

ESSENTIAL



# Mathematics

## Primary 1

Teacher's Guide



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# ESSENTIAL Mathematics Primary 1

Teacher's Guide

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

<b>Module 10:</b> Using non-standard units for measuring (2)	<b>Lesson 1:</b> Counting to find “How much” (using water) <b>Lesson 2:</b> Counting to find how many (using objects)	41 - 42	26 - 28	22 22 - 23
<b>Module 11:</b> Comparing two groups of objects	<b>Lesson 1:</b> One more than <b>Lesson 2:</b> One less than	43 - 47	29 - 32	24 25
<b>Module 12:</b> Comparing and ordering numbers	<b>Lesson 1:</b> Comparing 2 numbers <b>Lesson 2:</b> Ordering numbers.	48 - 50	33 - 34	26 26 - 27
<b>Module 13:</b> Numbers “one more” “one less”	<b>Lesson 1:</b> Finding “1 More/1 Less”	51 - 53	35 - 37	28
<b>Module 14:</b> Comparing numbers using the symbols $>$ , $<$ or $=$ .	<b>Lesson 1:</b> Comparing numbers using the greater than symbol (“ $>$ ”) <b>Lesson 2:</b> Comparing numbers using the less than symbol “ $<$ ” <b>Lesson 3:</b> Comparing numbers using the equals to symbol “ $=$ ”	54 - 57	38 - 40	29 30 30
<b>Module 15:</b> Relationship between quantities/ numbers up to 100	<b>Lesson 1:</b> Comparing two groups of objects (more than or less than). <b>Lesson 2: Comparing two groups of objects (equal to).</b>	58 - 62	41 - 44	31 32
<b>Module 16:</b> Comparing and ordering	<b>Lesson 1:</b> Ordering objects <b>Lesson 2:</b> Ordering numbers (smallest to greatest) <b>Lesson 3:</b> Comparing numbers (a lot or little bigger or smaller than another)	63 - 70	45 - 47	33 34 34

## Strand 1: Number

## Sub-strand 2: Number Operations (Addition, Subtraction, Multiplication and Division)

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

<b>Module 4:</b> Word Problems (joining and separating)	<b>Lesson 1:</b> Word Problems (joining)	88 - 92	59 - 61	42
	<b>Lesson 2:</b> Word Problems (separation)			43
<b>Module 5:</b> Relationship between addition and subtraction	<b>Lesson 1:</b> Changing addition to subtraction			44
	<b>Lesson 2:</b> Changing subtraction to addition	93 - 96	62 - 64	45
	<b>Lesson 3:</b> Addition to subtraction and vice versa.			45
<b>Module 6:</b> Word problems (addition and subtraction)	<b>Lesson 1:</b> Word problems (addition)			46
	<b>Lesson 2:</b> Word problems (subtraction)	97 - 101	65 - 67	46 - 47
	<b>Lesson 3:</b> Word problems (addition and subtraction)			47
<b>Module 7:</b> Addition and subtraction facts (fluency 1)	<b>Lesson 1:</b> One more or one less.	102 - 105	68 - 70	48
	<b>Lesson 2:</b> 2 more or 2 less			49
<b>Module 8:</b> Addition and subtraction facts (fluency 2)	<b>Lesson 1:</b> Making doubles (1 - 5)	106 - 108	71 - 73	50
	<b>Lesson 2:</b> Making Doubles (6 - 10)			51
<b>Module 9:</b> Addition and subtraction facts (fluency 3)	<b>Lesson 1:</b> finding 10 more.			52 - 53
	<b>Lesson 2:</b> Finding 10 less	109 - 111	74 - 75	53
<b>Module 10:</b> Addition and subtraction facts (fluency 4)	<b>Lesson 1:</b> Making 5s			54
	<b>Lesson 2:</b> Making 10s	112 - 114	76 - 78	54 - 55
<b>Module 11:</b> Addition sum up to 20 (strategy 1)	<b>Lesson 1:</b> Counting on by 2s			56
	<b>Lesson 2:</b> Counting on	115 - 117	79 - 80	56 - 57
<b>Module 12:</b> Addition sum up to 20 (strategy 2)	<b>Lesson 1:</b> Making 10s			58
	<b>Lesson 2:</b> Making doubles	118 - 121	81 - 82	59
<b>Module 13:</b> Subtraction facts within 20 (strategy 1)	<b>Lesson 1:</b> Counting down"			60
	<b>Lesson 2:</b> Finding the difference	122 - 124	83 - 85	61
<b>Module 14:</b> Subtraction facts within (strategy 2)	<b>Lesson 1:</b> Using addition to subtract (1)			62
	<b>Lesson 2:</b> Using addition to subtract (2)	125 - 127	86 - 87	63
<b>Module 15:</b> Word problems involving addition (up to 20)	<b>Lesson 1:</b> Word problems (sum up to 10).			64
	<b>Lesson 2:</b> Word problems (Sum up to 20)	128 - 131	88 - 90	65

<b>Module 16:</b> Word problems involving subtraction (within 20)	<b>Lesson 1:</b> Word problems (subtraction facts to 10) <b>Lesson 2:</b> Word problems (subtraction facts to 20)	132 - 138	91 - 93	66 - 67 67
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**Strand 1: Number**  
**Sub-strand 3: Fractions**

Module	Lessons	LB page numbers	WB page numbers	TG page numbers
<b>Module 1:</b> Understanding fractions (1)	<b>Lesson 1:</b> Unit as a whole	139 - 140	94 - 95	68
<b>Module 2:</b> Understanding fractions (2)	<b>Lesson 1:</b> One half <b>Lesson 2:</b> Making halves	141 - 144	96 - 97	69 69 - 70
<b>Module 3:</b> Understanding fractions (3)	<b>Lesson 1:</b> Group as a whole	145 - 146	98 - 99	71
<b>Module 4:</b> Half of amounts	<b>Lesson 1:</b> Breaking whole into halves (1) <b>Lesson 2:</b> Breaking whole into halves (2)	147 - 149	100 - 101	72 72 - 73
<b>Module 5:</b> Number of halves in an object	<b>Lesson 1:</b> Find number of halves in an object <b>Lesson 2:</b> Find number of halves in shapes	150 - 155	102 - 104	74 75

**Strand 1: Number**  
**Sub-strand 4: Money**

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



Strand 2: Algebra				
Sub-Strand 1: Patterns and Relationship				
Module	Lessons	LB page numbers	WB page numbers	TG page numbers
<b>Module 1:</b> Identifying and creating patterns (1)	<b>Lesson 1:</b> Making Patterns using numbers (1) <b>Lesson 2:</b> Making patterns using numbers (2)	166 - 168	110 - 111	81 81 - 82
<b>Module 2:</b> Identifying and creating patterns (2)	<b>Lesson 1:</b> Making patterns using shapes (1) <b>Lesson 2:</b> Making patterns using shapes (2)	169 - 171	112	83 84
<b>Module 3:</b> Identifying and creating patterns (3)	<b>Lesson 1:</b> Making patterns using sound <b>Lesson 2:</b> Making patterns using action.	172 - 174		85 86
<b>Module 4:</b> Identifying errors in patterns	<b>Lesson 1:</b> Identify errors in patterns (1) <b>Lesson 2:</b> Identify errors in patterns (2)	175 - 178	113	87 88
<b>Module 5:</b> Representing patterns in different ways	<b>Lesson 1:</b> Patterns in different ways	179 - 180	114	89
<b>Module 6:</b> Patterns in real life.	<b>Lesson 1:</b> Pattern in and outside classroom	181 - 186	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
<b>Module 1:</b> Naming and describing 2D	<b>Lesson 1:</b> Naming 2D shapes <b>Lesson 2:</b> Attributes of a triangle <b>Lesson 3:</b> Attributes of a square <b>Lesson 4:</b> Attributes of a rectangle <b>Lesson 5:</b> Attributes of a circle	188 - 191	118 - 119	92 92 - 93 93 93 94
<b>Module 2:</b> Naming and describing 3D objects	<b>Lesson 1:</b> Naming 3D objects <b>Lesson 2:</b> Attributes of a cube and a cuboid <b>Lesson 3:</b> Attributes of a sphere and cone <b>Lesson 4:</b> Attributes of a cylinder <b>Lesson 5:</b> Comparing 3D objects	192 - 195	120 - 122	95 96 96 97 97 - 98
<b>Module 3:</b> Identifying 2D shapes in 3D objects	<b>Lesson 1:</b> Identifying 2Ds (1) <b>Lesson 2:</b> Identifying 2Ds (2)	196 - 198	123 - 124	99 99 - 100
<b>Module 4:</b> Making your own shapes	<b>Lesson 1:</b> Making 2Ds (1) <b>Lesson 2:</b> Making 2Ds (2)	199 - 200	125 - 126	101 102
<b>Module 5:</b> Sorting 3D objects	<b>Lesson 1:</b> Sort 3Ds by type <b>Lesson 2:</b> Sort 3Ds by colour	201 - 203	127 - 128	103 103 - 104
<b>Module 6:</b> Sorting 2D shapes.	<b>Lesson 1:</b> Sorting 2Ds by type <b>Lesson 2:</b> Sorting 2Ds by colour	204 - 208	129	105 106

Strand 3: Geometry and Measurement Sub-Strand 2: Position/Transformation				
Module	Lessons	LB page numbers	WB page numbers	TG page numbers
<b>Module 1:</b> Positions of objects	<b>Lesson 1:</b> Identify the position of objects (1) <b>Lesson 2:</b> Identify the position of objects (2)	209 - 213	130 - 131	107 108

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

<b>Module</b>	<b>Lessons</b>	<b>LB page numbers</b>	<b>WB page numbers</b>	<b>TG page numbers</b>
<b>Module 1:</b> Comparing and measuring lengths	<b>Lesson 1:</b> Comparing lengths <b>Lesson 2:</b> Measuring lengths	214 - 217	132 - 134	109 110
<b>Module 2:</b> Comparing and ordering mass	<b>Lesson 1:</b> Comparing mass of objects <b>Lesson 2:</b> Ordering mass of objects	218 - 221	135 - 137	111 112
<b>Module 3:</b> Comparing and ordering capacity	<b>Lesson 1:</b> Comparing capacities <b>Lesson 2:</b> Ordering capacities	222 - 227	138	113 114

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

<b>Module</b>	<b>Lessons</b>	<b>LB page numbers</b>	<b>WB page numbers</b>	<b>TG page numbers</b>
<b>Module 1:</b> Collecting and handling data	<b>Lesson 1:</b> Sorting data (1) <b>Lesson 2:</b> Sorting data (2)	228 - 232	140 - 142	115 116
<b>Module 2:</b> Collecting and handling data (2)	<b>Lesson 1:</b> Interpretation of data <b>Lesson 2:</b> Picture graph	233	143 - 145	117 118

## 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 it 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 history 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 it 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, 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 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 \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

**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

2

### 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 1 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**
- Draw a number line on the floor. Have learners skip count in 2s from 20 to 40. Clap in twos and learners tell the number.
  - 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.

**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.

Number

**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.

<p style="text-align: center; background-color: #e0f2f1; border-radius: 10px; padding: 2px 10px; display: inline-block;"><b>ANSWERS</b></p> <p style="text-align: center; background-color: #e0f2f1; border-radius: 10px; padding: 2px 10px; display: inline-block; margin-left: 20px;"><b>Learner's Book</b></p> <p><b>Strand 1: Number</b> <b>Sub-strand 1: Number: Counting, representation, cardinality &amp; ordinality</b></p> <p><b>Module 1: Number names</b> <b>Exercise 1</b> Page 10 one → 1    two → 2 three → 3    four → 4 Five → 5    six → 6 Seven → 7    eight → 8 nine → 9</p> <p><b>Exercise 2</b> Page 11 a. one → C, H    four → A b. two → D, E    five → B, F c. three → G</p> <p><b>Exercise 3</b> Page 12 a. Check on learners' answers</p> <p><b>Module 2: Reading and writing the numeral zero (0)</b> <b>Exercise 1</b> Page 14 Check on learners' answers</p> <p><b>Exercise 2</b> Page 14 1. a. 0    b. 1    c. 4    d. 2    e. 0    f. 5 2. a. 0    b. 4    c. 0    d. 1    e. 0    f. 2 3. circle 3 zeros 4. circle 2 zeros 5. circle 2 zeros</p> <p><b>Exercise 4</b> Page 19 Check on learners' answers</p> <p><b>Exercise 5</b> 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</p> <p><b>Exercise 6</b> Page 21 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</p> <p><b>Module 4: Counting sequence (2)</b> <b>Exercise 1</b> Page 23 1. 35 37    39    41    43 2. 26 28    30    32    34 3. 47 49    51    53    55</p> <p><b>Exercise 2</b> Page 24 1. 43 41    39    37    35 2. 34 32    30    28    26 3. 60 58    56    54    52</p> <p><b>Exercise 3</b> Page 24 1. 60 62    64    66    68    70 2. 80 82    84    86    88    90 3. 90 92    94    96    98    100</p>	<p style="text-align: center; background-color: #e0f2f1; border-radius: 10px; padding: 2px 10px; display: inline-block;"><b>Workbook</b></p> <p style="text-align: center; background-color: #e0f2f1; border-radius: 10px; padding: 2px 10px; display: inline-block; margin-left: 20px;"><b>ANSWERS</b></p> <p><b>Strand: Number</b> <b>Sub-strand 1: Number: Counting, representation, cardinality &amp; ordinality</b></p> <p><b>Module 1: Number names</b> <b>Trial 1</b> Page 2 1 → One    2 → two    3 → three 4 → four    5 → five    6 → six 7 → seven    8 → eight    9 → nine</p> <p><b>Trial 2</b> Page 3 1 → e    2 → d    3 → b 4 → a    5 → c</p> <p><b>Trial 3</b> Page 4 six → pencils           → balloons seven → basketballs eight → cubes           → eggs nine → books</p> <p><b>Module 2: Reading and writing the numeral zero (0)</b> <b>Trial 1</b> 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</p> <p><b>Trial 2</b> Page 6 13 zeros must be circled.</p> <p><b>Trial 3</b> 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</p> <p><b>Module 4: Counting sequence (2)</b> <b>Trial 1</b> 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</p> <p><b>Trial 2</b> 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</p> <p><b>Trial 3</b> 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</p>
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## 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?

