Teaching at the Right Level

DELIVERY GUIDE

Teaching at the Right Level (TaRL) has been adapted from Pratham in India and is a collaboration between Department of Education, Ministry of Basic, Higher and Technical Education, Young 1ove and TISA.

HOW TO USE THIS GUIDE

This guide is your go-to Teaching at the Right Level (TaRL) resource. It provides comprehensive details and resources that will help you ensure classroom success everyday.

1 In Part One, you will find an overview of the **four TaRL Pillars**. These key activities define TaRL and are the essential ingredients to produce impact.

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2 In Part Two, you will learn how to **turn the TaRL Pillars into action**. This section explains how we move from assessing each student to placing them in appropriate groups, according to their learning needs.

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3 In Part Three, you will **learn the basics of teaching place value and all four basic operations** (addition, subtraction, multiplication, division). You will also learn how to facilitate **activities** where students learn and practice number recognition, place value and the basic operations.

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4 In Part Four, you will learn how to **complete weekly plans and lesson plans**. This section will help you take what you have learnt and plan and prepare for your lessons.

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5 In Part Five, you will learn how to **target your instruction.** This section will help you to select appropriate checkpoints for the objectives you are teaching. You will also learn to use data to know when to **progress** your students to the next l**evel of difficulty or the next operation**.

Throughout the guide you will see this icon. This points you to the Resource Kit. The Resource Kit provides additional resources on different concepts as well as the templates and exemplars you will need.

TABLE OF CONTENTS

Part I: WHAT IS TEACHING AT THE RIGHT LEVEL?

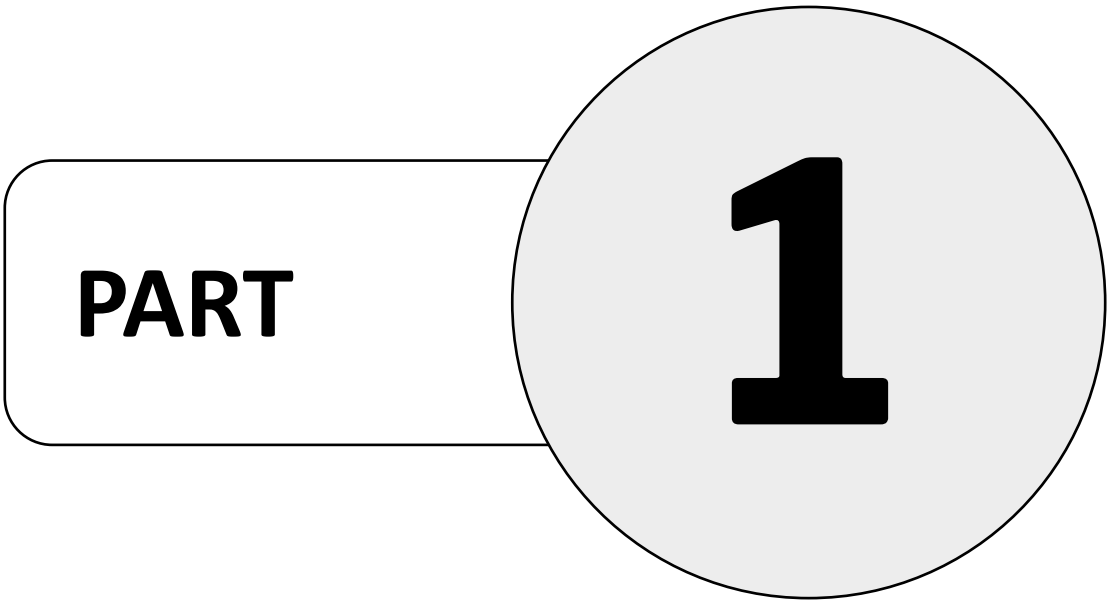
Part II: LEVELLING & GROUPING

Part III: TEACHING & LEARNING

Part IV: LESSON PLANNING

TABLE OF CONTENTS

Part V: TARGETED INSTRUCTION



WHAT IS TEACHING AT THE RIGHT LEVEL?

TEACHING AT THE RIGHT LEVEL

WHO?	*Youthful facilitators teach elementary learners*
WHAT?	*1-hour basic Numeracy lessons on Number Recognition, Place Value and basic operations.*
WHEN?	*Every day after (or during) school for 25 - 30 days*
HOW?	✔ *Assess on basic Numeracy skills* ✔ *Group by learning ability* ✔ *Teach students at their actual learning level with simple, targeted materials and fun activities*
WHY?	*To catch students who have fallen behind and ensure that all students achieve basic Numeracy.*

...so KIDS <u>LEARN!</u>

TaRL CALENDAR AT A GLANCE

	Week	Monday	Tuesday	Wednesday	Thursday	Friday
	1	TRAINING WEEK 1				
	2	TRAINING WEEK 2				
	3	BASELINE LEVELLING		LESSON PLAN PREP		
Progressive Levelling	4	Behaviour Management Session		TaRL WEEK 1: Structured Lesson Plans		
Progressive Levelling	5	TaRL WEEK 2: Flexible Lesson Plans				
Progressive Levelling	6	TaRL WEEK 3: Flexible Lesson Plans				
	7	MIDLINE LEVELLING		LESSON PLAN PREP		
	8	Behaviour Management Refresher		TaRL WEEK 4: Flexible Lesson Plans		
	9	TaRL WEEK 5: Flexible Lesson Plans				
	10	TaRL WEEK 6: Flexible Lesson Plans				
	11	ENDLINE LEVELLING		Student Appreciation & Teacher Training		

To note:

- ✔ **Behaviour Management Session.** The first lesson of Week 1 and Week 4 is dedicated to establishing classroom routines and a positive learning culture in order to curb behaviour issues throughout the program (See an exemplar for this lesson later in the guide)
- ✔ **Structured Lesson Plans.** These lesson plans have stronger requirements for classroom engagement and content. This structure, at the beginning of the first implementation block, sets the tone for TaRL learning.
- ✔ **Flexible Lesson Plans.** As Facilitators become more comfortable with students and identify their learning gaps, they may use a more flexible approach to lesson plan design.
- ✔ **Progressive Levelling.** In addition to scheduled levelling, students may be assessed and re-grouped any time between midline and endline.

THE FOUR PILLARS OF TEACHING AT THE RIGHT LEVEL

The Four Pillars embody TaRL philosophies, represent key program activities, and are critical to success. TaRL has impact on student learning *when the four pillars are implemented consistently and at quality.*

1

Assess and group by ability

Students are sorted into **LEVELS based on their performance on the numeracy assessment. They are then placed in** GROUPS with other learners on the same or a close level. This ensures students are taught the right skills at the right time.

2

Targeted instruction

Once levelled and grouped based on the numeracy assessment, students are **taught according to their learning needs**: Facilitators target student learning with **objectives, checkpoints, and group-specific activities.**

3

Fun and engaging teaching

In TaRL, students have fun while learning the basics. We use **simple and engaging materials and methods to teach numeracy concepts**.

4

Strong implementation systems

TaRL is supported by robust teams, policies, and procedures, such as rigorous monitoring, evaluating, and reporting.

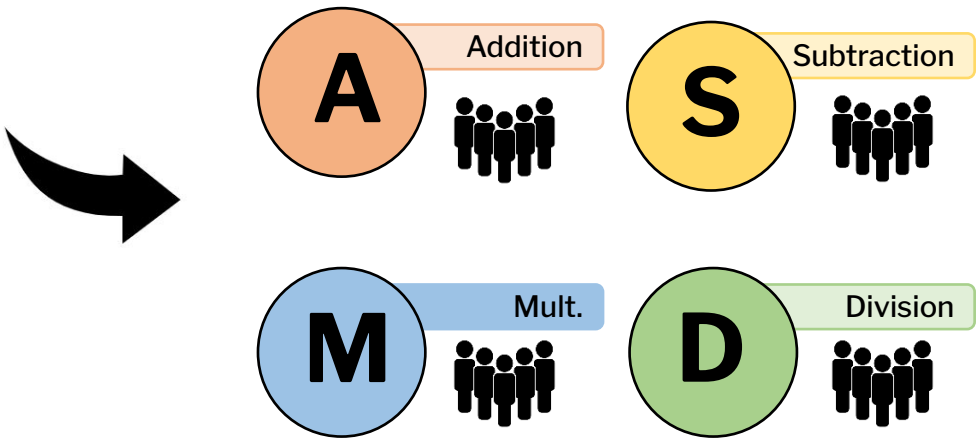
EXPLAINING THE FOUR PILLARS (1 & 2)

1 Assess and group by ability Level

Students are sorted into **LEVELS** and then **GROUPS** based on their performance on the numeracy assessment.

LEVELS
refer to students' performance on the numeracy assessment.

GROUPS
refer to what students learn in their TaRL class.



2 Targeted Instruction

Targeted instruction means teaching students according to their learning needs.
How does TaRL ensure this?

TaRL facilitators use, **specific objectives** to guide what will be learnt in each lesson and, **checkpoints** within the lesson to monitor each student's understanding of the objective. Facilitators use the data collected from the checkpoints to make informed adjustments to their lessons to better meet student's needs.

At intervals through the programme, **levelling assessments** provide another method of monitoring. These results help facilitators to refine their instruction further, according to individual student performance.

OBJECTIVES
provide a clear, targeted, and tangible focus for each lesson.

LEVELLING & MONITORING
provide an update on learner level that can be used for lesson planning.

Further to this, TaRL lessons are taught through a balance of teacher-led and student-led **whole class, small group and individua**l activities. These allow students to engage in learning in ways that suit their specific learning preferences and needs.

EXPLAINING THE FOUR PILLARS (3 & 4)

3 Fun & Engaging Teaching

In TaRL, students have fun while learning the basics. We use **simple and engaging materials and methods to teach numeracy concepts**:

The Five Modes of Instruction

- ✔ Listen
- ✔ Read
- ✔ Write
- ✔ Speak
- ✔ Do

Class Formations

- ✔ Whole Class
- ✔ Small Group
- ✔ Pair
- ✔ Individual

Find more about formations in the Resource Toolkit

Simple Materials

- ✔ Counting sticks
- ✔ Chalk place value circles
- ✔ Number books
- ✔ Multiplication Table
- ✔ Paper Money

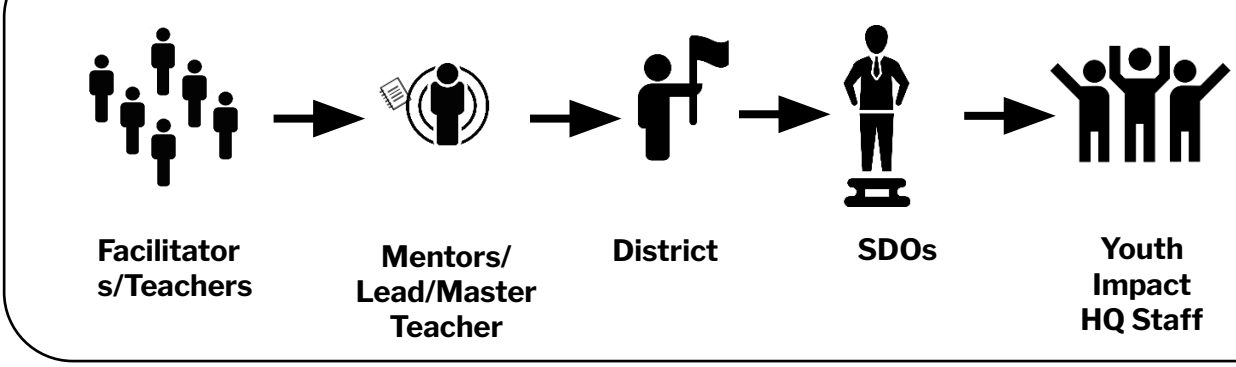
4 Strong Implementation Systems

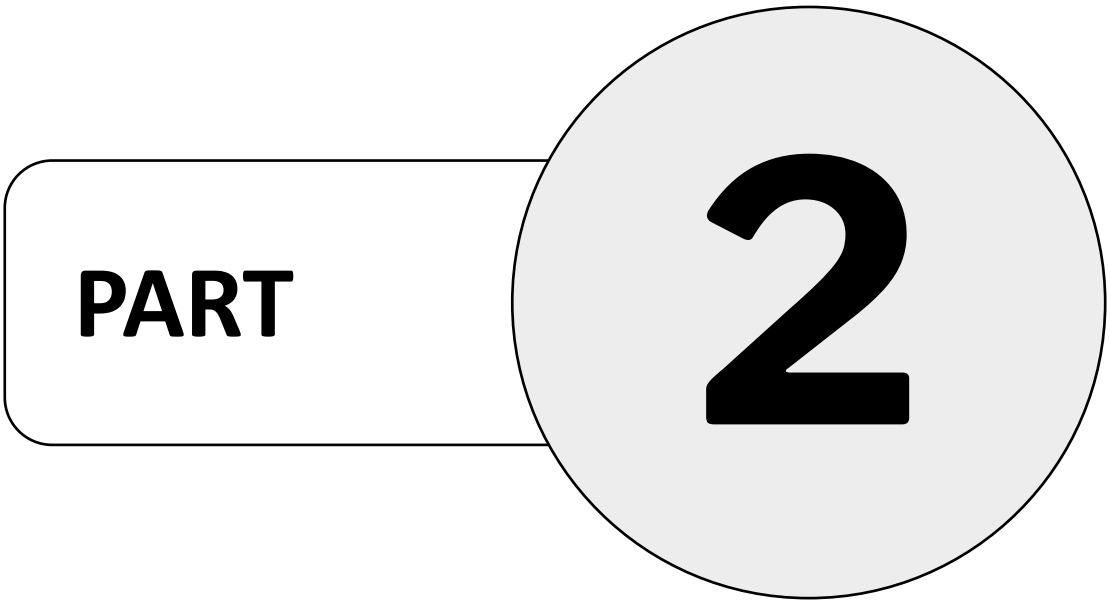
TaRL is supported by robust teams, policies, and procedures:

The TaRL Family

Implements and manages program operations and procedures, such as rigorous monitoring, evaluating, and reporting.

- ❑ Facilitators/Teachers
- ❑ Mentors/Lead Teachers/Master Teacher
- ❑ School Management, PTA
- ❑ District and Math Supervisors
- ❑ Schools Division Management
- ❑ Training Manager (TM)
- ❑ Youth Impact Headquarters Staff





LEVELLING & GROUPING

LEVELLING OVERVIEW

What is levelling?

Before teaching, we group students according to their actual numeracy ability, regardless of their class, age, or standard in school. This process is called 'levelling'—we 'level' students by:

1) **Assessing basic numeracy with a simple assessment tool**
2) **Putting students at the right 'level' in targeted learning groups.**

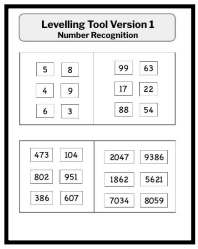
This allows us to see where students have fallen behind in numeracy and how to target instruction to students' needs.

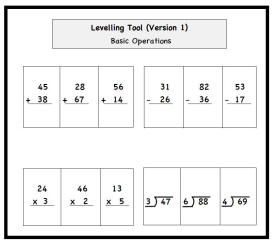
Basic numeracy assessment

Targeted learning groups

The Levelling Assessment Tool

The levelling tool assesses students' proficiency in fundamental areas of basic numeracy: number recognition, place value and the four operations.





Find the Levelling Tools in the Resource Toolkit

The Levelling Approach

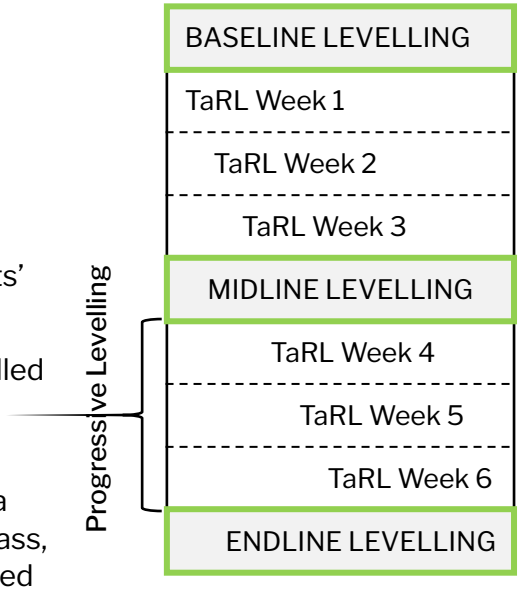
We conduct levelling using a one-on-one approach: ***a facilitator sits with a single student and guides them through the short assessment.*** This approach helps students to feel comfortable and fosters a friendly and intimate learning environment.

