



GHANA EDUCATION SERVICE

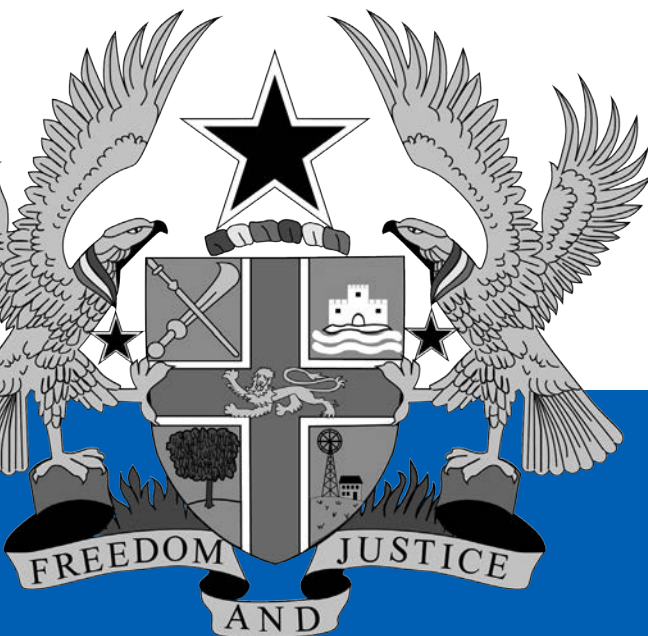
LEVEL

3

Differentiated Learning (DL)

*Mathematics Teachers Guide
for Lower Primary*

Basic 1~3



NOVEMBER, 2020

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TABLE OF CONTENTS

Section	Page
<i>Acknowledgement.....</i>	<i>vi</i>
<i>Foreword.....</i>	<i>vii</i>
<i>List of Abbreviations.....</i>	<i>viii</i>
<i>Differentiated learning instructional materials development team.....</i>	<i>ix</i>
<i>Introduction To Differentiated Learning (DL).....</i>	<i>xi</i>
Module 3	1
Module 3 Week One (Lesson 1).....	2
Module 3 Week One (Lesson 2).....	4
Module 3 Week Two (Lesson 1).....	6
Module 3 Week Two (Lesson 2).....	8
Module 3 Week Three (Lesson 1).....	10
Module 3 Week Three (Lesson 2).....	12
Module 3 Week Four (Lesson 1).....	14
Module 3 Week Four (Lesson 2).....	16
Module 3 Week Five (Lesson 1).....	18
Module 3 Week Five (Lesson 2).....	20
Module 3 Week Six (Lesson 1).....	22
Module 3 Week Six (Lesson 2).....	24
Module 3 Week Seven (Lesson 1).....	26
Module 3 Week Seven (Lesson 2).....	28
Module 3 Week Eight (Lesson 1).....	30

Module 3 Week Eight (Lesson 2)..... 32

Module 4 35

Module 4 Week One (Lesson 1)..... 36

Module 4 Week One (Lesson 2)..... 38

Module 4 Week Two (Lesson 1)..... 40

Module 4 Week Two (Lesson 2)..... 42

Module 4 Week Three (Lesson 1)..... 44

Module 4 Week Three (Lesson 2)..... 46

Module 4 Week Four (Lesson 1)..... 48

Module 4 Week Four (Lesson 2)..... 50

Module 4 Week Five (Lesson 1)..... 52

Module 4 Week Five (Lesson 2)..... 54

Module 4 Week Six (Lesson 1)..... 56

Module 4 Week Six (Lesson 2)..... 58

Module 4 Week Seven (Lesson 1)..... 60

Module 4 Week Seven (Lesson 2)..... 62

Module 4 Week Eight (Lesson 1)..... 64

Module 4 Week Eight (Lesson 2)..... 66

Module 5 69

Module 5 Week One (Lesson 1)..... 70

Module 5 Week One (Lesson 2).....	72
Module 5 Week Two (Lesson 1).....	74
Module 5 Week Two (Lesson 2).....	76
Module 5 Week Three (Lesson 1).....	78
Module 5 Week Three (Lesson 2).....	80
Module 5 Week Four (Lesson 1).....	82
Module 5 Week Four (Lesson 2).....	84
Module 5 Week Five (Lesson 1).....	86
Module 5 Week Five (Lesson 2).....	88
Module 5 Week Six (Lesson 1).....	90
Module 5 Week Six (Lesson 2).....	92
Module 5 Week Seven (Lesson 1).....	94
Module 5 Week Seven (Lesson 2).....	96
Module 5 Week Eight (Lesson 1).....	98
Module 5 Week Eight (Lesson 2).....	100
Activity Book	102
Mental Maths Activities	153
Glossary	154

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One purpose of this programme is to ensure that Ghanaian learners have the required skills to make them useful citizens to the Ghanaian society and the world at large. It is always important to remember that we reach the Ghanaian child through the teacher. So our commitment to support teacher development and the education system should be targeted at the teacher and learner.

FOREWORD

The Differentiated Learning (DL) programme seeks to give remediation to learners in Ghanaian primary schools by embedding teacher-led differentiated learning within the existing government structure. The programme focuses on equipping teachers with the requisite knowledge and skills to be able to support Basic Two to Basic Six learners who are struggling with English Language and Mathematics. It is also to help learners acquire basic skills in these subjects.

This is achieved by developing differentiated learning instructional materials and training teachers to teach learners at their level to reduce the gap between their knowledge and the learning standards of the National Council for Curriculum and Assessment (NaCCA) curriculum for literacy and numeracy.

The Ministry of Education (MoE) and the Ghana Education Service (GES) are grateful to UNICEF and IPA for this innovative approach to equip teachers to teach at the level of the learner. This will help learners in the targeted grades who are performing below their grade levels in English and Mathematics acquire the needed foundational skills to enable them to perform at grade level.

.....

Prof. Kwasi Opoku-Amankwa
(Director-General, Ghana Education Service)

LIST OF ABBREVIATIONS

BED	Basic Education Division
DL	Differentiated Learning
GALOP	Ghana Accountability for Learning Outcomes Programme
GES	Ghana Education Service
IPA	Innovations for Poverty Action
MoE	Ministry of Education
NaCCA	National Council for Curriculum and Assessment
NASIA	National Schools Inspectorate Authority
NTC	National Teaching Council
RPK	Relevant Previous Knowledge
STARS	Strengthening Teacher Accountability to Reach all Students
UNICEF	United Nations International Children's Emergency Fund

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INTRODUCTION TO DIFFERENTIATED LEARNING (DL)

DL is a programme that seeks to bridge the learning gaps among learners by creating opportunities for learners to learn at their pace. The programme provides remediation for learners who are lagging on their grade level proficiency while giving opportunity to those who are at par with the grade level curriculum to learn at a different pace to improve their literacy and numeracy skills. DL is delivered for English Language and Mathematics. DL is a holistic approach that helps to improve foundational skills.

Implementing DL in schools begins with assessing learners and grouping them into three different learning ability levels and teaching them according to those levels for 1-hour in a day, 2-hours in a week for a subject (English/Mathematics) and 8 weeks in a term.

Learners' proficiency levels are monitored over time and wherever they show signs of improvement, they are re-assessed and placed at higher levels where necessary. This means that at every point in time, learners are given the opportunity to learn at their own level and not at the grade level.

More information about the classroom methodology, teaching approach/ delivery processes as well as resources that supports implementation of DL in schools are provided in the DL Implementation Guide & Resource Packet.

Overview of the DL Mathematics Teachers Guide and Activity Book (TG)

The DL Teachers Guide provides the approaches and methods to be used in presenting the DL lesson and the corresponding activities that are expected to be performed in a DL class. The English Teachers guide for each level has 16 lessons for each term (2 lessons per week expected to be taught over 2 days per week and 8 weeks per term). Each lesson lasts for one hour a day.

The teacher has the flexibility to manage the time to cover all aspects of the lesson. At each level, the Teachers Guide is intended to assist the teacher to identify and engage underperforming learners in a variety of ways using the materials so that Learners can improve on their literacy and numeracy skills. The TG also outlines activities for advance learners (learners who are at par with the grade level curriculum).

For each DL class, the lessons must involve **whole class demonstration activities, pairs/ group activities, and individual activities**. There are instructions for directing teachers to do this. The Activity Book contains a detailed explanation of language games and strategies that have been used in the teacher's guide.

Module 3

(Eight Week's Lessons)

Module 3 - Week One (Lesson 1)



Big Idea

Counting and representing number quantities



Learning Outcomes

Count quantity of objects between 0 and 100

Identify and recognize numbers between 0 and 100

Read numbers/numerals between 0 and 100



Key Words

Number, how many, bundles, tens, ones



Materials

Countable objects (straws/sticks/bottle caps, pebbles, beads, beans), strings or rubber bands, small transparent containers, small sacks and number cards

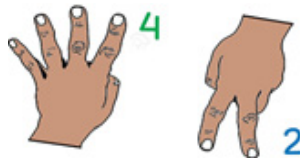




Teaching Procedure

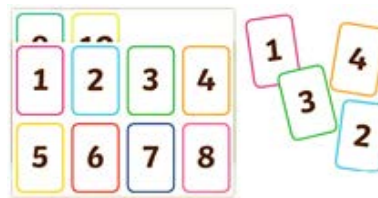
Mental Activity (5 minutes)

Learners play "How many fingers up/down" (M9)



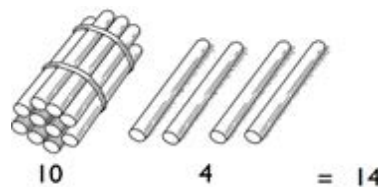
Reinforcement (5 minutes)

Shuffle number cards 1 - 20 for learners to pick and rearrange to form a sequence.



Learning Activity (25 minutes)

Learners make bundles and loose ones to represent a given number. (Activity 1C, Step 1)



Reflection/Plenary

Engage learners with reflective questions.

Self-Practice

Refer to workbook page.

Module 3 - Week One (Lesson 2)



Big Idea

Counting, representing and identifying Numbers (1 – 100)



Learning Outcomes

Count quantity of objects between 0 and 100

Identify and recognize numbers between 0 and 100

Read numbers/numerals between 0 and 100



Key Words

Count, number, numeral, number name, count forwards, and backwards,



Materials

Number chart (1-100) and number cards (1- 100)

Numbers 1-100									
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





Teaching Procedure

Mental Activity (5 minutes)

Learners play “Flipping floppy fingers” with sum within 20 (M...)

Reinforcement (5 minutes)

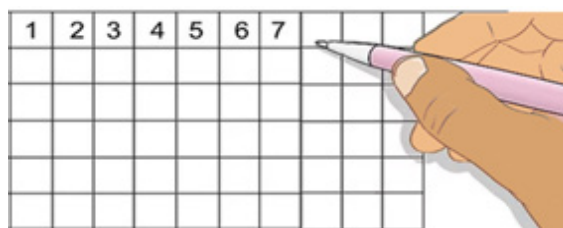
Say a number and learners mention “How many tens and how many ones”.

Learning Activity (25 minutes)

Display the number chart and have learners practice number reading from the number chart. (Activity 1C, Step 4)

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

Learners create the number chart (1 – 100) at the inside back cover of their jotters and practice reading.



Reflection/Plenary

Engage learners with reflective questions.

Self-Practice

Refer to workbook page.

Module 3 - Week Two (Lesson 1)



Big Idea

Place value of 2-digit numbers.



Learning Outcomes

Tell the place value of numbers up to 2-digits



Key Words

Ones, tens, place, digit,



Materials

Straws/sticks, place value frame and place value mat

PLACE VALUE CHART	
Tens	Ones





Teaching Procedure

Mental Activity (5 minutes)

Learners play "Thinking of a number"



Reinforcement (5 minutes)

Learners play "Who am I?" with tens and ones.

Learners write the answers in their jotters or exercise books.

Learning Activity (25 minutes)

Learners make bundles and loose straws/sticks to represent a given number and place them at the appropriate positions on the place value mat. (Activity 2C, Step 1)

	Tens	Ones
28 =		
15 =		

Learners represent given numbers in Tens and Ones on the place value frame in their exercise books.

Reflection/Plenary

Engage learners with reflective questions.

Self-Practice

Refer to workbook page.

Module 3 - Week Two (Lesson 2)



Big Idea

Place value of 2-digit numbers.



Learning Outcomes

Tell the place value of numbers up to 2-digits



Key Words

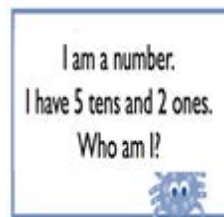
Ones, tens, place, digit,



Materials

Number wheel, place value frame, pebbles and straws/sticks.

PLACE VALUE CHART	
Tens	Ones

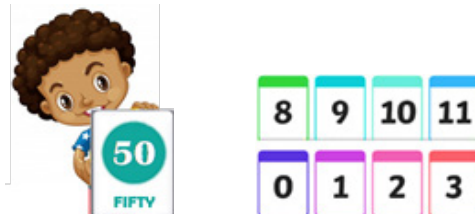




Teaching Procedure

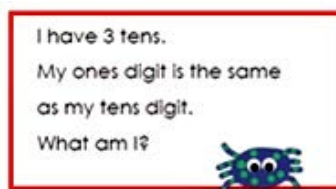
Mental Activity (5 minutes)

Learners play “say my number” using number cards



Reinforcement (5 minutes)

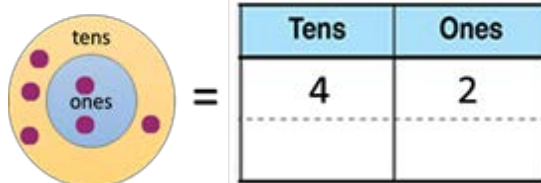
Learners play “Who am I?” with tens and ones. Learners write the answers in their jotters or exercise books.



Learning Activity (25 minutes)

Learners identify the place values of 2-digit numbers playing the “Number Wheel”. (Activity 2C, Step 2)

Learners play the “Number Wheel” to compare and order numbers.



Reflection/Plenary

Engage learners with reflective questions.

Self-Practice

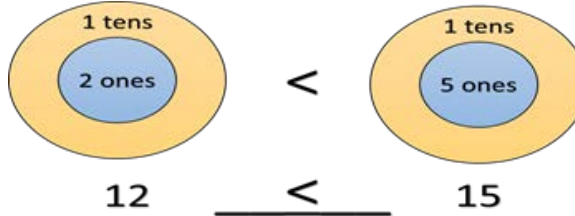
Refer to workbook page.

Module 3 - Week Three (Lesson 1)



Big Idea

Comparing 2-digit numbers



Learning Outcomes

Compare two 2-digit numbers using $<$ or $>$, $=$



Key Words

Greater than, less than, equal to,



Materials

Countable objects (straws/sticks, bottle caps, pebbles, beads, and beans), small transparent containers, small sacks, place value frame and place value mat

PLACE VALUE CHART	
Tens	Ones

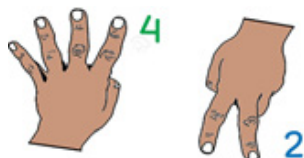




Teaching Procedure

Mental Activity (5 minutes)

Learners play "How many fingers up/down"



Reinforcement (5 minutes)

Learners skip count forward and backwards within 50.

skip counting by nines									
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

Learning Activity (25 minutes)

Learners make bundles of tens and loose straws/sticks to represent any two 2-digits given numbers and compare them using $<$ or $>$ taking into consideration tens and ones.

(Activity 3C)

Learners compare numbers using less than ($<$) and greater than ($>$). E.g. 2815 and explain the answers.



Reflection/Plenary

Engage learners with reflective questions.

Self-Practice

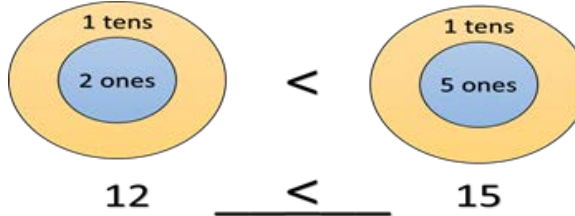
Refer to workbook page.

Module 3 - Week Three (Lesson 2)



Big Idea

Comparing 2-digit numbers



Learning Outcomes

Compare two 2-digit numbers using $<$ or $>$, $=$



Key Words

Greater than, less than, equal to,



Materials

Countable objects (straws/sticks, bottle caps, pebbles, beads, and beans), small transparent containers, small sacks, number wheel and place value mat,

PLACE VALUE CHART	
Tens	Ones

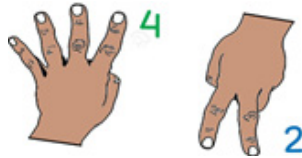




Teaching Procedure

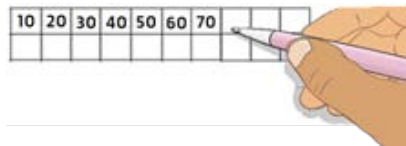
Mental Activity (5 minutes)

Learners play "How many fingers up/down"



Reinforcement (5 minutes)

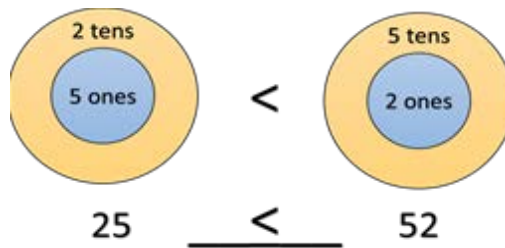
Learners write numbers in 10s from 5 to 90 sequentially.



Learning Activity (25 minutes)

Learners use "Number Wheel" to generate and compare 2-digit given numbers using $<$ or $>$ taking into consideration tens and ones. (Activity 3C Step 2)

Learners compare numbers using less than ($<$) and greater than ($>$). E.g. 25 52 and explain the answers.



Reflection/Plenary

Engage learners with reflective questions.

Self-Practice

Refer to workbook page.

Module 3 - Week Four (Lesson 1)



Big Idea

Adding 1-digit to 2-digit numbers



Learning Outcomes

Add 1-digit and 2-digit numbers and regroup



Key Words

Add, regroup, sum, count



Materials

Countable objects (straws/sticks, bottle caps, pebbles, beads, beans), strings or rubber bands, small transparent containers, addition mat and number cards

	Tens	Ones
+		
=		

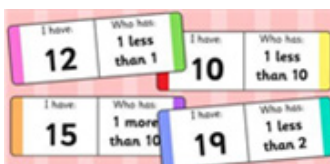




Teaching Procedure

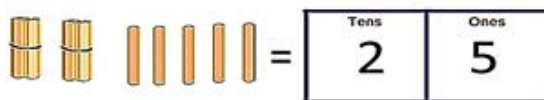
Mental Activity (5 minutes)

Learners play "One more/less, two more /less...?"



Reinforcement (5 minutes)

Give learners some straws to make bundles and loose ones between 10 and 99.



