 6 on the board.

Activity 2

- Let learners work in groups of four. Ask them to count seven objects. Give numeral cards to each group.
- They pick the numeral 7 and match it to the objects.
- Let them use their fingers to trace the numeral 7.
- Now let them write it in their jotters.

Activity 3

Use a similar method to teach writing of numerals 8 and 9.

Review exercises

Give out numeral cards 6 - 9 (dotted outline) for learners to trace them.

Assessment for learning

Refer learners to practices 1 and 2 on pages 27-26 in their workbook for exercises.

Answers to workbook

Practice 1

Learners to count, trace and write the numerals 6, 7, 8.

Practice 2

Learners to count, trace and write the numeral 9.

Practice 3

1) 7
2) 9
3) 6
4) 7

LESSON 8: Representing number quantities in different and equivalent ways

WB: pages 27-29

Content standard
KG1.1.1.2: Describe numbers and the relationship between numbers 0, 6 to 9.

Indicator
KG1.1.1.2.1: Represent number quantities (0 to 9) in different and equivalent ways.

Learning outcome: Learners will be able to represent number quantities in different and equivalent ways.

Essential for learning: Learners can write numerals 1-9.

New words: equivalent, represent, different, multiple.

Resources: crayons, pencils, straws, bottle caps, numeral cards, number name cards.

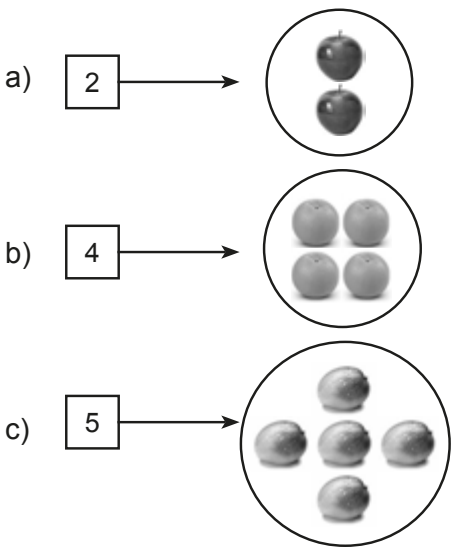
Core competencies:
Learners develop Problem Solving Skills:
Critical Thinking:
Justification of ideas:
Collaborative learning.

Warming up

Play: ”show me” call out a number and learners use their fingers to indicate the number.

Main activities

Activity 1
Whole class activity. Show off numeral card (2,4,4,8,9) one at a time. Learners count objects to represent them.



Activity 2

- Have learners work in pairs. One counts objects, call out the number and the other person picks a numeral card to match it.
- They exchange and repeat the activity several times.

Activity 3

- Put learners into groups of three. Give them number name cards. The leader counts a certain number of objects (not more than 9), and learners pick a number name card to match it.
- Change the leadership role for every learner to lead.
- Have them repeat this activity several times using the number name cards from 1 - 9.

Review exercise

Slow learners: Give out numeral cards (1-5) and counters to learners. Let them work in pairs and represent the numbers in as many ways as possible using their bottle caps.

Fast learners: Have learners work in pairs. Challenge them to find as many ways possible of representing numbers 1-9 by making groups of counters.

Assessment for learning

Refer learners to practices 1 to 3 on pages 27-29 of their workbook for exercises.

Suggested homework

Learners draw objects to represent the numbers

1) 3 2) 4 3) 5 4) 9

Answers to workbook

Practice 1

Spoons	3
Pencils	3
Dice	2
Baby	1
Fingers	4

Practice 2

1) 1 → 1 bottle cap
2) 3 → 3 bottle caps
3) 2 → 2 bottle caps
4) 4 → 4 bottle caps

Practice 3

1) 3 fingers → three
2) 4 fingers → four
3) 1 finger → one
4) 2 fingers → two

LESSON 9: Comparing two groups of objects (more than)

WB: pages 30-32

Content standard
KG1.1.1.2: Describe numbers and the relationship between numbers 0, 6 to 9.

Indicator
KG1.1.1.1.3: Use comparative language to describe the relationship between quantities/numbers up to 9.

Learning outcome: Learners will be able to identify and describe two groups of objects which are more than the other.

Essential for learning: Learners can count several objects and write numerals for them.

New words: compare, more than, less than, same as.

Resources: counters, straws, bottle caps, numeral cards.

Core competencies: Learners develop
Problem Solving Skills:
Critical Thinking:
Collaborative learning.

Warming up

Play: ”show me” call out a number and learners use their finger to indicate the quantity.

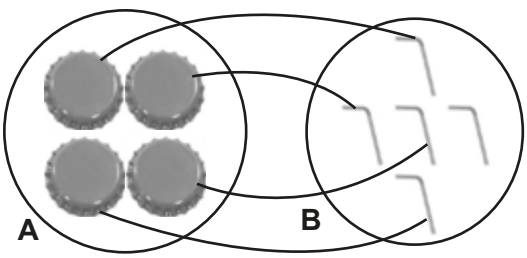
Main activity

Activity 1

- Call our four girls and five boys to the front of the class.
- Let them face each other.
- One boy will be left out without a partner.
- Have learners tell you the set which was more. i.e. the boys were more than the girls.

Activity 2

- Have learners be in their groups of four (note occasionally change members in their groups).
  Give them five straws and four bottle caps.
- Ask them to match and tell which group is more.



4 bottle caps 5 straws
B is more than A.

Activity 3

- Write this pair of numbers on the board.
- They use counters to compare and identify the group, which is more than the other. 1) 6 and 7
  2) 8 and 9 3) 3 and 2.
- Have learners work in pairs.

Review exercise

Learners work in pairs to compare and determine the group which has more objects.

1) 2 and 3 2) 4 and 6 3) 7 and 9

Assessment for learning

Refer learners to practices 1 to 3 on pages 30-32 of their workbook for exercises.

Suggested homework

Draw and match the two groups of objects and determine the group which has more objects.

Answers to workbook

Practice 1

1) Learners to colour pots
2) Learners to colour bulbs
3) Learners to colour apples

Practice 2

1) Learners to tick umbrellas
2) Learners to tick shirts

Practice 3

1) Learners to circle red triangles
2) Learners to circle green circles

LESSON 10: Comparing two groups of objects (less than)

WB: pages 33-35

Content standard
KG1.1.1.2: Describe numbers and the relationship between numbers 0, 6 to 9.

Indicator
KG1.1.1.1.3: Use comparative language to describe the relationship between quantities/numbers up to 9.

Learning outcome: Learners will be able to identify and describe two groups of objects and determine which group is more than and which are less than.

Essential for learning: Learners can count some objects and write numeral for it.

New words: compare, more than, less than, same as.

Resources: counters, straws, bottle caps, numeral cards.

Core competencies:
Problem Solving Skills:
Critical Thinking:
Justification of ideas:
Collaborative learning.

Warming up

Play: ”show me” call out a number and learners use their finger to indicate the quantity.

Main activity

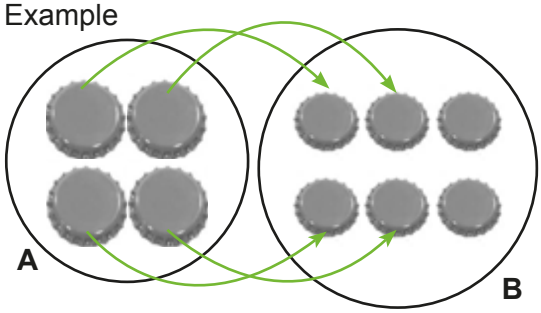
Activity 1

- Call out six girls and five boys to the front of the class.
- Let them face each other and holds their hands together.
- The class should come out with the group which is less than.

Activity 2

- Put learners into groups of two.
- Give them straws, bottle caps, sticks.
- Ask them to make two groupings so that one will be less than the other. (have them match first to determine the group which is less).

Example



4 bottle caps 6 bottle caps.

The diagram above shows that group A is less than group B.

- Have learners repeat this activity several times in pairs.

Review exercise

- Pair learners (slow and fast learners together). Write these numbers on the board.
- Let learners use counters to form groups and match to determine the group which has fewer objects.

Assessment for learning

Refer learners to practices 1 to 3 on pages 33-35 of their workbook for exercises.

Suggested homework

Make group of objects for these numbers. Match and tick the group with fewer objects:

1) 4 and 4 2) 5 and 7 3) 6 and 9.

Answers to workbook

Practice 1

1) Learners to tick children.
2) Learners to tick shoes.
3) Learners to tick shorts.

Practice 2

1) Learners to colour orange with 2 seeds.
2) Learners to colour orange with 3 seeds.
3) Learners to colour orange with 2 seeds.
4) Learners to colour orange with 1 seed.
5) Learners to colour orange with 4 seeds.

Practice 3

1) Learners to cross 1 bottle cap.
2) Learners to cross 4 bottles.

LESSON 11: Comparing two groups of objects (same as)

WB: pages 36-37

Content standard
KG1.1.1.2: Describe numbers and the relationship between numbers 0, 6 to 9.

Indicator
KG1.1.1.1.3: Use comparative language to describe the relationship between quantities/numbers up to 9.

Learning outcome: Learners will be able to identify and describe two groups of objects which are the same as the other.

Essential for learning: Learners can count some objects and write numerals for it.

New words: compare, more than, less than, same as.

Resources: counters, straws, bottle caps, numeral cards.

Core competencies:
Problem Solving Skills:
Critical Thinking:
Collaborative learning.

Warming up

Play: ”show me” call out a number and learners use their finger to indicate the quantity.

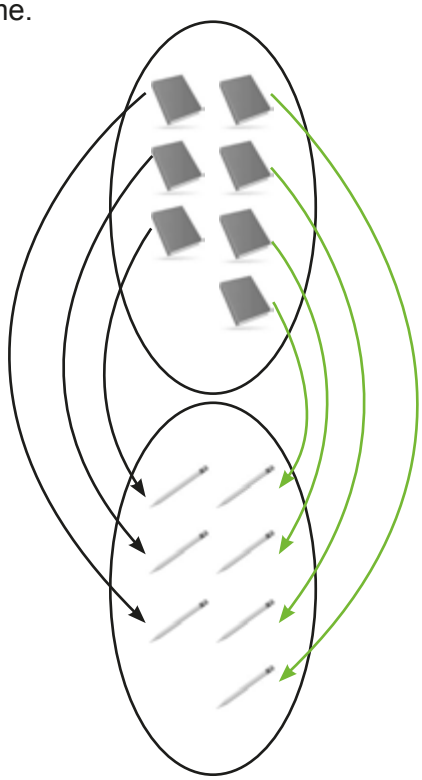
Main activity

Activity 1

- Call out three learners.
  Put chairs in front of the class.
  Ask the learners to sit on the chairs.
- Learners describe what they see. i.e. there is the same number of chairs as learners.

