



English

# Grade R Mathematics Improvement Programme



# Workshop 8 Facilitator's Guide

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The **Schools Development Unit** (SDU) at the **University of Cape Town** (UCT) is the mathematics technical partner to the Grade R Mathematics and Language Improvement Project. The SDU is a unit within UCT's School of Education that focuses on teachers' professional development in Mathematics, Science, Literacy/Language and Life Skills from Grade R to Grade 12. The SDU offers teacher qualifications and approved UCT short courses, school-based work, materials development and research to support teaching and learning in all South African contexts.

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## **Overview**

## **Purpose**

This is the eighth of twelve Grade R Mathematics Improvement Programme workshops, which form part of the Gauteng Department of Education (GDE) Grade R Mathematics and Language Improvement Project.

The purpose of this workshop is to continue assisting teachers to implement the Maths Programme in their classrooms. Participants will have the opportunity to reflect on their observations. They will explore how the guiding principles of teaching maths in Grade R should inform their planning, teaching and assessment. They will also consider learner progress, and individual developmental and learning needs. The workshop explores the content for Term 3 Weeks 4–6 and its classroom implementation.

References to the Grade R Mathematics Content Areas are taken from the *Curriculum* and Assessment Policy Statement (CAPS): Grade R Mathematics (Final Draft), 2011, Department of Basic Education, South Africa.

## **Learning outcomes**

- ◆ To reflect on the implementation of Term 3 Weeks 1–3
- To explore play-based strategies to support teaching maths in Grade R
- To deepen the understanding of the Maths Programme's topics
- To reflect on challenges and find solutions to implementing the Maths Programme
- ◆ To map out the Maths Programme content to be taught in Term 3 Weeks 4–6

## Workshop content

•	Opening and reflection	(1 hour)
•	Session 1: Measurement	(1 hour)
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•	Session 2: Measurement (continued)	(1 hour)
•	Session 3: Revisiting Grade R maths topics	(1 hour)
LU	NCH	
•	Session 4: Planning for teaching	(1½ hours)
•	Closing activities	(30 minutes)

## **Preparation**

- PPT welcome and outcomes
- Familiarise yourself with all the PowerPoints and videos
- Read:

Concept Guide, pages 8-12, 14-16, 29-34 and 57-109

Activity Guide: Term 3, pages 10 and 36-60

• Bring the post box

Remind participants to bring their:

Concept Guide

Activity Guide: Term 2 Activity Guide: Term 3

Poster Book

#### **Materials**

- Flipchart paper, kokis
- Prestik
- A *Resource Kit* for each group
- For Activity 2: string, pencils, sticks, jug, vase, cups, bottles and containers of different sizes (including two containers with different shapes, but the same capacity), bucket of water, balance scale, two or more kinds of fruit, books of different masses, one plastic bottle and one glass bottle of different masses, candles, egg timers, stopwatch (on a cellphone)

## Opening and reflection

1 hour

#### Facilitator's notes

- PPT: Learning outcomes of the workshop.
- Discuss the post box comments and feedback from the previous workshop. Remind participants to 'post' any new comments and feedback during the workshop.
- Remind participants of the *Take back to school* task from the end of Workshop 7.
- Refer participants to **Activity 1** and read through the instructions. Participants complete the activity in their groups. Groups then share key points with the large group.
- ♦ After the small group discussions, take comments from each group. Summarise the successes and challenges and discuss the implications for classroom implementation.

Here is the *Take back to school* task from Workshop 7.



## Take back to school task (Workshop 7)

- 1. Use the Term 3 Weekly Planning Template in Appendix A to plan and implement Term 3 Weeks 1–3 of the Maths Programme.
- 2. Document how you used the 'Check that learners are able to' observation list (in the eye box) during each of the teacher-guided activities.
- 3. Write an evaluation of what worked well, what did not work so well and what you could do differently to improve teaching and learning.
- 4. Bring your evaluation to the next workshop.

<u>გ</u> ტ	Activity	
ШШ	Activity	1

1.	In your group, share your successes and challenges with implementing the Maths Programme in Term 3 Weeks 1–3.
2.	Discuss your use of the <b>'Check that learners are able to'</b> observation list (in the eye box) during each of the teacher-guided activities.
3.	Share strategies for improving teaching and learning for the challenges you identified.

4. Write the main points of your discussion on flipchart paper. Report back on your discussion to the large group.



Activity Guide: Term 3, Week 3, Teacher-guided activity (pages 33–34)

Watch the video of a teacher working with a small group of learners during the teacher-guided activity in Term 3 Week 3.

Observe how the teacher:

- has prepared the small group activity
- manages the transitions between the eight tasks
- uses questions to guide the learners

<b>*</b>	records her observations of what has been learnt using the 'Check that learners are able to' observation list.