Learning Activity (25 minutes)

Learners should solve addition problems involving 1-digit with 2-digit numbers using number chart. For example $26 + 7$, $45 + 9$ etc. (Activity 4C Step 1)

100 Number Chart

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

Reflection/Plenary

Engage learners with reflective questions.

Self-Practice

Refer to workbook page.

Module 3 - Week Four (Lesson 2)



Big Idea

Adding 1-digit to 2-digit numbers



Learning Outcomes

Add 1-digit to 2-digit numbers



Key Words

Add, regroup, sum, number chart



Materials

Number chart and number cards

Numbers 1-100									
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





Teaching Procedure

Mental Activity (5 minutes)

Learners play "One more/less, two more /less...?"



Reinforcement (5 minutes)

Learners play "Who am I?" with tens and ones. Learners write the answers in their jotters or exercise books. (M7)

Learning Activity (25 minutes)

Learners should solve addition problems involving 1-digit and 2-digit numbers using "100 Number Chart" for example $45 + 31$, etc. (Activity 4C Step 2)

$$45 + 31 = 76$$

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

Reflection/Plenary

Engage learners with reflective questions.

Self-Practice

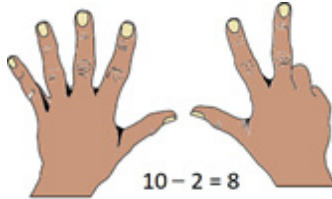
Refer to workbook page.

Module 3 - Week Five (Lesson 1)



Big Idea

Subtracting 1-digit from 2-digit number



Learning Outcomes

Subtract 1-digit numbers from 2-digit numbers to regroup



Key Words

Take away, minus, remainder, less



Materials

Countable objects (straws/sticks bottle caps, pebbles, beads, beans), small transparent containers, small sacks and subtraction mat.



	Tens	Ones
-		
=		





Teaching Procedure

Mental Activity (5 minutes)

Play “Doubles/doubles minus one” (within 10)

$$\begin{array}{|c|} \hline 3 \\ \hline \end{array} \begin{array}{|c|} \hline 3 \\ \hline \end{array} - \begin{array}{|c|} \hline 1 \\ \hline \end{array} = \begin{array}{|c|} \hline 5 \\ \hline \end{array}$$

Reinforcement (5 minutes)

Learners identify errors in “error counting” forwards and backwards (1-10) (M...)

Play “Blind number game”

Learning Activity (25 minutes)

Learners subtract 1-digit number from 2-digit numbers using the number chart. (Activity 4D, Step 1)

Example 35-4, 86-5.

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

Reflection/Plenary

Engage learners with reflective questions.

Self-Practice

Refer to workbook page.

Module 3 - Week Five (Lesson 2)



Big Idea

Subtracting two 2-digit number

$$33 - 11$$



Learning Outcomes

Subtract numbers up to 2-digit



Key Words

Take away, minus, remainder, number chart, number cards



Materials

Countable objects (straws/sticks/bottle caps, pebbles, beads, beans), small transparent containers and small sacks





Teaching Procedure

Mental Activity (5 minutes)

Learners play "One more/less, two more /less..." (M8)

Reinforcement (5 minutes)

Learners identify errors in 'error counting' forwards and backwards (1-10) (M...)

Mention a number for Learners to point to on the number chart

Learning Activity (25 minutes)

Learners should solve problems involving subtraction of 2-digit numbers from 2-digit numbers using Number Chart. For example: $28 - 15$; $84 - 33$. (Activity 4C, Step 2)

Learners demonstrate solving subtraction tasks using the "Number Chart."

$$84 - 33 = 51$$

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 Learners further problems to practice in pairs and explain their answers.

Reflection/Plenary

Engage learners with reflective questions.

Self-Practice

Refer to workbook page.

Module 3 - Week Six (Lesson 1)



Big Idea

Addition word problems.



Learning Outcomes

Model and solve addition word problems up to two 2-digit numbers



Key Words

More than, less than, same as



Materials

Countable objects (straws/sticks/bottle caps, pebbles, beads, beans), number line and number chart

Numbers 1-100									
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

Number Line

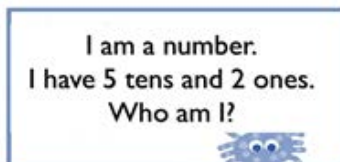




Teaching Procedure

Mental Activity (5 minutes)

Learners play "Who am I?" (1-10) (M)



Reinforcement (5 minutes)

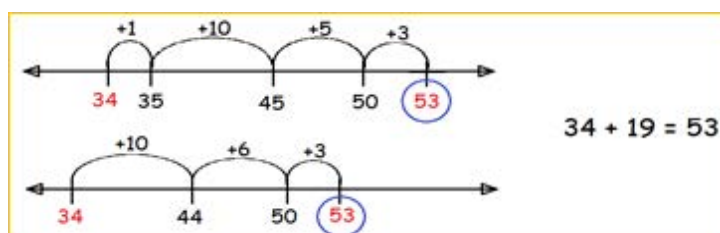
Learners play "How many tens and how many ones" (1-10) (M...)

Learning Activity (25 minutes)

Write addition word problem involving up to two 2-digit numbers on the board and have learners' model it into mathematical sentences.

For example: Kofi bought 34 wooden boards for his building, he later bought 19 more. How many boards did he buy for his building?

Have learners employ friendly jumps strategies and partial decomposition strategies to solve. (Activity 9C)



Reflection/Plenary

Engage learners with reflective questions.

Self-Practice

Refer to workbook page.

Module 3 - Week Six (Lesson 2)



Big Idea

Subtraction word problems



Learning Outcomes

Model and solve subtraction word problems up to two 2-digits numbers



Key Words

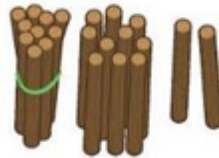
less, subtract, difference, minus, jumps, number line



Materials

Countable objects (straws/sticks/bottle caps, pebbles, beads, beans), small transparent containers, small sacks, number chart and subtraction frame

	Tens	Ones
-		
=		





Teaching Procedure

Mental Activity (5 minutes)

Learners sing a numeracy song (1-10) (M...)



Reinforcement (5 minutes)

Learners play “one more”, “one less”, “ten less, ten more” (M...)

two less		number		one more
18	←	20	→	21
	←		→	
	←		→	

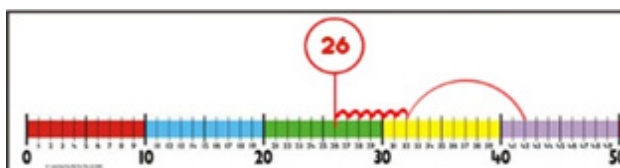
Learning Activity (25 minutes)

Write subtraction word problem involving subtracting 1-digit number from 2-digit number on the board and have learners’ model it into mathematical sentences.

Learners solve the word problems using any known strategy.
(Activity 9C)

Example:

A bus left a village for Accra with 42 learners. 16 learners alighted on the way. How many learners were left in the bus?



Have Learners solve similar problems at home and present in class?

Reflection/Plenary

Engage learners with reflective questions.

Self-Practice

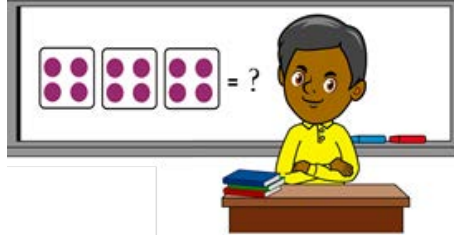
Refer to workbook page.

Module 3 - Week Seven (Lesson 1)



Big Idea

Multiplication of two 1-digit numbers



Learning Outcomes

Multiply two 1-digit numbers



Key Words

Groups, multiply, lots of



Materials

Countable objects (straws/sticks/bottle caps, pebbles, beads, beans), small transparent containers and small sacks





Teaching Procedure

Mental Activity (5 minutes)

Play “Base Ten Riddles” (M6)

Reinforcement (5 minutes)

Learners “Skip count in 2s, 3s, and 4s” (M5)

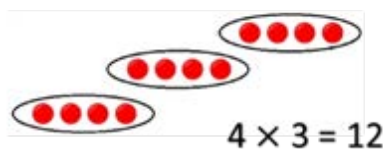
counting by fours									
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40

Learning Activity (25 minutes)

Learners multiply two 1-digit numbers using grouping, mixing sets. (Activity 10C)

Learners multiply two 1-digit numbers using ladder method
Write multiplication word problems involving two 1-digit numbers and have learners solve.

Write multiplication problems in figures and have learners create word problems for it.



Note: Allow Learners to use any of the multiplication strategies learnt to solve to show what?

Reflection/Plenary

Engage learners with reflective questions.

Self-Practice

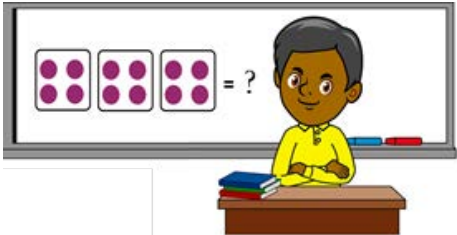
Refer to workbook page.

Module 3 - Week Seven (Lesson 2)



Big Idea

Multiplication of two 1-digit numbers



Learning Outcomes

Multiply two 1-digit numbers



Key Words

Multiply



Materials

Countable objects (straws/sticks/bottle caps, pebbles, beads, beans), small transparent containers, small sacks and multiplication chart.

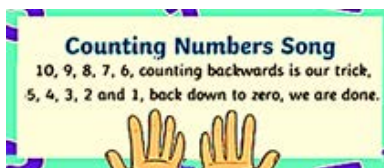




Teaching Procedure

Mental Activity (5 minutes)

Learners sing a numeracy song (M1)



Reinforcement (5 minutes)

Learners do 'finger count up to 10" (M...).



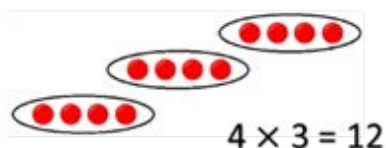
Learning Activity (25 minutes)

Learners multiply two 1-digit numbers using multiplication chart, area model. (Activity 10C)

Write multiplication word problems involving two 1-digit numbers and have learners solve.

Write multiplication sentences and have learners create word problems for it.

x	1	2	3	4	5	6
1	1	2	3	4	5	6
2	2	4	6	8	10	12
3	3	6	9	12	15	18
4	4	8	12	16	20	24
5	5	10	15	20	25	30



Reflection/Plenary

Engage learners with reflective questions.

Self-Practice

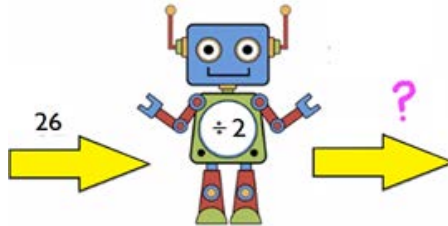
Refer to workbook page.

Module 3 - Week Eight (Lesson 1)



Big Idea

Division of 2-digit numbers by a 1-digit number



Learning Outcomes

Divide a 2-digit number by a 1-digit number



Key Words

Groups, share, how many in each group, form groups, divide



Materials

Countable objects (straws/sticks/bottle caps, pebbles, beads, beans), small transparent containers, small sacks, multiplication chart and number line

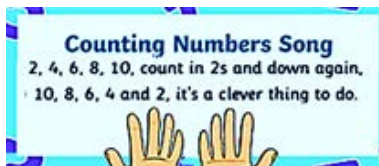




Teaching Procedure

Mental Activity (5 minutes)

Learners should sing a numeracy song (1-10) (M...)



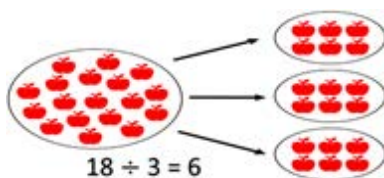
Reinforcement (5 minutes)

Learners should “Skip count backwards in 2s and 5s” from a given a number within 100.

For example: 60, 58, 56, 54, 52, 50, 48, 46, 44, 42, 40, 38, ...

Learning Activity (25 minutes)

Learners should divide a 2-digit number by a 1-digit number using the idea of sharing, groupings and repeated subtraction. (Activity 11C)



$18 - 3 = 15$	①
$15 - 3 = 12$	②
$12 - 3 = 9$	③
$9 - 3 = 6$	④
$6 - 3 = 3$	⑤
$3 - 3 = 0$	⑥

Write division problems involving two 2-digit numbers and have learners create a word sentence.

Write word problems involving division and have learners model mathematical sentence from them and solve.

Note: Allow learners to use any of the division strategies learnt to solve the division problems.

Reflection/Plenary

Engage learners with reflective questions.

Self-Practice

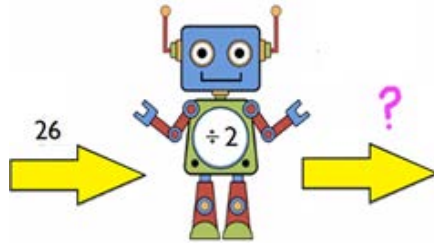
Refer to workbook page.

Module 3 - Week Eight (Lesson 2)



Big Idea

Division of 2-digit numbers by a 1-digit number



Learning Outcomes

Divide a 2-digit number by a 1-digit number



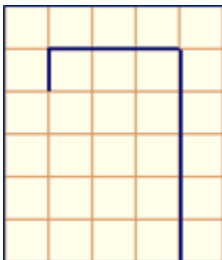
Key Words

Divide



Materials

Countable objects (straws/sticks/bottle caps, pebbles, beads, beans), small transparent containers, small sacks, multiplication chart and big seven frame



X	0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10
2	0	2	4	6	8	10	12	14	16	18	20
3	0	3	6	9	12	15	18	21	24	27	30
4	0	4	8	12	16	20	24	28	32	36	40
5	0	5	10	15	20	25	30	35	40	45	50
6	0	6	12	18	24	30	36	42	48	54	60
7	0	7	14	21	28	35	42	49	56	63	70



Teaching Procedure

Mental Activity (5 minutes)

Learners should “Skip count backwards in 2s” from a given a number less than 100 to 0.

For example: 60, 58, 56, 54, 52, 50, 48, 46, 44, 42, 40, 38, ...

Reinforcement (5 minutes)

Play “Skip count in 10s” (M5)

For example: 11, 21, 31, 41, 51, 61, 71, 81, ...

Learning Activity (25 minutes)

Learners should divide 2-digit numbers by a 1-digit number using repeated subtraction. (Activity 11C)

$18 - 3 = 15$	①
$15 - 3 = 12$	②
$12 - 3 = 9$	③
$9 - 3 = 6$	④
$6 - 3 = 3$	⑤
$3 - 3 = 0$	⑥

$$18 \div 3 = 6$$

repeated subtraction

Learners should be able to write division problems involving two 2-digit numbers and have learners create a word sentence.

Learners should be able to write word problems involving division and have learners’ model mathematical sentence and solve.

Note: Allow learners to use any of the division strategies learnt to solve the division problems.

Reflection/Plenary

Engage learners with reflective questions.

Self-Practice

Refer to workbook page.

Module 4

(Eight Week's Lessons)

Module 4 - Week One (Lesson 1)



Big Idea

Counting Numbers (1-50)



Learning Outcomes

Count objects between 0 and 100

Identify and recognise numerals between 0 and 100

Read number names of numerals between 0 and 100



Key Words

Number names, numerals, count, bundle, hundreds, tens, ones, loose, group of tens



Materials

Countable objects (straws/sticks/bottle caps, pebbles, beads, beans), strings or rubber bands, small plastic containers, small sacks and numeral cards

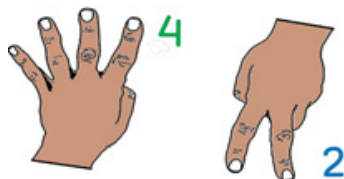




Teaching Procedure

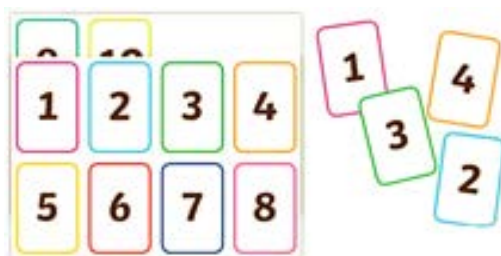
Mental Activity (5 minutes)

Learners play “How many fingers up? How many fingers down?” (M9)



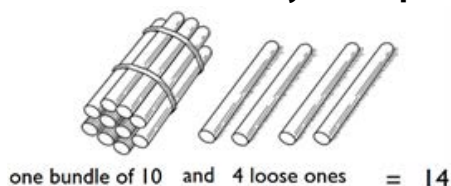
Reinforcement (5 minutes)

Shuffle numeral cards 1 - 10 for learners to pick and rearrange to form a sequence.



Learning Activity (25 minutes)

Guide learners make to bundles of tens and loose ones to represent a given number. **(Activity 1C Step 1)**



Let learners play the game “Guess my number” as an exercise **(see Activity 1C Step 2)**.

Reflection/Plenary

Engage learners in activities using reflective questions.

Self-Practice

Refer to workbook page.

Module 4 - Week One (Lesson 2)



Big Idea

Counting and Number names



Learning Outcomes

Count objects between 0 and 100

Identify and recognise numerals names between 0 and 100

Read number names of numerals between 0 and 100 in the correct order



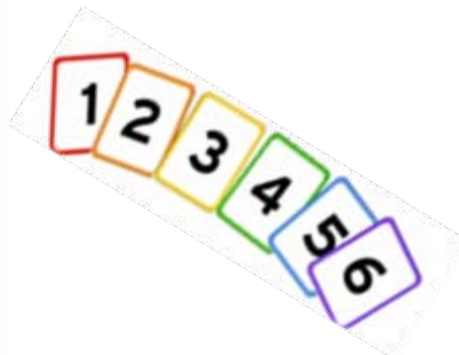
Key Words

Numeral, number name, number chart, count



Materials

Number chart (1-100) and number cards (1 – 100)





Teaching Procedure

Mental Activity (5 minutes)

Learners play “Thinking of a number?” (M1)



Reinforcement (5 minutes)

Say a number and learners mention “How many tens and how many ones”

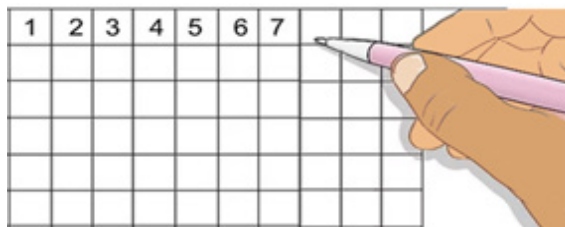
$$12 = 1 \text{ ten and } 2 \text{ ones}$$

$$44 = 4 \text{ tens and } 4 \text{ ones}$$

Learning Activity (40 minutes)

Display the number chart and have learners practice number reading from the number chart. **(Activity 2B Step 1)**

Learners create the number chart (1 – 100) at the inside back cover of their jotters to practice reading.