B is taller.

Which is longer?  
A is longer.  
B is longer.

Which is shorter?  
A is shorter.  
B is shorter.

Which is taller?  
A is taller.  
B is taller.

Which is taller?  
A is taller.  
B is taller.

**REVISION EXERCISES - From Kindergarten**

Count and circle the correct number of objects.  
Example

2 3 4

7 5 2

6 8 9

### 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.

Strand: 1  
Number

Strand: 2  
Algebra

### 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 | 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**

<p><b>N</b></p> <p>nine being one more than eight</p> <p>ninth coming next after the eighth position and before the tenth position</p> <p>number give numbers to nothing not anything; no thing</p> <p>number bond the relationship between a number and the part that combines to make the number</p> <p>numeral a symbol used to represent number</p> <p><b>O</b></p> <p>one being a single unit</p> <p>one less being fewer than the other by one</p> <p>one more being more than</p>	<p><b>P</b></p> <p>pairs a set of two similar things considered as a unit</p> <p>part a portion of an object</p> <p>pattern graphical representation of a structure in a particular way</p> <p>pesewa a Ghanaian currency name</p> <p>plus sum/add</p> <p>position the spatial property of a place where or way in which something is situated.</p> <p><b>R</b></p> <p>rectangle a parallelogram with four right angles</p> <p>remainder something left after other parts have been taken away or the number that remains after subtraction</p> <p>repeat do over, occur again,</p>
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**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?



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**

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 ...			
write numbers 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 by counting.			



**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 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

1. 5 \_\_\_\_\_
2. 2 \_\_\_\_\_
3. 3 \_\_\_\_\_
4. 1 \_\_\_\_\_
5. 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

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

- Refer to Let us learn 2 on page 9. 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 their Learner's Book.

#### 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**

Numeral, zero.

**Resources**

Bottle caps and straws.

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

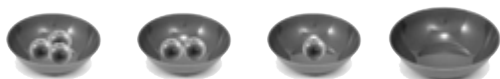
Sing a song: "Can you count 1 to 5"

**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, if you have 2 heads, stand up. No one is expected to stand up. This means that there are no learners with 2 heads. So, the number of learners with 2 heads is zero.
- Refer to Learner's Book page 13.
- 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.

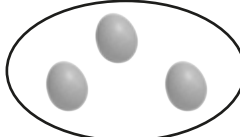
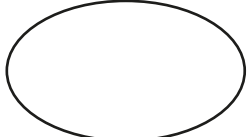

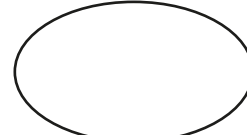


Have learners draw empty containers to represent the idea of nothing in the box.

**Assessment for Learning**

Refer learners to pages 14 and 15 of their Learner's Book for exercises.

**Suggested Homework**

Write the numerals for these groups of objects.

1		2	
	_____		_____
3		4	
	_____		_____
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 pictures 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 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 forwards from 1 to 20.
- Put learners into groups of 5. Let each group select a leader.
- Give each group a number chart. Ask learners in turns to read the numbers aloud.
- 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**

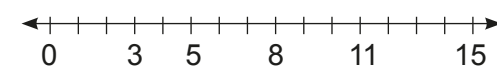
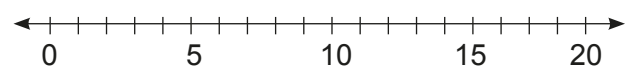
- Put before them a 1-50 number chart.
- Have learners count forwards from any number.

**Assessment for Learning**

Refer learners to exercise 1 on page 18 of their Learner's Book for exercises.

**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 5. Let each group select a leader. Give each group a number chart. Ask learners in turns to read the numbers aloud. Tell them to start on 40 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: 1 on page 16. 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**

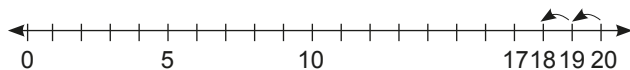
- Put before them a 1-50 number chart. Have learners count backwards from any number. Allow it if they start from numbers bigger than 50.

**Assessment for Learning**

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

**Suggested Homework**

Count backwards to complete the number line.

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

Play: "Fingers up and 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 5. Let each group select a leader. Give each group a 100-number chart. Ask learners in turns to read the numbers aloud. 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. Have learners count by 1s, starting on any number 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 them number chart with numbers 21-60. Have learners count forwards from any number. If they can count further than 60, allow it.

**Assessment for Learning**

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

**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 5. Let each group select a leader.
- Give each group a number chart. Ask learners in turns to read the numbers aloud.
- 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. 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 Learner's Book.

### Suggested Homework

Write numerals backwards from 60 - 40.

## 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 them form a big circle. Ask them to count forwards in 1s: first from 61 to 100, and then from any number bigger than 60, e.g. 80, 70, 65, etc.
- Put learners in 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. They count forwards from 60 - 100.

### Review Exercise

### Differentiated Lessons

#### Low Ability Learner

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

#### High Ability Learner

- 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.

### 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 Group**

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

**High Ability Group**

- Give out uncompleted 100-number charts for them to complete.

**Assessment for Learning**

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

**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 **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**

- Draw a number line on the floor. Have learners skip count in 2s from 20 to 40. Clap in twos and learners tell the number.
- 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.

**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.

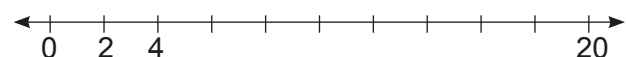
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

**Assessment for Learning**

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

**Suggested Homework**

Complete the number line.

**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.

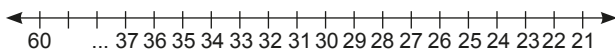
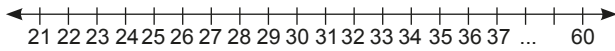
## Lesson 2: Counting backwards by 2s (60-20)

### 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 looking at the first number line.



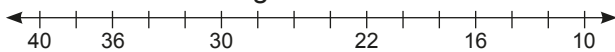
- Using the second number line, learners count backwards from 60 to 21.
- Learners form groups of five. Give out 100-number chart to each group.
- Have them count backwards from 60-21. The leader should make sure every learner takes part. They can start from any number. (**collaborative learning**)
- Refer learners to Let us learn: 2 on page 22. Have learners count backwards by 2s, starting from 60 - 20. They can start from any number.

### Review Exercise

#### Differentiated Lessons

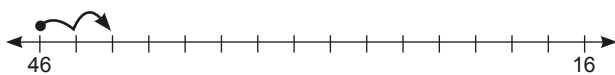
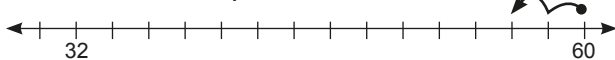
##### Low Ability Learners

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



##### High Ability Learners

- Let them complete the number line.

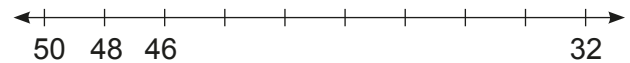


#### Assessment for Learning

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

### Suggested Homework

Complete the number line.



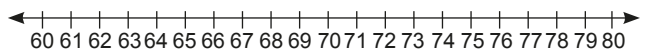
## Lesson 3: Counting forwards by 2s (60-100)

### 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 come and skip count forwards using a stick.



- Learners form groups of five. Give a 100-number chart to each group. They count in 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 page 21.
- Go through the activity with learners.

### Review Exercise

#### Differentiated Lessons

##### Low Ability Learners

- Give the 100-number chart out.
- 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 Learner's Book.

## 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. Call a learner to count and skip count backwards from 80-60.
- Refer to Learner's Book page 22. Go through the activities with learners.

### Review Exercise

### Differentiated Lessons

#### Low Ability Learners

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

### High Ability Learners

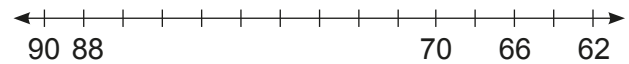
- Give the 100-number chart to them.
- Have them count backwards from these numbers and circle them: 60, 47, 52, 90.

### Assessment for Learning

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

### 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 in 10s forwards up to 100.

**Essentials for Learning**

Learners can count in 2s up to 100.

**New words**

Forwards, backwards, in 10s, count, tens.

**Resources**

Bottles caps, bundle of ten sticks.

Number of Lessons **2**

**Lesson 1: Counting forward by 10s (1-100)****Starter**

Have learners count in 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 to Learner's Book page 25 and 26. Learners count forwards on the chart starting from any number.

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

- Have them form a big circle; they count in tens (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

**Assessment for Learning**

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

**Suggested Homework**

Write the multiples of 10 from 20 up to 100.

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

### Starter

Have learners count in 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 to Learner's Book page 25 and 26. Help learners count backwards in 10s, starting from any number.

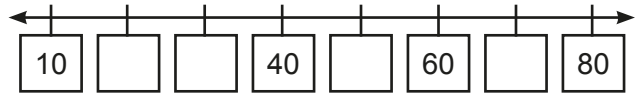
### Review Exercise

### Differentiated Lessons

#### Low Ability Learners

- Give out number line charts for them to complete up to 80.

- Then they count back in 10s from any of the numbers.



### High Ability Learners

- Start at these numbers count backwards in 10s: 90 or 85 or 72.

### Assessment for Learning

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

### 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” (count up to 50).

**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 plenty 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 learners, the number of boys, and the number of girls.

**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.
- Increase the number up to 50 if learners have understood it.
- Refer to Learner's Book 1 page 28 and 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.

**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 in 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 learner, count out objects for 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 page 29. 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 to write the number down.

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

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

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

**High Ability Learners**

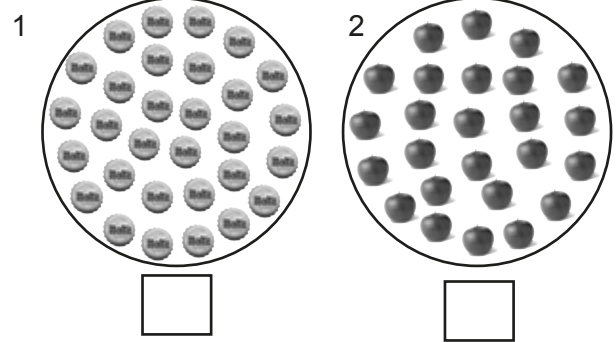
- Give out 30 straws, and 45 bottle caps in containers. They guess and count to find "How many?"

**Assessment for Learning**

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

**Suggested Homework**

Count and write the number



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 10<sup>th</sup> 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 1<sup>st</sup> to 10<sup>th</sup>, plastic containers, empty bottles.

Number of Lessons **1**

## Lesson 1: Ordinal numbers to 10<sup>th</sup> 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 4 learners and 5 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.
- Repeat this activity with different objects in the fourth to the tenth position.
- Arrange bottles or empty boxes in order. Let learners watch how they are being arranged, i.e. which one was put first, second etc.



- Arrange the badges on the walls of the classroom.
- Tell them that the learner who comes to school first in the morning should pick the first badge, the second learners should pick the second, up to the 10th badge.
- Let them tag themselves according to the order in which they came to school.
- Ask them to come and line up, with the first learner at the 1st position, second at the 2<sup>nd</sup> 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 page 32, and let them answer the questions there.

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

- In their groups, learners write their first names. They tag themselves from 1<sup>st</sup> up to the 5<sup>th</sup> position.

**High Ability Learners**

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

**Assessment for Learning**

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

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

**Suggested Homework**

What is the position of the circled number, counting from the left.

1. 1 2 3 4 (5) 6 7

2. 5 10 (15) 20 25

**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 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: Identify numbers in different positions****Starter**

Do mental game with learners play a “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 to Learner's Book page 36. Deduce from learners how to describe the positions of specific objects on the page. 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.
- 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. Let them identify numbers in different positions around the chosen number. (**leadership, critical thinking, collaborative learning**)

- Refer learners to 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 them these numeral cards: 6, 15, 24. They should find numbers that come before and after.

**High Ability Learners**

- Give them 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 page 37 of the Learner's Book exercise 1 and an activity.

**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 to Learner's Book page 38 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 five. 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 page 38. Go through the activities with learners.