#### Facilitator's notes

Show the video and lead a discussion based on the four observation prompts. If participants do not mention the following points, add them to the discussion.

- It is essential to read the *Getting ready* and *What you need* sections of the *Activity Guide*.
- It is important to be prepared **before** the week/day begins and to have all the resources available during an activity.
- ◆ Teachers must have read the activities and be able to engage with the learners without reading the *Activity Guide* line by line.
- ♦ Manage the time allocated to an activity. Do not spend too long on any task so that others have to be omitted. (Remember learners in Grade R should only spend 10–15 minutes on an activity.)
- Use closed questions to determine knowledge/facts and use open-ended questions to probe learner's reasoning and to find out how they solve problems.
- ♦ Listening to and observing **each** learner provides insight into their progress. It helps you to identify their abilities and the gaps in their skill and/or understanding.

## Facilitator's notes

Remind participants that the learners in Grade R measure informally, to find out 'How much of something' there is, by direct comparison and by using non-standard units of measurement. The focus in Grade R is on comparing how many non-standard units something measured. Discuss how learners can develop their estimation skills during measurement activities.

In Terms 1 and 2, time and length were the focus of Measurement. This session will revisit these topics and expand the discussion of Measurement to include mass, and capacity and volume.

Measurement is about finding out 'how much' there is of something. In Grade R, the focus of measurement is on:

- time
- length
- mass
- capacity and volume.

In the next activity, you will explore each of these measurement concepts.

Learners in Grade R measure informally, by direct comparison and by using non-standard units of measurement. Learners develop their estimation skills during informal measurement activities. They estimate how long or how heavy they think something is and then use a non-standard measuring instrument to find out how accurate their estimation was.

#### Facilitator's notes

- For **Activity 2**, set out the materials at different measurement workstations and clearly label each workstation according to the concept:
  - Length: string, pencils, sticks
- **Capacity and volume:** jug, vase, cups, bottles and containers of different sizes (including two containers with different shapes, but the same capacity), bucket of water
- **Mass:** balance scale, two or more kinds of fruit, books of different masses, one plastic bottle and one glass bottle of different masses
  - **Time:** candles, egg timers, stopwatch (on a cellphone).
- Divide participants into four groups and assign each group to a different measurement workstation. Explain that the groups will rotate. Participants should answer the questions in their *Participant's Workbook* for each workstation. They will spend about ten minutes at each workstation.
- After the activity, discuss each workstation. Discuss how accurate the estimations were and which of the estimations could not be checked by measuring with the tools provided, e.g., the tallest person, whether it would take longer to eat lunch or drive to school.
- Highlight how learners need many opportunities to develop their comparison and estimation skills before they can use standard units of measurement.



With your group, move to the measurement workstation you have been assigned to and answer the questions in your *Participant's Workbook*. Rotate to the next workstation when you receive the signal.

Length
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Refer to page 105 of the <i>Concept Guide</i> . What vocabulary did you use during this	
activity?	

Find the answer to each of the following and identify the non-standard unit of measurement you used.

	Estimate	Non-standard unit	Length
	(guess)	of measurement	
1. Who has the longest shoe?			
2. Who is the shortest?			
3. How long is your <i>Participant's</i>			
Workbook?			
4. Who has the longest arm?			
5. How wide is your table?			
6. How many hand spans is the			
height of the door?			

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activity?					

Refer to page 105 of the *Concept Guide*. What vocabulary did you use during this

Find the answer to each of the following and identify the non-standard unit of measurement you used.

	Estimate	Non-standard unit of measurement	Capacity or volume
	(guess)	of measurement	volulile
1. Which two containers of water			
will fill the jug?			
2. Which bottle holds the most			
cups of water?			
3. How many cups of water do you			
think it will take to fill the vase?			
4. How many cups of water will it			
take to half-fill the vase?			
5. Which container on the table			
has the least amount of water in it?			
6. Which two containers have the			
same amount of water?			

Mass
------

Refer to page 105 of the <i>Concept Guide</i> . What vocabulary did you use during this
activity?

Find the answer to each of the following and identify the non-standard unit of measurement you used.

	Estimate	Non-standard unit	Mass
	(guess)	of measurement	
1. Whose handbag in your group is			
the heaviest?			
2. Which book in your group is the			
lightest?			
3. Who is the heaviest in your			
group? Who is the lightest?			
4. Which fruit is the heaviest?			
5. Which bottle weighs the most?			

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Refer to page 105 of the <i>Concept Guide</i> . What vocabulary did you use during this	
activity?	

Find the answer to each of the following and identify the non-standard unit of measurement you used.

	Estimate	Non-standard unit	Time
	(guess)	of measurement	
1. Who arrived the earliest this			
morning?			
2. Who arrived the latest?			
3. How long does it take to walk			
from your chair to the car?			
4. Who walked the fastest from			
their chair to the car?			
5. Would it take longer to eat lunch			
or drive to school?			