Reflection/Plenary

Engage learners in activities using reflective questions.

Self-Practice

Refer to workbook page.

Module 4 - Week Two (Lesson 1)



Big Idea

Place value of 2-digit numbers



Learning Outcomes

Identify the place value of a digit in a 2-digit number



Key Words

Ones, tens, place, digit, place value



Materials

Straws/sticks, place value frame and place value mat

PLACE VALUE CHART	
Tens	Ones





Teaching Procedure

Mental Activity (5 minutes)

Learners play "Thinking of a number" (M1)



Reinforcement (5 minutes)

Learners play "Who am I?" with tens and ones. Learners write the answers in their jotters or exercise books. (M7)

I am a number.
I have 5 tens and 2 ones.
Who am I?



Learning Activity (35 minutes)

Learners make bundles of ten sticks/straws and loose ones to represent a given number and place them at the appropriate positions on the place value frame/mat. (**Activity 2C Step 1**)

	Tens	Ones
28 =		
15 =		

Learners make more representations for given numbers (pictorially, symbolically and kinesthetically (use concrete objects)).

Reflection/Plenary

Engage learners in activities using reflective questions.

Self-Practice

Refer to workbook page.

Module 4 - Week Two (Lesson 2)



Big Idea

Place value of 2-digit numbers



Learning Outcomes

Identify the place value of a digit in a 2-digit number



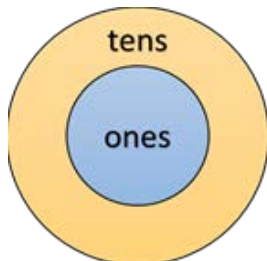
Key Words

Ones, tens, digit, how many, number wheel, place value and number cards



Materials

Number wheel, place value frame or mat, pebbles, straws, sticks and place value chart.



Tens	Ones





Teaching Procedure

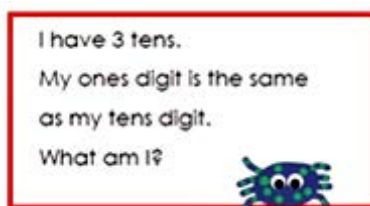
Mental Activity (5 minutes)

Learners play the game “Thinking of a number” (M1)



Reinforcement (5 minutes)

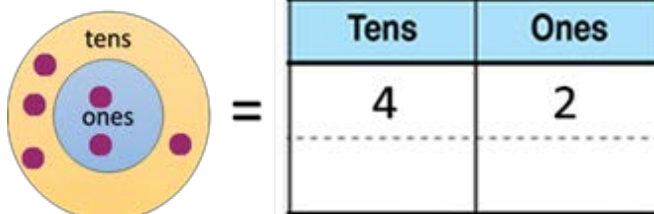
Learners play “Who am I?” game with tens and ones. Learners write the answers in their jotters or exercise books. (M7)



Learning Activity (35 minutes)

Learners identify the place values of digits in 2-digit numbers playing the “Number Wheel” game (**Activity 2C Step 2**)

Learners play the “Number Wheel” game and represent the number played in multiple ways.



Reflection/Plenary

Engage learners in activities using reflective questions.

Self-Practice

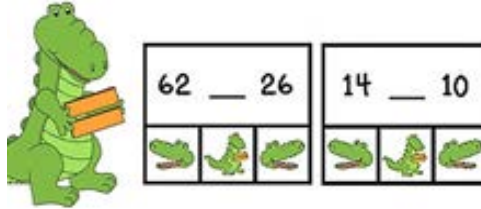
Refer to workbook page.

Module 4 - Week Three (Lesson 1)



Big Idea

Comparing 2-digit numbers using less than or greater than



Learning Outcomes

Compare given two 2-digit numbers using $<$ or $>$.



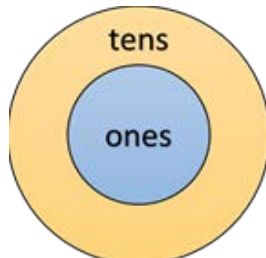
Key Words

Greater than, less than, tens, ones



Materials

Straws or sticks, place value chart and number wheel



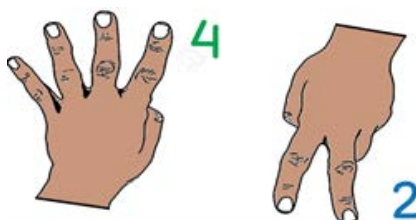
PLACE VALUE CHART	
Tens	Ones



Teaching Procedure

Mental Activity (5 minutes)

Learners play "How many fingers up? And how many down?" game (M9)



Reinforcement (5 minutes)

Learners skip count forward and backwards within 50.

skip counting by nines									
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

Learning Activity (35 minutes)

Learners make bundles of ten sticks or straws and loose ones to represent any two 2-digit given numbers, and compare them using $<$ or $>$ taking into consideration tens and ones. **(Activity 3C Step 1)**

Learners compare numbers using less than ($<$) and greater than ($>$). E.g. $28 \dots\dots\dots 15$, and explain the answers.



Reflection/Plenary

Engage learners in activities using reflective questions.

Self-Practice

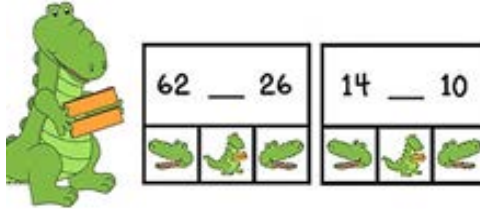
Refer to workbook page.

Module 4 - Week Three (Lesson 2)



Big Idea

Comparing 2-digit numbers



Learning Outcomes

Compare given two 2-digit numbers using $<$ or $>$ or $=$



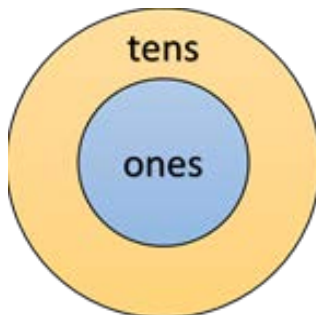
Key Words

Greater than, less than, equal to, compare numbers, order numbers,



Materials

Number wheel and place value chart



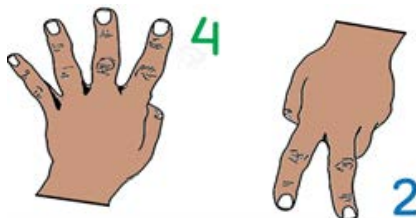
PLACE VALUE CHART	
Tens	Ones



Teaching Procedure

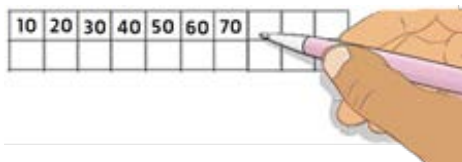
Mental Activity (5 minutes)

Learners play "How many fingers up/down" (M9)



Reinforcement (5 minutes)

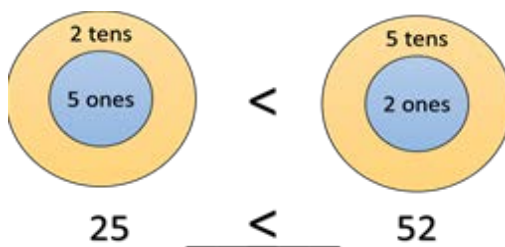
Learners write numbers in 10s from 10 to 90 sequentially.



Learning Activity (35 minutes)

Learners use "Number Wheel" to generate and compare 2-digit numbers using $<$ or $>$ taking into consideration tens and ones. **(Activity 3C Step 2)**

Learners compare numbers using less than ($<$) and greater than ($>$). E.g. 25 52 and justify the answers



Reflection/Plenary

Engage learners in activities using reflective questions.

Self-Practice

Refer to workbook page.

Module 4 - Week Four (Lesson 1)



Big Idea

Adding 1-digit numbers to 2-digit numbers



Learning Outcomes

Add 1-digit number and 2-digit number, and regroup



Key Words

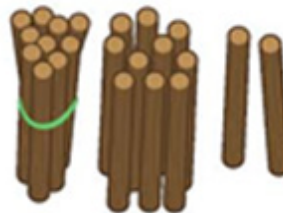
Add, regroup, sum, total altogether, how many more, tens, ones



Materials

Straws/sticks (bundles of ten and loose ones), addition mat and number cards

	Tens	Ones
+		
=		



8	9	10	11	24	25	26	27
0	1	2	3	16	17	18	19



Teaching Procedure

Mental Activity (5 minutes)

Learners play "One more or less, two more or less..." game (M8)

one less		number		one more
19	←	20	→	21
	←		→	
	←		→	
	←		→	

Reinforcement (5 minutes)

Give learners some straws to make bundles and loose ones representing numbers between 10 and 99

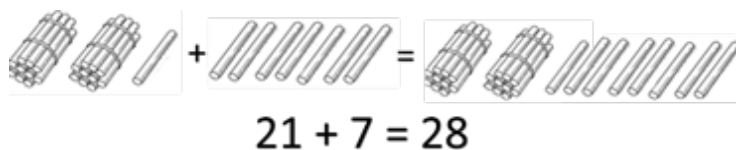


Learning Activity (40 minutes)

Learners solve addition problems involving 1-digit and 2-digit numbers using bundles of straws and loose straws on the addition frame/mat. For example, $21 + 7$, $45 + 9$

(Activity 4C Step 1)

Learners demonstrate solving addition tasks using the straws or sticks and addition frame.



Learners solve more problems in their exercise books using "Addition frame" E.g. $51 + 8$; $74 + 9$; $78 + 8$ etc.

Reflection/Plenary

Engage learners in activities using reflective questions.

Self-Practice

Refer to workbook page.

Module 4 - Week Four (Lesson 2)



Big Idea

Adding 1-digit numbers to 2-digit numbers



Learning Outcomes

Add 1-digit number and 2-digit number, and regroup



Key Words

Add, regroup, sum, total altogether, how many more, tens, ones



Materials

Number chart and number cards

Numbers 1-100										
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	

8	9	10	11
0	1	2	3
24	25	26	27
16	17	18	19



Teaching Procedure

Mental Activity (5 minutes)

Learners play “One more or less, two more or less...” game (M8)

one less		number		one more
19	←	20	→	21
	←		→	
	←		→	
	←		→	

Reinforcement (5 minutes)

Mention a number for learners to point on the number chart.

Learning Activity (40 minutes)

Learners solve addition problems involving 1-digit and 2-digit numbers using “100 Number Chart” for example $32 + 9$, $68 + 9$ etc. **(Activity 7A Step 2)**

The examples should reflect a regrouping of sums, e.g.,

$$\begin{array}{r} 68 \\ + 8 \\ \hline \end{array}$$

$$\begin{array}{r} 64 \\ + 7 \\ \hline 71 \end{array}$$

$$\begin{array}{r} 13 \\ + 9 \\ \hline 22 \end{array}$$

$$\begin{array}{r} 55 \\ + 6 \\ \hline 61 \end{array}$$

Reflection/Plenary

Engage learners in activities using reflective questions.

Self-Practice

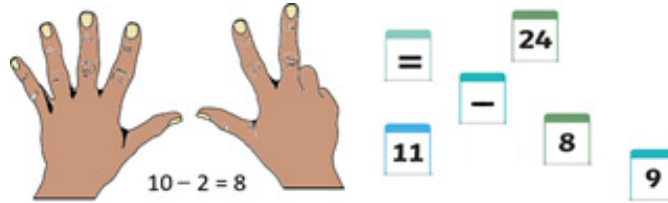
Refer to workbook page.

Module 4 - Week Five (Lesson 1)



Big Idea

Subtracting a 1-digit number from a 2-digit number



Learning Outcomes

Subtract 1-digit numbers from 2-digit numbers and regroup



Key Words

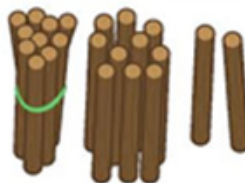
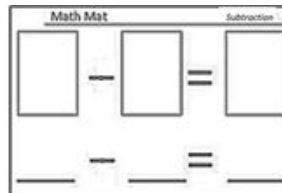
Take away, minus, remainder, how many left, how many less, tens, ones



Materials

Straws/sticks (bundles and loose ones) and subtraction mat/frame

	Tens	Ones
-		
=		





Teaching Procedure

Mental Activity (5 minutes)

Play “Doubles/doubles minus one” game (within 10)

$$3 + 3 - 1 = 5$$

Reinforcement (5 minutes)

Read backwards numbers on the number chart.

Learning Activity (35 minutes)

Learners subtract 1-digit number from 2-digit number using the subtraction frame/mat and subtraction chart.

(Activity 8A Step 2).

	Tens	Ones
	1	6
–		5
=	1	1

Reflection/Plenary

Engage learners in activities using reflective questions.

Self-Practice

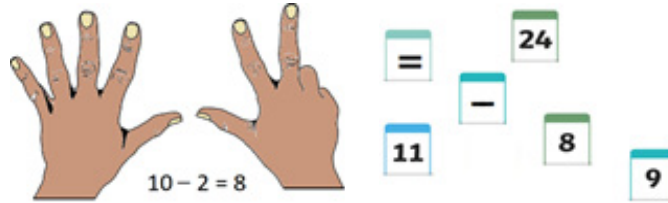
Refer to workbook page.

Module 4 - Week Five (Lesson 2)



Big Idea

Subtracting a 1-digit number from a 2-digit number



Learning Outcomes

Subtract 1-digit numbers from 2-digit numbers up to 100



Key Words

Take away, minus, remainder, subtract, how many left, how many less, tens, ones



Materials

Number chart (1-100) and number cards (1-100)

Numbers 1-100									
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

8	9	10	11
0	1	2	3
24	25	26	27
16	17	18	19



Teaching Procedure

Mental Activity (5 minutes)

Learners play “One more or less, two more or less...?” game (M8)

one less		number		one more
19	←	20	→	21
	←		→	
	←		→	
	←		→	

Reinforcement (5 minutes)

Mention a number for learners to point to on the number chart.

Learning Activity (40 minutes)

Learners solve problems involving subtraction of 1-digit numbers from 2-digit numbers using a Number Chart. For example, $18 - 5$; $35 - 9$. (**Activity 4D Step 1**)

Learners demonstrate solving subtraction tasks using the “Number Chart”

$$48 - 5 = 43$$

I	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 learners further problems to practice in pairs and explain their answers.

Reflection/Plenary

Engage learners in activities using reflective questions.

Self-Practice

Refer to workbook page.

Module 4 - Week Six (Lesson 1)



Big Idea

Solving Addition word problems



Learning Outcomes

Model and solve addition word problems up to two 2-digit numbers



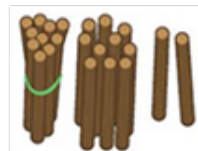
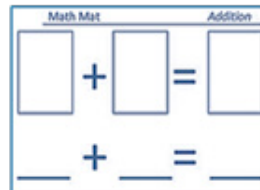
Key Words

Altogether, how many, add, how many more, tens, ones, total, sum, word problem



Materials

Straws/sticks (bundles and loose ones), addition frame and number chart.





Teaching Procedure

Mental Activity (5 minutes)

Play "Thinking of a number" (M1)



Reinforcement (5 minutes)

Play "Doubles plus one" game (M4)

$$\begin{array}{|c|} \hline 3 \\ \hline \end{array} \begin{array}{|c|} \hline 3 \\ \hline \end{array} + \begin{array}{|c|} \hline 1 \\ \hline \end{array} = \begin{array}{|c|} \hline 7 \\ \hline \end{array}$$

Learning Activity (40 minutes)

Write addition word problem involving adding 1-digit number to 2-digit number on the board and have learners model it into mathematical sentences. **(Activity 9C Step 1)**



Have learners solve the word problems using any known strategy.

For example: Akosua bought 34 wooden boards for her building, she later bought 9 more wooden boards. How many wooden boards altogether did she buy for her building?

Note: Have learners solve similar problems at home and present in class

Reflection/Plenary

Engage learners in activities using reflective questions.

Self-Practice

Refer to workbook page.

Module 4 - Week Six (Lesson 2)



Big Idea

Subtraction Word Problems



Learning Outcomes

Model and solve subtraction word problems involving two 2-digits numbers



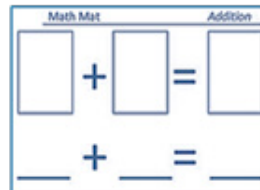
Key Words

Subtract, take-away, minus, how many left, how many less, word problem



Materials

Straws/sticks, subtraction frame or mat or chart, number chart, marbles and pebbles





Teaching Procedure

Mental Activity (5 minutes)

Play "Base Ten riddles" game (M6)

Reinforcement (5 minutes)

Play "One less, two less" game (M8)

two less	number
18 ←	20
←	
←	

one less	number
19 ←	20
←	
←	

Learning Activity (40 minutes)

Write word problems involving subtracting 1-digit number from 2-digit number on the board, and have the learners model it into mathematical sentences. Have learners solve the word problems using any known strategy.

(Activity 9C Step 1)



Example: A bus left a village for Accra with 20 learners. Six learners alighted on the way. How many learners were left on the bus?

Note: Have learners solve similar problems at home and present their answers in class.

Reflection/Plenary

Engage learners in activities using reflective questions.

Self-Practice

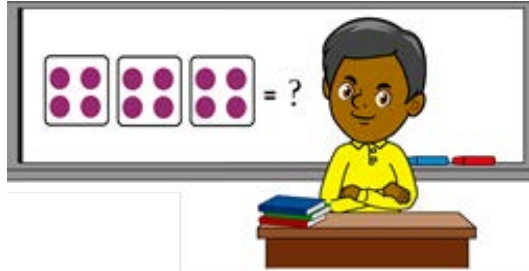
Refer to workbook page.

Module 4 - Week Seven (Lesson 1)



Big Idea

Multiplication of two 1-digit numbers



Learning Outcomes

Multiply two 1-digit numbers



Key Words

Groups, multiply, groups of, lots of



Materials

Straws/sticks, bottle caps, pebbles, marbles, beads and small empty transparent containers

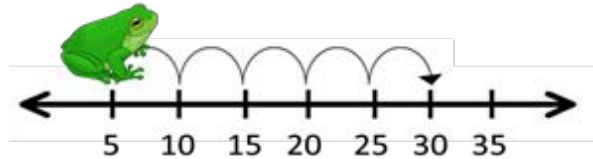




Teaching Procedure

Mental Activity (5 minutes)

Play "Skip count by 5s..." game (M5)



Reinforcement (5 minutes)

Play "Base ten riddles" game (M6)

Learning Activity (40 minutes)

Learners multiply two 1-digit numbers using grouping
(Activity 14).

Learners multiply two 1-digit numbers using ladder method
(Activity 10C Step 1).

