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GGT 2030
GROWING GAUTENG TOGETHER

Setswana/English

Lenaneotokafatso la Dipalo tsa Mophato R
Grade R Mathematics Improvement Programme

Thutano 3 ● Workshop 3
Kaedi ya Mofatlhosi ● Facilitator's Guide

The Grade R Mathematics and Language Improvement Project is an initiative of the **Gauteng Department of Education** and its key partner, the **Gauteng Education Development Trust**.

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The Grade R Mathematics and Language Improvement Project is managed by **JET Education Services** with **UCT's Schools Development Unit** and **Wordworks** as technical partners.

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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Porojeke ya Lenaneotokafatso la Dipalo le Puo tsa Mophato wa R ke itshimololelo ya **Lefapha la Thuto la Gauteng (Gauteng Department of Education)** mmogo le badirisani ba bona ba botlhokwa, **Gauteng Education Development Trust**.

Tlhabololo le tlhagiso ya didiriswa tsa katiso le phaposiborutelo ya Porojeke ya Lenaneotokafatso la Dipalo le Puo tsa Mophato wa R e kgontshitswe ke tshegetso ya **United States Agency for International Development** le **Zenex Foundation** ka matlole.

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Schools Development Unit (SDU) kwa **University of Cape Town** (UCT) ke badirisani ba setegeniki ba dipalo go Porojeke ya Lenaneotokafatso la Dipalo le Puo tsa Mophato wa R. SDU ke yuniti e e ka fa tlase ga School of Education sa UCT e e totileng tokafatso ya boporofešenale jwa barutabana mo Dipalong, Bonetetshing, Kitsokwalo/Puo le Dikgonotshelo go simolola ka Mophato R go fitlha ka Mophato 12. SDU e neelana ka thuto ka boithutedi jwa borutabana le dithutokhutshwe tse di dumeletsweng tsa UCT, tiro ya kwa sekolong, tlhagiso ya dibukana le dipatlisiso go tshegetsa go ruta le go ithuta mo makaelong otlhe a Aforikaborwa.

DITEBOGO

Ditebogo di lebisiwa segolobogolo go:

- Batlhankedi ba Lefapha la Thuto la Gauteng mo Lephateng la Kharikhulamo, Bokaedi jwa Thuto ya Barutabana le Thuto e e Kgethegileng ka ntlha ya seabe sa bona go dirisa dibukana tseno tsa rona.
- Badiri le barutabana ba Western Cape Education Department (WCED) ka ntlha ya seabe sa bona mo go netefatseng gore Grade R Mathematics Programme (*R-Maths*) e a diragadiwa mo Kapabophirima magareng ga 2016 le 2019.
- Setlhopha se se kwalang *R-Maths*: Badiri ba SDU le bagakolodi.

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Overview

Purpose

This is the third of twelve Grade R Mathematics Improvement Programme (Maths 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 assist teachers to implement the Maths Programme in their classrooms. Participants will strengthen their understanding of the CAPS Content Areas covered in Weeks 6–9 of Term 1 and practise skills in mediating maths learning.

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 1 Weeks 3–5
- To apply the Maths Programme principles in weekly planning
- To explore strategies to support teaching maths in Grade R
- To engage with the Maths Programme content of Term 1 Weeks 6–9 (Patterns, Functions and Algebra; Space and Shape (Geometry); Measurement; Numbers, Operations and Relationships)
- To start to understand how learners' different interests and ability levels inform learning and teaching

Workshop content

- Opening and reflection (1 hour)
- Session 1: Patterns, Functions and Algebra (1 hour)

TEA

- Session 2: Space and Shape (Geometry) (1 hour)
- Session 3: Measurement (1 hour)

LUNCH

- Session 4: Numbers, Operations and Relationships (1 hour)
- Session 5: Planning for teaching (1 hour)

Thadiso

Maitlhomo

Eno ke thutano ya boraro ya dithutano di le lesomepedi tsa Lenaneotokafatso la Dipalo tsa Mophato R (Lenaneo la Dipalo), Porojeke ya Lenaneotokafatso la Dipalo le Puo tsa Mophato wa R la Lefapha la Thuto la Gauteng (GDE).

Maitlhomo a thutano eno ke go thusa barutabana go diragatsa Lenaneo la Dipalo mo diphaposiborutelong tsa bona. Batsayakarolo ba tlaa tiisa go tlhaloganya ga bona ga Dikaroloteng tsa PPKT tse di lebilweng mo Dibekeng 6–9 tsa Kgweditharo 1 le go ikatisetsa dikgono tsa go tsereganya go ithuta dipalo.

Metswedi ya Dikaroloteng tsa Dipalo tsa Mophato wa R di tserwe go tswa mo *Polelong ya Pholisi ya Kharikhulamo le Tlhatlhobo (PPKT)*: *Dipalo tsa Mophato wa R (Lokwalo lwa Bofelo),* 2011, Lefapha la Thutotheo, Aforika Borwa.

Dipoelothuto

- Go sedisisa mo tiragatsong ya Kgweditharo 1 Dibeke 3–5
- Go diragatsa melawana ya Lenaneo la Dipalo mo thulaganyong ya beke le beke
- Go tlhotlhomisa ditogamaano tsa go tshegetsa go ruta dipalo mo Mophatong wa R
- Go mekamekana le diteng tsa Lenaneo la Dipalo la Kgweditharo 1 Dibeke 6–9 (Dipaterone, Ditiro le Alejibora; Boalo le Popego (Jeometeri); Tekanyo; Dinomore, Ditiro le Dikamano)
- Go simolola go tlhaloganya ka moo dikgatlhego tse di farologaneng tsa barutwana le maemo a bokgoni jwa bona a nang le seabe ka teng mo go ithuteng le mo go ruteng

Diteng tsa thutano

- Pulo le tshedisiso (Ura e le1)
- Karolo 1: Dipaterone, Ditiro le Alejibora (Ura e le 1)

TEE

- Karolo 2: Boalo le Popego (Jeometeri) (Ura e le 1)
- Karolo 3: Tekanyo (Ura e le 1)

DIJOTSHEGARE

- Karolo 4: Dinomore, Ditiro le Dikamano (Ura e le 1)
- Karolo 5: Go ithulaganyetsa go ruta (Ura e le 1)

Preparation

- PPT welcome and outcomes
- Read:

Concept Guide, pages 114–137
Activity Guide: Term 1, pages 18–21
Appendix A: Term 1 Weekly Content Summary

- Set out a Maths Programme *Resource Kit* on each group's table.

Materials

- Flipchart paper, kokis
- A *Resource Kit* for each group
- A *Poster Book* for each group
- *Resource Kit*: attribute blocks

Ipaakanyo

- PPT kamogelo le dipoelo
- Buisa:

Kaedi ya Mogopolo, ditsebe 114–137
Kaedi ya Ditirwana: Kgweditharo 1, ditsebe 18–21
Mametlelelo A: Kgweditharo 1 Khutshwafatso ya Diteng tsa Beke le Beke

- Baakanya *Kgetsana ya Didiriswa* ya Lenaneo la Dipalo mo tafoleng ya setlhopha se sengwe le se sengwe

Didiriswa

- Pampiri ya tšhatephetogi, dikhokhi
- *Kgetsana ya Didiriswa* ya setlhopha se sengwe le se sengwe
- *Buka ya Diphousetara* ya setlhopha se sengwe le se sengwe
- *Kgetsana ya Didiriswa*: dibolokoponagalo

Opening and reflection **1 hour**

Facilitator's notes

- PPT: Open the session and read through the agenda and learning outcomes for the workshop.
- Remind participants of the *Take back to school* task from the end of Workshop 2. Ask participants to reflect on this task and the implementation of Weeks 3–5 and to complete **Activity 1**.
- Groups share key points with the large group. Reflect on how assessment is continuous and that observations need to be ongoing.

Reflect on the implementation of the Maths Programme in your daily programme and complete the following activity in your group.

 **Activity 1**

1. Discuss your progress in implementing Weeks 3–5 and the *Take back to school* task from Workshop 2.
2. Share your photograph of the Space and Shape (Geometry) focus in the maths area.
3. How did you record your observations of each learner during the teacher-guided activity?
4. Which teaching principles are you more aware of in your classroom?

