

ESSENTIAL



Mathematics

Primary 1

Teacher's Guide



CAMBRIDGE



ESSENTIAL Mathematics Primary 1

Teacher's Guide

Adwoa Nkrumah • Vida Takyi • Samuel Oppong Jnr
Mathematical Association of Ghana



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Modules and Lessons Organisation

| Strand 1: Number | | | | |
|--|---|-----------------|-----------------|----------------------------|
| Sub-strand 1: Number: Counting, Representation, Cardinality and Ordinality | | | | |
| Module | Lessons | LB page numbers | WB page numbers | TG page numbers |
| Module 1: Number names | Lesson 1: Number names (1-5) Lesson 2: Number Names (6-10) | 8 - 12 | 2 - 4 | 2 2 - 3 |
| Module 2: Reading and writing the numeral zero (0) | Lesson 1: The number zero (0) | 13 - 15 | 5 - 6 | 4 |
| Module 3: Counting Sequence (1) | Lesson 1: Counting forwards by 1s (1 - 20) Lesson 2: Counting backwards by 1s (20 - 1) Lesson 3: Counting forwards by 1s (20 - 60) Lesson 4: Counting backwards by 1s (60-20) Lesson 5: Counting forwards by 1s (60-100) Lesson 6: Counting backwards by 1s (100-60) | 16 - 20 | 7 - 9 | 5 6 6 7 7 8 |
| Module 4: Counting Sequence (2) | Lesson 1: Counting forwards by 2s (20-60) Lesson 2: Counting backwards by 2s (60-20) Lesson 3: Counting forwards by 2s (60-100) Lesson 4: Counting backwards by 2s (100-60) | 21 - 24 | 10 - 11 | 9 10 10 11 |
| Module 5: Counting Sequence (3) | Lesson 1: Counting forwards by 10s (1-100) Lesson 2: Counting backwards by 10s (100-1) | 25 - 27 | 12 - 14 | 12 13 |
| Module 6: Counting to find “how many” | Lesson 1: Count to find “how many” (up to 50) Lesson 2: Count to find “how many” (50-100) | 28 - 31 | 15 - 17 | 14 14 - 15 |
| Module 7: Ordinal numbers | Lesson 1: Ordinal numbers up to 10 th position. | 32 - 35 | 18 - 20 | 16 - 17 |
| Module 8: Describing the position of numbers | Lesson 1: Identifying numbers in different positions | 36 - 37 | 21 - 22 | 18 - 19 |
| Module 9: Using non-standard units for measuring (1) | Lesson 1: Counting to find how long (using objects) Lesson 2: Counting to find “how long” (using body parts) | 38 - 40 | 23 - 25 | 20 20 - 21 |

| | | | | |
|---|--|---------|---------|---------------------|
| Module 10: Using non-standard units for measuring (2) | Lesson 1: Counting to find “how much” (using water) Lesson 2: Counting to find how many (using objects) | 41 - 42 | 26 - 28 | 22 22 - 23 |
| Module 11: Comparing two groups of objects | Lesson 1: One more than Lesson 2: One less than | 43 - 47 | 29 - 32 | 24 25 |
| Module 12: Comparing and ordering numbers | Lesson 1: Comparing two numbers Lesson 2: Ordering numbers | 48 - 50 | 33 - 34 | 26 26 - 27 |
| Module 13: Numbers “one more” “one less” | Lesson 1: Finding “one more/ one less” | 51 - 53 | 35 - 37 | 28 |
| Module 14: Comparing numbers using the symbols $>$, $<$ or $=$. | Lesson 1: Comparing numbers using the greater than symbol ($>$) Lesson 2: Comparing numbers using the less than symbol ($<$) Lesson 3: Comparing numbers using the equals to symbol ($=$) | 54 - 57 | 38 - 40 | 29 30 30 |
| Module 15: Relationship between quantities/ numbers up to 100 | Lesson 1: Comparing two groups of objects (more than or less than). Lesson 2: Comparing two groups of objects (same as) | 58 - 62 | 41 - 44 | 31 32 |
| Module 16: Comparing and ordering numbers/ objects | Lesson 1: Ordering objects Lesson 2: Ordering numbers (smallest to greatest) Lesson 3: Comparing numbers (a lot or little bigger or smaller than another) | 63 - 68 | 45 - 47 | 33 34 34 - 35 |

Strand 1: Number**Sub-strand 2: Number Operations (Addition, Subtraction, Multiplication and Division)**

| Module | Lessons | LB page numbers | WB page numbers | TG page numbers |
|--|---|-----------------|-----------------|-----------------|
| Module 1: Addition of whole numbers up to 20 | Lesson 1: Addition as joining (sum up to 10) Lesson 2: Addition as joining (sum up to 20) | 72 - 76 | 48 - 51 | 36 36 - 37 |
| Module 2: Subtraction of whole numbers within 20 | Lesson 1: Subtraction as separation up to 10 Lesson 2: Subtraction as separation up to 20 | 77 - 82 | 52 - 54 | 38 39 |
| Module 3: Word problems (comparing 2 sets) | Lesson 1: Comparing 2 sets (equal to or same as) Lesson 2: Comparing 2 sets (not equal to) | 83 - 87 | 55 - 58 | 40 40 - 41 |

| | | | | |
|---|---|-----------|---------|----------------|
| Module 4: Word Problems (joining and separating) | Lesson 1: Word Problems (joining) Lesson 2: Word Problems (separation) | 88 - 92 | 59 - 61 | 42 43 |
| Module 5: Relationship between addition and subtraction | Lesson 1: Changing addition sentence to subtraction sentence Lesson 2: Changing subtraction sentence to addition sentence Lesson 3: Addition sentence to subtraction sentence and vice versa | 93 - 96 | 62 - 64 | 44 45 45 |
| Module 6: Word problems (addition and subtraction) | Lesson 1: Word problems (addition) Lesson 2: Word problems (subtraction) Lesson 3: Word problems (addition and subtraction) | 97 - 101 | 65 - 67 | 46 46 47 |
| Module 7: Addition and subtraction facts (fluency 1) | Lesson 1: One more/one less Lesson 2: Two more/two less | 102 - 105 | 68 - 70 | 48 49 |
| Module 8: Addition and subtraction facts (fluency 2) . | Lesson 1: Making doubles (1 - 5) Lesson 2: Making Doubles (6 -10) | 106 - 108 | 71 - 73 | 50 51 |
| Module 9: Addition and subtraction facts (fluency 3) | Lesson 1: Finding 10 more. Lesson 2: Finding 10 less | 109 - 111 | 74 - 75 | 52 53 |
| Module 10: Addition and subtraction facts (fluency 4) | Lesson 1: Making 5s Lesson 2: Making 10s | 112 - 114 | 76 - 78 | 54 54 - 55 |
| Module 11: Addition sum up to 20 (strategy 1) | Lesson 1: Counting on by 2s Lesson 2: Counting on | 115 - 117 | 79 - 80 | 56 56 - 57 |
| Module 12: Addition sum up to 20 (strategy 2) | Lesson 1: Making 10s to add Lesson 2: Making doubles | 118 - 121 | 81 - 82 | 58 59 |
| Module 13: Subtraction facts within 20 (strategy 1) | Lesson 1: Counting down Lesson 2: Finding the difference | 122 - 124 | 83 - 85 | 60 61 |
| Module 14: Subtraction facts within 20 (strategy 2) | Lesson 1: Using addition to subtract (1) Lesson 2: Using addition to subtract (2) | 125 - 127 | 86 - 87 | 62 63 |

| | | | | |
|---|---|-----------|---------|----|
| Module 15: Word problems involving addition (up to 20) | Lesson 1: Word problems (sum up to 10). | 128 - 131 | 88 - 90 | 64 |
| | Lesson 2: Word problems (sum up to 20) | | | 65 |
| Module 16: Word problems involving subtraction (within 20) | Lesson 1: Word problems (subtraction facts within 10) | 132 - 135 | 91 - 93 | 66 |
| | Lesson 2: Word problems (subtraction facts within 20) | | | 67 |

Strand 1: Number Sub-strand 3: Fractions

| Module | Lessons | LB page numbers | WB page numbers | TG page numbers |
|---|---|-----------------|-----------------|-----------------|
| Module 1: Understanding fractions (1) | Lesson 1: Unit as a whole | 139 - 140 | 94 - 95 | 68 |
| Module 2: Understanding fractions (2) | Lesson 1: One-half | 141 - 144 | 96 - 97 | 69 |
| | Lesson 2: Making halves | | | 69 - 70 |
| Module 3: Understanding fractions (3) | Lesson 1: Group as a whole | 145 - 146 | 98 - 99 | 71 |
| Module 4: Half of amounts | Lesson 1: Breaking whole into halves (1) | 147 - 149 | 100 - 101 | 72 |
| | Lesson 2: Breaking whole into halves (2) | | | 73 |
| Module 5: Number of halves in an object | Lesson 1: Finding number of halves in an object | 150 - 153 | 102 - 104 | 74 |
| | Lesson 2: Finding number of halves in shapes | | | 75 |

Strand 1: Number Sub-strand 4: Money

| Module | Lessons | LB page numbers | WB page numbers | TG page numbers |
|---|---|-----------------|-----------------|-----------------|
| Module 1: Recognising Ghanaian coins by name | Lesson 1: Identifying the 1, 5 and 10 Ghana pesewa coins | 156 - 159 | 105 - 106 | 76 |
| | Lesson 2: Identifying the 20 and 50 Ghana pesewa coins and the 1 Ghana cedi coin | | | 77 |
| Module 2: Relationship among the Ghana coins | Lesson 1: Relationship among coins (1) | 160 - 162 | 107 - 108 | 78 |
| | Lesson 2: Relationship among coins (2) | | | 79 |

Strand 2: Algebra**Sub-Strand 1: Patterns and Relationship**

| Module | Lessons | LB page numbers | WB page numbers | TG page numbers |
|---|--|-----------------|-----------------|-----------------|
| Module 1: Identifying and creating patterns (1) | Lesson 1: Making Patterns using numbers (1) Lesson 2: Making patterns using numbers (2) | 166 - 168 | 110 - 111 | 81 81 - 82 |
| Module 2: Identifying and creating patterns (2) | Lesson 1: Making patterns using shapes (1) Lesson 2: Making patterns using shapes (2) | 169 - 171 | 112 | 83 84 |
| Module 3: Identifying and creating patterns (3) | Lesson 1: Making patterns using sound Lesson 2: Making patterns using action | 172 - 174 | - | 85 86 |
| Module 4: Identifying errors in patterns | Lesson 1: Identify errors in patterns (1) Lesson 2: Identify errors in patterns (2) | 175 - 178 | 113 | 87 88 |
| Module 5: Representing patterns in different ways | Lesson 1: Patterns in different ways | 179 - 180 | 114 | 89 |
| Module 6: Patterns in real life. | Lesson 1: Pattern in and outside the classroom | 181 - 183 | 115 | 90 |

Strand 3: Geometry and Measurement
Sub-Strand 1: 2D and 3D Shapes

| Module | Lessons | LB page numbers | WB page numbers | TG page numbers |
|---|--|-----------------|-----------------|---------------------------------|
| Module 1: Naming and describing 2D shapes | Lesson 1: Naming 2D shapes Lesson 2: Attributes of a triangle Lesson 3: Attributes of a square Lesson 4: Attributes of a rectangle Lesson 5: Attributes of a circle | 188 - 191 | 118 - 119 | 92 92 93 93 94 |
| Module 2: Naming and describing 3D objects | Lesson 1: Naming 3D objects Lesson 2: Attributes of a cube and a cuboid Lesson 3: Attributes of a sphere and cone Lesson 4: Attributes of a cylinder Lesson 5: Comparing 3D objects | 192 - 195 | 120 - 122 | 95 96 96 97 97 - 98 |
| Module 3: Identifying 2D shapes in 3D objects | Lesson 1: Identifying 2Ds (1) Lesson 2: Identifying 2Ds (2) | 196 - 198 | 123 - 124 | 99 99 - 100 |
| Module 4: Making your own shapes | Lesson 1: Making 2Ds (1) Lesson 2: Making 2Ds (2) | 199 - 200 | 125 - 126 | 101 102 |
| Module 5: Sorting 3D objects | Lesson 1: Sort 3Ds by type Lesson 2: Sort 3Ds by colour | 201 - 203 | 127 - 128 | 103 103 - 104 |
| Module 6: Sorting 2D shapes | Lesson 1: Sorting 2Ds by type Lesson 2: Sorting 2Ds by colour | 204 - 206 | 129 | 105 106 |

Strand 3: Geometry and Measurement
Sub-Strand 2: Position/Transformation

| Module | Lessons | LB page numbers | WB page numbers | TG page numbers |
|--|--|-----------------|-----------------|-----------------|
| Module 1: Positions of objects | Lesson 1: Identifying the position of objects (1) Lesson 2: Identifying the position of objects (2) | 209 - 212 | 130 - 131 | 107 108 |

Strand 3: Geometry and Measurement**Sub-Strand 3: Measurement – Length, Mass and Capacity**

| Module | Lessons | LB page numbers | WB page numbers | TG page numbers |
|---|---|------------------------|------------------------|------------------------|
| Module 1: Comparing and measuring lengths | Lesson 1: Comparing lengths Lesson 2: Measuring lengths | 214 - 217 | 132 - 134 | 109 110 |
| Module 2: Comparing and ordering mass | Lesson 1: Comparing mass of objects Lesson 2: Ordering mass of objects | 218 - 221 | 135 - 137 | 111 112 |
| Module 3: Comparing and ordering capacity | Lesson 1: Comparing capacities Lesson 2: Ordering capacities | 222 - 224 | 138 | 113 114 |

Strand 4: Data**Sub-Strand 1: Data Collection, Organisation, Interpretation, Presentation and Analysis**

| Module | Lessons | LB page numbers | WB page numbers | TG page numbers |
|--|---|------------------------|------------------------|------------------------|
| Module 1: Collecting and handling data | Lesson 1: Sorting data (1) Lesson 2: Sorting data (2) | 228 - 232 | 140 - 142 | 116 117 |
| Module 2: Collecting and handling data (2) | Lesson 1: Interpretation of data Lesson 2: Picture graph | 233 - 236 | 143 - 145 | 118 119 |

INTRODUCTION

The aim of the primary Mathematics curriculum is to provide learners with opportunities to further their Mathematical knowledge and skills and ensure they develop the attitudes and dispositions required to be successful Mathematics learners.

The revised Mathematics curriculum is standards-based that seeks to equip learners with the requisite skills needed to do Mathematics in ways that is enjoyable and easy. The standards-based curriculum drives on the development of strong concepts, critical thinking skills and problem-solving abilities and capabilities. The Teacher's Guide with its accompanying learners' book and workbook offers full coverage of the 2019 Standards-based Mathematics curriculum for primary schools with a problem-solving and inquiry-based approach to the learning of Mathematics.

Each lesson is based on a '**Big Idea**', providing an engaging, exciting theme which is endorsed in a real-life context. The 'Big Ideas' are meticulously presented using the scaffolding and differentiated strategies to accommodate diverse learners in the Ghanaian classroom. Activities, exercises and investigations provide opportunities for learners to apply their knowledge, skills and understanding of the Mathematics they are learning. The series also offer additional teaching and learning resources and mental maths games to support teaching and extend learning.

This material supports teachers in planning and delivering successful Mathematics lessons. It provides a clear understanding of learners' pre-requisite skills through "Starters" and "Find out" activities before introducing new concepts. Through its reinforcement activities in the form of "Starters", regular revisiting and extension of previous learning is emphasized to ensure better understanding of concepts before new ones are introduced.

Organisation of the curriculum

The curriculum is organised under Strands, Sub-strands, Content standards, Indicators and exemplars.

- **Strands** are the broad areas/sections of the Mathematics curriculum to be studied.
- **Sub-strands** are larger groups of related indicators. Indicators from sub-strands may sometimes be closely related.
- **Content Standards** refers to the pre-determined level of knowledge, skill and/or attitude that a learner attains by a set stage of education.
- **Indicators** is a clear outcome or milestone that learners have to exhibit in each year to meet the content standard expectation. The indicators represent the minimum expected standard in a year.
- **Exemplars** refers to support and guidance which clearly explains the expected outcomes of an indicator and suggests what teaching and learning activities could take, to support the facilitators/teachers in the delivery of the curriculum.

This Teacher's Guide and its accompanying Learner's Book are organized under four strands and nine sub-strands:

- **Strand 1:** Number (Counting, Representation and Cardinality) Operations and Fractions.
 - Sub-strand 1: Numbers: (Counting, Representation and Cardinality)
 - Sub-strand 2: Numbers: (Operations)
 - Sub-strand 3: Fractions Representation and Relationship
 - Sub-strand 4: Money
- **Strand 2:** Algebra
 - Sub-strand 1: Patterns and Relationships
- **Strand 3:** Geometry and Measurement
 - Sub-strand 1: 2D and 3D Shapes
 - Sub-strand 2: Position and Transformation
 - Sub-strand 3: Measurements — Length, Mass and Capacity
- **Strand 4:** Data
 - Sub-strand 1: Data (Collection, Presentation, Analysis and Interpretation)

Time allocation

For adequate coverage of the curriculum, the following time allocation is advised for Basic 1: ten periods a week, 30 minutes per period. It is recommended that the teaching periods be divided as follows: 2 periods per day (two, 30-minute periods).

Classroom management

Most teachers in Ghana are working with large classes, and are skilled in large-class methodology. Here are a few reminders about group, pair and individual work that could be helpful with large classes.

Group work

Many of the activities, especially, those related to listening and speaking are done in groups. Group work needs to be carefully planned and used thoughtfully. For group work to be successful, the whole class has to be well behaved. Therefore it is important for you to set very definite ground rules.

- Learners must listen to each other.
- They must give all group members the opportunity to share their ideas.
- They must be polite and courteous.
- Tell learners exactly how loudly they are expected to talk.
- Inform them as to whether they are allowed to get up out of their seats or not.
- Make them aware of the consequences if they do not adhere to the ground rules.
- It is usually best to remove them from the group and for them to complete the activity on their own.
- Have signals that will tell your learners that the activity is coming to an end or the noise level is getting too loud, for example, flicker the lights on and off or ring a bell. It is best not to use your voice as you will end up shouting to be heard above the group discussions.

Circulate and supervise. This is not free time for you. You need to listen to discussions, check if groups have understood the instructions and conduct informal assessments.

Vary groups. Three to five members per group is ideal. If groups are too large, you will usually find someone not participating.

Pair work

Learners are often instructed to work in pairs – either with their desk mate, or with a partner. This is an ideal opportunity for learners to assist each other, and for them to assess each other.

- Working with a desk mate offers the least classroom disturbance. The learners are already seated side-by-side. They ask and answer questions during Picture talk, and they discuss the readings before they write comprehension answers individually.
- Working with a partner that you have allocated to the learner means that you can pair a slower learner with a faster learner, so that they can help one another. You may also choose to pair learners of similar abilities together, so that they can proceed more quickly with the work, while you assist the slower pairs.

Individual work

Individual work usually follows a group discussion, or a reading by you, the teacher. The learner will by this stage, be familiar with the vocabulary required for the individual work, and will usually have been involved in a discussion about the text. This means that he or she is now ready to work alone, and answer comprehensive questions.

While learners are working individually, walk around the classroom, checking what they are doing, and offering help where it is needed.

Learning areas (Strands)

Strand 1: Number

Number and number sense takes a bigger part of the entire B1 curriculum. It forms 64% of the curriculum. An understanding of number extends beyond mere recognition of number and counting. Learners are required to develop a conceptual understanding of number. That is, they understand the value of each number and can describe the relationship between numbers.

Learners should be able to solve everyday problems with their number sense.

Learners who have number sense know that there are not enough toffees for everyone if there are four toffees to be shared among five learners. Also, $95 > 59$ and $59 < 95$. Conceptual understanding of number is the major building blocks of Mathematics.

Besides, conceptual understanding of number operations goes well beyond memorizing basic facts and the steps to follow when adding, subtracting, multiplying or dividing numbers or fractions. It involves combining both the procedural and conceptual understanding to demonstrate what it means to add, subtract, multiply and divide, and the effect that these operations have on numbers.

Again, an important requirement of the standard-based curriculum involves encouraging learners to develop personal strategies that are accurate and flexible to compute. Developing personal strategies for adding, subtracting, multiplying and dividing as well as developing a variety of strategies for computing mentally (without pencil and paper) and for making reasonable mental estimations is an important requirement by the curriculum.

Further, number emphasizes on the development of conceptual understanding of place value, particularly in early primary. Given that place value is a foundational concept, the learning outcomes have been revised to embed an explicit focus on the development of place value understandings. Learners are required to use manipulatives to demonstrate an understanding of place value of numbers by telling the meaning of each digit in a given 2-digit number (when the two digits are different, as well as when the two digits are the same) and explaining why the value of a digit depends upon its placement within a numeral. Number also requires learners to recognise Ghanaian coins by name, including one pesewa, five pesewas, ten pesewas, twenty pesewas, fifty pesewas, one cedi, and two cedis by value and describe the relationship among them.

Strand 2: Algebra

Mathematics is often regarded as the science of patterns. When solving a complex problem, we frequently suggest to learners that they try to work on simpler versions of the problem, observe what happens in a few specific cases — that is, look for a pattern — and use that pattern to solve the original problem.

Algebra is about recognizing, describing and working with patterns. The standard-based curriculum requires Basic 1 learners to begin recognizing and describing relationships and eventually, extending given patterns and creating their own patterns. It involves learners working in pairs or groups to explore repeating visual or shape patterns, action patterns and number patterns. This pattern-based thinking, using patterns to analyze and solve problems, is an extremely powerful tool for doing Mathematics. Learners who are comfortable looking for patterns and then analyzing those patterns to solve problems can also develop understanding of new concepts in the same way. Most of the major principles of Algebra emerge as generalizations of patterns in number and shape. It is therefore expected that as they move through the grade levels, learners use their understanding of patterns to describe the relationship among numbers.

This Teachers' guide meticulously guides the Mathematics teacher to help learners recognize, generalize, and use patterns that exist in numbers, in shapes, and in the world around them. Learners who have such skills are better problem solvers, have a better sense of the uses of Mathematics, and are better prepared for work with algebraic functions and they move to higher grade levels than those who do not.

Strand 3: Geometry and Measurement

The standard-based curriculum requires learners to develop an understanding of the 3D objects and 2D shapes in their environment and classrooms. This includes recognizing the features or attributes that distinguish different shapes and objects from each other, as well as recognizing what attributes can be measured and how to measure them. It also involves

building personal referents for key standard measure of lengths, mass, capacity, area and volume and using these references to estimate measures. This Teacher's Guide aids teachers to employ broad array of tasks that are based on learning trajectories with varied examples and non-examples, nurtures visual cognition with progression towards analytical thinking, and integrates rich and diverse maths communication.

Strand 4: Data

Mathematics is about describing and explaining relationships, including the relationships in data, and describing those relationships symbolically, orally or in written form. In primary, learners develop these understandings by collecting, interpreting and presenting data and making decisions based on data collected.

The major question that this Teacher's Guide seeks to answer is that “What are the important concepts involved in data collection and data use in the primary classroom, and how can teachers support the Mathematics of data?” And this “Guide” helps teachers to teach the underlying concepts that learners need to grasp in order to make use of the data they collect, to understand the questions they are trying to answer, to represent the data, and, finally, to interpret it.

Assessment

Assessment is a process of collecting and evaluating information about learners and using the information to make decisions to improve their learning. In this curriculum, it is suggested that assessment is used to promote learning. Its purpose is to identify the strengths and weaknesses of learners to enable teachers ascertain their learner's response to instruction.

Forms of Assessment

Assessment in the curriculum is both **formative** and **summative**.

Formative assessment

refers to a wide variety of methods that teachers use to conduct in-process evaluations of student comprehension, learning needs, and academic progress during a lesson, unit, or

course. Formative assessments help teachers identify concepts that students are struggling to understand, skills they are having difficulty acquiring, and addressing these challenges.

Assessment “**for**”, “**as**” and “**of**” learning
Formative assessment is viewed in terms of Assessment as learning and Assessment for learning.

Assessment as learning

Assessment as learning relates to engaging learners to reflect on the expectations of their learning. Information that learners provide the teacher forms the basis for refining teaching-learning strategies. Learners are assisted to play their roles and to take responsibility of their own learning to improve performance. Learners are assisted to set their own goals and monitor their progress.

Assessment for learning

It is an approach used to monitor learner's progress and achievement. This occurs throughout the learning process. The teacher employs assessment for learning to seek and interpret evidence which serves as timely feedback to refine their teaching strategies and improve learners' performance. Learners become actively involved in the learning process and gain confidence in what they are expected to learn.

Assessment of learning

This is **summative assessment**. It describes the level learners have attained in the learning, what they know and can do over a period of time. The emphasis is to evaluate the learner's cumulative progress and achievement.

Core competencies

As part of the new Standard-based curriculum, a number of core values have been identified to be imbued into learners. They are ways in which teachers and learners in Mathematics engage with the subject matter as they learn the subject. **The series** adopts various learning activities that enable these core competencies to be well-developed in learners. Through the use of group and pair activities, learners develop team spirit

and communication skills. Resources suggested for lessons offer learners the opportunity to develop their digital literacy skills too.

The six core competencies identified for all Ghanaian learners are:

Critical thinking and Problem Solving (CP)

This promote self-directed thinking that produces new and innovative ideas in solving problems, reflecting critically on learning experiences and processes and making effective decisions. **The series** encourages learners to draw on their own experiences to analyse situations and choose the most appropriate out of a number of possible ways of arriving at a solution.

Creativity and Innovation (CI)

Promoting economic and social entrepreneurship; imagining and pursuing novel ideas, judging value, developing innovation and curiosity. **The series** offers learners the opportunity to develop their own personal and effective strategies to solve problems.

Communication and Collaboration (CC)

This competence promotes in learners the skills to make use of languages, symbols and texts to exchange information about themselves and their life experiences. Learners actively participate in sharing their ideas. They engage in dialogue with others by listening to and learning from them. They also respect and value the views of others. **The series** recognizes that communicating one's ideas about Mathematics is an essential process for learning Mathematics. When young learners communicate their understandings (or their misunderstandings), they reflect upon, expand and often clarify their ideas and understanding of number quantities and the relationship between them.

For that reason, the lessons in **the series** have been designed such that it include explicit opportunities for learners to discuss their own understandings, and to hear and react to the mathematical understanding of other learners. Learners are asked to use oral, visual and written forms (e.g., objects, pictures, diagrams, words, symbols) to express their thinking and to share that thinking with others.

They are expected to explain or justify solutions, and use appropriate mathematical conventions and vocabulary when doing so.

Cultural Identity and Global Citizenship (CG)

This competence involves developing active globally aware citizens who have the skills, knowledge and motivation to address issues of human and environmental sustainability. Developing an understanding of what it means to be a citizen of Ghana and its values. **The series** offers learners the opportunity to develop a Ghanaian identity through the use of examples and resources that are of Ghanaian origin and inculcate in learners the spirit of appreciation for what is made in Ghana.

Personal Development and Leadership (PL)

This competence involves improving self-awareness and building self-esteem. It also entails identifying and developing talents, fulfilling dreams and aspirations. Learners are able to learn from mistakes and failures of the past. They acquire skills to develop other people to meet their needs. It involves recognising the importance of values such as honesty and empathy, and seeking the well-being of others. PL helps them acquire the skill of leadership, self-regulation and responsibility necessary for lifelong learning. **The series** imbues this core value in learners through the use of group works and presentations.

Digital Literacy (DL)

Digital Literacy develops learners to discover, acquire and communicate through ICT to support their learning. It also makes them use digital media responsibly. **The series** offers learners the opportunity to use ICT tools to make learning of Mathematics interesting.

Expectations of a Basic 1 Mathematics learner

Teachers are to focus on the four critical areas of the B1 curriculum, and in doing so, they have to achieve all the content standards through the indicators.

Teachers should ensure that B1 maths learners will have strong conceptual and procedural understandings of foundations of maths and be able to:

NUMBER

Number: Counting, Representation, Cardinality & Ordinality

- Use number names, counting sequences and how to count to find out “how many”?
- Identify numbers in different positions around a given number (0 – 100).
- Use number names and non-standard units for measuring (lengths and volumes) to count to find out “how long or how much?”...up to 100.
- Use comparative language to describe the relationship between quantities/numbers up to 100 using place value and the number line.
- Represent the comparison of two number up to 100 using the symbols “>, < or =”.
- Describe the relationship between quantities/ numbers up to 100.

Number Operations

- Demonstrate an understanding of addition as joining and finding how many altogether and subtraction as separating and finding how many left; numbers 0 to 20.
- Use objects and pictorial models to solve word problems involving joining, separating and comparing sets within 20 and unknowns as any one of terms in problems such as $9 + 7 = []$, $13 + [] = 19$ and $14 - [] = 3$.
- Use relationship between addition and subtraction to demonstrate understanding of equality for numbers within 20.
- Generate and solve word problem situations when given a number sentence involving addition and subtraction of numbers within 20.
- Use strategies for solving basic addition facts (and related subtraction fact) to 10.
- Use counting on, counting down and missing addend strategies for adding and subtracting within 20.
- Solve one-step word problems involving addition and subtraction within 20 using a variety of strategies.

Fractions

- Understand the fraction one-half as the

quantity obtained by taking 1 part when a whole is partitioned into two equal parts.

- Count in halves using concrete and pictorial representations of halves.

Money

- Recognise Ghanaian coins by name, including one pesewa, five pesewas, ten pesewas, twenty pesewas, fifty pesewas and one cedi by value and describe the relationship among them.

ALGEBRA

Patterns and Relationship

- Demonstrate an understanding of repeating patterns with 2 to 4 repeating elements.

GEOMETRY AND MEASUREMENT

- Distinguish between attributes that define a two-dimensional figure or three-dimensional figure and attributes that do not define the shape.
- Identify three-dimensional shapes, including spheres, cubes, cylinders, rectangular prisms (including cubes), and triangular prisms and describe their attributes using formal geometric language.
- Identify two-dimensional shapes, including circles, triangles, rectangles and squares as special rectangles, rhombuses and hexagons and describe their attributes using formal geometric language.
- Tell the position of objects relative other objects in space using words such as above, below, to the right.
- Develop an understanding of measuring as a process of comparing pairs of items using words such as smaller, longer, thinner, heavier, bigger etc.

DATA

- Organize and represent (using pictures/ objects) data with up to three categories
- Organize a given set of data into three categories, find the total number of data points and determine how many are in each category and compare the number in any two category.

Expectations of a Basic 1 Teacher

If learners are to meet the expectations of the B1 curriculum, teachers will need to:

- 1 Have a mastery of the content standards and the indicators in the B1 curriculum.
- 2 Identify and teach concepts/indicators that are related. For example, when teaching counting, learners can be made to collect data about themselves on “how many of learners in the class like coca cola?”
- 3 Employ concrete objects effectively and accurately in all lessons so that learners develop strong conceptual understandings of concepts.
- 4 Encourage learners to develop personal strategies to solve problems.
- 5 Use reinforcement activities through the use of Starters and Mental maths games to make learning of the concepts easier and enjoyable.
- 6 Encourage inquiry and mathematical reasoning by providing learners with rich tasks or problems to explore and encouraging them to represent their understandings in different ways.
- 7 Encourage learners to communicate their mathematical thinking in the classroom by having them share their thinking on how they got solutions.
- 8 Talk and do less than the learners. Teachers need to listen more and spend most of the time in the classroom having learners explain or do (as opposed to teacher explaining or doing) or having them work with a partner to figure things out.
- 9 Research on new strategies that can help learners find easy ways of solving problems in Mathematics.
- 10 Create a welcoming **learning environment** both in and out of the classroom that encourages learners to find Mathematics an interesting subject that can be learnt easily.

SCOPE OF THE SUB-STRANDS

| Strands | Sub-strands | Basic 1 |
|--|--|---------|
| Number (Counting, Representation and Cardinality) Operations and Fractions | Numbers: (Counting, Representation and Cardinality) | ✓ |
| | Numbers: (Operations) | ✓ |
| | Fractions, Representation and Relationship | ✓ |
| | Money | ✓ |
| Algebra | Patterns and Relationships | ✓ |
| Geometry and Measurement | 2D and 3D Shapes | ✓ |
| | Position and Transformation | ✓ |
| | Measurements | ✓ |
| Data | Data (Collection, Presentation, Analysis and Interpretation) | ✓ |

Source: NaCCA, Ministry of Education 2019

SAMPLE YEARLY SCHEME OF LEARNING – BASIC 1

| Week | Term 1 (List of term 1 Sub-strands) | Term 2 (List of term 2 Sub-strands) | Term 3 (List of term 3 Sub-strands) |
|------|---|--|--|
| 1 | Counting, Representation, and Cardinality | Counting, Representation, and Cardinality, Operations (Addition and Subtraction) | Counting, Representation, and Cardinality, Operations (Addition and Subtraction) |
| 2 | Counting, Representation, and Cardinality | Counting, Representation, and Cardinality, Operations (Addition and Subtraction) | Counting, Representation, and Cardinality, Operations (Addition and Subtraction) |
| 3 | Counting, Representation, and Cardinality, Operations | Patterns, Operations (Addition and Subtraction) | Patterns, Operations (Addition and Subtraction) |
| 4 | Counting, Representation, and Cardinality, Operations, Patterns | Patterns, Operations | Patterns, Operations (Addition and Subtraction) |
| 5 | Counting, Representation, and Cardinality, Operations, Patterns | Fractions, Representation and Relationship, Patterns, Operations | Money, Patterns, Operations |
| 6 | Operations, Patterns | Fractions, Representation and Relationship, Patterns Operations | Money, Patterns, Operations |
| 7 | Operations, Patterns | Fractions, Representation and Relationship, Patterns, Operations | Fractions, Representation and Relationship, Operations |
| 8 | Operations, Patterns, 2D and 3D Shapes | Patterns, 2D and 3D Shapes, Positions and Transformations | Fractions, Representation and Relationship, Operations |
| 9 | Operations, Patterns, 2D and 3D Shapes | Patterns, 2D and 3D Shapes, Positions and Transformations | Patterns, 2D and 3D Shapes, Mass, Length and Capacity |
| 10 | Operations, 2D and 3D Shapes, Data | Data Operations | Patterns, 2D and 3D Shapes, Mass, Length and Capacity |
| 11 | Operations, 2D and 3D Shapes, Data | Data, Operations | Data Collection, Operations |
| 12 | Operations, Data | Data, 2D and 3D Shapes, Positions and Transformations | Data Collection, 2D and 3D Shapes |

Source: NaCCA, Teacher Resource Pack - 2019

Structure of the Teacher's Guide

The concise Teacher's Guide is organized under the following headings and features.

Strand

The relevant NaCCA, Ministry of Education 2019 curriculum Strand covered is in the sidebar.

Sub-Strand

NaCCA, Ministry of Education 2019 curriculum Sub-strand covered.

Page reference

You will find LB and WB page references on the top right/left for each module.

Essentials for Learning

This feature indicates the list of knowledge, skills and understanding that learners are expected to possess in order to successfully go through the lesson. It helps to diagnose learners' difficulty and puts the teacher in a better position to teach the day's lesson. This is useful for diagnostic assessment.

Resources

Helps to aid preparation. The series identifies all the relevant resources necessary to deliver a successful lesson. Resources identified are mostly "NO COST" or "LOW COST" materials that teachers can easily acquire to make their lessons more meaningful and enjoyable.

Lesson title

Each lesson is clearly stated and given a title. The title is linked to the module.

Let us Learn

Recommended teaching time: 20 min.
It is the main teaching activity which is broken down into clear steps to support teachers in achieving the lesson indicator(s), and facilitate interaction with the whole class. Suggested statements and questions to ask are provided to support the teacher.

Number

1

Sub-Strand

Number: Counting, Representation, Cardinality & Ordinality

Learner's Book page 8
Workbook page 2

Module I: Number names

Content Standard
B1.1.1.1: Describe numbers and the relationship between numbers 0 to 100.

Indicator
B1.1.1.1.1: Use number names, counting sequences and how to count to find out "how many?"

Learning Expectation
Learners need to be able to: read and write number names from (1-9).

Essentials for Learning
Learners can write numerals from (1-10).

New words
Number names, one, two, three, four, five, six, seven, eight, nine.

Resources
Number name cards and numeral cards from one to nine, bottle caps, straws.

Number of Lessons 2

Lesson 1: Number names (1-5)

Starter
Sing a song: "A circle is a shape"

Find Out
Refer learners to page 8 of the Learner's Book. Deduce from learners if they can mention any of the names there. Expected answers one, five, nine, etc.

Let us Learn

- Have learners count forwards and backwards (1-9).
- Put them into groups of 5. Give them numeral cards (1-5) and number name cards (one-five) to each group. Arbitrarily they pick objects from one to five, pick a numeral card and a number name card to match the objects (*collaborative learning*).
- Refer to Learner's Book page 8. Learners count the dice there up to 5, pick a numeral card and a number name card to match them one by one. (*collaborative learning, critical thinking*)

Review Exercise

Differentiated Lessons

Low Ability Learners

- Give them numeral cards 1-3. They make groups of objects (1-3) pick a numeral card and number name cards and match them to the groups of objects made. They should work in pairs.

High Ability Learners

- In groups of 5, learners work with bottle caps and number name cards. They make groups of objects (1-5) arbitrarily and match the number names cards to the groups made. Let them also write the number names up to "five".

Assessment for Learning
Refer learners to page 10 - 11 of their Learner's Book for exercises.

Suggested Homework
Write number names for these numerals

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

Lesson 2: Number names (6-10)

Starter
Sing a song "I'm counting one"

Find Out
Refer to Learner's Book page 8. Learners now read some number names written there.

Let us Learn

- Working in pairs, learners pick objects to represent a number (6-9) that you have called out. They pick a numeral card and a

Differentiated Lessons

With increasing awareness of diversity in our classroom, the series offers teachers the opportunity to address these diversities in the classroom. Conscious effort is made to challenge high ability learners while offering extra support to low ability learners.

Module

This feature is the description of the lessons to be taught. The Module is a broad presentation of the concept that would be taught in a number of lessons.

New words

Every lesson in the series identifies key words that learners are expected to know and use appropriately. These are relevant to the lesson.

Number of Lessons

This specifies the number of lessons that are to be taught under each Module.

Content Standard

This feature indicates the broad expectations under the strands that learners are expected to achieve in the course of completing that grade level.

Indicator

This feature indicates the specific things that learners need to know and be able to demonstrate in order to achieve the content standards. Modules (lessons) are generated from these indicators.

Review Exercise

Recommended time: 5 min.
Offers teachers the opportunity to go over the lesson for learners to make reflective comments about their learning, as well as to discuss misconceptions and common errors, and summarise what they have learnt.

Suggested Homework

In every Module/lesson, an exploration of the concepts learned in the classroom is further extended to the home. The series suggests relevant home activities that help learners to augment and consolidate what has been learnt in the classroom and its real life application where necessary.

Learner's Book page 21

Workbook page 10

Sub-Strand

Number: Counting, Representation, Cardinality & Ordinality

Module 4: Counting sequence (2)**Content Standard**

B1.1.1.1: Describe numbers and the relationship between numbers 0 to 100.

Indicator

B1.1.1.1.1: Use number names, counting sequences and how to count to find out "how many?"

Learning Expectation

Learners need to be able to count forwards between two given numbers (20-60).

Essentials for Learning

Learners can count in 1s from 1-100.

New words

Forwards, backwards, counting, twos.

Resources

100-number charts, number line charts, numeral cards (30-40).

Number of Lessons **6****Lesson 1: Counting forward by 2s (20-60)****Starter**

Play counting forwards and backwards (1-10).

Find Out

Refer to Learner's Book page 21. Learners identify and mention objects from real life that come in twos or pairs, e.g. eyes, a pair of shoes, ears.

Let us Learn

- Refer to Learner's Book page 21. Learners identify and mention objects from real life that come in twos or pairs, e.g. eyes, a pair of shoes, ears.
- They can start from any number. (**critical thinking**)
- Put learners in groups of five. Give each group a 100-number chart.
- Let them count aloud in twos from 21 to 60. Make sure everybody takes part. They can start from any number. (**collaborative learning**)
- Refer learners to Let us learn:1 (1) on page 21, they count forwards by 2s following the frog jumps.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Give (1-50) number charts to them, and let them count forwards from 1 to 20 and 20 to 40.