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

- Have them measure the length of their table using a pencil. Refer to Learner's Book page 40.
- Learners go through the activities there in groups.

**High Ability Learners**

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

**Assessment for Learning**

Refer learners to page 40 for exercises.

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

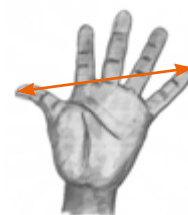
Ask learners to count in 2s from 1 up to 20, forwards and backwards.

**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 4 according to the number in the class.
- Group 1:** Have a group measure the length of the table using the hand span. 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 to measure the length.
- Refer to Learner's Book page 39. Have learners identify other parts of the body which could be used as non-standard units.
- In pairs, refer learners to page 40 to do the practical activities there.

## Review

### Differentiated Lessons

#### Low Ability Learners

- They should use the thumb to measure the lengths of their tables.

#### High Ability Learners

- They should 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 to Learner's Book page 40 for activities.

### 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?” with learners. 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 to Learner's Book page 41. Deduce from learners what the boy in the top picture is doing. Let them guess the number of cups that will fill the bucket. (*critical thinking*)

**Let us Learn**

- Put learners into groups of 4.
- 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 to Learner's Book page 41. Divide learners into groups for the practical activities there.

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

- Give them a plastic bottle cap and a teacup. They should count 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 fill it.

**Assessment for Learning**

Refer learners to page 42 for exercises.

**Suggested Homework**

Use a tablespoon to fill a medium size tomato tin with sand. Record how many tablespoons of sand you used.

**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.

**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 water sachets and a bucket. Learners should fill the bucket and count to find out the number of sachets that filled it.

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

**Assessment for Learning**

Refer to Learner's Book page 42 for exercises.

## 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 Learner's Book page 43.  
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 Learner's Book 1 page 43, Let us learn: 1a. 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**

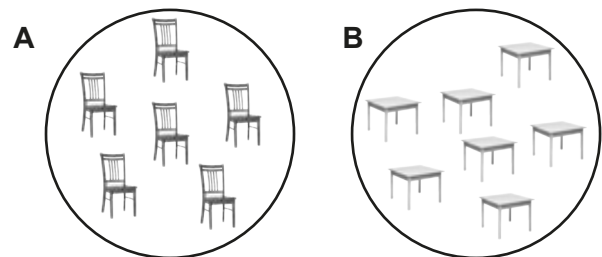
- Learners count 40 straws, put them into two groups and compare the two groupings. Have them make two different groupings of 40 straws.

**Assessment for learning**

Refer to exercise 1 on page 45 of the Learner's Book.

**Suggested Homework**

Which group is one more? How do you know?



## Lesson 2: One less than

### Starter

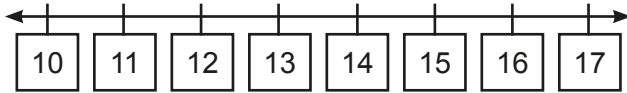
Say a number and learners give a number which is 1 more/less.

E.g. What is 1 more than 9? - 10

What is 1 less than 7? - 8

### Let us Learn

- Draw/display a number line on the board.



- 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. Say: 10 is **one less than** 11.
- Display the 100-number chart on the board. Locate number 32 on it, and call a learner to come and point to a number 1 less than 32. 1 less than 32 is 31.
- Refer to Learner's Book page 44, Let us learn: 1b. 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 them number line chart 1-20. They point to a number and say the number which is 1 less.

##### 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 page 46 of the Learner's Book.

#### Suggested Homework

Use 18 circles to make 2 groups which are "the 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 find if a group is more/less than another.

## 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 2 numbers

## Starter

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

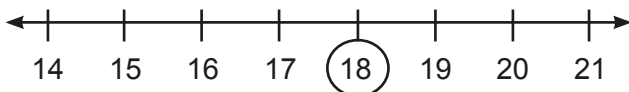
(1)  $7 \rightarrow 3$  (2)  $3 \rightarrow 7$  (3)  $5 \rightarrow 5$  (4)  $2 \rightarrow 8$

## 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. Elicit from them 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.

## 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

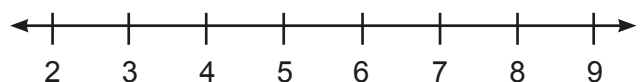
## Lesson 2: Ordering number.

## Starter

Play 1 more or 1 less. Mention a number and learners give two numbers : the number that is more than or 1 less than the given number.

## Let us Learn

- Draw a number line on the board.



- Write these numbers on the board: 6, 7 and 8. Call a learner to come and identify the numbers on the number line and circle them with different colours.
- Deduce from learners that the smallest number is 6, followed by 7 and 8.
- Do the reverse with them. (**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 page 49 and go through Let us Learn with them.
- Refer learners to page 49, Let us Learn 2: go through the activities with them.
- Order the numbers 1,2,5,9,6,1,3, in ascending and descending order (**critical thinking, collaborative learning**)

#### Review Exercise

#### Differentiated Lessons

##### Low Ability Learner

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

##### 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 "1 more/1 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 A: 8 books and B: 9 books separately on your table.
- Call two learners to come and count them one after the other. Have learners tell you what they notice about the two groups. 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. 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 5, give out number line cards (1 – 20). They select a number and find out a number which is 1 less and 1 more.
- Refer to Let us Learn on Learner's Book page 51. They should find more than 22 (move one step forward from 22), the answer is 23. So 1 less than 23 is also 22.

**Review Exercise****Differentiated Lessons****Low Ability Learner**

- Learners work in pair with number line cards (1 – 20). One selects a number and the other finds the number which is 1 less and 1 more. Learners have to 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*)

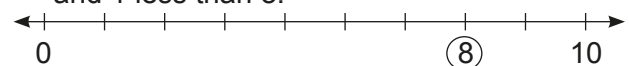
**Assessment for Learning**

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

**Suggested Homework**

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 are able to 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). Take over to the new line. 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



- Write two numbers on the board: 6 and 9. Ask the class to tell you the one which is greater and the one which is smaller. 9 is greater than 6.
- Call learners to come and write the symbol to make the statement true.  $9 > 6$ . Refer learners to page 54.
- Learners form groups of 5., Give out the greater than symbol and numeral cards to them.
- Write two numbers on the board. The groups

decide which number which is greater.

(1) 12, 15 (2) 27, 13 (3) 47, 58

- They pick the numeral cards and the symbol to make the statements true.
- Refer learners to Let us learn: on page 54 to get further understanding of the greater than symbol.

**Review Exercise****Differentiated Lessons****Low Ability Learner**

- Let learners work in pairs and solve compare the numbers using the symbols  $>$ ,  $<$ ,  $=$ . 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.

**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 to 10. 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 up to 20 and the symbol card.
- Learners mix the cards. They pick two numbers arbitrarily and find which number is less. They repeat this activity several times with numbers.
- Learners now work in pairs. Introduce the less than symbol to 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, 63.
- Deduce from them the difference between the two symbols > and <.
- Refer learners to Let us Learn: 2 on page 55 of the Learner’s Book. Go through the explanations with them.

### Review Exercise

#### Differentiated Lessons

##### Low Ability Learner

- Give them a number line chart 1-20. They select two numbers and use the symbol < to compare.

##### High Ability Learner

- 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

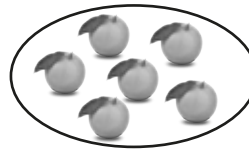
Refer learners to exercise 2 on page 56 of the Learner’s Book.

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

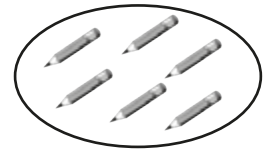
### Starter

Play doubles of numbers up to 5. Mention a number and learners find the answer by doubling it. 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 page 55. Go through Let us Learn: 3.
- 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 Learner

- 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 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.

#### Suggested Homework

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

(1)  $7 \underline{\quad} 5 + 2$

(2)  $9 \underline{\quad} 11$

(3)  $25 \underline{\quad} 24$

(4)  $20 \underline{\quad} 20$

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 that 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 why they say so. (*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. Identify which number 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 page 58 and 59 of the Learner's Book. Go through the activities with them.

**Review****Differentiated Lessons****Low Ability Learner**

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

**High Ability Learner**

- Give them 80 straws. They form two groups between 40-80 and use the relative terms more than or less than to describe their groups. 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.

## Lesson 2: Comparing two groups of objects

### Starter

Play “One less than”. Call out a number and learners come with 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

- In groups of fives give out 40 straws to learners. Have them put them into two equal groups. Each group is 20, 20 is the same as 20.
- Give 30 bottle caps. Learners put them into two equal groups. They should use the term “is the same as”.
- Refer to Learner’s Book page 59, Let us Learn: 2. 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 Learner

- Give to them 20 bottle caps. They pick 10, 18 and 20 respectively and make equal groups with these numbers.

##### High Ability Learner

- Give them 80 bottle caps and 60 straws. Pick (a) 40. (b) 30 and then (c) 70 straws and make equal groups.

#### Assessment for Learning

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

#### Suggested Homework

1. 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 others?

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

## Module I6: Comparing and ordering

**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)  $5 \rightarrow 10$

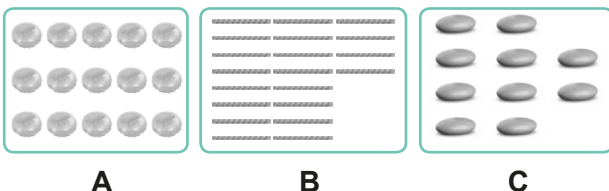
**Find Out**

Refer to Learner's Book 1 page 63.

Ask learners to identify the youngest and the oldest. They should justify how they got their answers. (*critical thinking and justification of ideas*)

**Let us Learn**

- Give out 20 straws, 15 bottle caps, and 10 pebbles to each group.
- Have them make three groups 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.



- Have them re-arrange the three groups, 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 group with the largest to the group with 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 from the smallest to the largest and vice versa.

Refer to Learner's Book page 63 and work through Let us Learn: 1 with learners.

**Review Exercise****Differentiated Lessons****Low Ability Learner**

- Give them 3 containers of different sizes to arrange in ascending and descending orders. They should select 4 learners with different heights and arrange them ascending and descending order according to height. (*critical thinking, collaborative learning*)

**High Ability Learner**

- Give them bottle caps. Let them make groups of (1) 9, 15, 7 and (2) 16, 19, 12 and order them in ascending and descending order.

**Assessment for Learning**

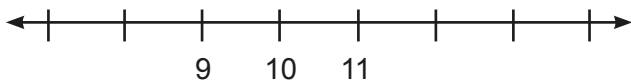
Refer learners to exercise 1 on page 66 of the Learner's Book.

**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**

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



- Have them circle the numbers. They already know that numbers to the left of a given number are small 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 the 11 is bigger, 9 is to the left of 10 so 9 is smaller than 10. Ordering the number from the smallest is 9, 10, 11.
- Ordering from the largest is 11, 10, 9.
- Refer to Learner's Book page 64, let us learn 2. Go through the activities with them.

**Review Exercise****Differentiated Lessons****Low Ability Learner**

- Have learners order the numeral cards from 1 up to 20 in their groups. In pairs have learners write and order them in ascending and descending order.

**High Ability Learner**

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

**Assessment for Learning**

Refer learners to exercise 1 on page 67.

**Lesson 3:** Ordering numbers (a lot or little bigger or smaller than another)**Starter**

Play making 10s. Mention a number, and learners to 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 sizes of the two tables.
- Learners lift them: one is very heavy and the other is light. The teacher's table is a lot heavier than the learner's table.
- Write these numbers on the board: 15, 40 and 65. Have learners use descriptions like 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 pick the numbers and describe the two numbers. (1) 20 and 18 (2) 35 and 40. With 35 and 40, 40 is 5 more than 35 and 35 is 5 less than 40.
- Refer learners to page 65 of Learner's Book. Talk about the three ages and use the expressions (lot bigger, a little bigger, lot smaller, a little smaller) to describe the different ages.

**Review Exercise****Differentiated Lessons****Low Ability Learner**

- 30 straws, 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 Learner**

- Give out 80 straws to learners in groups. They do their own separation and use the expression 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 page 68 of the Learner's Book.

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 and 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 6 books and another 10 books. Let them count them aloud for the class. Ask them to put them together.
- Call a third learner to come and count and tell the total to the class.
- In groups of five, ask them to count 48 bottle caps, then 6 bottle caps and put them together to find the total or the sum. (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 does Adwoa have now?
- Refer to Learner's Book page 72. 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 straw. Learner 1 gives some straws to Learner 2 and some to Learner 3. They put the straws together and find the total.

**High Ability Learners**

- They work in pairs or small groups. Give 10 bottle caps to them. One learner comes up with a word problem and pick bottle caps to represent the sentence and find the answer. E.g. I have 2 bottle caps. Aku gives me another 8. How many bottle caps do I have now?  $2 + 8 = 10$

**Assessment for Learning**

Refer learners to exercise 1 and 2 on pages 73 and 74 of the Learner's Book.

**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 does Kwasi have now? Have them use bottle caps to represent this scenario.