 **Video 1**

Activity Guide: Term 1, Week 3, Day 2 #1, 2 and 3 (page 56)

Watch the video of how the teacher uses a rhyme to practise counting and solving word problems.

Discuss how you managed this and other lessons that incorporated rhymes into counting activities.

_____

_____

_____

_____

Pulo le tshedisiso

Ura e le 1

Dintlha tsa mofatlhosi

- PPT: Bula karolo, mme o buise letema le dipoelo tsa thutano.
- Gopotsa batsayakarolo ka ga *Tirwana e o e busetsang kwa sekolong* go tswa kwa bokhutlong jwa Thutano 2. Kopa batsayakarolo go dira ka ditlhopha go sedisisa tirwana eno le tiragatso ya Dibeke 3–5 le go dira **Tirwana 1.**
- A ditlhopha di arogane dintlha tsa botlhokwa le setlhopha se segolo. Sedisisa ka moo tlhatlhobo e tswelelang pele ka teng le gore go tshwanetse ga nna go ntse go na le dikelotlhoko.

Sedisisa ka ga tiragatso ya Lenaneo la Dipalo mo lenaneong la gago la letsatsi le letsatsi mme o dire tirwana e e latelang mo setlhopheng sa gago.

Tirwana 1

1. Buisanang ka ga tswelelopele ya lona mo tiragatsong ya Dibeke 3–5 le *Tirwana e o e busetsang kwa sekolong* go tswa mo Thutanong 2.
2. Arogana ka setshwantsho sa gago se se tobilweng Boalo le Popego (Jeometeri) mo lefelong la dipalo.
3. O rekotile jang dilo tse o di etseng tlhoko ka ga morutwana yo mongwe le yo mongwe mo tirwaneng e e kaelwang ke morutabana?
4. Ke melawana efe ya go ruta e o e lemogileng mo phaposiborutelong ya gago?

Video 1

Kaedi ya Ditirwana: Kgweditharo 1, Beke 3, Letsatsi 2 #1, 2 le 3 (tsebe 57)

Lebelela video e e bontshang ka moo morutabana a dirisang morumo go ikatisetsa go bala le go rarabolola dipalo tsa mafoko.

Buisanang ka ga gore o kgonne jang go lepalepana le seno le dithuto tse dingwe tse di tsenyeleditseng merumo mo ditirwaneng tsa go bala.

_____

_____

_____

_____

Session 1: Patterns, Functions and Algebra **1 hour**

Facilitator's notes

- Explain that this workshop addresses the content of the Maths Programme Term 1 Weeks 6–9, and that the focus of Week 6 is on Patterns, Functions and Algebra.
- Refer participants to page 124 of the *Concept Guide*. Explain that the aim of **Activity 2** is to highlight the content of the Patterns, Functions and Algebra Content Area for Term 1.
- Ask participants to work in groups to complete **Activity 2**. Ask one person from each group to share their ideas.

This workshop focuses on teaching the following Maths Programme content: Term 1 Weeks 6–9. This session focuses on Term 1 Week 6: Patterns, Functions and Algebra.

Term 1 Content overview: Patterns, Functions and Algebra

Refer to the Patterns, Functions and Algebra Content Area on page 124 of the *Concept Guide*.

Activity 2

In your group, discuss:

1. What concepts are covered in Term 1?

_____

_____

_____

2. What are the differences between the content and the content from CAPS?

_____

_____

_____

Recognise the repeat in patterns.
Introduce language, e.g. What comes next? What comes before?
Create own pattern using physical objects, drawings, geometric patterns.
Explain own pattern (repeating rule).

Karolo 1: Dipaterone, Ditiro le Alejibora **Ura e le 1**

Dintlha tsa mofatlhosi

- Tlhalosa gore thutano e ama diteng tsa Lenaneo la Dipalo Kgweditharo 1 Dibeke 6–9, le gore Beke 6 e tobile Dipaterone, Ditiro le Alejibora.
- Kopa batsayakarolo go lebelela tsebe 125 ya *Kaedi ya Mogopolo*. Tlhalosa gore maikaelelo a **Tirwana 2** ke go bonatsha diteng tsa Dikarololoteng tsa Dipaterone, Ditiro le Alejibora mo Kgweditharong ya 1.
- Kopa batsayakarolo go dira ka ditlhopha go dira **Tirwana 2**. Kopa motho a le mongwe go tswa mo setlhopheng se sengwe le se sengwe go arogana dikakanyo tsa bona.

Thutano eno e totile go ruta diteng tse di latelang tsa Lenaneo la Dipalo: Kgweditharo 1 Dibeke 6–9. Karolo eno e totile Kgweditharo 1 Beke 6: Dipaterone, Ditiro le Alejibora.

Kgweditharo 1 Thadiso ya diteng: Dipaterone, Ditiro le Alejibora

Lebelela Karoloteng ya Dipaterone, Ditiro le Alejibora mo tsebeng 125 ya *Kaedi ya Mogopolo*.

Tirwana 2

Mo setlhopheng sa lona, buisanang ka ga:

1. Ke megopolo efe e e lebelelwang mo Kgweditharong ya 1?

_____

_____

_____

2. Pharologano magareng ga diteng le diteng tsa PPKT ke efe?

_____

_____

_____

Lemoga dipoeletso mo dipateroneng.
Tlhagisa puo, sk. Go latelang? Go tlang pele?
Tlhama paterone ya gago ka go dirisa dilo tse di tshwaregang, dithalo, dipaterone tsa jeometeri.
Tlhalosa paterone ya gago (molao wa go boeletsa).

Understanding patterns

Facilitator's notes

- PPT: Refer groups to Poster 7 in the *Poster Book* and have them complete **Activity 3**.
- PPT: Give a definition of a pattern and a sequence, using the information below. Demonstrate these explanations.
  *A **pattern** describes the regular sequence of objects, pictures, movements, actions or events that are repeated in a predictable way.*
  *A **sequence** is the particular order in which objects, pictures, movements, actions or events follow each other.*

Developing an understanding of patterns is an important part of maths. Patterns are all around us and children encounter lots of patterns in their daily lives at home and at school.

Think about your own understanding of the Content Area: Patterns, Functions and Algebra and complete Activity 3 with your group.

 **Activity 3**

In your group, discuss:

1. What kinds of patterns might Grade R learners observe in their daily lives?

_____

_____

Patterns in clothes, on buildings, in nature (e.g. flower, beehive).

Facilitator's notes

- PPT: Pictures of patterns around us in our natural and built environment.
- Discuss how a sequence of items can be extended but that this won't necessarily create a pattern.
- Look at examples of where a sequence is repeated to create a pattern.

2. Look at Poster 7 in the *Poster Book*.

- What patterns do you see?

_____

_____

- What is the pattern?

_____

_____

Identify the 'repeat' part of the pattern.
Elements are repeated (unless it is an irregular pattern, e.g. bark on a tree, random patterns on paper or fabric).

Go tlhaloganya dipaterone

Dintlha tsa mofatlhosi

- PPT: Kopa ditlhopha go lebelela Phousetara 7 mo *Bukeng ya Diphousetara* mme o ba kope go dira **Tirwana 3**.
- PPT: Neela tlhaloso ya paterone le tatelano, ka go dirisa tshedimosetso e e fa tlase. Diragatsa ditlhaloso tse.
  ***Paterone** e tlhalosa tatelano e e tlwaelegileng ya dilo, ditshwantsho, metsamao le ditiragalo kgotsa ditiro tse di ipoeletsang ka mokgwa o o bonelwang pele.*
  ***Tatelano** ke thulaganyo e e rileng moo dilo, ditshwantsho, metsamao, ditiragalo le ditiro di latelanang ka yona.*

Go godisa go tlhaloganya dipaterone ke karolo ya botlhokwa ya dipalo. Dipaterone di re dikologile mme bana ba rona ba kopana le dipaterone tse dintsi mo matshelong a bona kwa gae le kwa sekolong.

Akanya ka moo o tlhaloganyang Karoloteng ka teng: Dipaterone, Ditiro le Alejibora mme o dire Tirwana 3 le setlhopha sa gago.