Activity 2

Put seven books, and seven pencils on your table, call a girl to come and match the two groups of objects. The class talk about what they have observed. The number of books and pencils are the same.



Match 7 books to 7 pencils

Activity 3

- Put learners into groups of six, three boys and three girls.
- Let them face each other and hold their hands.
- Let them use the expressions “the girls are the same as the boys” to describe what they see.

Activity 4

- Direct learners to make equal groups with the counters they have as well as objects in the classrooms, like bags, pencils, erasers and crayons.

Review exercise

Slow learners: Pair learners to make equal groups of objects up to 5.

Fast learners: Pair learners to make an equal grouping of objects up to 9.

Assessment for learning

Refer learners to practice 1 to 2 on pages 36-37 of their workbook for exercises.

Answers to workbook

Practice 1

1) Goats → bowls
2) Huts → smocks
3) Cows → children

Practice 2

1) Learners to tick sets of 3 apples.
2) Learners to tick one cat and one finger.

LESSON 12: Ordering groups of objects

WB: pages 38

Content standard
KG1.1.1.2: Describe numbers and the relationship between numbers 0, 6 to 9.

Indicator
KG1.1.1.1.3: Use comparative language to describe the relationship between quantities/numbers up to 9.

Learning outcome: Learners will be able to order groups of objects from the smallest to the largest and vice versa.

Essential for learning: Learners can count forward and backwards by 1s from 1 to 9.

New words: order, smallest, largest.

Resources: bottle caps, straws, plastic bottles with different sizes, empty containers of various sizes.

Core competencies:
Learners develop Problem Solving Skills:
Critical Thinking:
Collaborative learning.

Warming up

Play: "what number is this?" Show a numeral card to learners. They call out the number. Repeat with different numerals.

8	7	2	5	4

Main activity

Activity 1

- Call four learners with different heights.
- Let them arrange themselves from the tallest to the shortest.

Abu Esi Kofi Efe

- Call another learner to re-arrange them from the shortest to the tallest.

Activity 2

- Put different sizes of bottles on your table.
- Call a learner to re-arrange them from the smallest to the largest and vice versa

200ml 500ml 1.5ml

- Now have learners work in groups of four.

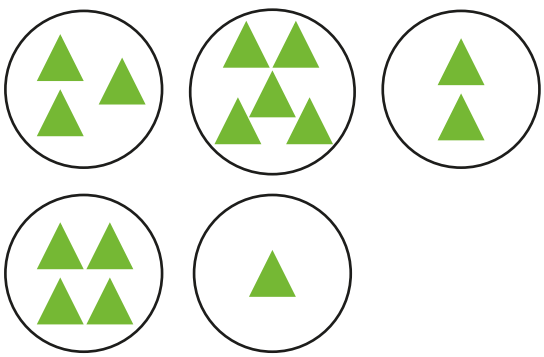
Activity 3

- Give them crayons, sticks, straws of different length.
- Ask them to arrange them:

1. Crayons from the shortest to the tallest.
2. Four straws from the longest to the shortest.
3. Stick from the smallest to the largest.

Review exercise

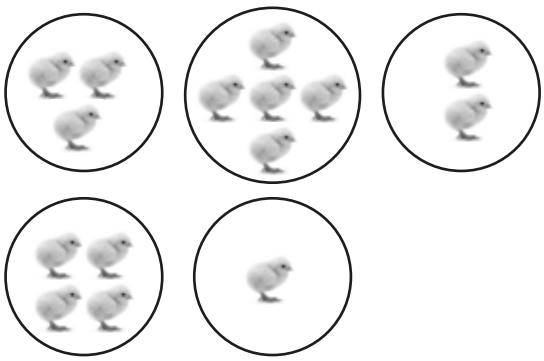
Give learners in groups of three cards with some objects drawn on them. Learners arrange them from the smallest number to the largest number and vice versa.



Assessment for learning

Refer learners to practice 1 and 2 on page 38 of their workbook for exercise.

Suggested homework

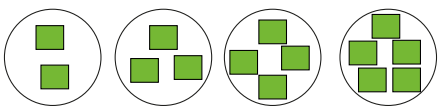


Learners order them:
1) From the largest to the smallest.
2) From the smallest to the largest.

Answers to workbook

Practice 1

Learners to draw items in order from smallest to largest.



Practice 2

Learners to draw items in order from largest to smallest.

LESSON 13: Identifying groups of objects (one more than one less than)

WB: pages 39-41

Content standard
KG1.1.1.2: Describe numbers and the relationship between numbers 0, 6 to 9.

Indicator
KG1.1.1.1.3: Use comparative language to describe the relationship between quantities/numbers up to 9.

Learning outcome: Learners will be able to identify the number and objects that are one more or one less than the other (1-9).

Essential outcome: Learners can compare and order a group of objects from the smallest to the largest and vice versa.

New words: Compare, 1 more than, 1 less than.

Resources: bottle caps, straws, numeral cards (1-9).

Core competencies: Learners develop
Problem Solving Skills:
Critical Thinking:
Collaborative learning.

Warming up

Play: "How many fingers up?". Hold up fingers (1-5). Learners call out the number together.

Main activities

Activity 1

- Put five chairs in front of the class.
- Call out four boys to the front of the class.
- Direct learners to count the number of chairs and the number of boys.
- Ask the boys to sit on the chairs.
- Let the learners tell you what they have observed. i.e. there is an extra chair.
- The chairs are one more than the boys.

Activity 2

- Call six girls to the front of the class.
- Direct them to sit on the chairs.
- The class tell you what they have observed.
- One girl will not get a seat.
- The girls are I more than the chairs.
- Repeat this activity with different objects.

Activity 3

- Show pictures of a family of four members and another family of three members.

- Have learners compare the two families. They should use the expression "1 more than" and "1 less than" to describe the two families.

Activity 4

- Put learners into groups of four. Give them straws and bottle caps. Let them make two groupings of straws of which one group is 1 more than the other.
- Let them do the same with the bottle caps.

Review exercise

Have learners work in pairs (one slow learner and one fast learner). They make their own groupings with the counters that they have using the expression “1 more than” and “1 less than”.

Assessment for learning

Refer learners to practice 1 to 3 on pages 39-41 of their workbook for exercises.

Suggested homework

Draw a family of two members and three members and compare using 1 more than and 1 less than. Label your work A and B.

Answers to workbook

Practice 1

1) Learners to tick 3 children and cross 2 children.
2) Learners to tick picture with 4 persons and cross picture with three persons.

Practice 2

1) Learners to tick children.
2) Learners to tick bottles.
3) Learners to tick pencils.

Practice 3

1) Learners to colour oranges.
2) Learners to colour boxes.
3) Learners to colour flowers.

LESSON 14: Identifying numbers (one more than or one less than)

WB: pages 42-43

Content standard
KG1.1.1.2: Describe numbers and the relationship between numbers 0, 6 to 9.

Indicator
KG1.1.1.1.3: Use comparative language to describe the relationship between quantities/numbers up to 9.

Learning outcome: Learners will be able to identify numbers and objects that are 1 more or 1 less than a number from 1 to 9.

Essential outcome: Learners can compare and order group of objects from the smallest to the largest and vice versa.

New words: Compare, 1 more than, 1 less than.

Resources: bottle caps, straws, numeral cards (1-9).

Core competencies:
Learners develop
Problem Solving Skills:
Critical Thinking:
Collaborative learning.

Warming up
Play: "How many fingers up?". Hold up fingers (1-5). Learners call out the answer together.

Main activities

Activity 1
- Ask learners to count forward and backwards by 1s up to 9.
  a) 1, 2, 3, 4, 5, 6, 7, 8, 9
  b) 9, 8, 7, 6, 5, 4, 3, 2, 1
  Let them write the numbers from 1 to 9 in their jotters.

Activity 2
- Display the numeral cards at a place where everybody can see.

1	2	3	4	5	6	7	8	9

- Circle a number, (3) . Ask learners to call out a number which is one more than 3 and one less then 3.
  1 more is ⟶ 4 1 less is ⟶ 2

Activity 3
- Have learners work in groups of four. They arrange the numeral cards on their table.
- One picks a numeral card and the rest call out the numbers which are one more or one less than the number picked.
- Learners take turns to call out the number.

Review exercise
Have learners work in pairs. They play one more than and one less than. One calls a number and the other calls out numbers that are one more than and one less than.

Assessment for learning
Refer learners to practices 1 and 2 on pages 42-43 in their workbook for exercises.

Suggested homework

Have learners write numbers which are one more than and one less than these numbers.

1) 6 2) 8
3) 3 4) 7

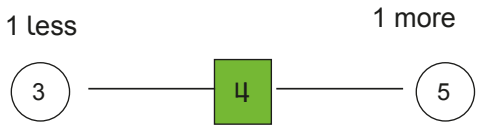
Answers to workbook

Practice 1

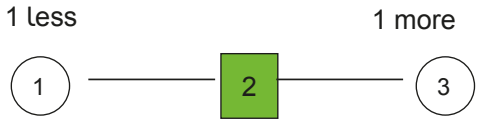
1) 4
2) 9
3) 7
4) 3
5) 1
6) 3
7) 4
8) 6
9) 2

Practice 2

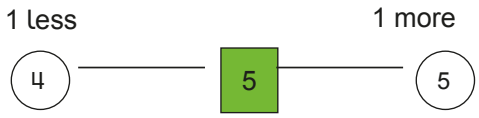
1)



2)



3)



TERM TWO

Strand: 2

Algebra

Strand 2: Algebra

Sub-strand 1: Non numerical patterns and relationships

WB: pages 46-48

LESSON 1: Patterns with shape

Content standard
KG1.2.1.1: Recognize and describe a simple non-numerical patterns.

Indicator
KG1.2.1.1.2: Create simple patterns using shapes, colour, size, sounds and movements.

Learning outcome: Learners will be able to sort, classify and extend a simple repeating non-numeral pattern.

Essential for learning: Learners can identify, draw and write names for 2D shapes. E.g. circle, triangle.

New words: patterns, create, continue, shape.

Resources: cut out shapes of 2D shapes, numeral cards, coloured straws, bottle caps and crayon.

Core competencies:
Problem Solving Skills:
Critical Thinking:
Justification of ideas:
Collaborative learning.

Warming up

Play: "Do what I do". Present sound and action in pattern with 2 terms and learners repeat the same. E.g. clap clap, tap tap, clap clap, tap tap.

Main activities

Activity 1

- Direct learners to form a big circle, they clap three times and tap their feet two times.
- If a leaner makes mistakes, he/she is dropped.

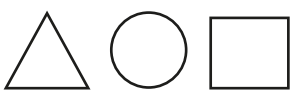
Activity 2

- Give out 2D shapes to learners in their group.
- Direct them to sort out the triangles and the circles to form patterns as shown below.

- Let them change to rectangle and square
- Now allow them to make their own patterns.

Activity 3

- Give them 2D shapes.