- Make 8 strokes and 6 strokes separately on the board IIIIIII IIIII. 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 page 76, Let us Learn: 1 and Let us Learn 2. Learners pose word problems for the two pictures. E.g. Kwesi has 7 erasers, the teacher added 10 more. How many erasers does Kwesi have now?

### Review Exercise

#### Differentiated Lessons

##### Low Ability Learners

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

##### High Ability Learners

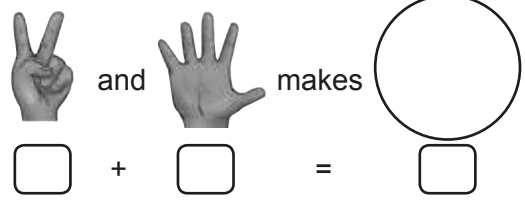
- Give out 20 straws to them. They act out their own word problem and solve them.

### Assessment for Learning

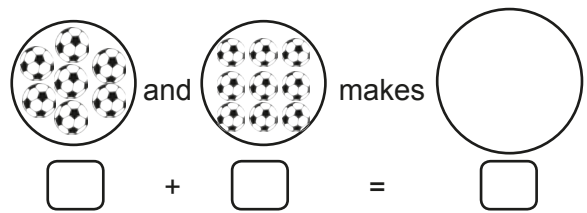
Refer learners to Exercise 3 on page 74 of the Learner's Book.

### Suggested Homework

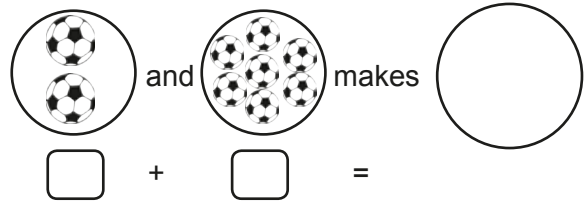
1



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 identify a number less than 1.

**New words**

Subtract, separation, take away, addition.

**Resources**

Bottle caps, straws.

Number of Lessons **2****Lesson 1: Subtraction as separation up to 10****Starter**

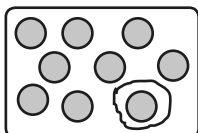
Play: "2 less". Mention a number and learners reduce it by 2. E.g. (1)  $6 \rightarrow 4$  (2)  $9 \rightarrow 7$  (3)  $6 \rightarrow 4$

**Find Out**

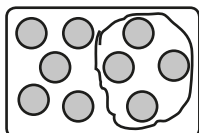
Refer to page 77. Have learners count the number of toffees, count how many have been taken away and the number left.  $8 - 3 = 5$  (**critical thinking**)

**Let us Learn**

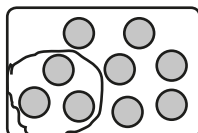
- Count out with learners 8 big books and put them on the table.
- Separate 3 from the others.
- Have them work in groups. Ask learners how many books were on the table and how many have been separated and how many are left. (**critical thinking, collaborative learning**)
- Give 10 bottles caps to learners. Learners work in groups of 5. 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 in 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 Learner's Book page 77 Let us Learn: 1 and page 78, Let us Learn 2. Take them through the activities there. They should use objects to demonstrate the examples practically. (**critical thinking**)

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

- Have learners work in groups of 4. Give them 8 straws. They separate them as follows and find the answer:  
(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 pages 79 and 80 of the Learner's Book for exercises 1 and 2.

## 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 once more and answer the question there.

### 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 member: 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 page 78, Let us learn: 3. Learners count the number of pencils and how many are left if they take away the ringed number of pencils.

### Review Exercise

#### Differentiated Lessons

##### Low Ability Learners

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

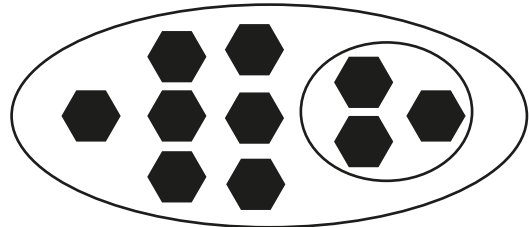
##### High Ability Learners

- Give them 20 bottle caps. They make up their own subtraction sentences, and use the bottle caps to demonstrate the subtraction and check the answer.

#### Assessment for Learning

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

#### Suggested Homework



Write a subtraction sentence for this diagram and solve it.

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 their own 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 set and find how many altogether. They can also separate a set and find 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. 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" to them. So the number of toffees = the number of ice creams.

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

- Give them 10 erasers. They should two equal groups with them. They talk about what they have done. They should work in pairs.

**High Ability Learners**

- Give them 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 of page 85 of the Learner's Book.

**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 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 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 where all the learners will be able to see them well. Ask a boy to come and 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. The girls stand together as a group and the boys stand together as a 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.
- Refer to Learner's Book page 84, Let us Learn 2. Have learners count the number of bees (A) and the number of mosquitoes (B) and answer the question. The number of bees is not the same as the number of mosquitoes.
- Refer to page 82 Let us Learn: 3. A is not equal to C, C is not equal to B.

### 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 them 10 bottle caps. Ask them to make a set A with 6 bottle caps and a set B with 3 bottle caps. Ask them to compare the sets..

#### High Ability Learners

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

### Assessment for Learning

Refer learners to exercise 2 of pages 86 of the Learner's Book.

### 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.

**New words**

Separate, join, altogether.

**Resources**

Straws, bottle caps, fruits.

Number of Lessons **2**

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

Play "One less" 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 can be added to 5 to get 9? Let them justify their answer. Expected answer is "4".

They can count 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 gives a total of 10 chairs.  
*(collaborative learning)*
- 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.

**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, which is 3.

### Let us Learn

- Put 12 books on the table. Call a learner to come and 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.

#### Suggested Homework

1. I have 15 bananas I eat 9. how many are left?
2. Esi has 12 toffees. She gives Afotey 7. 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: identify the relationship between addition and subtraction.

**Essential for Learning**

Learners are able to pose word problem involving addition and subtraction write sentences and solve them.

**New words**

Symbol, unknown, join, separate.

**Resources**

Straws, bottle caps, seeds, pebbles.

Number of Lessons **3**

**Lesson 1:** Changing addition to subtraction**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 brain storm 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 will give 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 to page 93 of Learner's Book  
 $5 + \square = 7$       $7 - \square = 5$
- Deduce from learners the interpretation of the two statements and how they could

solve it. Learners have to justify their answers by explaining how they got it. 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. That is .... 13, 14, 15, 16, 17, 18. How many times did you count to get to 18? 6 times. Now we have  $12 + 6 = 18$       $\rightarrow$       $18 - 12 = 6$
- Have learners work in groups of 4 to solve the word problems. **(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.

**Suggested Homework**

1.  $5 + \square = 10$ , and  $10 - \square = 5$
2.  $4 + 8 = 12$ , and  $12 - 8 = \square$

## Lesson 2: Changing subtraction to addition

### Starter

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

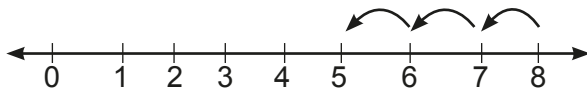
E.g. (1)  $8 \rightarrow 7$  (2)  $9 \rightarrow 8$  (3)  $6 \rightarrow 5$

### 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 should use straws.

(1)  $10 - \square = 7$       (2)  $18 - \square = 16$

(3)  $20 - \square = 10$

- Refer to Let us Learn: 2 of the Learner’s Book page 31

### Review Exercise

#### Differentiated Lessons

##### Low Ability Learner:

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

##### High Ability Learner

- 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.

## Lesson 3: Addition to subtraction and vice versa

### Starter

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

### Let us Learn

- Put learners in 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 on how to solved them..

(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 the 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.

#### Suggested Homework

Change to addition and solve:

(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, pose word problems. when given addition and subtraction sentences.

**Essentials for Learning****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 it with learners.

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

- Write this addition sentence for them 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:

1.  $2 + 6 = 8$
2.  $6 + 12 = 18$

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

Play "1 less" with learners. Mention numbers 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 5. Give each group a subtraction sentence card.
- They pose a word problem for it and solve it. E.g.  $10 - 8 = \square$ . 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 subtraction sentence and pose a word problem and solve it.
- Refer learners to page 98 and go through Let us Learn: 2 with them.  $12 - 8 = 4$ .

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

- Learners should work in pairs. They solve this:  $5 - 4 =$

**High Ability Learners:**

- Learners should work in pairs. They write a subtraction sentence and 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 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 could 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)**
- 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 4 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 tops. Bridget gives me 6 more. How many bottle caps do I have now?

**High Ability Learners**

- Sewah 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: find 1 more or 1 less when a number is given.

**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 or one less****Starter**

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

**Find Out**

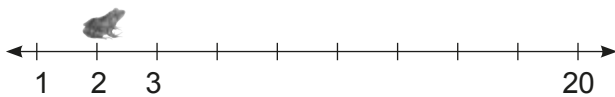
Refer learners to page 102. Deduce from learners the relationship between the numbers when moving forwards and backwards:

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 to Let us Learn: 1 on page 102. Let them count 1 more/1 less on the number track using their fingers. (**Collaborative learning**)

**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**

Direct learners to page 101 (Let us do an activity). In groups of five. let them do the two activities orally.

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: 2 more or 2 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 too for them to sit down. Let them discuss what they see.
- 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 101. They should use their fingers to hop in 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 on page 103.
- Put the frog at 6 and let it jump forwards in 2s from 6 and 8 etc. to find 2 more.
- Put the frog at 6 and let it jump 2 backwards in 2s from 6 and 4 etc. to find 2 less.

### Review Exercise

### Differentiated Lessons

#### Low Ability Learners

- Give number line 1-10 to them. They select a number and find 2 more or 2 less.

#### High Ability Learners

- Give them number line 1-20. They select a number and find 2 more or 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. Write 2 more from 6 up to 20.
2. Write 2 more from 10 up to 30.

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: double numbers from 1 up to 10. Use objects to represent doubles up to 5.

**Essentials for Learning**

Learners can identify number 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 than and show it up.

**Find Out**

Refer learners to page 106 of the Learner's Book. Let them look at the legs of the animals and let them 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 photos of the animals on page 104. 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 2 makes 4 a hen has 1 leg on one side, so double 1 makes 2: a spider has 4 legs on one side, so double 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 body which are doubles. Have them work in pairs, e.g. eyes, legs. (**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 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.
- Double the following numbers:  $2 \rightarrow 4$ ,  $3 \rightarrow 6$ .
- Call out numbers 1-5 at random. Learners use their fingers or straws to find their doubles.

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

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

**High Ability Learners**

- Give out numeral cards 1-10. They pick a card at random and the number. E.g.  $7 \rightarrow 14$ . They should work in pairs.

**Assessment for Learning**

Refer learners to exercise 1 on page 105 of the Learner's Book.

**Suggested Homework**

Write the names of 3 animals who have 4 legs.

## Lesson 2: Making doubles (6 -10)

### Starter

Play “2 more than and 2 less than”. Mention a number and learners call out a number which is 2 more or 2 less. E.g. 6, 2: more than 6 is 8: 2 less than 6 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 number 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 learners.

### Review Exercise

#### Differentiated Lessons

##### Low Ability Learners

- Give them numeral cards 5-8 and bottle caps. 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 learner picks a numeral and the other doubles the number on it. 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 eight. (*collaborative learning, leadership skills, critical learning*)

**Find Out**

Refer learners to (Find out) page 109 Have learners count from 7 to 37. They should tell you what is happening. Have them work in pairs. Let them locate 23 on the number chart. Refer them to 23 and 33. What can they say (Number above 23 decreases by 10, the number below 23 is increasing by 10 to 33. (*critical thinking, collaborative learning*))

**Let us Learn**

- Display the 100-numeral chart to a place where every learner can see.

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 in tens while moving your finger down the tens column: 10, 20, 30 .... 100.
- Remind learners that counting forwards in 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 10 less.
- 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. (*collaborative learning*)
- Refer to Learner's Book page 109. Go through the exercise with learners.

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

- Have learners work in pairs. One circles a number and the other person trace his/her finger counting in 10s forwards. They should alternate. (*collaborative learning, leadership skills*)

**High Ability Learners**

- I am 65 years old. Which number is 10 less than me and 10 more than me? Give out the 100-number chart to learners.

- Working in pairs they start from any number and count forwards and backwards in tens.

### Assessment for Learning

Refer learners to Learner's Book page 110 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 "Make 10". 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 us Learn

- Draw the number chart on the board.
- Start at 25 and count backwards 10 times. Let learners tell you the number that will be landed on. That is 15.
- Call learners to come and point to another number say 16. They move 10 times backwards and land on 6.
- Give number chart to learners in groups. They start from any number, say 18, and count backwards and land at 8.

- Have learners repeat this activity several times moving forwards and backwards.
- Refer to page 110. 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.

### Review Exercise

### Differentiated Lessons

#### Low Ability Learners

- Give out number line 1-15. They start on any number and move forwards and backwards. They should work in pairs.

#### High Ability Learners

- Give out number chart 1-20. They point to any number and count backwards and forwards.