High Ability Learners

- Give them 100-number charts and have them complete them. Ask them to skip count up to 60 in 2s from any number.

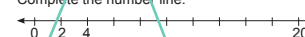
| | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|-----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 |
| 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 |
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 |
| 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 |
| 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |

Assessment for Learning

Refer learners to exercise 1 on page 23 of the Learner's Book.

Suggested Homework

Complete the number line.



9

Assessment for Learning

The feature specifies questions/activities crafted to assist teachers in checking learners' understanding of the lesson indicator(s). These questions are the "Exercises" in the Learner's Book.

Number

Learning Expectation

Are provided to help both teachers and learners identify what learners are required to know, understand and do in order to achieve the learning indicator(s).

Starter

Recommended teaching time: 5 min.

Identifies some mental math (games) activities that reinforce concepts learnt. Starters help in preparing learners for new skills, methods or concepts, reinforcing previous steps necessary for this new learning/lesson.

Find Out

Recommended teaching time: 10 min.

Teases learners knowledge on the 'big idea' of the lesson. This feature is intended to act as a foundation for discussion and investigation and is aimed at getting the learners engaged in the lesson. It helps learners discover by thinking critically.

Content Standard

B1.1.1.1: Describe numbers and the relationship between numbers 0 to 100.

Indicator

B1.1.1.1.1: Use number names, counting sequences and how to count to find out "how many?"

Learning Expectation

Learners need to be able to: read and write number names from (1-9).

Essentials for Learning

Learners can write numerals from (1-10).

New words

Number names, one, two, three, four, five, six, seven, eight, nine.

Resources

Number name cards and numeral cards from one to nine, bottle caps, straws.

Number of Lessons **2**

Lesson 1: Number names (1-5)

Starter

Sing a song: "A circle is a shape"

Find Out

Refer learners to page 8 of the Learner's Book. Deduce from learners if they can mention any of the names there. Expected answers one, five, nine, etc.

Let us Learn

- Have learners count forwards and backwards (1-9).
- Put them into groups of 5. Give them numeral cards (1-5) and number name cards (one-five) to each group. Arbitrarily they pick objects from one to five, pick a numeral card and a number name card to match the objects (**collaborative learning**).
- Refer to Learner's Book page 8. Learners count the dice there up to 5, pick a numeral card and a number name card to match them one by one. (**collaborative learning, critical thinking**)

Review Exercise

Differentiated Lessons

Low Ability Learners

- Give them numeral cards 1-3. They make groups of objects (1-3) pick a numeral card and number name cards and match them to the groups of objects made. They should work in pairs.

High Ability Learners

- In groups of 5, learners work with bottle caps and number name cards. They make groups of objects (1-5) arbitrarily and match the number names cards to the groups made. Let them also write the number names up to "five".

Assessment for Learning

Refer learners to page 10 - 11 of their Learner's Book for exercises.

Suggested Homework

Write number names for these numerals

- 5
- 2
- 3
- 1
- 4

Lesson 2: Number names (6-10)

Starter

Sing a song "I'm counting one"

Find Out

Refer to Learner's Book page 8. Learners now read some number names written there.

Let us Learn

- Working in pairs, learners pick objects to represent a number (6-9) that you have called out. They pick a numeral card and a

Answers

Answers are provided for all: Exercises in the Learner's Book as well as all Trials in the Workbook.

NSWERS

Learner's Book

d 1: Number

strand 1: Number: Counting, representation, cardinality & ordinality

le 1: Number names

ise 1 Page 10

- 1 two → 2
→ 3 four → 4
→ 5 six → 6
→ 7 eight → 8
→ 9

ise 2 Page 11

- ie → C, H four → A
o → D, E five → B, F
ee → G

ise 3 Page 12

Check on learners' answers

le 2: Reading and writing the numeral zero (0)

ise 1 Page 14

Check on learners' answers

ise 2 Page 14

- 0 b. 1 c. 4 d. 2 e. 0 f. 5
a. 4 b. 0 c. 1 d. 0 e. 2

Exercise 4 Page 19

Check on learners' answers

Exercise 5 Page 20

1. 63, 68, 87, 70, 71
2. 71, 83, 74, 94, 99
3. a. 61 b. 69 c. 80 d. 91 e. 99

Exercise 6 Page

1. 70, 69, 68, 67, 66, 65, 64
2. 81, 80, 79, 78, 77, 76, 75
3. 100, 99, 98, 97, 96, 95, 94
4. 85, 84, 83, 82, 81, 80, 79

Module 4: Counting sequence (2)

Exercise 1 Page 23

1. 35 37 39 41 43
2. 26 28 30 32 34
3. 47 49 51 53 55

Exercise 2 Page

1. 43 41 39 37 35
2. 34 32 30 28 26
3. 60 58 56 54 52

Exercise 3 Page 24

Strand: Number

Sub-strand 1: Number: Counting, representation, cardinality & ordinality

Module 1: Number names

Trial 1 Page 2

- 1 → One 2 → two 3 → three
4 → four 5 → five 6 → six
7 → seven 8 → eight 9 → nine

Trial 2 Page 3

- 1 → e 2 → d 3 → b
4 → a 5 → c

Trial 3 Page 4

- six → pencils
seven → balloons
eight → cubes
nine → eggs
nine → books

Module 2: Reading and writing the numeral zero (0)

Trial 1 Page 5

- 1 a. 2 b. 0 c. 4 d. 0 e. 6
2 a. 0 b. 7 c. 0 d. 1 e. 0
3 a. 5 b. 0 c. 0 d. 0 e. 9

Trial 2 Page 6

13 zeros must be circled.

Workbook

ANSWERS

Trial 3 Page 9

- 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

Module 4: Counting sequence (2)

Trial 1 Page 10

- 1 42
2 2, 4, 6, 8, 10, 12, 14
3 4, 6, 8, 10, 12, 14
4 10, 8, 6, 4, 2, 0
5 86, 84, 82, 80, 78, 76, 74, 72

Trial 2 Page 11

- 1 2, 4, 6, 8, 10, 12, 14, 16, 18, 20
2 1, 3, 5, 7, 9, 11, 13, 15, 17, 19
3 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26

Trial 3

- 100 98 96 94 92 90 88 86
84 82 80 78 76 74 72 70
68 66 64 62 60 58 56 54
52 50 48 46 44 42 40 38
36 34 32 30 28 26 24 22
20 18 16 14 12 10 8 6
4 2

Organisation and structure of the Learner's Book

The user-friendly Learner's Book tackles the new standard-based Mathematics curriculum features and criteria with a clear and logical structure that incorporates the following features.

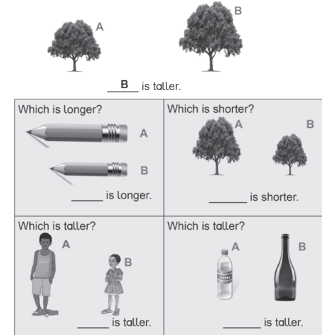
Revision Exercises - From KG

This precedes the main content and lessons in the Learner's book. Encourage learner's to do them to serve as a recap of what they learnt from KG.

REVISION EXERCISES - From Kindergarten

Answer the following.

Example: Which is taller?

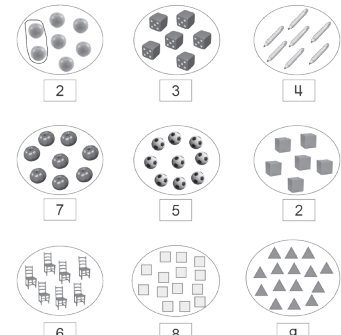


4

REVISION EXERCISES - From Kindergarten

Count and circle the correct number of objects.

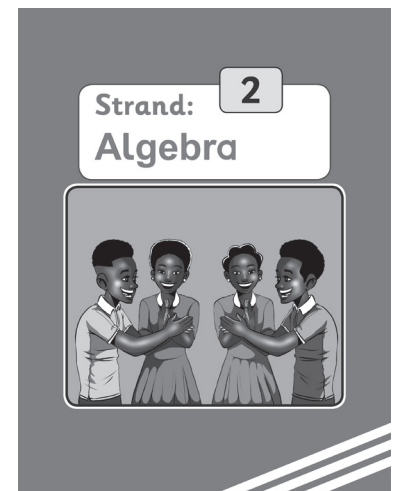
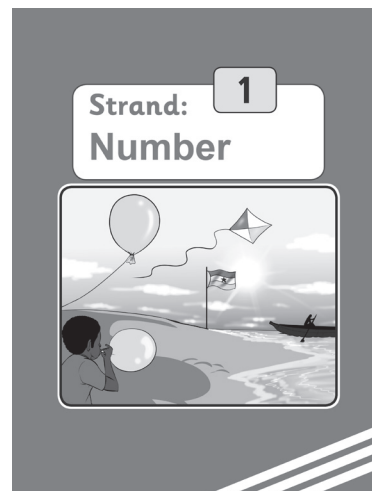
Example



1

Strand starter

There are four “strands” in the Learner's Book – one for each strand of the Mathematics curriculum. This precedes the beginning of contents under each strand.



Header and footer labels

Module: This is a broad presentation of the concept that would be taught in a number of lessons.

Indicator: This feature specifies the indicator that the lessons were developed from.

Sub-strand: These are larger groups of related mathematics topics to be studied under each strand.

Strand: This feature indicates the particular strand from which the lessons are developed.

BI.2.1.1.1

Sub-Strand

PATTERNS AND RELATIONSHIPS

Module 1

Identifying and creating patterns (I)

Algebra

167

New words and a Glossary

Every module in this series identifies the key words that learners are expected to know and use them appropriately through different lessons.

New words

- **zero**
- **numeral**
- **nothing**

GLOSSARY**N**

nine being one more than eight
 ninth coming next after the eighth position and before the tenth position
 number give numbers to
 nothing not anything; no thing
 number bond the relationship between a number and the part that combines to make the number
 numeral a symbol used to represent number
 O
 one being a single unit
 one less being fewer than the other by one
 one more being more than

P

pairs a set of two similar things considered as a unit
 part a portion of an object
 pattern graphical representation of a structure in a particular way
 pesewa a Ghanaian currency name
 plus sum/add
 position the spatial property of a place where or way in which something is situated.
 R
 rectangle a parallelogram with four right angles
 remainder something left after other parts have been taken away or the number that remains after subtraction
 repeat do over, occur again,

Find out

Recommended time: 10 minutes.

This begins every module. It teases learners knowledge on the 'big idea' of the lessons. This feature is intended to act as a foundation for discussion and investigation and is aimed at getting the learners engaged in the lesson. It brings out the **critical thinking** abilities of the learners.

Find out

What are the missing numbers?

**Let us learn**

Recommended time: 20 minutes.

This is the main teaching activity which is broken down into clear steps to support teachers in achieving the lesson indicator(s), and facilitate interaction with the whole class. Suggested statements and questions to ask are provided to support the teacher.

Let us learn

A. How many oranges are in each bowl?

A

5

B

0

C

3





There are 5 oranges in **A**.
 There are 3 oranges in **C**.

There is no orange in **B**
 or there is nothing in **B**.
Nothing means zero.



Zero is written as 0

Let us do an activity

This feature indicates how practical lessons should be taught. Activities could be pair work () or group work (). It is done to promote collaborative learning among learners.

Let us do an Activity**Work in pairs**

One person selects a number from the number chart. The other describes the position of the number. Change over until you have covered all the numbers.



| | | | |
|----|----|----|----|
| 3 | 9 | 30 | 15 |
| 12 | 27 | 33 | 18 |
| 21 | 42 | 24 | 36 |
| 39 | 48 | 6 | 45 |

Exercise

Recommended time: 10 minutes.

'Let Us Learn' is followed by **Exercises** where learners practice and consolidate what they have been taught. This provides an opportunity for all learners to strengthen their newly acquired knowledge. Additional exercises are provided in the Workbook.

Exercise 1

- 1 Look at the circled numbers in the table. complete these statements.

| | | | |
|----|----|----|----|
| 4 | 40 | 32 | 38 |
| 24 | 12 | 48 | 8 |
| 36 | 68 | 44 | 16 |

- a _____ is just above 36
- b _____ is 2 places to the right of 36
- a _____ is below 12
- b _____ is to the left of 12
- e List the numbers which are to the right of 12

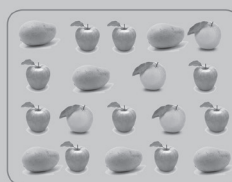
Reflection Exercise

Find this feature at the end of every sub-strand.

- helps learners to revise what they have learnt
- offers another opportunity to promote problem-solving and subject understanding.

Reflection Exercise 9

- 1 Sort the fruit.



- 2 Complete the table below and answer the questions.

| Fruits | Tally |
|--------|-------|
| | |
| | |
| | |

- 3 How many fruits altogether?

- 4 How many mangoes are there?

- 5 How many oranges are there?

- 6 How many more apples than mangoes are there? _____
- 7 Of which fruit are there the least? _____

Self-assessment

This comes immediately after reflection exercise.
Why must we assess our learners.
Usually, it's to improve learning.

When we let learners assess themselves, the results are pride in their learning, a sense of ownership of their efforts, and increased higher-order thinking capacity.

Self-assessment

| I can ... | Yes | Not sure | No |
|---|-----|----------|----|
| write number names up to nine. | | | |
| read and write the numeral zero. | | | |
| count forwards and backwards by 1s, 2s and 10s. | | | |
| count to find out how many. | | | |
| order positions from 1st to 9th. | | | |
| identify numbers in different positions. | | | |
| use objects to measure length by counting. | | | |
| use my body parts to measure length | | | |

1

Strand:

Number

Module I: Number names

Content Standard

B1.1.1.1: Describe numbers and the relationship between numbers 0 to 100.

Indicator

B1.1.1.1.1: Use number names, counting sequences and how to count to find out "how many?"

Learning Expectation

Learners need to be able to: read and write number names from (1-9).

Essentials for Learning

Learners can write numerals from (1-10).

New words

Number names, one, two, three, four, five, six, seven, eight, nine.

Resources

Number name cards and numeral cards from one to nine, bottle caps, straws.

Number of Lessons **2**

Lesson 1: Number names (1-5)

Starter

Sing a song: "A circle is a shape"

Find Out

Refer learners to page 8 of the Learner's Book. Deduce from learners if they can mention any of the names there. Expected answers: one, five, nine, etc.

Let us Learn

- Have learners count forwards and backwards (1-9).
- Put them into groups of five. Give out numeral cards (1-5) and number name cards (one-five) to each group. Arbitrarily they pick objects from one to five, pick a numeral card and a number name card to match the objects (**collaborative learning**)
- Refer to **Let us learn: 1** on page 8 of the Learner's Book. Learners count the dice there up to 5, pick a numeral card and a number name card to match them one by one. (**collaborative learning, critical thinking**)

Review Exercise

Differentiated Lessons

Low Ability Learners

- Give them numeral cards 1-3. They make groups of objects (1-3) pick a numeral card and number name cards and match them to the groups of objects made. They should work in pairs.

High Ability Learners

- In groups of five, learners work with bottle caps and number name cards. They make groups of objects (1-5) arbitrarily and match the number names cards to the groups made. Let them also write the number names up to "five".

Assessment for Learning

Refer learners to Exercise 1 and 2 on pages 10 - 11 of the Learner's Book for exercise.

Suggested Homework

Write number names for these numerals

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

Lesson 2: Number names (6-10)

Starter

Sing a song "I'm counting one"

Find Out

Refer to Learner's Book page 8. Learners now read some number names written there.

Let us Learn

- Working in pairs, learners pick objects to represent a number between 6 and 9 that you call out. They pick a numeral card and

a number name card to match the group of objects. (*critical thinking, collaborative learning*)

- Refer to **Let us learn: 2** on page 9 of the Learner's Book. Learners count the number of objects and read the number names.

Review Exercise

Differentiated Lessons

Low Ability Learners

- Have learners make groups of objects up to 7 and match numeral cards and number name cards to the groups made.

High Ability Learners

- Working in pairs, learners make groups of objects up to 10, and match numeral and number name cards to the groups made.

Assessment for Learning

Refer learners to Exercise 3 on page 12 of the Learner's Book for exercise.

Suggested Homework

Write number names for these numerals:

- | | | | | | |
|-----|---|-----|---|-----|---|
| (1) | 9 | (2) | 6 | (3) | 8 |
| (4) | 7 | (5) | | | |

For additional exercises under this module, refer to pages 2 - 4 of the Workbook.

Module 2: Reading and writing the numeral zero (0)**Content Standard**

B1.1.1.1: Describe numbers and the relationship between numbers 0 to 100.

Indicator

B1.1.1.1.1: Use number names, counting sequences and how to count to find out "how many?"

Learning Expectation

Learners need to be able to: read and write the numeral zero (0).

Essentials for Learning

Learners can read and write numerals from (1-20).

New words

N numeral, zero.

Resources

Bottle caps and straws.

Number of Lessons **1****Lesson 1: The number zero (0)****Starter**

Sing a song: "Can you count 1 to 5"

Find Out

Refer learners to page 13 of Learner's Book. Learners tell you the number of toffees in A and B? There are no toffees in B or there is nothing in B. (**critical thinking**)

Let us Learn

- Call five learners to the front of the class. Give 3 straws to one and ask him/her to hand them out to the 4 learners. One learner will get "nothing".
- Line up four bowls in front of the class as follows:



- Put 3, 2, and 1 objects respectively in them. Elicit from learners the number of objects in the fourth one. "Nothing". Now introduce the symbol for nothing as 0 (zero).
- Ask learners with 2 heads to stand up. No one is expected to stand up. This means that there is no learner with 2 heads. So, the number of learners with 2 heads is zero.
- Refer to **Let us learn** on page 13 of the Learner's Book.
- Instruct learners to look at the pictures and tell you the number of apples in each bowl. There are no apples (nothing) in bowl C. (**critical thinking**)
- Let learners know that nothing means zero and how it is written.

- Direct learners to page 14 to do the activity there.

Review Exercise

Have learners write the symbol 0 (zero) in their jotters.

Have learners draw empty containers to represent the idea of nothing.

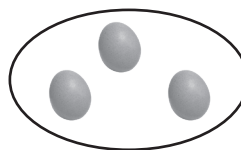
Assessment for Learning

Refer learners to Exercise 1 and 2 on pages 14 and 15 of the Learner's Book for exercise.

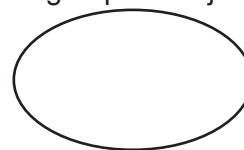
Suggested Homework

Write the numerals for these groups of objects.

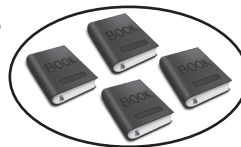
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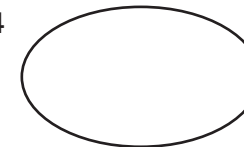
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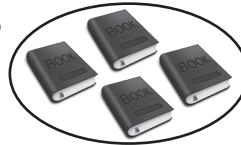
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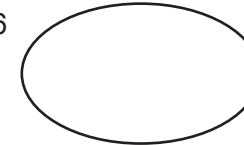
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5



6



For additional exercises under this module, refer to pages 5 - 6 of the Workbook.

Module 3: Counting sequence (1)**Content Standard**

B1.1.1.1: Describe numbers and the relationship between numbers 0 to 100.

Indicator

B1.1.1.1.1: Use number names, counting sequences and how to count to find out "how many?"

Learning Expectation

Learners need to be able to count forwards and backwards in 1s between two given numbers (0-100).

Essentials for Learning

Learners can count and write numerals from 0-20.

New words

Count forwards, backwards, one, two, three, one hundred.

Resources

Numeral cards 1-20, 100-number chart, bottle caps, straws, number line card.

Number of Lessons **6**

Lesson 1: Counting forwards by 1s (1-20)**Starter**

Play "Fingers up and down"

Hold up a number of fingers. Learners say the number name.

They also say the number of fingers that are down.

Find Out

Refer learners to Learner's Book page 16. Ask them what they can see in the picture and let them talk about it.

Let us Learn

- Call about 20 learners to line up in front of the class. Give each learner a numeral card (1-20). They sing a song.
- Let each learner mention the numeral card he/she is holding:

| | | | | | | |
|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 15 | 16 | 17 | 18 | 19 | 20 | |
- Let them count forwards from 1 to 20.
- Put learners into groups of five. Let each group select a leader.
- Give each group a number chart. Ask learners to read the numbers aloud in turns.
- Tell them to start on any number, e.g. 1, 5, etc. They can start on 20 and count up to 40.
- Refer learners to **Let us learn: 1** on page 16. Go through the activities with them.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Present learners with numeral cards 1 to 20. Call out learners to count forwards from 1 to 20.
- Each learner can start on any number. They should work in pairs.

High Ability Learners

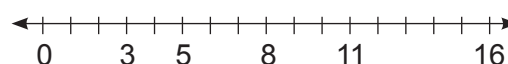
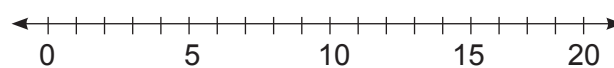
- Put before learners a 1-50 number chart.
- Have learners count forwards from any number.

Assessment for Learning

Refer learners to Exercise 1 on page 18 of the Learner's Book for exercise.

Suggested Homework

Count forwards to complete the number lines.



Lesson 2: Counting backwards by 1s (20-1)**Starter**

Clap a number of times (between 1 and 20) and let learners tell you the number.

Let us Learn

- Call about 20 learners to line up in front of the class. Give each learner a numeral card (1-20). Let each learner mention the numeral card that he/she is holding:

| | | | | | | |
|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 15 | 16 | 17 | 18 | 19 | 20 | |
- Let them count backwards from 20 to 1.
- Put learners into groups of five. Let each group select a leader. Give each group a number chart. Ask learners to read the numbers aloud in turns. Tell them to start on 20 and count backwards. They can start on different numbers but they should count backwards from the selected number.
- Refer learners to **Let us learn: 1** on page 16 of the Learner's Book. Learners count backwards by 1s, starting on any number.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Present learners with numeral cards 1 to 20. Call out learners to count backwards from 20 to 1. Each learner can start on any number.

High Ability Learners

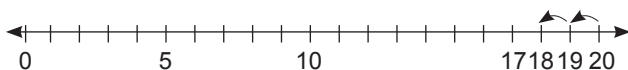
- Put before learners a 1-50 number chart. Have them count backwards from any number. Allow it if they start from numbers bigger than 50.

Assessment for Learning

Refer learners to Exercise 2 on page 18 of the Learner's Book for exercise.

Suggested Homework

Count backwards to complete the number line.

**Lesson 3: Counting forwards by 1s (20-60)****Starter**

Play: "Fingers up and down".

Hold up a number of fingers. Learners say the number name.

They also say the number of fingers that are down.

Let us Learn

- Call about 20 learners to line up in front of the class. Give each learner a numeral card (40-60).
- They sing a song. Let each learner mention the numeral card that he/she is holding. Let them count forwards from any number.
- Put learners into groups of five. Let each group select a leader. Give each group a 100-number chart. Ask learners to read the numbers aloud in turns. Tell them to start on any number, e.g. 1, 5, etc. They can start on 20 and count up to 60.
- Refer learners to **Let us learn: 2** on page 17 of the Learner's Book. Have learners count by 1s, starting on any number up to 60.

Review Exercise**Low Ability Learners**

- Present learners with numeral cards 21-30. Call out learners to count forwards from 20 to 30. Each learner can start on any number.

High Ability Learners

- Put before learners number chart with numbers from 21-60. Have learners count forwards from any number. If they can count further than 60, allow them.

Assessment for Learning

Refer learners to Exercise 3 on page 19 of the Learner's Book for exercise.

Suggested Homework

Write numerals from 40-60.

Lesson 4: Counting backwards by 1s (60-20)

Starter

Clap a number of times (between 1 and 20) and learners tell you the number.

Let us Learn

- Call about 20 learners to line up in front of the class. Give each learner a numeral card (21-60). Let each learner mention the numeral card that he/she is holding.

| | | | | | | | |
|----|----|----|-------|----|----|----|----|
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 |
| 37 | 38 | 39 | 40... | 60 | | | |

Let them count backwards from 60-20.
- Put learners into groups of five. Let each group select a leader.
- Give each group a number chart. Ask learners to read the numbers aloud in turns.
- Tell them to start on 60 and count backwards in turns. They can start on different numbers but they should count backwards from the selected number.
- Refer learners to **Let us learn: 2** on page 17 of the Learner's Book. Learners count backwards by 1s, from 60 to 20.

Review Exercise

Differentiated Lessons

Low Ability Learners

- Present learners with numeral cards 20-40. Call out learners to count backwards from 40-20. Each learner can start on any number.

High Ability Learners

- Put before them a number chart 60-20. Have learners count backwards from any number. Allow it if they start from numbers bigger than 60.

Assessment for Learning

Refer learners to Exercise 4 on page 19 of the Learner's Book for exercise.

Suggested Homework

Write numerals from 60 - 40 backwards.

Lesson 5: Counting forwards by 1s (60-100)

Starter

Mention a number, say 8, and learners pick straws to represent that number.

Let us Learn

- Let learners form a big circle. Ask them to count forwards by 1s: first from 61 to 100, and then from any number bigger than 60, e.g. 80, 70, 65, etc.
- Put learners into groups of five. Give out a 100-number chart to each group. Have learners in turns read the numerals from 61 to 100.
- Refer learners to **Let us learn: 2** on page 17 of the Learner's Book. They count forwards from 60 - 100.

Review Exercise

Differentiated Lessons

Low Ability Learners

- Give learners a 100-number chart. Let them count from 61 to 80, starting on any number.

High Ability Learners

- Present 100-number chart to learners. Have them read from 61-100. They can start from any number.

Assessment for Learning

Refer learners to Exercise 5 on page 20 of the Learner's Book for exercise.

Suggested Homework

Write numerals from 70-90.

Lesson 6: Counting backwards by
1s (100-60)**Starter**

Play making 5s. Mention a number and learners top up to make five. E.g. 4→1, 3→2 etc.

Let us Learn

- Have learners form a big circle. Give them numeral cards from 61-80 depending on the number in the class. They say their numbers from 80-61.
- In their groups, give them 100-number charts. They circle backwards from 100-60 in turns. They can start from any number.
- Now have learners count from 1-100. They can use the number chart.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Have the group count from 1-50, forwards and backwards. They can use the 50-number chart

High Ability Learners

- Give out 100-number charts with some numbers missing for them to complete.

Assessment for Learning

Refer learners to Exercise 6 on page 20 of the Learner's Book for exercise.

Suggested Homework

Write numerals backwards from 90-70.

For additional exercises under this module, refer to pages 7 - 9 of the Workbook.

Module 4: Counting sequence (2)**Content Standard**

B1.1.1.1: Describe numbers and the relationship between numbers 0 to 100.

Indicator

B1.1.1.1.1: Use number names, counting sequences and how to count to find out "how many?"

Learning Expectation

Learners need to be able to count forwards between two given numbers (20-60).

Essentials for Learning

Learners can count in 1s from 1-100.

New words

Forwards, backwards, counting, twos.

Resources

100-number charts, number line charts, numeral cards (30-40).

Number of Lessons **4****Lesson 1: Counting forward by 2s (20-60)****Starter**

Play counting forwards and backwards (1-10).

Find Out

Refer learners to page 21 of the Learner's Book. Learners identify and mention objects from real life that come in twos or in pairs, e.g. eyes, a pair of shoes, ears.

Let us Learn

- Draw a number line on the floor/board. Have learners skip count by 2s from 20 to 40. Clap in twos and learners tell the number. They can start from any number. (**critical thinking**)
- Put learners into groups of five. Give each group a 100-number chart.
- Let them count aloud by 2s from 21 to 60. Make sure everybody takes part. They can start from any number. (**collaborative learning**)
- Refer learners to **Let us learn: 1**, question 1 on page 21 of the Learner's Book, they count forwards by 2s following the frog jumps.

High Ability Learners

- Give learners 100-number charts with missing numbers and have them complete them. Ask them to skip count up to 60 by 2s from any number.

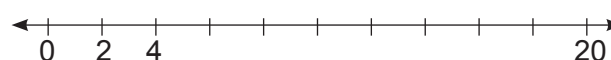
| | | | | | | | | | |
|---|----|----|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | | | | | | 17 | 18 | 19 | 20 |
| | | | | | | 27 | | | |
| | 32 | 33 | 34 | 35 | 36 | 37 | | | |
| | | | | | | | 48 | | |
| | 52 | 53 | 54 | 55 | 56 | | 58 | | |
| | | | | | | | | | |
| | 72 | 73 | 74 | 75 | 76 | | 78 | | |
| | | | | | | | 88 | 89 | 90 |
| | 92 | 93 | 94 | 95 | 96 | | 98 | | |

Assessment for Learning

Refer learners to Exercise 1 on page 23 of the Learner's Book for exercise.

Suggested Homework

Complete the number line below.

**Review Exercise****Differentiated Lessons****Low Ability Learners**

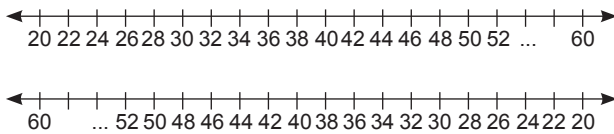
- Give (1-50) number charts to learners, and let them count forwards from 1 to 20 and 20 to 40.

Lesson 2: Counting backwards by 2s (60-20)**Starter**

Play counting forwards and backwards (1-10).

Let us Learn

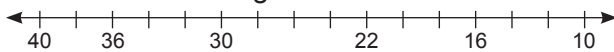
- Draw a large number line on the board from 21 to 60 and another one from 60 to 21. Let learners count forwards by 2s using the first number line.



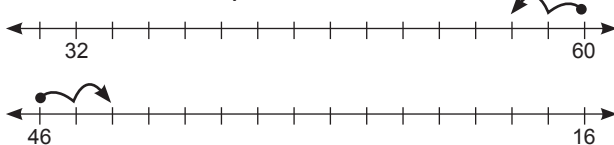
- Using the second number line, learners count backwards by 2s from 60 to 20.
- Put learners into groups of five. Give out 100-number chart to each group.
- Have them count backwards by 2s from 60 - 20. The leader should make sure every learner takes part. They can start from any number. (**collaborative learning**)
- Refer learners to **Let us learn: 2** on page 22 of the Learner's Book. Have learners count backwards by 2s, starting from 60 - 20. They can start from any number.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Give out number line charts for learners to fill in the missing numerals.

**High Ability Learners**

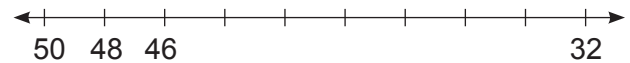
- Let them complete the number line.

**Assessment for Learning**

Refer learners to Exercise 2 on page 23 of the Learner's Book for exercise.

Suggested Homework

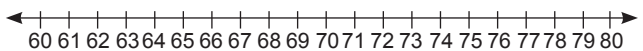
Complete the number line.

**Lesson 3: Counting forwards by 2s (60-100)****Starter**

Show numeral cards 30-40 to learners. Pick them arbitrarily and learners mention the numbers.

Let us Learn

- Draw a number line on the board from 60-80. Call a learner to skip count forwards using a stick.



- Learners form groups of five. Give a 100-number chart to each group. They count by 2s from any number from 60 up to 100. In pairs, let them count forwards using the number line chart as well. (**collaborative learning**)
- Refer learners to **Let us learn: 1 (2)** on page 21 of the Learner's Book. Go through the activity with learners.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Give the 100-number chart out to learners.
- They should count forwards from 60-80, starting on any number.

High Ability Learners

- Have learners work in pairs. Give out a 100-number chart to them.
- They should count forwards from any number from 61-100.

Assessment for Learning

Refer learners to Exercise 3 on page 24 of the Learner's Book for exercise.

Lesson 4: Counting backwards by 2s (100-60)

Starter

Show numeral cards 30-40 to learners. Pick them arbitrarily and learners mention the numbers.

Let us Learn

- Draw a number line 60-80 on the board. Call a learner to skip count backwards by 2s from 80-60.
- Put learners into groups of five. Give each group a 100-number chart. Have them count backwards by 2s from 80 - 60. The leader should make sure every learner takes part. They can start from any number. (*collaborative learning*)
- Refer learners to **Let us learn: 2** on page 22 of the Learner's Book. Let them count backwards by 2s from 70 - 56.

Review Exercise

Differentiated Lessons

Low Ability Learners

- Give 1-80 number chart to learners. They count backwards by 2s and colour the numbers.

High Ability Learners

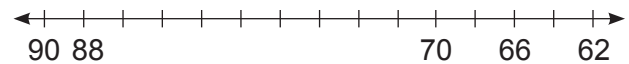
- Give a 100-number chart to learners.
- Have them count backwards from these numbers and circle them: 60, 47, 52, 90.

Assessment for Learning

Refer learners to Exercise 4 on page 24 of the Learner's Book for exercise.

Suggested Homework

Fill in the spaces.



For additional exercises under this module, refer to pages 10 - 11 of the Workbook.

Module 5: Counting sequence (3)**Content Standard**

B1.1.1.1: Describe numbers and the relationship between numbers 0 to 100.

Indicator

B1.1.1.1.1: Use number names, counting sequences and how to count to find out "how many?"

Learning Expectation

Learners need to be able to count by 10s forwards up to 100.

Essentials for Learning

Learners can count in 2s up to 100.

New words

Forwards, backwards, count, tens.

Resources

Bottles caps, bundle of ten sticks.

Number of Lessons **2****Lesson 1: Counting forwards by 10s (1-100)****Starter**

Have learners count by 2s from 1-20 starting on different numbers. E.g. 1, 3, 5, 7, 9, 11, 13, 15, 17, 19.

Find Out

Refer learners to page 25 of the Learner's Book.

Learners count and tell the number of fingers shown there.

Let us Learn

- Display a 100-number chart on the board and count from 1-100 as a class. When they get to a multiple of 10, one learner circles it.

| | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|-----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 |
| 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 |
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 |
| 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 |
| 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |

- Give out the 100-number chart to learners. Deduce from them what they can say about the numeral chart as they move downwards. The answer is that the number increases by 10.
- Refer learners to **Let us learn** on pages 25 and 26 of the Learner's Book. Learners count forwards by 10s on the chart starting from any number. Take them through the activities to count forward by 10s.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Have learners form a big circle. Let them count by 10s from ten (10) up to fifty (50).

High Ability Learners

- Let learners start on these numbers and count forwards by tens: 12, 27, 35, 7 and 8. Let them circle each 10.

Assessment for Learning

Refer learners to Exercise 1 on page 27 of Learner's Book for exercise.

Suggested Homework

Write the multiples of 10 from 20 up to 100.

Lesson 2: Counting backwards by 10s (100-1)

Starter

Have learners count by 2s from 1-20 starting on different numbers. E.g. 1, 3, 5, 7, 9, 11, 13, 15, 17, 19.

Let us Learn

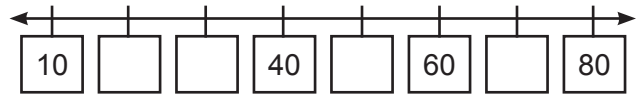
- Use the strategies used in teaching counting forwards from (1-100) to teach counting backwards.
- Refer learners to **Let us learn** on pages 25 and 26 of the Learner's Book. Help learners count backwards by 10s, starting from any number on the chart. Take them through the activities to count backwards by 10s.

Review Exercise

Differentiated Lessons

Low Ability Learners

- Give out number line charts for learners to complete up to 80.
- Then they count back by 10s from any of the numbers.



High Ability Learners

- Start at these numbers and count backwards by 10s: 90, 85 and 72.

Assessment for Learning

Refer learners to Exercise 2 on page 27 of the Learner's Book for exercise.

Suggested Homework

Start at 50, and write multiples of 10 backwards up to 10.

For additional exercises under this module, refer to pages 12 - 14 of the Workbook.

Module 6: Count to find “how many”**Content Standard**

B1.1.1.1: Describe numbers and the relationship between numbers 0 to 100.

Indicator

B1.1.1.1.1: Use number names, counting sequences and how to count to find out “how many?”

Learning Expectation

Learners need to be able to: count a number of objects up to 50 and tell “how many”

Essentials for Learning

Learners can count from 1 up to 100; they can also count in multiples of 10 up to 100.

New words

How many, counting.

Resources

Straws, seeds, bottle caps, pictures of seeds, cups, numeral cards, etc.

Number of Lessons **2**

Lesson 1: Count to find “how many” (up to 50)

Starter

Mention a number, say 6, and learners count straws or bottle caps to represent that number.

Show fingers 1-10 and learners mention the number name.

Find Out

Refer learners to page 28 of the Learner's Book.

Let them count to tell the number of boys, the number of girls and the total number of learners in the class.

Let us Learn

- Put learners into convenient groups. Give out straws and bottle caps to each group. The number should not be more than 10 initially.
- Ask learners to count the objects and write the number.
- Increase the quantity of objects up to 50 if learners have understood it.
- Refer learners to **Let us learn: 1** on pages 28 and 29 of the Learner's Book. Ask learners to count the different books and tell how many for each subject.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Give pictures of seeds to learners.
- They count to tell how many.

High Ability Learners

- Put seeds not more than 50 on the table for learners.
- They estimate and then count to tell how many.

Assessment

Refer learners to Exercise 1 on page 30 of the Learner's Book for exercise.

Lesson 2: Count to find “how many” (50-100)

Starter

Show fingers 1-10 and learners mention the number name.

Let us Learn

- Put learners into groups of five. Give straws up to 100 to each group. Call out a number (50-100) and ask learners to count the straws to represent it.
- Give out straws/bottle caps and numeral cards (60-100) to the groups. One learner picks a numeral card, holds it up and another learner count out objects to represent that number.

- In their groups, let learners select a leader who will show the cards and the rest count objects up to that number.
- The leader can also call out a number instead of showing a card, then the rest count straws or bottle caps to represent that number.
- Refer learners to **Let us learn: 2** on page 29 of the Learner's Book. Learners count the number of objects in each basket.

Review Exercise

Ask learners to count the number of tables in the classroom, tell how many and write the number.

They should also count the number of chairs, and desks, tell how many and write the numbers.

Differentiated Lessons

Low Ability Learners

- Give out a number of straws and counters to learners. They count to find "How many?"

High Ability Learners

- Give out 30 straws, and 45 bottle caps in containers. They guess and count to find "How many?"

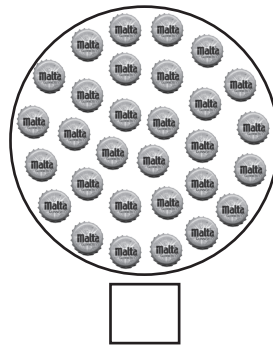
Assessment for Learning

Refer learners to Exercise 2 on page 31 of the Learner's Book for exercise.

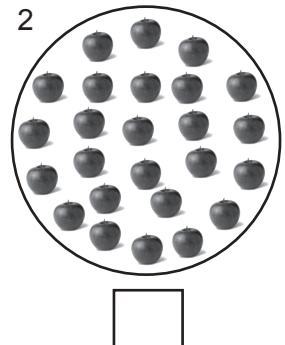
Suggested Homework

Count and write the number

1



2



For additional exercises under this module, refer to pages 15 - 17 of the Workbook.

Module 7: Ordinal numbers

Content Standard

B1.1.1.1: Describe numbers and the relationship between numbers 0 to 100.

Indicator

B1.1.1.1.1: Use number names, counting sequences and how to count to find out "how many?"

Learning Expectation

Learners need to be able to: use ordinal numbers to describe the position of objects up to the 10th place.

Essentials for Learning

Learners can write numerals from (1-20).

New words

Ordinal, position, first, second, third, fourth, fifth, sixth, seventh, eighth, ninth, tenth, order.

Resources

Position badges from 1st to 10th, plastic containers, empty bottles.

Number of Lessons **1**

Lesson 1: Ordinal numbers up to 10th position

Starter

Sing a song: "Obiara yeawo no Dwoda"

Find Out

Refer learners to page 32 of the Learner's Book. Let learners look at the cyclists and determine who was first and fourth. They should justify. (*critical thinking, justification of ideas*)

Let us Learn

- It will be better if you use practical activities to teach this lesson. Take the class outside the classroom. Call three learners to run a 30 metre race. Let the learners tell you who was first, second and third.
- Repeat this activity with four learners and five learners respectively.
- Take the class back to the classroom. Let them identify those who were first, second and third in the first race. Tag them with the position badges.
- Continue this activity with learners to determine the fourth to the tenth position.
- Guide learners to go through other activities using different objects. For example: arrange bottles or empty boxes

in order. Let learners watch how they are being arranged, i.e. which one was put first, second etc.