Write multiplication word problems involving two 1-digit numbers and have learners solve them.



Write multiplication sentence in figures and have learners create word problems for it.

Note: Allow learners to use any of the multiplication strategies learnt to solve.

Reflection/Plenary

Engage learners with reflective questions.

Self-Practice

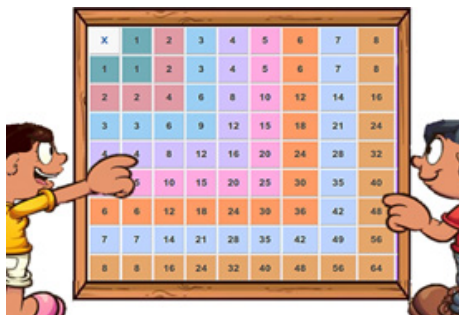
Refer to workbook page.

Module 4 - Week Seven (Lesson 2)



Big Idea

Multiplication of two 1-digit numbers



Learning Outcomes

Multiply two 1-digit numbers



Key Words

Multiply, product, groups of, count,



Materials

Multiplication chart

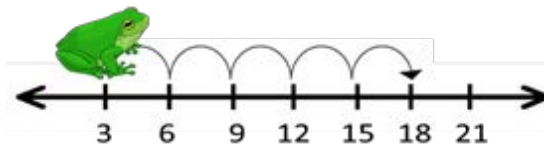
X	1	2	3	4	5	6	7	8
1	1	2	3	4	5	6	7	8
2	2	4	6	8	10	12	14	16
3	3	6	9	12	15	18	21	24
4	4	8	12	16	20	24	28	32
5	5	10	15	20	25	30	35	40
6	6	12	18	24	30	36	42	48
7	7	14	21	28	35	42	49	56
8	8	16	24	32	40	48	56	64



Teaching Procedure

Mental Activity (5 minutes)

Play "Skip count by 3s..." game (M5)



Reinforcement (5 minutes)

Play "Base ten riddles" game (M6)

Learning Activity (40 minutes)

Learners multiply two 1-digit numbers using multiplication chart (**Activity 10C**).

Write multiplication word problems involving two 1-digit numbers and have learners solve them.

Write multiplication sentences in figures and have learners create word problems for it.



Note: Allow learners to use any of the multiplication strategies learnt to solve the problems

Reflection/Plenary

Engage learners in activities using reflective questions.

Self-Practice

Refer to workbook page.

Module 4 - Week Eight (Lesson 1)



Big Idea

Division of 2-digit numbers by a 1-digit number

Sharing
Grouping



Learning Outcomes

Divide a 2-digit number by a 1-digit number



Key Words

Divide, groups of, how many, sharing, share



Materials

Straws/sticks, marbles or pebbles or bottle caps and small plastic containers

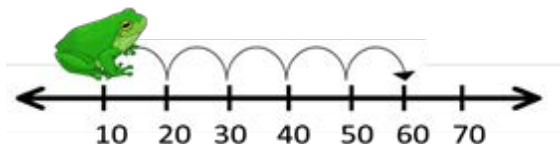




Teaching Procedure

Mental Activity (5 minutes)

Play “Skip count by 10s...” game (M5)



Reinforcement (5 minutes)

Learners do “Skip count backwards in 2s” starting from a given a number less than 100 to 0.

For example: 26, 24, 22, 20, 18, 16, 14, 12, 10, 8, 6, 4, ...

Learning Activity (35 minutes)

Learners divide a 2-digit number by a 1-digit number using the idea of sharing (**Activity 11C Step 1**)

Write word problems involving division. Have learners model the mathematical sentences and solve them.



Note: Allow learners to use any of the division strategies learnt to solve the problems.

Reflection/Plenary

Engage learners in activities using reflective questions.

Self-Practice

Refer to workbook page.

Module 4 - Week Eight (Lesson 2)



Big Idea

Division of 2-digit numbers by a 1-digit number

Sharing
Grouping



Learning Outcomes

Divide a 2-digit number by a 1-digit number



Key Words

Divide, groups of, how many, sharing, share



Materials

Straws or sticks (bundles of ten and loose ones), beads or pebbles and numeral cards or charts

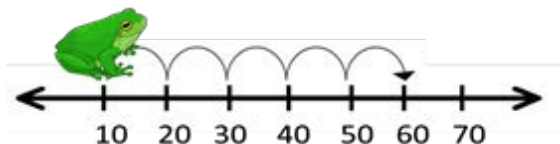




Teaching Procedure

Mental Activity (5 minutes)

Play "Skip count by 10s..." game (M5)



Reinforcement (5 minutes)

Learners do "Skip count backwards in 2s" starting from a given a number less than 100 to 0.

For example: 60, 58, 56, 54, 52, 50, 48, 46, 44, 42, 40, 38, ...

Learning Activity (35 minutes)

Learners divide a 2-digit numbers by a 1-digit number using grouping method (**Activity 11C Step 3**).

Write word problems involving division and have learners model the mathematical sentences and solve them.



Note: Allow learners to use any of the division strategies learnt to solve.

Reflection/Plenary

Engage learners in activities using reflective questions.

Self-Practice

Refer to workbook page.

Module 5

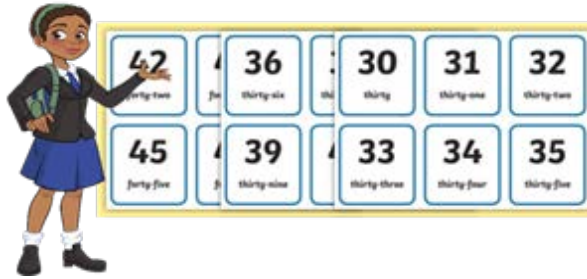
(Eight Week's Lessons)

Module 5 - Week One (Lesson 1)



Big Idea

Number names, numeral recognition, and counting sequence



Learning Outcomes

Count objects between 0 and 999

Identify and recognize numbers between 0 and 999

Read numbers/numerals between 0 and 100



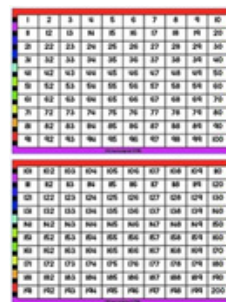
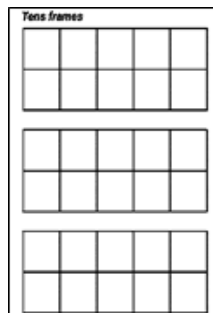
Key Words

Number, how many, count, bundle, tens, ones, loose, group of tens, hundreds



Materials

Straws, number frame and number chart (1-1,000)





Teaching Procedure

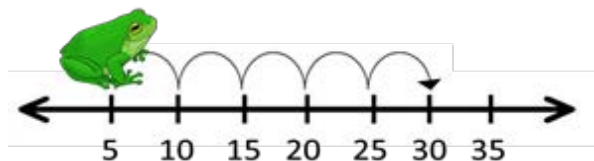
Mental Activity (5 minutes)

Have learners play “Thinking of a number -Tens and Ones” game (M1)



Reinforcement (5 minutes)

Have learners play “Skip Count in 5s, 10s, 20s...” game



Learning Activity (20 minutes)

Learners make bundles and loose ones to represent a given number. **(Activity 1C)**



Have learners model 3-digit numbers.

Reflection/Plenary

Engage learners with reflective questions.

Self-Practice

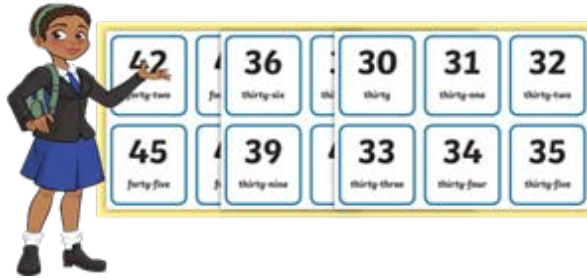
Refer to workbook page.

Module 5 - Week One (Lesson 2)



Big Idea

Number names, numeral recognition, and counting sequence



Learning Outcomes

Count objects between 0 and 1000

Identify and recognize numbers between 0 and 1000

Read numbers/numerals between 0 and 1000



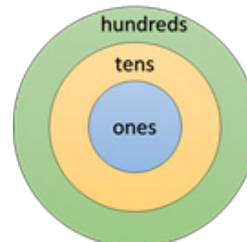
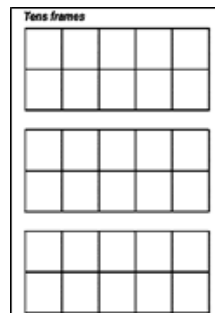
Key Words

Number, how many, count, bundle, tens, ones, loose, group of tens, hundreds



Materials

Straws, Number frame, Place value chart (1,000) and Place value Disc





Teaching Procedure

Mental Activity (5 minutes)

Have learners play “Thinking of a number -Tens and Ones” game (M1)



Reinforcement (5 minutes)

Say a number and have learners mention “How many tens and how many ones” there are.

Learning Activity (20 minutes)

Display the number chart 1 – 1,000 on the board and have learners practice number reading up to 999.

(Activity 1C Step 4)

Reflection/Plenary

Engage learners in activities using reflective questions.

Self-Practice

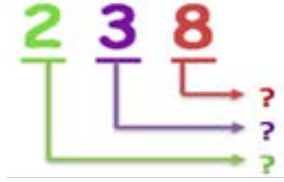
Refer to workbook page.

Module 5 - Week Two (Lesson 1)



Big Idea

Place value of 3-digit numbers



Learning Outcomes

Tell the place value of a digit in a 3-digit number



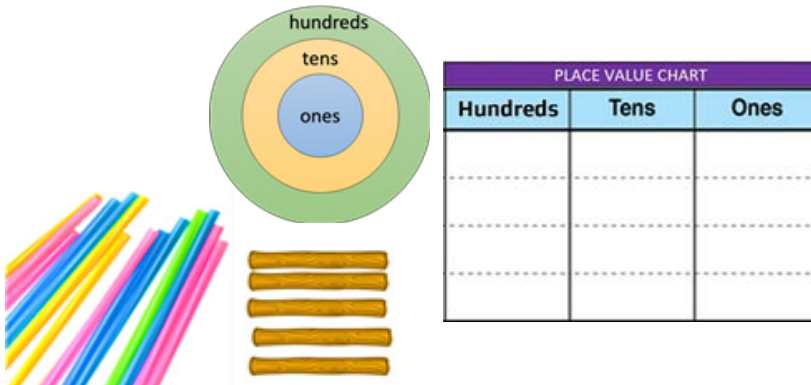
Key Words

Place value, place, position, number, 3-digit, hundreds, tens, ones,



Materials

Straws/sticks, place value frame or mat (100). Place values Disc (1, 10, 100, 1000), strings and transparent plastic containers



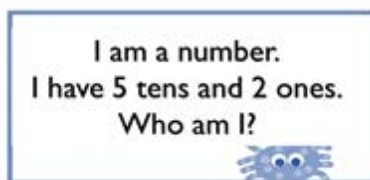
Mental Activity (5 minutes)

Learners play "Thinking of a number" game (M1)



Reinforcement (5 minutes)

Learners play "Who am I?" game with numbers which have tens and ones. Learners write the answers in their jotters or exercise books. (M7)



Learning Activity (35 minutes)

Learners make bundles of hundred and ten, and loose ones to represent a given number and place them at the appropriate positions on the place value frame.

(Activity 4A).

Hundreds	Tens	Ones

243

Learners represent given numbers in Hundreds, Tens and Ones pictorially, symbolically and kinesthetically.

Reflection/Plenary

Engage learners in activities using reflective questions.

Self-Practice

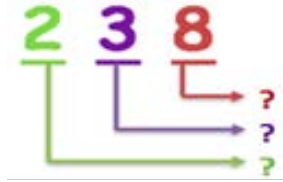
Refer to workbook page.

Module 5 - Week Two (Lesson 2)



Big Idea

Place value of 3-digit numbers



Learning Outcomes

Identify the place value of a digit in a 3-digit number



Key Words

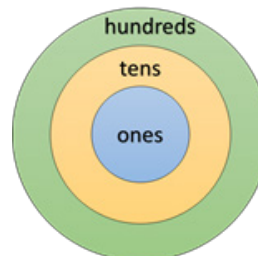
Place value, place, position, number, digit, hundreds, tens, ones,



Materials

100s number wheel, place value frame/mat/chart, pebbles, and place value discs

PLACE VALUE CHART		
Hundreds	Tens	Ones





Teaching Procedure

Mental Activity (5 minutes)

Learners play “Doubles” game (M3)

$$3 + 3 = 6$$

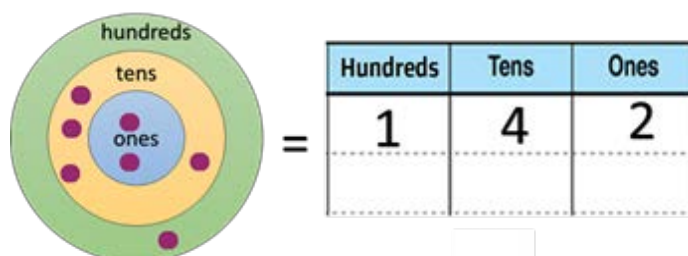
Reinforcement (5 minutes)

Play “Base-Ten Riddles” game with learners (M6)

Learning Activity (25 minutes)

In groups, have learners use the “Number Wheel” to determine the place value of digits in a 3-digit numbers **(Activity 4B)**.

Learners play “Number Wheel” game in groups and record their numbers to determine the place value.



Learners represent number played pictorially, symbolically and kinesthetically.

Reflection/Plenary

Engage learners in activities using reflective questions.

Self-Practice

Refer to workbook page.

Module 5 - Week Three (Lesson 1)



Big Idea

Comparing and Ordering 3-digit numbers



620	__	126	148	__	710



Learning Outcomes

Compare given two 3-digit numbers using $<$ or $>$



Key Words

Greater than, less than, equal to, hundreds, tens, ones, how many more, how many less



Materials

Place value discs, straws/sticks and place value frame/mat/chart

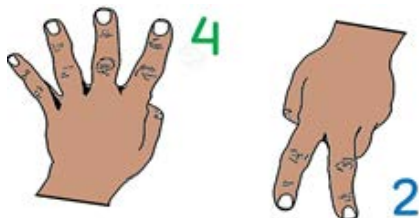
PLACE VALUE CHART		
Hundreds	Tens	Ones



Teaching Procedure

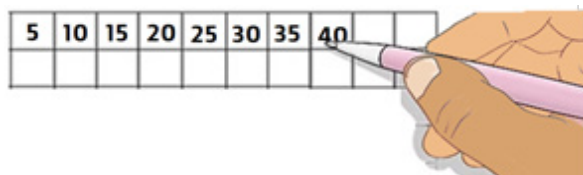
Mental Activity (5 minutes)

Learners play “How many fingers up/down” game (M9)



Reinforcement (5 minutes)

Learners write numbers in 5s, starting from 5 to 40 sequentially.



Learning Activity (25 minutes)

Learners to make bundles of ten and loose ones to represent any two 3-digit given number and compare them using $<$ or $>$ taking into consideration the place value of the numbers being compared.

(Activity 6C)

Learners compare and order numbers using less than ($<$) and greater than ($>$) and equal to ($=$). E.g. 250.....205.

Reflection/Plenary

Engage learners with reflective questions.

Self-Practice

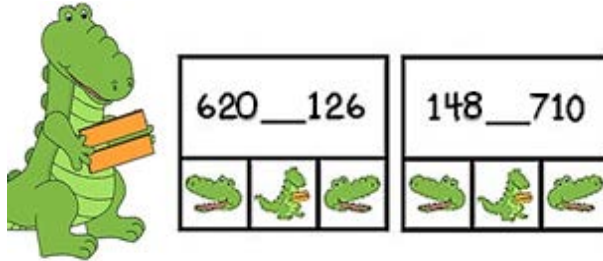
Refer to workbook page.

Module 5 - Week Three (Lesson 2)



Big Idea

Comparing and Ordering 3-digit numbers



Learning Outcomes

Compare given two 3-digit numbers using $<$ or $>$



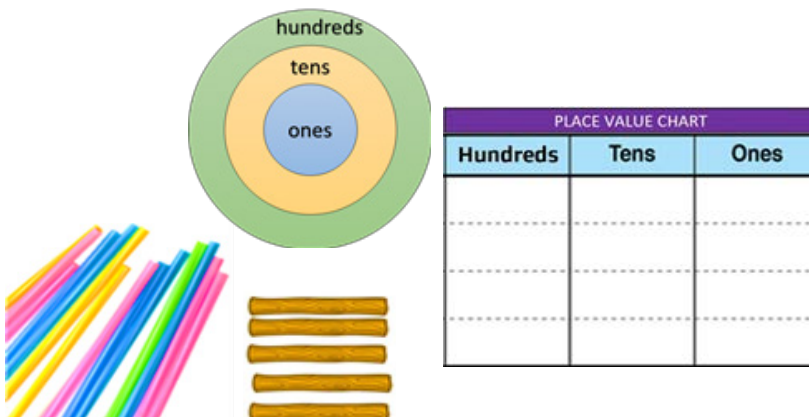
Key Words

Greater than, less than, equal to, compare, order, tens, ones, hundreds,



Materials

Straws/sticks and place value frame





Teaching Procedure

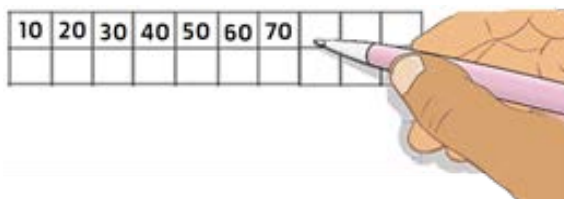
Mental Activity (5 minutes)

Have learners play “Thinking of a number” game (M1)



Reinforcement (5 minutes)

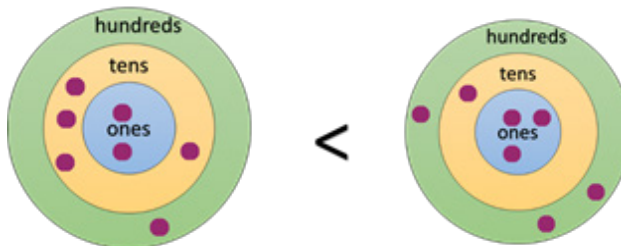
Learners write numbers in 10s starting from 10 to 200 sequentially.



Learning Activity (25 minutes)

Learners play “Number Wheel” game to compare given 3-digit numbers using $<$ or $>$, taking into consideration hundreds, tens and ones. **(Activity 6C)**

Have learners order numbers using less than ($<$) and greater than ($>$) e.g. 270..... 240 into their jotters.



Reflection/Plenary

Engage learners in activities using reflective questions.

Self-Practice

Refer to workbook page.