### 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**

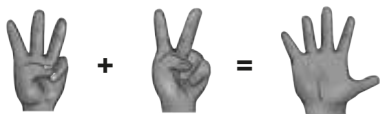
Play "Making doubles": Mention a number from 1-10 arbitrarily and learners double them. E.g.  
(1)  $4 \rightarrow 8$       (2)  $3 \rightarrow 6$       (3)  $7 \rightarrow 14$

**Find Out**

Refer to Learner's Book page 112.  
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 to make 5.
- Learners work in pairs. Give out straws to each pair. They play making fives by using the straws. *(collaborative learning)*
- Refer to Learner's Book page 112. Go through the exercise with learners.

**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 page 113 and 114 of the Learner's Book.

**Lesson 2:** Making 10s**Starter**

Play "Make 5". Show a number of fingers, and learners add another number to give the sum 5.

**Find Out**

Refer learners to page 112. 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 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 the number of bottle caps to add to that number to make 10.

- Repeat with other numbers. E.g. Count 7 bottle caps: IIIIIII. How many should be added to make 10? III (3).  $7 + 3 = 10$ . (*collaborative learning*)
- Refer to Learner's Book page 111. 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 13.

### 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 their Learner's Book for exercises.

### 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 II: 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 by putting the larger number first and count on.

**Essentials for Learning**

Learners can add 10 to numbers up to 100.

**New words**

Count on, doubles.

**Resources**

Numeral cards 1-20, 100 numeral charts  
bottle caps, straws.

Number of Lessons **2****Lesson 1: Counting on by 2s****Starter**

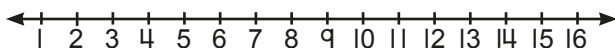
Learners count forwards and backwards from 1 – 20. They clap at the same time.

**Find Out**

Refer to Learner's Book page 115. Have learners work in pairs. They look at the objects and numbers and comment on them.

**Let us Learn**

- Put learners in groups of two. Give them a number line card.



- Learners count in 2s while pointing to the number and mentioning the number at the same time. Make sure they start from different numbers. E.g. 3, 5, 7, 9, 11. (*collaborative learning*)
- Display number chart on the board. Learners come and count in 2s starting from any number. The class mention the numbers as he/she points. (*critical thinking*)
- Refer to Learner's Book page 115. Learners count in 2s from 8 – 20. Learners practice in pairs.

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

- Working in pairs, learners use the number track to count in 2s starting from any number.

**High Ability Learners**

- Give out 100-number charts to learners in groups. Learners count in 2s starting from any number.

**Assessment for Learning**

Refer learners to exercise 1 on page 117 of the Learner's Book.

**Suggested Homework**

Count in 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**

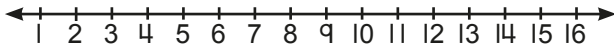
Refer to Learner's Book page 115. Have learners study the pattern of counting and tell their findings. (*critical thinking*)

**Let us Learn**

- Write the number 5 and 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 1

finger for each number as you count.

- Let them know that 8 was the last number you said when you 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  $12 + 4$  on the board. Demonstrate adding by counting on. (**critical thinking**)



- Write some addition sentences on the board. Have learners work in pairs using the number line card. (1)  $11 + 4$  (2)  $16 + 2$  (3)  $9 + 6$  (**collaborative learning, leadership skills**)
- Refer learners to page 116 of the Learner's Book through it.
- 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)  $6 + 3$

#### High Ability Learners

- Have learners work in pairs. Give them these number sentences for them to work using counting on: (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 for exercise.

### Suggested Homework

Add the following:

- |             |             |
|-------------|-------------|
| (1) $6 + 4$ | (2) $2 + 8$ |
| (3) $5 + 4$ | (4) $8 + 4$ |

For additional exercises under this module, refer to pages 79 - 80 of the Workbook.

**Module I2:** 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: 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 double". 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 page 118 of the Learner's Book (Find Out). 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 sentence on the board:  $7 + 2 + 3$ . 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 to add 2 and get 12. (*collaborative learning*)
- Write an addition sentence on the board:  $2 + 8 + 7$ .
- Elicit from learners which two numbers added together first gives 10; that is 2 and 8 makes 10, 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 page 118 of the Learner's Book. 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  $10 + 3 = 13$ .

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

Make ten first and add. Work in pairs.

- (1)  $2 + 9 + 1$     (2)  $6 + 7 + 4$     (3)  $5 + 9 + 5$

**High Ability Learners**

- Work in pairs. Give these number sentence cards to them.
- (1)  $6 + 4 + 2$                       (2)  $8 + 6 + 2$

**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 "Make 10". 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 learners to page 118. Let them discuss the 2 dice there and find the total. 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 in groups of five.
- From 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 double. 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 it and tell the answer. They should work in pairs.  
 (1) 3   (2) 5   (3) 6   (4) 9  
**(critical thinking, collaborative learning)**
- Write these on the board. Have learners work in groups.  
 (1)  $7 + 9$    (2)  $9 + 11$

- 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 them work in pairs. They should come out with object which have doubles. E.g. (1) car tyres (2) bicycle tyres

##### High Ability Learners

- Have learners solve these numbers:  
 (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 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: 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**

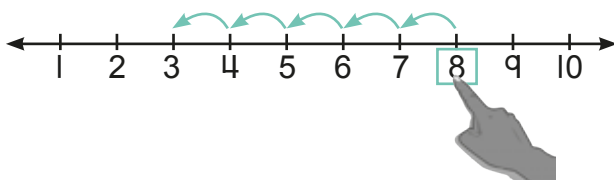
Play "Make 10" with learners. Mention a number and learners add the number to make 10,  $7 \rightarrow 3$ ,  $6 \rightarrow 4$ ,  $5 \rightarrow 5$ ,  $9 \rightarrow 1$

**Find Out**

Refer learners to page 122 of the Learner's Book. Show the pictures there, deduce from them what they can say about the two pictures. Which pile has more books? How many more books are in pile A? A has more books. 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 (3) is the answer.



- Learners find the larger number and count back the number of times of the smaller number. Use the frog to jump backwards.
- Have learners work in pairs. Let learners solve this:  $12 - 6 = ?$  Learners work in pairs and they write down their answers. (*critical thinking, collaborative learning*)

- Let them repeat 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. Go through Let us Learn 1 a and 1 b 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 Learner's Book page 124.

**Suggested Homework**

Solve these.

- (1)  $9 - 3$  (2)  $15 - 7$  (3)  $12 - 6$

## Lesson 2: Finding the difference

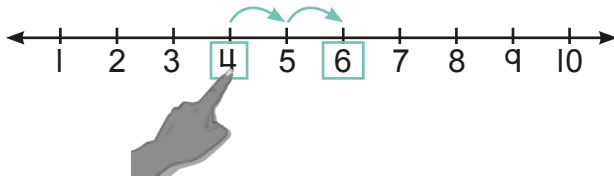
### Find Out

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:  $6 - 4 =$   
This could be interpreted as, what is the difference between 6 and 4?, 4 is how many less than 6; 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. 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. Have learners use it to solve these: Find the difference between 9 and 4

##### High Ability Learners

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

### Assessment for Learning

Refer learners to exercise 2 on page 124.

### 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 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: use addition to subtract or rewrite subtraction 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.

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 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.

$$8 - \boxed{\text{what}} = 3 \quad \rightarrow \quad 3 + \boxed{\text{what}} = 8$$

$$10 - \boxed{\text{what}} = 7 \quad \rightarrow \quad 7 + \boxed{\text{what}} = 10$$

(**critical thinking, collaborative learning**)

- Refer learners to Let us Learn 1: on page 125. Go through the activities with it.
- $9 - \text{what} = 5$  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 127 of the Learner's Book.

**Suggested Homework**

Change to addition sentences and solve.

$$(1) 9 - \boxed{\text{what}} = 6 \quad (2) 12 - \boxed{\text{what}} = 7$$

$$(3) 19 - \boxed{\text{what}} = 9$$

## Lesson 2: Using addition to subtract (2)

### Starter

Play Making doubles. Call out number and learners say the double of the 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 to addition sentences and solve them.
- Refer learners to Let us Learn 2: on page 126. Go through it with them.

### Review Exercise

#### Differentiated Lessons

##### Low Ability Learners

- Let them work in pairs. Give them subtraction sentence card they change to addition sentence and solve it.

$$7 - \boxed{\text{what}} = 4 \quad \rightarrow \quad 4 + \boxed{\text{what}} = 7$$

##### High Ability Learners

- Working in pairs, learners write their own subtraction sentences, rewrite it into addition sentences and solve them.

#### Assessment for Learning

Refer learners to exercise 2 on page 127 of the Learner's Book .

#### Suggested Homework

(1)  $12 - 8 = \boxed{\text{what}}$     (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 (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 interpret 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 "How many makes 10"

**Find Out**

Refer to find out page 128. Learners should work in pairs. Get them to pose the word problem, write an addition sentence for it and solve them.  $4 + 4 = 8$ . (**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 one, then 3 to the second person. The first person gives his/hers to the second person. Let them pose a word problem for that and find the answer.  $2 + 3 = 5$ . (**critical thinking, collaborative learning, problem solving skills**)
- Have them work in pairs, give them word problem cards and solve them. When they finish they exchange the word problem cards and solve them.
- Refer to Learner's Book page 128.
- Go through the addition sentence with them. The hand is adding 2 oranges to the 5 oranges and that gives the total 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.
- I have 3 bulbs. Daddy brought me 3 more. How many do I have now?
- 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 and solve them.

**Assessment for Learning**

Refer learners to exercise 1 on page 129 and 130 of the Learner's Book.

**Suggested Homework**

Yao Alato sold 8 balloons in the morning. She sold 11 in the afternoon. How many balloons did she sell for the day?

## Lesson 2: Word problem (Sum up to 20)

### Starter

Play "How many makes 10". 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 128. 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 for the quantities. Let them use counting on to get the answer.  $8 + 7 = 15$ . (**critical thinking, collaborative learning, problem solving skills**)
- In groups of 4, learners pose their own addition sentences and solve them. E.g. I have 4 straws; one picks them; 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 above.
- Refer 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 Kwasi 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.

#### Suggested Homework

1. Tutu has 9 bannanas. Dei adds 6 more. How many has Tutu now?
2. Mama Dollor has a 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 I6:** 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, taking from, comparing, left.

**Resources**

Number line strips for each learner, bottle caps, straws, subtraction word problems learners

Number of Lessons **2**

**Lesson 1:** Word problem (subtraction facts up to 10)**Starter**

Play "fingers up and down". Show fingers up and down. Learners say the number of fingers up and those down.

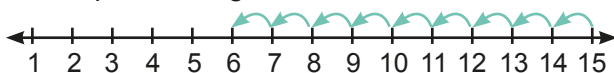
**Find Out**

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. One person takes a number of counters, gives some to the partner, writes a subtraction sentence and solves it. (**collaborative learning, leadership, critical thinking**)
- Give out word problems to learners. They use the number line to count down. I had 15 pebbles. I gave 9 to Esi.



- Point to the bigger number, 15, with your forefinger, count down six spaces and you will land at 9.
- Give the number line chart to learners and write some subtraction word problems on the board. They should use count down methods to solve the problems. (**critical thinking, collaborative learning, problem solving skills**)
- Mawusi has 10. She gives 4 to her friend. How many are left?
- Kwesi had 18 pencils, but he gave 10 to Adem. How many are left?
- Encourage learners to pose their own problems and solve them. (**problem solving, critical thinking, collaborative learning**)
- Refer learners to page 132. Go through the exercise with learner.

**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 are left?

**High Ability Learners**

- I have a certain number of erasers in my bag. I gave 6 to Mensah. I now have 4. What was the number 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 to subtraction sentence and solve it.

1. Maame has 10 goats, she sold 6. how many are left?
2. Seiwah has 10 pencils she gave her friend 2. How many are left?

## Lesson 2: Word problem (subtraction facts to 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 in front of the class. Give the girl 20 straws.
- Ask her to give 8 to the boy. Ask the girls to pose a word problem for it. Dede has 20 straws, he gives 8 to Aso. How many straws are left? They should write a subtraction sentence and solve it. **(problem solving skills critical thinking, collaborative learning)**
- Have learners work in pairs and repeat the activity. Give them 20 bottle caps for demonstration. They pose word problem sentence, change it to subtraction sentence and solve it. **(problem solving skills, critical thinking, collaborative learning)**
- Refer to Let us Learn 2 on page 133. Go through the scenario with learners and solve the problem.

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

- 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 word problem change it to subtraction sentence and solve it. **(critical thinking)**, problem solving skills

**Assessment**

Refer learners to exercise 2 on page 135 of Learner's Book for exercise.

**Suggested Homework**

1. There are 20 eggs in a basket. 10 got broken how many are left?
2. Dele has 15 pencils he gave some to his friends. He now has a 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 I: 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 have experiences with 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 say the number that will make 10 with the number you said.

**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 telling if the orange is a whole or not a whole? (*justification of ideas*)
- Open a discussion on the meaning of a whole. Elicit that a whole is any object with all its parts. (*critical thinking*)
- Direct learners to **Let us learn** in the Learner's Book 1. 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 papers. 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 divide shapes into equal halves.

**Assessment for Learning**

Refer learners to exercise 1 on page 40 of the Learner's Book.

**Suggested Homework**

1. Write five items that you consider as a whole.
2. Draw three whole items.

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 have experiences with 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 20".