1st 2nd 3rd 4th 5th 6th 7th 8th 9th 10th

- Arrange the badges on the walls of the classroom.
- Tell learners that the one who comes to school first in the morning should pick the first badge, the second learner should pick the second badge, and so on until the 10th badge is picked.
- Let them tag themselves according to the order in which they came to school.
- Ask them to line up, with the first learner at the 1st position, second at the 2nd position until they get to the 10th position.
- Let the class congratulate them for coming to school early. Throughout the week, let learners repeat this activity.
- Refer learners to the **Let us learn** on pages 32 and 33 of the Learner's Book. Guide learners through the activity. Go through the explanation with them.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- In their groups, learners write their first names. They tag themselves from 1st up to the 5th position in the order that they will finish.

High Ability Learners

- In groups of 10, learners write their full names. They tag themselves with the position badges according to how they finished.

Assessment for Learning

Refer learners to Exercise 1 and 2 on pages 34 and 35 of the Learner's Book for exercise.

Suggested Homework

What is the position of the circled number, when you count from the left.

1. 1 2 3 4 5 6 7
2. 5 10 15 20 25

For additional exercises under this module, refer to pages 18 - 20 of the Workbook.

Module 8: Describing the position of numbers**Content Standard**

B1.1.1.1: Describe numbers and the relationship between numbers 0 to 100.

Indicator

B1.1.1.1.2: Identify numbers in different positions around a given number 0-100.

Learning Expectation

Learners need to be able to identify numbers in different positions around a given number.

Essential for Learning

Learners can identify numbers which come before or after a given number.

New words

Left, right, above, below, position.

Resources

Numeral cards 1-20, 100 number charts.

Number of Lessons **1**

Lesson 1: Identifying numbers in different positions**Starter**

Do a mental game with learners. Play "one more" or "one less" than a given number up to 10, e.g. What number is one more than 6? What number is one less than 6? (Answer: One more than 6 is 7 and 1 less than 6 is 5.)

Find Out

Refer learners to page 36 of the Learner's Book. Deduce from learners how to describe the positions of specific objects in the grid. E.g. Describe the position of the ball. Which objects are to the left of the ball? Which object is to the right of the book? (*critical thinking, collaborative learning*)

Let us Learn

- Write numerals from 1-20 on the board.
1, 2, 3, 4, 5, 6, 7, 8, 9, 10,20
- Call out a number, say 8. Let them mention 2 numbers to the right of 8 and 2 numbers to the left of 8. Write them on the board.
- Put learners into convenient groups. Give out the 100-number chart to learners in their groups. Let them select a leader. Make sure they rotate the leaders. He/ she selects a number on the chart. The other learners identify numbers in different positions around the chosen number. (*leadership, critical thinking, collaborative learning*)

- Refer learners to **Let us learn** on page 36 of the Learner's Book. "*I am 20*" Deduce from learners how they can describe the position of the number 20.
- Now have learners work in pairs. One learner selects a number on the number chart and the other describes the position of the number.
- Let them change over until they have worked with all the numbers.
(*collaborative learning, critical thinking*)

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Give learners these number chart from 1 - 30. They should find numbers that come before and after 6, 15 and 24.

High Ability Learners

- Give learners a 3 x 3 grid. Let them write their own numbers and describe the position of the numbers using their own criteria.

| | | |
|--|--|--|
| | | |
| | | |
| | | |

Assessment for Learning

Refer learners to the activity and Exercise 1 on page 37 of the Learner's Book for exercise.

Suggested Homework

1. Write down the 2 numbers to the left of the circled number

15, 17, 19, 21, 23, 25

2. Write down 2 numbers to the right of the circled number.

5, 10, 15, 20, 25, 30, 35

For additional exercises under this module, refer to pages 21 - 22 of the Workbook.

Module 9: Using non-standard units for measuring (1)**Content Standard**

B1.1.1.1.1: Describe numbers and the relationship between numbers 0 to 100.

Indicator

B1.1.1.1.3: Use number names and non-standard units for measuring (lengths and volumes) to count to find out “how long or how much?”...up to 100.

Learning Expectation

Learners need to be able to: count to find how many using non-standard units.

Essential for Learning

Learners can use non-standard units, e.g. hand spans, to measure the length of objects.

New words

Measure, length, non-standard, thumb, forefinger.

Resources

Erasers, exercise book, sticks, straws

Number of Lessons **2**

Lesson 1: Counting to find “how long” (using objects)**Starter**

Learners count forwards and backwards between 1 and 20.

Find Out

Refer learners to page 38 of the Learner's Book and have learners guess what Adisa is doing. Learners guess how many hand spans will measure the table. (*critical thinking*)

Let us Learn

- Put learners into groups of four. Learners use the following to measure:
- Group 1:** Erasers to measure the length of their exercise book.
- Group 2:** Exercise books to measure the length of the board.
- Group 3:** Straws to measure the height of the teacher's table.
- Group 4:** A stick to measure the height of the cupboard.
- Refer learners to **Let us learn: 1** on page 38 of the Learner's Book. Go through the activities with learners.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Have them measure the length of their table using a pencil.
- Learners can do the activity in groups.

High Ability Learners

- Give learners sticks to measure the length of the veranda in front of the classroom.

Assessment for Learning

Refer learners to Activity 1 and Exercise 1, question 1 on page 40 of the Learner's Book for exercise.

Lesson 2: Counting to find “how long” (using body parts)**Starter**

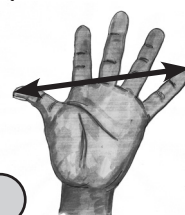
Ask learners to count by 2s from 1 up to 20, forwards and backwards.

Find Out

Refer learners to page 38 of the Learner's Book and let them estimate/guess the number of hand spans for the length and breadth of the table.

Let us Learn

- Put learners into groups of about four according to the number in the class.
- Group 1:** Have a group measure the length of the table using the hand span of selected learners. Let them count to tell “how many” hand spans they measured.



Hand span

- **Group 2:** Have another group measure the length of a window using the fore-finger. They should count the number of forefingers used to measure the length.
- **Group 3:** Have another group measure the height of teachers table using the palm. They count to find how many palms counted.
- **Group 4:** Have another group measure the length of the classroom using the foot. They should count the number of feet used.
- Refer learners to **Let us learn: 2** on page 39 of the Learner's Book. Have learners identify other parts of the body which could be used as non-standard units.

Review

Differentiated Lessons

Low Ability Learners

- Learners use the thumb to measure the lengths of their tables.

High Ability Learners

- Learners use the hand span to measure the height of the teacher's desk and the height of a window in the class.

Assessment for Learning

Refer learners to Activity 2 and Exercise 1, question 2 on page 40 of the Learner's Book for exercise.

Suggested Homework

Use your hand span to measure the length of your house door and write down how many hand spans you used.

For additional exercises under this module, refer to pages 23 - 25 of the Workbook.

Module 10: Using non-standard units for measuring (2)**Content Standard**

B1.1.1.1.1: Describe numbers and the relationship between numbers 0 to 100.

Indicator

B1.1.1.1.3: Use number names and non-standard units for measuring (lengths and volumes) to count to find out "how long or how much?"...up to 100.

Learning Expectation

Learners need to be able to: count to find how many using non-standard units.

Essential for learning

Learners can use non-standard units for measuring.

New words

Measure, filling, non-standard unit.

Resources

Funnels, bowls, plastic bottles, buckets, matchboxes, bottle caps, seeds, pebbles, sand.

Number of Lessons **2**

Lesson 1: Count to find "how much" (using water)

Starter

Play: "How many to make 10?". Call out a number, say 6; then learners find the number which, when added to 6 makes 10 (in this case it is 4).

Find Out

Refer learners to **Find out** on page 41 of the Learner's Book. Deduce from learners what the boy is doing. Let them guess the number of cups that will fill the bucket. (*critical thinking*)

Let us Learn

- Put learners into two groups.
Give out water, plastic bottles, bowls, bottle caps, empty milo tins and milk tins to them.
- Group 1:** Fill a milo tin with bottle caps. They should tell how many cups filled it.
- Group 2:** Fill a milo tin with water using a milk tin and tell how many milk tins filled the milo tin. (*collaborative learning*)
- Refer learners to **Let us learn** on page 41 of the Learner's Book. Divide learners into groups to do **Practical Activity 1**.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Give them a plastic bottle cap and a teacup. They should fill the teacup with water using the bottle cap. They then count and record the number of bottle caps that fill the teacup.

High Ability Learners

- Give them a paint bucket and a tea cup. They should find how many tea cups of water will fill the paint bucket.

Assessment for Learning

Refer learners to Activity 1 and Exercise 1 on page 42 of the Learner's Book for exercise.

Suggested Homework

Use a tablespoon to fill a medium size tomato tin with sand. Record how many tablespoons of sand filled the container.

Lesson 2: Counting to find "how many" (using objects)

Starter

Learners count forwards and backwards between 1 and 20.

Let us Learn

- Divide learners into groups of five. Give milo tins, pebbles, seeds and counters to each group.
They should use the items to fill the milo tins, count them and record the number of items that filled it.
- Refer learners to **Let us learn** on page 41 of the Learner's Book. Divide learners into groups to do **Practical Activity 2**.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Let them use pebbles to fill a large tomato tin and find out how many pebbles filled it.

High Ability Learners

- Give them sachets of water and a bucket. Learners should fill the bucket and count to find out the number of sachets of water that filled the bucket.

Assessment for Learning

Refer learners to Activity 2 and Exercise 2 on page 42 of the Learner's Book for exercise.

For additional exercises under this module, refer to pages 26 - 28 of the Workbook.

Module II: Comparing two groups of objects**Content Standard**

B1.1.1.1.1: Describe numbers and the relationship between numbers 0 to 100.

Indicator

B1.1.1.1.4: Use comparative language to describe the relationship between quantities/ numbers up to 100 using place value and the number line.

Learning Expectation

Learners need to compare two groups of objects and identify the group which has more/less.

Essentials for Learning

Learners can count up to 20.

New words

More than, less than, one less, one more, compare.

Resources

Bottle caps, straws.

Number of Lessons **2****Lesson 1: One more than****Starter**

Mention a number and learners add 1 more.
E.g. $6 \rightarrow 7$, $12 \rightarrow 13$, $37 \rightarrow 38$

Find Out

Refer to page 43 of the Learner's Book.
Learners compare the number of chairs to the number of boys and identify which of the groups is more/less. (**critical thinking**)

Let us Learn

- Put 15 books on the table and 14 pencils on the table. Call two learners to come and compare by matching the two groups of objects.
- The class should tell you which group is one more than the other.
- In pairs, have learners count out 25 straws and 20 bottle caps. They discuss and decide which group (straws or bottle caps) has more objects. (**collaborative learning**)
- Refer learners to **Let us learn: 1a** on page 43 of the Learner's Book. They match the bottle caps to the bottles and name the group which is one more.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Let them count the numbers of boys and girls in the class and compare to find out whether the boys or girls are more?. They should justify their conclusion.

High Ability Learners

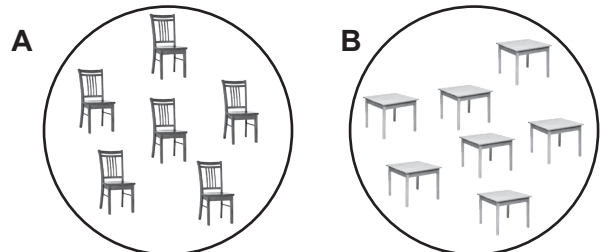
- Learners count 40 straws, put them into two groups and compare the two groupings. Have them make two different groupings that show one group having one more than the other.

Assessment for learning

Refer learners to Exercise 1 on pages 45 and 46 of the Learner's Book for exercise.

Suggested Homework

Which group is one more? How do you know?



Lesson 2: One less than

Starter

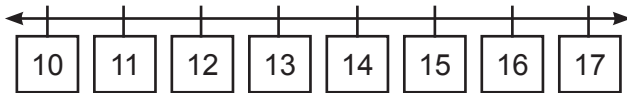
Say a number and learners give a number which is 1 more/less.

E.g. What is 1 more than 9? \rightarrow 10

What is 1 less than 7? \rightarrow 6

Let us Learn

- Draw/display a number line on the board.



- Ask learners to closely observe what you are about to do. Locate 11 on the number line. Now move your finger one step back from 11 on the number line, i.e. from 11 to 10. Tell learners that: 10 is **one less than** 11.
- Display the 100-number chart on the board. Locate number 32 on it, call a learner to point to a number which is 1 less than 32. 1 less than 32 is 31.
- Refer learners to **Let us learn: 1b** on page 44 of the Learner's Book. They should match the girls to the boys and deduce which one is one less than the other.

Review Exercise

Differentiated Lessons

Low Ability Learners

- Give learners number line chart 1-20. They point to a number and say the number which is 1 less than the number pointed.

High Ability Learners

- Give them a 100-number chart. Working in pairs, one learner points to a number and the other says the number which is 1 less than the number pointed.

Assessment for Learning

Refer learners to Exercise 2 on pages 46 and 47 of the Learner's Book for exercise.

Suggested Homework

Use 18 circles to make 2 groups which are "one less or one more".

For additional exercises under this module, refer to pages 29 - 32 of the Workbook.

Module I2: Comparing and ordering numbers

Content Standards

B1.1.1.1.1: Describe numbers and the relationship between numbers 0 to 100.

Indicator

B1.1.1.1.4: Use comparative language to describe the relationship between quantities/ numbers up to 100 using place value and the number line.

Learning Expectation

Learners need to be able to compare 2 numbers and identify the one which is more/less.

Essentials for Learning

Learners can compare two groups of objects and identify the group which is more or less.

New words

Less, increase, compare, less than, more than, same as, order, move, smallest, least, largest.

Resources

Straws, bottle caps, symbols cards <, >, =

Number of Lessons **2**

Lesson 1: Comparing two numbers

Starter

Play making 10s: Mention a number and learners add a number to make 10. E.g.

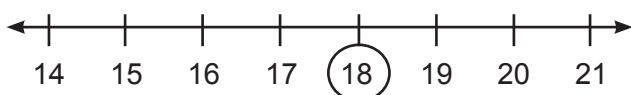
(1) $7 \rightarrow 3$ (2) $3 \rightarrow 7$ (3) $5 \rightarrow 5$ (4) $2 \rightarrow 8$

Find Out

Refer to Learner's Book page 48. Learners say which numbers are missing.

Let us Learn

- Draw a number line on the board.



Circle 18. Have learners look at the next number to the right and left of 18. Remind learners that, movement to the right increases the numbers and movement to the left decreases the number. (**critical thinking**)

- Refer learners to **Let us Learn: 1a** on page 48. 12 is to the left of 13 and 14 is to the right of 13. 13 is more than 12 and 13 is less than 14.
- Refer learners to **Let us Learn: 1b** Go through the activities with them.

Review Exercise

Differentiated Lessons

Low Ability Learners

- Write these numbers for them to state the one which is more/less:

(1) 12 and 15 (2) 26 and 28
(3) 33 and 23

High Ability Learners

- Working in pairs one learner writes two numbers and the partner compares the two and tells the one which is more or less.

Assessment for Learning

Refer learners to exercise 1 on page 50 of the Learner's Book.

Suggested Homework

Circle the bigger number in each pair of numbers.

(1) 6 and 9 (2) 15 and 12
(3) 25 and 24 (4) 72 and 27

Circle the smaller number in each pair of numbers.

(1) 9 and 5 (2) 15 and 18
(3) 35 and 24 (4) 72 and 27

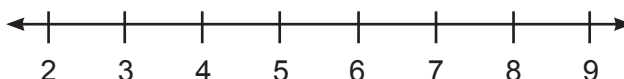
Lesson 2: Ordering numbers

Starter

Play 1 more or 1 less. Mention a number and learners give two numbers which is 1 more than and 1 less than.

Let us Learn

- Draw a number line on the board.



Write these numbers on the board: 6, 7 and 8. Call a learner to identify the numbers on the number line and circle them with different colours.

- Let learners tell you the smallest number, which is 6, followed by 7 and 8.
- Do the reverse with them. That is 8, 7 and 6. (**critical thinking, collaborative learning**)
- Write these numbers on the board. Have learners work in pairs and order them from the smallest to the largest and vice versa.
(1) 6, 9, 5 (2) 12, 10, 12
- Refer learners to **Let us learn: 2** on page 49 of the Learner's Book. Go through the activities with them.
- Order these numbers (1,2,5,9,6,1,3,) in ascending and descending orders (**critical thinking, collaborative learning**)

Review Exercise

Differentiated Lessons

Low Ability Learners

- Have learners work in pairs.
- Give out these numeral cards and number line cards to them.
(1) 3, 5, 2 (2) 6, 10, 8
- They order them from the largest to the smallest and vice versa.

High Ability Learner

- Have them order these numbers in ascending and descending order.
(1) 24, 18, 32 (2) 7, 12, 28, 30

Assessment for Learning

Refer learners to exercise 2, on page 50 of the Learner's Book.

Suggested Homework

1. Order these numbers from the largest to the smallest
12, 9, 8, 15
25, 18, 6, 32
2. Order these numbers from the smallest to the greatest
7, 3, 11, 5
6, 13, 4, 8

For additional exercises under this module, refer to pages 33 - 34 of the Workbook.

Module I3: Numbers "one more" "one less"

Content Standard

B1.1.1.1.1: Describe numbers and the relationship between numbers 0 to 100.

Indicator

B1.1.1.1.4: Use comparative language to describe the relationship between quantities/ numbers up to 100 using place value and the number line.

Learning Expectation

Learners need to be able to: identify numbers that are 1 more or 1 less than a given number.

Essentials for Learning

Learners can count numbers forwards and backwards between 1 and 100).

New words

More, less, forwards, backwards, step.

Resources

Numeral cards, 50-number charts, and 100-number charts, number line cards.

Number of Lessons **1**

Lesson 1: Finding "one more/one less"

Starter

Sing a song: "I am counting one"

Find Out

Refer learners to page 51. Have them look at the two pictures critically and tell you what they can say. (*critical thinking*)

Let us Learn

- Put 8 books on one side of the table and label it A and 9 books separately on another side and label it B.
- Call two learners to come and count them one after the other. Have learners tell you what they notice about the two groupings. Group A is 1 less than group B. Group B is 1 more than group A.
- Call out 7 boys and 6 girls to the front of the class. Have them face each other and hold hands. Let the class say what they notice. They should discuss this in pairs. They will notice that 1 boy has no partner. Therefore the girls are 1 less than the boys and the boys are 1 more than the girls. (*critical thinking, collaborative learning*)
- Learners work in groups of six. Give out number line cards (1 – 20). They select a number and find out a number which is 1 less and 1 more than the number selected.
- Refer to **Let us learn** on pages 51 and 52 of the Learner's Book. They should find 1 more than 22, which is 23 and 1 less than 22 is also 21. Take them through the remaining exercise.

Review Exercise

Differentiated Lessons

Low Ability Learners

- Learners work in pairs. Give them number line cards (1 – 20). One selects a number and the other finds the numbers which are 1 less and 1 more. Let learners change over. (*critical thinking/ collaborative learning*)



High Ability Learner

- Working in pairs, give out 100 number chart. One selects a number and the other learner says the number which is 1 less and 1 more and circles them. (*collaborative learning*)

Assessment for Learning

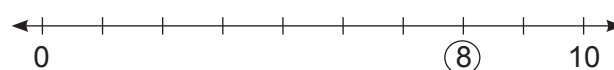
Refer learners to page 53 of the Learner's Book for exercises 1 and 2.

Suggested Homework

1 A  B 

A is _____ than B. B is _____ than A.

- 2 Write the numbers that are 1 more than 8 and 1 less than 8.



For additional exercises under this module, refer to pages 35 - 37 of the Workbook.

Module I4: Comparing numbers using the symbols $>$, $<$ or $=$ **Content Standard**

B1.1.1.1.1: Describe numbers and the relationship between numbers 0 to 100.

Indicator

B1.1.1.1.5: Represent the comparison of two numbers up to 100 using the symbols $>$, $<$ or $=$.

Learning Expectation

Learners need to be able: to compare two numbers using the symbols $>$, $<$ or $=$.

Essentials for Learning

Learners can count forwards and backwards between 1 and 100.

New words

Compare, less than, more than, the same as.

Resources

Straws, bottle caps, numeral cards, symbol cards $<$, $=$ and $>$.

Number of Lessons **3****Lesson 1:** Comparing numbers using the greater than symbol ($>$)**Starter**

Play making fives. Mention a number and learners add another number to make five (5).
E.g. (1) $3 \rightarrow 2$ (2) $4 \rightarrow 1$ (3) $2 \rightarrow 3$

Find Out

Refer learners to page 54 of the Learner's Book. Learners look critically at the two crocodiles and say what they see. (*critical thinking, collaborative learning*)

Let us Learn

- Use the elbow to show the greater than symbol ($>$).



- Write two numbers on the board: 9 and 6. Ask the class to tell you the one which is greater and the one which is smaller. 9 is greater than 6.
- Write the greater than symbol on the board.
- Refer learners to **Let us learn: 1** on page 54 of the Learner's Book. Go through the activity with them.
- Call a learner to come and write the symbol to make the statement true. That is $9 > 6$.

- Learners form groups of six. Give out the greater than symbol and numeral cards to them. Write two numbers on the board. The groups decide which number is smaller and which is greater. (1) 12, 15 (2) 27, 13 (3) 47, 58
- They insert the symbol to make each statement true.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Let learners work in pairs. Let them compare the numbers using the $>$ symbol.
E.g. (1) 8, 10 (2) 12, 19

High Ability Learners

- Using the number line chart as a guide learners write their own numbers and use the $>$ symbol to make the statement true.

Assessment for Learning

Refer learners to Exercise 1 on page 56 of the Learner's Book for exercise.

Suggested Homework

Use the symbols to make the statements true. $>$, $<$, or $=$.

- (1) $6 - 9$ (2) $12 - 15$
(3) $25 - 52$ (4) $17 - 14$

Lesson 2: Comparing numbers using
the less than symbol (<)**Starter**

Play: "How many fingers up". Hold up fingers from 1 to 10. Learners mention the number shown.

Let us Learn

- Put learners into groups of five. Give each group number cards from 1 to 20 and the "<" symbol card.
- Learners mix the cards up. They pick two numbers randomly and find the number which is less. They repeat this activity several times with different numbers.
- Learners now work in pairs. Introduce the less than symbol "<" to them.
- Refer learners to **Let us learn: 2** on page 55 of the Learner's Book. Go through the explanations with them.
- Write two numbers on the board: 12 and 14. Learners put the symbol in between to make the statement true. ($12 < 14$). Repeat with more pairs of numbers, e.g. 36 and 63.
- Deduce from them the difference between the two symbols > and <.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Give learners numeral cards 1 - 20. They select two numbers and use the "<" symbol to make the statement true.

High Ability Learners

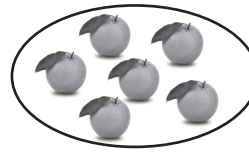
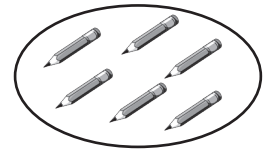
- Give them a 100 number chart. Learners select two numbers between 50 and 100 and use the "<" symbol to compare the two numbers.

Assessment for Learning

Refer learners to Exercise 2 on page 56 of the Learner's Book for exercise.

Lesson 3: Comparing numbers using
the equal to symbol (=)**Starter**

Play doubles of numbers. Mention a number and learners mention the double of that number. E.g. (1) $2 \rightarrow 4$ (2) $3 \rightarrow 6$
(3) $5 \rightarrow 10$

Let us Learn**A****B**

- Have learners count the number of objects in the two sets (A and B) and say what they notice. Learners work in pairs.
- The number of objects in A is the same as the number of objects in B. Now introduce the symbol for equals "=" to them. $6 = 6$.
- Refer learners to **Let us learn: 3** on page 55 of the Learner's Book. Go through the explanations with them.
- Let them work in pairs. They write two numbers that are the same and use the symbols to make the statement true.
- Now combine the three symbols and have learners work in pairs using these numbers:
(1) 6, 7 (2) 23, 32 (3) 86, 68
(4) 90, 99 (5) 25, 25
(critical thinking and collaborative learning).

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Have learners write two pairs of numbers and use the "=" symbols to compare.

High Ability Learner

- Learners work in pairs. They write 2 pairs of numbers and use any of the symbols to make the statements true. **(critical thinking, collaborative learning).**

Assessment for Learning

Refer learners to Exercise 3 on page 57 of the Learner's Book for exercise.

Suggested Homework

Use the symbols =, <, > to make the statements true.

- (1) $7 \underline{\hspace{1cm}} 5 + 2$ (2) $9 \underline{\hspace{1cm}} 11$
(3) $25 \underline{\hspace{1cm}} 24$ (4) $20 \underline{\hspace{1cm}} 20$

For additional exercises under this module, refer to pages 38 - 40 of the Workbook.

Module 15: Relationship between quantities/numbers up to 100**Content Standard**

B1.1.1.1.1: Describe numbers and the relationship between numbers 0 to 100.

Indicator

B1.1.1.1.6: Describe the relationship between quantities/numbers up to 100.

Learning Expectation

Learners need to be able: to identify the relationship between quantities and numbers.

Essentials for Learning

Learners can compare two numbers and identify the one which is less or more.

New words

Compare, more than, less than, equal to, a lot bigger, a little smaller.

Resources

Bottle caps, plastic bottles, straws, numeral cards 1-50.

Number of Lessons **2**

Lesson 1: Comparing two groups of objects (more than or less than)

Starter

Mention two numbers between 1 and 20, learners tell the number that is 1 more or 1 less. 6. E.g. 1 more than 6 is 7, 1 less than 6 is 5.

Find Out

Refer learners to Learner's Book page 58. In pairs, have learners compare the two groups of objects. Deduce from them which learner has more apples. Have learners justify their answer. (*collaborative learning*)

Let us Learn

- Have learners work in groups of four. Give 20 plastic bottles and 15 bottle caps to each group.
- Learners tell you which group is more/less. They should tell you how they got their answer by justifying it. (*collaborative learning, justification of ideas*)
- Show a group of 10 and a group of 12 objects to learners. They identify which group is more or less.
- They should justify by saying 10 is 2 less than 12, and 12 is 2 more than 10.
- Refer learners to **Let us learn: 1** on pages 58 and 59 of the Learner's Book. Go through the activities with them.

Review**Differentiated Lessons****Low Ability Learners**

- Give learners 30 bottle caps and let them form a group of 10 and a group of 20. Ask them to compare the groupings.
- Encourage them to use the terms less than or more than. (*collaborative learning*)

High Ability Learner

- Give learners 80 straws. They form two groups between 40-80 and use the relative terms more than or less than to describe their groupings. Learners should work in groups of five. (*collaborative learning*)

Assessment for Learning

Refer learners to Exercise 1 on pages 60 and 61 of the Learner's Book for exercise.

Lesson 2: Comparing two groups of objects (same as)**Starter**

Play “One less than”. Call out a number and learners call out the number which is 1 less than the number. E.g. (1) $9 \rightarrow 8$ (2) $7 \rightarrow 6$ (3) $10 \rightarrow 9$

Let us Learn

- Give out 40 straws to learners in groups of five. Have them put the straws into two equal groupings. Let them count and tell you how many straws are in each group. Each group is 20, so 20 is the same as 20.
- Give 30 bottle caps to learners to put them into two equal groupings. They should use the term “is the same as”.
- Refer learners to **Let us learn: 2** on page 59 of the Learner’s Book. Have learners compare the number of boys and the number of balls. The number of balls is the same as the number of boys. Learners should work in pairs. (*collaborative learning*)

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Give out 20 bottle caps to learners. Let them pick out 10 and make equal groupings from them. Let them do same for 18 and 20.

High Ability Learner

- Give learners 80 bottle caps and 60 straws. Let them pick 40, 30 and 70 straws or bottle caps at a time and make equal groupings.

Assessment for Learning

Refer learners to Exercise 2 on page 62 of the Learner’s Book for exercise.

Suggested Homework

1. Make three groupings of triangles. Draw 6 triangles for group A, 8 triangles for group B and 6 triangles for group C.
2. Compare the three groups.
Which groups are the same?
Which group is more than the other?

For additional exercises under this module, refer to pages 41 - 44 of the Workbook.

Module I6: Comparing and ordering numbers/objects**Content Standard**

B1.1.1.1.1: Describe numbers and the relationship between numbers 0 to 100.

Indicator

B1.1.1.1.6: Describe the relationship between quantities/numbers up to 100.

Learning Expectation

Learners need to be able to: order numbers from the smallest to the largest and vice versa.

Essentials for Learning

Learners can compare two numbers using the symbols $>$, $=$, $<$.

New words

Order, least, most, smaller, greatest.

Resources

Numeral cards 1-20, bowls of different sizes, number line drawn for each learner, straws, pebbles.

Number of Lessons **3**

Lesson 1: Ordering objects**Starter**

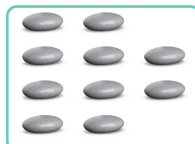
Play doubles of numbers up to 5. Mention a number, learners find the answer by doubling it. E.g. (1) $2 \rightarrow 4$ (2) $3 \rightarrow 6$ (3) $5 \rightarrow 10$

Find Out

Refer to Learner's Book on page 63. Ask learners to identify the youngest and the oldest. They should justify their answers. (*critical thinking and justification of ideas*)

Let us Learn

- Put learners into convenient groups. Give out 20 straws, 15 bottle caps, and 10 pebbles to each group.
- Have them make three groupings on their tables in this order: bottle caps, straws and pebbles.
- Write A against the group with the largest number of items, B against the next larger group and C against the smallest group.

**A****B****C**

- Have them re-arrange the three groupings, starting from the group with the smallest to the group with the largest number of objects; that is, C, A, B.

- Now let them re-arrange the groups starting from the largest to the smallest; that is B, A, C.
 - * Add more counters to what they have and ask them to make groups of 7, 12 and 19 bottle caps. Learners order their groupings from the smallest to the largest and vice versa.
- Refer learners to **Let us learn: 1** on page 63 of the Learner's Book. Go through the activity with learners.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Give learners 3 different sizes of containers. Let them arrange the containers in ascending and descending orders. They should select 3 learners with different heights and arrange them in ascending and descending orders, according to height. (*critical thinking, collaborative learning*)

High Ability Learner

- Give learners enough bottle caps. Let them make groupings of:
 - 9, 15 and 7.
 - 16, 19 and 12.
 They should order them in ascending and descending orders. and

Assessment for Learning

Refer learners to Exercise 1 on page 66 of the Learner's Book for exercise.

Suggested Homework

Ask learners to order these numbers in ascending and descending orders.

1. 10, 15 and 6.
2. 16, 2 and 11.
3. 9, 21 and 17.

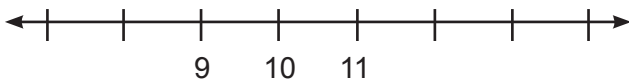
Lesson 2: Ordering numbers (smallest to greatest)

Starter

Play making 10s. Show numeral cards to the class and they say the number that has to be added to make 10. E.g. (1) 6 (2) 9 (3) 4

Let us Learn

- Put learners into groups of six. Write three numbers on the board. Example 12, 6 and 9.
- Have learners tell you the smallest number (6), the second smaller number (9) and the greatest number (12).
So, ordering from smallest to the greatest number, we get 6, 9, 12.
- The number line could be of help. Give the number line and numeral cards to learners in their groups.
Let them order these numbers using the number line: 11, 9 and 10.



- Have them circle the numbers. They already know that numbers to the left of a given number are smaller, whereas numbers to the right of a given number are bigger.
- From the number line, 10 and 9 are to the left of 11 so 11 is bigger than 10. 9 is to the left of 10 so 9 is smaller than 10. Ordering the number from the smallest is: 9, 10, 11.
- Refer learners to **Let us learn: 2** on page 64 of the Learner's Book. Go through the activities with them. (*critical thinking, collaborative learning, justification of ideas*)

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Give out mixed up numeral cards to learners. Have them order the numeral cards from 1 up to 20 in their groups.

High Ability Learners

- What do you do when you are ordering from the smallest number to the greatest?
- Have learners order these numbers in ascending order (1) 6, 8, 12 (2) 13, 2, 19 (3) 17, 5, 20, 13

Assessment for Learning

Refer learners to Exercise 2 on page 67 of the Learner's Book for exercise.

Suggested Homework

Have learners to order these numbers from the smallest to the greatest.

1. 1, 30 and 14.
2. 6, 13 and 12.
3. 39, 16, 20 and 12.

Lesson 3: Comparing numbers (a lot or little bigger or smaller than another)

Starter

Play making 10s. Mention a number, and learners top up to make 10.

Let us Learn

- Display the teacher's table and a learner's table in front of the class.
Have them discuss the weight of the two tables by lifting them one after the other. It is expected that the teacher's table will be very heavier than the learner's table. We say, the teacher's table is a lot heavier than the learner's table.
- Write these numbers on the board: 15, 40 and 65. Let learners describe them using the expressions: a lot bigger than, a little smaller than or a lot smaller than. Example 65 is a lot bigger than 15 and 15 is a little smaller than 40. 15 is a lot smaller than 65.
- Learners work in groups of five. Give out number cards to each group. Write these numbers on the board and ask them to

describe the two numbers. (1) 20 and 85 (2) 35 and 40.

With 35 and 40, 40 is 5 more than 35 and 35 is 5 less than 40. So we say, 40 is a little bigger than 35 and 35 is a little smaller than 40.

With 20 and 85, 85 is 65 more than 20 and 20 is 65 less than 85. Therefore we say, 85 is a lot bigger than 20 and 20 is a lot smaller than 85.

- Refer learners to **Let us learn: 3** on page 65 of the Learner's Book. Talk about the three ages and use the expressions (a lot bigger, a little bigger, a lot smaller, a little smaller) to describe the different ages.

Review Exercise

Differentiated Lessons

Low Ability Learners

- Give out 30 straws to learners in groups. They separate them into (1) 25 and 5 (2) 10 and 20 and they use the expressions a lot bigger/a lot smaller, a little bigger/smaller to describe the two numbers.

High Ability Learners

- Give out 80 straws to learners in groups. They do their own separation and use the expressions a lot bigger/a lot smaller, a little bigger/smaller to describe what they have done (**critical thinking, collaborative learning**)

- Give out 100 number chart to them. Let them select numbers from 50-100 and talk about them using the expressions learnt.

Assessment for Learning

Refer learners to Exercise 3 on page 68 of the Learner's Book for exercise.

Suggested Homework

Have learners describe these numbers using the expressions a lot bigger/a lot smaller, a little bigger/smaller.

1. 39, 16 and 100.

For additional exercises under this module, refer to pages 45 - 47 of the Workbook.

Encourage learners to do the reflection exercises on pages 69 and 70 after this sub-strand.

Learners complete the self-assessment table on page 71. This will help you know each learner's strength and weaknesses.

Module I: Addition of whole numbers up to 20**Content Standard**

B1.1.2.1: Develop a conceptual understanding of addition and subtraction.

Indicator

B1.1.2.1.1: Demonstrate understanding of addition as joining and finding how many altogether and subtraction as separating and finding how many left; numbers 0 to 20.

Learning Expectation

Learners need to be able to identify addition as joining.

Essential for Learning

Learners can form groups of objects and write numerals for them.

New words

Join, altogether, add, addition, total.

Resources

Bottle caps, straws, plastic bottles, seeds.

Number of Lessons **2****Lesson 1: Addition as joining (sum up to 10)****Starter**

Play "Making 10s". Mention a number, and learners top up to make 10. E.g. (1) $9 \rightarrow 1$
(2) $7 \rightarrow 3$ (3) $6 \rightarrow 4$

Find Out

Refer learners to page 72 of the Learner's Book to answer the questions there. Expected answers: 6 learners are sitting, 3 are joining, 9 altogether.

Let us Learn

- Call two learners to the front of the class. Give one learner 6 books and the other 10 books. Let them count them aloud to the class. Let them to put them together. Call a third learner to count and tell the total number of books to the class.
- In groups of five, ask them to count 48 and 6 bottle caps and put them together to find the total. **(The total of an addition sentence is called a sum.)**
- Now they should create story problems and solve them. E.g. Adwoa has 6 toffees. Ama adds 4 more. How many toffees has Adwoa now? **(critical thinking, collaborative learning)**
- Refer learners to **Let us Learn: 1** on page 72 of the Learner's Book. They should count the number of pebbles that Mamle and Oko are holding and give the total.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Learners act out story problems in groups of three, with 6 straws. Learner 1 gives some straws to Learner 2 and Learner 3. They put them together and find the total. **(collaborative learning)**

High Ability Learners

- Have learners work in small groups. Give 10 bottle caps to each group. One learner comes up with a word problem and picks bottle caps to represent the sentence and the rest find the answer. E.g. I have 2 bottle caps. Aku gives me another 8. How many bottle caps do I have now? $2 + 8 = 10$. **(problem solving, collaborative learning)**

Assessment for Learning

Refer learners to Exercise 1 on page 74 of the Learner's Book for exercise.

Lesson 2: Addition as joining (sum up to 20)**Starter**

Play "Making 10s". Mention a number and learners top up to make 10. E.g. (1) $9 \rightarrow 1$
(2) $7 \rightarrow 3$ (3) $6 \rightarrow 4$

Let us Learn

- Give learners a real-life addition problem where learners have to add two numbers. E.g. Kwesi has 6 birds in a cage. His father brought him another 6. How many birds has Kwesi now? Have them use bottle caps to represent the birds.
- Make 8 strokes (IIIIIIII) and 6 strokes (IIIIII) separately on the board. Ask learners to pose a word problem for that and find the answer. Repeat this activity several times with them.
- In groups of five, let them act out several scenarios.
- Refer learners to **Let us learn: 2** on page 73 of the Learner's Book. Learners pose word problems for the two pictures. E.g. Kwesi has 7 erasers, the teacher added 10 more. How many erasers has Kwesi now?
- Refer learners to **Let us learn: 3** on page 73 of the Learner's Book. Go through the activity with them.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Give 10 straws to learners. They act out their own story problems and solve them.

High Ability Learners

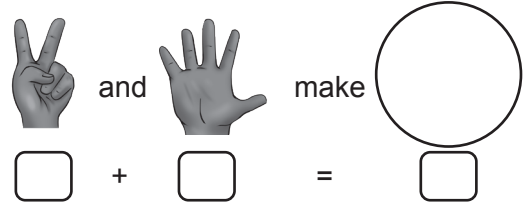
- Give out 20 straws to learners. They act out their own word problems and solve them.

Assessment for Learning

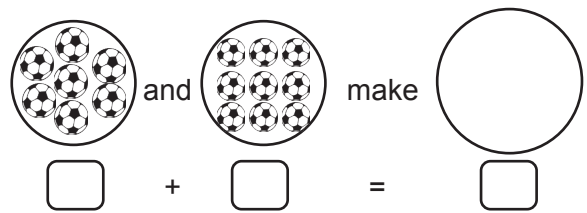
Refer learners to Exercise 2 and 3 on pages 75 and 76 of the Learner's Book for exercise.

Suggested Homework

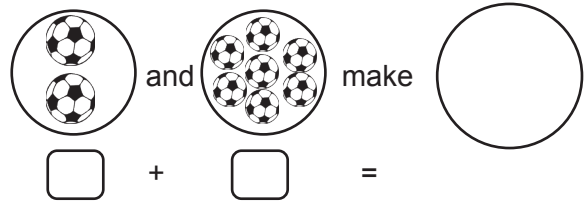
1



2



3



For additional exercises under this module, refer to pages 48 - 51 of the Workbook.

Module 2: Subtraction of whole numbers within 20**Content Standard**

B1.1.2.1: Develop a conceptual understanding of addition and subtraction.

Indicator

B1.1.2.1.1: Demonstrate understanding of addition as joining and finding how many altogether and subtraction as separating and finding how many left; numbers 0 to 20.

Learning Expectation

Learners need to be able to identify subtraction as separation.

Essentials for Learning

Learners can do addition with sum up to 20.

New words

Subtract, separation, take away, addition.