- Ask them to create patterns with the shapes. Have learners work in pairs.

Review exercises

Learners work in pairs. Allow them to create their own patterns with the 2D shapes.

Assessment for learning

Refer learners to practice 1,2 and 3 on pages 46-48 of their workbook for exercises.

Answers to workbook

Practice 1

1) 

2) 

3) 

4) 

Practice 2

1) 

2) 

3) 

4) 

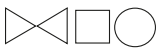
5) 

Practice 3

1) 

2) 

3) 

4) 

5) 

LESSON 2: Patterns with colour

WB: pages 49-50

Content standard
KG1.2.1.1: Recognize and describe a simple non-numerical patterns.

Indicator
KG1.2.1.1.2: Create simple patterns using shape, colour, size, sounds and movements.

Learning outcome: Learners will be able to sort classify and extend a simply repeating non-numeral pattern.

Essential for learning: Learners can create patterns with 2D shapes.

New words: patterns, create, continue, shape.

Resources: Cut out shapes of 2D, numeral cards, coloured straws, bottle caps and crayons, pencils.

Core competencies:
Learners develop Problem Solving Skills:
Critical Thinking:
Justification of ideas:
Collaborative learning.

Warming up

Play: "Do what I do". Present sound and action in pattern with 2 terms and learners repeat the same. E.g. clap clap, tap tap, clap clap, tap tap.

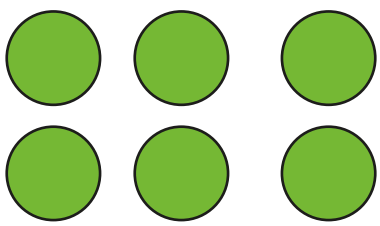
Main activities

Activity 1

- Make learners form a big circle. Play the game "My colour is". Give them red triangle and blue circle. alternately.
- The first person starts 'My colour is red', second person continues 'My colour is blue'.
- They continue until everybody says what their colour is.

Activity 2

- Put learners into groups of three.
- Give each group 6 coloured circles. They make pattern with them. E.g.



- Let them continue using squares and triangles.

Activity 3

- Give them coloured bottle caps to create their own patterns.

Review exercise

Have learners work in pairs to create their own patterns using the coloured bottle caps and 2D shapes.

Assessment for learning

Refer learners to practices 1 and 2 on pages 49-50 of their workbook for exercises.

Suggested homework

Learners create their own patterns with coloured 2D shapes on a sheet of paper with their names written on to be displayed in the classroom.

Answers to workbook

Practice 1

1) 

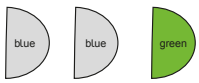
2) 

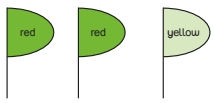
3) 

4) 

Practice 2

1) 

2) 

3) 

4) 

5) 

LESSON 3: Patterns with size

WB: pages 51

Content standard
KG1.2.1.1: Recognise and describe simple non-numerical patterns.

Indicator
KG1.2.1.1.2: Create simple patterns using shape, colour, size, sounds and movements.

Learning outcome: Learners will be able to sort classify and extend a simply repeating non-numeral pattern with size.

Essential for learning: Learners can create patterns with 2D shapes.

New words: patterns, create, continue, shape.

Resources: cut out shapes of 2D shapes, numeral cards, coloured sstraws, bottle caps and crayons, empty boxes, empty tins, plastic bottles.

Core competencies:
Learners develop Problem Solving Skills:
Critical Thinking:
Justification of ideas:
Collaborative learning.

Warming up
Play: "Do what I do". Present sound and action in pattern with 2 terms and learners repeat the same. E.g. clap clap, tap tap, clap clap, tap tap.

Main activities

Activity 1
- Call 4 boys to the front of the class: two short and two tall.
- Arrange them in pattern, one tall, one short, one tall, one short.
- Let learners describe the pattern.

Activity 2
- Arrange patterns with different containers. E.g.

Activity 3
- Put learners into groups of two. Let them go round and pick objects that they can form patterns with. E.g. bags, pencils, crayons, sticks, etc.
- They discuss among themselves how they can create patterns with sizes.

Activity 4
- Give out cut-out shapes with different sizes to create patterns

Review exercise
Have learners work in pairs. They move round the classroom and pick objects of different sizes and make patterns with them.

Assessment for learning

Refer learners to practice 1 on page 51 of their workbook for exercise.

Suggested homework

Use big circle small circle to create patterns.
Use small tin big tin, big tin small tin, etc, to create patterns.

Answers to workbook
Practice 1

1) 

2) 

3) 

4) 

LESSON 4: Patterns with numbers

WB: pages 52-53

Content standard
KG1.2.1.1: Recognise and describe a simple non-numerical patterns.

Indicator
KG1.2.1.1.1: Sort, classify and extend a simple repeating non-numerical patterns.

Learning outcome: Learners will be able to create patterns using colours.

Essential for learning: Learners can create patterns with 2D shapes

New words: patterns, create, continue, shape, colour.

Resources: cut out shapes of 2D shapes, numeral cards, coloured straws, bottle caps and crayon.

Core competencies:
Learners develop Problem Solving Skills:
Critical Thinking:
Justification of ideas:
Collaborative learning.

Warming up
Play: "Do what I do". Present sound and action in pattern with 2 terms and learners repeat the same. E.g. clap clap, tap tap, clap clap, tap tap.

Main activities

Activity 1
Give numeral cards to learners in their groups. Let them read the numbers and clap at the same time.
1 clap, 2 clap, 3 clap up to 9

Activity 2
- Write this pattern on the board. Learners study it and come out with two terms:
  1) 111, 222, 333, _____, _____
  2) 212, 222, 232, _____, _____
  3) 661, 662, 663, _____, _____

Activity 3
- Have learners work in pairs. Give them numeral cards (1-9) (at least nine each).
- They create three patterns on their table and later write them on a sheet of paper.
- Display their works on the board.

Review exercise
Have learners work in groups of four. Each person come out with a number pattern and the rest continue with two terms.

Assessment for learning
Refer learners to practices 1 and 2 on pages 52-53 of their workbook for exercises.

Answers to workbook
Practice 1

1) 4 3 1
2) 9 9 1
3) 6 1 6
4) 3 2 1

Practice 2

1) 1 1 2
2) 5 6 7
3) 3 3 2
4) 7 5 3
5) 2 3 2

Strand: 3

Geometry and measurement

LESSON 1: 2D shapes

WB: pages 56-58

Content standard
KG1.3.1.1: Describe attributes of shapes, sort a small collection of 3D objects according to a given criteria.

Indicator
KG1.3.1.1.1: Identify 2D shapes according to attributes: e.g. colour, size and shape.

Learning outcome: Learners will be able to trace around a given objects.

Essential for learning: Learners can be able to play with objects at home and in school. E.g. ball.

New words: trace, around, shape.

Resources: pencils, crayons, 2D, sort shapes, cut-out shapes of rectangles, triangles, circles and squares.

Core competencies: Learners develop Problem Solving Skills:
Critical Thinking: Justification of ideas:
Collaborative learning.

Warming up
Have learners sing or recite this song: "A circle is a shape"

Main activities

Activity 1
- Put learners into groups of four.
- Give them plenty solid shapes (balls, empty tins, empty boxes) to play with them.

Activity 2
- Give learners chalk and crayons to trace around the shapes they have in their jotters.
- Let them to colour the shapes that they have drawn.

Activity 3
- Let learners trace two shapes and colour them.

Review exercise
Learners trace around any objects they find in the classroom.

Assessment for learning
Refer learners to practices 1 to 3 on pages 56-58 of their workbook for exercises.

Suggested homework
They should trace around the cups and bowls they use at home and show it to the class the next day.

Answers to workbook
Practice 1
Learners to colour and trace the words.

Practice 2
Learners to trace and colour.

Practice 3
Learners to trace and colour.

LESSON 2: Corners and sides of 2D shapes

WB: pages 59-60

Content standard
KG1.3.1.1: Describe attributes of shapes, sort a small collection of 3D objects according to a given criteria.

Indicator
KG1.3.1.1.1: Identify 2D shapes according to attributes: e.g. colour size, shape.

Learning outcome: Learners will be able to identify the corners of 2D shapes.

Essential for learning: Learners can trace around 2D shapes.

New words: trace, around, shape.

Resources: pencils, crayons, 2D, sort shapes, cut-out shapes of rectangles, triangles, circles and squares.

Core competencies:
Learners develop Problem Solving Skills:
Critical Thinking:
Justification of ideas:
Collaborative learning.

Warming up

have learners sing or recite this song: “A circle is a shape”

Main activities

Activity 1

- Introduce corners to learners by observing the corners of the teacher’s table.
- Ask them to look around the classroom and identify objects with corners. E.g. blackboard, pictures, chairs, etc.
- Let them move round the classroom and touch them.

Activity 2

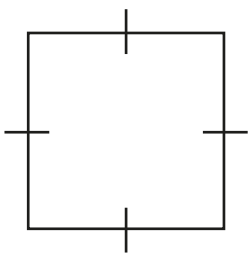
- Hold up a triangle to the class. Ask, “Can you identify the corners?” Call learners to come and point to the corners.
- Do the same for a square and a rectangle.

Activity 3

- Hold up the circle to the class. Ask, “Can you identify the corners?” Answer: “No, it has no corner”.
- Let learners know that a circle has no corner. Let them justify.

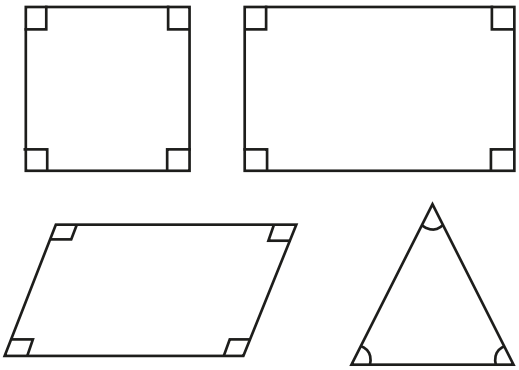
Activity 4

- Hold up a square to the class.
- Call learners to come and identify the sides of the shapes.
- Now let them identify the number of sides for each shape.



Activity 5

- Put learners into groups of four.
- Give out the cut-out shapes to learners.
- Let them mark the corners and sides of each shape and count.



Review exercise

Give cut-out shapes of 2D to learners to count and write the number of corners and sides for each shape.

Assessment for learning

Refer learners to practices 1 and 2 on pages 59-60 of their workbook for exercises.

Suggested homework

Learners draw triangle, square and rectangle and mark the corners and sides.

Answers to workbook

Practice 1

1) 3 corners
2) 4 corners
3) 4 corners
4) No corner

Practice 2

1) 3 sides
2) 4 sides
3) 4 sides
4) No sides.

WB: pages 61-62

LESSON 3: Sorting 2D shapes

Content standard
KG1.3.1.1: Describe attributes of shapes, sort a small collection of 3D objects according to a given criteria.