Say any number between 1 and 10.

Learners say the number that will make 10 with the number you said.

**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, a bread divided, a bread divided into 2 equal 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 "half", "part".
- Demonstrate one half of an object using the orange.
- Direct learners to **Let us Learn: 1** 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 make 20 with the number you said.

**Let us Learn**

- Put learners in small groups and present each group with some sheets of papers. 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 half. (**collaborative learning**)



- Pair learners and present them with shapes like triangles, squares, etc. for learners to colour one half each.

### Review Exercise

### Differentiated Lessons

#### Low Ability Learners

- Present learners with 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 half.
2. Draw three items that are not equally divided into two parts.

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 have experiences with a unit as a whole.
2. Learners can make a 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 perform some mental math games. Sing "one man and the son went to weed the cocoa farm".

**Find Out**

Direct learners to page 145 of the Learner's Book.

Ask: What can you say about the box of cold drinks? Can we call the box of cold drinks a whole? What will happen when we take out some of the bottles?

**Let us Learn**

- Put learners into 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 groups to make groups of counters from the 20 counters given out and justify the 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. 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

Engage learners to perform some mental math games. Give learners basic facts that can be solved by "Making 10s" or "Counting up or down" or "Making doubles" "or" small addition and subtractions" (plus/minus 1/plus or minus 2).

Have learners explain how they found answers.

### Find Out

Direct learners to page 147 of the Learner's Book.

Ask: What can you say about the group of objects?

Revise learners' knowledge about "group as a whole". Ask: can we say that the group of bottles in the box is a whole? Why?

### Let us Learn

- Call out two pupils to the front of the class.
- Put four bottle caps on the front table and ask the two pupils 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.
- 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 to observe the activity.

### Review Exercise

### Differentiated Lessons

#### Low Ability Learners

- Task learners to divide a given set of items into two equal parts.

#### High Ability Learners

- Task learners to mentally tell the half of a given group of items.

### Assessment for Learning

Refer learners to exercise 1 on page 148 of the Learner's Book

## Lesson 2: Breaking whole into halves (2)

### Starter

Engage learners to perform some mental math games. Give pupils basic facts that can be solved by "Making 10s" or "Counting up or down" them or "Making doubles" or calculating" + or - 1 or 2".

Have learners explain how they found answers.

**Let us Learn**

- Put learners into groups of say 6.
- 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 a given number.

**High Ability Learners**

- Task learners to mentally tell the half of a given number.

**Assessment for Learners**

Refer learners to exercise 2 on page 149 of the Learner's Book.

**Suggested Homework**

1. Draw six oranges and divide it into two equal parts.
2. Draw eight squares and divide it into two equal halves.
3. 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 number of given objects.

**Essential for Learning**

Learners are able to identify objects that are considered half.

Learners are able to count in 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: Find number of halves in an object****Starter**

Engage learners to do some mental math activities. Play "am counting one, what is one?".

**Find Out**

Direct learners to page 150 of the Learner's Book

**Ask:** What can you say about the three items there? Expect answers such as:

1 whole apple

Half apple

2 half apples

1 whole apple cut into two/halves

**Ask:** How many halves are there 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 telling 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? Also, **Ask:** 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 the 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 exercise 1a and 1b on pages 151 to 152 of the Learner's Book.

## Lesson 2: Find number of halves in shapes

### Starter

Engage learners to perform some mental math strategies. E.g. Skip count in 5s and 10s.

### Let us Learn

- Put learners into groups and task them to fold a number of sheets and then count and record the number of halves they can count. (**collaborative learning**)
- Give groups time to present their result and justify their answers.
- 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. 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

1. Draw 4 halves of an orange.
2. 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 I: 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 need to be able to identify items that are considered 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 to 5 or 10).

Raise up finger (1 to 5 or 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 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 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 coin is bigger in value than the other. Ask: which can buy more; 10p and 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 to 5 or 10).

Raise up finger (1 to 5 or 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 coin. (*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 are able to identify the Ghanaian and can tell which coin is bigger in value than another

### New words

Coin, cedi, pesewas, note.

### Resources

Ghana pesewa coins, 1 cedi note.

Number of Lessons **2**

### Lesson 1: Relationship between 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 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.

#### 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. 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 set of pesewa coins to choose a coin that is equivalent to the set of coins. E.g. a set of 5 10p coins make 1 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 between 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

- Present learners with price tags and challenge them to choose appropriate coins or make combinations of coins that can buy the items.

##### High Ability Learners

- Task learners to combine different pesewa coins that make up 1cedi.

#### 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 I: 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.
- Refer learners to Let us learn: 1 on page 166 of the Learner's Book. They should complete two questions there.

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

- Working in pairs, let them continue these patterns. 111, 112, 113, 11.....  
101, 201, 301.....

**High Ability Learners**

- Working in pairs, they 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 in 3 terms which is 10, 12, 14.
- Learners should know that number pattern can also be in counting backwards. Eg. 20, 18, 16, 14 \_\_\_\_\_.  
The next 3 terms are 12, 10 and 8.

- Refer learners to page 167 of the Learner's Book. Go through the activities with them. Let learners tell you the pattern used, ie. counting on in 2s.

### Review Exercise

### Differentiated Lessons

#### Low Ability Learners

- Working in pairs, let them continue these patterns.  
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 page 169 find out. Working in pairs give out the same number of 2D shapes at the page and ask them to make patterns with them, eg 1



Let them come out with what they have done by telling the class. (**critical thinking, collaborative learning**)

### Let us Learn

- Still working with the 2D shape example: create a pattern on the board for them to repeat it with their partners)

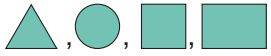


- Learners now work in groups of 5, they create their own patterns. (**collaborative learning, critical thinking, leadership**)
- Refer learners to page 169. Go through the activities with learners.


### Review Exercise

#### Differentiated Lessons

##### Low Ability Learners

- Draw a shapes pattern on the board. Learners study it and continue with two terms.
- Give out the 4 shapes  to learners.
- Working in pairs. They create their own pattern.

##### High Ability Learners

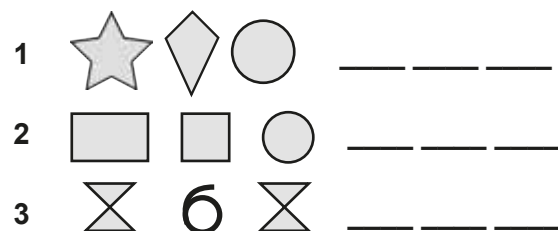
- Have learners continue this patterns  , .....
- Let them create their own patterns.

#### Assessment for Learning

Refer learners to exercise 1 on pages 170 and 165 of the Learner's Book.

#### Suggested Homework

Continue these pattern:



## Lesson 2: Making patterns using shapes (2)

### Starter

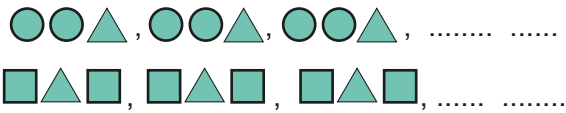
Sing a song: A circle is a shape.

### Find Out

Refer to page 169 of the Learner's Book.

Give out cut-out shapes for learners to make different shapes 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 and continue 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 them. 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 elements.

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 "I m counting one"

**Find Out**

Refer learners to page 172.

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, one, one clap 2, one clap 3, .... 9. If you make error you fall off continue until you get the winner. (**collaborative learning**)
- Still in a circle learners sing the song in kente weaving. "kro, kro hee, hee, kro hinko".
- Refer to Learner's Book page 172, Let us learn: 1. Demonstrate how the whistling and the clappings go together. Peel, peel, peel, (pa, pa, pa)
- Give whistles to learners in their group. Let them create their own whistle pattern and add with a clap. (**collaborative learning, critical thinking**)

- Refer to page 167 for a group activity.
- Have learners form a big circle and perform the group activity. (**collaborative learning**)

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

- Present 3 repeating element sound pattern: jump, clap, jump

**High Ability Learners**

- Move forward one, move backward two, move forward three .... up to nine (9)

**Assessment for Learning**

Refer learners to page 173 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 to Let us learn: 2, page 173 of the Learner's Book. Go through the activity with learners.

### Review Exercise

- Form groups of fives. Give whistle to each group and they play "peel, peel clap, peel, peel clap"
- Encourage them to come up with their own action patterns and play.

### Assessment for Learning

Refer learners to page 174 to do the activity. They work in pairs.

### Suggested Homework

Learners create their own action patterns and come to teach the whole class the next day.

**Module 4: Error 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. 2 is repeating twice so one is an error.

**Let us Learn**

- Call 8 learners (5 boys and 3 girls) in front. Let them line up as : boy girl, boy girl, boy, boy, boy girl.
- Learners identify the error.
- Arrange these: pencil eraser pen, pencil eraser pen, pen pen eraser. Learners identify the error.
- Refer learners to page 175.
- Learners perform the action there and identify that there are two squats there which is an error.
- In the second exercise, learners look at the shape patterns critically and identify that the triangle there 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 identify them.

**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; 798, 798, 789, 879
- Refer learners to page 176 of the Learner’s Book. Go through the 3 exercises there and learners 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.

**High Ability Learners**

Working in pairs, let learners identify the errors.

1 908, 908, 890

2 779, 779, 977, 779

3  $\times \times \Sigma$   $\times \times \Sigma$   $\times \Sigma \times$   $\times \times \Sigma$

**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 collect 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 do clap, jump, squat.

**Find Out**

Refer to page 179. 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: 1 boy, 1 girl and 1 boy
- Write 1 in front of the boys and 2 in front of the girl. That is 1 2 1.
- Place a rectangle shape behind the girl and square shapes behind the boys.
- 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 triangle 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 to Let us learn on page 179, go through the patterns and alternative patterns with them.
- Present this activity with different shapes, numbers, sound and action.

**Review Exercise**

Learners form a big circle in the classrooms, 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 classroom

### Starter

Learners sing the song "Kro, kro Hee Hee Krohiko"

### Find Out

Refer learners to page 181. They study the picture and explain what they see. Deduce from them the name, that is "Kente cloth". Let them tell you where they have seen the item before. What can it be used for?

It is used for special occasions like weddings.

Have they 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 in the classroom, let learners draw any pattern they saw.
- Arrange the learners in a nice 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 arrangement 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 page 181 of the Learner's Book. Lead the whole class to try and arrange the class setting shown in the picture.
- On page 176 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

Create and make any pattern of your 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 I: Naming and describing 2D 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 by their names; describe 2D shapes using their attributes.

### Essential for Learning

Learners know the basic 2D shape.

### 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

Pupils 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 and task them to do some tracing activities. (**collaborative learning**)
- 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.

- 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 the name.

#### 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. (*collaborative learning*)
- Present each group with a cut-out triangle and a 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.
- Direct learners to the **Let us Learn: 2** and discuss the attributes of 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 182 of the Learner's Book.

**Lesson 3: Attributes of a square****Let us Learn**

- Use learners' groups from previous lesson. (*collaborative learning*)
- Present each group with a cut-out square and a 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.
- Direct learners to the **Let us learn: 2** 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. (*collaborative learning*)
- Present each group with a cut-out rectangle and 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.
- Direct learners to the **Let us learn 2** and discuss the attributes of 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 exercise 1, question 3 on page 190 of the Learner's Book.



**Lesson 5: Attributes of a circle****Let us Learn**

- Use learners' groups from previous lesson. (**collaborative Learning**)
- Present each group with a cut-out circle and criteria to talk about the circle.
- Criteria:
  - Name
  - Number of sides
  - Straight or curved sides
  - Number of corners
- Give groups time to present work to class.
- Direct learners to **Let us Learn: 2** section 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**

Ask learners to draw all shapes covered in this module.

**Suggested Homework**

Complete the table

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 need to have experience with identifying 2D shapes; count in 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 pupils. Pupils 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 section in the Learner's Book.
- Point to the solid shapes and drill the names with them.
- Put learners into small groups of about 5 or 7. 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 to shapes in the objects.

**High Ability Learners**

- Task learners to differentiate among the 2D shapes found in the 3D objects.

**Assessment of 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 group to make presentation on their objects to the class using the criteria.  
**(justification of ideas)**
- Criteria:  
name  
roll/not roll  
flat face/curved face  
number of faces
- 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. 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 and criteria to describe them. Learners also identify objects that are considered 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

Draw a cube and cuboid for learners to tell you 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 object.
- Task group to make presentation on their objects to the class using the criteria.  
**(justification of ideas)**
- Criteria :  
name  
roll/not roll  
flat face/curved face  
number of faces
- 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 and criteria to describe them. Learners also identify objects that are considered 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

Refer learners to page 194 of their learners’ book for exercise.

## 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. **(justification of ideas)**
- Criteria:
  - name
  - roll/not roll
  - flat face/curved face
  - number of faces
- 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 are considered 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

Refer learners to page 195 of their learners’ book for exercise.

## 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 fold” 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.
- 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 a blindfold. 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 are able to 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 and task them to trace given items such as match-box, milk cans, coin, chocomilo etc. (**collaborative learning**)
- 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, rhombus and hexagon)
- Using the same groups, task learners to identify objects in and out of the class and tell the 2D shape in it.

- Go through the activities in Let us learn: 1, page 196 with learners.