Resources

Bottle caps, straws.

Number of Lessons **2**

Lesson 1: Subtraction as separation up to 10**Starter**

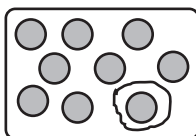
Play: "2 less". Mention a number and learners reduce it by 2. E.g. (1) $6 \rightarrow 4$ (2) $9 \rightarrow 7$ (3) $6 \rightarrow 4$

Find Out

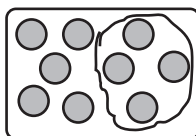
Refer learners to page 77 of the Learner's Book. Have learners count the number of toffees, count how many have been taken away and the number left. $8 - 3 = 5$ (**critical thinking**)

Let us Learn

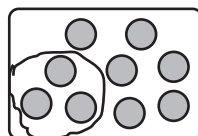
- Count out with learners 8 big books and put them on the table. Separate 3 from them.
- Have them work in groups of six. Ask learners how many books were on the table initially, how many have been separated and how many are left. (**critical thinking, collaborative learning**)
- Give 10 bottle caps to learners. Have them pick 9 bottle caps and separate them as follows: (1) 7 and 2, (2) 5 and 4, (3) 8 and 1. Each time, they must describe the subtraction sentence (see diagrams below). (**critical thinking, collaborative learning**).



9 take away
1 is 8.



9 take away
4 is 5.



9 take away
3 is 6.

- Refer to **Let us learn: 1** on page 77 and **Let us learn: 2** on page 78 of the Learner's Book. Take them through the activities. They should use objects to demonstrate the examples practically. (**critical thinking**)

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Have learners work in groups of four. Give them 8 straws. They separate them as follows and find the answers:
(1) 4 and 4 (2) 6 and 2 (3) 7 and 1

High Ability Learners

- Give out 10 bottle caps. Working in pairs, they make their own separation and explain to the partner what they have done.
- They both find an answer. Learners have to alternate.

Assessment for Learning

Refer learners to Exercises 1 and 2 on pages 79 and 80 of the Learner's Book for exercise.

Suggested Homework

Give learners 10 straws. Let them separate them in four different ways, write a subtraction sentence and find the answer.

Lesson 2: Subtraction as separation up to 20

Starter

Play: "2 less". Mention a number and learners reduce it by 2. E.g. (1) $6 \rightarrow 4$ (2) $9 \rightarrow 7$ (3) $6 \rightarrow 4$

Find Out

Refer to Learner's Book page 77. Learners look at the picture and answer the question.

Let us Learn

- Call out 8 learners to the front of the class. Have learners in the class count them. They should say the last number: 8. Ask 5 of them to go and sit down. How many are left? 3.
- Give out straws and bottle caps to learners in their groups. One poses a subtraction sentence, the rest pick straws to represent it. E.g. Afia has 6 pencils. She gives out 4. How many are left? They solve it.
- Refer to **Let us learn: 3** on page 78 of the Learner's Book. Learners count the number of pencils. They find out how many are left if they take away the pencils in the ring.

Review Exercise

Differentiated Lessons

Low Ability Learners

- Give learners 10 straws. They pose word problems themselves and solve them. Have them work in pairs.

High Ability Learners

- Give learners 20 bottle caps. They make their own subtraction sentences, and use the bottle caps to demonstrate the subtraction and find the answer.

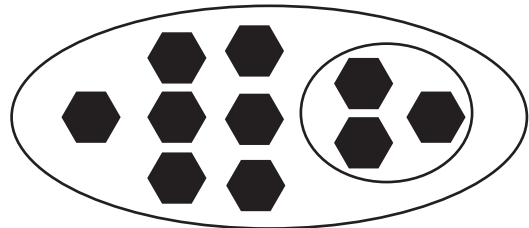
Assessment for Learning

Refer learners to Exercise 3 and 4 on pages 81 and 82 of the Learner's Book for exercise.

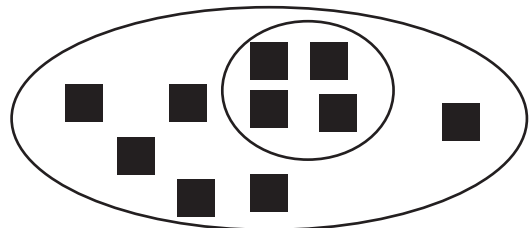
Suggested Homework

Write subtraction sentences for these diagrams and solve them.

1



2



For additional exercises under this module, refer to pages 52 - 54 of the Workbook.

Module 3: Word problems (comparing 2 sets)**Content Standard**

B1.1.2.2 Demonstrate an understanding of the concept of equality.

Indicator

B1.1.2.2.1: Demonstrate understanding of addition as joining and finding how many altogether and subtraction as separating and finding how many left; numbers 0 to 20.

Learning Expectation

Learners need to be able to generate and solve word problems and compare two sets and determine whether the members are the

same (equal to) or not the same (not equal to).

Essential for Learning

Learners can join two sets and find how many altogether. They can also separate a set and find out how many are left.

New words

Compare, same as, equal to, not equal to.

Resources

Bottle caps, straws, plastic bottles.

Number of Lessons **2**

Lesson 1: Comparing 2 sets (equal to or same as)**Find Out**

Refer learners to page 83 of the Learners Book. Let them compare the content (volume of water) of A and C and state their findings.

Let us Learn

- Let them count out 6 pebbles and 6 bottle caps, and put them in separate groups. Deduce from them what they notice about the two numbers. They are the same.
- Add more resources to what they have and let them form equal groups. The total should not be more than 20.
- Refer learners to **Let us learn: 1** on page 83 of the Learner's Book. Let them count the toffees and the ice creams and share their findings. Introduce the symbol "=" which means "the same as". So the number of toffees = the number of ice creams.
(critical thinking, collaborative learning)

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Give learners 10 erasers. They should make two equal groups. They work in pairs and talk about what they have done.

High Ability Learners

- Give learners 20 straws. They make two groups of the same number. They should discuss before forming the groups.

Assessment for Learning

Refer learners to Exercise 1 on page 85 of the Learner's Book for exercise.

Suggested Homework

Give learners 20 bottle caps and 16 straws. They make equal groupings.

Lesson 2: Comparing 2 sets (not equal to)**Starter**

Play "how many fingers up and how many fingers down"? Show 2 fingers and learners say 2 up and 3 down.

Find Out

Refer learners again to the three containers with water on page 84 of the Learner's Book. Deduce from them the containers which are the same and those that are not the same.

The content of A and C are the same, but the content of A is not the same as B, so A is not equal to B. Again the content in B is not equal to C.

Let us Learn

- Put 5 textbooks and 6 pencils on a table. They should be visible to all the learners. Ask a boy to count the textbooks one by one and a girl to count the pencils one by one.
- Ask learners to tell you whether the number of textbooks is the same/not the same as the pencils. They should justify what they say. The number of text books are not the same as the number of pencils.
- Call 6 girls and 8 boys to the front of the class. The girls stand together as a group and the boys stand together as another group. Learners tell whether the number of girls are the same as the number of boys. (They are not the same).
- Give out 20 straws to each group. They pose their own word problems and solve them. (*critical thinking, collaborative learning, problem solving*)
- Refer to **Let us learn: 2** on page 84 of the Learner's Book. Have learners count the number of bees in (A) and the number of mosquitoes in (B) and answer the question. The number of bees is not the same as the number of mosquitoes.
- Refer to **Let us learn: 3** on page 82 of the Learner's Book. Take learners through the activity.

Review Exercise

How do you know if 2 sets are equal or not? By counting and comparing the number of objects in each set.

Differentiated Lessons**Low Ability Learners**

- Give learners 10 bottle caps. Ask them to make a set (A) with 6 bottle caps and another set (B) with 3 bottle caps. Ask them to compare the two sets.

High Ability Learners

- Give learners 20 straws. Ask them to build any two sets with different numbers and compare them.

Assessment for Learning

Refer learners to Exercise 2 on pages 86 and 87 of the Learner's Book for exercise.

Suggested Homework

Draw a set of 4 squares and a set of 5 triangles and compare them.

For additional exercises under this module, refer to pages 55 - 58 of the Workbook.

Module 4: Word problems (joining and separating)**Content Standard**

B1.1.2.2 Demonstrate an understanding of the concept of equality.

Indicator

B1.1.2.2.1: Demonstrate understanding of addition as joining and finding how many altogether, and subtraction as separating and finding how many left; numbers 0 to 20.

Learning Expectation

Learners need to be able to: understand addition as joining.

Essential for Learning

Learners can separate a number of objects into two groups.

New words

Separate, join, altogether.

Resources

Straws, bottle caps, fruits.

Number of Lessons **2****Lesson 1:** Word problems (joining)**Starter**

Play "One less than" with learners. Call out a number between 1 and 10, and learners tell you the number which is one less. E.g.
(1) $9 \rightarrow 8$ (2) $7 \rightarrow 6$ (3) $5 \rightarrow 4$

Find Out

Refer learners to page 88 (**Find out "A"**) of the Learner's Book. Elicit from them how they can get an answer to the question. What should be added to 5 to get 9? Let them justify their answer. Expected answer is "4".

They can count on until they get the answer or subtract 5 from 9 to get the answer. Have learners solve it in pairs in their groups.
(*collaborative learning, critical thinking*)

Let Us Learn

- Put 5 chairs in front of the class. Put another set of 5 chairs in another place. Deduce from them how to get the total number of chairs. (We have to put them together and count them all.) So 5 chairs and 5 chairs give a total of 10 chairs.
(*critical thinking*)
- Refer to **Let us learn: 1** on page 88 of the Learner's Book. 2 birds on a tree, 9 more joining them. Learners write addition sentence and solve it.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Give this word sentence to them to solve: Edem has 6 balls, his uncle gives him 3 more. How many balls does Edem have now?

High Ability Learners

- Give them this word problem to solve: Esi had 16 toffees, Amina gave her 4 more. How many toffees does Esi have now?. They write an addition sentence and solve it.

Assessment for Learning

Refer learners to Exercise 1 on pages 89 and 90 of the Learner's Book for exercise.

Suggested Homework

- Mummy bought 7 chocolates for me. Daddy added 3. How many chocolates do I have now?
- There are 4 oranges in one basket and 10 in another basket. How many oranges are there altogether?

Lesson 2: Word problems (separation)

Starter

Play “Two less than” with learners. Mention a number, and learners reduce it by 2.

E.g. (1) $6 \rightarrow 4$ (2) $10 \rightarrow 8$ (3) $9 \rightarrow 7$

Find Out

Refer learners to page 88 (**Find out “B”**) of the Learner’s Book. Elicit from learners how to get the number of pencils left. Subtract 5 from 8, that gives 3.

Let us Learn

- Put 12 books on the table. Call a learner to count with the whole class. Another learner takes 5 books away. Another learner counts the remaining books and tells the class what is left. i.e. 7.
- Refer to page 89 of Learner’s Book. Go through the activities in **Let us learn: 2** with learners.
- Learners should look at the eggs and tell the number of eggs broken and the number left.
- Working in pairs, have learners pose one subtraction sentence and solve it. (**critical thinking, collaborative learning**)

Review Exercise

Differentiated Lessons

Low Ability Learners

- Give out 5 bottle caps to learners. They form subtraction sentences and solve them.

High Ability Learners

- Give 10 straws to them. They act out a practical scenario, pick the straws to represent it and solve the problem.

Assessment for Learning

Refer learners to Exercise 2 and 3 on pages 91 and 92 of the Learner’s Book for exercise.

Suggested Homework

- I have 15 bananas I ate 9. How many are left?
- Esi have 12 toffees. She gives 7 to Afotey. How many are left?

For additional exercises under this module, refer to pages 59 - 61 of the Workbook.

Module 5: Relationship between addition and subtraction**Content Standard**

B1.1.2.2 Demonstrate an understanding of the concept of equality

Indicator

B1.1.2.2.2 Use relationship between addition and subtraction to demonstrate understanding of equality for numbers within 20.

Learning Expectation

Learners need to be able to: identify the relationship between addition and subtraction.

Essential for Learning

Learners can pose word problems involving addition and subtraction and solve them.

New words

Symbol, unknown, join, separate.

Resources

Straws, bottle caps, seeds, pebbles.

Number of Lessons **3**

Lesson 1: Changing addition sentence to subtraction sentence

Starter

Play "How many fingers up and how many fingers down" with learners. Show one finger up; learners say 1 up and 4 down.

Find Out

Refer to Learner's Book page 93. Deduce from them how they will solve $7 + \square = 12$ and $12 - \square = 7$. They should justify their answers by explaining what they did. Have learners work in pairs. Counting on from 7 to 12 could be used and that gives the answer 5. *(collaborative learning, critical thinking)*

Let us Learn

- Have learners brainstorm and come up with a solution of what this means. What must be added to 7 to get 12? Learners can count on from 7 to 12. That gives 5.
- Write a similar problem on the board and let learners solve it. They should work in pairs. *(collaborative learning)*
- $12 - \square = 7$. Elicit from learners the meaning of that statement. Have learners act out the problem and come up with the meaning and the solution. It means what must be subtracted from 12 to get 7? Have them compare their answers.
- Refer learners to **Let us learn: 1** on page 93 of Learner's Book.
 $5 + \square = 7$ $7 - \square = 5$

- Deduce from them the interpretation of the two statements and how they can solve them. Learners have to justify their answers. Using counting on, $5 + 2 = 7$ and $7 - 2 = 5$. *(critical thinking, collaborative learning)*
- Find the missing addend $12 + \square = 18$. Start with 12, count on till you get to 18 and find the number of times counted. That is 13, 14, 15, 16, 17, 18. How many times did you count to get to 18? 6 times. Now we have $12 + 6 = 18 \rightarrow 18 - 12 = 6$ *(collaborative learning)*

Review Exercise

To find an unknown in addition problem, use the counting on method and find the number of times counted.

Low Ability Learners

- Give out bottle caps to learners to solve this: $5 + \square = 9$, $\rightarrow 9 - \square = 5$

High Ability Learners

- Let learners work in pairs to pose their own addition and subtraction sentences and solve them.

Assessment for Learning

Refer learners to Exercise 1 on page 95 of the Learner's Book for Exercise.

Suggested Homework

- $5 + \square = 10$, and $10 - \square = 5$
- $4 + 8 = 12$, and $12 - 8 = \square$

Lesson 2: Changing subtraction sentence to addition sentence

Starter

Play “1 less”. Mention a number, and learners reduce it by 1.

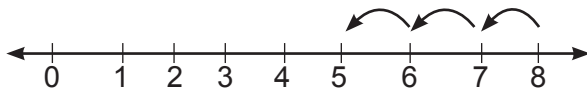
E.g. (1) $8 \rightarrow 7$ (2) $9 \rightarrow 8$ (3) $6 \rightarrow 5$

Find Out

Refer to **Let us learn: 2** on page 93. E.g. $6 - \square = 2$. This means, what must be added to 2 to get 6. $2 + \square = 6$.

Let us Learn

- Pose a practical scenario and learners find a subtraction sentence for it. I have 8 oranges. I ate some. I now have 3. How many did I eat? $8 - \square = 3$.
- Deduce from learners how they can find the number of oranges that I ate. They can use count down (back) to get the answer.



- Write some subtraction sentences on the board and let learners solve them in their groups. They can use straws.
 - (1) $10 - \square = 7$ (2) $18 - \square = 16$
 - (3) $20 - \square = 10$
- Refer to **Let us learn: 2** on page 93 of the Learner's Book. Go through the activity with learners.

Review Exercise

Differentiated Lessons

Low Ability Learners

- Write these subtraction sentences for them to solve: (1) $4 - \square = 1$ (2) $6 - \square = 10$
(3) $5 - \square = 3$

High Ability Learners

- Working in pairs, learners write two subtraction sentences and solve them on their own.

Assessment for Learning

Refer learners to Exercise 2 on page 95 of the Learner's Book for exercise.

Lesson 3: Addition sentence to subtraction sentence and vice versa

Starter

Play “1 less and 1 more”. Mention a number, say 6, and learners mention 5 as 1 less and 7 as 1 more.

Let us Learn

- Put learners into groups of 5.
- Write 1 subtraction and 1 addition sentence on the board. Have the group solve them and then do a presentation to the class.
 - (1) $8 + \square = 12 \rightarrow 12 - \square = 8$
 - (2) $15 - \square = 5 \rightarrow 5 + \square = 15$
- Working in pairs, have learners solve these.
 - (1) $16 + \square = 20 \rightarrow 20 - \square = 16$
 - (2) $17 - \square = 10 \rightarrow 10 + \square = 17$
- Refer to page 94. Go through the activity with learners.

Review Exercise

Differentiated Lessons

Low Ability Learners

- Write these on the board for learners to solve. They should work in pairs.
 - (1) $8 - \square = 7$ (2) $9 - \square =$

High Ability Learners

- Learners should work in pairs. They write their own addition sentences, change them to subtraction sentences and solve them.

Assessment for Learning

Refer learners to Exercise 3 on page 96 of the Learner's Book for exercise.

Suggested Homework

Change these subtraction sentences to addition sentences and solve them.

- (1) $8 - \square = 7$ (2) $12 - \square = 6$
- (3) $10 - \square = 3$

For additional exercises under this module, refer to pages 62 - 64 of the Workbook.

Module 6: Word problems (addition and subtraction)**Content Standard**

B1.1.2.2 Demonstrate an understanding of the concept of equality

Indicator

B1.1.2.2.3 Generate and solve word problem situations when given a number sentence involving addition and subtraction of numbers within 20.

Learning Expectation

Learners need to be able to pose word problems when given addition and subtraction sentences and solve them.

Essentials for Learning

Learners can find the sum for two numbers.

New words

Add, subtract, generate, altogether.

Resources

Straws, bottle caps

Number of Lessons **3**

Lesson 1: Word problems (addition)**Starter**

Play "Making 10". Mention a number and learners top up to make 10. E.g.:

(1) $6 \rightarrow 4$ (2) $3 \rightarrow 7$ (3) $1 \rightarrow 9$
(4) $2 \rightarrow 8$

Find Out

Refer to Learner's Book page 97 (**Find out: "A"**). Have learners look at the pictures and solve the problem. That is, 2 houses + 2 houses = 4 houses.

Let us Learn

- Write an addition sentence on the board. E.g. $6 + 3 = \square$.
- Learners should generate word problems for that sentence. E.g. I had 6 pencils, and my mother gave me 3 more. How many pencils do I have now?
- Learners use straws to represent the statement and solve it.
- Have learners work in pairs. They write an addition sentence and they pose a word problem (they should use their local language). E.g. $6 + 12 = 18$
- Refer to **Let us learn: 1** on page 97 of the Learner's Book. Go through the activities with learners.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Write this addition sentence on the board for learners to generate a word problem for it and solve it.
 $4 + 5 = \square$

High Ability Learners

- Learners work in pairs. They write an addition sentence and change it to a word problem and solve it.

Assessment for Learning

Refer learners to page 96 of the Learner's Book for the group activity.

Refer learners to exercise 1 on page 99 of the Learner's Book.

Suggested Homework

Write word problems for these:

- $2 + 6 = 8$
- $6 + 12 = 18$

Lesson 2: Word problems (subtraction)**Starter**

Play "1 less" with learners. Mention a number, and learners reduce it by 1. E.g. $8 \rightarrow 7$, $9 \rightarrow 8$

Find Out

Refer to Learner's Book page 97 (**Find out: "B"**). Learners write the subtraction sentence and solve it. $4 - 1 = 3$.

Let us Learn

- Learners work in groups of five. Give each group a subtraction sentence card.
- They pose a word problem for it and solve it. E.g. $10 - 8 = \square$. Example 10 eggs in a bowl, 8 are broken. How many are left? 2 are left. $16 - \square = 6$. I had 16 toffees and I ate some. I now have 6. How many did I eat? Ask what to add to 6 to get 16. The answer is 10.
- Now let learners work in pairs. They write their own subtraction sentence, pose a word problem and solve it.
- Refer learners to page 98 of the Learners Book. Go through **Let us learn: 2** with them. $12 - 8 = 4$.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Learners work in pairs to solve this:
 $5 - 4 = \square$

High Ability Learners:

- Learners work in pairs. They write a subtraction sentence, pose a word problem for it and solve it. E.g. $12 - 8 = \square$

Assessment for Learning

Refer learners to Exercise 2 on page 100 of the Learner's Book.

Suggested Homework

Write word problems for these subtraction sentences and solve them:

- $16 - 8 = \square$
- $12 - \square = 10$

Lesson 3: Word problem (addition and subtraction)**Starter**

Play "one more/one less". Mention a number, and learners give a number which is one more or one less. E.g. 6, one more is 7 and one less is 5. 18: one more is 19 and 1 less is 17.

Find Out

Refer learners again to page 97. Elicit from them how they can write the addition and the subtraction sentences and solve them.

(critical thinking)

Let us Learn

- Call two learners (a boy and a girl) to the front of the class. Give 8 straws to the girl and 6 straws to the boy.
- Have them count to the whole class. Ask the girl to add hers to the boy's. Let the boy count all the straws and tell the class the total: $8 + 6 = 14$.
- Deduce from the class whether the act they did was addition or subtraction. **(critical thinking)**
- Give out straws and bottle caps to learners. Have them work in pairs. They act out stories and identify whether the situation involves putting together or taking away. They should justify. **(critical thinking, justification of ideas, collaboration)**
- Example: I have two bottle caps, I am adding 6 more. The partner tells whether its addition or subtraction.
- Have learners work in groups of four and repeat the activities with different materials **(collaboration, critical thinking, justification of ideas)**
- Let learners do the activity on page 98. Let them work in pairs.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- I have 6 bottle caps. Bridget gives me 6 more. How many bottle caps do I have now?. Learners work in pairs.

High Ability Learners

- Serwah has 19 toffees. She gives 10 to her teacher. How many toffees are left?
- In pairs, have learners pose word problems and solve them. **(collaborative learning, personal development and leadership)**

Assessment for Learning

Refer learners to Exercise 3 on page 101 of the Learner's Book.

For additional exercises under this module, refer to pages 65 - 67 of the Workbook.

Module 7: Addition and subtraction facts (fluency 1)**Content Standard**

B1.1.2.3 Demonstrate fluency with addition and subtraction-relationships.

Indicator

B1.1.2.3.1 Use strategies for solving basic addition facts (and related subtraction fact) to 10.

Learning Expectation

Learners need to be able to find 1 more or 1 less for a given number.

Essentials for Learning

Learners can pose simple addition and subtraction sentences and solve them.

New words

Count on, count back, 1 more, 1 less, 2 more, 2 less.

Resources

Bottle caps, straws, numeral cards, number line (1-20).

Number of Lessons **2**

Lesson 1: One more/one less**Starter**

Play "Show me numbers 1-10". Mention a number, and learners show fingers and pick a numeral card to represent it.

Find Out

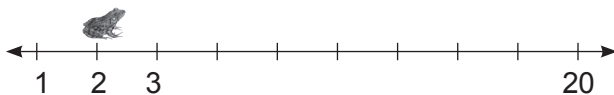
Refer learners to page 102. Deduce from learners the relationship between the numbers when moving forwards and backwards:

B is 1 more than A.

B is 1 less than C. (*critical thinking*)

Let us Learn

- Call 6 boys and 5 girls to the front of the class. Let them face each other.
- The class tells which gender are more and by how many. The boys are 1 more than the girls and the girls are 1 less than the boys.
- Draw a number line on the board and label it from 1-20. Count along, making one jump for every number you count.



- Draw a frog on it and let learners know that they are making 1 more (when the frog jumps to the next number forwards) or 1 less (when the frog jumps to the next number, backwards).
- Refer learners to **Let us learn: 1** on page 102 of the Learner's Book. Let them count 1 more/1 less on the number track using their fingers. (*Collaborative learning*)

- Direct learners to **Let us do an activity** on page 101 of the Learner's Book. In groups of five, let them do the two activities orally.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Give them numeral cards 1-10.
- Let them pick card 5 and the cards which are 1 more or 1 less.
- They should work in pairs.

High Ability Learners

- Working in pairs, have learners select a number between 1 and 20.
- They find the number which is 1 less or 1 more.

Assessment for Learning

Refer learners to Exercise 1 on page 104 of the Learner's Book.

Suggested Homework

Write 1 more and 1 less for the following numbers:

(1) 13 (2) 26 (3) 82 (4) 77

Lesson 2: Two more/two less

Starter

Play “Show me fingers up to 10”.

Mention a number and the learners show fingers to represent it.

Find Out

Refer again to Learner’s Book page 102 (**Find out**).

Deduce from learners the relationship between A and C. A is 2 less than C and C is 2 more than A.

Let us Learn

- Call six learners to the front of the class. Put 4 chairs there for them to sit on. Let them discuss what they see. Two learners will not get a chair to sit on. Therefore the learners are 2 more than the chairs and the chairs are 2 less than the learners.
- Refer learners to **Let us learn: 2** on page 103. They should use their fingers to hop by 2s forwards and backwards.
- They make 2 hops/jumps forwards to find 2 more. They make 2 hops/jumps backwards to find 2 less. (*collaborative learning, personal development*)

- Refer learners to **Let us learn: 2** on page 103.

Put the frog at 6 and let it jump forwards by 2s from 6 to 8 to find 2 more.

Put the frog at 6 and let it jump by 2s backwards from 6 to 4 to find 2 less.

(*collaborative learning*)

Review Exercise

Differentiated Lessons

Low Ability Learners

- Give number line 1-10 to learners. They select a number and find 2 more and 2 less. Let them work in pairs.

High Ability Learners

- Give them number line 1-20. They select a number and find 2 more and 2 less. They should work in pairs.

Assessment for Learning

Refer learners to Exercise 2 on page 105 of the Learner’s Book.

Suggested Homework

1. Select three numbers from 6 to 20 and write 2 more for each number selected.
2. Select three numbers from 10 to 30 and write 2 less for each number selected.

For additional exercises under this module, refer to pages 68 - 70 of the Workbook.

Module 8: Addition and subtraction facts (fluency 2)**Content Standard**

B1.1.2.3. Demonstrate fluency with addition and subtraction-relationships.

Indicator

B1.1.2.3.1 Use strategies for solving basic addition facts (and related subtraction fact) to 10.

Learning Expectation

Learners need to be able to double numbers from 1 up to 10. Use objects to represent doubles up to 5.

Essentials for Learning

Learners can identify numbers that are 1 more than and 1 less than.

New words

Double, same.

Resources

Bottle caps, straws, pictures of animals, numeral cards.

Number of Lessons **2**

Lesson 1: Making doubles (1 - 5)**Starter**

Play "1 more than, 1 less than". Call out a number, and learners write down the number which is 1 less or 1 more.

Find Out

Refer learners to page 106 of the Learner's Book. Let them look at the legs of the animals and tell you what they notice. A hen has 2 legs. A goat has 4 legs. A spider has 8 legs.

Let us Learn

- Refer again to the pictures of the animals on page 106. Let learners discover that the total number of legs equal to double the number of legs on one side, because both sides have the same number of legs. For example a goat has 2 legs on one side, so double of 2 makes 4. A hen has 1 leg on one side, so double of 1 makes 2. A spider has 4 legs on one side, so double of 4 makes 8. (**critical thinking**)
- Have learners come up with more examples of animals or objects where certain parts are doubles.
- Again let them come up with parts of the human body which are doubles, e.g. eyes, legs. Have them work in pairs, . (**collaborative learning, critical thinking**)
- Have learners pick a pencil. Ask how many they are holding. They answer '1'. Let them pick up another pencil, and deduce that double of 1 is 2.

- Direct learners to **Let us learn** on page 106 of the Learner's Book. Let them find doubles of the images there. Let them work in pairs. (**collaborative learning, justification of ideas**)

Review Exercise

To double a number we add the number to itself.

Differentiated Lessons**Low Ability Learners**

- Give out numeral cards 1-5 to learners. They pick a card and double the number. E.g. 3 → 6. They should work in pairs.

High Ability Learners

- Give out numeral cards 1-10 to learners. They pick a card at random and double the number. E.g. 7 → 14. They should work in pairs.

Assessment for Learning

Refer learners to Exercise 1 on page 107 of the Learner's Book.

Suggested Homework

- Write the names of 3 animals which have 4 legs.
- Double the following numbers: 2, 3, 6.

Lesson 2: Making doubles (6 -10)

Starter

Play “2 more and 2 less”. Mention a number and learners call out a number which is 2 more or 2 less. Example. 6, 2 more is 8 and 2 less is 4.

Let us Learn

- To double a number, we add the same number on, or we put the same amount of the ‘lot’ together.
- Working in their groups, give them counting materials such as straws or bottle caps.
- Randomly call out numbers between 5 and 9. Learners count out that number of objects twice, put the objects together and give the total. E.g. $IIIIII + IIIIII = 12$. So, the double of 6 is 12.
- Repeat this activity several times with different numbers with learners.

Review Exercise

Differentiated Lessons

Low Ability Learners

- Give learners numeral cards 5-9. Working in pairs, they take turns to pick a numeral card, double the number and give the answer.

High Ability Learners

- Give them numeral cards 1-10. Working in pairs, one learners picks a numeral card and the other doubles the number. They do it in turns.

Assessment for Learning

Refer learners to Exercise 2 on page 108 of the Learner’s Book.

Suggested Homework

Find doubles of these numbers.

(1) 5 (2) 4 (3) 7 (4) 9

For additional exercises under this module, refer to pages 71 - 73 of the Workbook.

Module 9: Addition and subtraction facts (fluency 3)**Content Standard**

B1.1.2.3 Demonstrate fluency with addition and subtraction-relationships.

Indicator

B1.1.2.3.1 Use strategies for solving basic addition facts (and related subtraction fact) to 10.

Learning Expectation

Learners need to be able to find 10 more or less than a given number up to 100.

Essentials for learning

Learners can make doubles of numbers from 1-10.

New words

More, less, count up, count down, 10 more, 10 less, tens.

Resources

Bottle caps, straws, numeral cards, number charts (1-100).

Number of Lessons **2**

Lesson 1: Finding 10 more**Starter**

Play doubles: In their groups, a learner picks a card and the rest give the double of that number. The numbers should be between 1-5. Example: 4 and they pick 8, show it and mention 8. (*collaborative learning, leadership skills, critical learning*)

Find Out

Refer learners to **Find out** on page 109 of the Learner's Book. Have learners count from 7 to 37. They should tell you what they observe. Have them work in pairs. Let them locate 13, 23 and 33 on the number chart.

What can they say (The number above 23 is 13, which decreases by 10, the number below 23 is 33, which increases by 10. (*critical thinking, collaborative learning*))

Let us Learn

- Display the 100-numeral chart on the board.

| | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|-----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 |
| 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 |
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 |
| 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 |
| 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |

- Count by 10s from 10 while moving your finger down the tens column: 10, 20, 30 100.
- Remind learners that counting forwards by 10s means you are counting a number that gives you 10 more than the previous number.
- Let learners know that the number just below any number on the 100-number chart is 10 more. So moving downwards on the number chart is counting 10 more.
- Have learners count forwards in tens to find numbers that are 10 more.
- Remind learners that you can start on any number and count forwards in tens. Circle 31. Have learners count in tens forward.
- Point to a number and let learners mention the number that is 10 more.
- Repeat with different numbers, example: 42. Let them count on in tens on the number chart in pairs to find 10 more. (*collaborative learning*)
- Refer learners to **Let us learn: 1** on page 109 of the Learner's Book. Go through the exercise with them.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Have learners work in pairs. One circles a number and the other person counts by 10s forward using his/her finger. They should alternate. (*collaborative learning, leadership skills*)

High Ability Learners

- Give out the 100-number chart to learners to use in answering the following. I am 65 years old.
 - Which number is 10 less than me? and
 - Which number is 10 more than me?
 - Working in pairs they start from any number and count forwards and backwards in tens.

Assessment for Learning

Refer learners to page 110 of the Learner's Book for exercise.

Suggested Homework

What is 10 more than these numbers?

(1) 67 (2) 22 (3) 18 (4) 65.

Lesson 2: Finding 10 less**Starter**

Play "Making 10s". Mention a number, and learners top up to make 10.

E.g. (1) $6 \rightarrow 4$ (2) $7 \rightarrow 3$ (3) $0 \rightarrow 10$

Find Out

Refer learners to page 109 of the Learner's Book. Let them point to 33 on the number chart and tell you what they observe about the 2 numbers above it.

Let us Learn

- Display the 100-number chart on the board.
- Start on 25 and count backwards 10 times with learners. Let learners tell you the number they will land on. That is 15.
- Call learners to come and point to another number say 16. They move 10 times backwards and land on 6. (*collaborative learning, observation*)

- Give number chart to learners in groups. They start from any number, say 18, and count backwards and land on 8.
- Have learners repeat this activity several times moving backwards from a selected number.
- Refer to **Let us learn: 2** on page 110 of the Learner's Book. Make learners move up from 54. The next number is 44. Let them know that moving upwards on the 100-number chart is 10 less.
- In pairs, learners find 10 less starting from any number. (*collaborative learning*)

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Give out number line card 1-15. They start on any number between 10 and 15 and move backwards 10 times and call out the number. They should work in pairs. (*collaborative learning*)

High Ability Learners

- Give out number chart 1-20 to learners. They point to any number and count backwards 10 times. Let them work in pairs. (*collaborative learning*)

Assessment for Learning

Refer learners to exercise 2 and 3 on Learner's Book page 111.

Suggested Homework

Find 10 less of these numbers:

(1) 77 (2) 99 (3) 86 (4) 23

For additional exercises under this module, refer to pages 74 - 75 of the Workbook.

Module 10: Addition and subtraction facts (fluency 4)**Content Standard**

B1.1.2.3 Demonstrate fluency with addition and subtraction-relationships.

Indicator

B1.1.2.3.1 Use strategies for solving basic addition facts (and related subtraction fact) to 10.

Learning Expectation

Learners need to be able to find two numbers which sum up to five (5).

Essentials for learning

Learners can find 1 more or less than a given number.

New words

More, less, count up, count down.

Resources

Bottle caps, straws, numeral cards, numerals (1-10).

Number of Lessons **2**

Lesson 1: Making 5s**Starter**

Play "Making doubles": Mention a number from 1-10 arbitrarily and learners double it. E.g.
(1) $4 \rightarrow 8$ (2) $3 \rightarrow 6$ (3) $7 \rightarrow 14$

Find Out

Refer learners to **Find out: A** on page 112 of the Learner's Book.
Let them answer the question.
How many do I add to 3 to get 5? Expected answer: 2.

Let us Learn

- Stand in front of the class, raise 2 fingers, ask learners to show their fingers which when added to yours make 5.
(*collaborative learning*)



- Change, using different fingers for them to add up to make 5.
- Learners work in pairs. Give out straws to each pair. They play making fives by using the straws. (*collaborative learning*)
- Refer learners to **Let us learn: 1** on page 112 of the Learner's Book. Go through the exercise with them.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Give out bottle caps. Working in pairs they use the caps to play "making 5s".

High Ability Learners

- Working in pairs, learners make 5s with these numbers: 4, 2 and 3.

Assessment

Refer learners to Exercise 1 on pages 113 and 114 of the Learner's Book.

Lesson 2: Making 10s**Starter**

Play "Making 5s". Show a number of fingers, and learners add another number to give the sum 5.

Find Out

Refer learners to **Find out: B** on page 112 of the Learner's Book. Learners find out how many to be added to 8 to make 10; the answer is 2.

Let us Learn

- Stand in front of the class. Show some fingers and learners say a number that will add up to 10. E.g. Show 3 fingers and learners say 7; show 6 fingers and learners say 4. (*critical thinking, collaborative learning*)

- Have learners work in pairs. Give them 10 bottle caps. Mention a number, and learners count a number of bottle caps that adds up to make 10.
- Repeat with other numbers. E.g. Count 7 bottle caps: IIIIII. How many should be added to make 10? III (3). $7 + 3 = 10$.
(collaborative learning)
- Refer to Learner's Book page 113. Go through the **Let us learn: 2** with learners.
- Ask learners how many should be added to the 7 beads to make 10; the answer is 3.

Review Exercise

Differentiated Lessons

Low Ability Learners

- Working in pairs, have learners solve these:
(1) $9 + \square = 10$ (2) $5 + \square = 10$

High Ability Learners

- Have learners work in pairs and solve these:
(1) $10 + 0 = \square$ (2) $\square + 6 = 10$
(3) $3 + \square = 10$

Assessment for Learning

Refer learners to Exercise 2 on page 114 of the Learner's Book.

Suggested Homework

Add a number to make 10:

(1) $7 \rightarrow \square$

(2) $2 \rightarrow \square$

(3) $6 \rightarrow \square$

(4) $9 \rightarrow \square$

For additional exercises under this module, refer to pages 76 - 78 of the Workbook.

Module 1 1: Addition sum up to 20 (strategy 1)**Content Standard**

B1.1.2.4 Apply strategies for adding and subtracting to 20.

Indicator

B1.1.2.4.1 Use counting on, counting down and missing addend strategies for adding and subtracting within 20.

Learning Expectation

Learners need to be able to add a pair of numbers using counting on from the larger number.

Essentials for Learning

Learners can add 2 numbers with sum up to 10.

New words

Count on, doubles.

Resources

Numeral cards 1-20, 100 numeral charts
bottle caps, straws, number track.

Number of Lessons **2**

Lesson 1: Counting on by 2s**Starter**

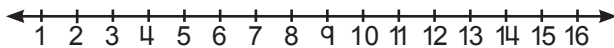
Learners count forwards and backwards from 1 – 20. They clap at the same time.

Find Out

Refer to Learner's Book page 115. Have learners work in pairs. They look at the objects and numbers and give their comment.

Let us Learn

- Put learners in groups of four. Give them number line cards.



- Learners count by 2s, point at the number and mention the number at the same time. Make sure they start from different numbers. E.g. 3, 5, 7, 9, 11. (*collaborative learning*)
- Display a number chart on the board. Call one learner to count by 2s starting from any number. The class mention the numbers as he/she points at them. (*critical thinking*)
- Refer learners to **Let us learn: 1** on page 115 of the Learner's Book. Learners count by 2s from 8 – 20. Let them practice in pairs.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Working in pairs, learners use the number track to count by 2s starting from any number.

High Ability Learners

- Give out 100-number charts to learners in groups. Learners count by 2s starting from any number.

Assessment for Learning

Refer learners to Exercise 1 on page 117 of the Learner's Book.

Suggested Homework

Count by 2s from 5 up to 31 and write the numbers.

Lesson 2: Counting on**Starter**

Learners play "10 more and 10 less", in their groups. One learner mentions a number and another says a number which is 10 more than the number mentioned. The third learner also says a number which is 10 less than the number. E.g.: 25, then 35 is 10 more than 25, 15 is 10 less than 25.

Find Out

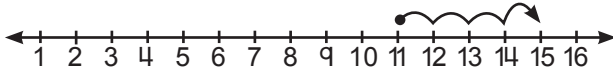
Refer to Learner's Book page 115. Have learners study the pattern of counting and tell their findings. (*critical thinking*)

Let us Learn

- Write the addition sentence $5 + 3$ on the board. Make learners aware that we shall be adding by "counting on". We start on the larger number which is 5, then we count on in our head (saying six, seven, eight.) Use

one finger for each number as you count on.

- Let them know that 8 was the last number mentioned when they were counting on. So 8 is the answer. (**critical thinking, collaborative learning**)
- Draw a big number line on the board. Give each pair a number line card. Write $11 + 4$ on the board. Demonstrate how to add by counting on. (**critical thinking**)



- Write some addition sentences on the board. Have learners work in pairs using the number line card. They should use counting on strategy. (1) $12 + 4$ (2) $16 + 2$ (3) $9 + 6$ (**collaborative learning, leadership skills**)
- Refer learners to **Let us learn: 2** on page 116 of the Learner's Book. Go through the exercise with them.
- The fingers also could be used for counting on.

Review Exercise

When using counting on for addition, we start on the larger number and count on.

Differentiated Lessons

Low Ability Learners

- Have learners work in pairs and find answers to these. (1) $3 + 2$ (2) $6 + 3$. Let them use counting on strategy.

High Ability Learners

- Have learners work in pairs. Give them these addition sentences for them to work using counting on strategy. (1) $12 + 6$ (2) $9 + 3$ (3) $15 + 7$

Assessment for Learning

Refer learners to Exercise 2 on page 117 of the Learner's Book.