When should you level?

We conduct levelling at three distinct times in the intervention:

1) **Baseline.** Before the intervention starts, students are assessed so that they can be grouped according to their current level of understanding.
2) **Midline.** Half-way through the intervention, students are re-levelled and re-grouped in order to determine students' progress during the first implementation block.
3) **Endline.** At the end of the intervention, students are levelled to assess overall learning during the program.

We also conduct '*progressive levelling*' on a need-basis between midline and endline. If a facilitator notices that a student is achieving all learning objectives in the TaRL class, a facilitator can recommend that the student be re-levelled before endline. This process allows students to move to the next learning group and advance their learning.



THE LEVELLING SCRIPT

Greeting and introduction

Set up a private individual assessment station for one-on-one levelling with students. Assess students one at a time. When a student approaches, greet them with a smile. Once they arrive, continue smiling, and offer them a high-five or a fist bump.

1. *Hi I'm ____ and you are? How are you? Do you prefer us to speak in English or in Filipino? So, you are comfortable with [repeat what language they chose].*
2. *Do you know what we are going to do? [Let student respond] That's right, we are here to do a fun math activity.*
3. I am going to ask you a few questions before we start our activity, is that okay?

Ask demographic questions (name, consent, standard & class, gender, age) and record answers on the Levelling Sheet.

Note the tool version (even or odd) to use during the assessment.

Find a template of the Levelling Sheet in the Resource Toolkit

Comforting small talk

Before starting the assessment, make small talk with the student to help them feel more comfortable. Try to match their mood—if they're confident, be very chatty; if they are shy, ask fewer questions and instead comfort and reassure them that this is not a test. Fist bumps and high fives are also a great way of creating a comfortable environment.

1. Where are you from? What's your favourite colour? What's it like living here?

Continue making small talk until you feel that the child is comfortable. Begin the assessment once you feel sure that the student is calm and does not feel like they are being tested.

The Levelling Assessment

1. As I have mentioned, I am not testing you and so please feel free and comfortable. You can also ask me any questions at any time. Is that fine?
2. "I have some Maths games we are going to complete. Are you ready?"
3. "˜On the page you can see…You will…"
   You will follow the instructions on "how to level number recognition" and "how to level basic operations" on the following pages.
4. Remember to give student "high fives" and "snaps"

After completing the Levelling Assessment

1. We are done now. Thank you so much for your time. Please call the other student when you get to class.

How to level: THE GOLDEN RULES

How do you ensure you are levelling students correctly?
Have these rules in mind as you learn more about how to level.

1 A two-part assessment

Part 1: You will assess the student's **number recognition.**

Part 2: You will assess the student's understanding of **basic operations**.

2 Prepare the student

Explain the levelling rules carefully to the student.

Allow them to choose the 4 numbers or 2 problems they will answer. Help them if needed. They may use **scrap paper** for working out.

Try to ensure that the student is comfortable and stress-free!

3 3 minutes per problem

Give the student **3 minutes to solve each basic operation problem**.

If they take longer, allow them to finish and then later consider their answer incorrect, because they went over time.

4 Allow student to try again ONCE

If the student **gets ONE question wrong, allow them one additional try**.

- If they answer correctly on the second try, proceed to the next question.
- If they answer incorrectly, stop the assessment and record student level.

Number Recognition: If the student identifies 3 out of 4 numbers correctly, allow **ONE additional attempt** to correct their 1 wrong number.
Operations: if they solve 1 out of 2 problems correctly, allow them **ONE additional attempt** to correct it.

5 When in doubt, use the Resource Kit

The Resource Kit includes,

- **Model answers** needed: needed especially to facilitate Part 2
- Various templates

Follow instructions to record the student's assessment results. **Write down observations** (common mistakes), which might help you when you teach.

HOW TO LEVEL NUMBER RECOGNITION (Part 1 of assessment)

Remember the 5 golden rules as you move through part 1!

- *Say for each number page:* On the page you can see some numbers. You will read some of them. Which 4 numbers would you like to try? Will you choose or shall I?"

1 1-digit numbers — Start HERE

5	8
4	1
6	3

CANNOT RECOGNISE 4 NUMBERS
- ✔ Stop this part of assessment
- ✔ **Student scores 0** on the levelling sheet for highest number recognition
- ✔ Proceed to Part 2 (basic operations)

RECOGNISES 4 NUMBERS:
- ✔ Proceed to 2-digit numbers

2 2-digit numbers

99	63
17	22
88	54

CANNOT RECOGNISE 4 NUMBERS
- ✔ Stop this part of assessment
- ✔ **Student scores 1** on the levelling sheet for highest number recognition
- ✔ Proceed to Part 2 (basic operations)

RECOGNISES 4 NUMBERS:
- ✔ Proceed to 3-digit numbers

3 3-digit numbers

473	104
802	951
386	607

CANNOT RECOGNISE 4 NUMBERS
- ✔ Stop this part of assessment
- ✔ **Student scores 2** on the levelling sheet for highest number recognition
- ✔ Proceed to Part 2 (basic operations)

RECOGNISES 4 NUMBERS:
- ✔ Proceed to 4-digit numbers

4 4-digit numbers

2047	9386
1862	5621
7034	8059

CANNOT RECOGNISE 4 NUMBERS
- ✔ **Student scores 3** on the levelling sheet for highest number recognition
- ✔ Proceed to Part 2 (basic operations)

RECOGNISES 4 NUMBERS:
- ✔ Student scores 4 for highest number recognition
- ✔ Proceed to Part 2 (basic operations)

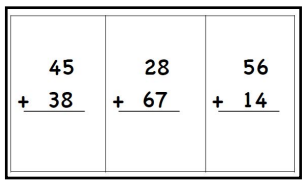
Remember the template is in the Resource Toolkit

HOW TO LEVEL BASIC OPERATIONS (Part 2 of assessment)

Remember the 5 golden rules as you move through part 2!

- *<u>Say for each operation:</u> On the page you can see some problems. You will solve some of them. Which two would you like to try? Will you choose or shall I?*
- *<u>Say for each operation:</u> Remember the problems are shown in columns. If you need, you can use scratch paper to work them out. "*

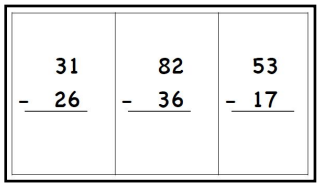
1 Addition — Start HERE



CANNOT SOLVE:
- ✔ Stop assessment
- ✔ **<u>Student scores B</u>** on the levelling sheet for highest operation

SOLVES 2 CORRECTLY:
- ✔ Proceed to next operation

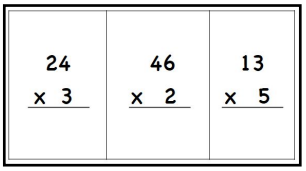
2 Subtraction



CANNOT SOLVE:
- ✔ Stop assessment
- ✔ **<u>Student scores A</u>** on the levelling sheet for highest operation

SOLVES 2 CORRECTLY:
- ✔ Proceed to next operation

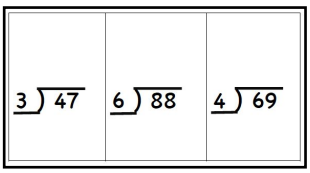
3 Multiplication



CANNOT SOLVE:
- ✔ Stop assessment
- ✔ **<u>Student scores S</u>** on the levelling sheet for highest operation

SOLVES 2 CORRECTLY:
- ✔ Proceed to next operation

4 Division



CANNOT SOLVE:
- ✔ Stop assessment
- ✔ **<u>Student scores M</u>** on the levelling sheet for highest operation

SOLVES 2 CORRECTLY:
- ✔ Stop assessment.
- ✔ Student scores D for highest operation

RECORDING ON THE LEVELLING SHEET

Complete before the assessment

Levelling Sheet

Date: Day [0 3] Month [0 7] Year [2 3] Levelling round: ⊗ Baseline ○ Midline ○ Endline

Region: North East School Name: Lesedi School Facilitator: Elizabeth Tlhalerwa

#	Full Name	Consent	Standard & Class	Gender	Est. Age	Tool Version	Highest Num. Recognition (0/1/2/3/4)	Highest Operation (B/A/S/M/D)
1	Kaone Kgope	⊗Y ○N	4A	○M ⊗F	9	Even	2	B
2	Otsile Mphusu	⊗Y ○N	4A	⊗M ○F	10	Odd	3	A
3	Kutlwano Molelu	⊗Y ○N	4A	○M ⊗F	9	Even	1	B
4	Kealeboga Mfolwe	⊗Y ○N	4A	○M ⊗F	9	Odd	3	B
5	Itumele Prince	⊗Y ○N	4A	⊗M ○F	11	Even	3	A
6	Andrek Pelle	⊗Y ○N	3D	⊗M ○F	9	Odd	2	B
7	Karunga Thimonyo	⊗Y ○N	3D	⊗M ○F	10	Even	2	A
8	Tshepi Limba	⊗Y ○N	3D	○M ⊗F	10	Odd	1	B
9	Katlego Botshelo	⊗Y ○N	3D	○M ⊗F	9	Even	0	B
10	Tacheba Mbuchili	⊗Y ○N	3D	⊗M ○F	10	Odd	0	B
11		○Y ○N		○M ○F		Even		
12		○Y ○N		○M ○F		Odd		
13		○Y ○N		○M ○F		Even		
14		○Y ○N		○M ○F		Odd		
15		○Y ○N		○M ○F		Even		
16		○Y ○N		○M ○F		Odd		
17		○Y ○N		○M ○F		Even		
18		○Y ○N		○M ○F		Odd		
19		○Y ○N		○M ○F		Even		
20		○Y ○N		○M ○F		Odd		
21		○Y ○N		○M ○F		Even		
22		○Y ○N		○M ○F		Odd		
23		○Y ○N		○M ○F		Even		
24		○Y ○N		○M ○F		Odd		
25		○Y ○N		○M ○F		Even		
26		○Y ○N		○M ○F		Odd		
27		○Y ○N		○M ○F		Even		
28		○Y ○N		○M ○F		Odd		
29		○Y ○N		○M ○F		Even		
30		○Y ○N		○M ○F		Odd		

During the greeting and introduction, ask demographic questions (name, grade & class, gender, age) and record answers here.

During the greeting and introduction, check the child consents to doing the exercise.

Note the tool version (even or odd) you are using.

The highest digit & operation: Follow "How to level number recognition" instructions

Levelling Summary:

B	A	S	M	D	*Total*
7	3	0	0	0	10

Count the number of students in each level:

- B (beginner, cannot add),
- A (addition),
- S (subtraction), M (multiplication),
- D (division)

LEVELLING RESULTS & ABILITY GROUPING

NUMBER RECOGNITION		
Student Performance in the Levelling Assessment	**What to Record on the Levelling Sheet**	**Student will Learn**
Cannot recognise 1 digit	Beginner (B)	1 digit
Cannot recognise 2 digits	1 digit	2 digits
Cannot recognise 3 digit	2 digits	3 digits
Cannot recognise 4 digits	3 digits	4 digits
Can recognise 4 digits	4 digits	4 digits

KEYNOTES

1. *When teaching you will begin teaching place value using 2-digits. This is for all students, including beginners.*
2. *You will learn that when grouping, we use basic operations results, not number recognition. This means the group name is determined by the operation that will be learnt.*

BASIC OPERATION		
Student performance	**What to record on the levelling sheet**	**Student learns (Teaching group)**
Cannot ADD	Beginner (B)	Addition
Cannot SUBTRACT	Addition (A)	Subtraction
Cannot MULTIPLY	Subtraction (S)	Multiplication
Cannot DIVIDE	Multiplication (M)	Division
Can Divide	Division (D)	Division

FROM LEVELS TO GROUPS

GROUPING PROTOCOL

- ✔ When grouping, use **basic operations results**, not number recognition. This means the group name is determined by the operation that will be learnt.
- ✔ Assign each student to their teaching groups
- ✔ The recommended group size is **25 students per group.**
- ✔ Where possible, each facilitator should have a similar number of students, with students' need for support also considered.

Let's try this example:

46 students have been levelled (assessed). Below are their results.

Levelling Results *The numbers below are how many students achieved that level in their assessment*	Teaching Group *Students will enter a group and learn content from a level higher than their assessment performance level.*
Beginner – *15*	**Group A** – *learns addition*
Addition - *7*	**Group S** – *learns subtraction*
Subtraction – *13*	**Group M** – *learns multiplication*
Multiplication – *9*	**Group D** – *learns division*
Division - *2*	

But we have 3 facilitators and 4 levels, so what do we do?

- ✔ Combine teaching groups to form classes.
- ✔ Give **priority to lower-level classes** i.e try to keep them by themselves.
- ✔ Pair lower levels together and do the same with upper levels e.g. AS or MD.
- ✔ Do NOT pair a lower level with a higher level group. eg AD or SD

B-15 → **A- 15**

Facilitator 1
- *A Class*
- *15 Students*

A-7, S-13 → **SM- 20**

Facilitator 2
- *SM Class*
- *20 Students*

M-9, D-2 → **D-11**

Facilitator 3
- *D Class*
- *11 Students*

TEACHING & LEARNING

TEACHING PLACE VALUE

A solid understanding of place value is vital for students to add, subtract, multiply and divide accurately. When practicing place value, students learn that the value of a number is determined by the placement of its digits.

KEY NOTES:

- ***Begin by teaching place value of 2-digit numbers.*** *This is for all operations.* Students here should place, read, write and solve.
- Always begin with units, and move from right to left.
- Always conclude by asking students the values of each digit in the number again.

Place Value Learning Activities

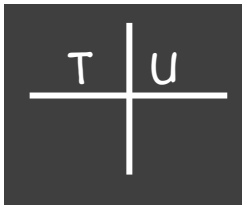
1. **Stone Throw**= All levels
2. **Sticks Bundling**= Addition and Subtraction
3. **Play Money**= Division

Teaching **PLACE VALUE** w/ stick bundling

Word Statement: Sunshine ate 23 sweets. Let's find the value of 23.

✓ Step 1: Read the problem as a class and draw the place value table with tens and units [T | U].

- *We are going to find the value of each number in 23. Because our number has two digits, we want to find its value in terms of tens and units in the place value table.*



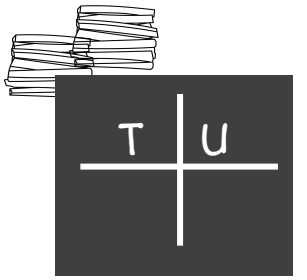
✓ Step 2: Explain you will use sticks to represent the sweets.

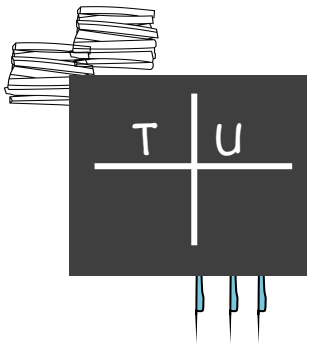
✓ Step 3: Explain place value task.

- *We are going to count and bundle sticks to help us identify the tens and units in the number and thus place the number into the place value table.*

✓ Step 4: Count 1 - 10.
Count and bundle 10 sticks then place them above the tens column.

- *Let's count: 1,2,3...10.*
- *We have counted ten, we must stop and make a bundle. Do we put the bundle on the units side of the place value table? No. We have to put it in the place value table on the tens side.*
- *Let's count another ten: 1, 2, 3, 10*
- *We have counted another ten, so let's make another bundle. Do we put it in the place value table on the units side? No. We have to bundle the sticks and put it in the place value table on the tens side too.*
- *We have two bundles of ten sticks.*
- *Quick check: do we have more or less than 9 sticks left? If we have more than 9, we can make another bundle. If we have less than 9, we move to the next step (the units). We have less, let's move to the next step.*





TEACHING PLACE VALUE

Teaching **PLACE VALUE** w/ stick bundling

✓ Step 5: Count the remaining sticks

Count 1,2,3 and and place the sticks below the units column.