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

- Present learners with shapes to tell the name.

**High Ability Learners**

- Task learners to tell the shape they see in a given 3D. For example: what shape is in an exercise book? Ans. rectangle

**Assessment for Learning**

Refer learners to Exercise 1 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 shape and some criteria to use to talk about the shape.  
**(Collaborative learning)**
- Task group to make presentation on their shape to the class using the criteria.  
**(justification of ideas)**
- Criteria:
  - name
  - number of sides
  - type of face
  - number of corners
- Encourage other learners to ask questions.
- Direct learners to **Let us Learn: 2** in the Learner's Book 1. Lead the class to identify the shapes in the 3D objects.

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

- Present learners with 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 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 hexagons?
3. How many corners are in a rhombus?

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, Let us learn. Go through the activity with learners.

**Review Exercise**

Refer learners to page 192 for an activity.

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

- Task learners to make a new shape from a different shape.

**High Ability Learners**

- 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 picks someone. 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. (**collaborative learning**)
- Task learners to draw lines to make 2D shapes.

### Review Exercise

#### Differentiated Lessons

##### Low Ability Learners

- Task learners to make a new shape from a different shape.

##### High Ability Learners

- 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, 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 Learner's Book 1.

**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. (**collaborative learning**).
- 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.
- Refer learners to page 201. Go through the activities in Let us learn with them.

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

- Task learners to match given solid shapes.

**High Ability Learners**

- Task learners to match given solid shapes.

**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 picks someone. 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.  
**(collaborative learning)**
- Task learners to match the shapes using colour.
- Task learners to draw to match to a given shape.

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

- Task learners to draw a given shape.

**High Ability Learners**

- Task learners to draw to match to a given shape.

**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 2D shapes.

**Essential for Learning**

Learners are able to identify 2D shapes and name them.

**New words**

Attribute, triangles, rectangles, squares, circles.

**Resources**

Sheets of paper, colour pencil, cut-out 2Ds, 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 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. (*collaborative learning*)

- 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.
- Go through the activities on page 204 (Let us learn) with learners. Let them identify the shapes and once that are the same.

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

- Task learners to match given plane shapes.

**High Ability Learners**

- Task learners to match given plane shapes.

**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.

Pick 2 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. (**collaborative learning**)
- Task learners to match the shapes using colour.
- Task learners to draw to match to a given shape.

### Review Exercise

#### Differentiated Lessons

##### Low Ability Learners

- Task learners to draw to match to a given shape.

##### High Ability Learners

- Task learners to draw to match to a given shape.

#### 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.
2. Colour the same shapes with the same 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 I: 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 where the two objects are, tell the position of objects.

### Essential for Learning

Learners have experience with identifying 2Ds and 3Ds and can read four to five letter words.

### New words

Under, below, above, beside, places, behind.

### Resources

Tennis balls, box, books, pencils, number chart, etc.

Number of Lessons **2**

## Lesson 1: Identify 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. Pupils 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 balls
- Direct learners to the Let us Learn section in the Learner's Book.
- Drill the new words with them. And lead

them to identify the position of the colours.

- Put learners into small groups of about 5 or 7.
- Tell the learners: There is a box and a small ball. (Refer to page 201 of the Learner's Book)
- Guess! Where is the ball? (**critical thinking**)
- Group discuss and select a leader to defend their answer. (**collaborative learning and leadership skills**)
- Allow learners time to present their findings quickly to the class.
- Hold a whole class activity as follows:  
Point to a learners  
Ask learners around to describe their positions in relation to the learner chosen.
- Refer learners to Let us learn: 1, page 209 of the Learner's Book. Go through the activity with them.

### Review Exercise

### Differentiated Lessons

#### Low Ability Learners

- Learners to identify the position of objects 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 1 on page 211 of the Learner's Book for exercise.

## Lesson 2: Identify the position of objects (2)

### Let us Learn

- Revise learners' knowledge on describing positions.
- Engage learners to 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.

- 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. (**collaborative learning**)
- Encourage learners to use the appropriate language to describe the position of the numbers.
- Allow learners time to present their findings quickly to the class.

### Review Exercise

#### Differentiated Lessons

##### Low Ability Learners

- Learners to identify the position of objects 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 220 and 385.

E.g. 36 is two places below 16.

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 I: 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 are able to count in 1s and compare objects.

**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 length****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 a 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 section in the Learner's Book.
- Drill the new words with them. 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.
- Show learners pictures of measuring items with matchsticks and paper clips. Learners to tell how many match sticks or paper clips measure the item.
- Present each group with pairs of objects to compare and record which is longer/taller. (*collaborative learning*)
- Allow learners to make presentation of their results to the class and justify their answers.
- Refer learners to Let us learn: 1. Go through the exercise with them.

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

- Learners to compare objects and tell which is longer or shorter.

**High Ability Learners**

- Task learners to select the best among given measuring items to measure a given object. E.g. to measure the cupboard, would 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 a 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

- Use learners’ groups from previous lessons.
- Present them with pencils, matchsticks, paper pins, 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*)
- Task groups to go out of the class to measure items and record their results.
- Refer to Let us learn: 2 on page 215 of the Learner’s Book. Go through the activity with learners.

### Review Exercise

#### Differentiated Lessons

##### Low Ability Learners

- Learners to tell how many pencils or measure an item.

##### High Ability Learners

- Learners to tell which item will be the best for measuring a particular object and state why.

#### Assessment for Learning

Refer learners to exercise 2 on page 217 of the Learner’s Book for exercise.

#### Suggested Homework

1. 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

2. Tell which of these items you would use to measure:
  - a. Matchsticks
  - b. pencil
  - c. paper clip
  - d. 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 mass, Order the weight of objects.

**Essential for Learning**

Learners need to: be able to count in 1s; compare and measure the length of objects.

**New Words**

weight, measure, heavy, heavier, light, lighter.

**Resources**

apples, pineapples, watermelons, books, pencils 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 the **Let us Learn** section in the Learner's Book.
- Drill the new words with them. And lead them to compare the mass of the objects using the correct language. E.g. "the melon is heavier than the apple".
- Display an apple, watermelon, lime, pencil and straw.

- Task learners to pick up the items in 2s, then compare and record which of the two items they feel its heavier. (**collaborative learning**)
- 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**)
- Discuss the activities in the Learner's Book. Encourage learners to use the appropriate language.
- Do a whole class activity:  
Put pairs of items together and ask learners to tell which is heavier/lighter/same.

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

- Learners to compare objects and tell which is heavier or lighter or same.

**High Ability Learners**

- Task learners to arrange from heaviest to lightest when given a number of items to compare.

**Assessment for Learning**

Refer learners to exercise 1 on page 220 of the Learner's Book for exercise.

**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.

Pupils must hold up the same number of fingers, but using a different arrangement of fingers (note: the same fingers as you used).

**Let us Learn**

- Use learners’ groups from previous lesson.
- Display an apple, watermelon, lime, pencil and straw.
- Task learners to compare and record which of the items they feel is heaviest and which is lightest. (**collaborative learning**)
- Call out groups to present and justify their results. (**critical thinking**)
- Do a whole class activity:  
Call out five learners who clearly have different body weights. Call out a learner and give him/her number cards from one to five to use to order the learners from heaviest to lightest.
- Task groups to go out of the class and pick five different items and order the items according to their mass. Groups should present their results with justification. (**collaborative learning, critical thinking**)
- Refer learners to Let us learn: 2 on page 219. Go through the activity with them.

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

- Have learners order objects and tell which is heaviest and which is lightest.

**High Ability Learners**

- Tag items that look similar in shape with different masses and ask learners to order the items.

**Assessment for Learning**

Refer learners to exercise 2 on page 221 of the Learner’s Book.

**Suggested Homework**

1. Write the names of at least two items under the following headings.

Heavier	Lighter
E.g. Book	Pencil

2. 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 the capacity of containers and other containers according to their capacity.

**Essential for Learning:**

Learners need to: be able to count in 1s 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 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” page 222 of the Learner's Book.

Ask: which of the two glasses contain more wine? Why do you say so? (**justification of ideas**) Can the other glass also contain more wine?

**Let us Learn**

- Put learners into groups of about five.
- Direct learners to the Let's Learn: 1 section in 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. “container A holds more than container B. Container C is half full/empty/full”.
- 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.

**(collaborative learning)**

- Call out groups to present their results. Ask learners to select which container they would prefer to use to fill a bigger container. (**critical thinking**).
- Discuss the activities in the Learner's Book. Encourage learners to use the appropriate language.
- Hold a whole class activity: Show pairs of containers for learners to tell which of the two holds more.

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

- Learners to compare pairs of containers and tell which holds more or less.

**High Ability Learners**

- Task learners to arrange from most to least when given a number of containers to compare.

**Assessment for learning**

Refer learners to page 223 for an activity. Let them work in pairs.

Refer learners to exercise 1 on page 224 of the Learner's Book.

**Lesson 2: Ordering capacities****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 groups to present their results. Ask learners to select which container fills a bigger container faster. (*critical thinking*)
- Discuss the activities in the Learner's Book. Encourage learners to use the appropriate language.
- Hold a whole class activity:  
Put pairs of containers down and ask learners to tell which holds more/less.

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

- Have learners order containers of different sizes from 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 most to least.

**Assessment for Learning**

Refer learners to exercise 2 on page 224 of the Learner's Book.

**Suggested Homework**

1. Draw pairs of containers to show which holds more and which holds less.

Hold more	Hold less

2. 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 I: 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 them. E.g.  $2 \rightarrow 4$ ,  $5 \rightarrow 10$ ,  $1 \rightarrow 10$

**Find Out**

Refer learners to Find Out on page 228. Deduce from learners how they can sort the fruits at the page.

Banana .....9


Pineapple .....5


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 this with the fruit. E.g. Mango, apples, etc.
- Refer learners to page 228, **Let us Learn**. Have learners sort the fruit and count how many for each.

**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 more. 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 bottle caps to arrange for the boys and the girls.

**Assessment for Learning**

Refer learners to exercise 1 and 2 on pages 230 of the Learner's Book.

**Suggested Homework**

Count the number of people in your house.

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 to page 219 of Learner's Book. Learners count the number of stars, triangles and squares.
- They answer questions like:
  - \* How many 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

#### Differentiated Lessons

##### Low Ability Learners/High Ability Learners

- 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 231 to 232 of the Learner's Book.

### Suggested Homework



Count and write the number.

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 must be added to that number to make 10. E.g.  $8 \rightarrow 2$ ,  $6 \rightarrow 4$ ,  $9 \rightarrow 1$ .

**Find Out**

Refer learners to page 233 of the Learner's Book. Have learners look at the picture and tell 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.  
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.

- Refer learners to Let us Learn: 1 page 233 of the Learner's Book and go through it with them. Have them count the flowers and leaves.

**Review Exercise**

- Draw toffee, chocolate and ice cream on the board. Learners make a stroke against the sweet he/she likes.
- 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 "Make 10".

Show fingers, and learners add a number to make 10.

### Let us Learn

- Refer learners to page 234, Let us learn: 2. Let them answer the questions.
- How many learners like apples?
- Guide them to tally their favourite fruits on the board.
- Display pictures of animals on the table. Call each learner to come and pick the animal he/she likes best. They paste it against the animal they like best.  
Dog \_\_\_\_\_  
Cat \_\_\_\_\_  
Monkey \_\_\_\_\_
  - 1 How many like cats?
  - 2 How many like dog?
  - 3 How many like monkey?
- Refer learners to Exercise 2 on page 236 of the Learner's Book. Have learners answer the questions there. E.g. How many different types of fruits are there? How many people like mango?

### Assessment

Refer learners to book 1, page for exercise.

### Suggested Homework

Count and write the number of these items in your house.

- 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 14

- 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

- 35 37   39   41   43
- 26 28   30   32   34
- 47 49   51   53   55

**Exercise 2** Page

- 43 41   39   37   35
- 34 32   30   28   26
- 60 58   56   54   52

**Exercise 3** Page 24

- 60 62   64   66   68   70
- 80 82   84   86   88   90
- 90 92   94   96   98   100

**Exercise 4**

- 75 73   71   69   67   65   63  
61
- 60 58   56   54   52   50   48  
46
- 60 58   56   54   52   50   48  
46
- 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**

- 3 13   23   33   43  
53 63   73   83   93
- 50 40   30   20   10  
60 50   40   30   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. | <b>a</b> | 9  | 11 | 13 | 17 |
|    | <b>b</b> | 2  | 9  | 12 | 16 |
|    | <b>c</b> | 3  | 7  | 15 | 20 |
|    | <b>d</b> | 4  | 8  | 12 | 19 |
| 2. | <b>a</b> | 15 | 12 | 11 |    |
|    | <b>b</b> | 14 | 13 | 10 |    |

**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
  - c. 6
  - d. 8
  - e. 7
  - f. 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<br>$11 - 5 = 6$<br>or $11 - 6 = 5$   | 2. 20<br>$12 + 8 = 20$<br>or $8 + 12 = 20$             |
| 3. 4<br>$15 + 4 = 19$<br>or $4 + 15 = 19$ | 4. 9<br>$2 + 6 = 8$<br>$13 - 4 = 9$<br>or $13 - 9 = 4$ |
| 5. 9<br>$8 + 9 = 17$<br>or $9 + 8 = 17$   | 6. 8<br>$2 + 6 = 8$<br>or $6 + 2 = 8$                  |

# ANSWERS

## Module 6: Word problems (addition and subtraction)

### Exercise 1 Page 99

- 9      8      17
- 6      8      14
- 13     7      20
- 3      8      11
- 7      5      12

### Exercise 2 Page 100

- $7 - 3 = 4$
- 4
- $13 - 7 = 6$
- $9 - 6 = 3$
- $4 - 4 = 0$
- $13 - 8 = 5$

### Exercise 3 Page 101

- $7 - 3 = 4$
- $8 - 4 = 4$
- $4 + 2 = 6$
- $4 + 2 = 6$

## Module 7: Addition and subtraction facts (fluency 1)

### Exercise 1 Page 104

Write the number that is 1 more than and 1 less than

- 7      9
- 8      10
- 3      5
- 16     18
- 9      11
- 11     13

Colour the correct number and write it

- 12
- 20
- 12
- 19

### Exercise 2 Page 104

- 4
- 6
- 15
- 
- 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

- 12
- 10
- 2
- 16
- 8 squares
- 10 circles
- 2 rectangles
- 6 triangles

### Exercise 2 Page 108

Circle the number that is double the number in the box

- 12
- 4
- 2
- 6
- 10

Draw the missing circles ?