Indicator
KG1.3.1.1.1: Identify 2D shapes according to attributes: e.g. colour, size and shape.

Learning outcome: Learners will be able to sort 2D shapes into a given criteria.

Essential for learning: Learners can identify corners and sides of 2D shapes.

New words: trace, around, shape.

Resources: pencils, crayons, 2D, sort shapes, cut-out shapes of rectangles, triangles, circles and squares.

Core competencies:
Learners develop Problem Solving Skills:
Critical Thinking:
Justification of ideas:
Collaborative learning.

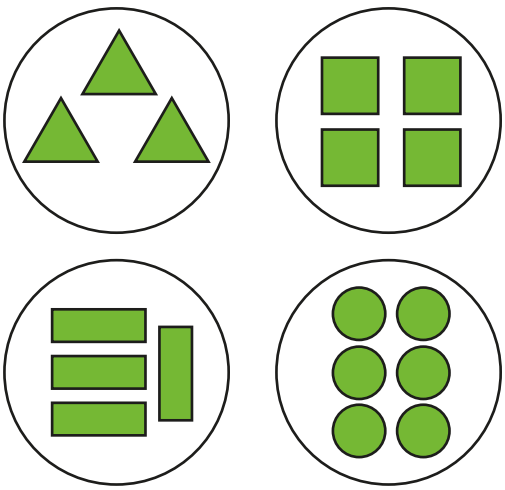
Warming up

Have learners sing or recite this song: “A circle is a shape”

Main activities

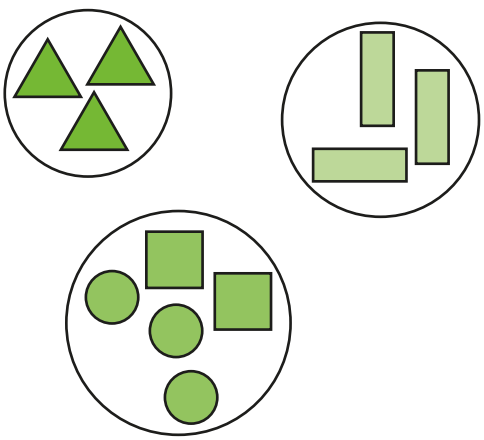
Activity 1

- Put learners into groups of four. Give them coloured 2D shapes.
- Direct them to sort them into same shapes and count the number for each.



Activity 2

Now ask learners to sort them based on colour (i.e. all shapes with one colour will be in one group).



Activity 3
Let them count the number for each of these colours.
Green
Blue
Yellow
Red

Review exercise
Have learners work in groups of two. Let them sort their pencils, exercise books and crayons based on shapes.

Assessment for learning
Refer learners to practices 1 and 2 on pages 61-62 of their workbook for exercises.

Suggested homework
Draw the 2D shapes and colour them. Use a different colour for each shape.

Answers to workbook
Practice 1
1) Rectangle 4
2) Square 3
3) Circle 3

Practice 2
1) Triangle --- 5
2) Circle --- 4
3) Square --- 6
4) Rectangle --- 3

LESSON 4: 3D objects

WB: pages 63-67

Content standard
KG1.3.1.1: Describe the attributes of shapes, and sort a small collection of 3D objects according to given attributes.

Indicator
KG1.3.1.1.2: Identify three-dimensional objects including cylinders, cones, spheres, and cubes in the real world.

Learning outcome: Learners will be able to identify 3D shapes with flat and round faces.

Essential for learning: Learners can trace around 3D objects to get 3D shapes.

New words: round, smooth, roll

Resources: 3D objects, e.g. balls, empty tins, empty boxes, fruts, vegetables.

Core competencies: Learners develop
Problem Solving Skills:
Critical Thinking:
Justification of ideas:
Collaborative learning.

Warming up
Play: “clap clap, tap tap”. Learners clap two times and tap their feet two times.

Main activities

Activity 1
- Give out 3D shapes to learners in their groups. Let them play with them.

Activity 2
- In their groups, let them group the objects according to sizes.
- All big objects in one group and all small objects in another group.

Activity 3
In pairs let learners identify objects which have flat and round faces. E.g.


Review exercise
In groups of three, let learners group the objects that are:
flat and round.
small and big.

Assessment for learning
Refer learners to practices 1 to 5 on pages 63-67 of their workbook for exercises.

Answers to workbook
Practice 1
Learners to colour.

Practice 2
1 Learners to tick ball and cross candy.
2 Learners to tick pencil and cross sharpener.

Practice 3
Flat objects --- 1, 3, 4, 6

Practice 4
Learners to colour 1, 3, 4

Practice 5

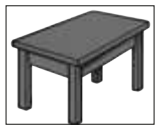

X


X


√


X


√


√

LESSON 5: Sorting 3D objects

WB: pages 68-72

Content standard
KG1.3.1.1: Describe the attributes of shapes, and sort a small collection of 3D objects according to given attributes.

Indicator
KG1.3.1.1.1: Identify 3-D objects according to attributes: e.g. colour, size and shape.

Learning outcome: Learners will be able to sort objects based on colour.

Essential for learning: Learners can sort objects based on shapes.

New words: sort, colour, round, flat.

Resources: crayons, pencils, balls, empty boxes, empty tins, plastic bowls.

Core competencies:
Learners develop Problem Solving Skills:
Critical Thinking:
Justification of ideas:
Collaborative learning.

Warming up
Have learners sing 'A circle is a shape'.

Main activities

Activity 1
- Put learners in their groups. Ask them to display their crayons on their tables and sort them according to colour.

Activity 2
- Give out 3D shapes to learners in their groups.
- Have learners sort the objects based on size. i.e. big objects and small objects.
- They should count the number for each.

Activity 3
- Have learners go outside the classroom.
- They collect different objects.
- When they return, let them sort their objects based on shape, size and colour.

Review exercise
Learners draw objects and colour it to be displayed in classroom.

Assessment for learning
Refer learners to practices 1 to 5 on pages 68-72 of their workbook for exercises.

Suggested homework
Learners draw two objects in their kitchen.

Answers to workbook
Practice 1
Learners to sort by same colour of objects.

Practice 2
Learners to sort by same colour of objects.

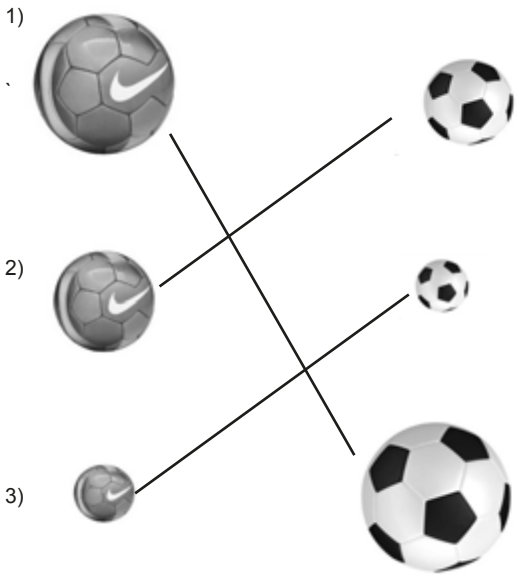
Practice 3

1) Sphere → orange
2) Cube → dice
3) Cylinder → chocolate drink tin

Practice 4

Big - 3, 4, 7, 10
Small - 5, 6, 8, 9

Practice 5



LESSON 6: 3D objects that can roll and cannot roll

WB: pages 73-75

Content standard
KG1.3.1.1: Describe the attributes of shapes, and sort a small collection of 3D objects according to given attributes.

Indicator
KG1.3.1.1.1: Identify 3-D objects according to attributes: e.g. colour, size and shape.

Learning outcome: Learners will be able to sort 3D objects according to given criteria (objects that can / cannot roll).

Essential for learning: Learners can identify objects that have flat or round face.

New words: round, smooth, roll

Resources: 3D objects, e.g. balls, empty tins, empty boxes, fruts, vegetables.

Core competencies:
Learners develop Problem Solving Skills:
Critical Thinking:
Justification of ideas:
Collaborative learning.

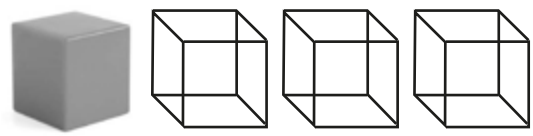
Warming up
Play: “clap clap, tap tap”. Learners clap two times and tap their feet two times.

Main activities

Activity 1
- Put learners into group of four.
  Give them the 3D shape.
  Ask learners to play with them.
- Let them group the objects according to sizes. All big objects in one group. Small objects in another group.

Activity 2
- Learners sort objects into two categories.
  Those that can roll and those that cannot roll.
  Objects that can roll: ball, oranges, milk, milo tins, round bottle, pen, pencils.
- Objects that cannot roll: all empty boxes, erasers, books, bags, etc.

Activity 3
- Have learners work in pairs. They group objects based on object, that can roll and cannot roll.


objects that cannot roll


objects that can roll

Review exercise
Learners draw one object that cannot roll

Assessment for learning

Refer learners to practices 1 to 3 on pages 73-75 of their workbook for exercises.

Answers to workbook

Practice 1

Object that can roll --- 2, 4, 5, 6.

Practice 2

1) Learners to trace and colour.
2) Learners to draw.

Practice 3

Objects that cannot roll --- 2, 4, 5, 7, 9.

Strand: 1

Number

Sub-strand 1: Whole Numbers: Operations, Relationship between numbers

WB: pages 78-80

LESSON 1: Addition (sum up to 5)

Content standard
KG1.1.2.1: Develop conceptual understanding of addition and subtraction.

Indicator
KG1.2.1.1: Understand addition as combing and finding how many altogether and subtraction as separating and finding how many left, numbers 0 to 5.

Learning outcome: Learners will be able to understand addition as conbining and finding how many altogether.

Essential for learning: Learners can count object and write numerals for the quantity.

New words: put together, altogether, makes, joining.

Resources: bottle caps, straws, numeral cards.

Core competencies:
Learners develop Problem Solving Skills:
Critical Thinking:
Collaborative learning.

Warming up

Play: “know my fingers”. Show a number of fingers and learners call out that number.

Main activities

Activity 1

- Call two girls to the front of the class. Ask: How many girls are there? (2). Ask one girl to go and join them.
- Ask: How many girls are there now? (2 + 1 makes 3). Repeat this activity with I boy and 3 boys.

Activity 2

- Put 3 books on the table.
- Count with the class. Call another boy to come and add 2.
- Ask the class to tell you the answer. 2 and 2 make 4.

Activity 3

- Put learners into groups of four.
  Note: (Try to change the group m embers from time to time.)
- Give them these scenario’s with their counters.

- I have 3 toffees. The KG2 teacher gives me 2 more. How many toffees do I have now?
- Kwasi has 1 counter, Mummy gave him 1 more. How many counters has Kwesi now?