Tirwana 3

Mo setlhopheng sa lona, buisanang ka ga:

1. Ke mefuta efe ya dipaterone e barutwana ba Mophato wa R ba ka e elang tlhoko mo matshelong a bona letsatsi le letsatsi?

_____

_____

Dipaterone mo diaparong, mo dikagong, mo tlhagong (sk. malomo, phago ya dinotshe).

Dintlha tsa mofatlhosi

- PPT: Ditshwantsho tsa dipaterone go re potologa mo tikologong ya rona ya tlhago le e e ikagetsweng.
- Buisanang ka ga gore tatelano ya dilwana e ka atoloswa jang mme le gore seno ga se ne se dira gore go nne le tlhamego ya paterone.
- Lebelela dikao tsa moo tatelano e boelediwang go tlhama paterone.

2. Lebelela Phousetara 7 mo *Bukeng ya Diphousetara*.

- O bona dipaterone dife?

_____

_____

- Paterone ke eng?

_____

_____

Tlhaola karolwana ‘e e boeleditsweng’ ya paterone.
Dielemente di boeleditswe (ntle le fa e le paterone e e sa tlwaelegang, sk. lekwati mo setlhareng, dipaterone tse di sa rulaganngwang mo pampiring kgotsa mo leseleng).

- Can you repeat the pattern? Explain.

_____

_____

A **pattern** describes the regular sequence of objects, pictures, movements, actions or events that are repeated in a predictable way.
A **sequence** is the particular order in which objects, pictures, movements, actions or events follow each other.

Identifying patterns

Facilitator's notes

- Explain that in a regular pattern we can see how the elements in a pattern are repeated, and we can predict the order or sequence that the pattern will follow.
- PPT: Circles and squares repeated to form a pattern.
- Refer participants to the circle and square patterns in the *Participant's Workbook*. Use the questions that follow to demonstrate how we can see that the circle and square are repeated and use this to predict what the next shape will be.
- In the pattern below we can see that the circle and square are repeated, and we can predict that the next shape in the sequence will be a circle, followed by a square and so on.

In a regular pattern, we can see how the elements in the sequence are repeated. We can also predict the order or sequence of the elements and how they will be repeated to create a pattern. In the pattern below we can see that the circle and square are repeated and we can predict what the next shape in the sequence will be.

Activity 4

1. Which shape is first?

_____

2. Which shape is next?

_____

3. What shape do you think will come after the last square?

_____

4. How would you extend the pattern?

_____

Repeating patterns are made up of a repeated sequence of elements, e.g. shapes, colours, sounds, objects, movements.

- A o ka boeletsa paterone? Tlhalosa.

_____

_____

Paterone e tlhalosa tatelano e e tlwaelegileng ya dilo, ditshwantsho, metsamao le ditiragalo kgotsa ditiro tse di ipoeletsang ka mokgwa o o bonelwang pele.
Tatelano ke thulaganyo e e rileng moo dilo, ditshwantsho, metsamao, ditiragalo le ditiro di latelanang ka yona.

Go tlhaola dipaterone

Dintlha tsa mofatlhosi

- Mo pateroneng e e tlwaelegileng re kgona go bona gore dielemente mo pateroneng di boeleditswe jang mme e bile re kgona go bonela pele tatelano kgotsa thulaganyo e paterone e tlaa e tsayang.
- PPT: Didiko le dikhutlonne di boeleditswe go bopa paterone.
- Kopa batsayakarolo go lebelela dipaterone tsa sediko le khutlonne mo *Bukatirong ya Batsayakarolo*. Dirisa dipotso tse di latelang go supa ka moo re ka bonang gore sediko le khutlonne di boeleditswe ka teng le go dirisa seno go bonela pele gore popego e e latelang e ya go nna efe.
- Mo pateroneng e e latelang, re ka bona gore sediko le khutlonne di boeleditswe, mme e bile re ka bonela pele gore popego e e latelang mo tatelanong e tlaa nna sediko, go latele khutlonne jalo le jalo.

Mo pateroneng e e tlwaelegileng re kgona go bona gore dielemente mo pateroneng di boeleditswe jang. Mme e bile gape re kgona go bonela pele tatelano kgotsa thulaganyo ya dielemente le gore di tlaa boelediwa jang go tlhama paterone. Mo pateroneng e e latelang, re ka bona gore sediko le khutlonne di boeleditswe, mme e bile re ka bonela pele gore popego e e latelang mo tatelanong e tlaa nna efe.

Tirwana 4

1. Ke popego efe ya ntlha?

_____

2. Ke popego efe e e latelang?

_____

3. O akanya gore go ya go tla popego efe morago ga khutlonne ya bofelo?

_____

4. O ya go atolosa paterone eno jang?

_____

Go boeletsa dipaterone go dirilwe ka tatelano e e boeleditsweng ya dielemente, sk. dipopego, mebala, medumo, dilo, metsamao.

Facilitator's notes

- PPT: Display the following sequence of attribute blocks:

yellow red blue yellow

- Ask participants to look at the pattern and to use the attribute blocks on their tables to copy the sequence. Groups then complete **Activity 5**.

In the next activity, the facilitator will show you a sequence of shapes. You will use the attribute blocks on your table to copy this sequence and discuss how to extend this to create a pattern.

Activity 5

1. What is the pattern?

_____

_____

2. What is the repeating part of the sequence?

_____

_____

Facilitator's notes

- The point of this activity is to identify the repeating part of the sequence, i.e. the pattern. Does the pattern begin with the yellow square and end with the blue circle? Or does the pattern begin with the yellow square and end with the yellow square?
- Explain that learners need to be able to identify the pattern before they can extend or create their own pattern.
- Emphasise that teachers should always repeat the pattern at least twice before asking learners to extend it, for example:

- After these activities highlight the importance of introducing learners to patterns that have only one attribute that differs, e.g. shape, and providing them with a long enough repeat sequence (e.g. three repeats) so that they can work out the pattern.
- Ask participants for examples of the kinds of patterns that families might find in their own homes and communities (**context principle**).
- Reflect on how a learner's experience of everyday patterns is the starting point for understanding the concept of pattern (**level principle**).

Dintlha tsa mofatlhosi

- PPT: Bontsha tatelano e e latelang ya dibolokoponagalo:

serolwana khibidu pududu serolwana

- Kopa batsayakarolo go lebelela paterone le go dirisa dibolokoponagalo mo ditafoleng tsa bona go kopolola tatelano. A ditlhopha jaanong di dire **Tirwana 5.**

Mo tirwaneng e e latelang, mofatlhosi o tlaa lo bontsha tatelano ya dipopego. Lo tlaa dirisa dibolokoponagalo mo tafoleng ya lona go kopolola tatelano eno le go buisana ka moo lo ka e atolosang ka teng go tlhama paterone.

Tirwana 5

1. Paterone ke eng?

_____

_____

2. Karolwana e e ipoeletsang ya tatelano ke eng?

_____

_____

Dintlha tsa mofatlhosi

- Ntlhakgolo ya tirwana eno ke go tlhaola se se boelediwang ke tatelano, sk. paterone. A paterone e simolola ka khutlonne e e serolwana le go felela ka sediko se sepududu? Kgotsa a paterone e simolola ka khutlonne e e serolwana le go felela ka khutlonne e e serolwana?
- Tlhalosa gore barutwana ba tlhoka go kgona go tlhaola paterone pele ga ba ka atolosa kgotsa ba ka tlhama paterone ya bona.
- Gatelela gore barutabana ba tshwanetse go boeletsa paterone bonnye gabedi pele ga ba ka kopa barutwana go e atolosa, sekao:

- Morago ga ditirwana tseno, bonatsha botlhokwa jwa go tlhagisetsa barutwana dipaterone tse di nang le ponagalo e le nngwe e e farologaneng, sk. popego, le go ba tlamela ka tatelano e telele e e ipoeletsang (sk. dipoeletso tse tharo) gore ba kgone go tsweletsa paterone.
- Kopa batsayakarolo dikao tsa mefuta ya dipaterone tse balelapa ba ka di bonang mo malapeng a bona le mo loagong (**molawana wa bokaelo**).
- Sedisisa ka moo maitemogelo a morutwana- a dipaterone tsa letsatsi le letsatsi e leng motheo wa go tlhaloganya mogopolo wa paterone (**molawana wa maemo**).