Check on learner's answers

## Module 9: Addition and subtraction facts (fluency 3)

### Exercise 1 Page 110

- 25 in red
- 9 in green
- 10 in yellow
- 13 in blue

### Exercise 2 Page 111

- 19      5
- 38      8
- 56      25
- 91      62
- 23      16

### Exercise 3

- 25
- 50
- 22
- 13
- 18
- 31

## Module 10: Addition and subtraction facts (fluency 4)

### Exercise 1 Page 113

Fill in the missing numbers to make 5s

- 1
- 3
- 4
- 2
- 0
- 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 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  $7 + 6 = 13$
8. 8  
 $8 + 8 = 16$
9. 11  
 $11 + 9 = 20$   
or  $9 + 11 = 20$
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

- $5 + 8 = 13$
- 5
- 4

### Exercise 2 Page 131

- 5
- 10
- 18
- 20
- 3
- 8

### Module 16: Word problems involving subtraction (within 20)

#### Exercise 1a Page 133

- 4
- $6 - 3 = 3$

#### Exercise 1b Page 134

- $8 - 5 = 3$
- $12 - 5 = 7$
- $12 - 9 = 3$
- $20 - 9 = 11$
- $16 - 11 = 5$

#### Exercise 2 Page 135

- 1  $\longrightarrow$  c
- 2  $\longrightarrow$  d
- 4  $\longrightarrow$  a
- 5  $\longrightarrow$  f
- 4  $\longrightarrow$  b
- 7  $\longrightarrow$  e

### Reflection Exercise 3 Page 136

- 12
- 8
- 16
- 5
- 16
- 20
- 3
- 6
- 15, 10, 15
- 19, 10, 19
- 6, 12, 12, 1, 13
- 5, 10, 10, 4, 14

### Reflection Exercise 4 Page 137

- 16, 20      7, 11      11, 15
- 2            0            4
- a 19        b 8

- $19 - 6 = 13$
- $12 + 7 = 19$
- 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

- one-half objects ( $\checkmark$ )  $\longrightarrow$  a, d  
non one-half ( $\times$ )  $\longrightarrow$  b, c

- wholes ( $\checkmark$ )  $\longrightarrow$  e, f  
halves ( $\times$ )  $\longrightarrow$  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

- 4
- 5
- 3
- 8
- 6

#### Module 5: Number of halves in an object

##### Exercise 1a Page 151

Check on learners' answers

##### Exercise 1b Page 148

- 8                      2. 10
- 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. 20p
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




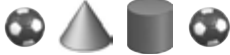

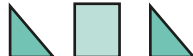
**Exercise 2** Page 168

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 1** 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**

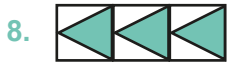
1. ✓
2. ✗
3. ✗
4. ✓
5. ✓

# ANSWERS

- Cross out last but one picture.
- Cross out first picture.

## Exercise 2 Page 178

- 3 5 1.
- 4 3 3 2.
- 4 6 2 4.
- 15 20 30 35 40 55 60.
- Circle, hexagon, square, circle hexagon
- red, green, yellow, green.



## Module 5: Representing patterns in different ways

### Exercise 1 Page 180

Fill in the spaces.

- 1 1 2 2.
  - 4 2 2 2 2 2 2.
- tap tap

Represent the following repeated patterns with other forms.

- Check on learners' answers.
- Check on learners' answers.
- Check on learners' answers.
- Check on learners' answers.
- Check on learners' answers.

## Module 6: Patterns in real life

### Exercise 1 Page 183

Check on learners' answers.

### Reflection Exercise 7 Page 184

- 123, 123, 123
- 
- jump, clap, sit, jump, clap
- 6, 4, 4, 6, 4, 2, 6, 4
- 
- Check on learners' answers.
- Check on learners' answers.
- Check on learners' answers.
- 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

- Check on learners' answers.
- a triangle 3.a rectangle  
b 3 sides 3 corners b 4 sides 4 corners

#### Exercise 2 Page 191

Look at the two pictures above

- A 1 B 1
- A 3 B 0
- A 2 B 2
- A 3 B 2
- 2
- 3
- 4
- 5

### Module 2: Naming and describing 3D objects

#### Exercise 1 Page 194

- Check on learners' answers
- cylinder cube sphere

#### Exercise 2 Page 195

Check on learners' answers

### Module 3: Identifying 2D shapes in 3D objects

#### Exercise 1 Page 198

- rectangle
- rectangle/triangle
- circle
- rectangle
- circle
- triangle
- triangle
- rectangle
- 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

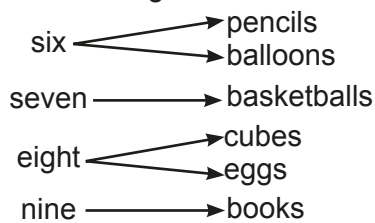
**Trial 1** Page 2

- 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



**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 37, 38, 39, 40, 41, 42  
 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

**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

**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
2	11	12
3	6	7
4	17	18
5	19	20

**Trial 2** Page 36

1	one more	one less
	17	16
2	one more	one less
	76	75
3	one more	one less
	53	52
4	one more	one less
	50	49
5	one more	one less
	51	50
6	one more	one less
	100	99

**Trial 4**

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 → 1 | b → 2 | c → 3 |
| 2 | a → 1 | b → 2 | c → 3 |
| 3 | a → 3 | b → 1 | c → 2 |
| 4 | a → 3 | b → 1 | c → 2 |
| 5 | a → 3 | b → 1 | c → 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 59

- 1  $13 - 4 = 9$                       2  $15 + 4 =$   
19
- 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  $12 + 3 = 15$                     4  $16 + 4 = 20$   
 $15 - 3 = 12$                      $20 - 16 = 4$   
or  $15 - 12 = 3$                 or  $20 = 4 = 16$
- 5  $5 + 8 = 13$                     6  $10 - 8 = 2$   
 $13 - 8 = 5$                      $8 + 2 = 10$   
or  $13 - 5 = 8$                 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 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

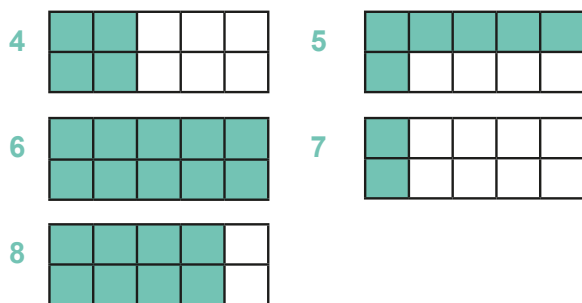
### Trial 2 Page 72

- 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

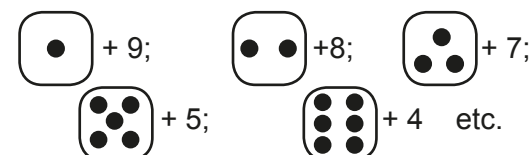
1 4    2 3    3 5

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 8    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)

$$1 + 9 + 5 = 15; \quad 5 + 2 + 8 = 15;$$

$$3 + 5 + 7 = 15 \quad 4 + 6 + 5 = 15;$$

$$5 + 5 + 5 = 15; \quad 9 + 5 + 1 = 15$$

$$2 + 5 + 8 = 15 \quad 10 + 0 + 5 = 15$$

$$0 + 5 + 10 = 15$$

**Trial 3** Page 82

<b>1</b>	$7 + 6 = 13$	<b>2</b>	$8 + 9 = 17$
	Double 6 = 12		Double 8 = 16
	$12 + 1 = 13$		$16 + 1 = 17$
<b>3</b>	$4 + 6 = 10$	<b>4</b>	$7 + 8 = 15$
	Double 5 = 10		Double 7 = 14
	$10 + 0 = 10$		$14 + 1 = 15$
<b>5</b>	$4 + 9 = 13$	<b>6</b>	$7 + 6 = 13$
	Double 4 = 8		Double 6 = 12
	$8 + 5 = 13$		$12 + 1 = 13$

**Module 13: Subtraction facts within (strategy 1)****Trial 1** Page 83

<b>1</b>	8	<b>2</b>	8	<b>3</b>	5	<b>4</b>	9
<b>5</b>	7						

**Trial 2** Page 84

<b>1</b>	11	<b>2</b>	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

<b>3</b>	8	<b>4</b>	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

<b>5</b>	14	<b>6</b>	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

<b>1</b>	5	<b>2</b>	9	<b>3</b>	9	<b>4</b>	15
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**Module 14: Subtraction facts within 20 (strategy 2)****Trial 1** Page 86

<b>1</b>	$4 - 1 = 3 \rightarrow 3 + 1 = 4$
<b>2</b>	$8 - 3 = 5 \rightarrow 5 + 3 = 8$
<b>3</b>	$14 - 7 = 7 \rightarrow 7 + 7 = 14$
<b>4</b>	$11 - 9 = 2 \rightarrow 2 + 9 = 11$

**Trial 2** Page 86

<b>1</b>	$2 + 3 = 5$	or	$3 + 2 = 5$
<b>2</b>	$8 + 4 = 12$	or	$4 + 8 = 12$
<b>3</b>	$5 + 4 = 9$	or	$4 + 5 = 9$
<b>4</b>	$9 + 5 = 14$	or	$5 + 9 = 14$
<b>5</b>	$6 + 9 = 15$	or	$9 + 6 = 15$

**Trial 3** Page 87

<b>1</b>	4	<b>2</b>	6	<b>3</b>	9
<b>4</b>	11	<b>5</b>	10	<b>6</b>	7
<b>7</b>	$20 - 7 = 13$	<b>8</b>	$16 - 9 = 7$		
	$7 + 13 = 20$		$9 + 7 = 16$		
<b>9</b>	$19 - 6 = 13$	<b>10</b>	$10 - 8 = 2$		
	$6 + 13 = 19$		$8 + 2 = 10$		

**Module 15: Word problems involving addition (within 20)****Trial 1** Page 88

<b>1</b>	$7 + 2 = 9$	<b>2</b>	$2 + 1 = 3$
<b>3</b>	$7 + 3 = 10$	<b>4</b>	$4 + 5 = 9$

**Trial 2** Page 89

<b>1</b>	$4 + 5 = 9$	<b>2</b>	$8 + 9 = 17$
<b>3</b>	$8 + 12 = 20$	<b>4</b>	$7 + 5 + 3 = 15$

**Trial 3** Page 90

<b>1</b>	$2 + 2 = 4$	<b>2</b>	$2 + 3 = 5$
<b>3</b>	$6 + 8 = 14$	<b>4</b>	$10 + 10 = 20$

**Module 16: Word problems involving subtraction (within 20)****Trial 1** Page 91

<b>1. 1</b>	<b>2</b>	$13 - 5 = 8$	<b>3</b>	$9 - 5 = 4$
<b>4.</b>	$4 - 2 = 2$			

**Trial 2** Page 92

<b>1</b>	7	<b>2</b>	1	<b>3</b>	11	<b>4</b>	5
----------	---	----------	---	----------	----	----------	---

**Trial 3** Page 93

<b>1</b>	$10 - 5 = 5$
<b>2</b>	$14 - 8 = 6$ (6 bananas)
<b>3</b>	$10 - 4 = 6$ (Akuvu is 6 years old).
<b>4</b>	$13 - 7 = 6$ (6 were not wearing spectacles)
<b>5</b>	$15 - 7 = 8$ (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**

- 1 Cross out (×) the 5<sup>th</sup> flower.  
 2 Cross out the 5<sup>th</sup> 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

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- 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.

Each lesson plan follows a highly effective lesson structure based on a '**Big idea**', providing an engaging, exciting theme which is endorsed in a real-life context.

The series is designed to ensure that the core values (core competencies) that epitomise the Standards-based curriculum are imbued in learners.

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The series consists of a Learner's Book, Workbook and Teacher's Guide for each stage.

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