Suggested Homework

Add the following:

- | | |
|--------------|--------------|
| (1) $6 + 4$ | (2) $2 + 8$ |
| (3) $4 + 16$ | (4) $8 + 10$ |

For additional exercises under this module, refer to pages 79 - 80 of the Workbook.

Module 12: Addition sum up to 20 (strategy 2)**Content Standard**

B1.1.2.4 Apply strategies for adding and subtracting to 20.

Indicator

B1.1.2.4.1 Use counting on, counting down and missing addend strategies for adding and subtracting within 20.

Learning Expectation

Learners need to be able to identify pairs of numbers that add up to 10.

Essentials for Learning

Learners can add two numbers with sum up to 20.

New words

Add, doubles, pair.

Resources

Numeral cards 1-20, straws, bottle caps.

Number of Lessons **2****Lesson 1: Making 10s to add****Starter**

Play "Making doubles". Mention a number and learners give you its double. E.g.

- (1) $2 \rightarrow 4$ (2) $4 \rightarrow 8$
(3) $5 \rightarrow 10$

Find Out

Refer to **Find out: B** on page 118 of the Learner's Book. Deduce from learners how they can quickly solve $6 + 3 + 4$. Can they think of making 10 first? (**critical thinking**)

Let us Learn

- Write this addition sentence on the board:
 $7 + 2 + 3 = \text{what}$.
Learners brainstorm to find out the easiest way of adding.
- Guide them to realise that it is easier to add 7 to 3 to get 10 first, then they use counting on strategy to add 2 and get 12. (**critical thinking, collaborative learning**)
- Write an addition sentence on the board:
 $2 + 8 + 7 = \text{what}$.
- Elicit from learners which two numbers when added together gives 10; that is 2 and 8, then using counting on method $10 + 7 = 17$.
- Have learners work in pairs. They write their own addition sentences and solve them. (**critical thinking, collaborative learning**)

- Refer learners to **Let us learn: 1a** on page 118 of the Learner's Book. Go through the exercise with them. Write this on the board:
 $6 + 3 + 4$. Learners find 2 numbers which add up to 10, i.e. 6 and 4. $6 + 4 = 10$. So $10 + 3 = 13$.
- Refer learners to **Let us learn: 1b** on page 119 of the Learner's Book. Go through the exercise with them.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Make 10 first and add. Work in pairs.
(1) $2 + 9 + 1$ (2) $6 + 7 + 4$

High Ability Learners

- Work in pairs. Give these addition sentence cards to them. They make 10 first and add.
(1) $6 + 4 + 2$ (2) $8 + 6 + 2$ (3) $5 + 9 + 5$

Assessment for Learning

Refer learners to exercise 1 on page 120 of the Learner's Book.

Suggested Homework

Add the following. Make 10 first.

- (1) $6+8+2$ (2) $9+7+1$ (3) $6+5+4$

Lesson 2: Making doubles

Starter

Play “Making 10s”. Mention a number and learners top up to make 10. E.g. (1) $9 \rightarrow 1$
(2) $6 \rightarrow 4$ (3) $2 \rightarrow 8$

Find Out

Refer to **Find out: A** on page 118 of the Learner’s Book. Let them discuss the 2 dice there and find the total number of dots. The 2 dice are showing 5 each and the total number of dots is 10, that is double of $5 = 10$.

Let us Learn

- Put learners into groups of five.
- From the earlier lesson on doubles, remind them of some animals and let them tell you the doubles of their legs. Goats have 4 legs \rightarrow double of 2; spider has 8 legs \rightarrow double of 4.
- Have learners come out with objects which have doubles. E.g. Teacher’s table, 2 legs in front and 2 legs behind. Double of 2 is 4.
- Write these numbers on the board. They count straws or bottle caps, double them and tell the answer. They should work in pairs. (1) 3 (2) 5 (3) 6 (4) 9
(critical thinking, collaborative learning)
- Write these addition sentences on the board. (1) $7 + 9 = ?$ (2) $8 + 11 = ?$. Find doubles of the smaller number and add. So $7 + 9$ becomes $7 + 7 + 2 = 14 + 2 = 16$.
 $8 + 11$ becomes $8 + 8 + 3 = 16 + 3 = 19$.

- Refer learners to page 119, **Let us learn: 2** of the Learner’s Book. $8 + 9 = ?$. Let them find double of the small number, 8, i.e. $8 + 8 = 16$. $16 + 1 = 17$.

Review Exercise

Differentiated Lessons

Low Ability Learners

- Have learners solve these numbers. They should use making doubles strategy.
(1) $2 + 4$ (2) $4 + 5$

High Ability Learners

- Have learners solve these numbers. They should use making doubles strategy.
(1) $6 + 8$ (2) $10 + 7$ (3) $9 + 12$

Assessment for Learning

Refer learners to Exercise 2 on page 121 of the Learner’s Book.

Suggested Homework

Add the following. Make doubles first.

(1) $8 + 9$ (2) $6 + 9$ (3) $7 + 11$

For additional exercises under this module, refer to pages 81 - 82 of the Workbook.

Module 13: Subtraction facts within 20 (strategy 1)**Content Standard**

B1.1.2.4 Apply strategies for adding and subtracting to 20.

Indicator

B1.1.2.4.1 Use counting on, counting down and missing addend strategies for adding and subtracting within 20.

Learning Expectation

Learners need to be able to: subtract a smaller number from a bigger number by counting back.

Essentials for Learning

Learners can count numbers forward and backwards up to 20.

New words

Counting down, difference, subtract, less.

Resources

Number line card for pairs of learners, numeral cards, books.

Number of Lessons **2**

Lesson 1: Counting down**Starter**

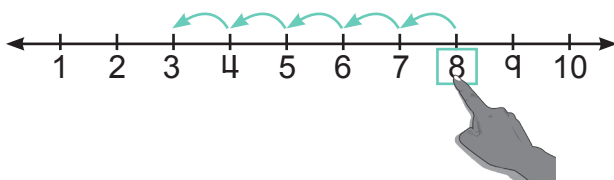
Play "Making 10s" with learners. Mention a number and learners add another number to make 10. $7 \rightarrow 3$, $6 \rightarrow 4$, $5 \rightarrow 5$, $9 \rightarrow 1$

Find Out

Refer learners to page 122 of the Learner's Book. Show the pictures to them. Deduce from them what they can say about the two pictures. Which pile has more books? How many more books are in pile A than in pile B? A has more books than B.

Let us Learn

- Draw a number line on the board.
- Write $8 - 5$ on the board. Demonstrate how to solve this subtraction sentence using the number line. That is from 8, count back five times. The number you land on is 3, that is the answer.



- Learners find the larger number and count back the number of times of the smaller number.
- Let learners solve this: $12 - 6 = ?$
Learners work in pairs. (*critical thinking, collaborative learning*)

- Let them practice with different subtraction sentences. (1) $12 - 8 = ?$ (2) $10 - 4 = ?$ (3) $15 - 7 = ?$
- Have learners write their own subtraction sentences and solve them. (*problem solving skills, critical thinking, collaborative learning*)
- Refer learners to pages 122 and 123 of the Learner's Book. Go through **Let us Learn: 1a** and **1b** with learners.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Work in pairs: Give them number line chart. Let them solve these: (1) $8 - 3 = ?$ (2) $6 - 2 = ?$

High Ability Learners

- Say I have 10 eggs and 6 got broken. How many are left? Encourage them to use the counting back method to get the answer. They write the subtraction sentence and solve it.
- Let them use their number line to solve these: (1) $13 - 6 = ?$ (2) $19 - 8 = ?$

Assessment for Learning

Refer learners to Exercise 1 on page 124 of the Learner's Book.

Suggested Homework

Solve these.

- (1) $9 - 3$ (2) $15 - 7$ (3) $20 - 6$

Lesson 2: Finding the difference

Starter

Play: "Making doubles". Call out a number and learners say the double of that number.

E.g. 5 10, 6 12, 10 20.

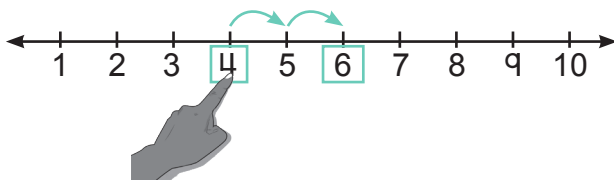
Find Out

Refer learners to page 122 of the Learner's Book.

Have them compare the number of books in A and B and find the difference. The difference is 4.

Let us Learn

- Write this sentence on the board: $6 - 4 = \square$. This could be interpreted as, what is the difference between 6 and 4? or 4 is how many less than 6, or 6 is how many more than 4? (**collaborative learning**)
- Draw the number line on the board.



- Demonstrate by starting on the smaller number, 4. Count on to 6. How many times did you move: 2 times. This means the difference between 6 and 4 is 2, so $6 - 4 = 2$.

- Refer learners to page 123 of the Learner's Book. Take learners through **Let us learn: 2**. The difference between A and B is 2 i.e. $4 - 2 = 2$

Review Exercise

Differentiated Lesson

Low Ability Learners

- Learners work in pairs. Give out number line cards to them. Have learners use them to solve these: Find the difference between: 1) 9 and 4 2) 10 and 6.

High Ability Learners

- Learners write their own subtraction sentences and find the differences. They should work in pairs.

Assessment for Learning

Refer learners to Exercise 2 on page 124 of the Learner's Book.

Suggested Homework

Find the difference.

- (1) $8 - 6$ (2) $12 - 6$ (3) $10 - 9$
(4) $7 - 2$

For additional exercises under this module, refer to pages 83 - 85 of the Workbook.

Module 14: Subtraction facts within 20 (strategy 2)**Content Standard**

B1.1.2.4 Apply strategies for adding and subtracting to 20.

Indicator

B1.1.2.4.1 Use counting on, counting down and missing addend strategies for adding and subtracting within 20.

Learning Expectation

Learners need to be able to: use addition to subtract or rewrite subtraction sentence as addition sentence.

Essentials for Learning

Learners can make 10s and count on to add.

New words

Add, subtract, counting down, difference, less.

Resources

Numeral cards 1-20, straws, bottle caps.

Number of Lessons **2****Lesson 1:** Using addition to subtract (1)**Starter**

Play: "Making doubles". Mention a number and learners double it. E.g. $2 \rightarrow 4$, $4 \rightarrow 8$, $5 \rightarrow 10$.

Find Out

Refer to page 125 of the Learner's Book. Deduce from learners how they can solve that problem about the broken pots. (**critical thinking**)

Let us Learn

- Write this subtraction sentence on the board. $8 - \boxed{\text{what}} = 2$.
- Let learners know that this subtraction sentence can be changed to addition sentence to help solve it.
- Now guide learners to change the sentence to read $2 + \boxed{\text{what}} = 8$. This means what must be added to 2 to get 8. Now you can use count on to get the answer.
- Learners work in pairs. Have learners change these subtraction sentences to addition sentences and find the answers.
 $8 - \boxed{\text{what}} = 3 \rightarrow 3 + \boxed{\text{what}} = 8$
 $10 - \boxed{\text{what}} = 7 \rightarrow 7 + \boxed{\text{what}} = 10$
(critical thinking, collaborative learning)

- Refer learners to **Let us learn: 1** on page 125 of the Learner's Book. Go through the activities with them.
 $9 - \text{what} = 5$ becomes $5 + \text{what} = 9$. Use counting on from 5 to get the answer.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Write these sentences for them to solve.
 $(1) 5 - \boxed{\text{what}} = 3$ $(2) 7 - \boxed{\text{what}} = 4$.
 They should work in pairs.

High Ability Learners

- Working in pairs, they write their own subtraction sentences. Change them to addition sentences and solve them.

Assessment for Learners

Refer learners to Exercise 1 on page 126 of the Learner's Book.

Suggested Homework

Change to addition sentences and solve them.

- $(1) 9 - \boxed{\text{what}} = 6$ $(2) 12 - \boxed{\text{what}} = 7$
 $(3) 19 - \boxed{\text{what}} = 9$

Lesson 2: Using addition to subtract (2)

Starter

Play: "Making doubles". Call out a number and learners say the double of that number.

E.g. $5 \rightarrow 10$, $6 \rightarrow 12$, $10 \rightarrow 20$.

Let us Learn

- Write the subtraction sentence on the board. $9 - 5 = \boxed{\text{what}}$. Demonstrate by changing it to addition sentence.
 $5 + \boxed{\text{what}} = 9$.
- Explain to them that $9 - 5 = \text{what?}$ means $5 + \text{what} = 9$?
- Give out subtraction sentence cards to learners in pairs. They change the subtraction sentences to addition sentences and solve them.
- Refer learners to **Let us learn: 2** on page 126 of the Learner's Book. Go through the activities with them.

Review Exercise

Differentiated Lessons

Low Ability Learners

- Let them work in pairs. Give them subtraction sentence card and they change to addition sentence and solve them.

$$7 - \boxed{\text{what}} = 4 \rightarrow 4 + \boxed{\text{what}} = 7$$

High Ability Learners

- Working in pairs, learners write their own subtraction sentences, rewrite them into addition sentences and solve them.

Assessment for Learning

Refer learners to Exercise 2 on page 127 of the Learner's Book.

Suggested Homework

Change these subtraction sentences to addition sentences and solve them.

$$(1) 12 - 8 = \boxed{\text{what}} \quad (2) 13 - 9 = \boxed{\text{what}}$$

$$(3) 10 - 2 = \boxed{\text{what}}$$

For additional exercises under this module, refer to pages 86 - 87 of the Workbook.

Module 15: Word problems involving addition (up to 20)**Content Standard**

B1.1.2.4 Apply strategies for adding and subtracting to 20.

Indicator

B1.1.2.4.2 Solve one-step word problems involving addition and subtraction within 20 using a variety of strategies.

Learning Expectation

Learners need to be able to change word problem into addition sentence and solve it.

Essentials for Learning

Learners can add with sum up to 10 using counting on method.

New words

Altogether, add, sum.

Resources

Number line chart for each learner, straws, bottle caps, word problem cards.

Number of Lessons **2**

Lesson 1: Word problems (sum up to 10)**Starter**

Play "Making 10s" with learners. Mention a number and learners add another number to make 10. $7 \rightarrow 3$, $6 \rightarrow 4$, $5 \rightarrow 5$, $9 \rightarrow 1$

Find Out

Refer to **Find out** on page 128 of the Learner's Book. Learners work in pairs. Get them to pose a word problem, write an addition sentence for it and solve it. $4 + 4 = 8$. (**critical thinking, collaborative learning**)

Let us Learn

- Call 2 learners (a boy and a girl) to the front of the class.
- Give 2 bottle caps to the boy, then 3 to the girl. The boy gives his to the girl. Let them pose a word problem for it, write an addition sentence for it and solve it. Baaba has 2 bottle caps. Dede has 3. Baaba gives his bottle caps to Dede. How many bottle caps has Dede now? $2 + 3 = 5$. (**critical thinking, collaborative learning, problem solving skills**)
- Have learners work in pairs, give them word problem cards to solve. When they finish they exchange the word problem cards and solve them.
- Refer learners to **Let us learn: 1** on page 128 of the Learner's Book. Go through the addition sentence with

them. A hand is dropping 2 oranges into a bowl with 5 oranges. That is $5 + 2 = 7$. (**problem solving skills**)

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Learners work in pairs. Give out these addition sentence cards to them. They change to simple addition sentence and solve them.
1. I have 3 bulbs. Daddy brought me 3 more. How many do I have now?
 2. Esi has 5 toffees. Akos gives her 2 more. How many has she now?

High Ability Learners

- Learners should work in pairs. They write their own word problems, write addition sentences and solve them.

Assessment for Learning

Refer learners to Exercise 1 on pages 129 and 130 of the Learner's Book.

Suggested Homework

1. Yao Alato sold 8 balloons in the morning. He sold 11 in the afternoon. How many balloons did he sell for the day?
2. There are 6 bottles on a table. Amina added 2 more. How many bottles are on the table now?

Lesson 2: Word problem (sum up to 20)

Starter

Play "Making 10s". Mention a number and learners add another number that will make the sum 10. $2 \rightarrow 8$ $6 \rightarrow 4$ $3 \rightarrow 7$ $1 \rightarrow 9$.

Find Out

Refer learners to page 128 of the Learner's Book. They should work in pairs. Deduce from them how to get the addition sentence: $4 + 4 = 8$. 4 birds on a tree, 4 more are flying to join them. (**critical thinking, collaborative learning, problem solving skills**)

Let us Learn

- Call out two learners to the front of the class. Let one of them give 6 exercise books to the other. Tell her to add 3 more.
- Deduce from learners what operation went on, (addition). Let them write addition sentence for that and solve it $6 + 3 = 9$.
- Take 7 straws, count with the class. Take another 8 and add to the one you were holding first. Count with the class. They should come out with an addition sentence. Let them use counting on strategy to get the answer. $8 + 7 = 15$. (**critical thinking, collaborative learning, problem solving skills**)
- In groups of four, learners pose their own addition sentences and solve them. E.g. I have 4 straws; one learner picks them up; another learner says: I am adding 7 more. The third learner says the addition sentence and the fourth learner gives the answer. $4 + 7 = 13$. (**critical thinking, problem solving skills**)

- Let them interchange their positions, until each learner acts out the positions in the process.
- Refer learners to the Learner's Book, page 129. Go through **Let us learn: 2** and **3** with the class.

Review Exercise

Differentiated Lessons

Low Ability Learners

Have learners work in pairs.

- Kwesi has 5 balls. His friend added 3 more. How many balls has Kwesi now?

High Ability Learners

- Give this addition word problem for them to solve.
- I have 8 toffees. Akos gives me 6 more. How many toffees do I have now?

Assessment for Learning

Refer learners to Exercise 2 on page 131 of the Learner's Book.

Suggested Homework

1. Tutu has 9 bannanas. Dei adds 6 more. How many has Tutu now?
2. Mama Dollor has 12 chairs. Her son bought her 8 more. How many chairs does she have now?

For additional exercises under this module, refer to pages 88 - 90 of the Workbook.

Module 16: Word problems involving subtraction (within 20)**Content Standard**

B1.1.2.4 Apply strategies for adding and subtracting to 20.

Indicator

B1.1.2.4.2 Solve one-step word problems involving addition and subtraction within 20 using a variety of strategies.

Learning Expectation

Learners need to be able to interpret subtraction word problems into subtraction sentences and solve them.

Essential for Learning

Learners can solve addition word problems with sum up to 20.

New words

Subtract, count back, take from, comparing, left.

Resources

Number line strips for each learner, bottle caps, straws, subtraction word problems for learners.

Number of Lessons **2**

Lesson 1: Word problem (subtraction facts within 10)**Starter**

Play "Fingers up and down". Show fingers up and down. Learners say the number of fingers up and those down.

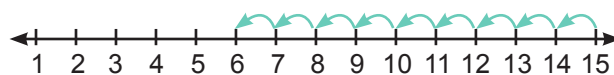
Find Out

Refer to Learner's Book page 132. Have learners work in pairs.

They read the word problem, deduce how to solve it. $10 - 4 = 6$ (**critical thinking, collaborative learning**)

Let us Learn

- Call a girl to the front of the class. Give her 10 straws. Let her call her best friend and give some to her. Have her count the total number she has now. The class should tell the number of straws she gave away and what is left in the hands. E.g. $10 - 4 = 6$ (**critical thinking, collaborative learning, problem solving skills**)
- Now, have learners work in pairs and repeat the activity above. One person takes a number of counters, gives some to the partner. They write a subtraction sentence and solve it. (**collaborative learning, leadership, critical thinking**)
- Give out word problem cards involving subtraction to learners. They write a subtraction sentence for it. They use the number line to count down to solve it. I have 15 pebbles. I gave 9 to Esi. How many pebbles are left.



- Point to the bigger number, 15, with your forefinger, count down nine spaces and you will land on 6. So, $15 - 9 = 6$.
- Give the number line chart to learners and write some subtraction word problems on the board. They should use count down strategy to solve the problems. (**critical thinking, collaborative learning, problem solving skills**)
- Mawusi has 10 pencils. She gives 4 to her friend Abiba. How many pencils are left for Mawusi?
- Kwesi had 18 pencils, but he gave 10 to Edem. How many pencils are left for Kwesi?
- Encourage learners to pose their own subtraction word problems and solve them. (**problem solving, critical thinking, collaborative learning**)
- Refer learners to **Let us learn: 1** on page 132 of the Learner's Book. Go through the exercise with them.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Have learners work in pairs and solve this: I have 13 mangoes, I gave 6 out, how many mangoes are left?

High Ability Learners

- I have a certain number of erasers in my bag. I gave 6 to Mensah. I now have 4. How many erasers did I have initially? (*critical thinking, collaborative learning, problem solving skills*)

Assessment

Refer learners to Exercise 1a and 1b on pages 133 and 134 of the Learner's Book.

Suggested Homework

Change the following to subtraction sentences and solve them.

- Maame has 10 goats, she sold 6. how many are left?
- Seiwah has 10 pencils she gave her friend 2. How many are left?

Lesson 2: Word problem (subtraction facts within 20)

Starter

Play "Fingers up and down". Show fingers up and down. Learners tell you the number of fingers up and those down.

Let Us Learn

- Call a girl and a boy to the front of the class. Give the girl 20 straws. Ask her to give 8 to the boy. Ask the class to pose a word problem for it. Example, Dede has 20 straws, he gives 8 to Aso. How many straws are left with Dede? They should write a subtraction sentence and solve it. $20 - 8 = 12$ (*problem solving skills critical thinking, collaborative learning*)
- Have learners work in pairs and repeat the activity above. Give them 20 bottle caps for demonstration. They pose subtraction word problems, change them to subtraction sentences and solve them. (*problem solving skills, critical thinking, collaborative learning*)

- Refer to **Let us learn: 2** on page 133 of the Learner's Book. Go through the scenario with learners and let them solve the problem.

Review Exercise**Differentiated Lessons****Low Ability Learners**

Have learners work in pairs.

- Dan has 8 toffees. He gives 6 to Afi. How many are left? They should use bottle caps to demonstrate, write a subtraction sentence and solve it. (*critical thinking, problem solving skills*)

High Ability Learners

- Learners pose their own subtraction word problem, change it to subtraction sentence and solve it.
- Let them work in pairs. (*critical thinking, problem solving skills*)

Assessment

Refer learners to Exercise 2 on page 135 of the Learner's Book.

Suggested Homework

- There are 20 eggs in a basket. 10 got broken how many are left?
- Dele has 15 pencils he gives some to his friends. He now has 10. How many did he give to his friends?

For additional exercises under this module, refer to pages 91 - 93 of the Workbook.

Encourage learners to do the reflection exercises on pages 136 and 137 after this sub-strand.

Learners complete the self-assessment table on page 138. This will help you know each learner's strength and weaknesses.

Module 1: Understanding fractions (1)**Content Standard**

B1.1.3.1 Develop an understanding of halves using concrete and pictorial representations.

Indicator

B1.1.3.1.1 Understand the fraction one-half as the quantity obtained by taking 1 part when a whole is partitioned into two equal parts.

Learning Expectation

Learners need to be able to: identify objects that are considered whole.

Essential for Learning

Learners can identify objects that are whole and objects with parts missing.

New words

Whole, part.

Resources

Sheets of paper, colour pencils, oranges, etc.

Number of Lessons **1**

Lesson 1: Unit as a whole**Starter**

Engage learners to perform some mental math games. Play "how many more fingers to make 10?".

Say any number between 1 and 10.

Learners show the number of fingers that will be added to make 10.

Find Out

Direct learners to page 139 of the Learner's Book.

Ask: What part of the human being can you see? Why do human beings need all these parts? When parts are put together, what do we get?

Let us Learn

- Display some oranges in front of the class. Engage learners to talk about the orange by asking them if the orange is a whole or not a whole? (*justification of ideas*)
- Open a discussion on the meaning of a whole. Elicit from learners that a whole is any object with all its parts. (*critical thinking*)
- Direct learners to **Let us learn** on page 139 of the Learner's Book. Lead a discussion on identifying all the objects as being wholes. (*critical thinking*)

- **Ask:** What other objects in the classroom are considered wholes? (*justification of ideas*)
- Put learners in small groups and give each group some colour pencils and sheets of paper. Learners draw any object that is a whole. (*collaborative learning*)

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Present learners with pictures of objects that are wholes and those that are not. Learners point to an object and tell if it is a whole or not.

High Ability Learners

- Task learners to list 5 things that are whole and tell you why.

Assessment for Learning

Refer learners to Exercise 1 on page 140 of the Learner's Book.

Suggested Homework

1. Write five items that you consider as a whole.
2. Draw three items that are whole.

For additional exercises under this module, refer to pages 94 - 95 of the Workbook.

Module 2: Understanding fractions (2)**Content Standard**

B1.1.3.1 Develop an understanding of halves using concrete and pictorial representations.

Indicator

B1.1.3.1.1 Understand the fraction one-half as the quantity obtained by taking 1 part when a whole is partitioned into two equal parts.

Learning Expectation

Learners need to be able to:

1. Identify objects that are considered half.
2. Make halves from whole objects.

Essential for Learning

Learners can identify objects that are whole and objects with parts missing.

New words

Whole, part, half, one-half, equals.

Resources

Sheets of paper, colour pencils, oranges, etc.

Number of Lessons **2**

Lesson 1: One-half**Starter**

Engage learners to perform some mental math games. Play "how many more fingers to make 10".

Say any number between 1 and 10.

Learners show the number of fingers that will be added to make 10.

Find Out

Direct learners to page 141 of the Learner's Book.

Ask: What can you see? Learners should be able to tell you that they can see a bread, or a bread divided, or a bread divided into 2 parts, etc.

Let us Learn

- Display some oranges in front of the class. Engage learners to talk about the orange by telling if the orange is a whole or not a whole. (*justification of ideas*)
- Revise learners' knowledge about wholes. (*critical thinking*)
- Ask learners: when we divide an item into 2 equal parts and take one part, how is it called? Elicit answers such as "one-half" or "part" from learners.
- Demonstrate one-half of an object using the orange.
- Direct learners to **Let us learn: 1** on page 141 of the Learner's Book. Lead a discussion on identifying all the objects as being halves or not. (*critical thinking*)

- **Ask:** What other objects in the classroom are considered halves? (*justification of ideas*)

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Present learners with pictures of objects that are wholes and those that are not.
- Learners point to an object and tell if it is a whole or not.

High Ability Learners

- Task learners to divide shapes or objects into equal halves.

Assessment for Learning

Refer learners to Exercise 1 on page 143 of the Learner's Book.

Lesson 2: Making halves**Starter**

Say any number between 1 and 20.

Learners say the number that will add up to make 20 with the number you said.

Let us Learn

- Put learners in small groups and present each group with some sheets of paper. Lead the class to fold the paper into two equal parts to show one-half. (*collaborative learning*)

- Present each group with some colour pencils and sheets of paper. Learners draw any object that is a whole.
- Learners divide the objects into two equal parts to show one-half. (**collaborative learning**)
- Pair learners and present them with shapes like rectangles, squares, etc. for learners to colour one half of each shape.
- Direct learners to **Let us learn: 2** on page 142 of the Learner's Book. Go through the activity with them.

Review Exercise

Differentiated Lessons

Low Ability Learners

- Present learners with different shapes for them to colour one half of the shape.

High Ability Learners

- Task learners to divide whole shapes into equal halves.

Assessment for Learning

Refer learners to Exercise 2 on page 144 of the Learner's Book.

Suggested Homework

1. Draw any five items and colour one part of it to show one-half.

For additional exercises under this module, refer to pages 96 - 97 of the Workbook.

Module 3: Understanding fractions (3)**Content Standard**

B1.1.3.1 Develop an understanding of halves using concrete and pictorial representations.

Indicator

B1.1.3.1.1 Understand the fraction one-half as the quantity obtained by taking 1 part when a whole is partitioned into two equal parts.

Learning Expectation

Learners need to be able to: identify a group of objects as a whole.

Essential for Learning

1. Learners can identify a unit as a whole.
2. Learners can identify half of a unit whole.

New words

Whole, part, half, group.

Resources

Sheets of paper, colour pencils, oranges, bottle caps, straws, etc.

Number of Lessons **1**

Lesson 1: Group as a whole**Starter**

Engage learners to sing "one man and the son went to weed a cocoa farm".

Find Out

Direct learners to page 145 of the Learner's Book.

Ask: What can you say about the crate of coke? Can we call the crate a whole? What will happen when we take out some of the bottles?

Let us Learn

- Put learners into sizeable groups.
Ask each group to count out 20 counters for the group.
Hold a discussion on why the 20 counters can be regarded as a whole.
- Task the groups to make groups of counters from the 20 counters and justify their result.
- Task the groups to identify groups of objects in and out of the classroom that can be considered whole. E.g. whole class (learners in the class), a pack of toffees, a crate of eggs, etc.

- Refer learners to page 145 of the Learner's Book. Go through the activities of **Let us learn** with them.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Task learners to draw a given number of items to make a whole.

High Ability Learners

- Task learners to identify groups of objects in the classroom that can be identified as a whole.

Assessment for Learning

Refer learners to Exercise 1 on page 146 of the Learner's Book.

Suggested Homework

Draw three groups of items to show group as a whole.

For additional exercises under this module, refer to pages 98 - 99 of the Workbook.

Module 4: Half of amounts

Content Standard

B1.1.3.1 Develop an understanding of halves using concrete and pictorial representations.

Indicator

B1.1.3.1.2 Count in halves using concrete and pictorial representations of halves.

Learning Expectation

Learners need to be able to: make half of amounts/groups of objects.

Essential for Learning

1. Learners have experience with unit as a whole.
2. Identify a group of objects as a whole.

New words

Whole, part, half, amount, group, halves.

Resources

Sheets of paper, colour pencils, oranges, bottle caps, straws, etc.

Number of Lessons **2**

Lesson 1: Breaking whole into halves (1)

Starter

Play "Making 10s". Mention a number and learners add another number that will make the sum 10. $2 \rightarrow 8$ $6 \rightarrow 4$ $3 \rightarrow 7$ $1 \rightarrow 9$.

Find Out

Direct learners to page 147 of the Learner's Book.

Ask: What can you say about the oranges in the bowl?

Let us Learn

- Revise learners' knowledge about "group as a whole". **Ask:** can we say that the oranges in the bowl is a whole? Why?
- Call out two learners to the front of the class.
- Put four bottle caps on the front table and ask the two learners to share them equally. Then put 10 bottle caps and also ask them to share them equally.
- Engage learners to explain that half of an amount means dividing a group of objects into two equal parts. (*critical thinking*)
- Put learners into groups of six.
- Ask each group to make four groups of counters (4, 8, 12, and 20).

- Task each group to divide each group into two equal parts and present their result to the class with justifications. (*collaborative learning*)
- Refer Learners to **Let us learn**, on page 147 of the Learner's Book. Go through the activities with them.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Task learners to divide a given set of items into two equal parts. Example, 12 straws, 1 crate of egg of 6 pieces.

High Ability Learners

- Task learners to mentally tell the half of a given group of items. Example a pack of pencil of 24pieces. A crate of apples of 32 pieces.

Assessment for Learning

Refer learners to Exercise 1 on page 148 of the Learner's Book.

Lesson 2: Breaking whole into halves (2)

Starter

Play "Making 10s". Mention a number and learners add another number that will make the sum 10. $2 \rightarrow 8$ $6 \rightarrow 4$ $3 \rightarrow 7$ $1 \rightarrow 9$.

Let us Learn

- Put learners into groups of say six. Give learners a table of values:

| | | | | |
|--------|---|----|----|----|
| Whole | 6 | 12 | 16 | 24 |
| Halves | | | | |

- Task learners to count a number of counters to represent the wholes in the table.
- Then divide the counters into two equal parts and record how many there are in each half.
- Learners to present their answers and explain their results.

Review Exercise

Differentiated Lessons

Low Ability Learners

- Task learners to count and tell the half of 16 balls.

High Ability Learners

- Task learners to mentally tell the half of a crate of eggs of 30 pieces and a pile of 18 books.

Assessment for Learners

Refer learners to Exercise 2 on page 149 of the Learner's Book.

Suggested Homework

- Draw six oranges and divide it into two equal parts.
- Draw eight squares and divide it into two equal halves.
- Draw four triangles and colour half of the four.

For additional exercises under this module, refer to pages 100 - 101 of the Workbook.

Module 5: Number of halves in an object**Content Standard**

B1.1.3.1 Develop an understanding of halves using concrete and pictorial representations.

Indicator

B1.1.3.1.2 Count in halves using concrete and pictorial representations of halves.

Learning Expectation

Learners need to be able to: count the number of halves in a given object.

Essential for Learning

1. Learners can identify objects that are considered half.
2. Learners can count by 1s and 2s up to 100.

New words

Halves, one-half, whole.

Resources

Sheets of paper, colour pencils, oranges, diagrams showing halves of objects etc.

Number of Lessons **2**

Lesson 1: Finding number of halves in an object**Starter**

Play "Fingers up and down". Show fingers up and down. Learners say the number of fingers up and those down.

Find Out

Direct learners to page 150 of the Learner's Book

Ask: What can you say about the picture?

Expect answers such as:

Apples

1 whole apple

Half apple

2 half apples

1 whole apple cut into two/halves

Ask: How many halves will you get when 1 whole apple is cut into two halves?

Let us Learn

- Display some three oranges in front of the class. Engage learners to talk about the orange by saying if the orange is a whole or not a whole? (*justification of ideas*)

- Demonstrate by cutting each of the oranges into two equal parts. **Ask:** How many halves are there in one whole orange? How many halves are there in three whole oranges? (*critical thinking through justification of ideas*)
- Direct learners to **Let is learn: 1** on page 150 of the Learner's Book.
- Engage learners to count the number of halves in the limes.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Present learners with pictures of objects of a number of halves. Call out learners to count the number of halves.

High Ability Learners

- Show a number of whole objects and ask learners to mentally tell how many halves are there in the wholes.

Assessment for Learning

Refer learners to Exercises 1a and 1b on pages 151 to 152 of the Learner's Book.

Lesson 2: Finding number of halves in shapes

Starter

Engage learners to perform some mental math strategies. E.g. Skip count in 5s and 10s up to 100.

Let us Learn

- Put learners into convenient groups and task them to fold a number of sheets, say 4, into halves. They count and record the number of halves.
Give the groups time to present their result and justify their answers. (**collaborative learning**)
- Pair learners to draw different shapes and divide them into halves and shade one part. Learners also count and record the number of halves they get from their activity.
- Refer learners to **Let us learn: 2** on page 151 of the Learner's Book. Have learners do the activity practically.

Review Exercise

Differentiated Lessons

Low Ability Learners

- Give learners a number, say 8. Task them to use paper folding to show 8 halves.

High Ability Learners

- Give learners a number, say 12 halves. Ask learners to mentally tell how many wholes are there in the halves.

Assessment for Learning

Refer learners to Exercise 2 on page 153 of the Learner's Book.

Suggested Homework

- Draw 4 halves of an orange.
- Draw 3 whole circles and divide each to show six halves.

For additional exercises under this module, refer to pages 102 - 104 of the Workbook.

Encourage learners to do the reflection exercises on page 154 after this sub-strand.

Learners complete the self-assessment table on page 155. This will help you know each learner's strength and weaknesses.

Module 1: Recognising Ghanaian coins by name

Content Standard

B1.1.4.1 Identify coins, their values and the relationships among them in order to recognize the need for monetary transactions.

Indicator

B1.1.4.1.1 Recognise Ghanaian coins by name, including one pesewa, five pesewas, ten pesewas, twenty pesewas, fifty pesewas and one cedi by value and describe the relationship among them.

Learning Expectation

Learners need to be able to: recognise Ghanaian coins by name.

Essential for Learning

Learners can identify money.

New words

Coin, cedi, pesewas, note.

Resources

Ghana pesewa coins, 1 cedi note.

Number of Lessons **2**

Lesson 1: Identifying the 1, 5 and 10 Ghana pesewa coins

Starter

Play: How many fingers up; how many fingers down? (whole class activity for recognizing quantities up to 10).

Raise up finger (1 to 10)

Ask: How many fingers do you see? Learners call out the answer together.

The aim of the game is to develop speed, so move quickly from one group of fingers to the next.

Find Out

Direct learners to page 156 of the Learner's Book.

Ask: What is the girl holding? What do we use it for? Do you have some with you? Tell one thing that you use your money for.

Let us Learn

- Put learners into small groups of about five. Display the 1, 5 and 10 Ghana pesewa coins in front of each group, Task learners to examine the coins carefully.
- Conduct a class voting for the groups to choose two out of the coins to discuss among themselves in their groups. (*collaborative learning, personal development*).

- Call on each group to make a presentation using the following criteria:
 - * The features on each coin.
 - * The colour.
 - * Some of the items they can buy with the coin. (*justification of ideas*)
- Direct learners to **Let us learn: 1** on page 156 of the Learner's Book. Lead the class to identify the coins together.
- Brainstorm on which of the coins is bigger in value than the other. **Ask:** Which one can buy more; 10p or 5p?

Review Exercise

Differentiated Lessons

Low Ability Learners

- Present learners with some pesewa coins to identify and tell the differences in value.

High Ability Learners

- Present learners with coins to tell how much more is one coin bigger/smaller than the other.

Assessment for Learning

Refer learners to Exercise 1 on page 158 of the Learner's Book.

Lesson 2: Identifying the 20 and 50 Ghana pesewa coins and the 1 Ghana cedi coin

Starter

Play: How many fingers up; how many fingers down? (whole class activity for recognizing quantities up to 10).

Raise up finger (1 to 10)

Ask: how many fingers are down?
learners call out the answer together.

Let us Learn

- Use learners' group from previous lesson.
- Display the 20 and 50 Ghana pesewa coins and the 1 Ghana cedi coin in front of each group.
- Task learners to examine the coins carefully.
- Conduct a class voting for the groups to choose two out of the coins to discuss among themselves in their groups.
(collaborative learning, personal development)
- Call up each group to make a presentation using the following criteria:
 - * The features on each coin.
 - * The colour.
- Some of the items they can buy with the coins. **(justification of ideas)**

- Direct learners to **Let us learn: 2** on page 157 of the Learner's Book. Lead the class to identify the coins together.
- Brainstorm on which of the coin is bigger in value than the other.

Ask: which can buy more; 20p or 50p?

Review Exercise

Differentiated Lessons

Low Ability Learners

- Present learners with some pesewa coins to identify and tell the differences in value.

High Ability Learners

- Present learners with coins to tell how much more is one coin bigger/smaller than the other.

Assessment for Learning

Refer learners to Exercise 2 on page 159 of the Learner's Book.

Suggested Homework

1. Write any two things you can see on a 50p coin.
2. Write three items you can buy with a 20p coin.
3. Tell which group of coins you will use to buy a 50p pencil.

For additional exercises under this module, refer to pages 105 - 106 of the Workbook

Module 2: Relationship among the Ghanaian coins

Content Standard

B1.1.4.1 Identify coins, their values and the relationships among them in order to recognize the need for monetary transactions.

Indicator

B1.1.4.1.1 Recognise Ghanaian coins by name, including one pesewa, five pesewas, ten pesewas, twenty pesewas, fifty pesewas and one cedi by value and describe the relationship among them.

Learning Expectation

Learners need to be able to: recognize

Ghanaian coins by name and value and tell the relationship among the coins.

Essential for Learning

Learners can identify the Ghanaian coins and can tell which one is bigger in value.

New words

Coin, cedi, pesewas, note.

Resources

Ghana pesewa coins, 1 cedi note.

Number of Lessons **2**

Lesson 1: Relationship among coins (1)

Starter

Play: One more/less than... (whole class activity for practising mental fluency with one or two more than a number up to 20).

Call out a number.

Learners must call out a number that is one more/less than the number you called.

The aim of the game is to develop speed, so move quickly from one number to the other.

Find Out

Direct learners to page 160 of the Learner's Book. **Ask:** Are the number of 10p coins equal to the 1cedi coin? How many more 10p coins are needed to make 1cedi coin?

Let us Learn

- Put learners into small groups of about five.
- Display the Ghana pesewa coins in front of each group,
- Task learners to make groups of coins that make other equivalent coins. E.g. 2 of 10pesewa coins make 20pesewa coin. (*collaborative learning, justification of ideas*)

- Direct learners to **Let us learn** on page 160 of the Learner's Book. Lead the class to identify the coins and the relationships.
- Brainstorm on which of the set of coins make an equivalent to other coins.