- *Let's count the remaining sticks: 1,2,3*
- *We place these in the units column because they are less than ten.*

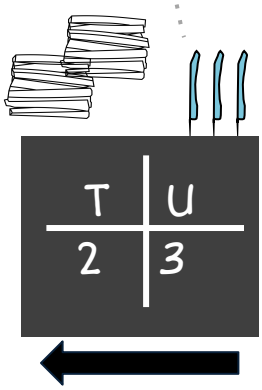
KEY POINTS

Remind students of the bundling rule.

- *A bundle is made of ten sticks and we call that 1 ten.*
- *When counting less than 10 sticks, we refer to units.*
- *After counting and placing the bundles and sticks, we record our values in the place value table and always begin with units.*

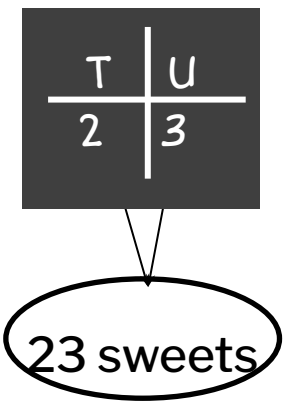
✓ Step 6: Write down the values of number in the place value table.

- *Remember we always start with the units which are on the right. We will start writing the units. Remember any sticks which did not make up a bundle (are less than 10) are units. We have 3 sticks, so we have 3 units. Write the 3.*
- *Next we move towards the tens column. Lets count how many tens we have (1 ten, 2 tens).* Write the 2 in the tens column.
- *How many units does 23 have? (3). This means there is 3 in 23. How many tens does 23 have? (2 tens). We know 2 tens is the same as 20. This means 23 has 2 tens or 20 in it.*



✓ Step 7: Bring down the numbers to create a whole number.

- *We have placed our number based on the value of each of its digits. Now we will bring these down to make a whole number.*
- *How many units does 23 have? (3) How many tens does 23 have? (2)*
- *Remember the sticks represented sweets. So, we will add the word sweets here.*



KEYNOTE: checking your answer

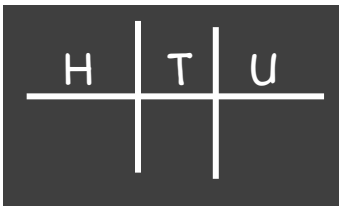
Checking the accuracy of your answer is important in Maths. Encourage students to count the sticks to verify there are indeed 23 - and 23 sweets is the correct answer.

Students make some common errors when performing procedures requiring place value. Consult the Resource Kit for some handy tips on how you might support them to make less errors.

TEACHING PLACE VALUE

Teaching **PLACE VALUE** w/ Play Money

<u>Problem Statement</u>: Bono gets P572 out the bank. Let's find the value of 572.



✓ <u>Step 1</u>: Read the problem as a class. Write the place value table with hundreds, tens and units [H | T | U].

- *We are going to find the value of 572. Because our number has three digits, we want to find its value in terms of hundreds, tens and units.*

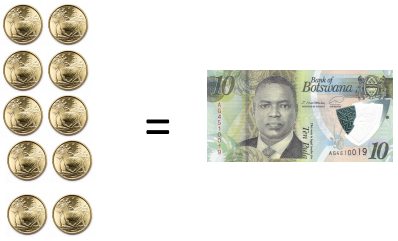
✓ <u>Step 2</u>: Introduce 'the bank' and link money to place value.

- *Here in my bank I have one hundred pula notes, ten pula notes and one pula coins. My one pula coins represent units. My ten pula notes represent tens. My hundred pula notes represent hundreds.*
- *This means when we use the place value table,*
  - *for units we use the one pula coins,*
  - *for tens we use the ten pula notes and*
  - *for hundreds we use the hundred pula notes.*

CONVERSION OF MONEY

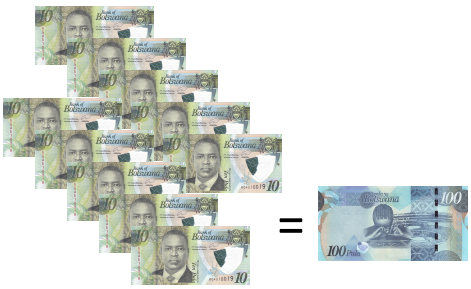
✓ <u>Step 3</u>: Introduce the change rules for 1 to 10.

- *Which is smaller - 1 or 10? Let's see how many one pula coins make up a ten pula note.*
  Count 1,2,3,4,5,6,7,8,9,10 one pula coins.
- *10 one pula coins is the same as (or equal to) 1 ten pula note.*



✓ <u>Step 4</u>: Introduce the change rules for 10 to 100.

- *Which is smaller? 10 or 100? Let's see how many ten pula notes make up a hundred pula note.*
  Count 10, 20, 30, 40, 50, 60, 70, 80, 90, 100 ten pula notes.
- *10 ten pula notes is the same as (or equal to) 1 hundred pula note.*

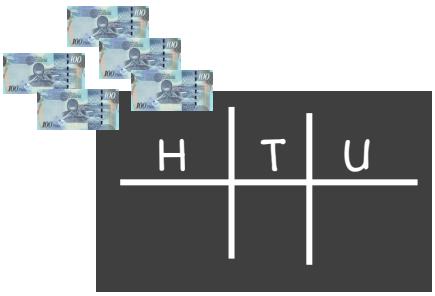


✓ <u>Step 5</u>: Review problem and count P572.

- *How many pula does Bonno have? 572.*

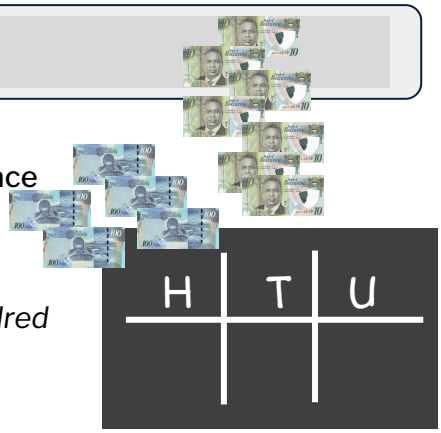
✓ <u>Step 6</u>: Count hundreds, place money above the H column of the place value table.

- *Let's count and start with the hundreds... 100, 200, 300, 400, 500.*
- *Let's place our 5 hundred pula notes near the hundreds column.*



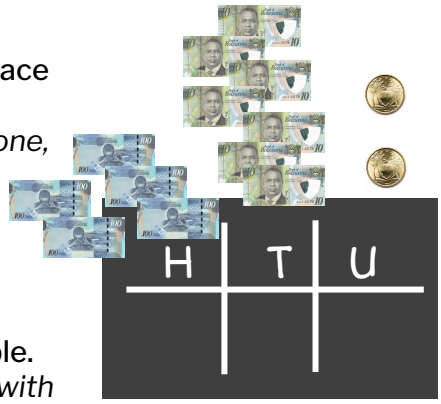
TEACHING PLACE VALUE

Teaching **PLACE VALUE** w/ Play Money



✓ <u>Step 7</u>: Count tens, place money above the T column of the place value table.

- *Let's count the tens now... five-hundred AND ten, five-hundred AND twenty, five-hundred and thirty, five-hundred and forty, five-hundred and fifty. five-hundred and sixty, five-hundred and seventy*
- *Let's place our 7 ten pula notes near the tens column.*

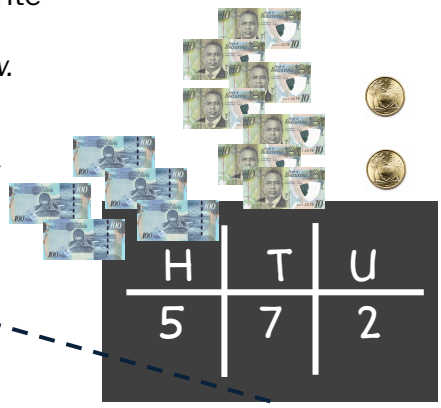


✓ <u>Step 8</u>: Count units, place money above the U column of the place value table.

- *Let's count the units now... five-hundred AND seventy-one, five-hundred AND seventy-two*
- *Let's place our 2 one pula coins near the units column.*

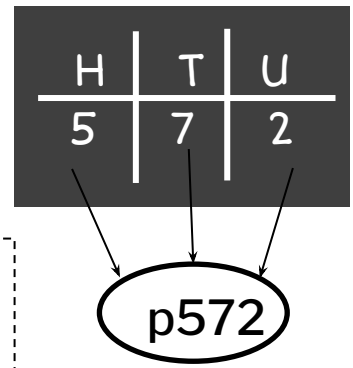
✓ <u>Step 9</u>: Convert the counted money to digits in place value table.

- *We will start with the units. Remember we always start with the units which are on the right. The one pula coins represent units. We have 2 coins, so we have 2 units* (Write 2).
- *We move towards the left. So let's work on the tens now. The ten pula notes represent tens. We have 7 ten pula notes, so we have 7 tens* (Write 7).
- *Last is the hundreds. The hundred pula notes represent hundreds. We have 5 hundred pula notes, so we have 5 hundreds* (Write 5).



✓ <u>Step 10</u>: Bring down the digits to create a whole number.

- *Let's bring the digits down to make a whole number. We start with the units, then tens, then hundreds.*
- *How many units does 572 have? (2) How many tens does 572 have? (7) How many hundreds does 572 have? (5)*
- *Remember we are working with money. So, we will add the P for Pula.*



KEYNOTE

There is no need to count the money again after writing it as whole number but if any student has doubts, let them count the money to verify.

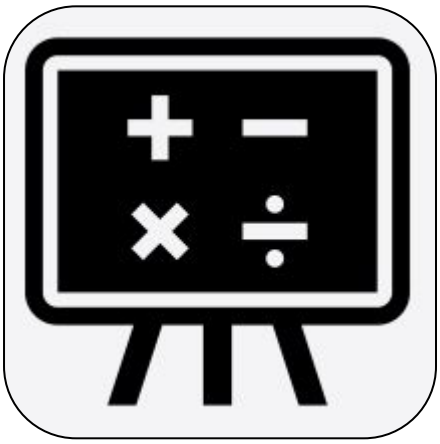
TEACHING BASIC OPERATIONS

USING FOUR QUESTIONS TO SOLVE PROBLEMS

Read out the word problem to the students. Point to each word as you read it.

Word problem: Temogo goes to the shop and spends P16 on biscuits. He also buys a box of juice for P19. How much money does he spend in total?

Ask the four questions to check their understanding of the word problem:



1. **What information are we given (in the word problem)?**
   - *Temogo goes to the shop and spends P16 on biscuits. He also buys a box of juice for P19.*
2. **What are we being asked?**
   - *(how much money does he spend in total?)*
3. **What do we have to do?**
   - *(Add - P16 and P19)*
4. **Why?**
   - (To know how much he will spend in total.)

ADDITION W/ REGROUPING

Temogo goes to the shop and spends P16 on biscuits. He also buys a box of juice for P19. How much money does he spend?

Step 1: Read the problem.
Ask the 4 questions.

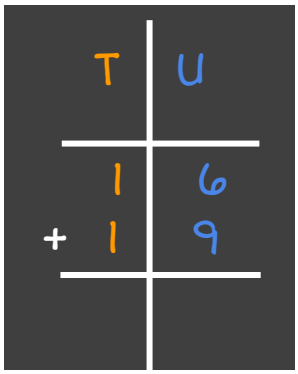
1. **What information are we given (in the word problem)?**
   - *P16 on biscuits, P19 on juice*
2. **What are we being asked?**
   - *How much money does he spend?*
3. **What do we have to do?**
   - *Add - P16 and P19*
4. **Why?**
   - To know how much he spent in total.

Students make some common errors when performing operation procedures. Consult the Resource Kit for some handy tips on how you might support them to make less errors.

ADDITION W/ REGROUPING

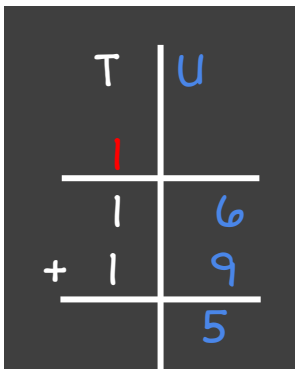
Temogo goes to the shop and spends P16 on biscuits. He also buys a box of juice for P19. How much money does he spend?

Step 2: Draw the addition table.
Place your numbers.
Ensure the **tens digits are on the left** and **unit digits are on the right**.



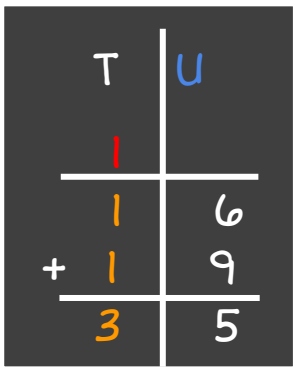
Step 3: Remember to always begin with the digits on the right (units).
Add the digits in the units column.
[6 + 9 = 15]

Step 4: The total is more than ten.
We take the number and break it into its tens and units. There are [5] units (or 5) and [1] ten (or 10) in [15].
We place the units into the lower units section. Place the [5].
We now have to carryover the [1] to the upper tens column because it is a ten and a ten CANNOT stay in the units column!



Step 5: Add the digits in the tens column.
Remember to add the extra ten (represented by a 1) in the upper tens column.
[1 + 1 + 1 = 3]

Step 6: **Place the 3 in the lower tens column.**

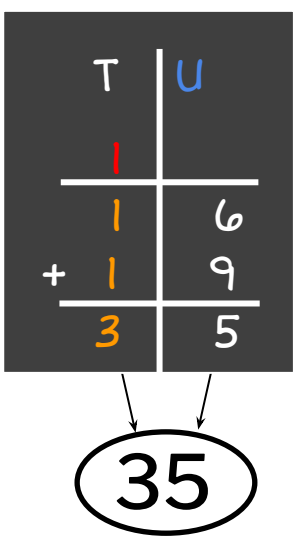


Step 7: Read you final answer. It is [35]
Bring it down to make a whole number.

Step 8: Re-read the word problem.
What were you asked? [How much money does he spend?]
Did you answer the question? [Yes]

Step 9: Check your answer: while this is not mandatory, it is helpful to get the students doing the following as a habit.

Perform the inverse calculation [35 - 19 should equal 16].
Did it work out? Then, you are correct!

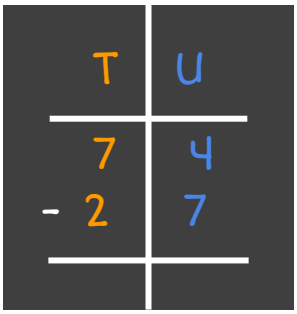


SUBTRACTION W/ BORROWING

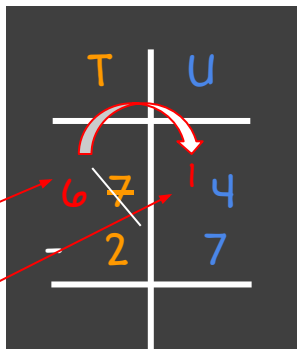
Marvan had P74. He gave his sister P27. How much does he have left?

Step 1: Read the problem. Ask the 4 questions.

1. **What information are we given (in the word problem)?**
   - *He had P74, he gave P27 away.*
2. **What are we being asked?**
   - *How much money does he have left?*
3. **What do we have to do?**
   - *Subtract - P27 **from** P74*
4. **Why?**
   - To know how much he has left.

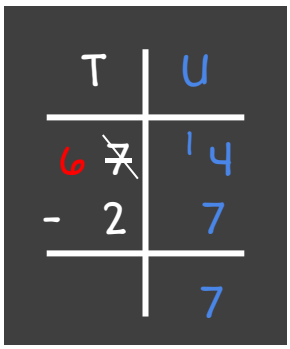


Step 2: Draw the subtraction table.
Place your numbers.
REMEMBER the bigger number is placed above the smaller number, signifying that you are subtracting the bottom number from the top one.
Ensure the **tens digits are on the left**
and **unit digits are on the right**.



Step 3: Remember to always begin with the digits on the right (units).
Subtract the digits in the units column.
[4 - 7 = ?]

Step 4: We CANNOT subtract 7 from 4.
We must borrow 1 ten from the tens column.
Cross out the 7 and replace it with 6 to show there are no longer 7 tens, but there are 6 because you borrowed 1 ten.
Place a small 1 next to the [4] This shows you borrowed that 1 ten so that you could regroup 1 ten and 4 units into 14 units.