Module 5 - Week Four (Lesson 1)



Big Idea

Addition of two 2-digit numbers



Learning Outcomes

Add two 2-digit numbers with sum up 99



Key Words

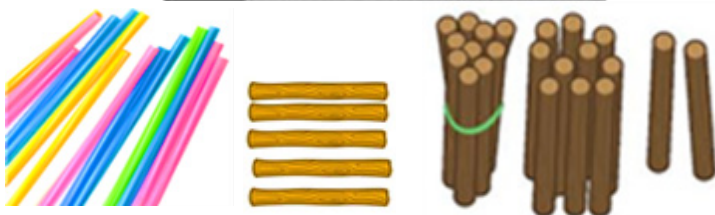
Add, sum, altogether, how many more?



Materials

Straws/sticks (bundles of ten and loose ones), addition mat/frame and place value disc

	Hundreds	Tens	Ones
+			
=			





Teaching Procedure

Mental Activity (5 minutes)

Play "One more/less, two more /less..." games (M8)

two less		number		one more
18	←	20	→	21
	←		→	
	←		→	

Reinforcement (5 minutes)

Give learners some straws to make bundles of hundred, ten and loose ones



Hundreds	Tens	Ones
1	2	5

Learning Activity (25 minutes)

Learners solve addition problems involving two 2-digit numbers using bundles of ten straws and loose straws. For example, $21 + 43$, $45 + 23$ etc. (**Activity 7A Step2**)

Learners demonstrate solving addition tasks using the straws/sticks and addition frame.

Learners solve more problems in their exercise books using "Addition frame" E.g. $51 + 28$; $14 + 39$; $48 + 18$ etc.

Reflection/Plenary

Engage learners in activities using reflective questions.

Self-Practice

Refer to workbook page.

Module 5 - Week Four (Lesson 2)



Big Idea

Addition of two 2-digit numbers



Learning Outcomes

Add two 2-digit numbers with sum up 99



Key Words

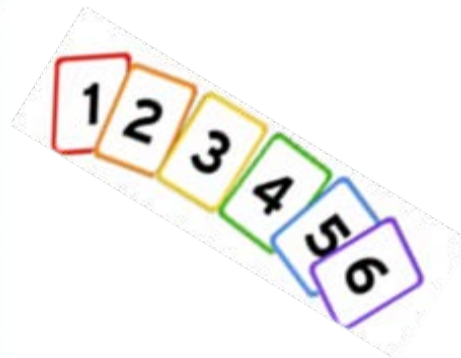
Add, sum, altogether, total



Materials

Number chart and number cards

Numbers 1-100									
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





Teaching Procedure

Mental Activity (5 minutes)

Play “One more/less, two more /less...” game (M8)

two less		number		one more
18	←	20	→	21
	←		→	
	←		→	

Reinforcement (5 minutes)

Mention a number for learners to point to on the number chart.

Learning Activity (40 minutes)

Learners solve addition problems involving two 2-digit numbers using “Number Chart”. For example, $32 + 17$, $60 + 29$. **(Activity 4C Step 2)**

Have learners demonstrate solving addition tasks involving two 2-digit numbers using the number chart.

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

$$24 + 5 = 29$$

Learners solve more problems in their exercise books using the “Number Chart” E.g. $41 + 58$; $44 + 39$; $48 + 27$.

Reflection/Plenary

Engage learners in activities using reflective questions.

Self-Practice

Refer to workbook page.

Module 5 - Week Five (Lesson 1)



Big Idea

Subtraction of two 2-digit numbers



Learning Outcomes

Subtract two 2-digit numbers



Key Words

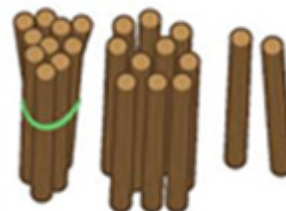
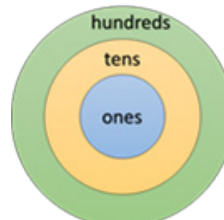
Subtract, take-away, less, minus, how many left? Tens, Ones



Materials

Straws/Sticks (bundles of ten and loose ones), Subtraction Frame/mat and place value discs

	Tens	Ones
-		
=		





Teaching Procedure

Mental Activity (5 minutes)

Play “Doubles/doubles plus one” game (M3) (M4)

$$3 + 3 + 1 = 7$$

Reinforcement (5 minutes)

Play “Numbers in Equivalent Ways” game with learners (M2)

Learning Activity (40 minutes)

Learners solve subtraction problems involving two 2-digit numbers using bundles of ten straws and loose ones, and subtraction frame. **(Activity 8B Step 2)**

Learners demonstrate solving subtraction tasks using the subtraction frame.

	Tens	Ones
—		
=		

Reflection/Plenary

Engage learners in activities using reflective questions.

Self-Practice

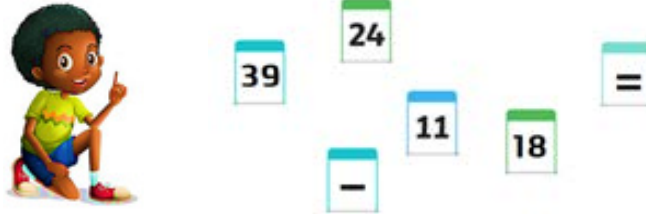
Refer to workbook page.

Module 5 - Week Five (Lesson 2)



Big Idea

Subtraction of two 2-digit numbers



Learning Outcomes

Subtract two 2-digit numbers



Key Words

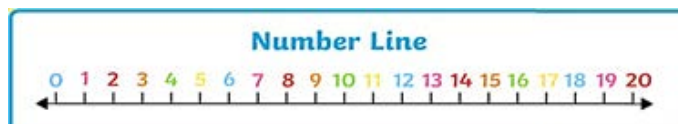
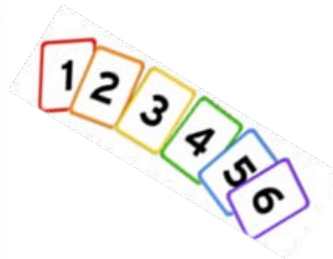
Subtract, minus, less, take-away, how many left



Materials

Number chart, number card and number line

Numbers 1-100									
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





Teaching Procedure

Mental Activity (5 minutes)

Play “One more or less, two more or less” game (M8)



Reinforcement (5 minutes)

Have learners point a given 2-digit number on number chart.

Learning Activity (40 minutes)

Learners solve problems involving subtraction of 2-digit numbers from other 2-digit numbers using Number Chart. For example, $88 - 55$; $45 - 23$. (**Activity 4D Step 2**).

Have learners demonstrate solving subtraction tasks using the “Number Chart”

Numbers 1–100									
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

Reflection/Plenary

Engage learners in activities using reflective questions.

Self-Practice

Refer to workbook page.

Module 5 - Week Six (Lesson 1)



Big Idea

Multiplication of a 2-digit number by a 1-digit number



Learning Outcomes

Multiply a 2-digit number by a 1-digit number.



Key Words

Multiply, product, lots of, groups of



Materials

Straws/sticks, pebbles, bottle tops and multiplication chart

X	0	1	2	3	4	5	6	7	8	9	10	11	12
0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10	11	12
2	0	2	4	6	8	10	12	14	16	18	20	22	24
3	0	3	6	9	12	15	18	21	24	27	30	33	36
4	0	4	8	12	16	20	24	28	32	36	40	44	48
5	0	5	10	15	20	25	30	35	40	45	50	55	60
6	0	6	12	18	24	30	36	42	48	54	60	66	72
7	0	7	14	21	28	35	42	49	56	63	70	77	84
8	0	8	16	24	32	40	48	56	64	72	80	88	96
9	0	9	18	27	36	45	54	63	72	81	90	99	108
10	0	10	20	30	40	50	60	70	80	90	100	110	120
11	0	11	22	33	44	55	66	77	88	99	110	121	132
12	0	12	24	36	48	60	72	84	96	108	120	132	144

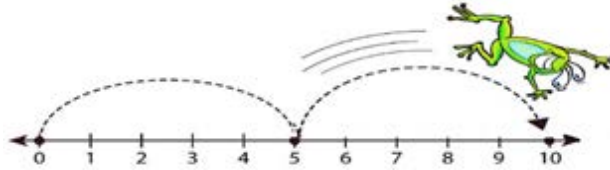




Teaching Procedure

Mental Activity (5 minutes)

Play “Skip count by 5s...” game (M5)



Reinforcement (5 minutes)

Have learners play “Base ten riddles” game. (M6)

Learning Activity (25 minutes)

Learners multiply 2-digit numbers by 1-digit numbers using grouping of object (**Activity 10C**).

Write multiplication word problems involving two 2-digit numbers by 1-digit numbers and have learners solve them.



Reflection/Plenary

Engage learners in activities using reflective questions.

Self-Practice

Refer to workbook page.

Module 5 - Week Six (Lesson 2)



Big Idea

Multiplication of a 2-digit number by a 1-digit number



Learning Outcomes

Multiply a 2-digit number by a 1-digit number.



Key Words

Multiply, product, lots of, groups of



Materials

Multiplication chart and A4 sheets

X	0	1	2	3	4	5	6	7	8	9	10	11	12
0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10	11	12
2	0	2	4	6	8	10	12	14	16	18	20	22	24
3	0	3	6	9	12	15	18	21	24	27	30	33	36
4	0	4	8	12	16	20	24	28	32	36	40	44	48
5	0	5	10	15	20	25	30	35	40	45	50	55	60
6	0	6	12	18	24	30	36	42	48	54	60	66	72
7	0	7	14	21	28	35	42	49	56	63	70	77	84
8	0	8	16	24	32	40	48	56	64	72	80	88	96
9	0	9	18	27	36	45	54	63	72	81	90	99	108
10	0	10	20	30	40	50	60	70	80	90	100	110	120
11	0	11	22	33	44	55	66	77	88	99	110	121	132
12	0	12	24	36	48	60	72	84	96	108	120	132	144

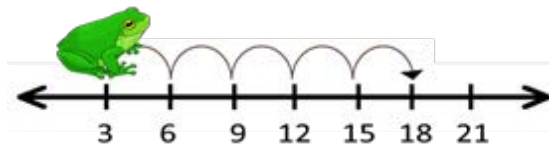




Teaching Procedure

Mental Activity (5 minutes)

Learners do "Skip count by 3s, 6s, 8s..."



Reinforcement (5 minutes)

Have learners play "Base ten riddles" game. (M6)

Learning Activity (40 minutes)

Have learners multiply 2-digit numbers by 1-digit numbers using the multiplication chart (**Activity 10C**).

Reflection/Plenary

Engage learners in activities using reflective questions.

Self-Practice

Refer to workbook page.

Module 5 - Week Seven (Lesson 1)



Big Idea

Multiply 2-digit numbers by 1-digit numbers



Learning Outcomes

Multiply a 2-digit number by a 1-digit number



Key Words

Multiply, groups of, lots of, product



Materials

Pencils, A4 sheets, ruler and multiplication chart

X	0	1	2	3	4	5	6	7	8	9	10	11	12
0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10	11	12
2	0	2	4	6	8	10	12	14	16	18	20	22	24
3	0	3	6	9	12	15	18	21	24	27	30	33	36
4	0	4	8	12	16	20	24	28	32	36	40	44	48
5	0	5	10	15	20	25	30	35	40	45	50	55	60
6	0	6	12	18	24	30	36	42	48	54	60	66	72
7	0	7	14	21	28	35	42	49	56	63	70	77	84
8	0	8	16	24	32	40	48	56	64	72	80	88	96
9	0	9	18	27	36	45	54	63	72	81	90	99	108
10	0	10	20	30	40	50	60	70	80	90	100	110	120
11	0	11	22	33	44	55	66	77	88	99	110	121	132
12	0	12	24	36	48	60	72	84	96	108	120	132	144





Teaching Procedure

Mental Activity (5 minutes)

Play “Base Ten Riddles” games (M6)

Reinforcement (5 minutes)

Have learners do skip count in 2s and 4s starting from a number between 1 and 50

counting by fours									
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

Learning Activity (40 minutes)

Have learners multiply 2-digit numbers by 1-digit numbers using multiplication chart (**Activity 10C**).

Reflection/Plenary

Engage learners with reflective questions.

Self-Practice

Refer to workbook page.

Module 5 - Week Seven (Lesson 2)



Big Idea

Division of 2-digit numbers by a 1-digit number

Sharing
Grouping



Learning Outcomes

Divide a 2-digit number by a 1-digit number



Key Words

Groups of, lots, divide, share, sharing, grouping



Materials

Straws/sticks, bottle caps and transparent empty containers

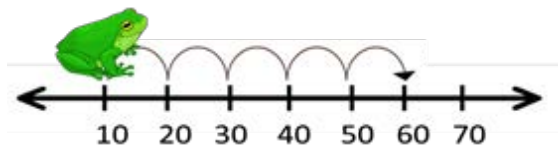




Teaching Procedure

Mental Activity (5 minutes)

Play "Skip count in 10s" game (M5)



Reinforcement (5 minutes)

Invite 2 or 3 learners and give out a handful of straws to them to share and observe how they do the sharing.

Learning Activity (40 minutes)

Learners divide a 2-digit number by a 1-digit number using the sharing method. **(Activity 11C Step1)**

Write division sentences involving two 2-digit numbers and 1-digit numbers and have learners create a word sentence.

Write word problems involving division, and have the learners model mathematically and solve.



Reflection/Plenary

Engage learners in activities using reflective questions.

Self-Practice

Refer to workbook page.

Module 5 - Week Eight (Lesson 1)



Big Idea

Division of 2-digit numbers by a 1-digit number

Sharing
Grouping



Learning Outcomes

Divide a 2-digit number by a 1-digit number



Key Words

Divide, groups of, groups, sharing, lots of, share



Materials

Straws/Sticks (bundle of tens and loose ones) and beads/pebbles





Teaching Procedure

Mental Activity (5 minutes)

Learners play “Skip count in 4s, 6s, 8s” game.

counting by fours									
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

Reinforcement (5 minutes)

Give learners some straws/beads to form groups and make equal formation.

Learning Activity (40 minutes)

Have learners divide 2-digit numbers by 1-digit numbers using division by grouping (**Activity 11C Step2**).

Write division sentences involving two 2-digit and 1-digit numbers and have learners create word sentences for it.

Reflection/Plenary

Engage learners in activities using reflective questions.

Self-Practice

Refer to workbook page.

Module 5 - Week Eight (Lesson 2)



Big Idea

Division of 2-digit numbers by a 1-digit number

Sharing
Grouping



Learning Outcomes

Divide a 2-digit number by a 1-digit number



Key Words

Repeated subtraction, divide, groups, lots of

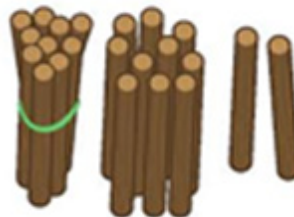


Materials

Straws/Sticks (bundles of ten and loose ones), beads/pebbles and numeral cards chart.



Numbers 1-100									
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

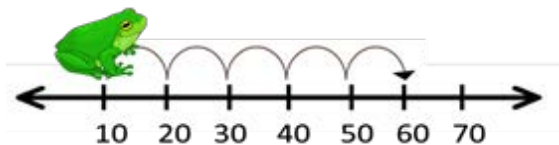




Teaching Procedure

Mental Activity (5 minutes)

Learners play “Skip count in 10s” game (M5)



Reinforcement (5 minutes)

Have learners play the “Skip count backwards in 2s” game starting from a given number less than 100 and ending on 0

For example, 26, 24, 22, 20, 18, 16, 14, 12, 10, 8, 6, 4, ...

Learning Activity (35 minutes)

Have learners divide a 2-digit number by a 1-digit number using repeated subtraction approach (**Activity 11C Step3**)

Have learners divide 2-digit numbers by 1-digit number (Activity 13)

E.g. $18 \div 3 = 6$

$18 - 3 = 15$	①
$15 - 3 = 12$	②
$12 - 3 = 9$	③
$9 - 3 = 6$	④
$6 - 3 = 3$	⑤
$3 - 3 = 0$	⑥

Write division sentences involving two 2-digit numbers and 1-digit numbers and have learners create a word problem.

Reflection/Plenary

Engage learners in activities using reflective questions.

Self-Practice

Refer to workbook page.

Activity Book

(Mathematics)

ACTIVITY 1

Counting Numbers (1-50)

Materials/Resources required:

Number line, number cards, number track, number chart.



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

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

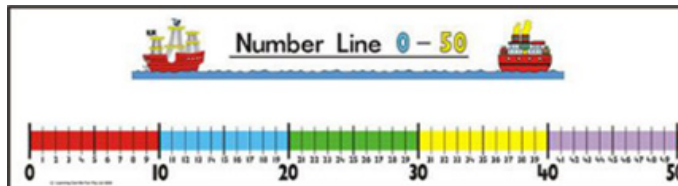
Teacher led Activity:

Display number line with number points from 1 to 50 and demonstrate counting.

ACTIVITY 1A

Step 1:

- Put learners into convenient groups.
- Provide learners with number tracks of different ranges (1-10, 11-20, 21-30) etc on sheets of paper, manila cards or draw on the floor for learners to point or step on and mention.
- Learners match number cards with numbers on the number line.
- Have learners do counting on the number line



Step 2:

- Display number chart 1-50 for learners to read sequentially (forward and backwards).

- ii. Have learners read the numbers top to bottom and bottom to top.
- iii. Have each learner take his/her turn in reading and recognizing the numbers on the number chart.
- iv. Learners match groups of objects with numeral cards.

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

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



Note for the teacher

- Give learners more task. Go round and assist learners who need help and encourage peer support.

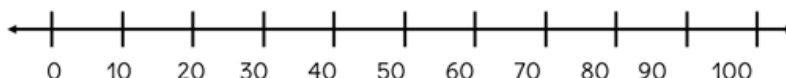
Reflection/Plenary:

1. What numbers are in between 16 and 19?
2. What number comes before 13?
3. What number comes two steps after 39?

ACTIVITY 1B

Steps:

- i. Put learners into convenient groups.
- ii. Provide learners with number tracks of different ranges (1-10, 11-20, 21-30) etc on sheets of paper, manila cards or draw on the floor for learners to point or step on and mention.
- iii. Learners match number cards with numbers on the number line.
- i. Display number chart 1-100 for learners to read sequentially (forward and backwards), diagonally and randomly.



Note for the teacher

- Give learners more task. Go round and assist learners who need help and encourage peer support.

Reflection/Plenary:

1. What number is between 83 and 85?
2. What number comes before 53?
3. What number comes after 92?

Materials required:

Bundles and loose straws, cards in pack, number cards, match sticks in boxes, etc.