Review Exercise

Differentiated Lessons

Low Ability Learners

- Present learners with a set of pesewa coins. They choose a coin that is equivalent to the set of coins. E.g. a set of five 10p coins make one 50p coin.

High Ability Learners

- Task learners to make different sets of coins that make up 1cedi.

Assessment for Learning

Refer learners to Exercise 1 on page 161 of the Learner's Book.

Lesson 2: Relationship among coins (2)

Starter

Play: Two more/less than... (whole class activity for practising mental fluency with one or two more than a number up to 10 or 20).

Call out a number.

Learner must call out a number that is two more/less than the number you called.

The aim of the game is to develop speed, so move quickly from one number to the other.

Let us Learn

- Use learners' previous groups.
Display the Ghana pesewa coins in front of each group,
Also, display items like pencils, erasers, exercise books, etc. with price tags.
- Task learners to make different combinations of coins that can buy the items. E.g. 1 of 50pesewa coins or 5 of 10pesewa coins can buy a pencil.
(collaborative learning, justification of ideas)
- Then challenge learners to combine different pesewa coins to make an equivalent amount that can buy an item. E.g. 2 of 20pesewa coins and 1 of 10pesewa coins can buy the pencil.
- Demonstrate, then discuss with learners, combinations of coins that make 1 cedi.

Review Exercise

Differentiated Lessons

Low Ability Learners

- Task learners to combine different pesewa coins that make up 1cedi.

High Ability Learners

- Present learners with price tags and challenge them to choose appropriate coins or make combinations of coins that can buy the items.

Assessment for Learning

Refer learners to Exercise 2 on page 162 of the Learner's Book.

Suggested Homework

1. How many 20p and 10p coins make 50p?
2. How many 20p coins make 1cedi?
3. How many 50p coins make 1cedi?
4. How many 10p coins make 50p?
5. How many 1p coins make 20p?

For additional exercises under this module, refer to pages 107 - 108 of the Workbook.

Encourage learners to do the reflection exercises on page 163 after this sub-strand.

Learners complete the self-assessment table on page 164. This will help you know each learner's strength and weaknesses.

2

Strand:
Algebra

Module 1: Identifying and creating patterns (1)**Content Standard**

B1.2.1.1 Recognize, create, extend and describe non-numerical and simple numerical patterns.

Indicator

B1.2.1.1.1 Demonstrate an understanding of repeating patterns with 2 to 4 repeating elements.

Learning Expectation

Learners need to be able to: identify simple patterns with numbers.

Essentials for Learning

Learners can write numerals from 1-20.

New words

Patterns, order, shapes, number.

Resources

Numeral cards 1 – 9 (at least 20 of each numeral).

Number of Lessons **2****Lesson 1: Making patterns using numbers (1)****Starter**

Sing a song: "1,2,3,4, pounding fufu near the door".

Find Out

Refer learners to page 166. Deduce from them how they can identify the missing numbers. They should justify their answers. Expected answers are: 8, 12.

Let us Learn

- Write these numbers on the board. 111, 222, 333, 444,
Deduce from learners to tell you the next 3 numerals. That is 555.
Let them explain how they got the answer. Give them, more examples and make them continue with one or two terms.
- Refer learners to **Let us learn: 1** on page 166 of the Learner's Book. They should complete the two questions there. (*critical thinking*)

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Working in pairs, let them continue these patterns with two terms.
- 111, 112, 113, 114,
 - 101, 201, 301,

High Ability Learners

- Working in pairs, learners create two number patterns on their own.

Assessment for Learning

Refer learners to Exercise 1 on page 167 of the Learner's Book.

Lesson 2: Making patterns using numbers (2)**Starter**

Sing a song: "1,2,3,4, pounding fufu near the door".

Find Out

Refer learners again to page 166 Deduce from learners how they will find the missing numbers on the balloons.

Let us Learn

- Write these numbers on the board: 0, 2, 4, 6, 8 _____. Learners tell the pattern used for this and continue with 3 terms which is 10, 12, 14.
- Learners should know that counting backwards can also be used in number patterns. Eg. 20, 18, 16, 14 _____. The next 3 terms are 12, 10 and 8.
- Refer learners to **Let us learn: 2** on page 167 of the Learner's Book. Go through the activities with them.
Let learners tell you the pattern used, ie. counting on by 2s.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Working in pairs, let them continue these patterns in two terms.
323, 323, 323,
541, 542, 543,

High Ability Learners

- Working in pairs, they create two number patterns on their own.

Assessment for Learning

Refer learners to Exercise 2 on page 168 of the Learner's Book.

Suggested Homework

Learners use these numbers to create patterns on their own.

1, 2, 3, 4, 5.

For additional exercises under this module, refer to pages 110 - 111 of the Workbook.

Module 2: Identifying and creating patterns (2)**Content Standard**

B1.2.1.1: Recognize, create, extend and describe non-numerical and simple numerical patterns.

Indicator

B1.2.1.1.1: Demonstrate an understanding of repeating patterns with 2 to 4 repeating elements.

Learning Expectation

Learners need to be able to: identify simple patterns and continue. Use shapes to make patterns.

Essentials for Learning

Learners can identify the names of the plane shapes and can use them to model houses and cars.

New words

Patterns, order, 2D shapes.

Resources

Different cut-out 2D shapes of different sizes and colours, numeral cards (1-10) at least 10 of each numeral.

Number of Lessons **2**

Lesson 1: Making patterns using shapes (1)**Starter**

Sing a song on shapes. "A circle is a shape, it has no corner but it can roll".

Find Out

Refer learners to **Find out** on page 169 of the Learner's Book. Working in pairs give out the same number of 2D shapes at the page and ask them to make patterns with them,



Let them come out with what they have done by telling the whole class. (**critical thinking, collaborative learning**)


Let us Learn

- Still working with the 2D shapes, create a pattern on the board for learners to repeat it with their partners.



- Learners now work in groups of four to create their own patterns. (**collaborative learning, critical thinking, leadership**)
- Refer learners to **Let us learn: 1** on page 169 of the Learner's Book. Go through the activities with them.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Draw a pattern on the board using shapes. Learners study it and continue with two terms.
- Give out these shapes  to learners.
- Working in pairs, they create their own patterns.

High Ability Learners

- Have learners continue this pattern with 3 terms



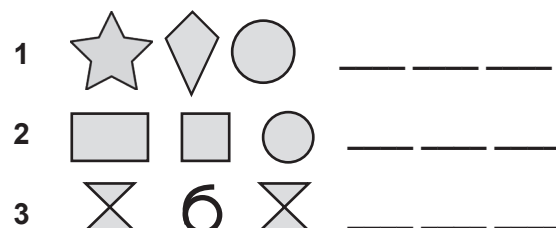
- Let them create their own patterns.

Assessment for Learning

Refer learners to Exercise 1 on pages 170 and 171 of the Learner's Book.

Suggested Homework

Continue these pattern with 3 terms:



Lesson 2: Making patterns using shapes (2)

Starter



Sing a song: A circle is a shape.

Find Out

Refer to page 169 of the Learner's Book.

Give out cut-out shapes for learners to make different patterns on their own.

Let us Learn

- Draw some shapes on the board. Have learners study it and continue.


- Refer learners to page 170, **Let us learn: 2**. Let them identify the colours used for the pattern.
- They should work in pairs. Have them use the coloured cut-out shapes to create their own patterns. (*collaborative learning, critical thinking*)

Review Exercise

Differentiated Lessons

Low Ability Learners

- Give out the four 2D shapes to learners. Working in pairs, have learners use the 2D shapes to make patterns with the coloured cut-out shapes.

High Ability Learners

- Working in pairs, let learners draw their own shapes, make patterns with them and colour them.

Assessment for Learning

Refer learners to Exercise 2 on page 171 of the Learner's Book.

Suggested Homework

Learners use 2D shapes to create repeating patterns.

For additional exercises under this module, refer to pages 112 of the Workbook.

Module 3: Identifying and creating patterns (3)**Content Standard**

B1.2.1.1: Recognize, create, extend and describe non-numerical and simple numerical patterns.

Indicator

B1.2.1.1.1: Demonstrate an understanding of repeating patterns with 2 to 4 repeating elements.

Learning Expectation

Learners need to be able to: make pattern using sound and actions.

Essentials for learning

Learners can make patterns with 2D shapes.

New words

Patterns, order, shape, repeat, sound, action.

Resources

Several 2D shapes with different sizes, whistles.

Number of Lessons **2****Lesson 1: Making patterns using sound****Starter**

Sing a song "Am counting one"

Find Out

Refer learners to page 172 of the Learner's Book.

Learners look at the girls playing the "ampe". They should come out or predict the two possible outcomes. ("opare ohyiwa") (**critical thinking, collaborative learning**)

Let us Learn

- Take learners outside the classroom. Make them form a big circle. They repeat this; one clap 1, one clap 2, one clap 3, 9. If you make error you fall out. Continue until you get a winner. (**collaborative learning**)
- Still in a circle learners sing the song in kente weaving. "kro, kro hee, hee, kro hinko".
- Refer learners to **Let us learn: 1** on page 172 of the Learner's Book. Demonstrate how the whistling and the clappings go together. Peel, peel, peel, (pa, pa, pa)

- Give whistles to learners in their groups. Let them create their own whistle pattern and clap simultaneously. (**collaborative learning, critical thinking**)

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Present 3 repeating element sound pattern to learners to act and say. jump, clap, jump

High Ability Learners

- Ask learners to do these movement patterns while saying them. Move forward one, move backward two, move forward three up to nine (9)

Assessment for Learning

Refer learners to **Let us do an activity** on page 173 of the Learner's Book for a group activity.

Suggested Homework

Learners create their own sound patterns and come to teach the whole class the next day.

Lesson 2: Making patterns using actions

Find out

Refer learners to page 172 of the Learner's Book. Elicit from learners what the two girls are doing. "They are playing ampe". Let them use the words "Ohyiwa, Opare"

Let us Learn

- Take learners outside the classroom. They play:
 - (1) one, two, forward; three, four backwards; one, two, forward; three, four backwards; with that action.
 - (2) Clap, squat, stand; clap, squat, stand;
- Back to their classroom. They play "sit, clap stand, sit, clap, stand".
- Refer learners to **Let us learn: 2**, on page 173 of the Learner's Book. Go through the activity with learners.

Review Exercise

- Put learners into groups of five. Give each group a whistle and they play "peel, peel clap, peel, peel clap"
- Encourage them to come out with their own action patterns.

Assessment for Learning

Refer learners to **Let us do an activity** on page 174 of the Learner's Book. They work in pairs.

Suggested Homework

Learners create their own action patterns and teach the whole class the next day.

Module 4: Identifying errors in patterns**Content Standard**

B1.2.1.1: Recognize, create, extend and describe non-numerical and simple numerical patterns.

Indicator

B1.2.1.1.1: Demonstrate an understanding of repeating patterns with 2 to 4 repeating elements.

Learning Expectation

Learners need to be able to: identify and describe errors in number patterns. Identify errors in shapes, sound or action patterns.

Essentials for Learning

Learners can use 2D shapes to make patterns on their own.

New words

Identify, errors, missing pattern.

Resources

Numeral cards 1-10, 2D shapes.

Number of Lessons **2****Lesson 1: Identify errors in patterns (1)****Starter**

Sing the song: A circle is a shape.

Find Out

Refer to page 175 of the Learner's Book.

Deduce from them how to identify the errors in the three patterns.

Let us Learn

- Call 8 learners (5 boys and 3 girls) to the front of the class. Let them line up as follows: boy girl, boy girl, boy, boy, boy girl. Ask learners to look at the arrangement and tell you what they see. Learners identify the error.
- Arrange these: pencil, eraser, pen; pencil, eraser, pen; pen, pen, eraser. Learners identify the error.
- Refer learners to **Let us learn: 1** on pages 175 and 176 of the Learner's Book.
- Learners perform the action there and identify that there are two squats instead of one. The second squat is an error.
- In the second exercise, learners look at the shape patterns critically and identify that the triangle is an error.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Arrange 2D shapes for them to identify the error. They should work in pairs.

High Ability Learners

- Learners work in pairs. Present to them the four 2D shapes. Learners make their own pattern, make mistakes and the other learner identifies the error.

Assessment for Learning

Refer learners to Exercise 1 on page 177 of the Learner's Book.

Lesson 2: Identify errors in patterns (2)

Starter

Learners say the rhyme “one, two, buckle my shoe”.

Let us Learn

- Write a number pattern on the board, and let learners identify the errors.
543, 543, 534, 543; and
798, 798, 789, 879
- Refer learners to **Let us learn: 2** on page 176 of the Learner's Book. Go through the 3 exercises with learners. They identify the errors and correct them.

Review Exercise

Differentiated Lessons

Low Ability Learners

- Working in pairs, learners identify the errors in shape patterns and correct them.

1.  

2. 

High Ability Learners

Working in pairs, let learners identify the errors in the following patterns.

1 908, 908, 890

2 779, 779, 977, 779

3 $\begin{array}{cccc} \times & \times & \Sigma & \times & \times & \Sigma & \times & \Sigma & \times & \times & \Sigma \end{array}$

Assessment for Learning

Refer learners to Exercise 2 on page 178 of the Learner's Book.

Suggested Homework

Learners create two patterns on their own.

For additional exercises under this module, refer to pages 113 of the Workbook.

Module 5: Representing patterns in different ways**Content Standard**

B1.2.1.1: Recognize, create, extend and describe non-numerical and simple numerical patterns.

Indicator

B1.2.1.1.1: Demonstrate an understanding of repeating patterns with 2 to 4 repeating elements.

Learning Expectation

Learners need to be able to: identify patterns in and outside the classroom.

Essentials for Learning

Learners can identify errors in patterns and correct them.

New words

Represent, repeat, pattern, sound, action.

Resources

Pencils, shape cards, chair, table, bottle caps, etc.




Number of Lessons **1****Lesson 1:** Patterns in different ways**Starter**

Learners play clap, jump, squat.

Find Out

Refer to page 179 of the Learners Book.
Learners talk about what the boy is doing and mimic the pattern for that.
The boy is ringing the bell; cring, cring.

Let us Learn

- Call out two boys and a girl to the front of the class.
Line them up as follows: 1 boy, 1 girl and 1 boy.
- Write 1 in front of the boys and 2 in front of the girl. This shows 1 2 1.
- Place a rectangle shape behind the girl and square shapes behind the boys.
This shows   .
- Let learners observe the arrangements and tell you what they see. (**critical thinking, observation**)
- They should be able to tell you that, where a boy is has the number 1 and a square shape and where the girl is has the number 2 and a rectangle shape.

- Let them know that a repeating pattern can be represented with a shape, sound or action pattern or vice versa.
- Repeat the above activity with different items and numbers.
- Refer learners to **Let us learn** on page 179 of the Learner's Book. Go through the patterns with them.
- Present this activity with different shapes, numbers, sound and action.

Review Exercise

Learners form a big circle in the classroom, they repeat a sound and the number alternatively.

Assessment for Learning

Refer learners to Exercise 1 on page 180 of the Learner's Book.

Suggested Homework

Write patterns in different ways.

For additional exercises under this module, refer to pages 114 of the Workbook.

Module 6: Patterns in real life**Content Standard**

B1.2.1.1: Recognize, create, extend and describe non-numerical and simple numerical patterns.

Indicator

B1.2.1.1.1: Demonstrate an understanding of repeating patterns with 2 to 4 repeating elements.

Learning Expectation

Learners need to be able to: identify patterns in and outside the classroom.

Essentials for Learning

Learners can identify errors in patterns and correct them.

New words

Patterns, Kente, outside, fabric, designs.

Resources

Pieces of Kente cloths, pieces of wood, shape cards, etc.

Number of Lessons **1**

Lesson 1: Pattern in and outside the classroom

Starter

Learners sing the song "Kro, kro, kro, kro, Hee Hee, Krohiko"

Find Out

Refer learners to page 181 of the Learner's Book. They study the picture and explain what they see. Deduce from them the name, that is "Kente" cloth. Let them tell you if they have seen a "Kente" cloth before and its uses.

"Kente" cloth/dress is usually worn to on special occasions such as weddings, festivals, durbars and other ceremonial functions.

Ask whether they have worn a dress made of Kente before?

Let us Learn

- Learners go outside the classroom and observe the environment. Let them identify any patterns that they see. They should look at the stores, buildings, roofs of buildings, cars parked, etc. (**critical thinking and observation**)
- Back to the classroom, let learners draw any pattern they saw.
- Arrange the learners in a special order in their seating position. It can be 1 boy, 1 girl or 2 boys 1 girl, 2 boys 1 girl, etc. Select some learners to observe the arrangements and tell the class what they see.

- Let learners tell you things in their home that form patterns. Eg. the tiles on the floors, the designs on their fence wall, etc.
- Refer learners to **Let us learn** on pages 181 and 182 of the Learner's Book. Lead the whole class to try and arrange the class sitting shown in the picture on page 181.
- On page 182 of the Learner's Book, learners look at the school building critically and say what they can see. Likewise, they look at the kitchen and identify the pattern that they see.

Review Exercise

Each learner creates his/her own pattern and colours it.

Assessment for Learning

Refer learners to Learner's Book 1, page 183, to do the activity and exercise.

Suggested Homework

Learners create and make any pattern of their choice.

For additional exercises under this module, refer to pages 115 of the Workbook

Encourage learners to do the reflection exercises on page 184 after this sub-strand.

Learners complete the self-assessment table on page 185. This will help you know each learner's strength and weaknesses.

3

Strand:

**Geometry and
measurement**

Module 1: Naming and describing 2D shapes**Content Standard**

B1.3.1.1 Analyse attributes of two-dimensional shapes and three-dimensional objects to develop general concept about their properties.

Indicator

B1.3.1.1.1 Distinguish between attributes that define a two-dimensional figure or three-dimensional figure and attributes that do not define the shape.

Learning Expectation

Learners need to be able to: identify 2D shapes by their names; describe 2D shapes using their attributes.

Essential for Learning

Learners can use 2D shapes to make patterns.

New words

attribute, circle, triangle, rectangle, square, corners, sides

Resources

Sheets of paper, colour pencil, cut-out 2D shapes, match box, dice, chocomilo, coin etc.

Number of Lessons **5**

Lesson 1: Naming 2D shapes**Starter**

Play: "Five (or ten) more/less than" (whole class activity for practicing mental fluency with five or ten more than a number up to 50 or 100).

Call out a number

Learners must call out a number that is five or ten more/less than the number you called.

The aim of the game is to develop speed, so move quickly from one number to the other.

Find Out

Direct learners to page 188 of the Learner's Book.

Ask: Have you seen any of these shapes before? Where can you find them? Can you name them? Are any of the shapes the same?

Let us Learn

- Put learners into groups of six and task them to do some tracing activities.
- Lead the class to name the shapes they have gotten from their tracing activities. Drill the names of the shapes with the class. Help learners practise the spelling of the names.
- Task learners to identify objects that have the shapes learnt in class. (**collaborative learning**)

- Refer learners to page 188, **Let us learn:** 1. Have learners identify the shapes there.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Present learners with shapes to tell their names.

High ability learners

- Task learners to tell the shape they see in a given 3D object.

Assessment of Learning

Refer learners to Exercise 1, question 1 on page 190 of the learners' book for exercise.

Lesson 2: Attributes of a triangle**Starter**

Play: "One more/less than" (whole class activity for practising mental fluency with one or two more than a number up to 10 or 20).

Call out a number.

Learners must call out a number that is one more/less than the number you called.

The aim of the game is to develop speed, so move quickly from one number to the other.

Let us Learn

- Use learners' groups from previous lesson.
- Present each group with a cut-out triangle and some criteria to talk about the triangle.

Criteria:

Name.

Number of sides.

Straight or curved sides.

Number of corners.

- Give groups time to present work to class.

(collaborative learning)

- Direct learners to the **Let us Learn: 2** on page 189 of the Learner's Book and discuss the attributes of a triangle with them.

Review Exercise**Differentiated Lessons****Low ability learners**

- Present learners with a triangle to name and describe it.

High Ability Learners

- Task learners to draw a triangle and show the features of the triangle by pointing it out to justify.

Assessment for Learning

Refer learners to Exercise 1, question 2 on page 190 of the Learner's Book.

Lesson 3: Attributes of a square**Starter**

Play: "One more/less than" (whole class activity for practising mental fluency with one or two more than a number up to 10 or 20).

Call out a number.

Learners must call out a number that is one more/less than the number you called.

Let us Learn

- Use learners' groups from previous lesson.
- Present each group with a cut-out square and some criteria to talk about the square.

Criteria:

Name.

Number of sides.

Straight or curved sides.

Number of corners.

- Give groups time to present work to class.

(collaborative learning)

- Direct learners to the **Let us Learn: 2** on page 189 of the Learner's Book and discuss the attributes of a square with them.

Review**Differentiated Lessons****Low Ability Learners**

- Present learners with a square to name and describe it.

High Ability Learners

- Task learners to draw a square and show the features of the square by pointing it out to justify.

Assessment for Learning

Learners draw a square.

Lesson 4: Attributes of a rectangle**Starter**

Play: "Five (or ten) more/less than" (whole class activity for practising mental fluency with five or ten more than a number up to 50 or 100).

Call out a number. Learners must call out a number that is five or ten more/less than the number you called.

The aim of the game is to develop speed, so move quickly from one number to the other.

Let us Learn

- Use learners' groups from previous lesson.
- Present each group with a cut-out rectangle and some criteria to talk about the rectangle.

Criteria:

Name.

Number of sides.

Straight or curved sides.

Number of corners.

- Give groups time to present work to class.

(collaborative learning)

- Direct learners to the **Let us Learn: 2** on page 189 of the Learner's Book and discuss the attributes of a rectangle with them.

Review Exercise**Differentiated lesson****Low Ability Learners**

- Present learners with a rectangle to name and describe it.

High ability learners

- Task learners to draw a rectangle and show the features of the square by pointing it out to justify.

Assessment for Learning

Refer learners to exercise 1, question 3 on page 190 of the Learner's Book.

Lesson 5: Attributes of a circle**Starter**

Play: "One more/less than" (whole class activity for practising mental fluency with one or two more than a number up to 10 or 20).

Call out a number.

Learners must call out a number that is one more/less than the number you called.

Let us Learn

- Use learners' groups from previous lesson.
- Present each group with a cut-out circle and some criteria to talk about the circle.
- Criteria:
Name.
Number of sides.
Straight or curved sides.
Number of corner.
- Give groups time to present work to class.
(collaborative learning)
- Direct learners to the **Let us Learn: 2** on page 189 of the Learner's Book and discuss the attributes of a circle with them.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Present learners with a circle to name and describe it.

High Ability Learners

- Task learners to draw a circle and show the features of the circle by pointing it out to justify.

Assessment for Learning

Refer learners to Exercise 2 on page 191 of the Learner's Book.

Suggested Homework

Complete the table below.

| Shape | Name | Number of sides | Straight or curved sides | Number of corners |
|---|------|-----------------|--------------------------|-------------------|
|  | | | | |
|  | | | | |
|  | | | | |
|  | | | | |

Note: you can give the assignment on individual shapes.

For additional exercises under this module, refer to pages 118 - 119 of the Workbook.

Module 2: Naming and describing 3D objects**Content Standard**

B1.3.1.1 Analyse attributes of two-dimensional shapes and three-dimensional objects to develop general concept about their properties.

Indicator

B1.3.1.1.1 Distinguish between attributes that define a two-dimensional figure or three-dimensional figure and attributes that do not define the shape

Learning Expectation

Learners need to be able to: recognise and name 3D objects, describe 3D objects using their attributes.

Essential for Learning

Learners can identifying 2D shapes and count by 1s up to 20.

New words

Cylinder, cube, cuboid, cone, sphere, attribute.

Resources

Sheets of paper, cardboard, colour pencil, 3D objects, pictures of 3D objects, etc.

Number of Lessons **5****Lesson 1: Naming 3D objects****Starter**

Play: "Count and write" (whole class or pair activity to practise counting and representing groups of objects with numerals).

Have Learners put objects on their table or put some large objects on table in front of learners. Learners count them together and then write the number in their books.

Activity can be done in pairs, with one partner putting a group of objects on the table of the other partner. Both partners write the number in their note books.

Find Out

Direct learners to page 192 of the Learner's Book.

Ask: Have you seen any of these pictures anywhere before? What object have any of these shapes? Can you show me any object in the classroom that has the shape of any of the 3D objects? Elicit answers such as: dice, chalk box, cupboard, water bottles etc.

Let us Learn

- Direct learners to the **Let us learn: 1** on pages 192 and 193 of the Learner's Book. Point to the solid shapes and drill the names with them.
- Put learners into small groups of about five or seven. Task them to identify objects in the classroom and their homes that have any of the 3Ds. (**collaborative learning**)
- Allow learners time to present their findings quickly to the class.
- Encourage other learners to ask questions for clarification.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Present learners with 3D objects to name and identify the 2D shapes in the objects.

High Ability Learners

- Task learners to differentiate between the 2D shapes found in the 3D objects.

Assessment for Learning

Refer learners to Exercise 1 on page 194 of the Learner's Book.

Lesson 2: Attributes of a cube and a cuboid

Starter

Play: "Count and write" (whole class or pair activity to practise counting and representing groups of objects with numerals).

Have learners put objects on their table or put some large objects on table in front of learners. Learners count them together and then write the number in their books.

Let us Learn

- Use learners' group from previous lesson. Give each group a cube and a cuboid and some criteria to use to talk about the object.
Task the groups to make presentation on their objects to the class using the criteria.
Criteria:
Name.
Roll/not roll.
Flat face/curved face.
Number of faces. (*collaborative learning, justification of ideas*)
Encourage other learners to ask questions.
- Demonstrate how to cut the net of a cube and a cuboid.
- Refer learners to **Let us learn: 2** on page 193 of the Learner's Book. Have learners identify the number of faces of each solid shape.

Review Exercise

Differentiated Lessons

Low Ability Learners

- Present learners with a cube and a cuboid with a criteria to describe them. Learners also identify objects that looks like cubes or cuboid in the environment.

High Ability Learners

- Task learners to identify 2D shapes found in the cube and describe the cube using a given criteria.

Assessment

Ask learners to draw a cube and a cuboid. They should find the difference, using their attributes.

Lesson 3: Attributes of a sphere and cone

Starter

Play: "finding the shape" (whole class or group activity to practise identification of 2D shapes).

Give a box containing 2D shapes to each group (about 12 shapes altogether). One learner should have their group's box in front of them.

Say the name of any shape, e.g.: square. All the learners with the boxes quickly find and hold up the shape just named by you.

Rotate the box among all the members of the group and increase the pace.

Let us Learn

- Use learners' group from previous lesson. Give each group a sphere and a cone and some criteria to use to talk about the objects.
Task each group to make presentation on their objects to the class using a given criteria.
Criteria:
Name.
Roll/not roll.
Flat face/curved face.
Number of faces. (*collaborative learning, justification of ideas*)
Encourage other learners to ask questions.
- Demonstrate how to cut the net of a sphere and a cone.
- Task each group to cut the net to make their own sphere and cone.

Review Exercise

Differentiated Lessons

Low Ability Learners

- Present learners with a sphere and a cone with some criteria to describe them. Learners also identify objects that look like spheres and cones in the environment.

High Ability Learners

- Task learners to identify the 2D shapes found in a sphere and a cone and describe them using a given criteria.

Assessment for Learning

Ask learners to draw a sphere and cone.

Lesson 4: Attributes of a cylinder

Starter

Play: “count and write” (whole class or pair activity to practise counting and representing groups of objects with numerals).

Have learners put objects on their table or put some large objects on table in front of learners.

Learners count them together and then write the number in their books.

Let us Learn

- Use learners’ group from previous lesson. Give each group a cylinder and some criteria to use to talk about the object. Task each group to make a presentation on their objects to the class using the criteria. Criteria:
Name.
Roll/not roll.
Flat face/curved face.
Number of faces. (**collaborative learning, justification of ideas**)
Encourage other learners to ask questions.
- Demonstrate how to cut the net of a cylinder.
- Task each group to cut the net to make their own cylinder.

Review Exercise

Differentiated Lessons

Low Ability Learners

- Present learners with a cylinder and criteria to describe it. Learners also identify objects that look like cylinder in the environment.

High Ability Learners

- Task learners to identify the 2D shapes found in a cylinder and describe it using a given criteria.

Assessment for Learning

Task learners to draw 2 cylinders in different positions.

Lesson 5: Comparing 3D objects

Starter

Play: “Finding the shape” (whole class or group activity to practise identification of 2D shapes).

Give a box containing 2D shapes to each group (about 12 shapes altogether). One learner should have their group’s box in front of them.

Say the name of any shape, e.g.: square. All the learners with the boxes quickly find and hold up the shape just named by you.

Rotate the box among all the members of the group and increase the pace.

Let us Learn

- Use learners’ group from previous lesson.
- Play a game of “shape hunt” where groups find 3D objects hidden in the class by the teacher. Members of the group must describe the 3D objects using given attribute.
- Play a game of “blind folding” where a learner is blind-folded and given a 3D object to describe. Learners do so by just feeling and using their experience of the sides of the 3D to describe it. (**collaborative learning, justification of ideas, critical thinking**)
- Task learners to draw at least two of the 3Ds and colour them nicely.

Review Exercise

Differentiated Lessons

Low Ability Learners

- Present learners with a 3D to describe using a given criteria. Learners also draw a cone and a sphere.

High Ability Learners

- Task learners to differentiate between a cube and a cuboid through blindfolding. Learners also draw a cube and a cuboid.

Assessment

Refer learners to Exercise 2 on page 195 of the Learner’s Book.

Suggested Homework

1. Write any two objects that have a rectangular shape.
2. Use these criteria to describe the following 3D objects.

| Criteria | Cone | Cylinder | Sphere | Cuboid | Cube |
|-----------------------------|------|----------|--------|--------|------|
| 1. Corners | | | | | |
| 2. Faces | | | | | |
| 3. Roll/not roll | | | | | |
| 4. Flat face/curved surface | | | | | |

Draw any two 3D objects.

For additional exercises under this module, refer to pages 120 - 122 of the Workbook

Module 3: Identifying 2D shapes in 3D objects**Content Standard**

B1.3.1.1 Analyse attributes of two-dimensional shapes and three-dimensional objects to develop general concept about their properties.

Indicator

B1.3.1.1.1 Distinguish between attributes that define a two-dimensional figure or three-dimensional figure and attributes that do not define the shape.

Learning Expectation

Learners need to be able to: identify 2D shapes, identify 2D shapes in 3D objects.

Essential for Learning

Learners can identify 3D objects and name them.

New words

Roll, flat, triangles, rectangles, squares, Circles.

Resources

Sheets of paper, colour pencil, cut-out shapes of 2D, match box, ludu dice, chocomilo, coin etc.

Number of Lessons **2**

Lesson 1: Identifying 2Ds (1)**Starter**

Play: "Five more/less than" (whole class activity for practising mental fluency with five more than a number up to 50 or 100).

Call out a number.

Learners must call out a number that is five more/less than the number you called.

The aim of the game is to develop speed, so move quickly from one number to the other.

Find Out

Direct learners to page 196 of learners' book 1.

Ask: Have you seen an object like this before? What does it look like? Elicit answers such as: a sphere, a circle, it is round, it is the world, a ball, etc.

Let us Learn

- Put learners into groups of four and task them to trace around given items such as match-box, milo cans, coin, chocomilo etc. Lead the class to identify the shapes they have gotten from their tracing activities.
- Drill the names of the plane shapes with the class. (circle, square, rectangle, triangle)
- Using the same groups, task learners to identify objects in and out of the classroom and tell the 2D shapes in them. (*collaborative learning, critical thinking*)

- Go through the activities in **Let us learn: 1**, on page 196 of the Learner's Book with learners.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Present learners with 2D shapes to tell their names.

High Ability Learners

- Task learners to tell the shape they see in a given 3D object. For example: what shape can you identify in an exercise book? Ans. rectangle.

Assessment for Learning

Refer learners to Exercise 1, questions 1 - 4 on page 198 of the Learner's Book.

Lesson 2: Identifying 2Ds (2)**Starter**

Play: "Ten more/less than" (whole class activity for practising mental fluency with ten more than a number up to 50 or 100).

Call out a number.

Learners must call out a number that is 10 more/less than the number you called.

The aim of the game is to develop speed, so move quickly from one number to the other.

Let us Learn

- Use learners' previous groups.
Give each group a 3D shape and some criteria to use to talk about the shape.
Task each group to make presentation on their shape to the class using the criteria.
Criteria:
Name.
Number of sides.
Type of face.
Number of corners. (*Collaborative learning, justification of ideas*)
Encourage other learners to ask questions.
- Direct learners to **Let us learn: 2** on page 197 of the Learner's Book. Lead the class to identify the shapes in the 3D objects.

Review Exercise

Differentiated Lessons

Low Ability Learners

- Present learners with 2D shapes to tell the name, number of sides and corners.

High Ability Learners

- Task learners to tell the number of sides and corners in a given number of shapes.
E.g. How many sides are in 3 squares.

Assessment for Learning

Refer learners to Exercise 1, questions 5 - 9 on page 198 of the Learner's Book.

Suggested Homework

1. Draw a square and a triangle and tell the number of sides and corners in each.
2. How many sides are in three triangles?
3. How many corners are in a circle?

For additional exercises under this module, refer to pages 123 - 124 of the Workbook.

Module 4: Making your own shapes**Content Standard**

B1.3.1.1 Analyse attributes of two-dimensional shapes and three-dimensional objects to develop general concept about their properties.

Indicator

B1.3.1.1.1 Distinguish between attributes that define a two-dimensional figure or three-dimensional figure and attributes that do not define the shape.

Learning Expectation

Learners need to be able to: identify 2D shapes, make 2D shapes from other 2D shapes.

Essential for Learning

Learners can identify 2D shapes and name them. They can also draw the 2D shapes.

New words

Attribute, triangles, rectangles, squares, circles.

Resources

Sheets of paper, colour pencil, cut-out 2Ds, etc.

Number of Lessons **2****Lesson 1: Making 2Ds (1)****Starter**

Play: "Count and write" (whole class or pair activity to practise counting and representing groups of objects with numerals).

Have learners put objects on their table or put some large objects on table in front of learners.

Learners count them together and then write the number in their notebooks.

Activity can be done in pairs, with one partner putting a group of objects on the table of the other partner. Both partners write the number in their note books.

Find Out

Direct learners to page 199 of the Learner's Book.

Ask: What shape do you see? Can you identify more than one shape? Can we make other shapes from the shape?

Let us Learn

- Put learners into groups of about five. Present each learner in the group with sheet of papers. Demonstrate how to make a square from a rectangle and a triangle from rectangle or a square. (**collaborative learning**). Task learners to fold or cut (if appropriate) 2D shapes from other shapes.
- Refer to page 199 of the Learner's Book, **Let us learn**. Go through the activity with learners.

Review Exercise

- Task learners to make a new shape from a different shape.

Assessment for Learning

Refer learners to Exercise 1 on page 200 of the Learner's Book.

Lesson 2: Making 2Ds (2)

Starter

Roll a dice.

All the learners have to stand up behind their chairs. The teacher should have two or three dice.

The dice are rolled and the teacher uses the numbers rolled (e.g. 2, 4 and 1) to create a question for the learners to answer (e.g. "What is $2+4+1$?").

The learners put up their hands if they know the answer and the teacher calls one of them. If the learner gets it correct, someone in their row can sit down. If they get the answer wrong, someone in the row has to stand up (if everyone is standing, everyone stays up).

The aim of the game is for the learners to try and get everyone on their row to sit down.

Let us Learn

- Use learners' previous groups.
Give each group a chart showing the various shapes.
- Task learners to draw lines to make 2D shapes.

- Refer learners to **Let us do an activity** on page 200 of the Learner's Book to do the activity in groups of five. (*collaborative learning, problem solving*)

Review Exercise

- Task learners to make a new shape from a different shape.

Assessment for Learning

Refer learners to Exercise 2 on page 200 of the Learner's Book.

Suggested Homework

Make three different shapes using other shapes of your choice.

For additional exercises under this module, refer to pages 125 - 126 of the Workbook.

Module 5: Sorting 3D objects**Content Standard**

B1.3.1.1 Analyse attributes of two-dimensional shapes and three-dimensional objects to develop general concept about their properties.

Indicator

B1.3.1.1.2 Identify three-dimensional shapes, including spheres, cones, cylinders, rectangular prisms (including cubes), and triangular prisms and describe their attributes using formal geometric language.

Learning Expectation

Learners need to be able to: identify 3D objects, and sort 3D objects.

Essential for Learning

Learners can identify 3D objects and name them.

New words

Attribute, cone, cylinder, sphere, cube, cuboid.

Resources

Sheets of paper, colour pencil, cut-out 3Ds, outline drawing of 3Ds, etc.

Number of Lessons **2****Lesson 1: Sort 3Ds by type****Starter**

Play: Five (or ten) more/less than... (whole class activity for practising mental fluency with five or ten more than a number up to 50 or 100).

Call out a number.

Learners must call out a number that is five or ten more/less than the number you called.

The aim of the game is to develop speed so move quickly from one number to the other.

Find Out

Direct learners to page 201 of the Learner's Book.

Ask: What shapes can you see?

Let us Learn

- Put learners into groups of about five. Present each group with a picture/chart showing solid shapes of different colours and sizes. Task learners to sort the shapes according to the type, i.e. cones, cuboids etc.
- Play "Shape match". Put 3D objects on the floor. Give learners a sample 3D object to match it with the right shape. (*collaborative learning, problem solving*).

- Refer learners to page 201 of the Learner's Book. Go through the activities in **Let us learn** with them.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Give learners cut out pictures of different 3D objects. Task them to sort them according to their type.

High Ability Learners

- Task learners to draw some 3D objects and sort them into their types.

Assessment for Learning

Refer learners to Exercise 1 on page 202 of the Learner's Book.

Lesson 2: Sort 3Ds by colour**Starter**

Roll a dice. All the learners have to stand up behind their chairs. The teacher should have two or three dice.

The dice are rolled and the teacher uses the numbers rolled (e.g. 2, 4 and 1) to create a question for the learners to answer (e.g. "What is $2+4+1$?").

The learners put up their hands if they know the answer and the teacher calls one of them. If the learner gets it correct, someone in their row can sit down. If they get the answer wrong, someone in the row has to stand up (if everyone is standing, everyone stays up). The aim of the game is for the learners to try and get everyone in their row to sit down.

Let us Learn

- Use learners' previous groups.
Give each group a chart showing the different 3D objects of different colours.
- Task learners to match the shapes using colour.
- Give learners cut out 3D objects of different colours. Task them to sort them using the colours. That is, they should put objects with the same colour together.
(collaborative learning, problem solving)

Review Exercise

- Give learners outline drawing of 3D objects. Let them colour them repeating same colours for different objects.

Assessment for Learning

Refer learners to Exercise 2 on page 203 of the Learner's Book.

Suggested Homework

1. Draw three cylinders of different sizes and colour each with a different colour.
2. Draw a cube and a cuboid and colour them with the same colour.

For additional exercises under this module, refer to pages 127 - 128 of the Workbook.

Module 6: Sorting 2D shapes**Content Standard**

B1.3.1.1 Analyse attributes of two-dimensional shapes and three-dimensional objects to develop general concept about their properties.

Indicator

B1.3.1.1.3 Identify two-dimensional shapes, including circles, triangles, rectangles and squares as special rectangles, rhombuses and hexagons and describe their attributes using formal geometric language.

Learning Expectation

Learners need to be able to identify 2D shapes and sort them.

Essential for Learning

Learners can identify 2D shapes and name them.

New words

Attribute, triangles, rectangles, squares, circles.

Resources

Sheets of paper, colour pencil, cut-out 2Ds, pictures/chart of plane shapes, etc.

Number of Lessons **2****Lesson 1: Sorting 2Ds by type****Starter**

Play: "Count and write" (whole class or pair activity to practise counting and representing groups of objects with numerals).

Have learners put objects on their table or put some large objects on table in front of learners.

Learners count them together and then write the number in their notebooks.

Activity can be done in pairs, with one partner putting a group of objects on the table of the other partner. Both partners write the number in their note-books.

Find Out

Direct learners to page 204 of the Learner's Book.

Ask: Can you identify and name the shapes?

Let us Learn

- Put learners into groups of about five. Present each group with a picture/chart showing plane shapes of different colours and sizes.