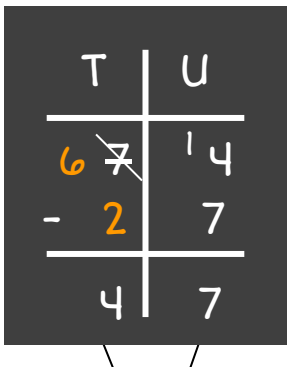


Step 5: Subtract the digits in the units column.
[14 - 7 = 7]

Step 6: Place the [7] in the lower units column.

Step 7: Subtract the digits in the tens column.
[6 - 2 = 4]

Step 8: Place the [4] in the lower tens column.



Step 9: Read you final answer. It is [47]
Bring it down to make a whole number.

Step 10: Re-read the word problem.
What were you asked? [How much does he have left?]
Did you answer the question? [Yes]

Step 11: Check your answer: while this is not mandatory, it is helpful to get the students doing the following as a habit.
Perform the inverse calculation [27 - 47 should equal 74].
Did it work out? Then, you are correct!

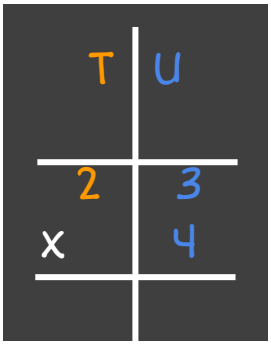
47

MULTIPLICATION LADDERS

Martin has **23** bags of sweets. Each bag has **4** sweets inside. How many sweets does Martin have altogether?

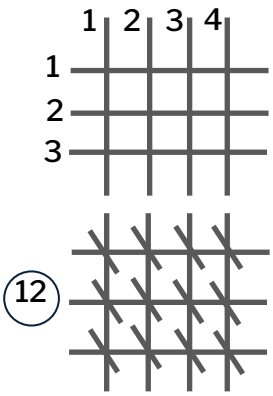
<u>Step 1:</u> Read the problem.
Ask the 4 questions.

1. **What information are we given (in the word problem)?**
   - *There are 23 bags, each bag has 4 sweets.*
2. **What are we being asked?**
   - *How many sweets does Martin have altogether?*
3. **What do we have to do?**
   - *Multiply - 23 bags by 4 sweets (23 x 4)*
4. **Why?**
   - *To know how many sweets Martin has altogether.*



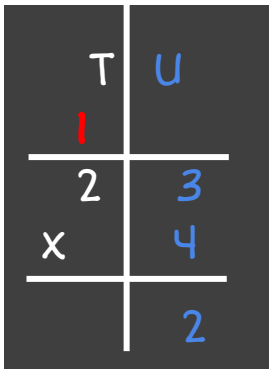
<u>Step 2</u>: Draw the multiplication table.
Place your numbers.
Write the larger number at the top.
Ensure the **tens digits are on the left** and **unit digits are on the right**.
*Note: remember the second number (sweets) has no tens.

<u>Step 3</u>: Multiply the units first.
Multiply the lower digit by the upper digit.
[4 x 3 = ?]



<u>Step 4</u>: Draw a multiplication ladder.
a) Draw vertical lines (from top to bottom) to represent the bottom digit. There should be [4] vertical lines.
b) Draw horizontal lines (from left to right) to represent the top digit. These must cross over the vertical lines. There should be [3] horizontal lines.

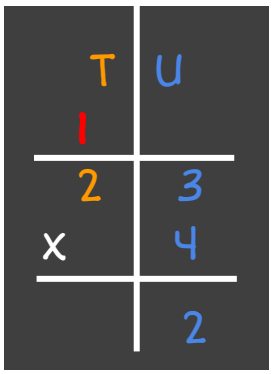
<u>Step 5</u>: Count the total number of points of intersection - this is where both lines touch.
You might say *"Now let's count all of the points where our lines meet or touch to help us work out 4 x 3. Let's start counting and mark each spot as we go. 1, 2, 3...12."*

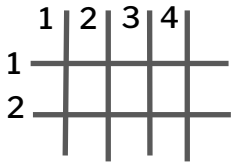


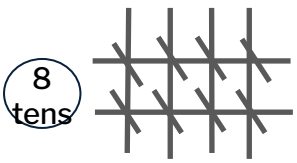
<u>Step 6</u>: Regroup your answer into tens and units and place the digits in the multiplication table.
You might say *"We know now that [4 x 3 is 12] . We can regroup 12 units into 1 ten and 2 units. Let's place this into our multiplication table. Remember we are busy with the righthand column. How many units? [2] Let's place our units. How many tens? [1]. Let's place [1] in the upper tens window. We need to come back to it later."*

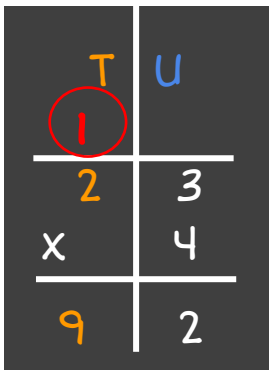
MULTIPLICATION LADDERS

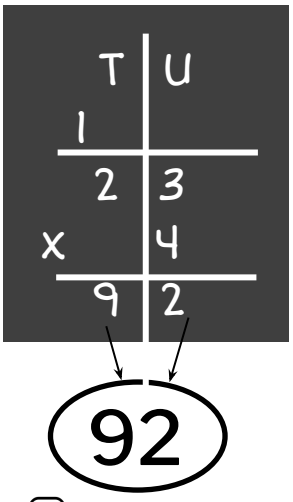
Martin has **23** bags of sweets. Each bag has **4** sweets inside. How many sweets does Martin have altogether?











<u>Step 7</u>: Multiply the lower units multiplier by the upper tens multiplier.
[4 units x 2 tens = ? or 4 x 20 = ?]

<u>Step 8</u>: Draw another multiplication ladder.

a) Draw vertical lines (from top to bottom) to represent the bottom digit. There should be [4] vertical lines. As you draw the vertical lines count [1,2,3,4] since these represent the ones.

b) Draw horizontal lines (from left to right) to represent the top digit. These must cross over the vertical lines. There should be [2] horizontal lines. As you draw the horizontal lines count [10, 20] since these represent the tens.

<u>Step 9</u>: Count the total number of points of intersection - this is where both lines touch.
You might say *"Now let's count all of the points where our lines meet or touch to help us work out 4 units x 2 tens. Let's start counting and mark each spot as we go. 1 ten, 2 tens...8 tens"*

<u>Step 10</u>: Add your carried over 10 then place the digits in the multiplication table.
You might say *"We know now that [4 x 2 tens is 8 tens] . Can anybody remember where else we have kept a ten? Yes, in the upper ten window. Before we add our tens digit to the lefthand column, we need to add the upper ten. So, [8] tens plus [1] ten is [9] tens. Now, we can add this to the tens column.*

<u>Step 11</u>: Bring down the digits to make a whole number [92].

<u>Step 12</u>: Re-read the word problem.
What were you asked? [How many sweets does Martin have altogether?]
Did you answer the question? [Yes]

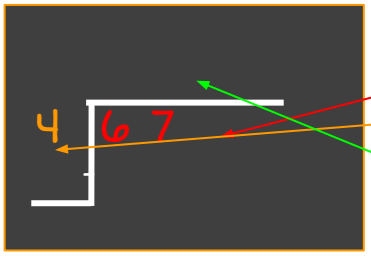
<u>Step 13</u>: Check your answer: while this is not mandatory, it is helpful to get the students doing the following as a habit.
Perform the inverse calculation [92 ÷ 4 should equal 23].
Did it work out? Then, you are correct!

BASIC OPERATIONS: DIVISION (2-digit by 1-digit)

Neo has P67 and wants to share it equally between her 4 friends. How much will each friend get?

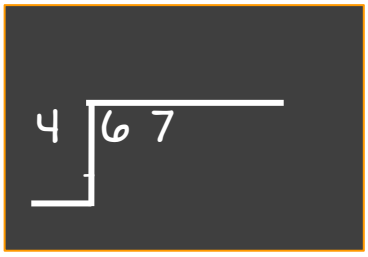
Step 1: Read the problem.
Ask the 4 questions.

1. What information are we given (in the word problem)?
   - *Neo has P67 and wants to share it equally between 4 friends.*
2. What are we being asked?
   - *How much will each friend get?*
3. What do we have to do?
   - *Share 67 sweets between 4 friends (67 ÷ 4)*
4. Why?
   - *To know how many sweets each friend will get.*



Step 2: Prepare for long division.
Place your dividend (the number being divided) inside the bracket.
Place your divisor (the number dividing the dividend) outside your bracket.
You will work below the brackets, but your answer (the quotient) goes above the bracket.

For all numbers, ensure the tens digits are on the left and unit digits are on the right.



Step 3: You will move through the following process as you solve the division problem.

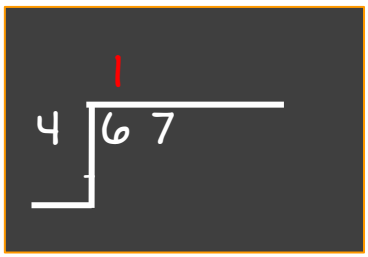
REMEMBER:
The quick and easy sequence of solving for long division:

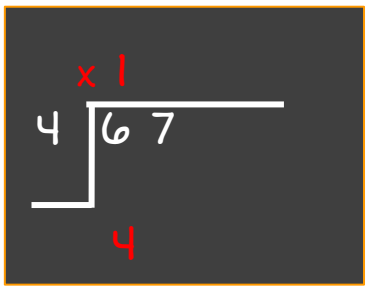
1. DIVIDE.
2. MULTIPLY.
3. SUBTRACT.
4. BRING DOWN

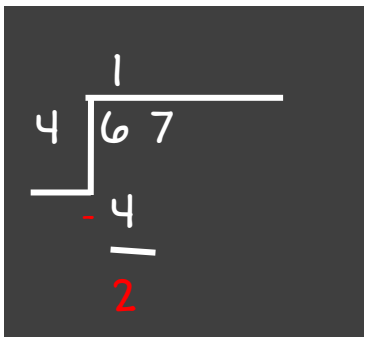
÷ × − ↓

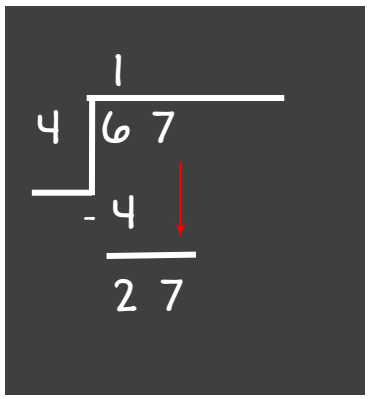
BASIC OPERATIONS: DIVISION (2-digit by 1-digit)

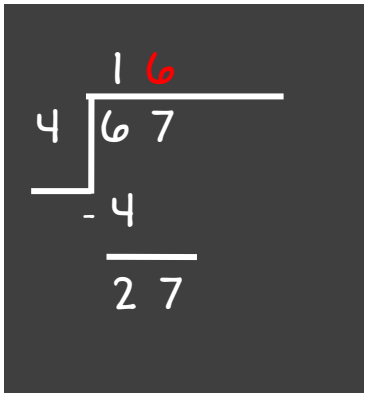
Neo has P67 and wants to share it equally between her 4 friends. How much will each friend get?







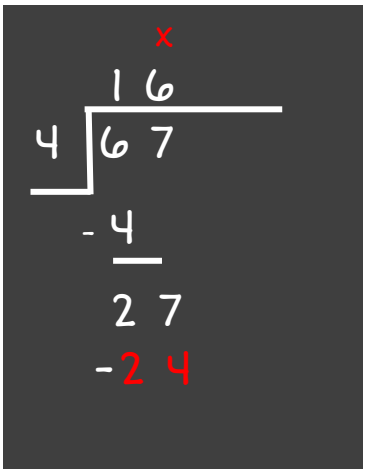


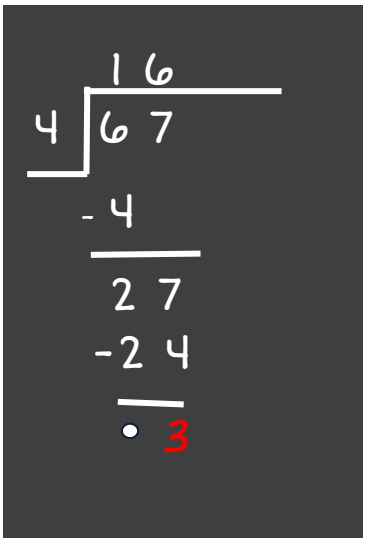


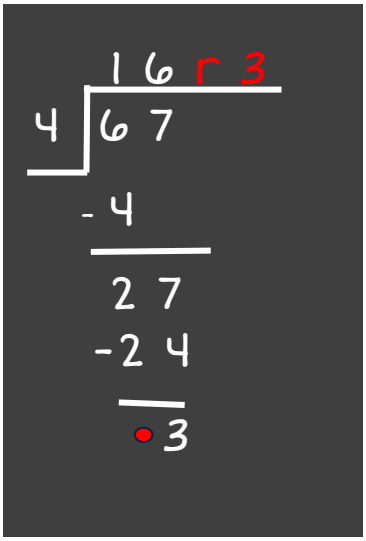
a)	We are going to move from left to right and begin with the tens this time round.	
b)	÷	We divide first. How many times does [4] go into [6]? [4 goes into 6 once], therefore place the answer [1] above the [6] (in the quotient place).
d)	×	Now we multiply our answer by the divisor [4]. [4 x 1 = 4], place the [4] below the 6.
d)	−	Next we subtract. [6 – 4 = 2], place the answer [2] below the [4].
e)	↓	Is there another digit in the dividend [67]? Yes, bring it down. Bring down the next digit [7].
f)	÷	It's time to divide again. How many times does [4] go into [27]? [4 goes into 27 six times], therefore place the answer [6] above the 7.

BASIC OPERATIONS: DIVISION (2-digit by 1-digit)

Neo has P67 and wants to share it equally between her 4 friends. How much will each friend get?







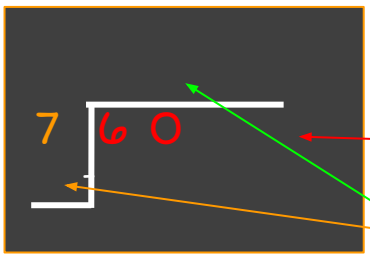
g)	×	Now we multiply our answer by the divisor [4]. [4 x 6 = 24], place the answer directly below the [27].
h)	−	Now we subtract. [27 – 24 = 3] place the answer [3] below the [24].
i)	⬇	Is there another digit in the dividend [67]? No - then there is nothing to bring down! We are left with 3. We call it a remainder and place it next to our answer (quotient) [16]
j)	Our final answer is 16 r 3. Re-read the word problem. What were you asked? [How many sweets will each friend get?] Did you answer the question? [Yes]	
k)	Check your answer: while this is not mandatory, it is helpful to get the students doing the following as a habit. Perform the inverse calculation [16 x 4 should equal 67 - 3]. Did it work out? Then, you are correct!	

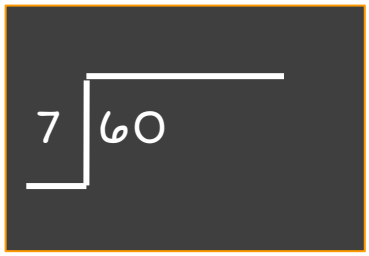
BASIC OPERATIONS: DIVISION (zero concept)

Liz has 40 beads. She wants to share them equally between her 7 necklaces. How many beads on each necklace?

<u>Step 1:</u> Read the problem.
Ask the 4 questions.

1. What information are we given (in the word problem)?
   - *Liz has 40 beads and wants to share these equally between 7 necklaces..*
2. What are we being asked?
   - *How many beads on each necklace?*
3. What do we have to do?
   - *<u>Share</u> 40 beads between 7 necklaces (40 ÷ 7)*
4. Why?
   - *To know how many beads will be on each necklace.*





<u>Step 2</u>: Prepare for long division.
Place your dividend (the number being divided) inside the bracket.
Place your divisor (the number dividing the dividend) outside your bracket.
You will work below the brackets, but your answer (the quotient) goes above the bracket.