Review exercise

Slow learners: Learners work in pairs to solve these:
2 straws and 2 straws make _____

Fast learners: Ask them to act out their own scenario for two questions.

Assessment for learning

Refer learners to practices 1 to 3 on pages 78-80 of their workbook for exercises.

Suggested homework

Solve these:

1. 2 mangoes and 1 mango make _____mangoes.
2. 3 erasers and 2 erasers make _____ erasers.
3. 3 footballs and 1 football make _____ footballs.

Answers to workbook

Practice 1

1) Learners to draw 5 squares.
2) Learners to draw 4 triangles.
3) Learners to draw 3 stars.

Practice 2

1) Learners to draw 2 buttons.
2) Learners to draw 5 eggs
3) Learners to draw 3 tomatoes.
4) Learners to draw 4 balls.

Practice 3

1) Learners to draw 4 oranges. [4]
2) Learners to draw 3 triangles. [3]
3) Learners to draw 5 bananas. [5]
4) Learners to draw 4 pencils. [4]

LESSON 2: Subtraction within 5

WB: pages 81-82

Content standard
KG1.1.2.1: Develop conceptual understanding of addition and subtraction.

Indicator
KG1.1.2.1.1: Understand addition as combining and finding how many altogether and subtraction as separating and finding how many left, for numbers 0 to 5.

Learning outcome: Learners will be able to understand subtraction as separating and finding how many are left.

Essential for learning: Learners can do addition with sum up to 5.

New words: subtract, difference, take way.

Resources: bottle caps, straws, numeral cards.

Core competencies:
Learners develop Problem Solving Skills:
Critical Thinking:
Collaborative learning
.

Warming up

Play: "one less than". Call out a number and learners subtract one from it and call out the number. E.g. 5➔4, 3➔2, 4➔3.

Main activities

Activity 1

- Call out four learners to the front of the class.
- Let the class count them and ask two to go and sit down. Ask these questions:
  How many were there altogether? → 4
  How many went to sit down? → 2
  How many are left? → 2
  So 4 take away 2 is 2.
- Repeat this activity with different learners and numbers.

Activity 2

1. Call a boy to count 5 books and put them on the table.
2. Let them count with the class. Call a girl to go and take 3. Ask these questions:
   How many books were there?➔5
   How many books were taken away? ➔3
- How many books are left? – 2.
  So 5 take away 3 is 2
- Repeat this activity with learners.

Activity 3

- Have learners work in groups of four to act out these situations:
- Give them sufficient straws and bottle caps.

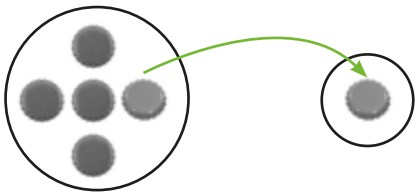
1. Dela has 3 erasers, he lost 1, how many are left?
2. Fosuah has 5 toffees, she ate 3, how many are left? Learners answer.

Activity 4

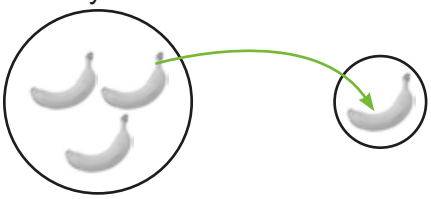
- Have learners work in pairs.
- One comes out with a scenario and

the partner comes out with counters to solve the problem.
- Let them take turns.

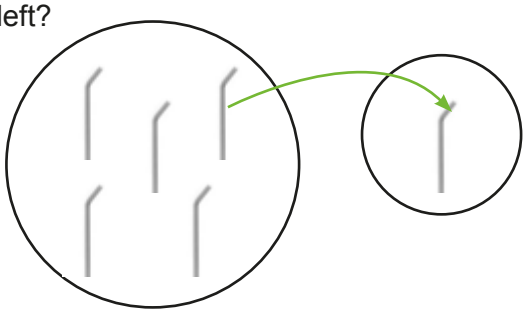
Activity 5
- Have learners work in groups of four.
- Have learners count 5 bottle caps.
- Ask them to separate 1 from it and tell how many are left.



Take 3 bananas and separate 1 from it, how many are left.



Separate 1 from 5 straws, how many are left?



Review exercise

Slow learners: Let them work in pairs and solve these:
Mummy picked 4 eggs for breakfast, she fell and broke 2. How many were left?

Fast learners: Give them counters to act their own stories and find answers.

Assessment for learning

Refer learners to practices 1 and 2 on pages 81-82 of their workbook for exercises.

Suggested homework

Solve these:
5 toffees take away 2, is.....
4 triangles separate 2 from them, is.....

Answers to workbook
Practice 1
1) 2
2) 1
3) 4
4) 3

Practice 2
1) 2
2) 3
3) 4

LESSON 3: Addition (6 to 9)

WB: pages 83-84

Content standard
KG1.1.2.1: Develop conceptual understanding of addition and subtraction.

Indicator
KG1.2.1.1: Understand addition as combing and finding how many altogether and subtraction as separating and finding how many left, for numbers 0 to 5.

Learning outcome: Learners will be able to understand addition as combining and finding how many altogether.

Essential for learning: Learners can combine two groups of objects with sum up to 5.

New words: combine, put together, altogether.

Resources: bottle caps, straws, numeral cards.

Core competencies:
Learners develop Problem Solving Skills:
Critical Thinking:
Collaborative learning.

Warming up

Play: "1 more than". Call out a number and the whole class add 1 to it and call the number. E.g.
2 ⟶ 3, 4 ⟶ 5, 3 ⟶ 4

Main activities

Activity 1

- Call a boy and a girl to the front of the class. Ask these questions:
  How many eyes have the two?
  2 eyes and 2 eyes make 4.

How many legs have the two? 2 legs and 2 legs make 4.

Repeat using parts of the body to get sum up to five.

Activity 2

- Put learners into groups of four.
- Give counters to them.
- Let them use the counters to act out these situations.

Daddy has 3 belts, uncle gifted him 3 more. How many has he now?
3 belts and 3 belts make 6 belts.

Dede has 4 pencils, Amina gave her 3 more. How many pencils has she now?

Activity 3

- Call out a boy and a girl to the front of the class to act out these situations.

- Put 10 erasers on your table.
- Ask the boy to take 4 and the girl to take 6.
- Ask each learner to count what he/she has to the class.
- Now ask the boy to give his to the girl. Now ask these questions:

1. How many has the girl? (6)
2. How many did the boy give to her? (4)

So 6 and 4 make what? (10).
Repeat this scenario with different numbers with the class.

Activity 4

- Put learners into groups of four. Give out bottle caps and straws to them.
- Let them act out these scenarios.

1. Nkrumah has 5 dolls, her Auntie brought her 2 more. How many dolls has she now?
2. Fuseni plucked 6 oranges, his friend added 3 more. How many mangoes has Fuseni now?

Activity 5

- Have learners work in pairs (fast learner and slow learners).
- They create their own scenarios and solve them.

Review exercise

Pair two slow learners and one fast learner. One create a situation and the two use counters to solve the addition situation. They create 2 different groups. Count the number of counters in each group and then put them together and find the total.

Assessment for learning

Refer learners to practices 1 and 2 on pages 83-84 of their workbook for exercises.

Suggested homework

Use your counters to solve these scenarios:
4 chocolates and 3 chocolates make _____
6 straws and 3 straws make _____
2 mangoes and 7 mangoes make _____

Answers to workbook

Practice 1

1) Learners to draw 6 cross marks.
2) Learners to draw 7 triangles.
3) Learners to draw 10 squraes.

Practice 2

1) Learners to draw 8 oranges.
2) Learners to draw 7 balls.
3) Learners to draw 6 pencils.
4) Learners to draw 9 cross marks.

LESSON 4: Subtraction (within 10)

WB: pages 85-86

Content standard
KG1.1.2.1: Develop conceptual understanding of addition and subtraction.

Indicator
KG1.2.1.1: Understand addition as combining and finding how many altogether and subtraction as separating and finding how many left, for numbers 0 to 5.

Learning outcome: Learners will be able to understand subtraction as separating and finding how many are left.

Essential for learning: Learners can do subtraction within 5.

New words: take away, separate, remove, how many left.

Resources: bottle caps, straws, numeral cards.

Core competencies: Learners develop
Problem Solving Skills:
Critical Thinking:
Justification of ideas:
Collaborative learning.

Warming up

Play: "1 less than". Call out a number and the class subtract 1 from it and call out the number. E.g. 1. 6 → 5
2. 9 → 8 3. 10 → 9

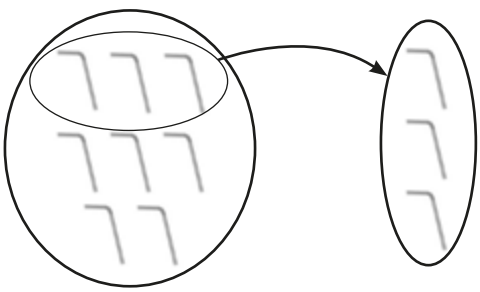
Main activities

Activity 1

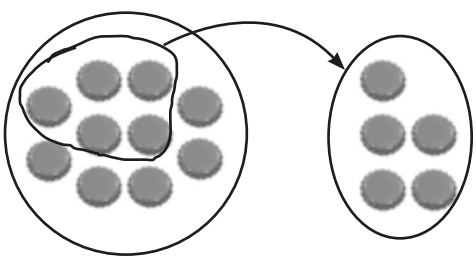
- Call out 9 learners to the front of the class (5 girls and 4 boys).
  Let them line up and the class count them.
- Ask 3 girls and 2 boys to come and sit down. Ask the following questions.
  How many learners were there? (9).
  How many went to sit down? (5).
- Count, how many are still standing? (4).
  So 9 take away 5 is what? (4).

Activity 2

- Have learners work in groups of two. Ask them to count 8 straws.
- Let them separate 3 from it.
- Let them tell you how many are left?



Ask them to count 10 bottle caps. Ask them to take away 6. How many are left?



Activity 3

- Create situations for learners to act out to get the answer.
- They use their counters.
  There were 9 birds on a tree, 3 flew away.
  How many are left?

Ask these questions:

1. How many are left?
2. How many birds flew away?
3. How many are left?
4. 8 bulbs are in a box. 3 got broken, how many bulbs are left.?

Ask these questions:

1. How many bulbs were in the box? (8)
2. How many got broken? (3)
3. How many are left? (6).

Activity 4

- Have learners work in pairs.
- Give them 10 counters.
- Repeat Activity 3 above until learners can use counters to represent and solve a subtraction sentence by creating a group, removing a certain number of counters in the group, e.g. Dela has 8 mangoes, he ate 4.
- How many are left? (Draw 8 mangoes and remove 4, how many are left?)

Review exercise

Pair 2 slow learners and 1 fast learner. They create their own scenarios and use counters to solve them.