- Task learners to sort the shapes according to the type, i.e. triangles, rectangles, squares, circles, etc.
- Play "Shape match". Put 2D shapes on the floor. Give learners a sample 2D shape to match it with the right shape. (*collaborative learning, critical thinking, problem solving*)
- Go through the activities of **Let us learn** on page 204 of the Learner's Book with learners. Let them identify the shapes and those that are the same.

Review Exercise

- Give learners cut out 2D shapes. Task them to sort them by type.

Assessment for Learning

Refer learners to Exercise 1 on page 205 of the Learner's Book.

Lesson 2: Sorting 2Ds by colour

Starter

Play: "Maths Champion".

Ask all the learners in your class to stand up.

Select two learners and ask an addition question (or a Maths question based on the topic you are teaching at that time). Whoever gets the question wrong, sits down. If they answer correctly, they stay standing.

Keep going around the class until only one learner is left standing. This person is the Maths Champion!

Let us Learn

- Use learners' previous groups.
Give each group a chart showing the different 2D shapes of different colours. Task learners to match the shapes using colours.
- Arrange cut out shapes of different colours in front of each group. Ask them to draw lines to match shapes with the same colour. (**collaborative learning, justification of ideas**)

Review Exercise

- Provide learners with a sheet of paper with different 2D shapes of different colours printed on it. Working in groups of five, learners sort the shapes based on colour. They use numerals to sort the shapes.

Assessment for Learning

Refer learners to Exercise 2 on page 206 of the learner's Book.

Suggested Homework

1. Draw three triangles of different sizes and colour each with a different colour.

For additional exercises under this module, refer to pages 129 of the Workbook.

Encourage learners to do the reflection exercises on pages 207 after this sub-strand.

Learners complete the self-assessment table on page 208. This will help you know each learner's strength and weaknesses.

Module 1: Positions of objects**Content Standard**

B1.3.2.1 Describe the position of objects in space.

Indicator

B1.3.2.1.1 Tell the position of objects relative to other objects in space using words such as above, below, to the right etc.

Learning Expectation

Learners need to be able to tell the position of objects.

Essential for Learning

Learners can identify a number before and after a given number.

New words

Under, below, above, beside, places, behind.

Resources

Tennis balls, box, books, pencils, number chart, etc.

Number of Lessons **2**

Lesson 1: Identifying the position of objects (1)

Starter

Play: "Count and write" (whole class or pair activity to practise counting and representing groups of objects with numerals).

Have learners put objects on their table or put some large objects on table in front of learners. Learners count them together and then write the number in their notebooks.

Activity can be done in pairs, with one partner putting a group of objects on the table of the other partner. Both partners write the number in their note-books.

Find Out

Direct learners to page 209 of the learner's Book.

Ask: Can you identify the items in the picture? Where is the ball? Where is the cat? Can we place any of the items anywhere else around the chair? Expect answers such as: behind the chair, beside the chair, etc.

Let us Learn

- Put a box in front of the class. Pick a tennis ball and call learners to place the ball anywhere they want around the box. Engage learners to tell the position of the tennis ball.
- Direct learners to **Let us learn: 1** on page 209 of the Learner's Book.

- Lead them to identify the position of the coloured shapes.
- Put learners into small groups of about five or seven.
Tell the learners: There is a box and a small ball. Guess! Where the ball is.
- Refer learners to **Let us do an activity** on page 210 of the Learner's Book. (**Critical thinking**)
- Each group discuss and select a leader to defend their answer.
- Allow learners time to present their findings quickly to the class. (**collaborative learning and leadership skills**)
- Hold a whole class activity as follows:
Point to a learner.
Ask learners around to describe their positions in relation to the learner chosen.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Give a picture showing objects in different positions in relation to each other. Task learners to identify the position of each object in the picture.

High Ability Learners

- Task learners to arrange objects in different positions and describe them.

Assessment for Learning

Refer learners to Exercise 1 on page 211 of the Learner's Book.

Lesson 2: Identifying the position of objects (2)

Starter

Play: "Count and write" (whole class or pair activity to practise counting and representing groups of objects with numerals).

Have learners put objects on their table or put some large objects on table in front of learners. Learners count them together and then write the number in their notebooks.

Activity can be done in pairs, with one partner putting a group of objects on the table of the other partner. Both partners write the number in their note-books.

Let us Learn

- Revise learners' knowledge on describing positions of objects.
- Engage learners in their sitting arrangements to describe their positions. Hold a whole class activity as follows
Point to a learner.
Ask learners around to describe their positions in relation to the learner chosen. (**Critical thinking**)
- Put learners into small groups of about six. Present each group with a number chart. Demonstrate by describing numbers in the number chart.
Task learners to circle any number on the chart and describe about five numbers in relation to the chosen number.
- Encourage learners to use the appropriate language to describe the position of the numbers. Example, above, below, to the right of, two places to, etc
- Allow learners time to present their findings quickly to the class. (**Critical thinking, collaborative learning**)

Review Exercise

Differentiated Lessons

Low Ability Learners

- Put a group of objects before learners. They identify the position of an object in relation to other objects.

High Ability Learners

- Task learners to create positions for objects and describe them.

Assessment for Learning

Refer learners to Exercise 2 on page 212 of the Learner's Book.

Suggested Homework

| | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 |

Tell the position of six different numbers from 1 to 50.

E.g. 36 is two places below 16.

15 is two places above 35.

For additional exercises under this module, refer to pages 130 - 131 of the Workbook.

Encourage learners to do the reflection exercises on page 213 after this sub-strand.

Learners complete the self-assessment table on page 213. This will help you know each learner's strength and weaknesses.

Module 1: Comparing and measuring lengths**Content Standard**

B1.3.3.1 Demonstrate an understanding of measurement.

Indicator

B1.3.3.1.1 Develop an understanding of measuring as a process of comparing pairs of items using words such as smaller, longer, thinner, heavier, bigger etc.

Learning Expectation

Learners need to be able to: compare the length of objects, measure the length of objects.

Essential for Learning

Learners can count by 1s and compare numbers.

New words

Length, long, longer, short, shorter, tall, taller.

Resources

Matchsticks, pencils, paper clips, straws, colour pencils etc.

Number of Lessons **2**

Lesson 1: Comparing lengths**Starter**

Play: "Doubles" (whole class activity for developing mental fluency with doubles of 10).

Call out a number between 1 and 10.
Learners must call out the double of that number.

The aim of the game is to develop speed, so move quickly from one number to the other.

Find Out

Direct learners to **Find out** on page 214 of the Learner's Book.

Ask: can you tell what the person is doing under each foot? Is there any other way we can measure? How many more paper clips are there under the big foot than the small foot? Which ways can we measure the height of the potplants?

Let us Learn

- Put learners into groups of about five.
- Direct learners to the **Let us learn: 1** on page 214 of the Learner's Book.
- And lead them to compare the lengths of the objects using the correct language. E.g. "Stick A is longer than Stick B".
- Hold a whole class activity.
Put two items together and ask learners to tell which is longer.

- Call two learners with different heights to the front of the classroom. Let them stand with their backs facing each other. Ask learners to closely observe and tell you who is taller than the other.
- Present each group with pairs of objects to compare and record which is longer/taller. Example, pencil and crayon, etc.
- Allow learners to make presentation of their results to the class and justify their answers. (*collaborative learning, leadership skills, critical thinking*)

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Learners to compare objects and tell which is longer or shorter. Example, ruler and a pen.

High Ability Learners

- Task learners to select the best among given measuring items to measure a given object. E.g. To measure the cupboard, What will you use? A pencil or paper clip?

Assessment for Learning

Refer learners to Exercise 1 on page 216 of the Learner's Book.

Lesson 2: Measuring lengths

Starter

Play: “Doubles” (whole class activity for developing mental fluency with doubles of 10).

Call out a number between 1 and 10.

Learners must call out the double of that number.

The aim of the game is to develop speed, so move quickly from one number to the other.

Let us Learn

- Change learners' groups from the previous lessons and make new groups of six. Present them with pencils, matchsticks, paper clips, straws, etc.
- Have them use “matchsticks” and “paper clips” and “pencils” to measure and record the length of the top side of their table. (*collaborative learning*)

| Number of matchsticks | Number of paper clips | Number of pencils |
|-----------------------|-----------------------|-------------------|
| 30 | 35 | 18 |

- Call out groups to present their results. Ask learners to select which item they would prefer to use to measure and give reasons for their answers. (*critical thinking, collaborative learning*)
- Task the groups to go out of the class to measure items and record their results.
- Refer learners to **Let us learn: 2** on page 215 of the Learner's Book. Go through the activities with learners.

Review Exercise

Differentiated Lessons

Low Ability Learners

- Give learners in groups of five, paper clips and match sticks. Task them to measure the height of their chairs using both items. They record the number of times they get for each item.

High Ability Learners

- Give learners a list of items that can be measured. Example table, board, etc. Let them tell you the best item to use in measuring their lengths. They should justify their answers. let them work in groups of six.

Assessment for Learning

Refer learners to Exercise 2 on page 217 of the Learner's Book.

Suggested Homework

- Measure the length of your bed with a pencil and a straw and record your results in the table below.

| Number of straws | Number of pencils |
|------------------|-------------------|
| | |

- Tell which of these items you would use to measure:
 - Matchsticks
 - pencil
 - paper clip
 - straw

| Items | Measuring tool |
|-------------------------------|----------------|
| 1. Length of an exercise book | |
| 2. Blackboard | |
| 3. Top of teacher's table | |
| 4. Your bed | |

For additional exercises under this module, refer to pages 132 - 134 of the Workbook.

Module 2: Comparing and ordering mass**Content Standard**

B1.3.3.1 Demonstrate an understanding of measurement.

Indicator

B1.3.3.1.1 Develop an understanding of measuring as a process of comparing pairs of items using words such as smaller, longer, thinner, heavier, bigger etc.

Learning Expectation

Learners need to be able to compare the mass of objects, and order the weight of objects.

Essential for Learning

Learners can count by 1s, compare and measure the length of objects.

New Words

weight, measure, heavy, heavier, light, lighter.

Resources

Apples, pineapples, watermelons, books, pencils, plastic cup, etc.

Number of Lessons **2**

Lesson 1: Comparing mass of objects**Starter**

Play: "Show me"... but in different ways (whole class activity for practising different ways of making or showing a number or quantity).

Raise up fingers (1 to 5 or 1 to 10) and say the number you are holding up.

Learners must hold up the same number of fingers, but using a different arrangement of fingers (note the same fingers as you used).

Find Out

Direct learners to **Find out** on page 218 of the Learner's Book.

Ask: Which of the two dogs can you lift easily? Why do you say so? What else will be easier to lift than the smaller or bigger dog?

Let us Learn

- Put learners into groups of about five. Direct learners to **Let us learn: 1** on page 218 of the Learner's Book. And lead them to compare the mass of the objects using the correct language. E.g. The Elephant is heavier than the Antelope, the Bird is lighter than the Cat, etc.
- Put the class into three groups. Display an apple, watermelon, lime, pencil and straw on a table in front of each group.

- Task learners to pick up two items, then compare and say which of the two items is heavier than the other. They should record their findings. Each group should make sure all the members participate. Call out groups to present their results. Ask learners to select which item they would prefer to carry for an hour and give reasons for their answers. (**Critical thinking, collaborative learning**)
- Do a whole class activity: Put pairs of items together and ask learners to tell which is heavier, lighter or the same in weight by lifting the items. Refer learners to **Let us learn: 2** on page 219 of the Learner's Book. Go through the activity with them

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Give learners the following items. Plastic cup, watermelon and pencils. They compare objects and tell which is heavier or lighter.
- Task learners to compare the mass of the following. Apple, watermelon, and pencil.

Assessment for Learning

Refer learners to Exercise 1 on page 220 of the Learner's Book.

Lesson 2: Ordering mass of objects**Starter**

Play: “Show me... but in different ways” (whole class activity for practising different ways of making or showing a number or quantity).

Raise up fingers (1 to 5 or 1 to 10) and say the number you are holding up.

Learners must hold up the same number of fingers, but using a different arrangement of fingers (not the same fingers as you used).

Let us Learn

- Use learners’ groups from previous lesson. Display an apple, watermelon and pencil. Task learners to compare and record which of the items is heaviest and which is lightest.
- Call out groups to present and justify their results. (**critical thinking, collaborative learning, justification of idea**) Do a whole class activity. Call out three learners who clearly have different body weights. Call out a learner and give him/her number cards from one to three to use to order the learners from heaviest to lightest.
- Task the groups to go out of the class and pick three different items and order the items according to their mass. Groups should present their results with justification. (**collaborative learning, critical thinking, justification of idea**)
- Refer learners to **Let us learn: 3** on page 219. Go through the activity with them.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Have learners order paper, stone and pen and tell which is heaviest and which is lightest.

High Ability Learners

- Have learners select four objects of their choice with different weights. They should order them from heaviest to the lightest.

Assessment for Learning

Refer learners to Exercise 2 on page 221 of the Learner’s Book.

Suggested Homework

- Write the names of at least two items under the following headings.

| Heavier | Lighter |
|-----------|---------|
| E.g. Book | Pencil |
| | |
| | |
| | |
| | |
| | |

- Draw pairs of objects to show which is heavier and which is lighter.

| Heavier | Lighter |
|---------|---------|
| | |
| | |
| | |

For additional exercises under this module, refer to pages 135 - 137 of the Workbook.

Module 3: Comparing and ordering capacity**Content Standard**

B1.3.3.1 Demonstrate an understanding of measurement.

Indicator

B1.3.3.1.1 Develop an understanding of measuring as a process of comparing pairs of items using words such as smaller, longer, thinner, heavier, bigger etc.

Learning Expectation

Learners need to be able to compare and order the capacity of different containers.

Essential for Learning:

Learners can compare the length and weight of objects.

New Words

Capacity, full, half full, empty, more, less, most, least.

Resources

Empty containers of different sizes, cups, bottles, etc.

Number of Lessons **2**

Lesson 1: Comparing capacities**Starter**

Play: "Show me... but in different ways" (whole class activity for practicing different ways of making or showing a number or quantity).

Raise up fingers (1 to 5 or 1 to 10) and say the number you are holding up.

Learners must hold up the same number of fingers, but using a different arrangement of fingers (not the same fingers as you used).

Find Out

Direct learners to **Find out: A** on page 222 of the Learner's Book.

Ask: Which of the two glasses contain more wine? Why do you say so? Can the other glass also contain more wine? (**justification of ideas**)

Let us Learn

- Put learners into groups of about five. Direct learners to **Let us learn: 1** on page 222 of the Learner's Book. Drill the new words with them. And lead them to compare the capacity of the containers using the correct language. E.g. The containers in A are empty, the containers in B are half full. The containers in C are full.
- Put a filled 500ml bottle, a third full and 1 litre bottle of water in front of the class. Ask learners to tell you which one holds more? Don't be surprised when some tell you the

500ml holds more. This is because they see that to be full. Let learners know that, the size of a container determines how much water it can contain.

- Display two containers of different sizes (capacity) in front of each group. Give learners a cup to use to fill the two containers with water or sand to determine which container holds more/less.
- Call out groups to present their results. (**Collaborative learning, critical thinking**).
- Refer learners to **Let us do an activity** on page 223 of the Learner's Book. Explain the activity to them. Let them work in pairs to come out with the answer.
- Hold a whole class activity. Show pairs of containers for learners to tell which of the two can hold more.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Present three containers with water, one full, the other half full and the third one empty to learners. They should describe each container in terms of the capacity of water it holds. Let them work in groups of five.

High Ability Learners

- Give learners three containers of different sizes. Task them to fill them with water to different levels and describe them. They can work in pairs or groups of four.

Assessment for learning

Refer learners to Exercise 1 on page 224 of the Learner's Book.

Lesson 2: Ordering capacities**Starter**

Play: "Show me... but in different ways" (whole class activity for practising different ways of making or showing a number or quantity).

Raise up fingers (1 to 5 or 1 to 10) and say the number you are holding up.

Learners must hold up the same number of fingers, but using a different arrangement of fingers (not the same fingers as you used).

Find Out

Direct learners to **Find out: B** on page 222 of the Learner's Book.

Ask: Which holds more and which holds less? Why do you say so? (**justification of ideas**)

Let us Learn

- Use learners' previous groups. Display containers of different sizes (capacity) in front of each group. Task learners to fill the containers using the same cup to compare and order which of the containers holds most and which holds least. (**collaborative learning**)
- Call out the groups to present their results. Ask learners to select which container fills a bigger container faster. (**critical thinking**)
- Refer learners to **Let us learn: 2** on page 223 of the Learner's Book. Discuss the activities in the Learner's Book. Encourage learners to use the appropriate language.
- Hold a whole class activity: Put three different sizes of containers down and ask learners to order them according to the one which holds more to the one that holds less.

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Give learners three different sizes of containers. Have them order the containers from the one that holds most to least. Allow learners to fill the containers with water or sand to aid in the comparison.

High Ability Learners

- Have learners order containers of different sizes from the least to most and vice versa.

Assessment for Learning

Refer learners to Exercise 2 on page 224 of the Learner's Book.

Suggested Homework

- Draw pairs of containers to show which holds more and which holds less.

| Hold more | Hold less |
|-----------|-----------|
| | |
| | |
| | |

- Write the names of two items under following headings.

| Hold more | Hold less |
|------------------|-----------|
| E.g. Eating bowl | Barrel |
| | |
| | |
| | |
| | |
| | |

For additional exercises under this module, refer to pages 138 of the Workbook.

Encourage learners to do the reflection exercises on page 225 after this sub-strand.

Learners complete the self-assessment table on page 225. This will help you know each learner's strength and weaknesses.

4

Strand:

Data

Module 1: Collecting and handling data (1)**Content Standards**

B1.4.1.1: Organise, represent and interpret data.

Indicator

B1.4.1.1.1: Organise and represent (using pictures/objects) data with up to three categories.

Learning Expectation

Learners need to be able to sort and organise data.

Essentials for Learning

Learners can group objects based on a given criteria.

New words

Data, collecting, sort, gather, arrange.

Resources

Fruits, bottle caps of different colours.

Number of Lessons **2****Lesson 1: Sorting data (1)****Starter**

Play: "Doubles": Call out a number and learners double it. E.g. $2 \rightarrow 4$, $5 \rightarrow 10$, $1 \rightarrow 2$

Find Out

Refer learners to **Find out** on page 228.

Deduce from learners how they can sort the fruits at the page.



Banana9

Pineapple5

Orange 6

(collaborative learning, critical thinking)

Let us Learn

- Give out bottle caps to learners.
On the floor, write boys and girls. Each learner puts his/her bottle cap against his/her gender.
Boys 
Girls 
Let them count to tell the number of caps for each sex.
- Repeat the above activity using fruits. E.g. Mango, apples, etc.
- Refer learners to **Let us learn: 1** on page 228 of the Learner's Book. Have learners sort the fruit and count how many for each.
(collaborative learning, critical thinking, problem solving)

Review Exercise**Differentiated Lessons****Low Ability Learners**

- Give each learner a bottle cap. Present to them a picture of a bird and a cat. They arrange the caps against the animal they like best. Let them count to find how many altogether, which animal had more/less.

High Ability Learners

- Let them count the number of girls and the number of boys in the class. They use different bottle caps to arrange for the boys and the girls.

Assessment for Learning

Refer learners to Exercise 1 and 2 on pages 230 and 231 of the Learner's Book.

Suggested Homework

Count the number of people in your house and record it.

Men _____

Women _____

Girls _____

Boys _____

Lesson 2: Sorting data (2)

Starter

Play: "Doubles": Call out a number and learners double it. $2 \rightarrow 4$, $3 \rightarrow 6$, $5 \rightarrow 10$.

Let us Learn

- Write the days of the week from Monday to Sunday on the board. Have learners come and make a stroke against the day that he/she was born.
- Refer learners to **Let us learn: 2** on page 229 of the Learner's Book. They count the number of stars, triangles and squares and record their findings.
- Let them answer questions like:
 - * How many types of shapes are there?
 - * Which shape is more and by how many?
 - * How many shapes are there altogether?
 (They should work in groups.)
(collaborative learning)

Review Exercise

- Present to them Fanta and Malt tops. Each person takes one that he/she likes best. Let them count to know the drink that learners like most.

Assessment for Learning

Refer learners to Exercise 3 on page 232 of the Learner's Book.

Suggested Homework



Count and write the number for each item above.

Spoons _____

Bowls _____

Pots _____

For additional exercises under this module, refer to pages 140 - 142 of the Workbook.

Module 2: Collecting and handling data (2)**Content Standards**

B1.4.1.1: Organise, represent and interpret data.

Indicator

B1.4.1.1.2: Organise a given set of data into three categories, find the total number of data points and determine how many are in each category and compare the number in any two category.

Learning Expectation

Learners need to be able to organize data and interpret it.

Essentials for Learning

Learners can organize data with a given criteria.

New words

Collecting, data, interpret.

Resources

Flowers of different kinds, bottle caps, fruits, pictures of animals and birds.

Number of Lessons **2****Lesson 1: Interpretation of data****Starter**

Play: "How many to make 10". Call out a number between 1 and 9. Learners call out a number that adds up to make 10.

E.g. 8 → 2, 6 → 4, 9 → 1.

Find Out

Refer learners to page 233 of the Learner's Book. Have learners look at the picture and say the quantity of each item. Let them work in pairs. (*collaborative learning*)

Let us Learn

- Take the class outside.
Walk round with them and ask them to pick anything that is attractive to them, such as flowers, pebbles, leaves (be careful of dangerous flowers and leaves), etc.
- Let them assemble the materials they brought according to sameness and count for each category and record.
Example: stones _____, pebbles _____, flowers _____
- The game I like best:**
Write these games on the board.
Ampe:
Football:
Netball.
- Learners go and make a stroke against the game they like best.
They should count and tell the number in each category. (*collaborative learning*)

- Refer learners to **Let us learn: 1** on page 233 of the Learner's Book and go through the activities with them. Have them count the flowers and leaves and record their findings.

Review Exercise

- Draw toffee, chocolate and ice cream on the board. Learners make a stroke against the sweet they like best.
- They count to find the number in each category:
toffee _____
chocolate _____
ice cream _____

Assessment for Learning

Refer learners to Exercise 1 on page 235 of the Learner's Book.

Lesson 2: Picture graph

Starter

Play "Making 10s".

Show fingers up, and learners add a number to make 10.

Let us Learn

- Refer learners to **Let us learn: 2** on page 234 of the Learner's Book. Take them through the activity to answer the questions.
- Guide them to tally their favourite fruits on the board.
- Display pictures of animals on the table. Call each learner to pick the animal he/she likes best. They paste them against the animal they like best.

Dog _____

Cat _____

Monkey _____

- How many like cats?
- How many like dog?
- How many like monkey?

Assessment

Refer learners to Exercise 2 on page 236 of the Learner's Book.

Suggested Homework

Count and write the number of these items in your home.

1 Spoons _____

2 Cups _____

3 Cooking utensils _____

For additional exercises under this module, refer to pages 143 - 145 of the Workbook.

Encourage learners to do the reflection exercises on page 237 after this sub-strand.

Learners complete the self-assessment table on page 237. This will help you know each learner's strength and weaknesses.

Strand 1: Number
Sub-strand 1: Number: Counting, representation, cardinality & ordinality
Module 1: Number names
Exercise 1 Page 10

| | | | | | |
|-------|---|---|-------|---|---|
| one | → | 1 | two | → | 2 |
| three | → | 3 | four | → | 4 |
| Five | → | 5 | six | → | 6 |
| Seven | → | 7 | eight | → | 8 |
| nine | → | 9 | | | |

Exercise 2 Page 11

| | | | | | |
|----------|---|------|------|---|------|
| a. one | → | C, H | four | → | A |
| b. two | → | D, E | five | → | B, F |
| c. three | → | G | | | |

Exercise 3 Page 12

a. Check on learners' answers

Module 2: Reading and writing the numeral zero (0)
Exercise 1 Page 14

Check on learners' answers

Exercise 2 Page 15

- a. 0 b. 1 c. 4 d. 2 e. 0 f. 5
- a. 0 b. 4 c. 0 d. 1 e. 0 f. 2
- circle 3 zeros
- circle 2 zeros
- circle 2 zeros

Module 3: Counting sequence (1)
Exercise 1 Page 18

Check on learners' answers

Exercise 2

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

Exercise 3 Page 19

| | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 |
| 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |

Exercise 4 Page 19

Check on learners' answers

Exercise 5 Page 20

- 63, 68, 87, 70, 71
- 71, 83, 74, 94, 99
- a. 61 b. 69 c. 80 d. 91 e. 99

Exercise 6 Page

- 70, 69, 68, 67, 66, 65, 64
- 81, 80, 79, 78, 77, 76, 75
- 100, 99, 98, 97, 96, 95, 94
- 85, 84, 83, 82, 81, 80, 79

Module 4: Counting sequence (2)
Exercise 1 Page 23

| | | | |
|----------|----|----|----|
| 1. 35 37 | 39 | 41 | 43 |
| 2. 26 28 | 30 | 32 | 34 |
| 3. 47 49 | 51 | 53 | 55 |

Exercise 2 Page

| | | | |
|----------|----|----|----|
| 1. 43 41 | 39 | 37 | 35 |
| 2. 34 32 | 30 | 28 | 26 |
| 3. 60 58 | 56 | 54 | 52 |

Exercise 3 Page 24

| | | | | |
|----------|----|----|----|-----|
| 1. 60 62 | 64 | 66 | 68 | 70 |
| 2. 80 82 | 84 | 86 | 88 | 90 |
| 3. 90 92 | 94 | 96 | 98 | 100 |

Exercise 4

| | | | | | |
|-----------|----|----|----|----|----|
| 1. 75 73 | 71 | 69 | 67 | 65 | 63 |
| 61 | | | | | |
| 2. 60 58 | 56 | 54 | 52 | 50 | 48 |
| 46 | | | | | |
| 3. 60 58 | 56 | 54 | 52 | 50 | 48 |
| 46 | | | | | |
| 4. 100 98 | 96 | 94 | 92 | 90 | 88 |
| 86 | | | | | |

Module 5: Counting sequence (3)
Exercise 1 Page 27

0-10-20-30-40-50-60-70-80-90-100

Exercise 2

| | | | |
|----------|----|----|----|
| 1. 3 13 | 23 | 33 | 43 |
| 53 63 | 73 | 83 | 93 |
| 2. 50 40 | 30 | 20 | 10 |
| 60 50 | 40 | 30 | 20 |

Module 6: Count to find “how many”

Exercise 1 Page 30

1. 18 2. 16
3. 14 4. 7
5. 49 6. 39

Exercise 2 Page 31

1. 16
2. 35
3. 27
4. 21
5. 99

Module 7: Ordinal numbers

Exercise 1 Page 34

1. Edem
2. Laryea
3. 6th
4. Oko
5. Sefa
6. 1st 2nd 3rd 4th 5th 6th 7th

8th 9th 10th

Exercise 2 Page 35

1. Check learners answers
2. 1st
3. 3rd
4. 5th

Module 8: Describing the position of numbers

Exercise 1 Page 37

1. a 24 b 44 c 68
d 24 e 48 and 8

2. a before 28: 27 26 25 24
b after 28: 29 30 31 32

3. a before 41: 40 39 38 37
b after 41: 42 43 44 45

Module 9: Using non – standard units for measuring (1)

Exercises

Check on learners’ answers

Module 10: Using non – standard units for measuring (2)

Page 42

Exercise 1 Check on learners’ answers

Exercise 2 Check on learners’ answers

Module 11: Comparing two groups of objects

Exercise 1 Page 45

1. a one less b one less
one more one more
2. a A is one less than B
b B is one more than A

Exercise 2 Check on learners’ answers
Pages 46 and 47

1. ✓ × 2. × ✓ 3. × ✓ 4. ✓ × 5. × ✓

Exercise 3 Page 47

1. a and c
2. a and c
3. a and b

Module 12: Comparing and ordering numbers

Exercise 1 Page 50

1. 10 is more than 6
2. 3 is less than 9
3. 12 is less than 15
4. 18 is more than 16

Exercise 2

1. 21 25 29 30
2. 72 65 62 58

Module 13: Numbers: “one more” “one less”

Exercise 1 Page 53

1. 17 18 19
2. 22 23 24
3. 43 44 45
4. 70 71 72

Exercise 2

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

ANSWERS

Module 14: Comparing whole numbers using the symbols ">", "<" or "="

Exercise 1 Page 56

1. $49 > 29$
2. $8 > 4$
3. $50 > 36$
4. $27 > 13$
5. $18 > 15$
6. $35 > 22$
7. $34 > 21$
8. $17 > 15$
9. learners own numbers.
10. learners own numbers.

Exercise 2

1. $39 < 48$
2. $12 < 15$
3. $25 < 29$
4. $36 < 41$
5. $34 < 43$
6. $23 < 32$
7. $19 < 22$
8. $29 < 38$
9. learners own numbers.
10. learners own numbers.

Exercise 3 Page 57

- | | |
|---------|---------|
| 1. $>$ | 2. $=$ |
| 3. $<$ | 4. $<$ |
| 5. $=$ | 6. $>$ |
| 7. $=$ | 8. $>$ |
| 9. $>$ | 10. $<$ |
| 11. $<$ | 12. $=$ |
| 13. $<$ | 14. $>$ |

Module 15: Relationship between quantities/ numbers up to 100

Exercise 1 Page 60

1. two more
2. equal to
3. three less
4. two more
5. equal to

Exercise 2 Page 62

Check on learners' answers

Module 16: Comparing and ordering

Exercise 1 Page 66

Check on learners' answers

Exercise 2 Page 67

- | | | | | | |
|----|---|----|----|----|----|
| 1. | a | 9 | 11 | 13 | 17 |
| | b | 2 | 9 | 12 | 16 |
| | c | 3 | 7 | 15 | 20 |
| | d | 4 | 8 | 12 | 19 |
| 2. | a | 15 | 12 | 11 | |
| | b | 13 | 10 | 4 | |

Exercise 3 Check on learners' answers Page 68

Reflection Exercise 1 Page 69

1. 19, 17, 16, 15, 14, 13, 12.
2. 28, 38, 48, 58.
3. 24.
4. check on learners answers
5. $a >$ $b <$ $c =$
6. 21, 18, 8, 6, 2
7. 11, 19, 21, 32, 50
8. 88, 90

Reflection Exercise 2 Page 70

1. 46, 56, 76, 86, 96
2. 5th, 4th, 3rd, 2nd,
3. 1st, 3rd, 4th, 5th, 7th, 8th, 9th
4. c 44
a, b and d check on learners answers
5. 10, 15, 30, 35
6. 22, 26, 30, 32, 36
7. 30, 40, 60, 70, 80, 90

Strand 1: Number

Sub-strand 2: Number operations (addition, subtraction, multiplication and division)

Module 1: Addition of whole numbers up to 20

Exercise 1 Page 74

1. 6 and 5 make 11
2. 12 and 4 make 16
3. 10 and 10 make 20

Exercise 2 Page 75

1. $1 \rightarrow 13$
2. $2 \rightarrow 16$
3. $3 \rightarrow 15$
4. $4 \rightarrow 20$
5. $5 \rightarrow 9$

Exercise 3 Page 76

1. 7 counters
2. 8 toffees
3. 6 pencils
4. 7 pens
5. 9 erasers

Module 2: Subtraction of whole numbers up to 20

Exercise 1 Page 79

1. addition
2. subtraction
3. subtraction
4. subtraction

Exercise 2 Page 80

- | | |
|------|------|
| 1. 6 | 2. 6 |
| 3. 7 | 4. 9 |
| 5. 6 | 6. 8 |

Exercise 3 Page 81

1. 5
2. 1
3. 0
4. 2

Exercise 4 Page 82

1. 9
2. 4
3. 9-4
4. 5

Module 3: Word problems (comparing 2 sets)

Exercise 1 Page 85

1. not equal
2. equal
3. equal

Exercise 2 Page 86

1. B is not equal to A
C is equal to A
B is not equal to C
2. B is not equal to A
C is not equal to A
B is equal to C
3. B is not equal to A
C is equal to A
B is not equal to C
4. B is not equal to A
C is not equal to A
B is equal to C

Module 4: Word problems (joining and separation)

Exercise 1 Page 89

1.
 - a. $8 + 9 = 17$
 - b. 4
2.
 - a. 6
 - b. 8
 - c. 7
 - d. 8

Exercise 2 Page 91

1. $14 - 6 = 8$
2. $11 - 6 = 5$
3. $12 - 4 = 8$
4. 4
5. $12 - 3 = 9$

Exercise 3 Page 92

1. $18 - 7 = 11$
2. 11
3. 11
4. 20

Module 5: Relationship between addition and subtraction

Exercise 1 Page 95

- | | |
|-------|------|
| 1. 4 | 2. 5 |
| 3. 3 | 4. 8 |
| 5. 15 | 6. 7 |

Exercise 2

- | | |
|------|-------|
| 1. 6 | 2. 2 |
| 3. 2 | 4. 4 |
| 5. 3 | 6. 11 |

Exercise 3 Page 96

- | | |
|---|--|
| 1. 6 $11 - 5 = 6$ or $11 - 6 = 5$ | 2. 20 $12 + 8 = 20$ or $8 + 12 = 20$ |
| 3. 4 $15 + 4 = 19$ or $4 + 15 = 19$ | 4. 9 $13 - 4 = 9$ or $13 - 9 = 4$ |
| 5. 9 $8 + 9 = 17$ or $9 + 8 = 17$ | 6. 8 $2 + 6 = 8$ or $6 + 2 = 8$ |

ANSWERS

Module 6: Word problems (addition and subtraction)

Exercise 1 Page 99

1. 9 8 17
2. 6 8 14
3. 13 7 20
4. 3 8 11
5. 7 5 12

Exercise 2 Page 100

1. $7 - 3 = 4$
2. 4
3. $13 - 7 = 6$
4. $9 - 6 = 3$
5. $4 - 4 = 0$
6. $13 - 8 = 5$

Exercise 3 Page 101

1. $7 - 3 = 4$
2. $8 - 4 = 4$
3. $4 + 2 = 6$
4. $4 + 2 = 6$

Module 7: Addition and subtraction facts (fluency 1)

Exercise 1 Page 104

Write the number that is 1 more than and 1 less than

1. 7 9
2. 8 10
3. 3 5
4. 16 18
5. 9 11
6. 11 13

Colour the correct number and write it

7. 12
8. 20
9. 12
10. 19

Exercise 2 Page 105

1. 4
2. 6
3. 15
- 4.
- a. 6 10
- b. 11 15
- c. 7 11
- d. 15 19
- e. 14 18

Module 8: Addition and subtraction facts (fluency 2)

Exercise 1 Page 107

1. 12
2. 10
3. 2
4. 16
5. 8 squares
6. 10 circles
7. 2 rectangles
8. 6 triangles

Exercise 2 Page 108

Circle the number that is double the number in the box

1. 12
2. 4
3. 2
4. 6
5. 10

Draw the missing circles ?

Check on learner's answers

Module 9: Addition and subtraction facts (fluency 3)

Exercise 1 Page 110

1. 25 in red
2. 9 in green
3. 10 in yellow
4. 13 in blue

Exercise 2 Page 111

1. 19 5
2. 38 8
3. 56 25
4. 91 62
5. 23 16

Exercise 3

1. 25
2. 50
3. 22
4. 13
5. 18
6. 31

Module 10: Addition and subtraction facts (fluency 4)

Exercise 1 Page 113

Fill in the missing numbers to make 5s

1. 1
2. 3
3. 4
4. 2
5. 0
6. 5

7. 3
8. 4
9. 2
10. 1

Exercise 2 Page 114

Fill in the missing numbers

1. 4 2. 3 3. 5
4. Check on learners' answers
5. Check on learners' answers
6. Check on learners' answers

How many more to make 10?

7. 6 8. 4 9. 8 10. 0

Module 11: Addition sum up to 20 (strategy 1)

Exercise 1 Page 117

1. Count by 2s to get to 17. Start from 5

5 7 9 11 13 15 17

2. Count by 3s to get to 19. Start from 4

4 7 10 13 16 19

3. Count by 4s to get to 18. Start from 2

2 6 10 14 18

4. Count by 5s to get to 16. Start from 1

1 6 11 16

Exercise 2

1. 13 2. 14 3. 18
4. 15 5. 19 6. 20

Module 12: Addition sum up to 20 (strategy 2)

Exercise 1 Page 120

Make 10 first, then add

1. $3 + 7 + 4 = 14$
2. $10 + 2 = 12$; $1 + 2 + 9 = 12$
3. $10 + 4 = 14$; $5 + 4 + 5 = 14$
4. $10 + 7 = 17$; $7 + 6 + 4 = 17$
5. $10 + 9 = 19$; $8 + 9 + 2 = 19$
6. $10 + 5 = 15$; $7 + 5 + 3 = 15$

Exercise 2 Page 121

Use doubling to answer the questions

1. $8 + 1 = 9$
2. Double 5 = 10; $10 + 1 = 11$
3. Double 8 = 16; $16 + 1 = 17$

4. Double 7 = 14; $14 + 1 = 15$
5. Double 9 = 18; $18 + 1 = 19$
6. Double 6 = 12; $12 + 1 = 13$
7. Double 5 = 10; $10 + 3 = 13$
8. Double 7 = 14; $14 + 3 = 17$

Module 13: Subtraction facts within 20 (strategy 1)

Exercise 1 Page 124

Use the number line to subtract by counting back

1. 9
2. 3
3. 4
4. 11
5. 8
6. 11

Exercise 2 Page 124

1. 5 2. 3 3. 6
4. 1 5. 7 6. 2

Module 14: Subtraction facts within 20 (strategy 2)

Exercise 1 Page 126

Rewrite the subtraction sentence as addition. Count on to find the missing number

1. 6 6
2. 4 4 11
3. 8 12 8 20
4. 10 6 10 16

Exercise 2 Page 127

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

$6 + 7 = 13$
or $7 + 6 = 13$

9. 11
 $11 + 9 = 20$
or $9 + 11 = 20$

8. 8
 $8 + 8 = 16$

10. 6
 $6 + 8 = 14$
or $8 + 6 = 14$

Module 15: Word problems involving addition (up to 20)

Exercise 1 Page 129

Solve the following

1. $6 + 10 = 16$
2. $7 + 11 = 18$
3. $5 + 4 = 9$

ANSWERS

4. $5 + 8 = 13$
5. 5
6. 4

Exercise 2 Page 131

1. 5
2. 10
3. 18
4. 20
5. 3
6. 8

Module 16: Word problems involving subtraction (within 20)

Exercise 1a Page 133

1. 4
2. $6 - 3 = 3$

Exercise 1b Page 134

1. $8 - 5 = 3$
2. $12 - 5 = 7$
3. $12 - 9 = 3$
4. $20 - 9 = 11$
5. $16 - 11 = 5$

Exercise 2 Page 135

1. $1 \longrightarrow c$
2. $2 \longrightarrow d$
3. $4 \longrightarrow a$
4. $5 \longrightarrow f$
5. $4 \longrightarrow b$
6. $7 \longrightarrow e$

Reflection Exercise 3 Page 136

1. 12
2. 8
3. 16
4. 5
5. 16
6. 20
7. 3
8. 6
9. 15, 10, 15
10. 19, 10, 19
11. 6, 12, 12, 1, 13
12. 5, 10, 10, 4, 14

Reflection Exercise 4 Page 137

1. a. 16, 20 b. 7, 11 c. 11, 15
2. a. 2 b. 0 c. 4
3. a. 19 b. 8

4. $19 - 6 = 13$
5. $12 + 7 = 19$
6. a 5 b 7
 $8 + 5 = 13$ $12 + 7 = 19$

Strand 1: Number

Substrand 3: Fractions

Module 1: Understanding fractions (1)

Exercise 1 Page 140

Wholes \longrightarrow 1, 3, 4, 7, 10

Module 2: Understanding fractions (2)

Exercise 1 Page 143

1. one-half objects (✓) \longrightarrow a, d
 non one-half (✗) \longrightarrow b, c

2. wholes (✓) \longrightarrow e, f
 halves (✗) \longrightarrow c, b, d

Exercise 2 Page 144

Check on learners' answers

Module 3: Understanding fraction (3)

Exercise 1 Page 146

Check on learners' answers

Module 4: Half of amounts

Exercise 1 Page 148

Groups that have been halved– 2, 3, 6, 7, and 8.