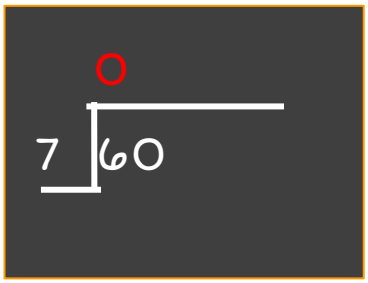
For all numbers, ensure the **hundreds, tens and units are well placed.**

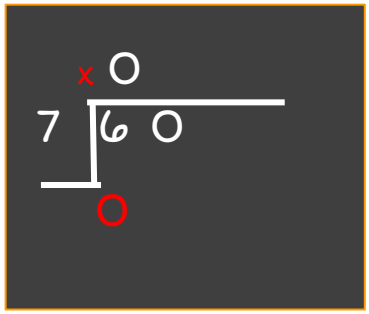
<u>Step 3</u>:

Remember the sequence of solving for long division:

1. **DIVIDE.**
2. **MULTIPLY.**
3. **SUBTRACT.**
4. **BRING DOWN**

÷ × − ↓

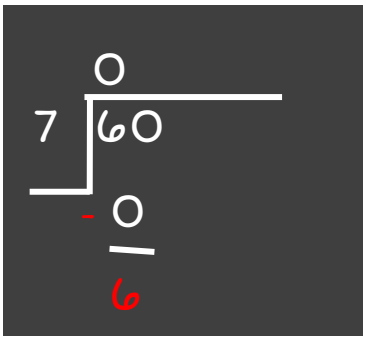


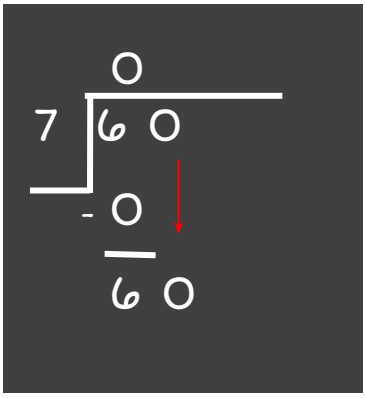


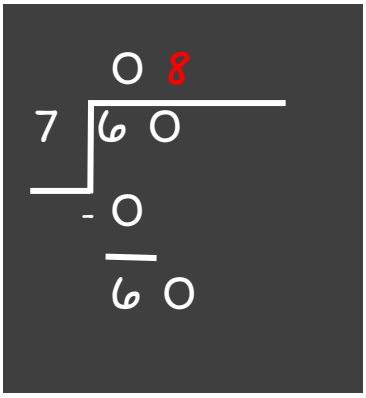
a)	We are going to move from left to right and begin with the hundreds this time round.	
b)	÷	We divide first. How many times does [7] go into [6]? [7 goes into 6 zero times], therefore place the answer [0] above the [6] (in the quotient place).
c)	×	Now we multiply our answer by the divisor [7]. [0 x 7 = 0], place the [0] below the 6.

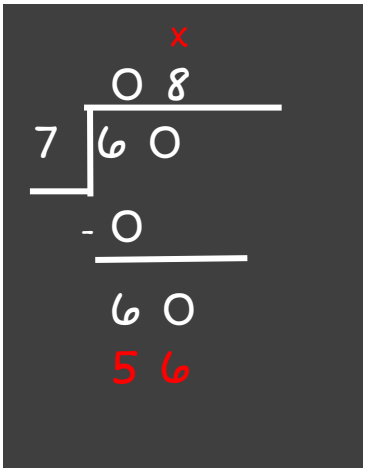
BASIC OPERATIONS: DIVISION (zero concept)

Liz has 40 beads. She wants to share them equally between her 7 necklaces. How many beads on each necklace?





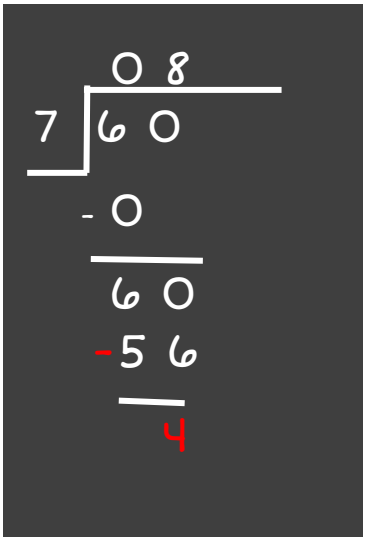


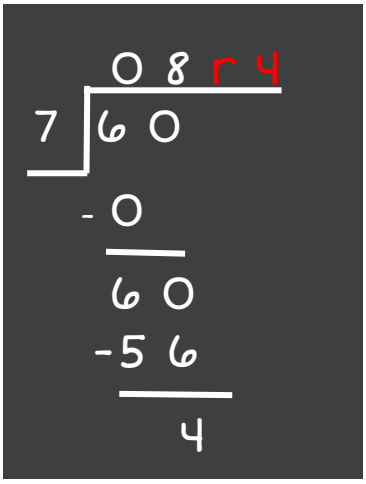


d)	−	Next we subtract. [6 – 0 = 6], place the answer [6] below the [0].
e)	↓	Is there another digit in the dividend [60]? Yes, bring it down. Bring down the next digit [0].
f)	÷	It's time to divide again. How many times does [7] go into [60]? [7 goes into 60 eight times], therefore place the answer [8] above the 0.
g)	×	Now we multiply our answer by the divisor [7]. [8 x 7 = 56], place the answer directly below the [60].

BASIC OPERATIONS: DIVISION (zero concept)

Liz has 40 beads. She wants to share them equally between her 7 necklaces. How many beads on each necklace?





h)	—	Now we subtract. [60 – 56 = 4] place the answer [4] below the [56].
i)	⬇	Is there another digit in the dividend [60]? No - then there is nothing to bring down! We are left with 4. We call it a remainder and place it next to our answer (quotient) [8]
n)	Our final answer is 8 r 4. Re-read the word problem. What were you asked? [How many beads on each necklace?] Did you answer the question? [Yes]	
o)	Check your answer: while this is not mandatory, it is helpful to get the students doing the following as a habit. Perform the inverse calculation [8 x 7 should equal to 60 - 4]. Did it work out? Then, you are correct!	

TEACHING THE BASIC OPERATIONS

During TaRL, you will cover the following basic operations.

You will notice we add a level of complexity to each operation in order to focus our time on the area in which the student might struggle most.

	ADDITION	SUBTRACTION	MULTIPLICATION	DIVISION
LVL X DIFF.	Addition w/ Regrouping	Subtraction w/ Borrowing	Multiplication w/ Regrouping	Division w/ Remainder
DIGITS	2-digit and 2-digit	2-digit from 2-digit	2-digit by 1-digit	2-digit by 1-digit

Some procedural reminders:

When introducing numbers, remind students that the placement of the digits in a number determine the number's value. For example,

- ❑ When 0 is at the beginning of a number, we ignore it e.g 05 is five
- ❑ When 0 is after another digit, we recognise it e.g. 50 is fifty and 500 is five hundred

When practicing place value or solving basic operations, use these phrases for converting units into tens and tens into hundreds:

- ❑ "We bundle" = sticks
- ❑ "We change/We convert" = money
- ❑ "You can only break a bundle or money into units"
- ❑ "Regroup the tens and units into units" or "Regroup the hundreds and tens into tens."

We always start with the units when:

- ❑ adding
- ❑ subtracting
- ❑ multiplying
- ❑ working with place value

For long division we start from the left (with the digit that has the largest value)

We regroup when

- ❑ adding
- ❑ multiplying

We borrow when

- ❑ subtracting

We use concrete materials (like sticks) or pictures,

- ❑ for addition
- ❑ for subtraction
- ❑ to aid understanding of place value of digits in all operations - especially for struggling students at any level of difficulty
- ❑ usually for numbers less than 50

CONCEPT V. PRACTICE ACTIVITIES

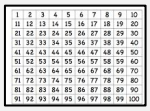
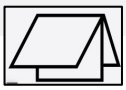
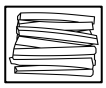
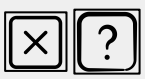
Facilitators should use two different types of activities to teach basic numeracy: **CONCEPT ACTIVITIES** and **PRACTICE ACTIVITIES**.

	CONCEPT ACT.	PRACTICE ACT.
WHAT	❑ Introductory and methods-based activities	❑ Fast-paced games that allow students to practice the methods they have learned
WHEN	❑ Used when teaching a new topic and/or method	❑ Used after students demonstrate proficient understanding of topic and/or method
WHY	❑ Facilitate deep understanding of abstract numeracy topics	❑ Increase students' mental maths speed and dexterity operating numbers and solving sums
HOW	❑ Use sticks, stones, paper money to show physical manipulation of objects and turn abstract concepts into practical processes	❑ Fun and engaging games ❑ Often have an element of limited time and/or competition
FORM.	❑ Demonstrate and in whole group ❑ Review in small group ❑ Internalize in pairs and individuals	❑ Whole group and small group
CONTENT	❑ Group-specific	❑ Can be adapted for any group

As students progress in learning, facilitators should spend less time on concept activities and more time on practice activities.

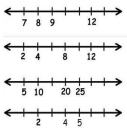
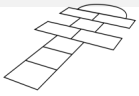
CONCEPT ACTIVITIES MENU

Concept activities are used when students learn new concepts and methods.

Activity	Summary
 **Number Chart: 1 – 100 or 1 – 1 000**	Facilitators point to numbers on chart either in order (left to right, groups of 5, 10 etc) or randomly. Students count and read numbers. They form (trace) numbers in the air, before writing them on the floor/board/books. Students can also be asked to find a number which comes before or after, or is 10/100 more or less. Always keep the number chart visible for students to reference.
 **Number Book**	Students use the number book to create numbers of their own choice by flipping the booklets flaps each labelled 0-9.
Number Cards	Facilitator gives the student a number card then the student says the number out loud and traces it. They could trace it in the air, on sand or with soap on the floor.
 **Object & Number Matching**	Students count groups of objects and match them to number cards or numbers written on the floor.
 **Number Card Matching**	Pairs of number cards are placed face-down on the floor. Students flip two cards to try to make matched pairs. When incorrectly matched, return cards to the floor. When correctly matched remove cards from pile of face-down cards. Do not mix the cards until the game is completed.
 **Bundling Sticks**  **Counting & Changing Money**	Students count, read, and write numbers and their place value using: 1) single sticks and bundles of sticks 2) play money. Students understand that 10 individual pieces = 1 whole object (i.e. 10 sticks = 1 bundle)
 **Stone Throw**	Students toss 9 stones into concentric circles labeled Th|H|T|U. Students count the total number of stones in each circle to create a number, e.g. [3 stones in hundred, 2 stones in ten, 5 stones in units = 325] Facilitator could extend the activity by asking for changes in the formed number e.g. [Take away 2 tens, what is the new number?] or [Deconstruct the number back into the circles now.]
 **Addition/Subtraction Word Problems**	Students complete addition/subtraction sums featured in a relatable, real-life word problem.
 **Multiplication Ladders**	Students learn multiplication using lines to create “ladders” or grids. Students count the number of times a set of lines intersect to learn the product of a multiplication problem.
 **Multiplication Chart**	Students learn and memorize multiplication facts using a multiplication chart with numbers 1 – 12 on the x-and y-axis. They might learn a song or chant to help them remember.
 **Missing Multiplication Chart**	Students are given number cards and required to fill in the missing blanks on the multiplication chart. They should practise multiplying and its inverse, dividing as they find both multipliers and product.
 **Multiplication/Division Word Problems**	Students complete multiplication or division sums featured in a relatable, real-life word problem.

PRACTICE ACTIVITIES MENU

Practice activities help students increase their speed and dexterity solving basic operations. These activities can be adapted for any group.

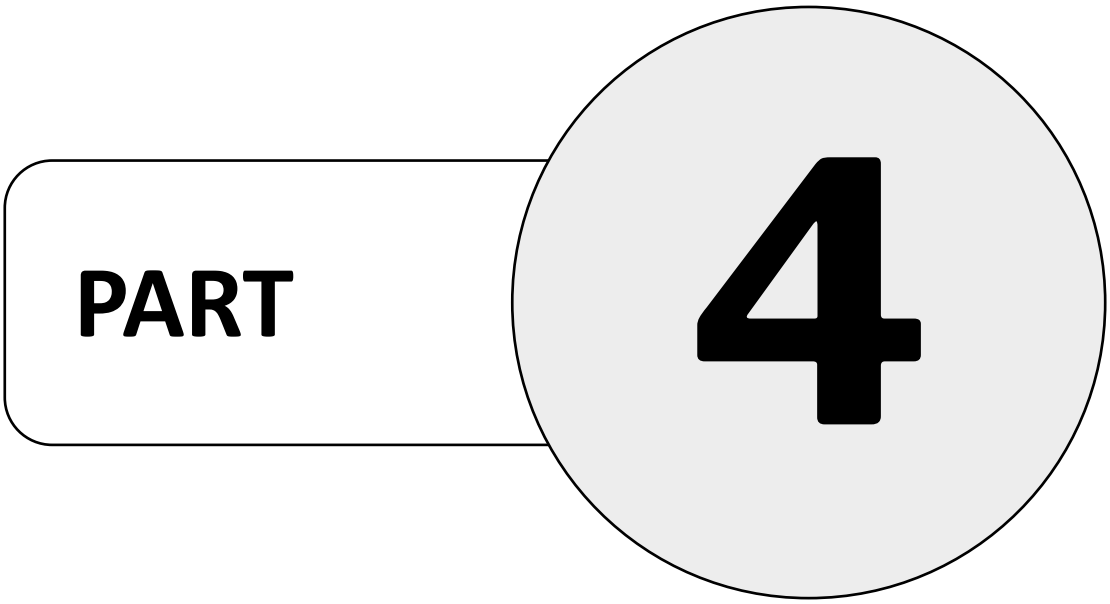
Activity	Materials	Summary
 Number Lines	❑ *Ruler* ❑ *word problems/ numericals*	Students use the number line to either add, subtract or multiply. Add= when adding you move to the right side of the number line Subtract = when subtracting you move to the left side of the number line..
 Basketball	❑ *Chalk* ❑ *4 paper balls*	Students practice operations by trying to toss paper balls in circles on the floor. Each circle is worth a certain amount of points. The aim is to score a sum total of points equal to the number stated by the facilitator.
 Guess What	❑ *Sticks* ❑ *Stones* ❑ *Paper money*	Students count small objects and then, with their eyes closed, a facilitator or other student adds, subtracts, or divides the items. Students then open their eyes to determine what was added, subtracted or divided.
 At the Market	❑ *Paper money* ❑ *Price tags* ❑ *Classroom items*	Students practice a variety of basic operations when buying and selling classroom items to each other in small groups and pairs.
 Burning Lava	❑ *Different sized pieces of blank paper* ❑ *Problems*	Students solve different sums from the facilitator and are only allowed to move forward when they solve the problems correctly.
 Chatterbox	❑ *Square paper* ❑ *Pencils* ❑ *Workbooks*	Students create their own chatterbox then pair up and solve the sums that their peers created on their chatterboxes.
 Hopscotch	❑ *Chalk* ❑ *Number cards*	Students are given a number card and required to say the answers as they hop in the various squares.
 Mingling Numbers	❑ *Paper numbers*	Students are assigned numbers and walk throughout the classroom. When facilitators call out a sum or scenario (“create an even number”), students create pairs or groups to create the sum.
 Make Your Own Word Problem	❑ *Paper* ❑ *Permanent markers or other writing utensil*	Students create and share their own practice word problems for a level-appropriate basic operation, individually or in small groups. Students then trade and complete the word problems.

 Find detailed explanations in the Resource Toolkit

CHOOSING AN APPROPRIATE CONCEPT ACTIVITY FOR THE GROUP YOU ARE TEACHING

Now you have learnt about each activity, below we organise them based on Math concept and show you which are appropriate for each group you will be teaching

		ACTIVITY	GROUP
NUMBER RECOGNITION		Number Chart Reading: Standard 1 – 100	All
		Number Chart Reading: Expanded 1 – 1,000	Groups S, M, & D
		Number Book	
		Number Cards	All
		Object & Number Matching	
		Number Card Matching	
PLACE VALUE		Bundling Sticks	Group A & S
		Counting & Changing Money	Groups D
		Stone Throw	All
BASIC OPERATIONS		Addition Word Problems	Group A
		Subtraction Word Problems	Group S
		Multiplication Ladders	Group M
		Multiplication Chart	
		Multiplication Tables	
		Multiplication Word Problems	
		Division Word Problems	Group D



LESSON PLANNING

AN OVERVIEW OF YOUR LESSON

Students learn three main numeracy topics in TaRL: **Number Recognition**, **Place Value** and **Basic Operations**. Facilitators teach these in every lesson, but do focus on group-appropriate basic operations. This is visible below.