Assessment for learning

Refer learners to practices 1 and 2 on pages 85-86 of their workbook.

Suggested homework

Draw objects to solve these:
6 triangles remove 4 how many are left?
9 circles, remove 6. How many are left?

Answers to workbook

Practice 1

1) 6
2) 4
3) 5
4) 6

Practice 2

1) 1
2) 4
3) 3
4) 2

LESSON 5: Decomposing of numbers (up to 5)

WB: pages 87-90

Content standard
KG1.1.2.1: Develop conceptual understanding of addition and subtraction.

Indicator
KG1.1.2.1.2: Compose and decompose numbers up to 5 using concrete materials.

Learning outcome: Learners will be able to decompose numbers up to 5 using concrete materials.

Essential for learning: Learners can do addition with sum up to 10.

New words: decompose, numbers, altogether, counters.

Resources: concrete materials, straw, bottle caps, numeral cards (1-5)

Core competencies:
Learners develop Problem Solving Skills:
Critical Thinking:
Collaborative learning.

Warming up

Play: “How many fingers up?” hold up fingers (1-5) the class call out the answer together.

Main activities

Activity 1

- Call out four boys to the front of the class.
- Demonstrate how different you can arrange the boys.

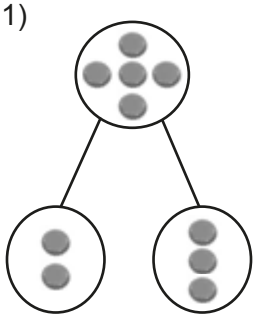
1. 3 and 1
2. 2 and 2
3. 1 and 3.

- As you re-arrange them, learners call out the new arrangement.
- Repeat with 5 girls, this time call a boy to come and arrange them in three different ways.

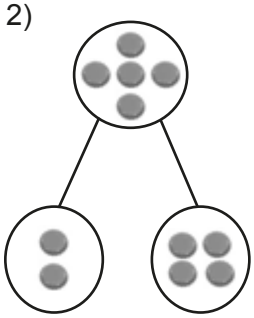
Activity 2

- Put learners into groups of four. Give them 5 counters.
- Ask them to decompose them in three different ways.

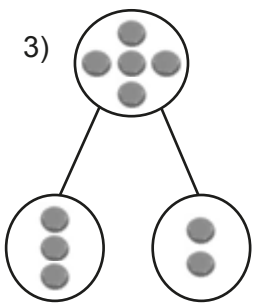
1)



2)



3)



Activity 3

- Have learners work in pairs now. Give them 5 counters each.
- Have them arrange the counters e.g. 1. four 2. three different ways.

Review exercise

Have learners work in groups of four. They decompose these numbers in two different ways.

1. 3 2. 4

Assessment for learning

Refer learners to practices 1 to 4 on pages 87-90 of their workbook for exercises.

Answers to workbook

Practice 1

1) 1 stars
2) 2 stars
3) 2 stars
4) 1 star
5) 2 stars

Practice 2

1) 1 apple
2) 2 triangles
3 3 triangles
4) 3 stars
5 1 die
6) 2 oranges

Practice 3

1) 4
2) 1
3) 2
4) 3

Practice 4

1)  3

2)  4

3)  1

4)  2

TERM THREE

Strand: 1

Number

LESSON 1: Composing and decomposing numbers (up to 10)

WB: pages 92-97

Content standard
KG1.1.2.1: Develop conceptual understanding of addition and subtraction.

Indicator
KG1.1.2.1.2: Compose and decompose numbers up to 10 using concrete materials.

Learning outcome: Learners will be able to decompose objects up to 10.

Essential for learning: Learners can decompose numbers up to 5.

New words: decompose, arrange, numbers.

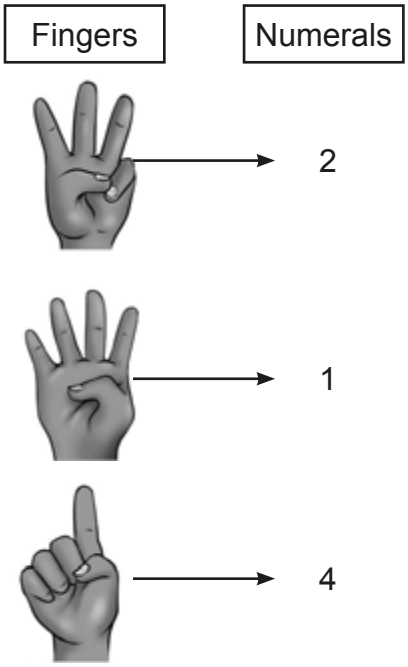
Resources: counters e.g straws, bottle caps.

Core competencies: Learners develop
Problem Solving Skills:
Critical Thinking:
Collaborative learning.

Warming up

Play: "How many to make 5?" Show a number of fingers and learners top up to make 5.

E.g.



Main activities

Activity 1

- Put 4 chairs in front of the class. Ask this question:

1. How many to make 6?
2. Learners count on and add 2 chairs to make 6.

Activity 2

- Call 4 girls to the front of the class. Ask the girls in the class:
  How many more to make the girls 7?
  Let 3 girls join them, counting on as 4,5,6,7.

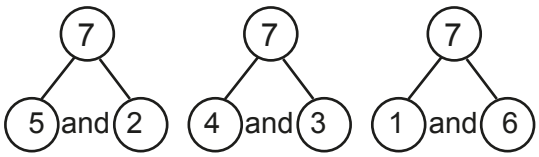
- Repeat this activity with 5 boys. Ask:
  How many to make 9?
  Then 4 boys join them.
  In each case let learners form a line.

Activity 3

Put learners into groups of three.
Give them 10 counters. Ask them to decompose them in 3 different ways. 10 as
7 and 3
6 and 4
5 and 5
3 and 7
2 and 8.

Activity 4

- Have learners work in pairs.
- Ask them to decompose 7 in 3 different ways.
- Let them use counters.



Review exercise

Slow learners: Have learners work in pairs. Let them use counters to decompose 1) 4 2) 6

Fast learners: Working in pairs give them 10 bottle caps to decompose
1) 6 2) 9 3) 10

Assessment for learning

Refer learners to practices 1 to 5 on pages 92-97 of their workbook for exercises.

Suggested homework

Use counters to decompose these numbers in different ways.
1) 5 2) 7 3) 9.

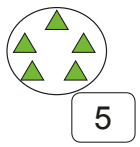
Answers to workbook
Practice 1

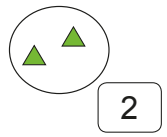
1) 

2) 

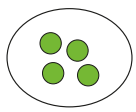
3) 

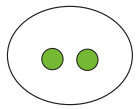
4) 

5) 

6) 

Practice 2

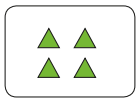
1) 

2) 

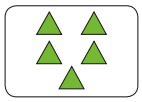
3) 1
4) 4
5) 3
6) 6

Practice 3

1)

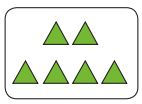


2)



3)

4)



Practice 4

1) 6
2) 4
3) 1
4) 3
5) 7

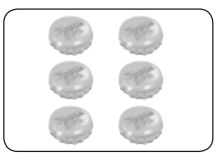
Practice 5

1)

2)

3)

4)



LESSON 2: Composing and decomposing numbers (2) (up to 10)

WB: pages 98-99

Content standard
KG1.1.2.1: Develop conceptual understanding of addition and subtraction.

Indicator
KG1.1.2.1.2: Compose and decompose numbers up to 10 using concrete materials.

Learning outcome: Learners will be able to decompose numbers up to 10 in different ways.

Essential for learning: Learners can decompose number of objects up to 10 in different ways.

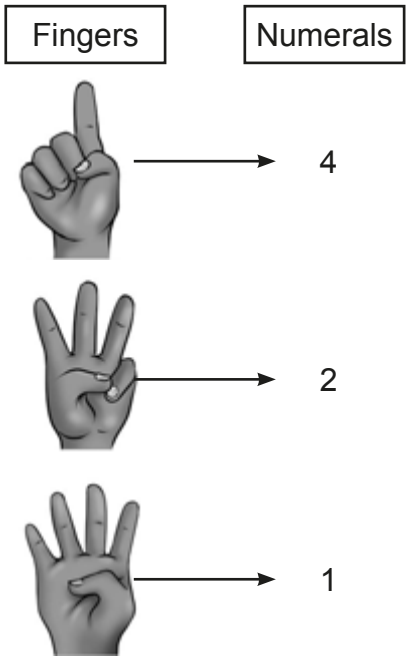
New words: decompose, arrange, numbers, different.

Resources: numeral cards (1-10), straws, bottle caps.

Core competencies: Learners develop
Problem Solving Skills:
Critical Thinking:
Collaborative learning.

Warming up

Play: "How many to make 5?" Show a number of fingers and learners call out a number when added to the fingers shown will make 5.
E.g. 1) 1 → 4 2) 3 → 2 4. 1



Main activities

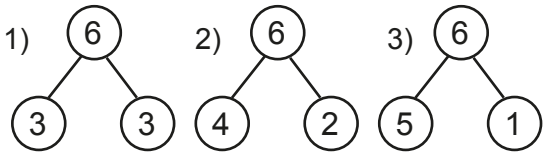
Activity 1

- Pick a numeral card [5] and show it to learners.
- Ask them to pick numeral cards sum up to 5 the cards should be displayed on the board as follows: → [5]

1) [4] and [1] 2) [3] and [2]

Activity 2

- Put learners into a groups of four. Give them numeral cards. Direct them to pick the numeral card 6. Now ask learners to pick three (3). 2 numbers which sum up to 6.



Activity 3
Have learners work in pairs (one fast and one slow learner). Let them decompose these numbers in three different ways.
1) 5 2) 7

Review exercise

Slow learners: Have learners work in pairs to decompose numbers in two different ways.
1) 4 2) 6

Fast learners: Have learners work in pairs to decompose these numbers in 3 different ways.
1) 7 2) 9 3) 10

Assessment for learning

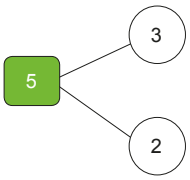
Refer learners to practices 1 and 2 on pages 98-99 of their workbook for exercises.