Introduce learners to patterns that start with only one attribute that differs, e.g. shape, and provide enough items in the sequence so that learners can work out what the pattern is (the repeating part in the sequence).

It is important for teachers to provide a range of opportunities for learners to identify, copy and create different kinds of patterns using sounds, actions, objects and pictures.

 **Video 2**

Activity Guide: Term 1, Week 6, Days 2, 3 and 4 (pages 104–111)

Watch the video of the teacher setting up activities that provide opportunities for learners to create and discuss patterns.

Notice how the teacher guides the learners through questions and prompts to create a pattern. Write down the vocabulary that she and the learners using during these activities.

_____

_____

_____

_____

Refer to pages 160–173 of the *Concept Guide* to read more about teaching Patterns, Functions and Algebra in Grade R. You will also find a list of appropriate questions and vocabulary for this Content Area.

The **level principle** says that learners are at different starting points in Grade R. Each learner's prior knowledge is the starting point for what they will learn. They can use what they know already to learn new maths concepts and skills.

Tlhagisetsa barutwana dipaterone tse di simololang ka ponagalo e le nngwe fela e e farologaneng, sk. popego, mme o ba tlamele ka dilwana tse di lekaneng mo tatelanong gore barutwana ba kgone go tsweletsa se paterone e leng sona (karolwana e e ipoeletsang mo tatelanong).

Go botlhokwa gore barutabana ba neelane ka ditšhono tsa methale gore barutwana ba tlhaole, kopolole le go tlhama mefuta e e farologaneng ya dipaterone ba dirisa medumo, ditiragatso, dilo le ditshwantsho.

Video 2

Kaedi ya Ditirwana: Kgweditharo 1, Beke 6, Malatsi 2, 3 le 4 (ditsebe 104–111)

Lebelela video ya morutabana a rulaganya ditirwana tse di tlamelang ka ditšhono tsa gore barutwana ba tlhame le go buisana ka ga dipaterone.

Lemoga ka moo morutabana a kaelang barutwana ka teng ka dipotso le tlhotlheletso ya go tlhama paterone. Kwala tlotlofoko e ena le barutwana ba e dirisang mo ditirwaneng tseno.

_____

_____

_____

_____

Lebelela ditsebe 160–173 tsa *Kaedi ya Mogopolo* go buisa go le gontsi ka ga go ruta Dipaterone, Ditiro le Alejibora mo Mophatong wa R. Gape o tlaa bona lenane la dipotso tse di maleba le tlotlofoko ya Karoloteng eno.

Molawana wa maemo o a re barutwana ba kwa metheong e e farologaneng mo Mophatong wa R. Kitso ya pele ya morutwana yo mongwe le yo mongwe ke motheo wa se ba yang go se ithuta. Ba ka dirisa se ba se itseng go ithuta megopolo e mešwa ya dipalo le dikgono.

Session 2: Space and Shape (Geometry) 1 hour

Facilitator's notes

- Explain that the focus of Week 7 is on Space and Shape (Geometry).
- Refer participants to pages 126–131 of the *Concept Guide*.
- Have participants work in groups to complete **Activity 6**. Ask one person from each group to report back.
- The focus on Space and Shape (Geometry) in this workshop extends the discussion in Workshop 2.

The focus of Term 1 Week 7 is Space and Shape (Geometry). In Workshop 2, we discussed 3-dimensional objects and 2-dimensional shapes and the content of Weeks 3–5 to be implemented in the classroom.

Term 1 Content overview: Space and Shape (Geometry)

Activity 6

Refer to the Space and Shape (Geometry) Content Area on pages 126–131 of the *Concept Guide*. You will see that circles, squares and triangles are introduced in CAPS in Term 1 and rectangles are introduced in Term 4. The Maths Programme suggests that rectangles are introduced incidentally in Term 1.

1. When you taught squares did you find that learners confused squares and rectangles? Give reasons to support your answer.

_____

_____

_____

_____

Learners need to see the differences between the two shapes. Even though both have four sides and four corners, the rectangle has two long sides and two short sides, and the square has four sides that are the same length.

2. How were rectangles introduced in Week 3 of the Maths Programme?

_____

_____

_____

_____

Practically by using boxes and discussing and comparing the sides of a box.

Karolo 2: Boalo le Popego (Jeometeri) **Ura e le 1**

Dintlha tsa mofatlhosi

- Tlhalosa gore Beke 7 e totile Boalo le Popego (Jeometeri).
- Kopa batsayakarolo go lebelela ditsebe 126–131 tsa *Kaedi ya Mogopolo*.
- A batsayakarolo ba dire ka ditlhopha go dira **Tirwana 6**. Kopa motho a le mongwe go tswa mo setlhopheng se sengwe le se sengwe go bega.
- Boalo le Popego (Jeometeri) mo thutanong eno di totile go atolosa puisano e e mo Thutanong 2.

Kgweditharo 1 Beke 7 e tobile Boalo le Popego (Jeometeri). Mo Thutanong 2, re buisane ka ga dilo tsa tlhakore-3 le dibopego tsa tlhakore-2 le diteng tsa Dibeke 3–5 go ka diragadiwa mo phaposiborutelong.

Kgweditharo 1 Thadiso ya diteng: Boalo le Popego (Jeometeri)

Tirwana 6

Lebelela Karoloteng ya Boalo le Popego (Jeometeri) mo ditsebeng 126–131 tsa *Kaedi ya Mogopolo.* O tlaa bona gore didiko, dikhutlonne le dikhutlotharo di tlhagisitswe mo PPKT mo Kgwedithareng 1 le gore dikhutlonnetsepa di tlhagisitswe ka ditiragalo mo Kgwedithareng 1.

1. Fa o ne o ruta dikhutlonne a o bone barutwana ba tlhakatlhakanya dikhutlonne le dikhutlonnetsepa? Neela mabaka go tshegetsa karabo ya gago.

_____

_____

_____

_____

Barutwana ba tlhoka go bona dipharologano magareng ga dipopego tse pedi tseno. Le fa tsotlhe di na le matlhakore a mane le dikhutlo tse nne, khutlonnetsepa e na le matlhakore a mabedi a maleele le a mabedi a makhutshwane, fa khutlonne yona e na le matlhakore a mane a a lekanang ka boleele.

2. Dikhutlonnetsepa di ne tsa tlhagisiwa jang mo Bekeng 3 ya Lenaneo la Dipalo?

_____

_____

_____

_____

Ka go dirisa mabokoso le go buisana ka ga matlhakore a lebokoso mmogo le go a bapisa.

Identifying 2-dimensional shapes (triangles)

Facilitator's notes

- Remind participants that in Workshop 2 they learnt about 3-dimensional objects and 2-dimensional shapes.
  3-dimensional *means that an object has three dimensions: length, width and height.*
  2-dimensional *means that a shape has length and width.*
- Explain that triangles are taught in a similar way to circles and squares in Term 1 (Week 7).

In Grade R learners recognise, identify and name 2-dimensional shapes: circles, squares, triangles and rectangles. The Maths Programme also suggests that learners are encouraged to describe the properties of these shapes, e.g. straight or curved lines, number of lines and corners.

Learners apply their new knowledge of shapes and reinforce this learning in the independent small group activities.

 **Video 3**

Activity Guide: Term 1, Week 7, Days 1 and 2 (pages 120–125)

Watch the video of the teacher introducing the learners to the triangle.

Notice how the teacher encourages the learners to describe the properties of the triangle.

_____

_____

_____

_____

_____

Facilitator's notes

- In **Activity 7** participants will reflect on how the *Poster Book* can be used during activities to stimulate discussion.
- PPT: Display Poster 8 and ask participants to respond to the questions in **Activity 7**.
- After the activity ask participants which properties of 2-dimensional shapes were discussed and what maths language was used.
- Remind participants that 2-dimensional means that a shape has length and width (breadth) and that 3-dimensional means that an object has length, width and height.