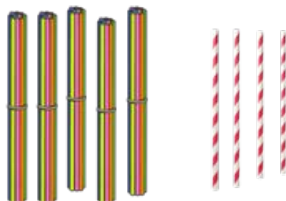
Teacher led Activity:

- i. Put Learners into convenient groups of 4-5 members and let them familiarize themselves with the materials.

ACTIVITY 1C

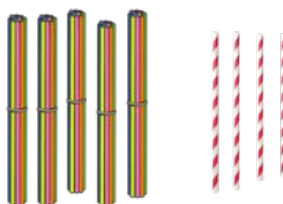
Step 1:

- i. In their convenient group, one learner selects a number card at random and show it to the group members. For example, **54**
- ii. Have learners model the number on the card with the bundle and loose straws.



- iii. Have learners tell how many bundles and how many loose ones are formed. That is 5 bundles and 4 loose straws.

- iv. Learners tell how many tens and how many ones. That is 5 tens and 4-ones
- v. Have learners write the numeral for 5 tens and 4 ones. That is 50 + 4
- vi. Learners conclude that



Reflection/Plenary:

1. Have learners talk about their final answer.
2. Have learners repeat the process by selecting different number cards.
3. Number cards should be a 2-digit number (10-99).

Step 2:

- i. In their convenient groups, select one of the materials and get the groups to make an estimate of the quantity one group at a time.
- ii. Let each group have their turn to estimate.
- iii. Have a pupil count to verify the number.
- iv. Repeat the activity several times with the other materials and record the results in a table under the headings below.

Objects to estimate	Guess made				Number verified
	G1	G2	G3	G4	
Box of match sticks					
Bundles of straws					
Bundles and loose straws					
Cards in pack					

- v. The group with the best estimate after game wins.

Step 3:

Material required:

Length of teacher's table, length of learner's table, length and width of

the classroom, distance between any two points (classroom to canteen, classroom to school field), using parts of the body (hand span, foot, stride, arm stretch), etc

- i. Select one of the materials whose length is to be estimated and the unit of measure.
- ii. Each group select one person whose part of the body is used as the unit to estimate and estimate.
- iii. Have the selected person do the practical activity by counting to verify the number
- iv. Repeat the activity several times with other materials and distances and record the results in a table under the headings below;

Lengths and distances to estimate	Guess made				Number verified
	G1	G2	G3	G4	
Going round the teacher's table using span					
Length of one side of the classroom					
Width of window					
Distance between the two uprights of a goalpost					

- v. The group with the best estimate after game wins.

Note for the teacher

- The total number of groups will depend on the class size.
- Each group should be given the opportunity to start.

Reflection/Plenary:

1. Name two materials/items used for the estimation.
2. Are you a good estimator YES/NO
3. Explain your answer selected in (b)
4. What will you do to help you do good estimation?

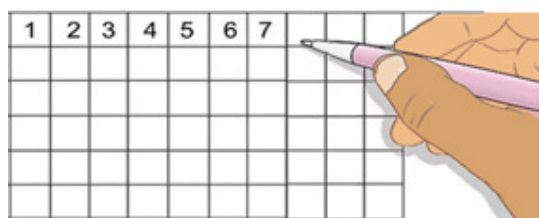


Step 4:

- i. Put Learners into convenient groups.
- ii. Provide learners with number cards and number charts from 1- 100.

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

- iii. Let learners read the numbers sequentially (forwards and backwards) from any given number. For example, count forward in tens starting from 20. Count backwards in tens starting from 88.
- iv. Let learners in each group repeat activity (iii) several times.
- v. Let learners read the numbers sequentially (diagonally, top to down, down to top, zigzag) and randomly.
- vi. Learners create the number chat (1-100) at the inside back cover of their jotters and practice reading.



Note for the teacher

- The number reading activity should be done at the beginning of every lesson for the first four weeks by inviting a different learner each time.
- After reading in tens, higher achievers may be allowed to read in twos and in fives (forward and backward).
- Reading in twos should start with an even number and in fives should start with a number ending with zero or five.

Reflection/Plenary:

82	83		85	86
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1. What number comes after 83?
2. What number comes before 68?
3. Arrange the numbers from the smallest to the biggest 75, 38, 72, 27.

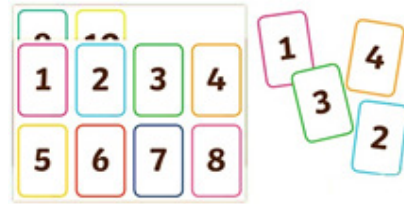
ACTIVITY 2

Reading Numbers forwards and backwards

Materials/Resources required:

Number card, number chart.

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



Teacher led Activity:

Display the number chart (1-50) for learners to observe and come out with their own conclusions.

ACTIVITY 2A

Steps:



- Put Learners into convenient groups.
- Provide learners with number cards and number charts from 1- 50.
- Let learners read the numbers sequentially (forwards and backwards) from any given number. For example, count forward starting from 20. Count backwards starting from 88.
- Let learners in each group repeat activity (iii) several times.
- Let learners read the numbers sequentially (diagonally, top to down, down to top, zigzag) and randomly.



15	2	1	12
8	5	6	11
4	9	10	7
3	14	13	

Note for the teacher

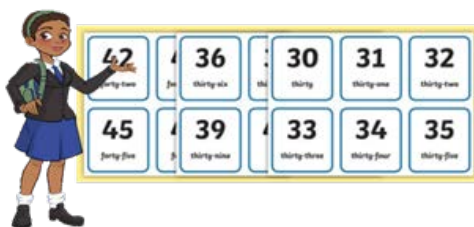
- The number reading activity should be done at the beginning of every lesson for the first four weeks by inviting a different learner each time.

Reflection/Plenary:

- What number comes after 30?
- What number comes before 22?
- Arrange the numbers from the smallest to the biggest 13, 11, 14, 12.

Materials Required:

Number card, number chart.



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

Teacher led Activity:

Display the number chart (1-100) for learners to observe and come out with their own observations.

ACTIVITY 2B

Steps:



- Put Learners into convenient groups.
- Provide learners with number cards and number charts from 1- 100.
- Let learners read the numbers sequentially (forwards and backwards) from any given number. For example, count forward starting from 20. Count backwards starting from 88.
- Let learners in each group repeat activity (iii) several times.
- Let learners read the numbers sequentially (diagonally, top to down, down to top, zigzag) and randomly.

Note for the teacher

- The number reading activity should be done at the beginning of every lesson for the first four weeks by inviting a different learner each time.

Reflection/Plenary:

- What number comes after 83?
- What number comes before 68?
- Arrange the numbers from the smallest to the biggest 75, 38, 72, 27.



82	83		85	86
----	----	--	----	----

ACTIVITY 2C

Place value of 2-digit numbers

Materials Required:

Countable objects (bundles of straws/sticks, bottle caps, pebbles, beads, beans), strings or rubber bands, place value mat, number cards (2-digits), tens number wheel, pebbles.



Teacher led Activity:

Pick up a fistful of sticks or straws and count them. Introduce a rule to Learners: "If the number of straws is 10, we bundle or tie the 10 straws/sticks together with a rubber band."

Step 1:

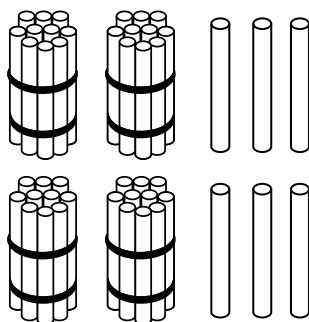


- Put Learners into convenient groups.
- Give each group materials (place value mats, bundles and loose straws and number/numeral cards).
- A learner in the group pick a number/numeral card at random and

show it to the group

- iv. Have group members model the number with the bundles and loose straws and place it correctly on the place value mat.

For instance, for 46 straws, Learners make 4 bundles of 10s and 6 loose ones.



- v. Have Learners place the bundles in the Tens column and the loose straws in the Ones column.

PLACE VALUE CHART	
Tens	Ones

- vi. Have learners answer the following;
- How many bundles?
 - How many loose ones?
 - How many tens?
 - How many ones?
 - What is the number name?

Note for the teacher

- Put Learners into small groups (4-5 members)
- Have Learners do further practice using the above strategy to identify the place value of digits

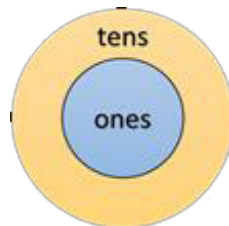


Reflection/Plenary:

Have learners tell the value of each digit in the numeral.

Step 2:

- (i) Draw 2 concentric circles on the floor and label them ones and tens (as in the diagram) for learners to see.



(ii) Label the circles as follows

- Innermost circle (wheel) represents Ones
- The outer circle (wheel) represents Tens

(iii) Learners to stand at a short distance from the outer circle and perform the following activities:

- “ throw the 9 pebbles on the circles”
- “remove the pebbles which have fallen on the line of the circles or which are outside of the last circle”.
- “count the pebbles which are inside each of the circle and represent each on the place value chart”.
- “Write down the number in the place value frame”.

Note for the teacher

- Put Learners into small groups (4-5 members)
- Have Learners do further practice using the above strategy to identify the place value of digits



Reflection/Plenary:

Have learners tell the value of each digit in the numeral.

ACTIVITY 3

Counting quantities of objects

Materials/Resources required:

Countable objects (straws/sticks, bottles caps, beads), small transparent contains, small sacks etc.



Teacher led Activity:

Provide learners with countable objects and lead them to count to find how many

ACTIVITY 3A

Steps:



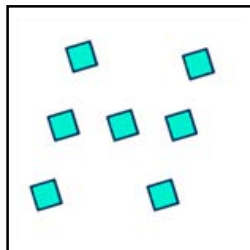
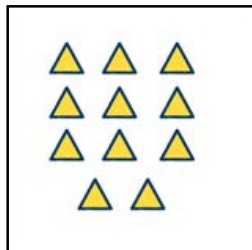
- Put learners into convenient groups.
- Provide learners with groups of objects and guide them to count and tell how many.
- Have learners match quantity of objects in two groups of different objects.
- Guide learners to match quantity of objects to their corresponding numerals.

Note for the teacher

- Go round and assist learners who need help and encourage peer support.

Reflection/Plenary:

Tick (✓) the group that has more objects and cross (X) out the group that has least objects.



ACTIVITY 3B

Steps:



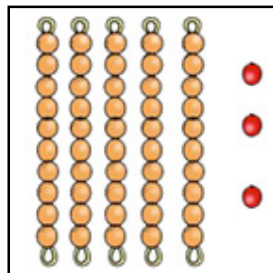
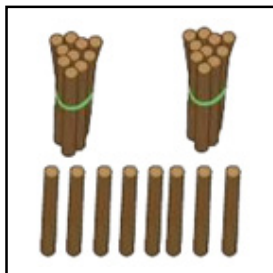
- Put learners into convenient groups.
- Provide learners with groups of objects and guide them to count and tell how many.
- Have learners compare quantity of objects in two groups of different objects by doing one-to-one matching.
- Guide learners to match quantity of objects to their corresponding numerals.

Note for the teacher

- Go round and assist learners who need help and encourage peer support.

Reflection/Plenary:

Tick (✓) the group that has more objects and cross (X) out the group that has least objects.



ACTIVITY 3C

Comparing 2-digit numbers

Materials Required:

Countable objects (bundle and loose straws/sticks, small sacks Number Wheel, 9 pieces of stones (or pebbles)).



Teacher led Activity:

Put Learners into convenient groups of 4-6. Provide learners with materials for them to familiarize with

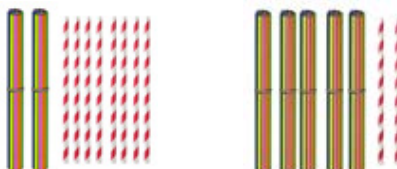


Step 1:

- i. Teacher writes 2852 on the board
- ii. Have learners model each number with the bundle and loose straws.



- iii. Have learners tell the number of bundles and loose straws that make up each number.
- iv. Have learners tell the number of tens and ones in each number.
- v. Have learners compare the two numbers by using the term “more than”, or “less than”.
- vi. Have learners compare the two numbers by putting $>$ or $<$ in between the numbers to make the mathematical sentence true.



Note for the teacher

- Go round and assist learners who need help and encourage peer support.
- Ensure maximum participation by all learners in each group.
- Give more example for learners to practice.

Reflection/Plenary:

Learners to explain how they arrived at their answer.

Teacher led Activity:

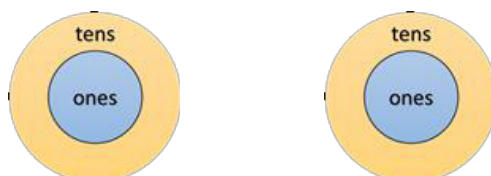
Put Learners into convenient groups of 4-6.



Step 2:

(i) Teacher writes 2852 on the board

(ii) Have learners model each number on the different number wheel



(iii) Have learners tell the number of tens and ones in each number.

(iv) Have learners compare the two numbers by using the term “more than”, or “less than”.

(v) Have learners compare the two numbers by putting $>$ or $<$ in between the numbers to make the mathematical sentence true.



Reflection/Plenary:

Learners to explain how they arrived at their answer.

ACTIVITY 4

Place Value (1-100)

Materials/Resources required:

Tens frame, countable objects (bundles of straws/sticks, bottle caps, pebbles, beads, beans), strings or rubber bands, small transparent containers, small sacks, place value mat.



Teacher led Activity:

Pick up a fistful of sticks or straws and count them. Introduce a rule to Learners: "If the number of straws is 10, we bundle or tie the 10 straws/sticks together with a rubber band. Thus, one bundle means 10! And 10 straws/ sticks make a bundle. Less than 10 straws should stay loose".

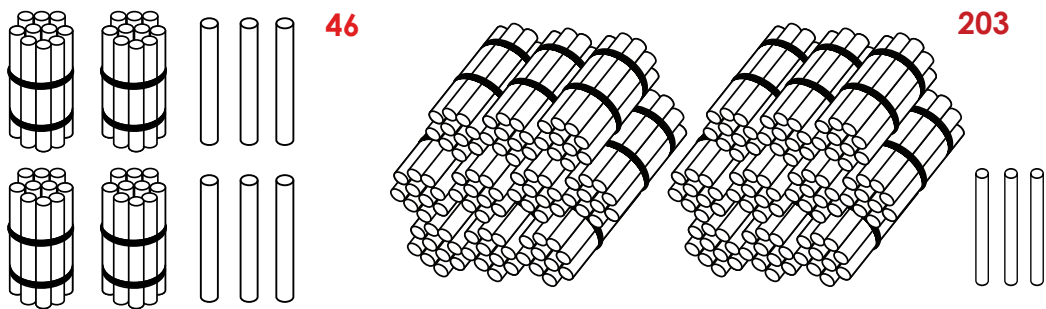
ACTIVITY 4A

Steps:



- Put Learners into convenient groups.
- Give each group a fistful of sticks or straws and have them count.
- Learners make bundles of tens and loose ones.
- Learners say the number of bundles and loose ones they make from the objects counted.

For instance, for 46 straws, Learners make 4 bundles of 10s and 6 loose ones or 203 straws.



- v. Introduce the “tens” and “ones” place value frame.
- vi. Have Learners place the bundles in the Tens column and the loose straws in the Ones column.
- vii. Have Learners repeat the activity by partitioning straws into Tens and Ones.

Hundreds	Tens	Ones

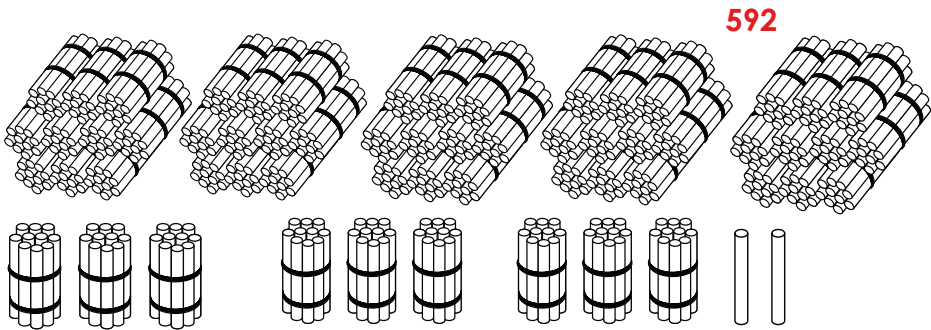
Figure 1: Tens place value frame

Note for the teacher

- Go round to assist Learners.
- Invite a couple of Learners to demonstrate activity to the class.

Reflection/Plenary:

Observe the group and answer the questions.



- How many bundles?
- How many loose ones?
- How many tens?
- How many ones?
- What is the number name?
- Write the numeral for the quantity.

ACTIVITY 4B

Materials Required:

Countable objects (bundle and loose straws/sticks, small sacks Number Wheel, 9 pieces of stones (or pebbles)).

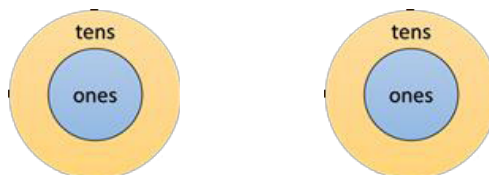


Teacher led Activity:

Put Learners into convenient groups of 4-6. Provide learners with materials for them to familiarize with

Step:

- Teacher writes 2852 on the board
- Have learners model each number on the different number wheel



- (iii) Have learners tell the number of tens and ones in each number.
- (iv) Have learners compare the two numbers by using the term “more than”, or “less than”.
- (v) Have learners compare the two numbers by putting $>$ or $<$ in between the numbers to make the mathematical sentence true.

Reflection/Plenary:

Learners to explain how they arrived at their answer.

ACTIVITY 4C

Step 1:

Teacher writes 2852 on the board.

Example

$$26 + 7 = ?$$

- i. Display the number chart and have Learners work in pairs to determine the patterns on the chart.
- ii. Learners notice that moving to the right is plus 1 representing Units and moving downwards is plus 10 representing Tens
- iii. Learners hold/identify the first number (26), and tell the number of tens and units in the second number (7)
- iv. From the first number (26), move to the right 7 units and land on 33.

Therefore ; $26 + 7 = 33$

100 Number Chart

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

Figure 5: 100 Numeral Chart

Step 2:

Write the addition problem on the board.

Example
 $45 + 31 = ?$

- Learners hold/identify the first number (45) on the number chart.
- Have learners tell the number of tens and units in the second number (31)
- From the first number (45), move down 3 steps and land 75.
- Move from 75 to the right 1 unit and land on 76.

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

Therefore ; $45 + 31 = 76$

Note for the teacher

- Put Learners into smaller groups.
- Have Learners do further practice using the above strategy in their groups.
- Go round and support struggling Learners
- Invite Learners to demonstrate strategy to the class.
- Have Learners do further practice using the above strategy.

Reflection/Plenary:

1. Share your strategies with friends using the addition chart to add numbers
2. Mention everyday life situations where we use addition.