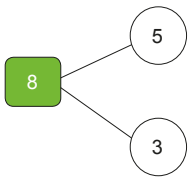
Suggested homework

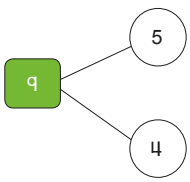
Decompose these numbers in three different ways.
1) 6 2) 7 3) 9

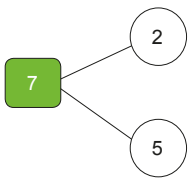
Answers to workbook

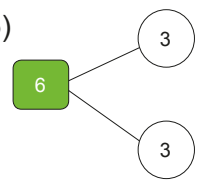
Practice 1

1)


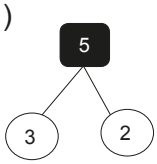
2)


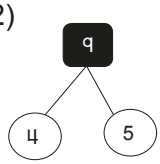
3)


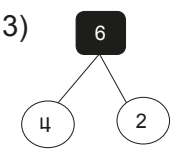
4)


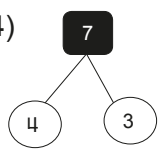
5)


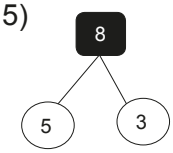
Practice 2

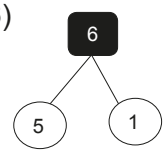
1)


2)


3)


4)


5)


6)


LESSON 3: Position of objects. (1)

WB: pages 100-101

Content standard
KG1.3.2.1: Describe the position of objects in space.

Indicator
KG1 the right, etc..3.2.1.1: Tell the position and motion of objects in space using such words as above, below, to the right etc.

Learning outcome: Learners will be able to describe the position of a given objects.

Essential for learning: Learners can describe the position of objects.

New words: position, describe, under, beside, in, below, inside.

Resources: ball, table, box, eraser, books, chairs, bottles.

Core competencies: Learners develop
Problem Solving Skills:
Critical Thinking:
Justification of ideas:
Collaborative learning.

Warming up
Have learners sing “I am counting one”.

Main activities

Activity 1
- Put your chair in front of the class.
- Call one learner to stand behind it.
- Ask: Where is Abiba? (Abiba is standing behind the chair). Now put a book on the chair.
- Ask the class to describe the position of the book. The book is on the chair.

Activity 2
- Have learners watch you.
  Put a big box in front of the class.
  Put a book inside it.
- Ask the class to describe the position of the book (the book is inside the box).

Activity 3
- Have learners work in groups of four
  They create their own situation using objects in the classroom. E.g. one stands beside/behind another person and the rest describe the position.

Review exercise
Work in pairs. Let them take two bottle caps.
They put one on top of the other.
They put an object in a box and describe its position.

Assessment for learning

Refer learners to practices 1 and 2 on pages 100-101 of their workbook for exercises.

Suggested homework

Ask learners to draw an object on top of a table.

Answers to workbook

Practice 1

1) a
2) a

Practice 2

1) Learners to colour the eraser beside the book.

2) Mamle
   Baba

LESSON 4: Position of objects (2)

WB: pages 102-103

Content standard
KG1.3.2.1: Describe the position of objects in space.

Indicator
KG1.3.2.1.1: Tell the position and motion of objects in space using such words as above, below, to the right etc.

Learning outcome: Learners will be able to describe position of objects.

Essential for learning: Learners can describe object which are on top or inside a box.

New words: describe, objects, first, second, third, fourth, fifth.

Resources: ordinal number cards 1st 2nd 3rd 4th 5th

Core competencies: Learners develop
Problem Solving Skills:
Critical Thinking:
Justification of ideas:
Collaborative learning.

Warming up

lLearners sing the song "I'm counting one".

Main activities

Activity 1

- Divide the class into five groups.
- Take them outside the classroom. Each group select one person to run 30 meter race.
- The group watch the position of their member.
- Back to the classroom, tag the runners with their positional cards.

Activity 2

- The group select another person from their group.
- They write the first name on the board.
- The first picks the 1st card with the masking tape and tag himself/herself.

Activity 3

- Let them fill the bottle.
- Give the groups equal capacity of water.
- The group select another learner from their group.
- They all start to fill the bottle with water.
- The first person to finish picks the 1st positional card, the second picks the 2nd card and so on.
- They tag it to themselves.

Review exercise

1. Have learners work in groups of two. They arrange bottle caps in line and determine the first to the fifth.
2. Draw five bowls and label the 1st to 5th.

Assessment for learning

Refer learners to practices 1 and 2 on page 102-103 of their workbook for exercises.

Answers to workbook

Practice 1

1) true
2) false
3) false
4) true
5) Tetteh

Practice 2

1) true
2) true
3) fale
4) false

LESSON 5: Position of numbers

WB: pages 104-105

Content standard
KG1.1.1.2: Describe numbers and the relationship between numbers 0, 6-9.

Indicator
KG1.1.2.5: Identifying numbers in differnt positions around a given number.

Learning outcome: Learners will be able to describe the position of numbers.

Essential for learning: Learners can describe the position of objects.

New words: describe, right, left, above.

Resources: number chart (1-10), number line, position of numbers.

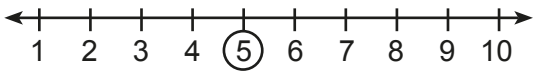
Core competencies:
Learners develop Problem Solving Skills:
Critical Thinking:
Justification of ideas:
Collaborative learning.

Warming up

Play: "How many to make 10?" Call out a number and learners call out another number which when added to the one you called make 10.

Main activities

Activity 1
Draw a number line on the board. Label it (1-10) circle 5.



Let learners tell you the numbers to the left and right of it. The numbers are 4 and 6 respectively.

Activity 2
Put number chart on the board. Learners work in groups of four.

2	5	9
1	8	4
6	7	3

Circle 7, Learners answer these questions:
1. What is the number to the left of 7?
2. Write two numbers above it.
3. What number is on the right?
4. What number is on the left?

Activity 3
- Put learners into groups of two. Give each group a number chart to describe a selected number.

2	7	0
10	8	2
4	1	۹

II am 8, describe me.

1. Write the number on my left.
2. Write the number above me.
3. What number is below me?

Review exercise

Slow learners: Give them number line cards. Circle 5. They write two numbers on the left and right of 5 respectively.

Fast learners: Give them number chart, they select a number on their own and describe the number.

Assessment for learning

Refer learners to practices 1 and 2 on pages 104-105 of their workbook for exercises.

Suggested homework

II am 10, describe me.

2	۹	6
3	10	5
1	8	4

1. What number is above me? Write
2. What number is below me? Write
3. Write the number on my left.
4. Write the number on my right.

Answers to workbook

Practice 1

1) Learners to colour 6 blue.
2) Learners to colour 2 red.
3) Learners to colour 4 yellow.
4) 2 and 7

Practice 2

1) ۹
2) 1
3) 2
4) 5

LESSON 6: Word problem involving addition

WB: pages 106-107

Content standard
KG1.1.2.1: Develop conceptual understanding of addition and subtraction.

Indicator
KG1.2.1.1: Understand addition as combing and finding how many altogether and subtraction as separating and finding how many left, numbers 0 to 5.

Learning outcome: Learners will be able to solve word problem involving addition with sum up to (5).

Essential for learning: Learners can put two groups of objects together and find the sum up to 10.

New words: altogether, add, put together.

Resources: bottle caps, straws, picture cards of addition problems, oranges, word problem cards.

Core competencies:
Learners develop Problem Solving Skills:
Critical Thinking:
Collaborative learning.

Warming up
Play: "clap my number". Call out a number and learners clap that number of times. E.g. 4, then learners clap 4 times.

Main activities

Activity 1
- Tell the class one word problem. There are 3 oranges on my table. The head teacher came to add 2 more. How many oranges do I have now?
- Call one girl and one boy to come and act the scenario. 3 oranges and 2 oranges make 5.

Activity 2
- Give another word problem and learners work in groups of two to solve it.
  Auntie Adwoa has 2 dresses. Her daughter added 2 more. How many dresses has Auntie Adwoa now? 2 and 2 make 4.

Activity 3
- Give out word problem cards with pictures to each group.
- They look at the pictures and solve the problems.

Review exercise
Slow learners: Work in pairs to solve this: Abiba has 2 cola nuts, Musa gave her 1 more. How may cola nut has she now?

Fast learners: Teacher Kwesi has 3 bulbs, the son bought him 2 more. How many bulbs has teacher Kwesi now?

Assessment for learning
Refer learners to practices 1 and 2 on pages 106-107 of their workbook for exercises.

Suggested homework

Solve these word problems:

1. There are 2 bottles on a table. Mawusi added 1. How many bottles are on the table now?
2. 3 birds on a tree, 2 flew to join them. How many birds are on the tree now?

Answers to workbook

Practice 1

1) 4
2) 4

Practice 2

1) 5
2) 5

LESSON 7: Word problem involving subtraction

WB: pages 108-109

Content standard
KG1.1.2.1: Develop conceptual understanding of addition and subtraction.

Indicator
KG1.2.1.1: Understand addition as combing and finding how many altogether and subtraction as separating and finding how many left, numbers 0 to 5.

Learning outcome: Learners will be able to solve word problem involving subtraction.

Essential for learning: Learners can separate/subtract a number of objects from a group of objects.

New words: take away, remove, separate, take away.

Resources: subtraction word card, bottle caps, straws.

Core competencies: Learners develop
Problem Solving Skills:
Critical Thinking:
Justification of ideas:
Collaborative learning.

Warming up

Play: "1 less than". Call out a number and learners subtract 1 from that number and call out the number.

Main activities

Activity 1

- Tell the class word problems on subtraction.
- They use their counters to solve it.

1. There are 4 birds on a tree. 3 flew away how many birds are on the tree now?
2. Ask: How many birds were on the tree? (4).
3. How many flew away? (3)
4. How many are left? (1).

Activity 2

- Put learners into groups of four. Give them the subtraction word problem cards.
- Read and interpret it in the local language for them to solve it. (there are 5 chocolates in a box. Daddy took 2. How many are left?) Learners use their counters to solve it.

Activity 3

- Learners pose their own word problem and solve them. They should work in groups of three.

Review exercise

Have learners work in pairs (one slow leaner and one fast learner). Give them word problem card to solve. They should use counters to help them. (There are 5 balloons hanged on the rope, 3 got burst. How many are left?)

Assessment for learning

Refer learners to practices 1 and 2 on pages 108-109 of their workbook for exercises.

Suggested homework

Solve these:
There are 4 toffees in my bag. I gave 1 to Fati. How many do I have now?
Aso has 5 cola nuts, she chews 4 of them. How many are left?

Answers to workbook

Practice 1

1) 2
2) 4

Practice 2

1) 3
2) 2

Strand: 3

Geometry and measurement

LESSON 1: Comparing length/height of objects

WB: pages 112-114

Content standard
KG1.3.3.1: Describe relationships between objects that have measurable attributes and sort a small collection of such objects according to given attributes.

Indicator
KG1.3.3.1.1: Develop an understanding of length, mass or capacity by sorting items into given measurable attributes. Eg small, long, thin, big, heavy etc.

Learning outcome: Learners will be able to compare two objects and determine the one which is shorter/ longer.

Essential for learning: Learners have been comparing their heights.

New words: compare, short, shorter, long, longer.

Resources: different lenghts of straws, sticks, pencils, ropes, empty blastic bottles.

Core competencies: Learners develop
Problem Solving Skills:
Critical Thinking:
Collaborative learning

Warming up
Play “clap my number”. Call out a number and the class clap to that number.