Exercise 2 Page 149

1. 4
2. 5
3. 3
4. 8
5. 6

Module 5: Number of halves in an object

Exercise 1a Page 151

Check on learners' answers

Exercise 1b Page 148

1. 8 2. 10
3. 6 4. 12

Exercise 2 Page 153

Check on learners' answers

Reflection Exercise 5 Page 154

1. Check on learners' answer
2. Check on learners' answer
3. 4
4. 7
5. Check on learners' answer
6. 10
7. Check on learners' answer

Strand 1: Numbers

Sub-strand 4: Money

Module 1: Recognise Ghanaian coins by name

Exercise 1 Page 158

Check on learners' answers

Exercise 2 Page 159

1. 50p
2. 10p
3. 50p
4. 1 cedi
5. 10p
6. 5p
7. Smallest to greatest: B, A, C
Greatest to smallest: C, A, B
8. Smallest to greatest: C, B, A
Greatest to smallest: A, B, C

Module 2: Relationship among the Ghana coins

Exercise 1 Page 161

1. 10
2. 5
3. 2
4. 1
5. 20
6. 100

Exercise 2 Page 162

1. 2
2. 1
3. 4
4. 0
5. 1
6. 5

Reflection Exercise 6 Page 163

1. 50 pesewas, 1 cedi, 20 pesewas
2. B, C, A
3. B, C, A
4. 4
5. False
6. True

Strand 2: Algebra

Sub-strand 1: Patterns and relationship

Module 1: Identifying and creating patterns (1)

Exercise 1 Page 167

Continue each pattern

1. 3,7 3,7
2. 2,8 2,8
3. 491 491
4. 6543 6543
5. 4324 4324
6. 111 22




















Exercise 2 Page 168

1. 5, 9, 0, 5, 9, 0
2. 5, 4, 7, 6, 5, 4
3. 3 5 7 9 11 13 15
17 19
4. 78 75 72 69 66 63 60
57 54
5. 17 18 6 17 18 6 17
18 6
6. 20 18 16 14 12 10 8 6
4

Module 2: Identifying and creating patterns (2)

Exercise 1 Page 170

Check on learners' answers

- 1a.    b.    c.  
- d.     2a.    
- b.   

Exercise 2 Page 171

1. yellow, red, red
2. yellow, green, green
3. blue, blue, blue
4. blue, green, yellow, red, blue, green,

Module 3: Identifying and creating patterns (3)

Activities

Module 4: Identifying errors in patterns

Exercise 1 Page 177

1. ✓
2. ✗
3. ✗
4. ✓
5. ✓

ANSWERS

6. Cross out last but one picture.
7. Cross out first picture.

Exercise 2 Page 178

1. 3 5 1.
2. 4 3 3 2.
3. 4 6 2 4.
4. 15 20 30 35 40 55 60.
5. Circle, hexagon, square, circle hexagon
6. red, green, yellow, green.



Module 5: Representing patterns in different ways

Exercise 1 Page 180

Fill in the spaces.

1. a. 1 1 2 2.
b. 4 2 2 2 2 2 2 4.
tap tap
2. Represent the following repeated patterns with other forms.
 - a. Check on learners' answers.
 - b. Check on learners' answers.
 - c. Check on learners' answers.
 - d. Check on learners' answers.
 - e. Check on learners' answers.

Module 6: Patterns in real life

Exercise 1 Page 183

Check on learners' answers.

Reflection Exercise 7 Page 184

1. 123, 123, 123
- 2.
3. jump, clap, sit, jump, clap
4. 6, 4, 4, 6, 4, 2, 6, 4
- 5.
6. Check on learners' answers.
7. Check on learners' answers.
8. Check on learners' answers.
9. Check on learners' answers.

Strand 3: Geometry and Measurement

Sub-strand 1: 2D shapes and 3D objects

Module 1: Naming and describing 2D shapes

Exercise 1 Page 190

1. Check on learners' answers.
- 2.a triangle 3.a rectangle
b 3 sides b 4 sides
3 corners 4 corners

Exercise 2 Page 191

Look at the two pictures above

1. A 1 B 1
2. A 3 B 0
3. A 2 B 2
4. A 3 B 2
5. 2
6. 3
7. 4
8. 5

Module 2: Naming and describing 3D objects

Exercise 1 Page 194

1. Check on learners' answers
2. cylinder cube sphere

Exercise 2 Page 195

Check on learners' answers

Module 3: Identifying 2D shapes in 3D objects

Exercise 1 Page 198

1. rectangle
2. rectangle/triangle
3. circle
4. rectangle
5. circle
6. triangle
7. triangle
8. rectangle
9. square

Module 4: Making your own shapes

Exercise 1 Page 200

Check on learners' answers

Exercise 2

Check on learners' answers

Module 5: Sorting 3D objects

Exercise 1 Page 202

Same shapes — 1, 3, 4 and 6.

Exercise 2 Page 203

Same colour — 1, 2, 4 and 5.

Module 6: Sorting 2D shapes





Exercise 1 Page 205

Check on learners' answers

Exercise 2 Page 206

1. circle
2. square
3. rectangle
4. triangle
5. rectangle

Reflection Exercise 8 Page 207

1. triangle →  cylinder → 
cube →  circle → 
2. 2
3. rectangle
4. cylinder
5. Check on learners' answers

Strand 3: Geometry and Measurement

Sub-Strand 2: Position/Transformation

Module 1: Positions of objects

Exercise 1 Page 211

Tell the position

1. 2 places to the right
2. 3 places below
3. 1 place above
4. 2 places below
5. 2 places above

Exercise 2 Page 212

Look at the picture. Underline the correct answer

1. on
2. behind
3. under in front of
4. beside beside
5. in front of
6. beside on

Reflection Exercise 9

Page 213

1. left
2. below
3. right
4. above
5. on the left of
6. above
7. left; below
8. to the right of

Strand 3: Geometry and Measurement

Sub-strand 3: Measurement-Length, mass and capacity

Module 1: Comparing and measuring lengths

Exercise 1 Page 216

1. a
2. b
3. b
4. a
5. b
6. b
7. a

Exercise 2 Page 217

How many pencils or paper clip long is each item? Count and write to complete the statements

1. 5 pencils 15 clips
2. 2 pencils 6 clips
3. 1 pencils 3 clips
4. 4 pencils 12 clips

Module 2: Comparing and ordering mass

Exercise 1 Page 220

1. heavier
2. lighter
3. same
4. watermelon → heaviest
mango → lighter
banana → lightest

Exercise 2 Page 221

Put the objects in order from lightest to heaviest.

1. c a b
2. a c b
3. a c b
4. b c a
5. c b a

ANSWERS

Module 3: Comparing and ordering capacity

Exercise 1 Page 224

1. b 2. d

Exercise 2

- a. Bucket holds most,
tea cup holds least
b. the oil container holds most,
water bottle holds least

Reflection Exercise 10 Page 225

1. 2, 3, 5
2. longer
3. the stone (a) is heavier
4. The cup (b) holds less.
5. The pot holds more.

Strand 4: Data

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

Module 1: Collecting and handling data (1)

Exercise 1 Page 230

1. Check on learners' answers
2. a 6 + 5 + 4 = 15
b birds
c 1

Exercise 2 Page 231

1. 9 b 6 c

| Bottle caps | Number of bottle caps |
|-------------|-----------------------|
| cola | 9 |
| pepso cola | 6 |
| fruto juice | 4 |

2. 9 bottle caps
3. fruto juice
4. $9 + 6 + 4 = 19$

Exercise 3 Page 232

- A Orange 12 B Big 11
Apple 11 Small 12

Module 2: Collecting and handling data (2)

Exercise 1 Page 235

1.

| Balls | Tally | Number |
|-------------|-------|--------|
| Football | | 5 |
| Tennis ball | | 7 |
| Basketball | | 9 |

2. 4
3. 2
4. 21

Exercise 2 Page 236

1. apple
2. mango
3. 5

Reflection Exercise 11 Page 237

1. Orange 4, Apple 9, Mango 6.

2.

| Fruits | Tally |
|---------|-------|
| Orange | |
| Apple | |
| Mangoes | |

2. 4, 9, 6
3. 19
4. 6
5. 4
6. 3
7. orange

Strand: Number

Sub-strand 1: Number: Counting, representation, cardinality & ordinality

Module 1: Number names

Trial 1 Page 2

1 → One 2 → two 3 → three
4 → four 5 → five 6 → six
7 → seven 8 → eight 9 → nine

Trial 2 Page 3

1 → e 2 → d 3 → b
4 → a 5 → c

Trial 3 Page 4

six → pencils
 → balloons
seven → basketballs
eight → cubes
 → eggs
nine → books

Module 2: Reading and writing the numeral zero (0)

Trial 1 Page 5

1 a 2 b 0 c 4 d 0 e 6
2 a 0 b 7 c 0 d 1 e 0
3 a 5 b 0 c 0 d 0 e 9

Trial 2 Page 6

13 zeros must be circled.

Trial 3

1 0

Module 3: Counting sequence (1)

Trial 1 Page 7

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

Trial 2 Page 8

1 0, 1, 2, 3, 4, 5, 6
2 6, 7, 8, 9, 10
3 10, 11, 12, 13, 14
4 37, 38, 39, 40, 41, 42
5 20, 19, 18, 17, 16, 15
6 41, 40, 39, 38, 37, 36
7 50, 49, 48, 47, 46, 45
8 45, 46, 47, 48, 49, 50

Trial 3 Page 9

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

Module 4: Counting sequence (2)

Trial 1 Page 10

1 42
2 2, 4, 6, 8, 10, 12, 14
3 4, 6, 8, 10, 12, 14
4 10, 8, 6, 4, 2, 0
5 86, 84, 82, 80, 78, 76, 74, 72

Trial 2 Page 11

1 2, 4, 6, 8, 10, 12, 14, 16, 18, 20
2 1, 3, 5, 7, 9, 11, 13, 15, 17, 19
3 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26

Trial 3

100 98 96 94 92 90 88 86
84 82 80 78 76 74 72 70
68 66 64 62 60 58 56 54
52 50 48 46 44 42 40 38
36 34 32 30 28 26 24 22
20 18 16 14 12 10 8 6
4 2

Module 5: Counting sequence (3)

Trial 1 Page 12

1 30 2 30 3 50

Trial 2 Page 13

1 10 20 30 40 50 60 70
80 90 100
2 17 27 37 47 57 67 77
87 97
3 90 80 70 60 50 40
40 30 20 10 0

Trial 3 Page 14

1 Numbers circled in blue 13, 23, 33, 43, 53, 63, 73, 83, 93
2 Numbers circled in red 8, 18, 28, 38, 48, 58, 68, 78, 88, 98
3 Numbers circled in green 5, 15, 25, 35, 45, 55, 65, 75, 85, 95

ANSWERS

- 4 40
5 70

Module 6: Count to find “how many”

Trial 1 Page 15

- 1 2 2 4 3 6
4 10 5 8 6 6
7 7 8 1

Trial 2 Page 16

- 1 → 18
2 → 16
3 → 14
4 → 7
5 → 49
6 → 39

Trial 3 Page 17

- 1 20 2 42 3 18
4 80

Module 7: Ordinal numbers

Trial 1 Page 18

Check on learners’ answers

Trial 2 Page 19

Check on learners’ answers

Trial 3 Page 20

- | | |
|-----------|----------|
| 1 First | 2 Second |
| 3 Third | 4 Fourth |
| 5 Fifth | 6 Sixth |
| 7 Seventh | 8 Eighth |
| 9 Ninth | |

Module 8: Describing the position of numbers

Trial 1 Page 21

Check on learners’ answers

Trial 2 Page 22

- 1 55 and 70
2 15
3 40, 10, 30

Trial 3

- 1 72 and 42
2 42 and 12
3 12, 4, 16, 8

Module 9: Using non – standard units for measuring (1)

Trial 1 Page 23

- 1 a, 6 buckets b 4 buckets
2 a, 9 b 4 c 8

Trial 2 Page 24

- 1 8 2 6 3 4
4 5 5 10 6 9

Trial 3 Page 25

- 1 a 2 a 3 10 cubes 4
6 coins
5 6 tiles

Module 10: Using non – standard units for measuring (2)

Trial 1 Page 26

- 1 more less
2 less more
3 less more
4 less more
5 b bucket
6 b freezer

Trial 2 Page 27

- 1 Container 1 is full
2 Container 2 is half full
3 Container 1 has much water than container 2.
4 Container 2 has less water than container 1.

Trial 3

- 1 c 1 e 2 d 3 a 4 b 5
2. Ident.: 1. Empty 2. Nearly full 3. Half full 4. full
order: 4 2 3 1
3 a Red — 1st glass from left
b Blue — 4th glass
c Green — 2nd glass
4 a water bottle b spoon

Module 11: Comparing two groups of objects

Trial 1 Page 29

- 1 The erasers are of the same number as the pencils.
The pencils are of the same number as the erasers.
2 The erasers are 1 more than the pencils
The pencils are 1 less than the erasers.

Trial 2 Page 30
 1 ✗ ✓ 2 ✓ ✗ 3 ✗ ✓

Trial 3 Page 31
 1. Circle 2. duck 3. A 4. B

Trial 4 Page 32
 1 → c 2 → a 3 → d 4 → b

Module 12: Comparing and ordering numbers

Trial 1 Page 33
 1 less than 2 same as
 3 more than 4 same as
 5 more than 6 less than
 7 same as 8 more than
 9 more than 10 less than

Trial 2
 1 5, 9, 13 2 2, 10, 16
 3 4, 5, 8, 10 4 2, 3, 4, 7, 11

Trial 3 Page 34
 1a 20, 30, 40 b 25, 35, 70
 c 35, 50, 65 d 15, 30, 75, 80
 e 10, 27, 46 f 4, 5, 14
 2a 50, 35, 20 b 60, 45, 25
 c 80, 75, 25 d 70, 50, 45, 35
 e 80, 75, 30, 15 f 41, 31, 21

Module 13: Numbers: "one more" "one less"

Trial 1 Page 35

| One less | Number | One more |
|----------|--------|----------|
| 1 14 | 15 | 16 |
| 2 11 | 12 | 13 |
| 3 6 | 7 | 8 |
| 4 17 | 18 | 19 |
| 5 19 | 20 | 21 |

Trial 2 Page 36
 1 one more 16 one less 15
 2 one more 76 one less 74
 3 one more 53 one less 51
 4 one more 50 one less 48
 5 one more 51 one less 49
 6 one more 100 one less 98

Trial 3 Page 37

1 14, 15, 16
 2 7, 8, 9
 3 25, 26, 27
 4 48, 49, 50
 5 64, 65, 66
 6 28, 29, 30
 7 32, 33, 34
 8 98, 99, 100

Trial 4

| | | 1 less than | 1 more than | |
|---|----|----------------|-------------|----|
| 1 | 10 | 1 less than 11 | 1 more than | 12 |
| 2 | 21 | 1 less than 22 | 1 more than | 23 |
| 3 | 18 | 1 less than 19 | 1 more than | 20 |
| 4 | 47 | 1 less than 48 | 1 more than | 49 |
| 5 | 12 | 1 less than 13 | 1 more than | 14 |

Module 14: Comparing numbers using the symbols ">", "<" or "="

Trial 1 Page 38

A
 1 $10 > 2$ 2 $55 > 22$
 3 $23 > 5$ 4 $72 > 27$
 5 $89 > 18$ 6 $82 > 13$
 7 $83 > 38$ 8 $99 > 98$
B
 1 $18 < 25$ 2 $15 < 32$
 3 $21 < 38$ 4 $16 < 38$
 5 $23 < 32$ 6 $25 < 52$
 7 $13 < 22$ 8 $12 < 29$

Trial 2 Page 39

| | |
|-------------|--------------|
| 1 $49 > 29$ | 2 $36 < 59$ |
| 3 $18 < 75$ | 4 $34 > 21$ |
| 5 $64 > 55$ | 6 $53 < 82$ |
| 7 $13 < 27$ | 8 $85 > 71$ |
| 9 $99 = 99$ | 10 $34 = 34$ |

Trial 3 Page 40

1 Any numbers greater than 18
 2 15
 3 Any number less than 26
 4 any number less than 50
 5 Any number greater than 43
 6 35
 7 ✓ 8 ✗ 9 ✓ 10 ✓
 11 ✗ 12 ✗
 13 Check on learners' answers
 14 Check on learners' answers
 15 Check on learners' answers

Module 15: Relationship between quantities/ numbers up to 100

Trial 1 Page 41

- 1 Group A 2 Group B
- 3 Objects in group A are more than those in group B or objects in group B are less than those in group A.
- 4 The Objects in group A are less than those in group B or the objects in group B are more than those in group A.
- 5 The objects in group A are the same as those in group B.

Trial 2 Page 43

- 1 c, is more than 2 b, is less than
- 3 less than 4 more than
- 5 same as

Trial 3 Page 44

- 1 the same as 2 more than
- 3 less than 4 more than
- 5 the same as 6 less than

Module 16: Comparing and ordering

Trial 1 Page 45

- 1 $a \rightarrow 1$ $b \rightarrow 2$ $c \rightarrow 3$
- 2 $a \rightarrow 1$ $b \rightarrow 2$ $c \rightarrow 3$
- 3 $a \rightarrow 3$ $b \rightarrow 1$ $c \rightarrow 2$
- 4 $a \rightarrow 3$ $b \rightarrow 1$ $c \rightarrow 2$
- 5 $a \rightarrow 3$ $b \rightarrow 1$ $c \rightarrow 2$

Trial 2 Page 46

- 1 12, 13, 16 2 11, 14, 15
- 3 26, 28, 30, 36 4 15, 30, 35, 40, 45

Trial 3 Page 47

- 1 a, 100 is a lot bigger than 90
b, 90 is a lot smaller than 100
- 2 a, 59 is a little bigger than 54
b, 54 is a little smaller than 59
- 3 a, 75 is a lot bigger than 29
b, 29 is a lot smaller than 75
- 4 50 is bigger 30 is smaller
- 5 11 is bigger 8 is smaller

Strand 1: Number

Sub-strand 2: Number operations (addition, subtraction, multiplication and division)

Module 1: Addition of whole numbers up to 20

Trial 1 Page 48

- 1 8 and 7 make 15
- 2 9 and 8 make 17
- 3 6 and 3 make 9
- 4 6 and 10 make 16
- 5 8 and 8 make 16

Trial 2 Page 49

- 1 6 and 5 make 11 2 13 and 7 make 20
- 3 8 and 8 make 16 4 9 and 3 make 12
- 5 6 and 8 make 14

Trial 3 Page 51

- 1 $9 + 6 = 15$ 2 $15 + 3 = 18$
- 3 $12 + 7 = 19$ 4 $8 + 6 = 14$
- 5 $10 + 10 = 20$

Module 2: Subtraction of whole numbers up to 20

Trial 1 Page 52

- 1 $4 - 2 = 2$ 2 $10 - 4 = 6$
- 3 $3 - 2 = 1$ 4 $3 - 1 = 2$
- 5 $8 - 2 = 6$ 6 $5 - 2 = 3$

Trial 2 Page 53

- 1 $8 - 5 = 3$ 2 $17 - 8 = 9$
- 3 $20 - 10 = 10$ 4 $9 - 3 = 6$

Trial 3 Page 54

- 1 Addition
- 2 Subtraction
- 3 Subtraction
- 4 Subtraction
- 5 Addition

Module 3: Word problems (comparing 2 sets)

Trial 1 Page 55

- 1 a 2 b 3 a 4 a

Trial 2 Page 56

1. a ✓
2. a ✓
3. a and b ✓
4. b ✓
5. b ✓
6. a and b ✓
- 7.

Trial 3 Page 57

- 1 C is not equal to A
B is equal to A
- 2 B is not equal to A
C is equal to A
- 3 A is not equal to B
C is not equal to B
- 4 A is not equal to B
C is not equal to B

Module 4: Word problems (joining and separation)

Trial 1 Page 59

- 1 $7 + 6 = 13$
- 2 $13 - 3 = 10$
- 3 $14 - 11 = 3$
- 4 $10 + 5 = 15$
- 5 $6 + 7 = 13$

Trial 2 Page 60

- 1 $13 - 4 = 9$
- 2 $15 + 4 =$
- 3 $9 + 8 = 17$
- 4 $14 - 7 = 7$
- 5 $12 - 5 = 7$
- 6 $9 + 7 = 16$

Trial 3 Page 61

- 1 9
- 2 4
- 3 5
- 4 $9 - 4 = 5$

Module 5: Relationship between addition and subtraction

Trial 1 Page 62

- 1 2
- 2 6
- 3 7
- 4 10

Trial 2 Page 63

- 1 $5 + 4 = 9$
- 2 $8 + 6 = 14$
- $4 + 5 = 9$
- $6 + 8 = 14$
- $9 - 5 = 4$
- $14 - 8 = 6$
- $9 - 4 = 5$
- $14 - 6 = 8$
- 3 $9 + 7 = 16$
- 4 $7 + 8 = 15$
- $7 + 9 = 16$
- $8 + 7 = 15$
- $16 - 9 = 7$
- $15 - 7 = 8$
- $16 - 7 = 9$
- $15 - 8 = 7$
- 5 $11 + 6 = 17$
- 6 $14 + 6 = 20$
- $6 + 11 = 17$
- $6 + 14 = 20$
- $17 - 11 = 6$
- $20 - 6 = 14$
- $17 - 6 = 11$
- $20 - 14 = 6$

Trial 3 Page 64

- 1 $8 + 3 = 11$
- 2 $20 - 2 = 18$
- $11 - 8 = 3$
- $18 + 2 = 20$
- or $2 + 18 = 20$

- 3 $12 + 3 = 15$
- $15 - 3 = 12$
- or $15 - 12 = 3$

- 5 $5 + 8 = 13$
- $13 - 8 = 5$
- or $13 - 5 = 8$

- 4 $16 + 4 = 20$
- $20 - 16 = 4$
- or $20 - 4 = 16$
- 6 $10 - 8 = 2$
- $8 + 2 = 10$
- or $2 + 8 = 10$

Module 6: Word problem (addition and subtraction)

Trial 1 Page 65

- 1 11
- 2 10
- 3 20

Trial 2 Page 66

- 1 $9 - 4 = 5$
- 2 $10 - 6 = 4$
- 3 $20 - 9 = 11$
- 4 $17 - 10 = 7$
- 5 $12 - 6 = 6$
- 6 $10 - 10 = 0$

Trial 3 Page 67

- 1 $4 \rightarrow f$
- 2 $7 \rightarrow b$
- 3 $6 \rightarrow c$
- 4 $10 \rightarrow d$
- 5 $9 \rightarrow a$

Module 7: Addition and subtraction facts (fluency 1)

Trial 1 Page 68

- 1 8
- 2 9
- 3 17
- 4 14
- 5 12
- 6 19
- 7 13
- 8 9
- 9 19 and 21

Trial 2 Page 69

- | | <u>2 more</u> | <u>2 less</u> |
|---|---------------|---------------|
| 1 | 6 | 2 |
| 2 | 15 | 11 |
| 3 | 20 | 16 |
| 4 | 9 | 5 |
| 5 | 5 | 1 |

Trial 3 Page 70

- 1 9 11 7
- 2 7 8 6
- 3 14 15 13
- 4 6 8 4
- 5 10 12 8
- 6 12 13 11

ANSWERS

Module 8: Addition and subtraction facts (fluency 2)

Trial 1 Page 71

| Number | Double of the number |
|--------|----------------------|
| 2 | 4 |
| 4 | 8 |
| 5 | 10 |
| 6 | 12 |
| 8 | 16 |
| 10 | 20 |

1 6 bottle caps 2 8 pencils

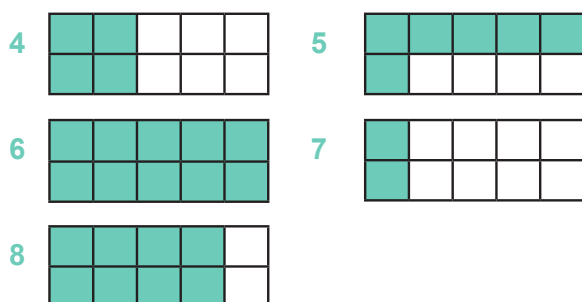
Trial 2 Page 72

- 1 $5 \rightarrow 10$ 2 $4 \rightarrow 8$ 3 $3 \rightarrow 6$
 4 $8 \rightarrow 16$ 5 $1 \rightarrow 2$
 6 i $2 \rightarrow d$ (apples)
 6 ii $5 \rightarrow a$ (fingers)
 6 iii $3 \rightarrow b$ (oranges)
 6 iv $4 \rightarrow c$ (balls)

Trial 3 Page 73

1 (10) 2 (8) 3 (6)

Check learners drawings.



Module 9: Addition and subtraction facts (fluency 3)

Trial 1 Page 74

1 46 2 18 3 27 4 55
 5 82

Trial 2 Page 75

1 20 in red 2 1 in green
 3 19 in yellow 4 13 in blue
 5 6 in brown

Trial 3

| | 10 more | 10 less |
|---|---------|---------|
| 1 | 19 | 4 |
| 2 | 28 | 10 |
| 3 | 46 | 35 |
| 4 | 63 | 17 |
| 5 | 41 | 8 |

Module 10: Addition and subtraction facts (fluency 4)

Trial 1 Page 76

1 2 2 3 3 1 4 4
 5 5 6 0

The expected answers for questions 7 to 12 are
 $0 + 5$; $5 + 0$; $1 + 4$; $4 + 1$; $2 + 3$; $3 + 2$
 (Note: the answers can be in any order)

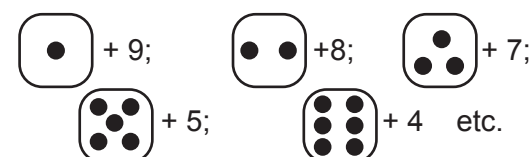
Trial 2 Page 77

1 4 2 3 3 5

Expected answers for questions 4 to 12 are
 $0 + 10$; $10 + 0$; $1 + 9$; $9 + 1$; $2 + 8$; $8 + 2$; $3 + 7$;
 $7 + 3$; $4 + 6$; $6 + 4$; $5 + 5$.
 (Note: Answers can be in any order)

Trial 3 Page 78

Expected answers – not in order



Check on learners' answers

Module 11: Addition sum up to 20 (strategy 1)

Trial 1 Page 79

1 12 2 13 3 17 4 15
 5 16 6 17

Trial 2

1 16 2 17 3 18 4 20
 5 17 6 20

Trial 3 Page 80

1 4 6 8 10 12 14 16 18
 2 5 9 13 17
 3 2 7 12 17 22
 4 1 11
 5 4 7 10 13 16

Module 12: Addition sum up to 20 (strategy 2)

Trial 1 Page 81

1 Circle 7 and 3 2 Circle 9 and 1
 $10 + 2 = 12$ $10 + 2 = 12$
 3 Circle 3 and 7 4 Circle 5 and 5
 $10 + 4 = 14$ $10 + 1 = 11$
 5 Circle 4 and 6 6 Circle 1 and 9
 $10 + 2 = 12$ $10 + 6 = 16$

Trial 2

Possible combinations (any six)

$$\begin{array}{ll} 1 + 9 + 5 = 15; & 5 + 2 + 8 = 15; \\ 3 + 5 + 7 = 15 & 4 + 6 + 5 = 15; \\ 5 + 5 + 5 = 15; & 9 + 5 + 1 = 15 \\ 2 + 5 + 8 = 15 & 10 + 0 + 5 = 15 \\ 0 + 5 + 10 = 15 \end{array}$$

Trial 3 Page 82

| | |
|-----------------------|-----------------------|
| 1 $7 + 6 = 13$ | 2 $8 + 9 = 17$ |
| Double 6 = 12 | Double 8 = 16 |
| $12 + 1 = 13$ | $16 + 1 = 17$ |
| 3 $4 + 6 = 10$ | 4 $7 + 8 = 15$ |
| Double 5 = 10 | Double 7 = 14 |
| $10 + 0 = 10$ | $14 + 1 = 15$ |
| 5 $4 + 9 = 13$ | 6 $7 + 6 = 13$ |
| Double 4 = 8 | Double 6 = 12 |
| $8 + 5 = 13$ | $12 + 1 = 13$ |

Module 13: Subtraction facts within (strategy 1)

Trial 1 Page 83

| | | | |
|------------|------------|------------|------------|
| 1 8 | 2 8 | 3 5 | 4 9 |
| 5 7 | | | |

Trial 2 Page 84

| | |
|----------------------|----------------------|
| 1 11 | 2 12 |
| 7 is 11 less than 18 | 15 is 12 more than 3 |
| 18 is 11 more than 7 | 3 is 12 less than 15 |

| | |
|---------------------|---------------------|
| 3 8 | 4 7 |
| 17 is 8 more than 9 | 13 is 7 more than 6 |
| 9 is 8 less than 17 | 6 is 7 less than 13 |

| | |
|----------------------|---------------------|
| 5 14 | 6 1 |
| 5 is 14 less than 19 | 9 is 1 less than 10 |
| 19 is 14 more than 5 | 10 is 1 more than 9 |

Trial 3 Page 85

| | | | |
|------------|------------|------------|-------------|
| 1 5 | 2 9 | 3 9 | 4 15 |
|------------|------------|------------|-------------|

Module 14: Subtraction facts within 20 (strategy 2)

Trial 1 Page 86

| |
|--|
| 1 $4 - 1 = 3 \rightarrow 3 + 1 = 4$ |
| 2 $8 - 3 = 5 \rightarrow 5 + 3 = 8$ |
| 3 $14 - 7 = 7 \rightarrow 7 + 7 = 14$ |
| 4 $11 - 9 = 2 \rightarrow 2 + 9 = 11$ |

Trial 2 Page 86

| |
|---------------------------------------|
| 1 $2 + 3 = 5$ or $3 + 2 = 5$ |
| 2 $8 + 4 = 12$ or $4 + 8 = 12$ |
| 3 $5 + 4 = 9$ or $4 + 5 = 9$ |
| 4 $9 + 5 = 14$ or $5 + 9 = 14$ |
| 5 $6 + 9 = 15$ or $9 + 6 = 15$ |

Trial 3 Page 87

| | | |
|-------------|-------------|------------|
| 1 4 | 2 6 | 3 9 |
| 4 11 | 5 10 | 6 7 |

| | |
|------------------------|-----------------------|
| 7 $20 - 7 = 13$ | 8 $16 - 9 = 7$ |
| $7 + 13 = 20$ | $9 + 7 = 16$ |

| | |
|------------------------|------------------------|
| 9 $19 - 6 = 13$ | 10 $10 - 8 = 2$ |
| $6 + 13 = 19$ | $8 + 2 = 10$ |

Module 15: Word problems involving addition (within 20)

Trial 1 Page 88

| | |
|-----------------------|----------------------|
| 1 $7 + 2 = 9$ | 2 $2 + 1 = 3$ |
| 3 $7 + 3 = 10$ | 4 $4 + 5 = 9$ |

Trial 2 Page 89

| | |
|------------------------|---------------------------|
| 1 $4 + 5 = 9$ | 2 $8 + 9 = 17$ |
| 3 $8 + 12 = 20$ | 4 $7 + 5 + 3 = 15$ |

Trial 3 Page 90

| | |
|-----------------------|-------------------------|
| 1 $2 + 2 = 4$ | 2 $2 + 3 = 5$ |
| 3 $6 + 8 = 14$ | 4 $10 + 10 = 20$ |

Module 16: Word problems involving subtraction (within 20)

Trial 1 Page 91

| | | |
|-----------------------|-----------------------|----------------------|
| 1. 1 | 2 $13 - 5 = 8$ | 3 $9 - 5 = 4$ |
| 4. $4 - 2 = 2$ | | |

Trial 2 Page 92

| | | | |
|------------|------------|-------------|------------|
| 1 7 | 2 1 | 3 11 | 4 5 |
|------------|------------|-------------|------------|

Trial 3 Page 93

| |
|---|
| 1 $10 - 5 = 5$ |
| 2 $14 - 8 = 6$ (6 bananas) |
| 3 $10 - 4 = 6$ (Akuvi is 6 years old). |
| 4 $13 - 7 = 6$ (6 were not wearing spectacles) |
| 5 $15 - 8 = 7$ (7 birds flew away) |

ANSWERS

Strand 1: Number Substrand 3: Fractions

Module 1: Understanding fractions (1)

Trial 1 Page 94

Coloured whole objects 1 and 4

Trial 2

Whole fruits 1, 2, 4, 7

Trial 3 Page 95

1 Half objects a, d and e

2 whole shapes A, C and F

Module 2: Understanding fractions (2)

Trial 1 Page 96

Half objects 2, 3 and 4

Trial 2

Check on learners' answers

Trial 3 Page 97

1 → c

2 → d

3 → e

4 → a

5 → b

Module 3: Understanding fraction (3)

Trial 1 Page 98

Whole group of items 1, 4, 5 and 8

Trial 2 Page 99

1, 4, 6, 8, 7, 9, 12

2, 3, 5, 10, 11

Whole

not a whole

Module 4: Understanding fraction (3)

Trial 1 Page 100

1 6 in each group

2 4 circles in each group

3 6 triangles in each group

4 5 triangles in each group

Trial 2 Page 101

1 20

2 12

3 15

4 4

5 5

6 20

Module 5: Number of halves in an object

Trial 1 Page 102

1 4

2 11

3 16

4 6

5 12

Trial 2 Page 103

1 16

2 18

3 20

4 12

Trial 3 Page 104

1 3

2 5

3 4

4 2

5 8

Strand 1: Number

Sub-strand 4: Money

Module 1: Recognising Ghanaian coins by name

Trial 1 Page 105

1 5p → b

2 Gh¢1 → c

3 20p → b

4 50p → c

5

1 → 1 pesewa

2 → 10 pesewas

3 → 20 pesewas

4 → 5 pesewas

5 → 50 pesewas

Trial 2 Page 106

1 1 cedi

2 20 pesewas

3 50 pesewas

4 10 pesewas

5 50 pesewas

6 1 cedi

Module 2: Relationship among the Ghanaian coins

Trial 1 Page 107

1 1-50p, 2-20p, 1-10p

2 2-20p, 1-10p

3 1-10p, 2-5p

4 1-1cedi, 1-50p, 2-20p, 1-10p

Trial 2

1 same

2 different

3 different

Trial 3 Page 108

1 yes

2 yes

3 No

4 No

5 Yes

Strand 2: Algebra

Sub-strand 1: Patterns and relationships

Module 1: Identifying and creating patterns (1)

Trial 1 Page 110

1 4, 5, 6, 7, 8, 9

2 12, 10, 8, 6, 4, 2

3 6, 5, 4, 3, 2, 1

4 5, 7, 9, 11, 13, 15

5 10, 20, 30, 40, 50, 60

Trial 2 Page 111




- 1 2, 8, 2, 8, 2, 8
 2 491 491 491
 3 8357 8357 8357 8357
 4 1357 1357 1357
 5 3 8 (13) 18 (23) (28) (33) (38)
 (43)

Trial 3




Check on learners' answers

Module 2: Identifying and creating patterns (2)

Trial 1 Page 112

- 1 
 2 
 3 

Trial 2

- 1 
 2 
 3 

Module 4: Identifying errors in patterns

Trial 1 Page 113

- 1 Cross out (×) the 5th flower.
 2 Cross out the 5th shape. (2nd square)
 3 Not in order – 50 pesewas coin is the error.
 4 In order.

Module 5: Representing patterns in different ways

Trial 1 Page 114

Check on learners answers

Module 6: Patterns in real life

Trial 1 Page 115

Check on learners answers

Strand 3: Geometry and measurement

Sub-strand 1: 2D shapes and 3D objects

Module 1: Naming and describing 2D shapes

Trial 1 Page 118

- 1 → rectangle 2 → circle
 3 → triangle 4 → square
 5 → circle 6 → rectangle
 7 → square 8 → triangle

Trial 2 Page 119

- 1 This is a rectangle. It has 4 corners
 It has 4 sides
 2 This is a triangle. It has 3 corners
 It has 3 sides
 3 This is a circle. It has 0 corners. it has 0 sides
 4 This is a square. It has 4 corners
 It has 4 sides

Module 2: Naming and describing 3D objects

Trial 1 Page 120

- 1 Cube 2 Cylinder 3 Cuboid
 4 Cone 5 Sphere

Trial 2 Page 121

- 1 0 flat face 1 curved
 2 2 flat faces 1 curved
 3 6 flat faces 0 curved
 4 6 flat faces 0 curved
 5 Objects that can roll – a, d, e, f and g

Trial 3 Page 122

- 1 Cubes – 3 2 Cones – 2
 Cones – 1 Cylinders – 2
 Cylinders – 2 Cuboids – 1
 Cubes – 1
 3 Cuboids – 2 4 Spheres – 2
 Cones – 2 Cylinder – 1
 Spheres – 1 Cuboids – 2

Module 3: Identifying 2D shapes in 3D objects

Trial 1 Page 123

- 1 → d 2 → d 3 → a
 4 → c 5 → a and b 6 → a
 7 → c 8 → c

Trial 2 Page 124

- 1 Circle
 2 rectangle
 3 circle
 4 triangle
 5 square

ANSWERS

- 6 rectangle
7 square
8 triangle
9 rectangle

Module 4: Making your own shapes

Trial 1 Page 125

- 1 Squares – 2 2 Circles – 1
Triangles – 12 Triangles – 3
Rectangles – 1 Rectangles – 1

Trial 2 Page 126

Check on learners' answers

Trial 3

Check on learners' answers

Module 5: Sorting 3D objects

Trial 1 Page 127

- Cuboids blue – 3 cubes red – 4
cones green – 3 Spheres yellow – 3
cylinders black – 5

Trial 2 Page 128

- Cone (red) 4
Cube (blue) 5
Cylinder (green) 6
Cuboid (brown) 4
Sphere (purple) 4

Module 6: Sorting 2D shapes

Trial 1 Page 129

Learners to do these.

Trial 2

Learners to do these.

Strand: Geometry and measurement

Sub-strand 2: Position/transformation

Module 1: Position of objects

Trial 1 Page 130

- a in front of ; on b behind
c behind d in front of
e beside f in front of

Trial 2 Page 131

- 1 to the left. 2 above.
3 two places. 4 below.
5 to the right .

Strand: Geometry and measurement

Sub-strand 3: Measurement-length, mass and capacity

Module 1: Comparing and measuring lengths

Trial 1 Page 132

- 1 A 2 B 3 A
4 A
5 A is shorter than B or B is longer than A

Trial 2 Page 133

Check on learners' answers

Trial 3 Page 134

- 1 11 paper clips 2 5 match sticks or 14 paper clips long
3 6 (paper clips) 4 14 (blocks) 5 9 (blocks) 6 16 (blocks)

Module 2: Comparing and ordering mass

Trial 1 Page 135

Check on learners' answers

Trial 2 Page 136

- 1 A 2 B 3 A 4 B 5
A 6 B
7 A 8 B

Trial 3 Page 137

- 1 heavier 2 lighter 3 heavier

Module 3: Comparing and ordering capacity

Trial 1 Page 138

Check on learners' answers

Trial 2

Check on learners' answers

Strand 4: Data

Sub-stand 1: Data collection, organisation, presentation, interpretation and analysis

Module 1: Collecting and handling data (1)

Trial 1 Page 140

8 oranges 6 bananas 4 apples

Trial 2 Page 141

| Items | Totals |
|-------------|--------|
| birds | 8 |
| flowers | 5 |
| bottle caps | 5 |

1 3 2 18

Trial 3 Page 142

Banana – 12 squares;
apples – 8 squares;
pineapples – 11 squares

Module 2: Collecting and handling data (2)

Trial 1 Page 143

| Vehicles | Tally | Number |
|-----------|-------|--------|
| Motorbike | | 8 |
| Bicycle | | 4 |
| car | | 6 |

1 2 2 motorbike 3 18

Trial 2 Page 144

1 5 2 cherry 3 banana 4
15

Trial 3 Page 145

1 12
2 4
3 4
4 pencils
5 book

ESSENTIAL Mathematics Primary 1

Teacher's Guide

ESSENTIAL Mathematics Primary Book 1 is written to meet the full requirements of the current New Standards-based curriculum by the National Council for Curriculum and Assessment (**NaCCA**) with a problem-solving and discovery approach to the learning of Mathematics.

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The series consists of a Learner's Book, Workbook and Teacher's Guide for each stage.

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