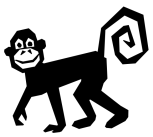
5 min	10 min	10 min	30 min	5 min
Ice breaker	Number recognition	Place Value	Operations (with checkpoint)	Closing

Here is an overview of what you might plan for in a lesson. You won't cover every type of activity and should try to use a mix of formations in class.

ORDER	**MAIN CONTENT**	**FORMATION** (to push student engagement)	**PACING**
1	ICE BREAKER	Whole class	*5 minutes*
2	NUMBER RECOGNITION: _____ activity	 Whole class	*5 to 10 minutes*
3	PLACE VALUE*: _____ activity _____ activity CHECKPOINT (if applicable)	 Whole class Small group (Checkpoint)	*10 to 15 minutes* *(last 2 minutes)*
4	OPERATION: Addition/ subtraction/ multiplication/ division _____ activity _____ activity CHECKPOINT on _____	 Whole class Small group Checkpoint	*30 minutes* *(last 3 minutes)*
5	CLOSER		5 minutes
*From your second lesson you will cover only place value and will use the time meant for operations for PV too. Then when more than 70 % of your students have mastered place value, you will begin covering operations too.			**TOTAL: 1 HOUR**

ICEBREAKERS

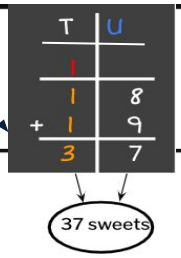
Icebreakers are used at the beginning and end of each lesson to energise students. Facilitators should spend no more than 5 minutes on an icebreaker.

Icebreaker	Summary
 **Bungalow**	"Hey ___, hey ___, let me see your bungalow, let me see your bungalow. My hands are high, my feet are low & this is how I bungalow". Then student does their own dance move. [*Best used in the beginning of each implementation block when students are new to the facilitator*]
 **Hundreds, Tens, Units**	Facilitator says 'hundreds', 'tens', or 'units'. Students follow direction assigned to each word. Students are 'out' if they do action that does not correspond with command. '**hundreds**' = hands on head '**tens**' = hands on waist '**units**' = hands on knees
 **Snap & Clap**	Students must guess what number is being made by the facilitator. A clap represents 10 and a snap represents 1. Facilitator snaps and claps to make numbers. e.g.. five claps and three snaps = 53
 **Stomp & Count**	Students must guess what number is being made by the facilitator. Each foot is assigned a number and the facilitator stomps to create numbers *e.g left foot = 5, right foot = 10; one right, two left stomps = 20*
 **River, Bank, River**	Students stand in a circle. River means they must jump/step forward. Bank means they must jump/step backwards.
 **Banana**	Students are the bananas in this scenario. They must follow instructions from the facilitators to know what to do. *e.g. "Jump banana, jump jump banana!" (students jump)*
 **Marvan the Monkey**	Students stand in a circle, shoulder to shoulder. Have one student in the middle of the circle. A ball must be passed around the circle, & the person in the middle must try to guess where the ball is. The chant is "Marvan the monkey, keep it going, keep it going." *[A small ball or object is required]*
 **Nature Walk**	Students take a walk on the school premises and find materials that will be used in the session e.g.. sticks or stones.
 **Simon says**	Facilitator gives instructions (usually physical actions such as "jump in the air" or "stick out your tongue") to students, which should only be followed when the facilitator says "Simon says" prior to the instruction.
 **Mingle game**	Students walk throughout the classroom. When facilitators call out a sum or scenario (e.g. "create an even number"), students follow the instruction by creating pairs or small groups.

STRUCTURED LESSON PLAN EXEMPLAR 1

Objective:
By the end of this session 70% of the students should be able to add a 2 digit number by a 2 digit numbers with a carryover.

Checkpoint:



GROUP(s):
☑Addition ☑Subtraction
☐ Multiplication ☐ Division

Date [23/03/24]

MATERIALS: Number book, pencils, student books, chalk,stones, flip charts,erasers,a pointer

ICEBREAKER:	**Nature Walk**	Time: 5 mins
FORMATION	☑Whole Class	

Students walk around the school premises and find 5 or more stones to be used in the place value activity.

ACTIVITY #1:	**Number book (2 digits)**				Time: 5 mins
CONTENT	☑Number Recognition				
FORMATION	☑Whole Class				
MODES	☑Listen	☑Read	☑Write	☐Do	☐Solve

Students create numbers using the number book between 10-99.
They must:

- Identify the number
- Say the number
- Trace the number in the air
- Write the number on the board.

Have 4 different student lead each action

ACTIVITY #2:	**Stick bundling (2 digits)**				Time: 15 mins
CONTENT	☑Place Value				
FORMATION	☑Whole Group	☑Small Group	☑Individual		
MODES	☑Listen	☑Read	☑Write	☑Do	☑Solve

Students are given different word statements. They need to show the value of their number by bundling the tens and units, then writing the digits into a place value table.

T	U

WG: Katlego has 15 tables in her class.

SG: Thabo has 12 sweets in her bag.

ACTIVITY #3:	**Introduce Addition with regrouping 2 by 2**				Time: 30 mins
CONTENT	☑Basic Operations				
FORMATION	☑Whole Group	☑Small Group	☑Individual	☑Checkpoint	
MODES	☑Listen	☑Read	☑Write	☑Do	☑Solve

WG: Laone has 16 mangoes and her friend gave her 15 more mangoes. How many mangoes are there altogether?

SG 1: Thabo has 14 sweets. He buys 17 more. How many sweets does he have in total?

SG 2: Tende has 15 friends. 17 more friends arrive. How many friends does she have altogether?

Extra Problems

a) 14 + 18
b) 16 + 19
c) 31 - 17
d) 33 - 19

SUBTRACTION GROUP

SG 1: Emily has 33 marbles and she gave 15 away. How many marbles is she left with?

SG 2: Lizzie has 37 tomatoes. Marci ate 18. How many tomatoes are left?

CheckPoint: Thato has 18 corn and she bought 19 more. How many corn are there altogether?

ACTIVITY #4:	**Banana**				Time: 5 mins
CONTENT	☑Closer				
FORMATION	☑Whole Group				
MODES	☑Listen	☐Read	☐Write	☑Do	☐Solve

The students are bananas and i tell them what to do, for example Jump banana, jump-jump banana (the students will jumps)

Check all activities you fully completed: ⊗Icebreaker ⊗#1 ⊗#2 ⊗#3 ⊗#4

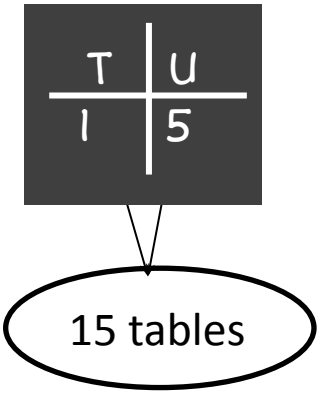
If you did not complete all activities, briefly note WHY:

What I Did Well	What I Could Do Better	Plan for Tomorrow
Pair Work Students helped each other while i move around the class and helped 3 struggling students.	Keeping the energy up between the activities and use call to responses to get their energies up.	Practice the same objective as 45% of the class got the checkpoint correct, emphasise how to add the carryover at the window and use call to responses.

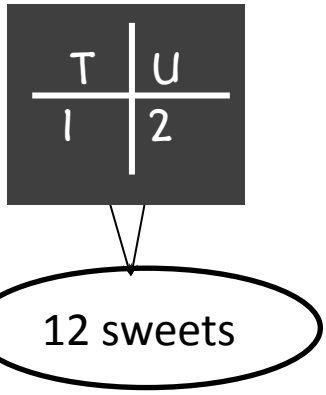
Lesson Plan Creative Canvas

Place value

WG

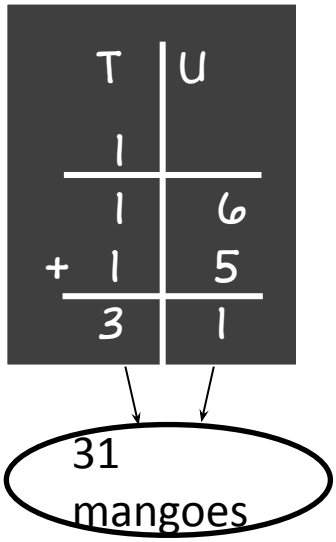


SG

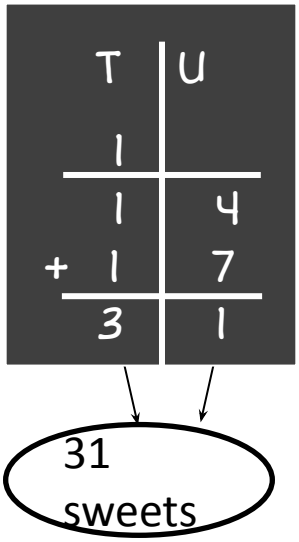


Basic operation

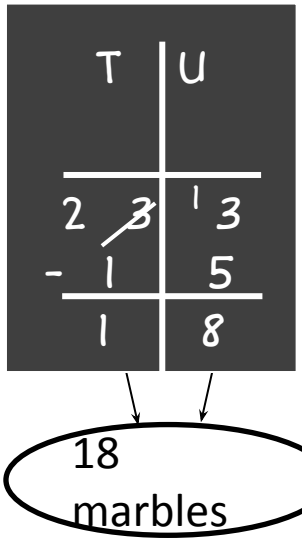
WG



SG



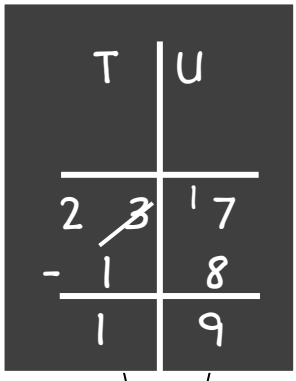
Subtraction group



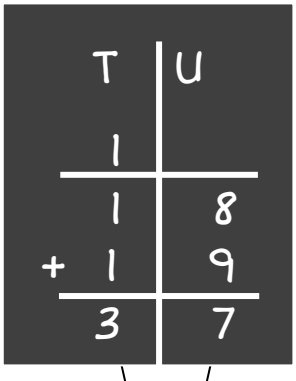
Extra problems

14 + 18 = 32
16 + 19 = 35
31 - 17 = 14
33 - 19 = 14

Subtraction group



Checkpoint



Preparing for your lesson:
Concepts, associated activities and materials

TOPIC	ULTIMATE OBJECTIVE	TEACHER-LED	CONCEPT ACTIVITIES	MATERIALS
NUMBER RECOGNITION	Students learn to see and read numbers 0 – 9,999	Introducing numbers	Number chart reading Number book Number cards Obj & No. matching Number card matching	❑ *Number charts* ❑ *Number cards* ❑ *Number book* ❑ *Matching number cards* ❑ *Sticks*
PLACE VALUE	Students learn the difference between digits and numbers and the value of numbers with the Th|H|T|U table.	Place value with sticks Place value with money	Bundling sticks Counting & changing money Stone throw	❑ *Sticks bundling* ❑ *Stone throw* ❑ *Paper Money*
ADDITION	Students learn when and how to add with carryover.	Addition (with regrouping)	Addition word problems	
SUBTRACTION	Students learn when and how to subtract with borrowing.	Subtraction (with borrowing)	Subtraction word problems	
MULTIPLICATION	Students learn when and how to multiply, with a carryover. Students learn to read multiplication table, and do mental multiplication.	Multiplication Ladders (with regrouping)	Multiplication tables Multiplication chart Multiplication ladders Multiplication word problems	❑ *Multiplication charts* ❑ *Multiplication ladders* ❑ *Stick bundling*
DIVISION	Students learn when and how to complete long division with a remainder.	Long division	Division word problems	❑ *Sticks* ❑ *Stones* ❑ *Paper Money*

NOTE: Make concrete materials available to students especially as they learn new concepts or struggle to understand something. In time, they should improve their use of Mental Math.

OBJECTIVES & CHECKPOINTS

Objectives and Checkpoints are essential to successful TaRL lessons. Individually, they are valuable tools to use when planning and leading learning. When combined they become powerful data collection and decision-making tools that can be used to rapidly advance student learning.

LEARNING OBJECTIVES

- ❑ Learning objectives are succinct daily goals that facilitators aim for students to achieve.
- ❑ They provide a clear, targeted and tangible focus for each lesson.
- ❑ They inform every activity in a lesson.
- ❑ They are a SMART way of targeting teaching numeracy concepts:

  Strategic | reflects a thoughtful and important goal to advance student learning

  Measurable | specific and observable; can be assessed on whether it is achieved

  Ambitious | keep students challenged and on the 'cusp of learning'

  Realistic | although ambitious, not too challenging

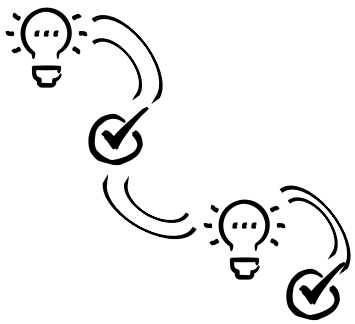
  Time-bound | has a clear deadline or moment when it will be implemented

CHECKPOINTS

- ❑ Checkpoints are short, simple individual activities that students complete before leaving class.
- ❑ They are linked directly to objectives and provide data on whether the objective was achieved.
- ❑ They are tools to determine student comprehension and when to move to a new concept.
- ❑ They are completed in student individual notebooks, collected at the end of the class, and marked for accuracy *after class* in the student register.

CHECKPOINT vs. INDIVIDUAL ACTIVITY
Checkpoints are a TYPE of individual activity. However, checkpoints are unique because they **directly link to the objective.**

The Relationship Between Objectives & Checkpoints



Checkpoints are used to determine whether the primary learning objective was achieved: **if 70% or more of students get the checkpoint correct, the Facilitator achieved the objective and can move on to the next topic.** If fewer than 70% of students got the checkpoint correct, the Facilitator should spend more time on that learning objective the following day.

Facilitators create one objective and corresponding checkpoint per lesson.

OBJECTIVE:
Students is able to subtract 2 two-digit numbers with borrowing.

⟺

CHECKPOINT:
52 – 39 = ?

SYNCING OBJECTIVES & CHECKPOINTS

1. This table lists the objectives associated with each concept
2. It gives examples of checkpoints to check a student has mastered that objective
3. It states the most difficult steps a student should be able to do when performing each operation. If they cannot do each of these, they are not likely to achieve the checkpoint.

Lesson Concept	**Objectives** *[At the end of the lesson, students will be able]*		**Checkpoints** *[Getting this correct shows a student has mastered the objective]*	**Steps** *[If a student is able to do all of these, they should master the objective.]*
Place Value	To identify the digits in a number		Identify the value of ...in the number....	
Addition	To add two 2-digit numbers with a carryover.		You eat 15 sweets. You eat 16 more. How many did you eat altogether? (Shame, you will feel sick).	- regroup units and tens by carrying over - ensure 0 is considered as a placeholder - add the correct digits, including those carried over
Subtraction	To subtract two 2-digit numbers with borrowing,		You bought 40 sweets for your party. 24 were eaten. How many do you have left?	- regroup units and tens by borrowing - ensure 0 is considered as a placeholder - subtract the correct digits, including those borrowed
Multiplication	To multiply a 2-digit number by a 1-digit number with carry over		Your dad grows mango trees. There are 22 trees. Each tree has 8 mangoes. How many mangoes do the trees have altogether?	- regroup units and tens by carrying over - multiply the correct digits, including those carried over - ensure 0 is considered as a placeholder - use the ladder correctly
Division	To divide a number by a 1-digit number using long division	2-digit number by a 1-digit number	Share 12 apples between 5 people.	- follow the division process of divide, multiply, subtract, bring down. - ensure 0 is considered as a placeholder - perform division with a remainder

DEVELOPING A WEEKLY GUIDE

For each TaRL implementation block, facilitators plan weekly guides. This allows Facilitators to set preliminary learning goals that ensure they plan well and progress through concepts efficiently. These guides, in combination with checkpoint data and daily reflection notes, also inform lesson plan design.