Go tlhaola dibopego tsa tlhakore-2 (dikhutlotharo)

Dintlha tsa mofatlhosi

- Gopotsa batsayakarolo gore mo Thutanong ya 2 ba ithutile ka ga dilo tsa tlhakore-3 le dibopego tsa tlhakore-2.
  Tlhakore-3 *e kaya gore selo se na le matlhakore a mararo: boleele, bophara le bogodimo.*
  Tlhakore-2 *e kaya gore popego e na le boleele le bophara.*
- Tlhalosa gore dikhutlotharo di rutiwa ka tsela e e tshwanang le ya didiko le dikhutlonne mo Kgweditharong 1 (Beke 7).

Mo Mophatong wa R barutwana ba lemoga, tlhaola le go neela maina a dibopego tsa tlhakore-2: didiko, dikhutlonne, dikhutlotharo le dikhutlonnetsepa. Lenaneo la Dipalo gape le tshikhinya gore barutwana ba rotloediwe go tlhalosa dipharologantsho tsa dipopego tseno, sk. mela e e tlhamaletseng kgotsa e e kgogoropo, palo ya mela le dikhutlo.

A barutwana ba diragatse kitso ya bona e ntšhwa ya dipopego le go gatelela go ithuta gono mo ditirwaneng tsa bona tsa ditlhopha tse dinnye tsa boikemedi.

Video 3

Kaedi ya Ditirwana: Kgweditharo 1, Beke 7, Malatsi 1 le 2 (ditsebe 120–125)

Lebelela video ya morutabana a tlhagisetsa barutwana khutlotharo.

Lemoga ka moo morutabana a rotloetsang barutwana ka teng go tlhalosa dipharologantsho tsa khutlotharo.

_____

_____

_____

_____

_____

Dintlha tsa mofatlhosi

- Mo **Tirwaneng 7**, batsayakarolo ba tlaa sedisisa ka moo *Buka ya Diphousetara* e ka dirisiwang ka teng ka nako ya ditirwana go tlhotlheletsa dipuisano.
- PPT: Bontsha Phousetara 8 mme o kope batsayakarolo go tsibogela dipotso tse di mo **Tirwaneng 7**.
- Morago ga tirwana, botsa batsayakarolo gore ke diponagalo dife tsa dipopego tsa tlhakore-2 tse di neng di lebilwe le gore ke puo efe ya dipalo e e neng e dirisiwa.
- Gopotsa batsayakarolo gore tlhakore-2 e kaya gore popego e na le boleele le bophara (boatlhamo) le gore tlhakore-3 e kaya gore selo se na le boleele, bophara le bogodimo.

Activity Guide: Term 1 provides many opportunities throughout the term for teachers to use open-ended questions. The *Poster Book* is used during whole class activities and small group teacher-guided activities to encourage learners to express their own ideas and solve problems.

In Activity 7, you will discuss a poster and talk about whether the questions posed are 'open-ended' or 'closed' questions.

Activity 7

1. Look at Poster 8 and respond to the following questions.

- How many triangles can you see? closed

_____

- How do you know it is a triangle? open-ended

_____

- How many sides does it have? closed

_____

- How many corners does it have? closed

_____

- How many lines? closed

_____

- Can you see any other triangles? closed

_____

- What other shapes can you see? closed

_____

- What is the same about these two shapes? open-ended

_____

- What is different about these two shapes? open-ended

_____

2. Which of the questions above are open-ended and which are closed questions?

_____

_____

Kaedi ya Ditirwana: Kgweditharo 1 e tlamela ka ditšhono tse dintsi go ralala kgweditharo gore barutabana ba dirise dipotso tse di bulegileng. *Buka ya Diphousetara* e a dirisiwa ka nako ya ditirwana tsa phaposiborutelo yotlhe le ditirwana tsa ditlhopha tse dinnye tse di kaelwang ke morutabana go rotloetsa barutwana go tlhalosa dikakanyo tsa bona le go rarabolola dipalo.

Mo Tirwaneng 7, lo tlaa buisana ka ga phousetara le go bua ka ga gore a dipotso tse di boditsweng 'di bulegile' kgotsa 'di tswalegile'.

Tirwana 7

1. Lebelela Phousetara 8 mme o tsibogele dipotso tse di latelang.

- O kgona go bona dikhutlotharo tse kae? e tswalegile

_____

- O itse jang gore ke khutlotharo? e bulegile

_____

- E na le matlhakore a le kae? e tswalegile

_____

- E na le dikhutlo di le kae? e tswalegile

_____

- Mela e kae? e tswalegile

_____

- A o kgona go bona dikhutlotharo tse dingwe? e tswalegile

_____

- Ke dipopego dife gape tse o kgonang go di bona? e tswalegile

_____

- Dipopego tse pedi tseno di tshwana ka eng? e bulegile

_____

- Dipopego tse pedi tseno di farologana ka eng? e bulegile

_____

2. Ke dife tsa dipotso tse di fa godimo di bulegileng le gore ke dife tse di tswalegileng?

_____

_____

Facilitator's notes

- Discuss the kinds of questions that were asked in **Activity 7** and how the **guidance principle** encourages problem solving through effective questioning.
- Highlight the importance of using maths vocabulary in discussions with learners.
- Remind participants that not all learners will grasp the ideas/concepts at the same time (**level principle**) and that they should be encouraged to share their thinking and be given plenty of practical activities and opportunities to talk about shapes.

The **guidance principle** encourages teachers and learners to work together to solve problems using effective questioning.

- **Closed questions** are questions that have a limited 'yes' or 'no' response. Closed questions can be helpful in finding out what learners know, like 'Which shape is a triangle?', 'What colour is it?'
- **Open-ended questions** have more than one possible answer, stimulate thinking and encourage learners to express their own ideas when solving problems.

Not all learners will grasp these concepts or learn the maths language at the same time (**level principle**).

Maths vocabulary

When learners investigate, and describe shapes and objects, they use everyday language like 'flat', 'smooth' and 'pointy'. Teachers can introduce maths vocabulary to replace everyday language, for example: straight lines, curved lines, corners, sides. We also talk about how long something is, how wide it is and refer to the height of something.

Refer to the pages 190–193 of the *Concept Guide* to read more about asking questions related to teaching and learning Space and Shape (Geometry) concepts. Also read page 192 for more about Space and Shape (Geometry) vocabulary in Grade R.

Dintlha tsa mofatlhosi

- Buisanang ka ga mefuta ya dipotso tse di boditsweng mo **Tirwaneng 7** le gore **molawana wa go kaelwa** o rotloetsa go rarabolola dipalo ka go dirisa dipotso tse di utlwalang.
- Bonatsa botlhokwa jwa go dirisa tlotlofoko ya dipalo mo dipuisanong le barutwana.
- Gopotsa batsayakarolo gore ga se barutwana botlhe ba ba tlaa tshwarelelang dikakanyo/megopolo ka nako e le nngwe (**molawana wa maemo**) le gore ba tshwanetse go rotloediwa go arogana dikakanyo tsa bona le go neelwa ditirwana tsa tiragatso di le dintsinyana le ditšhono tsa go bua ka ga dipopego.

Molawana wa go kaelwa o rotloetsa barutabana le barutwana go dira mmogo go rarabolola dipalo ka go dirisa dipotso tse di utlwalang.

- **Dipotso tse di tswalegileng** ke dipotso tse di nang le tsibogo e e lekantsweng ya 'ee' kgotsa 'nnyaa'. Dipotso tse di tswalegileng di ka thusa go batla se barutwana ba se itseng, jaaka 'Khutlotharo ke popego efe?', 'E mmala o o ntseng jang?'
- **Dipotso tse di bulegileng** di na le dikarabo tse di fetang bongwe, di tlhotlheletsa go akanya mme e bile di rotloetsa barutwana go tlhalosa dikakanyo tsa bona fa ba rarabolola dipalo.

Ga se barutwana botlhe ba ka tshwarelelang megopolo kgotsa go ithuta puo ya dipalo ka nako e le nngwe (**molawana wa maemo**).

Tlotlofoko ya dipalo

Fa barutwana ba tlhotlhomisa, le go tlhalosa dipopego le dilo, ba dirisa puo e e tlwaelegileng jaaka 'sephaphathi', 'boleta' le 'e e ntlhana'. Barutabana ba ka tlhagisa tlotlofoko ya dipalo go emisetsa puo e e tlwaelegileng, sekao: mela e e tlhamaletseng, mela e e kgogoropo, dikhutlo, matlhakore. Gape re bua ka gore selo se boleele go le kana kang, se bophara go le kana kang le go bua ka ga bogodimo jwa sengwe.