## Facilitator's notes

♦ Wrap up Session 1 with a discussion about how participants would be able to set up similar activities in their classrooms. Encourage discussion about issues of space, resources and discipline.

## **Session 2: Measurement (continued)**

1 hour

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ШШ	<b>Activity</b>	3

Consider the measurement activities that you have just experienced in Activity 2. How is
your classroom set up to provide similar learning experiences?

In Grade R, Measurement focuses on estimating, weighing, comparing and ordering objects according to how heavy or light they are.

Learners may find it difficult to understand that a small object can be heavier than a larger object. They need many opportunities to explore small heavy objects, small light objects, big heavy objects and big light objects.

#### **Facilitator's notes**

- Show Video 2. After the video, discuss what participants observed.
- Point out that mass is an abstract concept. Learners cannot see whether something is heavy or light. Teachers in Grade R often introduce the concept of mass with a balance scale so that learners can see what happens when an object is placed on each of its sides.
- Find out how participants have used a balance scale in their classrooms.
- Often learners notice that one side of the balance scale goes up and one side goes down, but they think that this is because the side of the scale that is higher is heavier. Teachers can help by pointing out that the side with the heavier object always goes down.

## oo □⊲<sub>Video 2</sub>

Activity Guide: Term 3, Week 5, Day 1 #4 (pages 45–46); Day 2 #4 and 5 (pages 46–47); Day 3 #4 (pages 47–48); Day 4 #4 (page 48); Day 5 #4 (page 49)

Watch the video of comparing the mass of one object against another.

Discuss these questions.

- What do you see happening?
- What concepts are being taught and learnt?
- ♦ What skills are being practised?
- What are the learners doing and saying?
- ♦ How is the teacher mediating learning?


## **Session 3: Revisiting Grade R maths topics**

1 hour

## Facilitator's notes

- Each group needs newsprint, kokis, Prestik and a Resource Kit.
- Allocate one topic to each small group.
- Small groups discuss the topic they are given and prepare a presentation for the whole group.
- As the groups are working, join their discussions and provide input on the content where they need this for their presentations.
- ◆ To support the participants' discussions, refer them to the relevant sections on pages 69–109 of the *Concept Guide*.

As you know, the Maths Programme is designed to introduce new knowledge and build on this progressively across the weeks and terms. During this session, we will revisit Content Areas and topics that we have dealt with in previous workshops and we will discuss how these topics have been presented in the Maths Programme.



## **Activity 4**

The facilitator will give a topic to each group to discuss.

You are required to prepare a presentation on your understanding of the topic and how the Maths Programme deals with the development of the concepts and skills related to it. Read the relevant information associated with your topic in the *Concept Guide* (pages 69–109).

You will receive ONE of the following topics:

- 1. How are shapes introduced and consolidated in the Maths Programme? Refer to Term 3, Week 4, Days 1, 2 and 3 to support your discussion.
- 2. Position and direction are difficult concepts for young children to grasp. How does the Maths Programme present these topics in Terms 1, 2 and 3? Refer to Term 3, Week 4, Days 4 and 5 to support your discussion.
- 3. Term 3, Week 4, Day 5 deals with the topic of symmetry. Explain your understanding of this topic. Share your experiences of teaching symmetry and how your learners have demonstrated their understanding of it.
- 4. Dot cards are used throughout the Maths Programme. Discuss the value of using this resource and if/how it contributes to building number concept. Refer to Term 3, Weeks 4 and 6 to support your discussion.
- 5. Discuss the routine that is used to introduce a new number in the Maths Programme. Explain how this routine builds on and consolidates the development of number concept. Refer to Term 3, Week 6 to support your discussion.
- 6. Explain how word problems are used to teach addition, subtraction, grouping (multiplication) and equal sharing (division). Discuss the importance of the use of

language and the structure of the word problem. Also included a motivation for the use of fingers and concrete apparatus during problem-solving activities. Refer to Week 6, Day 5 and the teacher-guided activities to provide examples.

- 7. How does the Maths Programme facilitate learning how to sequence/order the counting numbers (oral counting)? Consider each of the resources below to support your discussion:
  - songs and rhymes
  - number washing line
  - ♦ jumping tracks
  - number symbol cards.

How do these activities link to the concept of ordinal numbers? Refer to Term 3, Week 6 for examples to support your discussion.

8.	A real understanding of counting is achieved when learners are able to count each object in a collection and know that the last count represents the total number of the collection. This is a difficult concept for learners to grasp. How does the Maths Programme provide opportunities for learners to develop the concept of cardinality?				

## Facilitator's notes

• While each group is presenting, guide the discussion and ensure that the issues linked to the content have been dealt with.