Main activities

Activity 1
- Call out two boys with different heights.
  Let them stand side by side or back to back.
  Now have learners compare their heights.
- They should use the expressions shorter than and taller than. E.g. Asante is taller than Kwesi so Kwesi is shorter than Asante.

Activity 2
- Put learners into groups of five.
  Give each group different objects.
- Put them at the same base and let them compare their lengths.

Activity 3
- Give learners longer sticks to compare the heights/lengths of tables and chairs in the classroom.
- Let them use the expression shorter than/taller than/longer than.
  E.g The stick is longer than the table

Review exercise
Let learners compare their heights with the teacher’s table.

Assessment for learning

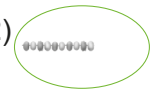
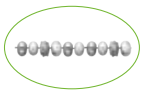
Refer learners to practices 1 to 3 on pages 112-114 of their workbook for exercises.

Answers to workbook

Practice 1

1) ☐

☑


2) ☑

☐


3) ☑

☐


4) ☐

☑

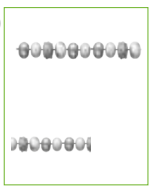

Practice 2

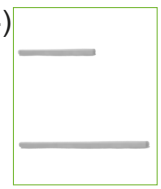
1) ☑

☐

2) ☐

☑

3) ☑

☐

4) ☐

☑

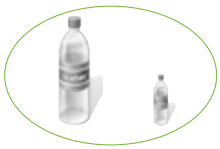
Practice 3

1) ☐

☑

2) ☑

☐

3) ☑

☐

4) ☐

☑

LESSON 2: Comparing capacities of containers

WB: pages 115-116

Content standard
KG1.3.3.1: Describe relationships between objects that have measurable attributes and sort a small collection of such objects according to given attributes.

Indicator
KG1.3.3.1.1: Develop an understanding of length, mass or capacity by sorting items into given measurable attributes. Eg small, long, thin, big, heavy etc.

Learning outcome: Learners will be able to compare capacities of two containers and determine which holds more or less.

Essential for learning: Learners can compare two objects and identify the one which is shorter or longer.

New words: holds more, holds less, capacity.

Resources: containers with different capacities, bowls of different sizes, plastic bottles, etc, water.

Core competencies: Learners develop
Problem Solving Skills:
Critical Thinking:
Justification of ideas:
Collaborative learning.

Warming up
Play "1 more than". Call out a number and learners add one to it and call out the number.

Main activities

Activity 1
- Show learners two containers of different sizes. Say I want to know which of these two containers holds more?
  Accept any answer they will give.
  Now fill one of the container with water.
  Pour the content into the other.
  If the second container cannot take or hold all the water, then it is smaller than the first.
  If it holds all the water and there is room for more, then the second container is larger than the first.
  Now let learners compare what you did by using the expression "holds more than" / "holds less than".

Activity 2
- Put learners into groups of four.
  Give them different sizes of containers.
  Let them take 2 containers, fill one with water up to the brim and pour all into the second container.
  They should use expression like "holds more than" / " holds less than".

Review exercise
Have learners work in groups of four. Give them 1 litre and 500 ml container. They fill them with water and compare the two.

Assessment for learning
Refer learners to practices 1 and 2 on pages 115-116 of their workbook for exercises.

Suggested homework

Learners compare their bowls and cups they use at home and determine the one which holds more or less water.

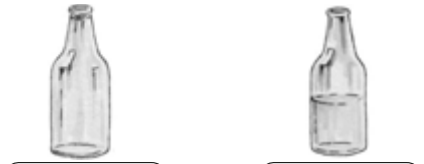
Answers to workbook

Practice 1

1) Learners to colour the bucket.
2) Learners to colour the pot.
3) Learners to colour the basin.
4) Learners to colour the kettle.
5) Learners to colour the laddle.
6) Learners to colour the bigger jar.

Practice 2

1)



more | less

2)

more | less

LESSON 3: Comparing weight of objects

WB: pages 117-118

Content standard
KG1.3.3.1: Describe relationships between objects that have measurable attributes and sort a small collection of such objects according to given attributes.

Indicator
KG1.3.3.1.1: Develop an understanding of length, mass or capacity by sorting items into given measurable attributes. Eg small, long, thin, big, heavy etc.

Learning outcome: Learners will be able to compare the weight of two objects and determine the one which weighs more / less.

Essential for learning: Learners can compare two containers and determine the one which holds more / less.

New words: compare, weight, heavy, light, leanier, lighter, scale.

Resources: leaves, stones, vegetables, books, cups, erasers, pencils.

Core competencies: Learners develop Problem Solving Skills:
Critical Thinking:
Justification of ideas:
Collaborative learning.

Warming up:
Play "1 more than". Call out a number and learners add one to it and call out the number.

Main activities

Activity 1
- Call a boy and a girl to the front of the class.
  Ask the learners to predict the one who weights heavy?
  Now call about four learners to come and lift them up and use the expression Kudjo is heavier than Akuvi so Akuvi is lighter than Kudjo.

Activity 2
- Put different objects on your table.
  Call learners to come up one at a time, they take two objects and hold them in their hands, to get a sense of the mass of the objects and compare them using the expression heavier than and lighter than.

Activity 3
- Put learners into groups of three.
- Give each group two different objects of different mass (e.g. a bottle of water and straw).
  Ask learners to predict which one is heavier or lighter?
  Let learners hold the objects in each of their hands to confirm their answer. using the term "lighter than / heavier than. i.e. the bottle of water is heavier than the straw so the straw is lighter than the bottle of water.

Activity 4
- Have learners go round the classroom to identify objects in the classroom. They should select any two of the objects and compare their weights.

- Guide them to describe the relationship using lighter than / heavier than. E.g.
  They compare a bag and duster The bag is heavier than the duster.

Review exercise

Give a litre bottle of water to each group (this is the main weight) as well as straws, bottle caps, stones and books. They work together to separate their objects into two groups of objects that are heavier than the litre bottle of water and objects that are lighter than the litre bottle of water.

Assessment for learning

Refer learners to practices 1 and 2 on pages 117-118 of their workbook for exercises.

Suggested homework

Learners compare two objects in the house. They report to their groups prediction and findings.

Answers to workbook

Practice 1

1) Learners to circle the lantern.
2) Learners to circle the stapler.
3) Learners to circle the table.
4) Learners to circle the key.
5) Learners to circle the banana.

Practice 2

1) Learners to tick the spoon.
2) Learners to tick the sliced orange.
3) Learners to tick the cup.
4) Learners to tick the bottle cap.
5) Learners to tick the tea cup.
6) Learners to tick the plastic bucket.

Strand: 4

Handling data

Strand 4: Handling data

Sub-strand 1: Data (Collection, Presentation, Analysis and Interpretation)

WB: pages 120-123

LESSON 1: Classification of objects

Content standard
KG1.4.1.1: Collect and present data using objects.

Indicator
KG1.4.1.1.1: Classify objects and count the number of objects in each category.

Learning outcome: Learners will be able to clasify objects into 3 categories and count the number for each.

Essential for learning: Learners can group/sort objects into a given cirteria and write numeral for each number.

New words: classify, sort, group

Resources: bottle caps, straws, cut-out shapes of 2Ds, fruits.

Core competencies: Learners develop Problem Solving Skills:
Critical Thinking:
Collaborative learning.

Warming up

Play “How many”. Clap a number of times and the class tell you the number. E.g. clap, clap, clap – 3 times.

Main activities

Activity 1

- Call 6 boys and 4 girls to the front of the class.
- Mix them up. Call the class leader to sort them according to their sex.
- Let the class count them.
  Boys: 6
  Girls: 4

Activity 2

- Put learners into groups of four. Give them Fanta, Malt and Pepsi caps.
- Ask them to sort them according to brands and write their numbers.
  Let them decide which cap are more or less and the total number of bottle caps.

Activity 3

- Give out cut-out shapes of 3Ds to each group.
  Let the members sort them according to shapes and colour.
  In each case let them write the number for each category.

Review exercise

Put learners into groups of four. Give them pencils, erasers and straws.
They sort and count them and write the numbers for each category.

Assessment for learning

Refer learners to practices 1 to 4 on pages 120-123 of their workbook for exercises.

Suggested homework

Learners count the number of spoons, cups, bowls in their homes and write the number.

Answers to workbook

Practice 1

1) 6
2) 4
3) yellow
4) 10

Practice 2

Triangles = 3
squares = 3
Circle = 4

Practice 3

1) 4
2) 2
3) 5
4) apples
5) oranges

Practice 4

1) 4
2) 3
3) 3
4) 10
5) cups

A

altogether with everything added together.
around in a circle.
arrange put (things) in a required order.

B

backwards in the direction of or toward the back.
below at a lower level or to a place that is lower.
beside by the side of something or next to (someone or something).
bottle caps the cover of bottles. usually used in counting.

C

capacity the ability to hold or contain people or things — usually singular.
classify to arrange (people or things) into groups based on ways that they are alike.
compare estimate, measure, or note the similarity or dissimilarity between. two or more things.
continue to keep doing something in the same way as before.
Count to recite numbers.
counters something that is used for counting.
create to cause (something new) to exist.

D

decompose express (a number or function) as a combination of simpler components.
difference the quality that makes one person or thing unlike another.
different not of the same kind.
describe to say what something or someone is like.

E

equivalent having the same value, use, meaning, etc.

F

flat having a smooth, level, or even surface.
forwards in the direction that one is facing or towards the front.

G

group a number of people or things that are located, gathered, or classed together.

H

heavy having great weight.

I

inside an inner side, edge, or surface of something.

J

joining putting or bringing two things together.

L

largest greatest in size or amount.
less than smaller relative to the other.
light not heavy.
long extending a great distance from one end to the other end.

GLOSSARY

M

match to make or see a connection or relationship between (two people or things).
missing unable to be found.
multiple a number that can be produced by multiplying a smaller number.

N

number an arithmetical value, expressed by a word, symbol, or figure, representing a particular quantity and used in counting and making calculations.

O

order place in a certain arrangement.

P

patterns a repeated decorative design.
position the spatial property of a place where or way in which something is situated.

R

remove to move or take (something) away from a place.
represent to be an example of (someone or something).
roll to move across the ground or another surface by turning over and over.
round having a circular shape.

S

scale a device that is used for weighing people or things.
separate to cause (two or more people or things) to stop being together, joined, or connected.
shape the form or outline of an object.
short having little length.
smooth having a flat, even surface.
sort to separate and put (people or things) in a particular order.
straws often made into bundles for counting.
subtract to take something away from a group or number of things.

T

trace to draw the outline of (something).

U

under in or to a lower place than (something)

W

weight a measurement that indicates how heavy a person or thing is.

ESSENTIAL

Mathematics

Kindergarten 1

Teacher' Guide

NNF BOOKS

ISBN 978-9988-8976-2-8

9 789988 897628