Lebelela ditsebe 190–193 tsa *Kaedi ya Mogopolo* go buisa go le gontsi ka ga go botsa dipotso tse di amanang le go ruta le go ithuta megopolo ya Boalo le Popego (Jeometeri). Gape buisa tsebe 193 go buisa go le gantsi ka ga tlotlofoko ya Boalo le Popego (Jeometeri) mo Mophatong wa R.

Session 3: Measurement

1 hour

Facilitator's notes

- Explain that the focus of Week 8 is on Measurement.
- Refer participants to pages 132–135 of the *Concept Guide*.
- Have participants work in groups to complete **Activity 8**. Ask one person from each group to share their ideas.

The focus of Term 1 Week 8 is Measurement: time and length.

Term 1 Content overview: Measurement

Activity 8

Refer to the Measurement Content Area on pages 132–135 of the *Concept Guide*.
In your group, review:

1. What concepts are covered in Term 1?

_____

_____

2. What are the differences between this content and the content from CAPS?

_____

_____

What is measurement?

Facilitator's notes

- Ask participants to think about what measurement is.
- PPT: Same picture as in Activity 9.
- Participants complete **Activity 9** and share what they have written.
- Brainstorm the following questions with the group:
  Who is taller?
  Who is heavier?
  Who is older?
- Explain that measurement is about finding out 'how much' there is of a something, e.g. the length of something, how much something holds (the capacity), the mass of something or how long it takes to do something (time).
- Explain that to talk about measurement you need to say what you want to measure – the attribute. Give examples of attributes: length, height, mass, capacity.
- Use the information below Activity 9 to explain standard and non-standard measuring units.
- Explain that in Grade R, learners measure informally using non-standard measuring units to measure time, length, mass and capacity or volume.

Karolo 3: Tekanyo **Ura e le 1**

Dintlha tsa mofatlhosi

- Tlhalosa gore Beke 8 e tobile Tekanyo.
- Kopa batsayakarolo go lebelela ditsebe 132–135 tsa *Kaedi ya Mogopolo*.
- A batsayakarolo ba dire ka ditlhopha go dira **Tirwana 8**. Kopa motho a le mongwe go tswa mo setlhopheng se sengwe le se sengwe go arogana dikakanyo tsa bona.

Kgwedithаro 1 Beke 8 e tobile Tekanyo: nako le boleele.

Kgwedithаro 1 Thadiso ya diteng: Tekanyo

Tirwana 8

Lebelela Karoloteng ya Tekanyo mo ditsebeng 132–135 tsa *Kaedi ya Mogopolo*.
Mo setlhopheng sa gago, lebelela gape gore:

1. Ke megopolo efe e e dirilweng mo Kgwedithаrong 1?

_____

_____

2. Pharologano magareng ga diteng tseno le diteng go tswa mo PPKT ke efe?

_____

_____

Tekanyo ke eng?

Dintlha tsa mofatlhosi

- Kopa batsayakarolo go akanya ka ga se tekanyo e leng sona.
- PPT: Setshwantsho se se tshwanang le se se mo Tirwaneng 9.
- A batsayakarolo ba dire **Tirwana 9** mme ba arogane se ba se kwadileng.
- Buisanang ka ga dipotso tse di latelang le setlhopha:
  Ke mang yo moleejana?
  Ke mang yo o boketenyana?
  Ke mang yo mogolwane?
- Tlhalosa gore tekanyo ke ka ga go batlisisa gore go na le 'bokaakang' jwa sengwe, sk. boleele jwa sengwe, sengwe se tshola go le kana kang (mothamo), boima jwa sengwe kgotsa go tsaya nako e e kana kang go dira sengwe (nako).
- Tlhalosa gore go bua ka ga tekanyo o tlhoka go kaya gore o batla go lekanya eng – ponagalo. Neela dikao tsa diponagalo: boleele, bogodimo, boima, mothamo.
- Dirisa tshedimosetso e e fa tlase ga Tirwana 9 go tlhalosa diyuniti tsa go lekanya go go tlhomameng le go go sa tlhomamang.
- Tlhalosa gore mo Mophatong wa R, barutwana ba lekanya mo go sa tlhomamisiwang ka go dirisa diyuniti tsa go lekanya go go sa tlhomamang go lekanya nako, boleele, boima le mothamo kgotsa volumo.

In Activity 9 we will discuss the question ‘What is measurement?’.

Activity 9

Look at the picture below and answer the question.

Who is the biggest?

_____

Measurement is about finding ‘how much’ there is of a thing, e.g.:

- the length of something
- how much something holds
- the mass of something
- how long it takes to do something.

In order to measure, we need to decide on which attribute (feature/characteristic) we want to measure, e.g. length, mass, time. We use the following words to describe the measurements: taller, heavier, older.

Mo Tirwaneng 9, re tlaa buisanela potso ‘Tekanyo ke eng?’.

Tirwana 9

Lebelela setshwantsho se se fa tlase mme o arabe potso.

Ke mang yo mogolo go gaisa?

_____

Tekanyo e mabapi le go batlisisa gore go na le ‘bokaakang’ jwa selo, sk.:

- boleele jwa sengwe
- sengwe se tshola go le kana kang
- boima jwa sengwe
- go tsaya nako e kae go dira sengwe.

Gore re kgone go lekanya, re tlhoka go swetsa gore re batla go lekanya ponagalo (sebopego/popego) efe, sk. boleele, boima, nako. Re dirisa mafoko a a latelang go tlhalosa ditekanyo: leejana, boketenyana, mogolwane.

We need to use units to measure. These can be non-standard units or standard units.

- **Non-standard measuring units** include hands, feet, crayons, pieces of string, sticks and blocks.
- **Standard measuring units** include litres, millilitres, kilograms, grams, metres, hours, minutes, etc.

In Grade R learners measure **informally** and use **non-standard measuring units** to measure time, length, mass, capacity and volume.

Direct comparison

Facilitator's notes

- Demonstrate how to use direct comparison and a non-standard unit of measurement. Ask eight volunteers to stand in front. Ask:
  Who is the tallest in the group? How do you know?
  Who is the shortest in the group? How do you know?
  Is anyone the same height? How do you know?
  How can we find out?
- Have the participants stand back-to-back to compare their height. Afterwards, ask participants to complete **Activity 10**.
- Discuss that by directly comparing the attribute (height) of the two people, we could find out who was taller.
- Point out that this measurement activity has been taken from Week 8 in *Activity Guide: Term 1* (pages 136–149) and that participants should refer to this activity when planning.

Measurement in Grade R includes comparing the attribute of something 'directly' with something else. For example, measuring the length of a crayon against another crayon or comparing the height of two learners standing back-to-back.

Observe the facilitator measuring a group of participants and then complete Activity 10 in your group.

Activity 10

Refer to pages 194–207 of the *Concept Guide* to read more about Measurement and pages 136–149 of *Activity Guide: Term 1* before you answer the questions below.

Re tlhoka go dirisa diyuniti go lekanya. Diyuniti tseno e ka nna tse di sa tlhomamang kgotsa tse di tlhomameng.

- **Yuniti tekanyo e e sa tlhomamang** e akaretsa diatla, dinao, dikherayone, manathwana a mogala, dikota le diboloko.
- **Yuniti tekanyo e e tlhomameng** e akaretsa dilithara, dimililithara, dikhilokereme, dikereme, dimethara, diura, metsotso, j.j.

Mo Mophatong wa R barutwana ba lekanya **kwa ntle le thulaganyo** mme ba dirisa **diyuniti tekanyo tse di sa tlhomamang** go lekanya nako, boleele, boima, mothamo le volumo.