## **Session 4: Planning for teaching**

1½ hours

It is important to plan and prepare thoroughly for each week. This will allow you to feel confident about what you are doing and help you to focus on teaching and working with the learners. As you have already experienced in Terms 1 and 2, the Maths Programme is carefully structured, and the maths content is presented in a progressive developmental sequence. It has been designed to ensure that all the Grade R Mathematics content and skills are covered and learners are well prepared for Grade 1. Teachers need to be cautious about selecting activities from different weeks and leaving other activities out.

#### Facilitator's notes

- Move between the groups as participants discuss the planning and preparation for teaching Term 3 Weeks 4-6 in **Activity 5**. Assist by making suggestions on overcoming challenges.
- Each group presents their main discussion points to the whole group.



## Activity 5

- 1. In your group, complete the planning templates for Term 3 Weeks 4–6 (Appendix
- 2. Your group will present an overview of your planning discussion to the other groups. Note the main points of your discussion on flipchart paper. Include answers to the following questions:
  - ♦ How could you work with a colleague to prepare for each week?
  - ♦ How is the week structured?
  - ♦ How do the topics build on previous lessons?
  - Do the whole class activities successfully open the way for discussion and exploration of new knowledge?
  - How does the teacher-guided activity provide opportunities for the teacher to assess and support the learners?
  - Do the independent small group activities allow for adequate practice of new knowledge and skills?

#### Facilitator's notes

♦ **Workshop reflection:** Ask participants to take a few minutes to reflect on the day and to page through their *Participant's Workbook*. Ask them to jot down any questions or comments to share with the whole group.

Ask individual participants to volunteer responses to the following:

- I learnt ...
- I did not like ...
- I enjoyed ...
- I now understand ...
- I'm still not clear about ...
- I would like more information on ...
- Encourage participants to add any comments and feedback not yet shared to the post box.
- ♦ **Take back to school task:** Read through this task. Ask if there is anything that is not clear and that requires more explanation.
- **Evaluation:** Hand out copies of the Workshop Evaluation Form and have participants complete the form.
- Next workshop: Give dates for the next workshop and close the workshop.



<b>Norkshop reflection:</b> Take a few minutes to reflect on the day. Page through your <i>Participant's Workbook</i> to remind yourself of what was covered. Write down your houghts.	
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Share your reflections with the large group.



## Take back to school task

- 1. Use *Activity Guide: Term 3* to plan and implement Term 3 Weeks 4–6 of the Maths Programme.
- 2. Write comments in the book that you use to keep track of each learner's progress (learner observation book). Use the **'Check that learners are able to'** observation list (eye box) during each of the teacher-guided activities to guide your observations and comments.
- 3. Make notes of what worked well, what did not work well and how you resolved any challenges during your implementation of Term 3 Weeks 4–6.

4. Bring your learner observation book and the notes you made when reflecting on each day's teaching to the next workshop.

## **Evaluation**

Complete the Evaluation Form.

## APPENDIX A: TERM 3 WEEKLY PLANNING TEMPLATE

Day 5

## Term 3: Activity Plan: Week \_\_\_\_ CONTENT AREA: TOPIC: **INTRODUCE NEW KNOWLEDGE:** PRACTISE: Workstation activities (independent small group activities) Whole class activities Teacher-guided activity Activity 1 Day 1 **Activity 2** Day 2 **Activity 3** Day 3 Day 4 **Activity 4**

Term 3: Activity Plan: Week \_\_\_\_

- 01 111 0				
CONTE	NT AREA:			
TOPIC:				
INTROL	DUCE NEW KNOWLEDGE:			
PRACTI	SE:			
Whole o	class activities	Teacher-guided activity	Workstation activ	vities (independent small group activities)
Day 1			Activity 1	
D 2		-	Activity 2	
Day 2			Activity 2	
Day 3		1	Activity 3	
-				
		-		
Day 4			Activity 4	
Day 5		1		
-				

Term 3: Activity Plan: Week \_\_\_\_

1 01 111 0 1 1 1 0 c1 v 1 cy	- 14m: W 00m			
CONTENT AREA:				
TOPIC:				
INTER OR LIGHT METAL	ANOTHER DE CE			
INTRODUCE NEW I	KNOWLEDGE:			
PRACTISE:				
Whole class activit	ies	Teacher-guided activity		vities (independent small group activities)
Day 1			Activity 1	
Day 2			Activity 2	
2u, 2				
			A - 12-24 2	
Day 3			Activity 3	
Day 4				
Duy 1			Activity 4	
Day 5				

## **Workshop 8 Evaluation Form**

1.	Did the workshop meet your expectations?
2.	What did you learn in this workshop that helped you the most?
3.	Was there anything that you did not like or had difficulty understanding?
4.	How will you apply what you have learnt in your Grade R classroom?
5.	Do you have any suggestions for improving further workshops?