ACTIVITY 4D

Step 1:

Write the subtraction problem on the board.

Example

$$35 - 4 = ?$$

- i. Learners hold/identify the first number (35) on the number chart.
- ii. Have learners tell the number of units in the second number (4)
- iii. From the first number (35), move backwards 4 steps and land 31.

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

Therefore $35 - 4 = 31$.

Step 2:

Write the subtraction problem on the board.

Example
84 - 33 = ?

- i. Learners hold/identify the first number (84) on the number chart.
- ii. Have learners tell the number of tens and number of units in the second number.
- iii. From the first number (84), move backwards 3 steps and land 81.
- iv. From (81), move upwards 3 steps and land on 51.

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

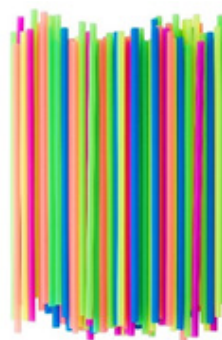
Therefore 84 – 33 = 51.

ACTIVITY 5

Guess my Number Game

Materials/Resources required:

Bottle tops in containers, pebbles in sacks, bunch of straws, cards in pack, match sticks in boxes, etc.



Teacher led Activity:

Put Learners into convenient groups of 4-5 members and let them play 'Guess my number game'. Let Learners know that, "in this game the group that makes the best estimate of the materials wins". Every group has an opportunity to make an estimate within 10 seconds.



ACTIVITY 5A

Step 1:

- In their convenient groups, select one of the materials and get the groups to make an estimate of the quantity one group at a time.
- Let each group have their turn to estimate.
- Have a pupil count to verify the number.
- Repeat the activity several times with the other materials and record the results in a table under the headings below.

Objects to estimate	Guess made				Number verified
	G1	G2	G3	G4	
Box of match sticks					
Stones in sack					
Cards in pack					
Bottle tops in a cup					

v. The group with the best estimate after game wins.

Step 2:

Material required:

Length of teacher's table, length of learner's table, length and width of the classroom, distance between any two points (classroom to canteen, classroom to school field), using parts of the body (hand span, foot, stride, arm stretch), etc.

- Select one of the materials whose length is to be estimated and the unit of measure.
- Each group select one person whose part of the body is used as the unit to estimate and estimate.
- Have the selected person do the practical activity by counting to verify the number
- Repeat the activity several times with other materials and distances and record the results in a table under the headings below;

Lengths and distances to estimate	Guess made				Number verified
	G1	G2	G3	G4	
Teacher's table					
Width of door					
Width of window					
Classroom to canteen					

v. The group with the best estimate after game wins.

Note for the teacher

- The total number of groups will depend on the class size.
- Each group should be given the opportunity to start.

Reflection/Plenary:

1. Name two materials/items used for the estimation.
2. Are you a good estimator YES/NO
3. Explain your answer selected in (b)
4. What will you do to help you do good estimation?

ACTIVITY 5B

Step 1:

- i. In their convenient groups, select one of the materials and get the groups to make an estimate of the quantity one group at a time.
- ii. Let each group have their turn to estimate.
- iii. Have a pupil count to verify the number.
- iv. Repeat the activity several times with the other materials and record the results in a table under the headings below.

Objects to estimate	Guess made				Number verified
	G1	G2	G3	G4	
Box of match sticks					
Stones in sack					
Cards in pack					
Bottle tops in a cup					

- v. The group with the best estimate after game wins.

Step 2:

Material required:

Length of teacher's table, length of learner's table, length and width of

the classroom, distance between any two points (classroom to canteen, classroom to school field), using parts of the body (hand span, foot, stride, arm stretch), etc.

- i. Select one of the materials whose length is to be estimated and the unit of measure.
- ii. Each group select one person whose part of the body is used as the unit to estimate and estimate.
- iii. Have the selected person do the practical activity by counting to verify the number
- iv. Repeat the activity several times with other materials and distances and record the results in a table under the headings below;

Lengths and distances to estimate	Guess made				Number verified
	G1	G2	G3	G4	
Teacher's table					
Width of door					
Width of window					
Classroom to canteen					

- v. The group with the best estimate after game wins.

Note for the teacher

- The total number of groups will depend on the class size.
- Each group should be given the opportunity to start.
- Quantity of objects to be estimated should be large enough.

Reflection/Plenary:

1. Name two materials/items used for the estimation.
2. Are you a good estimator YES/NO
3. Explain your answer selected in (b)
4. What will you do to help you do good estimation?
5. Give one importance of estimation to the learner.

ACTIVITY 6

Comparing numbers

Materials/Resources required:

Countable objects (Straws/sticks/bottle caps, pebbles, beads, beans), small transparent containers, small sacks Number Wheel, place value frame, 9 pieces of stones (or pebbles) , pictures of groups of items.



Teacher led Activity:

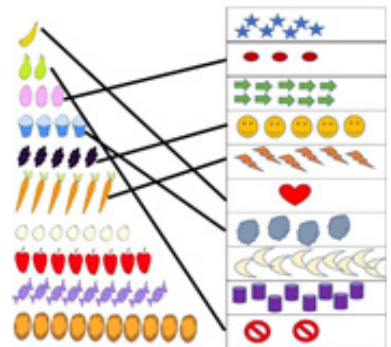
Put Learners into convenient groups of 4-6. Provide learners with materials for them to familiarize with.



ACTIVITY 6A

Step 1:

- In pairs, pick up a fistful of a countable materials (say sticks or straws) and count them. Compare your quantity with that of your partner using “more than”, “less than” or “same as”.
- Let each pair have their turn to compare their fistful quantity.
- Repeat the activity several times with the other concrete materials.
- Using one-to-one matching (by drawing lines), compare pictures of two groups.



Note for the teacher

- Ensure maximum participation of each learner in the group
- Consider gender in grouping and pairing.

How to Play the Number Wheel.

Step 2:

- (i) Draw 2 concentric circles on the floor and label them ones, tens (as in diagram below) for learners to see.
- (ii) Label the circles as follows
 - Innermost circle (wheel) represents Ones whiles outer circle (wheel) represents tens
- (iii) Learners to stand at a short distance from the outer circle and perform the following activities:
 - “ throw the 9 pebbles on the circles”
 - “remove the pebbles which have fallen on the line of the circles or which are outside of the last circle”.
 - “count the pebbles which are inside each of the circle and represent each on the place value chart”.
 - “Write down the number in the place value frame”.
 - “Repeat the above activity for the second number”
- (iv) Learners compare the numbers using ‘>’ or ‘<’.

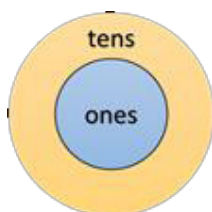


Figure 5a: Tens number wheel

PLACE VALUE CHART	
Tens	Ones

Figure 5b: Tens place value frame

Note for the teacher

- Put Learners into small groups.
- Have Learners do further practice using the above strategy to compare numbers.
- Go round and assist.

- Invite Learners to demonstrate to the class.

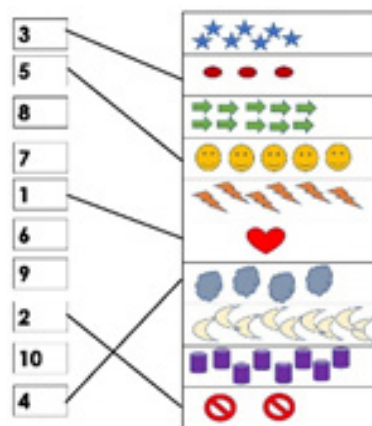
Reflection/Plenary:

Why do we compare quantity of objects in two groups?

ACTIVITY 6B

Step 1:

- In pairs, pick up a fistful of a countable materials (say sticks or straws) and count them. Compare your quantity with that of your partner using “more than”, “less than” or “same as”.
- Let each pair have their turn to compare their fistful quantity.
- Repeat the activity several times with the other concrete materials.
- Using one-to-one matching (by drawing lines), compare pictures of two groups.



Note for the teacher

- Ensure maximum participation of each learner in the group
- Consider gender in grouping and pairing.

How to Play the Number Wheel.

Step 2:

- Draw 2 concentric circles on the floor and label them ones, tens (as in diagram below) for learners to see.
- Label the circles as follows
 - Innermost circle (wheel) represents Ones whiles outer circle (wheel) represents tens
- Learners to stand at a short distance from the outer circle and perform the following activities:
 - “ throw the 9 pebbles on the circles”

- “remove the pebbles which have fallen on the line of the circles or which are outside of the last circle”.
- “count the pebbles which are inside each of the circle and represent each on the place value chart”.
- “Write down the number in the place value frame”.
- “Repeat the above activity for the second number”

(iv) Learners compare the numbers using ‘>’ or ‘<’.

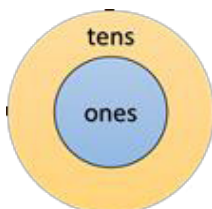


Figure 5a: Tens number wheel

PLACE VALUE CHART	
Tens	Ones

Figure 5b: Tens place value frame

Note for the teacher

- Put Learners into small groups.
- Have Learners do further practice using the above strategy to compare numbers.
- Go round and assist.
- Invite Learners to demonstrate to the class.

Reflection/Plenary:

Why do we compare quantity of objects in two groups?

ACTIVITY 7

Addition of 1-and 2-digit Numbers using the Addition Frame

Materials/Resources required:

Tens Addition frame, countable objects (bundles and loose straws/sticks, bottle caps, pebbles, beads).

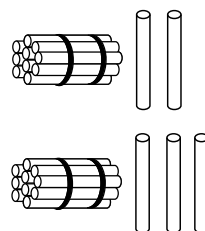


Teacher led Activity:

Pick up a fistful of sticks or straws and count them. Introduce a rule to Learners: "If the number of straws is 10, we bundle or tie the 10 straws/sticks together with a rubber band. Thus, one bundle means 10. 10 straws/sticks make a bundle. Less than 10 straws should stay loose".

For example, 12= 1 bundle of tens and 2 loose ones

13= 1 bundle of tens and 3 loose ones



ACTIVITY 7A

Step 1:

- Write addition problem involving two 1-digit numbers on the board.
For example; $5+4 =$
- Have Learners represent the first number as 5 straws in the first row of the addition frame.
- Learners mention " how many units?"
- Have Learners represent the second number as 4 loose straws in the second row
- Have Learners match the loose straws in the ones column.
- Have Learners draw down the remaining unmatched straws in the first row to the bottom of the frame
- Have Learners count the loose ones at the bottom of the frame as the answer

Therefore $5 + 4 = 9$

Step 2:

- i. Write addition problem involving a 2- digit number and a 1-digit number on the board. For example; $12+5 =$
- ii. Have learners model the first number with the bundle and loose straws and place them in the first row of the addition frame.
- iii. Have learners model the second number with the loose straws and place them in the second row of the addition frame.

Addition frame	
Tens	Ones
	
+	
=	

- iv. Have learners draw down all the loose straws in the ones column to the bottom.
- v. Have learners draw down all the bundles in the first column to the bottom.
- vi. Have learners count the quantity of loose straws in the ones column and mention the number name.
- vii. Have learners count the quantity of bundles of straws in the tens column and mention the number name.
- viii. Have learners combine the tens and ones at the bottom and call out the number name.

Addition frame	
Tens	Ones
+	
	

- ix. Have learners write the numeral for the number name to complete the addition problem.

Therefore Learners conclude that $12 + 5 = 17$.

Reflection/Plenary:

How did you use the addition frame to solve the problem?

ACTIVITY 7B

Step 1:

- i. Write addition problem involving a 2- digit number and a 1-digit number on the board. For example; $21+7 =$
- ii. Have learners model the first number with the bundle and loose straws and place them in the first row of the addition frame.
- iii. Have learners model the second number with the loose straws and place them in the second row of the addition frame.
- iv. Have learners draw down all the loose straws in the ones column to the bottom.
- v. Have learners draw down all the bundles in the first column to the bottom.
- vi. Have learners count the quantity of loose straws in the ones column and mention the number name.
- vii. Have learners count the quantity of bundles of straws in the tens column and mention the number name.
- viii. Have learners combine the tens and ones at the bottom and call out the number name.
- ix. Have learners write the numeral for the number name to complete the addition problem.

Therefore Learners conclude that $21 + 7 = 28$.

Reflection/Plenary:

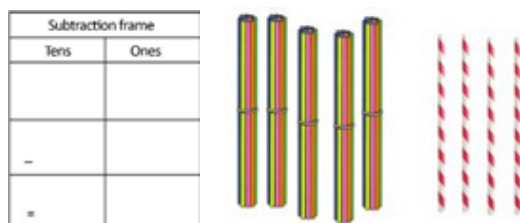
How did you use the addition frame to solve the problem?

ACTIVITY 8

Subtraction of Whole Numbers Using the Subtraction Frame

Materials/Resources required:

Subtraction frame, straws (bundles and loose)



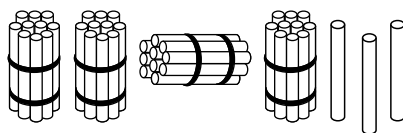
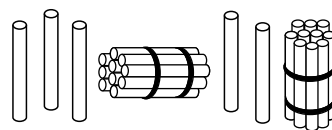
Teacher led Activity:

Pick up a fistful of sticks or straws and count them. Introduce a rule to

Learners: “If the number of straws is 10, we bundle or tie the 10 straws/sticks together with a rubber band. Thus, one bundle means 10. 10 straws/sticks make a bundle. Less than 10 straws should stay loose”.

For example, $25 = 2$ bundles of tens and 5 loose ones

$43 = 4$ bundles of tens and 3 loose ones



ACTIVITY 8A

Step 1:

- Write a subtraction problem on the board. For example; $6 - 3 =$
- Have Learners represent the first number (6) as 6 straws in the first row of the subtraction frame.
- Learners mention “ how many units?”
- Have Learners represent the second number (3) as 3 loose straws in the second row
- Have Learners match loose straws in units column until the units in the second row gets finished
- Have Learners draw down the remaining unmatched straws in the first row to the bottom of the frame
- Have Learners count the loose ones at the bottom of the frame as the answer

Step 2:

- i. Write a subtraction problem on the board. For example; $17 - 5 =$
- ii. Have Learners represent the first number (17) as 1 bundle of tens and 7 loose straws in the first row of the subtraction frame.
- iii. Learners mention “how many tens and how many units?”
- iv. Have Learners represent the second number (5) as 5 loose straws in the second row
- v. Have Learners match loose straws in units column until the units in the second row gets finished
- vi. Have Learners draw down the remaining unmatched straws in the first row to the bottom of the frame
- vii. Have Learners match the bundles in the tens column, and draw down the remaining unmatched bundles to the bottom
- viii. Have Learners count the bundles and loose ones at the bottom of the frame as the answer

Therefore:

$$6 - 3 = 3$$

$$17 - 5 = 12$$

Subtraction frame	
Tens	Ones
-	
=	

Figure 5a: Tens subtraction frame

Note for the teacher

- Put Learners into small groups.
- Have Learners do further practice using the above strategy in their groups.
- Go round and assist.
- Invite Learners to demonstrate to the class.



Reflection/Plenary:

- 1. How did you use the subtraction frame to solve the problem?
- 2. Share with the class everyday life situation when subtraction is used?

ACTIVITY 8B

Step 1:

- i. Write a subtraction problem on the board. For example; $37 - 5 =$
- ii. Have Learners represent the first number (37) as 3 bundles of tens and 7 loose straws in the first row of the subtraction frame.
- iii. Learners mention “how many tens and how many units?”
- iv. Have learners represent the second number (5) as 5 loose straws in the second row
- v. Have learners match loose straws in units column until the units in the second row gets finished.
- vi. Have learners draw down the remaining unmatched straws in the first row to the bottom of the frame.
- vii. Have learners match the bundles in the tens column, and draw down the remaining unmatched bundles to the bottom.
- viii. Have learners count the bundles and loose ones at the bottom of the frame as the answer.

Step 2:

- i. Write a subtraction problem involving two 2-digit numbers without re-grouping on the board. For example; $58 - 14 =$
- ii. Have learners represent the first number (58) as 5 bundles of tens and 8 loose straws in the first row of the subtraction frame.
- iii. Learners mention “how many tens and units?”
- iv. Have learners represent the second number (14) as 1 bundle of ten and 4 loose straws in the second row.
- v. Have learners match loose straws in units column until the units in the second row gets finished.
- vi. Have learners match the bundles of tens straws in tens column until the tens in the second row gets finished.
- vii. Have learners draw down the remaining unmatched straws in the first row to the bottom of the frame.
- viii. Have learners draw down the remaining unmatched straws in the first row of the tens column to the bottom of the frame.
- ix. Have learners count the bundles and loose ones at the bottom of the frame as the answer.

Therefore:

$$37 - 5 = 32$$

$$58 - 14 = 44$$

Subtraction frame	
Tens	Ones
-	
=	

Figure 5a: Tens subtraction frame

Note for the teacher

- Put Learners into small groups.
- Have Learners do further practice using the above strategy in their groups.
- Go round and assist.
- Invite Learners to demonstrate to the class.



Reflection/Plenary:

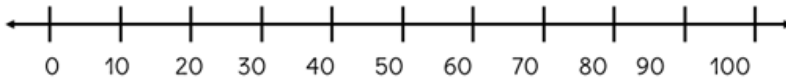
1. How did you use the subtraction frame to solve the problem?
2. Share with the class everyday life situation when subtraction is used?

ACTIVITY 9

Addition and Subtraction Word Problems

Materials/Resources required:

Manila cards, number line.



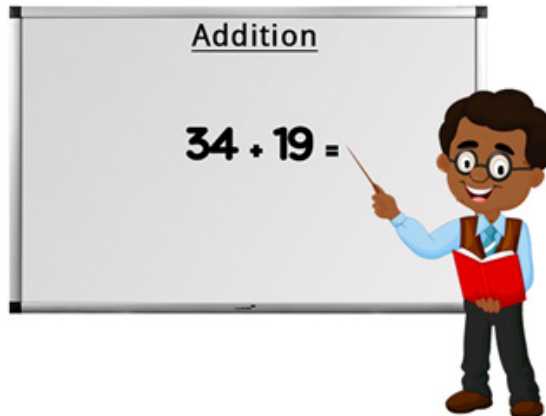
Teacher led Activity:

Discuss with learners everyday situations that involves addition and subtraction.

ACTIVITY 9C

Step 1:

- i. Write an addition word problem on the board/cardboard.



Example

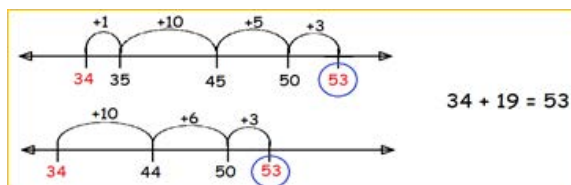
***"Kofi bought 34 wooden boards for his building, he later bought 19 more.
How many boards did he buy for his building?"***

- ii. Have learners read the problem and say
 - a. What is in the story?
 - b. What is being asked for?
 - c. What can I introduce to solve the problem?