Papiso ka tlhamalalo

Dintlha tsa mofatlhosi

- Supa gore papiso ya tlhamalalo e dirisiwa jang le yuniti tekanyo e e sa tlhomamang. Kopa baithaopi ba le robedi go ema kwa pele. Botsa:
  Ke mang yo moleele go gaisa mo setlhopheng? Lo itse jang?
  Ke mang yo mokhutshwane go gaisa mo setlhopheng? Lo itse jang?
  A go na le ba ba lekanang ka boleele? Lo itse jang?
  Re ka batlisisa seno jang?
- A batsayakarolo ba eme ba bapile mme ba hularelane go bapisa bogodimo jwa bona. Morago ga foo, kopa batsayakarolo go dira **Tirwana 10**.
- Buisanang gore fa o bapisa ponagalo (bogodimo) ya batho ba babedi ka tlhamalalo, re ka bona gore ke ofe yo moleejana.
- Supa gore tirwana eno ya tekanyo e tswa mo Bekeng 8 mo *Kaeding ya Ditirwana*: Kgweditharo 1 (ditsebe 136–149) le gore batsayakarolo ba tshwanetse go lebelela tirwana eno fa ba ithulaganya.

Tekanyo mo Mophatong wa R e akaretsa go bapisa ponagalo ya sengwe le se sengwe 'ka tlhamalalo'. Sekao, go bapisa boleele jwa kherayone le kherayone e nngwe kgotsa go bapisa bogodimo jwa barutwana ba babedi ba eme ba bapile mme ba hularelane.

Ela tlhoko mofatlhosi fa a lekanya setlhopha sa batsayakarolo mme morago o dire Tirwana 10 mo setlhopheng sa gago.

Tirwana 10

Lebelela ditsebe 194–207 tsa *Kaedi ya Mogopolo* go buisa go le gontsi ka ga Tekanyo le ditsebe 136–149 tsa *Kaedi ya Ditirwana: Kgweditharo 1* pele ga o araba dipotso tse di fa tlase.

1. What non-standard unit of measurement was used to measure the height of the participants?

_____

Learners' bodies.

2. What other non-standard units of measurement could be used to measure the height of the participants?

_____

E.g. string, pencil, block.

Time

Facilitator's notes

- Facilitate a discussion about teaching time to learners in Grade R – that it is an abstract concept and that learners need to learn about time from daily experiences that are familiar to them.
- Ask participants to complete **Activity 11** and share their ideas with the large group. These should include:
  - sequencing of repeated events or activities during the day
  - the weather chart with day, date and month and pictures on a weekly calendar
  - the calendar with days of the week.

Time is a difficult abstract concept for learners to understand. Learners need to understand how time passes in their own lives, so teachers need to relate time to the learner's daily experiences and events that are familiar to them.

Activity 11

Refer back to Term 1 Week 8 in *Activity Guide: Term 1* and with a partner discuss how time is taught in these lessons. Share your ideas about the following.

1. How can Grade R teachers/practitioners help learners understand more about the concepts of:

- day and night?
- yesterday, today and tomorrow?
- how long things take?
- the sequence of time?

_____

_____

_____

_____

1. Go dirisitswe yuniti tekanyo e e sa tlhomamang efe go lekanya bogodimo jwa batsayakarolo?

_____

Mebele ya barutwana.

2. Go ka dirisiwa diyuniti tekanyo tse di sa tlhomamang dife gape go lekanya bogodimo jwa batsayakarolo?

_____

Sk. mogala, phensele, boloko.

Nako

Dintlha tsa mofatlhosi

- Etelela puisano ka ga nako ya go ruta barutwana ba Mophato R pele – gore ke mogopolo o o sa tshwaregeng le gore barutwana ba tlhoka go ithuta ka ga nako go tswa mo maitemogelong a letsatsi le letsatsi a ba a tlwaetseng.
- Kopa batsayakarolo go dira **Tirwana 11** le go arogana dikakanyo tsa bona le setlhopha se segolo. Tseno di tshwanetse go akaretsa:
  - tatedisanyo ya dilo tse di ipoeletsang kgotsa ditirwana mo letsatsing
  - tšhate ya bosa e e nang le letsatsi, letlha le kgwedi le ditshwantsho tsa khalendara ya beke le beke
  - khalendara e e nang le malatsi a beke.

Seno ke mogopolo o o thata o o sa tshwaregeng oo barutwana ba ka se o tlhaloganyeng. Barutwana ba tlhoka go tlhaloganya ka moo nako e fetang ka teng mo matshelong a bona, ka jalo barutwana ba tlhoka go tlhalosa nako ka go e bapisa le maitemogelo a barutwana le ditiro tse di tlwaelegileng.

Tirwana 11

Lebelela Kgweditharo 1 Beke 8 mo *Kaeding ya Tirwana*: *Kgweditharo 1* mme lo buisane le molekane ka ga ka moo nako e rutiwang ka teng mo dikamusong tseno. Arogana dikakanyo tsa gago ka ga tse di latelang.

1. Barutabana/badiri ba Mophato wa R ba ka thusa jang barutwana go tlhaloganya go le gontsi ka ga megopolo ya:

- motshegare le bosigo?
- maabane, gompieno le kamoso?
- dilo di tsaya nako e kae?
- tatelano ya nako?

_____

_____

_____

_____

2. How can you use your daily programme activities to teach learners about the concept of time?

_____

_____

_____

_____

Discussing the sequence of activities – e.g. what do we do first, next, what happened before Storytime – provides opportunities to reflect on what happened first/next/last.

3. What vocabulary is important to understand the concept of time?

_____

_____

_____

Before, after, next, now, then, day, night, morning afternoon, today, yesterday, tomorrow.

Refer to pages 194–207 of the *Concept Guide* to read more about Measurement and time. Refer to the page 210 of the *Concept Guide* to read more about asking questions related to teaching and learning of Measurement in Grade R.

2. O ka dirisa jang ditirwana tsa gago tsa lenaneo la letsatsi le letsatsi go ruta barutwana ka ga mogopolo wa nako?

_____

_____

_____

_____

Go buisana ka ga tatelano ya ditirwana – sk. re dirang pele, se se latelang, ke eng se se neng se diragala pele ga nako ya kanelo – e tlamela ka ditšhono go sedisisa ka ga se se diragetseng pele/gape/la bofelo.

3. Ke tlotlofoko efe e e botlhokwa go tlhaloganya mogopolo wa nako?

_____

_____

_____

Pele, morago, latelang, jaanong, morago ga moo, motshegare, bosigo, mosong, thapama, gompieno, maabane, kamoso.

Lebelela ditsebe 194–207 tsa *Kaedi ya Mogopolo* go buisa go le gontsi ka ga Tekanyo le nako. Lebelela tsebe 211 ya *Kaedi ya Mogopolo* go buisa go le gontsi ka ga go botsa dipotso tse di amanang le go ruta le go ithuta Tekanyo mo Mophatong wa R.

Session 4: Numbers, Operations and Relationships

1 hour

Facilitator's notes

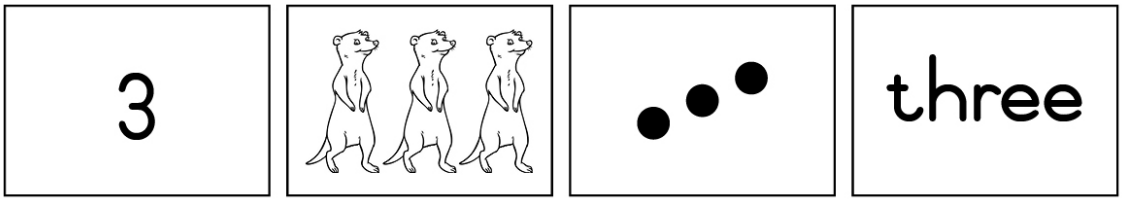
- Draw the participants' attention to how the number 3 is introduced on pages 102–105 of *Activity Guide: Term 1*.
- Explain that even though the Content Area Focus is Patterns, Functions and Algebra in Week 6, the number 3 is also introduced in this week.
- Discuss the routine that is followed for the numbers 1 and 2 and reflect on whether the same routine is followed for number 3. Discuss how each number of pictures and dots is one more than the previous one and make the connection to the fact that 2 is one more than 1 and 3 is one more than 2.
- Explain that in Week 6 learners are also introduced to dot cards.
- Use the dot cards in the *Resource Kit* to demonstrate how learners match counters to the dot cards and discover that 3 is made up of 1 and 2 dots.