(1) Identify your starting point.

- ❑ Consider the Group(s) you are teaching and their current abilities.
- ❑ Draft concrete objectives for first two days of implementation block.

Where are students' current abilities?

DAILY OBJECTIVES					
Week	Monday	Tuesday	Wednesday	Thursday	Friday
1	Behavioural Management Lesson				

(2) Identify your end point.

- ❑ Consider the Group(s) you are teaching and how they need to advance their skills.
- ❑ Create concrete objectives for last two days.

Where should student be at the end of the first block in order to progress to the next group?

3					

(3) Fill in the middle.

- ❑ Consult the numeracy concepts menu for list of concepts in progressive order.

What do students need to learn to get from start point to end point? How should you progress through concepts?

- ❑ Plan to introduce, review, and practice all Group appropriate concepts.

How much time do you expect students may need to internalise new concepts through review and practice?

(4) Review with supervisor, use to draft lesson plans, and prepare to adapt!

- ❑ Remember that this is ONLY an initial guide. Prioritise teaching to students' needs!

How can you use this guide to assist in lesson plan design while prioritising targeted teaching according to students' needs on a daily basis?

SAMPLE WEEKLY PLAN

This is an exercise to complete at the beginning of each implementation block. Facilitators should always pay attention to student learning and move to new concepts if they are confident that students understand material.

3	2	1		DAILY OBJECTIVES
PRACTICE Multiplication of two by 1-digit numbers with a carryover	PRACTICE Subtract two 2-digit numbers	Behavioral Management Lesson	MON	
PRACTICE Multiplication of two by 1-digit numbers with a carryover	PRACTICE Subtract a 2-digit number from a 2-digit number with borrowing	PLACE VALUE Carryout place value of 2 digits using Stone Throw	TUE	
INTRODUCE Division of two by 1-digit numbers with a reminder	PRACTICE Subtract two 2-digit numbers with borrowing	PRACTICE Place Value of 2 digits	WED	
PRACTICE Division of two by 1-digit numbers with a reminder	INTRODUCE Multiplication of two by 1-digit numbers with a carryover	INTRODUCE Subtract a 2-digit number from a 2-digit number with borrowing	THR	
PRACTICE Division of two by 1-digit numbers with a reminder	PRACTICE Multiplication of two by 1-digit numbers with a carryover	PRACTICE Subtract two 2-digit numbers	FRI	

HOW TO DESIGN A LESSON PLAN, PT I

Facilitators write lesson plans everyday using the templates in their Lesson Plan Journal. Facilitators should use this step-by-step guide to ensure each lesson leads to deep learning.

(1) Identify the objective.

- ❑ Consider previous day's checkpoint data and lesson plan reflection notes.

Are students demonstrating proficiency in the concept or method?

- ❑ Consider weekly goal & guide plans.

What did you plan to do in your weekly guide?
How does it align or not align with student checkpoint performance?

Objective:	Checkpoint:

(2) Create a checkpoint linked to an objective.

- ❑ Consult the Synced Objectives & Checkpoints guide.

How can students demonstrate whether they have learned the lesson objective?

Note. Usually checkpoints will be a problem
i.e. 34 + 19 = ?

Objective:	Checkpoint:

(3) Indicate the Group(s) you are facilitating.

- ❑ Remember to tick multiple boxes if your Group is combined (i.e. Group A/S)

GROUP(s):
☐ Addition ☐ Subtraction
☐ Multiplication ☐ Division

(4) Select an Icebreaker from the icebreakers menu or design your own.

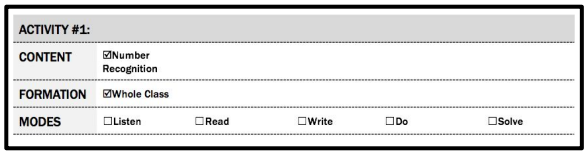
- ❑ Indicate Icebreaker class formation.
- ❑ Summarize icebreaker in simple language for easy reference.

What kind of energy do you want to create upon entering the class?

ICEBREAKER:	
FORMATION	☑Whole Class

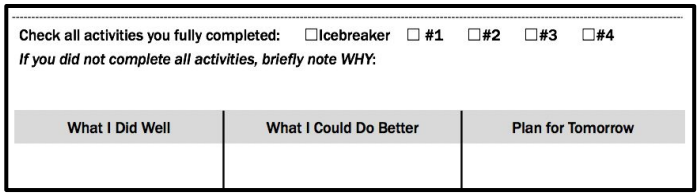
HOW TO DESIGN A LESSON PLAN, PT II

(5) Select and draft 3 – 4 activities

❑ Consider content and link to objective.	*How much time should you spend on number recognition, place value, and basic operations given student performance?* *Do your activities and content ensure you meet your objective?*
❑ Consider class formation and student engagement.	*Which activities are best suited for whole group, small group, pair, and individual work?*
❑ Consider modes of learning.	*Will students engage in each of the five modes at least once?* *Which activities are best suited for each mode of learning?*
❑ Ensure activities build on each other towards the objective.	*Does the content build upon and advance student learning logically?* *Do activities flow in content and in types of engagement?*
❑ Consider your space and note all materials needed.	*What does your space allow or inhibit? (i.e. can you write on the floor or the board?)* *Which materials are already prepared? What needs to be prepared?*
❑ Summarise each activity in simple language. ❑ Include MULTIPLE PROBLEMS & ANSWERS.	*Did you include multiple PROBLEMS and ANSWERS you will use in class. (68 – 29 = ?)* 
❑ Ensure you complete a checkpoint linked to an objective everyday.	*How can you make sure you complete the checkpoint even if you don't complete all other activities?* 

(6) Use Lesson Plan Creative Canvas to brainstorm activity ideas, detail step-by-step plans, draft multiple problems, and checkpoints, etc.

This is your planning space—use it however you like so that you can be fully prepared!



(7) Take your Lesson Plan to class with you!

BEHAVIOUR MANAGEMENT LESSON PLAN – DAY 1

Objectives:
1. Facilitator develops positive, respectful and engaging relationships with students.
2. Students develop familiarity with materials, routines, expectations, and class practices.

Checkpoint:

GROUP(s):
☐ Addition ☐ Subtraction
☐ Multiplication ☐ Division

Date [_ _/_ _/_ _]

LESSON OVERVIEW

When	What	Minutes	Why
1)	**Introduction & Icebreaker**	7	*Allow students to get to know their facilitator and to create excitement.*
2)	**Name Game**	7	*Familiarise mixed-grade students with each other and help facilitator learn student names.*
3)	**Expectations**	4	*Allow students to feel informed and ask questions about the program; to create comfort, clarity, and excitement.*
4)	**Ground Rules**	10	*Develop clear behavioural norms, expectations, and agreed upon rules to curb future class disruptions. Always include the Young 1ove rules:* 1. We have fun when we learn together. 2. We all participate and ask questions. 3. We help each other. 4. We are free to speak both Setswana and English.
5)	**Call to Response**	4	*Familiarise students with how to respond to different actions or expressions used in the class.*
6)	**Group Formations**	5	*Acquaint students with the four class formations to assist smooth transitions from formation to formation in future sessions.*
7)	**Introduce Materials** (individual)	3	*Allow students to take ownership over their learning materials, write their names, and feel proud of their personal books.*
8)	**Introduce Materials** (group)	5	*Familiarise students with sticks, stones, play money, and rubber bands as learning tools.*
9)	**How to Pass Out Materials**	10	*Create and practice systematic ways of distributing materials within the classroom; prevents wasting time in future sessions.*
10)	**Sign Pledge Closer**	5	*Provide an opportunity for students to buy-in or "commit" to TaRL, to good behaviour, etc. and to know that there is a reward for their commitment and good behaviour.*
	TOTAL:	60 **Minutes**	

TARGETED INSTRUCTION

Targeted Instruction: An overview

Remember what we learnt about targeted instruction already?

Here is a reminder.

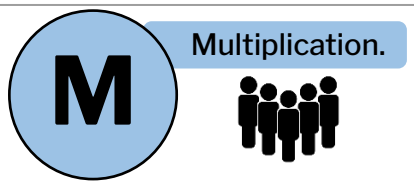
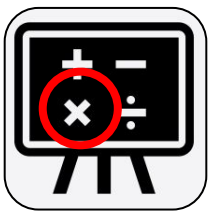
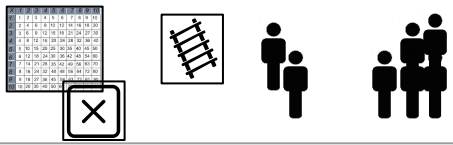
Targeted instruction means teaching students according to their learning needs.
How does TaRL ensure this?

TaRL facilitators use, **specific objectives** to guide what will be learnt in each lesson and, **checkpoints** within the lesson to monitor each student's understanding of the objective. Facilitators use the data collected from the checkpoints to make informed adjustments to their lessons to better meet student's needs.

At intervals through the programme, **levelling assessments** provide another method of monitoring. We call this **progressive levelling**. These results help facilitators to constantly refine their instruction, according to individual student performance.

Further to this, TaRL lessons are taught through a balance of teacher-led and student-led **whole class, small group and individua**l activities. These allow students to engage in learning in ways that suit their specific learning preferences and needs.

What does this mean for you, the facilitator?

Students are leveled regularly and **grouped based on their performance** . (NOT their age/school grade).	
In class the students **learn the operation they struggled with**.	
Each lesson has an **objective** aligned with what students need to learn. a. This must focus on **one operation** and b. be an **appropriate difficulty** level (E/M/H)	**To multiply two 2-digit numbers (easy)**
Teaching **materials** and learning **formations** are planned which align with the objective and suit different learning preferences.	
The facilitator chooses a **checkpoint which aligns with the objective.**	**3 trees give 14 apples each. How many are there altogether?**

Targeted Instruction: An overview

During class students complete the checkpoint.

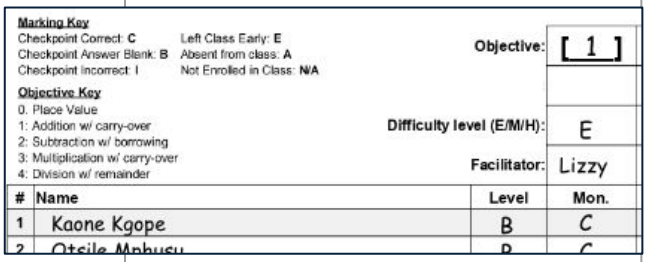
The facilitator **collects their answers** (checkpoint data) and **complete a checkpoint register.**

14 x 3 = 42

14 x 3 = 32

The facilitator reflects on the checkpoint data

a. How many students **achieved** the checkpoint?
b. How many students **did not achieve** the checkpoint?
c. What common errors are evident?
d. Which students need support?



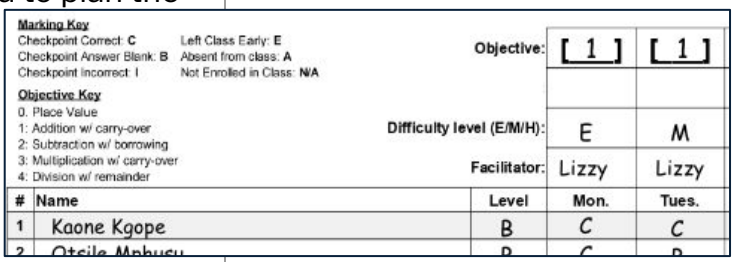
Marking Key
Checkpoint Correct: C
Checkpoint Answer Blank: B
Checkpoint Incorrect: I
Left Class Early: E
Absent from class: A
Not Enrolled in Class: N/A

Objective Key
0. Place Value
1: Addition w/ carry-over
2: Subtraction w/ borrowing
3: Multiplication w/ carry-over
4: Division w/ remainder

#	Name	Objective:	[1]
		Difficulty level (E/M/H):	E
		Facilitator:	Lizzy
1	Kaone Kgope	Level	B
2	Otsile Mphusu	Mon.	C

The facilitator uses this checkpoint data to plan the next lesson:

a. More than 70% were correct - **move to the next objective.**
b. Less than 70% were correct - **repeat the same objective.**



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#	Name	Objective:	[1]	[1]
		Difficulty level (E/M/H):	E	M
		Facilitator:	Lizzy	Lizzy
1	Kaone Kgope	Level	B	C
2	Otsile Mphusu	Mon.	C	C
		Tues.		

They may also regroup students - especially those who made similar errors.

What if you have more than one level in your class?

You might have students ready to learn
1. different operations
2. the same operation at different difficulty levels

How do you target instruction across different groups in the same class?

The operation covered during whole class activities is **based on the majority** of the students in the class.

M 10 students **S** 15 students

An **objective** is chosen which aligns with the operation.

To subtract two 2-digit numbers (easy)

The **checkpoint** aligns with the objective.

You had 35 sweets. You ate 16. How many are left?

You then use **different class formations to meet the needs of each student** in the class.

1. Students practice the current operation OR

1. Students practice an operation or difficulty level different to the main objective OR

1. You might introduce new concepts to a minority.

Grp 1	Practices subtraction (easy)
Grp 2	Practices subtraction (medium)
Grp 3	Introduced multiplication

The four operations: EASY/MEDIUM/HARD

The table now includes examples of easy, medium and hard problems associated with each operation.

	ADDITION	SUBTRACTION	MULTIPLICATION	DIVISION
LVL X DIFF.	Addition w/ Carryover	Subtraction w/ Borrowing	Multiplication w/ Carryover	Division w/ Remainder
DIGITS	2-digit and 2-digit	2-digit from 2-digit	2-digit by 1-digit	2-digit by 1-digit
EASY	**Example:** 15+17 Answer <80	**Example:** 31-15 Answer <80	**Example:** 16x 2 Answer <80	**Example:** 25 ÷2 Answer <80
	Use numbers which can be manipulated using concrete materials (stick bundling etc)			
MEDIUM	**Example:** 28+19 32+28 Answer <80 0 concept	**Example:** 46-29 42-33 50-28 Answer <80 0 concept	**Example:** 24x3 25 x 2 10 x 4 Answer <80 0 concept	**Example:** 45 ÷ 3 40 ÷ 3 31 ÷ 3 Answer <80 0 concept
	Use larger numbers so most students are starting to use mental maths but concrete materials can still be used.			
HARD	**Example:** 58+67 42+28 Answer >80 0 concept	**Example:** 85 - 26 90 - 88 Answer >80 0 concept	**Example:** 55 x 5 60 x 3 Answer >80 0 concept	**Example:** 12 ÷ 7 20 ÷ 6 Answer >80 0 concept
	Use larger numbers so most students are using mental maths.			

<u>Easy (Introduction)</u>

- Small numbers
- No zero concept
- Students are using concrete materials
- Answer is less than 80

<u>Hard (Practice)</u>

- Number scheme is increasing
- Zero concept is introduced
- MOST students are using quick mental math
- Answer is more than 80

<u>Medium (Practice)</u>

- Number scheme is increasing
- Zero concept is introduced
- MOST students are transitioning from the use of concrete materials to mental math
- Answer is less than 80

CHECKPOINT MENU

CHECKPOINTS EXAMPLES PER OPERATION

	ADDITION	SUBTRACTION	MULTIPLICATION	DIVISION
DIGITS	2-digit and 2-digit	2-digit from 2-digit	2-digit by 1-digit	2-digit by 1-digit
EASY	12 + 19 13 + 18 13 + 19 14 + 17 14 + 18	32 - 19 31 - 18 33 - 19 35 - 17 34 - 18	15x3 16x2 16x3 17x2 18x2	23 ÷ 2 27 ÷ 2 25 ÷ 2 29 ÷ 2 43 ÷ 2
MEDIUM	24 + 18 25 + 15 (zero concept) 25 + 26 21 + 39 (zero concept) 27 + 34	24 - 17 (zero concept) 44 -28 34 -29 (zero concept) 45 - 26 25 - 17 (zero concept)	14x4 14x5 (zero concept) 16x4 20x3 (zero concept) 23x3	41 ÷ 4 41 ÷ 5 (zero concept) 53 ÷ 4 53 ÷ 6 51 ÷ 7 (zero concept)
HARD	32 + 48 (zero concept) 13 + 59 44 + 49 51 + 39 (zero concept) 65 + 38	78 - 89 (zero concept) 82 - 38 53 - 47 (zero concept) 80 - 51 (zero concept) 96 - 47	16x5 (zero concept) 23x7 27x8 40x8 (zero concept) 26x9	15 ÷ 8 63 ÷ 8 (zero concept) 81 ÷ 9 (zero concept) 50 ÷ 6 (zero concept)

KEYNOTE

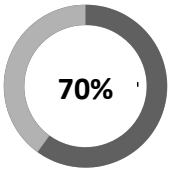
- *Turn these number sentences into word problems before using them as checkpoint questions.*
- *Remember to use checkpoint data to help you plan your next lesson*
  - *How many students were correct/incorrect?*
  - *Was your checkpoint too easy or too difficult?*
  - *Which students need support?*
  - *Give feedback to students where they made errors and a chance to practice again.*

Check the resource toolkit for more examples.