- iii. Have learners write the mathematical statement for the word problem.
- iv. Have Learners write the expansion of the two addends.
- v. Have Learners group the tens and the units.
- vi. Have Learners add the tens and the ones separately.
- vii. Have Learners add to obtain the final answer.

Example 1

Using friendly jumps



Example 2

Using partial decomposition

$$34 + 19 = 30 + 4 + 10 + 9$$

$$= 30 + 10 + 4 + 9$$

$$= 40 + 13$$

$$= 40 + 10 + 3$$

$$= 50 + 3$$

$$= 53$$

Note for the teacher

- Put learners into small groups.
- Have learners do further practice using the above strategy to add numbers.
- Go round and assist.
- Invite learners to demonstrate to the class.

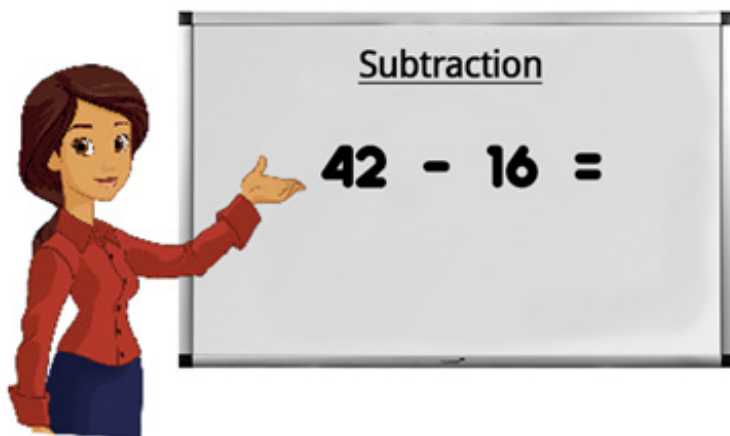


Reflection/Plenary:

How did you use the partial decomposition strategy to solve the addition problem?

Step 2:

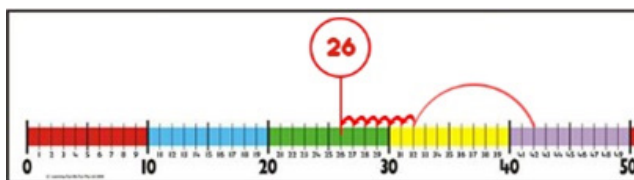
- i. Write an subtraction word problem on the board/cardboard.



For example

***"A bus left a village for Accra with 42 pupils. 16 pupils alighted on the way.
How many pupils were left in the bus?"***

- ii. Have learners read the problem and say
- What is in the story?
 - What is being asked for?
 - What can I introduce to solve the problem?
- iii. Have learners write the mathematical statement for the word problem.
- iv. Have learners draw the number line with number points to include 42.
- v. Learners identify the second number as 1 ten and 6 ones.
- vi. From 42, make friendly jumps of 1 ten backwards/left (to the left) and land on 32.
- vii. From 32, learners make friendly jumps of 6 units to the backwards/left and land on 26.



Therefore, $42 - 16 = 26$

Note for the teacher

- Put Learners into small groups
- Have Learners do further practice using any other strategy in their groups.



- Go round and assist learners
- Invite Learners to demonstrate how to use the number line to the class.

Reflection/Plenary:

1. Share with the class everyday life situation where subtraction is used?
2. What would you do to ensure you improve on your strategy for doing subtraction?

ACTIVITY 10

Multiplication of Whole Numbers

Materials/Resources required:

Countable objects (Straws/sticks/bottle caps, pebbles, beads, beans), small transparent containers, small sacks



Teacher led Activity:

Put learners into convenient groups of 4-6. Provide learners with materials for them to familiarize with. Discuss with learners everyday situation of equal groups and intersections.

ACTIVITY 10C



Step 1:

- Give 12 countable objects to each group.
- Learners form equal groups with not more 9 straws in one group.
- Ask learners to describe the groups formed as 'a groups of b'.
- Learners put the groups together and count to get the product.

For example:

2 groups of 3 straws
6 groups of 2 straws
3 group of 4 straws

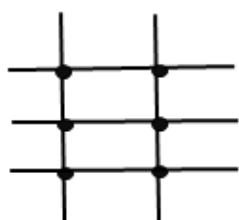
3 groups of 2 straws
2 groups of 6 straws
4 groups of 3 straws

	3 groups of 2 = $3 \times 2 = 6$
	4 groups of 3 = $4 \times 3 = 12$
	2 groups of 6 = $2 \times 6 = 12$

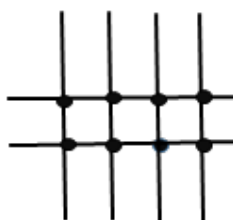
- v. Guide learners to write mathematical sentences for modelled grouping.

Step 2:

- Write a multiplication question on the board. For example find $2 \times 3 =$
- Have learners describe 2 times 3 as 2 legs and 3 arms
- Have learners arrange 2 straws/sticks vertically (legs) and intersect it with 3 horizontal ones (arms).
- Have learners count the number of intersections as the product.



$$2 \times 3 =$$



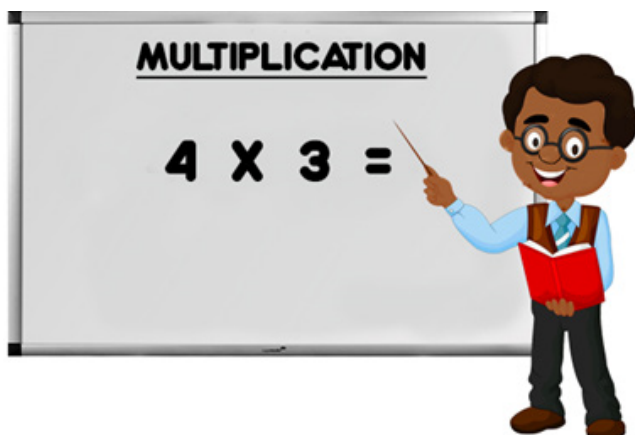
$$4 \times 2 =$$

- Ask Learners to model different multiplication sentences.
- Have learners write multiplication sentences for modelled activity (ladder).



Note for the teacher

- Alternatively, have Learners draw vertical lines to represent the legs and horizontal lines across them to represent the arms and then count the number of intersections as the product.



***“In a class, there are 4 learners each in 3 rows.
How many learners are in the class?”***

x	1	2	3	4	5	6
1	1	2	3	4	5	6
2	2	4	6	8	10	12
3	3	6	9	12	15	18
4	4	8	12	16	20	24
5	5	10	15	20	25	30



Note for the teacher

- Explain that when a number is added to itself a certain number of times that relation is denoted by the multiplication ($\times$) sign.
- Go round and assist groups develop the understanding of the concept.
- Invite Learners to demonstrate the formation of equal groups and intersections of legs and arms to the class

Reflection/Plenary:

Which of the two strategies (grouping or ladder) would you want to use to solve multiplication problems?

Give reasons.

ACTIVITY 11

Division as a way of Sharing

Materials/Resources required:

Countable objects (Straws/sticks/bottle caps, pebbles, beads, beans).



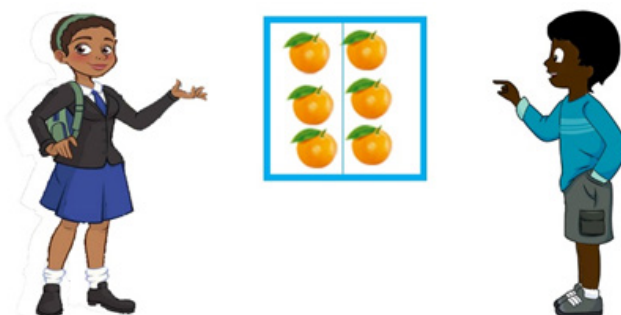
Teacher led Activity:

Provide learners with materials for them to familiarize with. Discuss with learners everyday situation of sharing and grouping of items.

ACTIVITY 11C

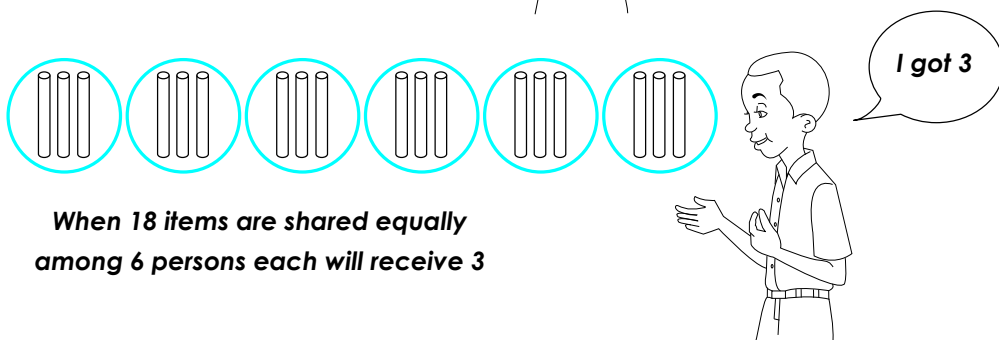
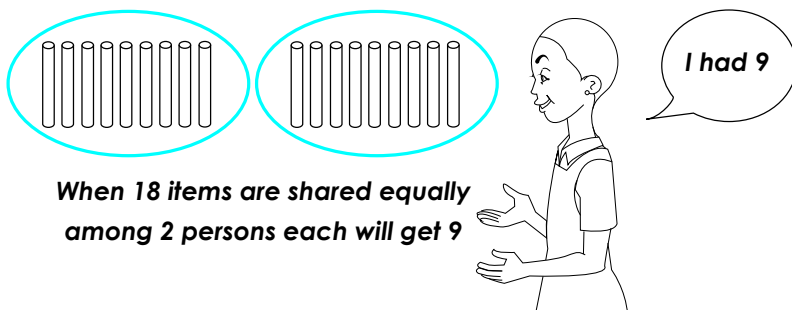
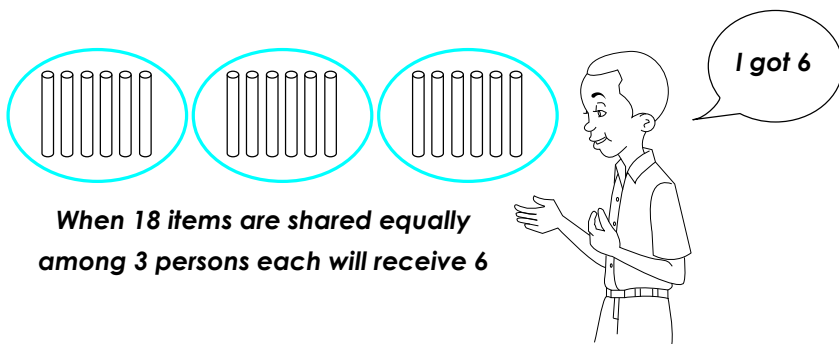
Step 1:

- Put learners into convenient groups.
- Provide each group with materials not more than 9 objects.
- Instruct members in each group to share the materials equally.



“When 6 objects are shared by 2 people each will get 3”

- Have learners count and tell/sign/show the number of objects obtained by each member of the group.
- Provide each group with materials not more than 18 objects.
- Instruct members in each group to share the materials equally.

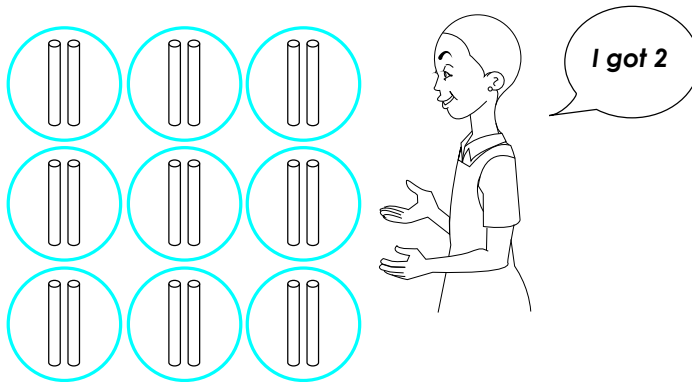


vii. Ask how many participants were given sticks and how many each?

Note: Explain that the process of equal distribution of counting sticks is denoted by the division ($\div$) symbol.

For example, sharing 18 equally among 3, means 18 divided by 3, and is written as $18 \div 3 = 6$.

Similarly, dividing 18 equally among 9, each will have 2. Thus 18 divided by 9 is the same as $18 \div 9 = 2$.



Also, dividing 18 equally among 6, is the same as $18 \div 6 = 3$

And dividing 18 equally among 2, is the same as $18 \div 2 = 9$



Note for the teacher

- Give more tasks for Learners to practice with numbers involving a 2-digits by 1-digit number
- Visit the groups to assist
- Invite groups to demonstrate division as sharing to the class.
- Explain the concept using the common saying “one for you, one for me”

Reflection/Plenary:

1. How using division does by sharing helps you to easily do division?
2. What is difficult about using this method?
3. What is very interesting about the method?
4. What would you do to ensure you improve on the strategy for doing division?

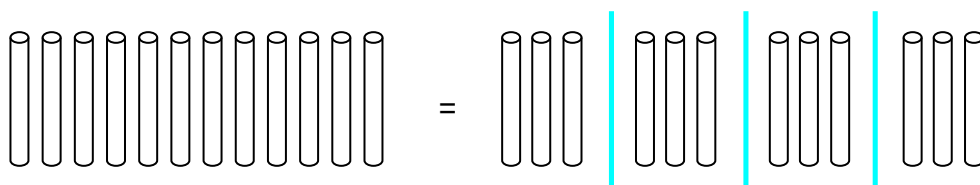
Step 2:

- i. Put Learners into convenient groups.
- ii. Give 12 straws to each group.
- iii. Ask the Learners to put the straws into equal groups of:
 - a. Three and find how many groups they obtain?
 - b. Four and find how many groups they obtain?

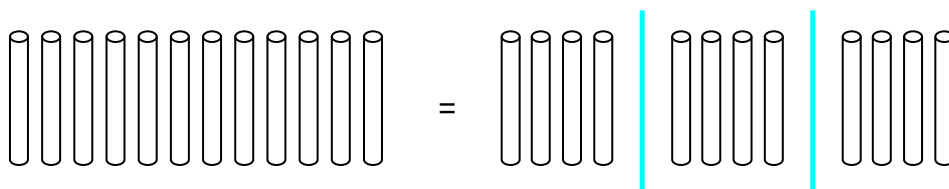
- c. Six and find how many groups they obtain?
- d. Two and find how many groups they obtain?

Note: Explain that when quantities are put into equal sub-groups of a certain number of times, that relation is denoted by the division ($\div$) sign.

For example, when 12 straws are put into equal groups of 3, we have $12 \div 3 = 4$



Similarly, when 12 straws are put into equal groups of 4, we have $12 \div 4 = 3$



Also, when 12 straws are put into equal groups of 6, we have $12 \div 6 = 2$

And when 12 straws are put into equal groups of 2, we have $12 \div 2 = 6$

Note for the teacher

- Give more tasks for Learners to practice with numbers involving a 2-digits by 1-digit number.
- Visit the groups to assist.
- Invite Learners to demonstrate division as grouping to the class.

Step 3:

- i. Put Learners into convenient groups.
- ii. Explain division as a way of repeatedly subtracting a particular number from a given quantity until there is none left and determining the number of times the number is taken from the quantity.
- iii. Write a problem on the problem. For example, $18 \div 3 = ?$
- iv. Have learners subtract 3 repeatedly from 18 and count the number of times they did the subtraction.
- v. Learners tell their answer.

$18 - 3 = 15$	①
$15 - 3 = 12$	②
$12 - 3 = 9$	③
$9 - 3 = 6$	④
$6 - 3 = 3$	⑤
$3 - 3 = 0$	⑥

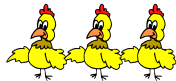
Note for the teacher

- In this strategy, learners repeatedly subtract the divisor (i.e 3) from the given number (i.e 18) until there is nothing left.
- Learners count the number of times 3 was subtracted from 18 which is 6-times. Hence , $18 \div 3 = 6$.
- Give more tasks for Learners to practice with numbers involving a 2-digits by 1-digit number.
- Visit the groups to assist.
- Invite Learners to demonstrate division as grouping to the class.

Reflection/Plenary:

1. Which of the two strategies (grouping or sharing) would you want to use to solve division problems?
2. Give reasons.

MENTAL MATHS ACTIVITIES

“Guess My Number” (Show a number of objects e.g. pebbles and get the participants to estimate its number. Have participants count the items to see who made the best guess)	“Thinking of a number: Ones and Tens” (E.g. I am thinking of a number. The number has 6 ones and 2 tens. What is the number? 26)
“Describing Numbers in Equivalent Ways” (Call out a number and ask participants to describe it in relation with other numbers)	“5 more or less than” (Call out a number and participants say the number which is five more, for example, for 4, the correct response is 9)
“Doubles” (Call out a number and participants say a double of the number, for example, 4 the double is 8)	“1 more than double of” or “1 less than double of” (Call out a number and participants state 1 plus a double of the number, e.g. for 8, the answer is $1 + (2 \times 8) = 17$)
“Skip Count” (2s, 5s, or 10s) (Call out a number and participants skip count in multiples of the number until you say stop, e.g. 2 and participants start 2, 4, 6, ..., ...)	“Chicken and Legs” Call out the number of chickens. Children must call out how many legs in total these chickens have. 
“Pairs that sum to 10/20” Call out a number between 1 and 10 (or 1 to 19). Children call out the number that must be added to make 10 (or 20).	“Find number to make 100 with” I call out a number ending in 0, for example 40. Learners have to call out how many more it would take to make 100

GLOSSARY

The Directed Reading Thinking Activity (DRTA) is a comprehension strategy that guides students in asking questions about a text, making predictions, and then reading to confirm or refute their predictions. The DRTA process encourages students to be active and thoughtful readers, enhancing their comprehension.

DRA Directed Reading Activity.

K-W-L (Ogle, 1986) is an instructional reading strategy that is used to guide students through a text. Students begin by brainstorming everything they know about a topic. This information is recorded in the K column of a K-W-L chart.

The KWL chart or table was developed within this methodology and is a form of instructional reading strategy that is used to guide students taking them through the idea and the text. A KWL table is typically divided into three columns. What do you know, want to know and have learnt.

K	-	what do you K now,
W	-	what do you W ant to know
L	-	what have you L earnt

A story map is a strategy that uses a graphic organiser to help learners learn the elements of a book or story. By identifying story characters, plot, setting, problem and solution, learners read carefully to learn the details. There are many different types of story map graphic organisers.