CUSP OF LEARNING

WHAT **is the 'CUSP of LEARNING'?**

Students should always be *genuinely learning*. They should occupy the middle space between being overstimulated with too difficult material and under-stimulated with too easy material.



Facilitators can keep students on the 'cusp of learning' with the checkpoint rule of thumb:

If 70% or more of students demonstrate understanding on a checkpoint, move to the next concept or activity.

How do I keep students on the **'CUSP of LEARNING'?**

Facilitators must have:

- ❑ a thorough understanding of students' learning needs and abilities
- ❑ a willingness to push students' genuine learning through pre-planning, and in-class improvisation and experimentation
- ❑ an orientation towards facilitating growth, not just success

What does 'CUSP of LEARNING' look like in practice?

*Katlego is facilitating a **Group S** class and 72% of his students successfully complete their checkpoint : 81 – 18 = ?*

Katlego is now developing the next day's lesson plan and can decide to...

OPTION #1

Review two-digit subtraction with borrowing.

✖ LEARNING STAGNATES.

Students repeat what they already know and may stagnate and become disengaged or bored.

OR

OPTION #2

Introduce two-digit Multiplication with regrouping.

✓ LEARNING PROGRESSES.

Students build upon their subtraction competencies with new challenging material.

CHECKPOINT PACING

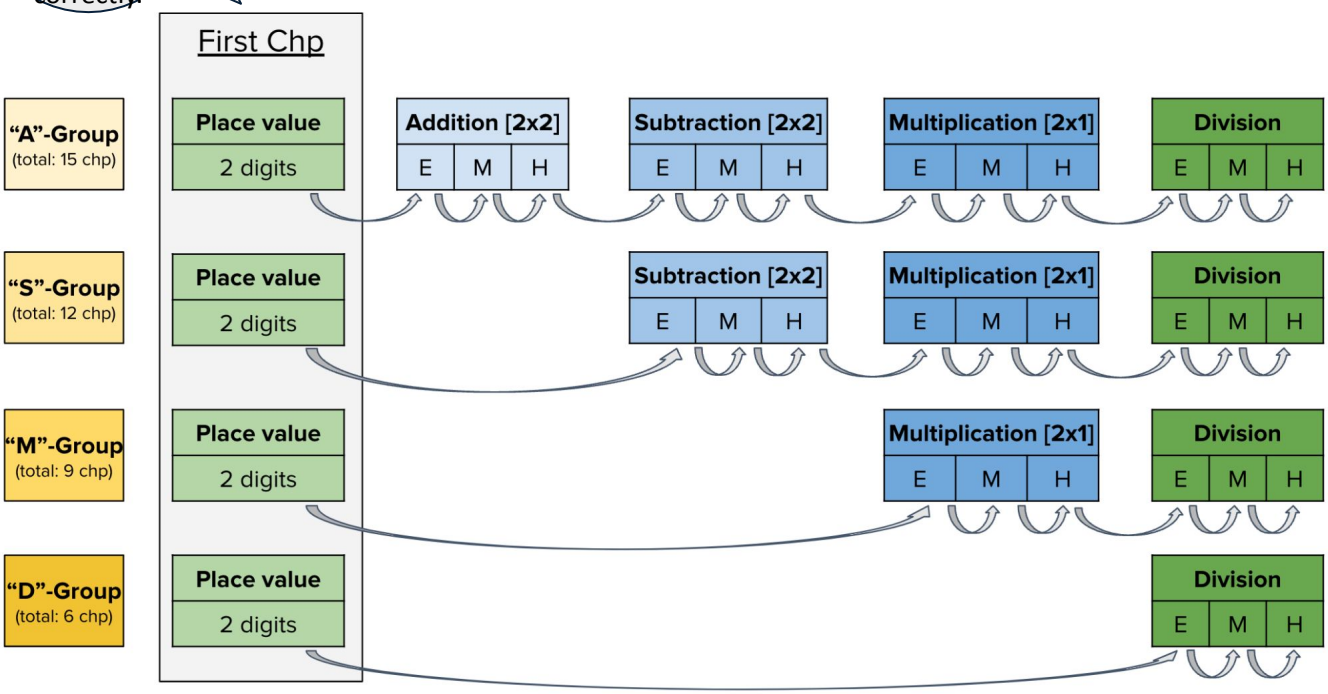
A reminder: What is the difference in difficulty between **CHECKPOINTS**?

Difficulty	Zero Concept	< 80 or > 80	
Easy	No	**< 80**	Values are small, no zero concept.
Medium	Yes	**< 80**	Values are small, **adding zero concept.**
Hard	Yes	**> 80**	Values are too large to easily use teaching aids (ie. sticks). **Mental math** is needed to solve problems.

Note: we move to operations when 70% of students have answered ONE PV chp correctly.

This means we progress between difficulty levels within the same operation and we move to the next operation when we have mastered the most difficult level (hard). This is called checkpoint pacing.

What is an example of proper **CHECKPOINT PACING**?



- Move from easy to medium to hard checkpoints, then to a new operation.
- The cusp of learning: Only move to the next objective if **70% of the class or more** answer the checkpoint correctly.
- Have more than one teaching group in your class? **Move at the pace of the group containing more students.** E.g. You have 10 Addition (A) students and 15 subtraction (S) students - move the class according to the S group.
- Have concrete materials on hand: especially for easy and some medium problems, and for struggling students at any difficulty level.
- Encourage the use of mental math when a student is ready - and mostly when solving medium and hard problems.

Checkpoint Register

Teaching Group: AS

Date Range: [07] / [03] to [11] / [03] **School Name:** Lesedi School **Region:** North East

Marking Key
Checkpoint Correct: **C** | Left Class Early: **E**
Checkpoint Answer Blank: **B** | Absent from class: **A**
Checkpoint Incorrect: **I** | Not Enrolled in Class: **N/A**

Objective Key
0. Place Value
1: Addition w/ carry-over
2: Subtraction w/ borrowing
3: Multiplication w/ carry-over
4: Division w/ remainder

#	Name	Level	Objective: [1] Mon.	[1] Tues.	[1] Wed.	[2] Thurs.	[2] Fri.
			Difficulty level (E/M/H): E	M	H	E	E
			Facilitator: Lizzy	Lizzy	Lizzy	Lizzy	Lizzy
1	Kaone Kgope	B	C	C	C	I	C
2	Otsile Mphusu	B	C	B	C	I	I
3	Kutlwano Molelu	A	E	C	C	I	C
4	Kealeboga Mfolwe	B	C	A	A	A	I
5	Itumele Prince	B	C	C	A	B	B
6	Andrek Pelle	A	C	C	C	I	E
7	Karunga Thimonyo	B	C	C	C	I	I
8	Tshepi Limba	A	C	C	C	I	I
9	Katlego Botshelo	B	I	C	C	C	C
10	Tacheba Mbuchili	B	I	C	B	I	I
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							
32							
33							
34							
	Total # Correct Checkpoints: / Total # Students that did the Checkpoint:		7/9	8/9	7/8	1/8	3/8
	= % Students Correct:		77.7 %	88 %	87.5 %	12.5 %	37.5 %

Attendance Level (L/M/H):	H	H	M	M	M

A/B Assignment (e.g., standard protocol)
Standard

Issues with A/B Protocol? (Yes/No)
NO

	Zero concept	Number scheme
Easy	No	<80
Medium	Yes	<80
Hard	Yes	>80

STRUCTURED LESSON PLAN EXEMPLAR 2: multi-level class

Using data for lesson planning:

Last lesson, 75% of the class got the subtraction (hard) checkpoint correct. Today during the operations parts of your lesson you will,

1. Introduce a new concept (multiplication with carryover - easy) to the whole class.
2. Allow students to practice multiplication (easy) in small groups/pairs. Circulate these groups to support them.
3. Split students into small groups again to be able to target the struggling students
    a. Allow the 25% who did not achieve the subtraction checkpoint yesterday to practice subtraction (hard) individually. Circulate to check how they are doing.
    b. While the 25% are busy, allow the 75% who got the previous checkpoint correct yesterday to do practice activities involving multiplication.
4. Get all students to complete a multiplication (easy) checkpoint individually.
5. Based on the checkpoint results, tomorrow you may be able to work through the answer and procedure used to answer the multiplication checkpoint as your whole class part of the lesson

This is how you might pace a 1 hour lesson:

<table>
<tr><td>5 min</td><td>10 min</td><td>10 min</td><td colspan="4">32 min</td><td>3 min</td></tr>
<tr><td rowspan="2">ICE BREAKER</td><td rowspan="2">Number recognition

Number chart</td><td rowspan="2">Place Value

Stone throw</td><td colspan="4">Operations (with checkpoint)</td><td rowspan="2">CLOSING</td></tr>
<tr><td>9 min

WG</td><td>10 min

SG</td><td>8 min

SG (subtraction)

SG (multiplication))</td><td>5 min

Check point</td></tr>
</table>

On the pages which follow is a scripted lesson plan for this class. In the Resource Kit you will find the same lesson plan with even more detail!

STRUCTURED LESSON PLAN EXEMPLAR 2: multi-level class (shortened version)

Objective:
By the end of this session 70% of the students should be able to multiply a 2 digit number by 1.

Checkpoint:
I have 16 bananas and sold each for P3. How much money did I make in total?

GROUP(s):
☐ Addition ☑ Subtraction
☑ Multiplication ☐ Division

Date [23/07/23]

MATERIALS: Number Chart, pencils, student books, chalk,stones, flip charts,erasers,a pointer

ICEBREAKER: **Nature Walk** Time: 5 mins

FORMATION ☑Whole Class

Students walk around the school premises and find 5 or more stones to be used in the place value activity. On return, students to pair up and make groups of 10 stones.
After, count groups by 10 to find out the total number of stones.

ACTIVITY #1: **Number Chart (2 digits)** Time: 10 mins

CONTENT ☑Number Recognition

FORMATION ☑Whole Class

MODES ☑Listen ☑Read ☐Write ☑Do ☐Solve

Students identify numbers on the number chart between 10-99.
They must:

- Say the number
- Point to the number
- Trace the number in the air
- Write the number on the floor/in books.
- Find the number that comes before and after the number
- Find a number that is 10/100 more or less than that number

Have 4 different student lead each action

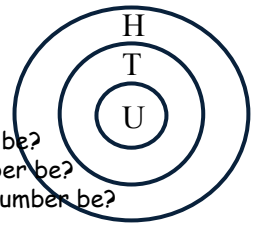
ACTIVITY #2: **Stone Throw (3 digits)** Time: 10 mins

CONTENT ☑Place Value

FORMATION ☑Whole Group ☑Small Group ☑Individual

MODES ☑Listen ☐Read ☑Write ☑Do ☐Solve

Demonstrate the stone throw activity with a 3-digit number.



Extend the class by asking,

1. What if I added another ten? What would the new number be?
2. What if I removed one hundred? What would the new number be?
3. If there was a zero in the tens place, what would the new number be?

Students do stone throw activity in small groups, adding digits to a place value table.

STRUCTURED LESSON PLAN EXEMPLAR 2: multi-level class(shortened version)

ACTIVITY #3: a) **Introduce Multiplication with regrouping 2 by 1 (easy)**					Time: 9 mins
CONTENT	☑Basic Operations				
FORMATION	☑Whole Group				
MODES	☑Listen	☐Read	☐Write	☑Do	☐Solve

Work through the following multiplication problem with the whole class. Move through each step carefully

WG: Laone has 13 pens and sold each for P5 How many money will she make in total?

ACTIVITY #3: **b) Practice Multiplication with regrouping 2 by 1 (easy)**					Time:10 mins
CONTENT	☑Basic Operations				
FORMATION	☑Small Group				
MODES	☐Listen	☑Read	☑Write	☑Do	☑Solve

All students are split into small groups to practice this lesson's objective and are given the following problems:

SG: Thabo has 12 sweets and sold each for P6. How many money did she make altogether?

SG: There are 4 guava trees. Each has 14 guavas. How many guavas are there altogether?

Circulate room, checking how students do
Take note of the following common errors:
- Incorrect placement of digits into the multiplication table
- Incorrect use of multiplication ladder
- Wrong process
- Regrouping and carrying over needing work

Extra problems:
3 x 15
18 x 2
19 x 3

ACTIVITY #3: c) **Practice subtraction with borrowing 2 digit from 2 digit (hard)**					Time: 8 mins
CONTENT	☑Basic Operations				
FORMATION	☑Small Group	Targeted			
MODES	☐Listen	☑Read	☑Write	☑Do	☑Solve

Those students who DID NOT achieve the subtraction checkpoint last lesson are split into small groups to practice subtraction and given the following problem:

Quick reminder to the small groups:
1. Read the problem. Answer the 4 questions together.
2. One person should draw the subtraction table, and together you place the numbers.
3. Subtract the units then the tens.
4. Remember to borrow tens and regroup them in the units column if you need to.
5. Complete the table with your answer.

SG: We bought 56 bags. We sold 49. How many do we have left?

SG: I collected 72 cans over the weekend. My little brother broke 29 of them. How many do I have left?

STRUCTURED LESSON PLAN EXEMPLAR 2: multi-level class(shortened version)

Circulate the room, checking how students do: where do they struggle? Are they ready to pass this checkpoint now?

ACTIVITY #3: c) Practice Multiplication with regrouping 2 by 1 (easy)					Time: 8 mins
CONTENT	☑Basic Operations				
FORMATION		☑Small Group			
MODES	☐Listen	☑Read	☐Write	☑Do	☑Solve

Those students who achieved the subtraction checkpoint yesterday, now spend time practicing multiplication.
They might finish the extra problems or play burning lava using the following number sentences:

3 x 16
19 x 2
4 x 14
97-28
97-88

ACTIVITY #3: d) Facilitate the checkpoint (individual)					Time: 5 mins
CONTENT	☑Basic Operations				
FORMATION			☑Individual	☑Checkpoint	
MODES	☐Listen	☑Read	☑Write	☑Do	☐Solve

All students to work through the checkpoint questions in their books individually.

Checkpoint: I have 16 books and sold each for P3. How much money did I make altogether?

ACTIVITY #4: Banana					Time: 3 mins
CONTENT	☑Closer				
FORMATION	☑Whole Group				
MODES	☐Listen	☐Read	☐Write	☐Do	☐Solve

The students are bananas and I tell them what to do, for example Jump banana, jump-jump banana (the students will jump). Show me the product of 5 and 2, banana. (the students will show 10 fingers).

Check all activities you fully completed: ☒Icebreaker ☒#1 ☒#2 ☒#3 ☒#4
If you did not complete all activities, briefly note WHY:

What I Did Well	What I Could Do Better	Plan for Tomorrow
Pair Work Students helped each other in small groups while I moved around the class and helped groups who were struggling with multiplication.	Keeping the energy up between the activities and using call to responses to get their energies up.	I checked the data: 45 % of the students got the multiplication checkpoint correct. So I need to work more on multiplication (easy) tomorrow. I will use the checkpoint question as our whole class activity.

Lesson Plan Creative Canvas

Basic operation

WG

	T	U
	1	
	1	3
x		5
	6	5

P31

SG

	T	U
	1	
	1	2
x		6
	7	2

31 pens

SG

	T	U
	1	
	1	4
x		4
	5	6

18 guavas

Extra problems

3 x 15 = 45
18 x 2 = 36
19 x 3 = 57

Subtraction group

	T	U
	4 ~~5~~	16
-	4	9
		9

9 bags

Subtraction group

	T	U
	6 ~~7~~	12
-	2	9
	4	3

37 cans

	T	U
	1	
	1	6
x		3
	4	8

P18

Extra problems

3 x 16 =48
19 x 2 =18
4 x 14 = 56
97-28 =69
97-88 = 9