In Workshop 2, you were introduced to the concepts of counting and representation of number. In this workshop we will see how the same ideas continue into Week 6 as the number 3 is introduced. The same routine is followed as with numbers 1 and 2, namely:

Refer to pages 102–105 of *Activity Guide: Term 1* for the introduction of number '3' activity.

Tell the *Number 3 story* and dramatise as you build up the story with the different representations of the number using frieze cards from the *Resource Kit*:

- animal (picture)
- number symbol
- number word
- dots (representing the doorbells).



Look for objects and match the number symbol (3) and number word (three). In Week 6, learners are introduced to dot cards (from the *Resource Kit*). Learners match counters to the dot cards and discuss that 3 is made up of 1 and 2 dots.

Karolo 4: Dinomore, Ditiro le Dikamano **Ura e le 1**

Dintlha tsa mofatlhosi

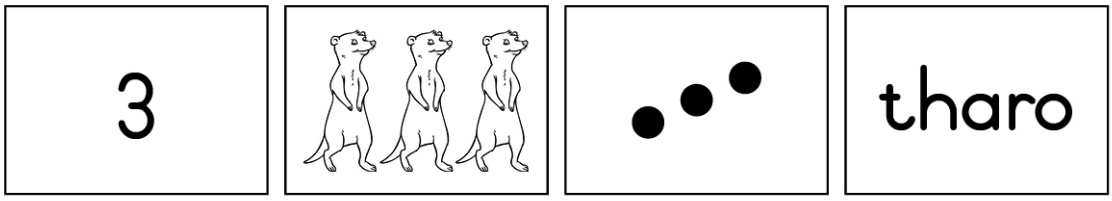
- Kopa batsayakarolo go lebelela ka moo nomore 3 e tlhagisitsweng ka teng mo ditsebeng 102–105 tsa *Kaedi ya Mogopolo: Kgweditharo 1*.
- Tlhalosa gore le mororo Karoloteng e e Lebeletsweng e le Dipaterone, Ditiro le Alejibora mo Bekeng 6, nomore 3 le yona e tlhagisitswe mo bekeng eno
- Tlhalosa moetlo o o latelwang wa dinomore 1 le 2 mme o sedisise gore a moetlo oo o a latelwa mo nomoreng 3. Buisanang ka moo nomore e nngwe le e nngwe ya ditshwantsho le marontho e fetang e e fetileng ka nngwe ka teng mme o golagane seo le ntlha ya gore 2 e feta 1 ka nngwe le gore 3 e feta 2 ka nngwe.
- Tlhalosa gore mo Bekeng 6, barutwana le bona ba tlhagisetswa dikarataronthο.
- Dirisa dikarataronthο tse di mo *Kgetsaneng ya Didiriswa* go supa ka moo barutwana ba nyalanyang dibadi le dikarataronthο ka teng mme o lemoge gore 3 e diriwa ke marontho a 1 le 2.

Mo Thutanong 2, o tlhagiseditswe mogopolo wa go bala le tlhagiso ya nomore. Mo thutanong eno re tlaa bona gore dikakanyo tseo di tswelela jang mo Bekeng 6 fa nomore 3 e tlhagisiwa. Go latelwa moetlo o o tshwanang fa dinomore 1 le 2, e bong:

Lebelela ditsebe 102–105 tsa *Kaedi ya Ditirwana: Kgweditharo 1* go bona tlhagiso ya tirwana ya nomore '3'.

Anaanela *Kanelo ya nomore 3* mme o se diragatse fa o ntse o aga kanelo ka ditlhagiso tse di farologaneng tsa nomore ka go dirisa dikaratakgabisi go tswa mo *Kgetsaneng ya Didiriswa:*

- phologolo (setshwantsho)
- letshwaopalo
- lefokopalo
- marontho (a emetse dibele tsa lebati).



Lebelela dilo go nyalanya letshwaopalo (3) le lefokopalo (tharo). Mo Bekeng 6, barutwana ba tlhagisetswa dikarataronthο (go tswa mo *Kgetsaneng ya Didiriswa*). Barutwana ba nyalanya dibadi le dikarataronthο le go buisana gore 3 e dirilwe ke marontho a 1 le 2.

Term 1 Content overview: Numbers, Operations and Relationships

Facilitator's notes

- Explain that the focus of Week 9 is on Numbers, Operations and Relationships.
- Refer participants to pages 114–123 of the *Concept Guide*.
- Have participants work in groups to complete **Activity 12**. Ask one person from each group to share their ideas.

Week 7 focuses on Space and Shape (Geometry) while Week 8 focuses on Measurement. The focus of Week 9 in Term 1 is once more on number concepts. In this session, you will investigate the relationship between numbers.

Activity 12

Refer to the Numbers, Operations and Relationships content overview on pages 114–123 of the *Concept Guide*. In your group, discuss the following features of the content overview:

1. What is Topic 1.4?
2. What sub-topics are listed under this topic?
3. What are the differences between the blue and black text? Explain why you think this is so.

Calculating

Facilitator's notes

- Point out that learners in Grade R do not do number operations such as addition and subtraction, multiplication and division. Give an example of how these concepts are gradually built up through counting and manipulation of concrete materials and through problem solving in appropriate real-life contexts.
- Demonstrate an activity that involves breaking down and building up numbers ('Shake and break' on pages 166–169 of *Activity Guide: Term 1*).
- After the demonstration, participants complete **Activity 13**. Ask one person from each group to share their ideas.
- Discuss which of the questions asked were open-ended and which were closed questions.
- Remind participants that not all learners will demonstrate an understanding of these number concepts at the same time (**level principle**).

In Grade R learners do not do number operations like addition and subtraction, multiplication and division. These concepts are gradually built up through investigation and through problem solving. For example: *I have three apples. I eat one. How many apples do I have left?*

Kgweditharo 1 Thadiso ya diteng: Dinomore, Ditiro le Dikamano

Dintlha tsa mofatlhosi

- Tlhalosa gore Beke 9 e totile Dinomore, Ditiro le Dikamano.
- Kopa batsayakarolo go lebelela ditsebe 114–123 tsa *Kaedi ya Mogopolo*.
- A batsayakarolo ba dire ka ditlhopha go dira **Tirwana 12**. Kopa motho a le mongwe go tswa mo setlhopheng se sengwe le se sengwe go arogana dikakanyo tsa gagwe.

Beke 7 e totile Boalo le Popego (Jeometeri) fa Beke 8 e totile Tekanyo. Beke 9 yona mo Kgweditharong 1 gape e lebeletse megopolopalo. Mo karolong eno, o tlaa tlhotlhomisa kamano magareng ga dinomore.

 **Tirwana 12**

Lebelela thadiso ya diteng tsa Dinomore, Ditiro le Dikamano mo ditsebeng 114–123 tsa *Kaedi ya Mogopolo*. Mo setlhopheng sa gago, buisanang ka diponagalo tse di latelang tsa thadiso ya diteng:

1. Setlhogo 1.4 ke eng?
2. Ke ditlhogwana dife tse di neetsweng mo tlase ga setlhogo seno?
3. Pharologano magareng ga mokwalo o mopududu le o montsho ke efe? Tlhalosa gore goreng o akanya jalo.

Go balela

Dintlha tsa mofatlhosi

- Tlhagisa gore barutwana mo Mophatong wa R ga ba dire ditiro tsa dipalo jaaka go tlhakanya le go ntsha, go atisa le go arola. Neela sekao sa ka moo megopolo eno e ageletsweng ka iketlo ka teng ka go bala le go dirisa malea a dire tse di tshwaregang le ka go dirisa tharabololo ya dipalo mo makaelong a a maleba a botshelo.
- Diragatsa tirwana e e akaretsang go tlhatlhamolola le go aga dinomore ('Go tshikinya le go thuba' mo ditsebeng 166–169 tsa *Kaedi ya Ditirwana: Kgweditharo 1*).
- Morago ga tiragatso eno, a batsayakarolo ba dire **Tirwana 13**. Kopa motho a le mongwe go tswa mo setlhopheng se sengwe le se sengwe go arogana dikakanyo tsa bona.
- Buisanang gore ke dife tsa dipotso tse di boditsweng tse di bulegileng le gore ke dife tse di tswalegileng.
- Gopotsa batsayakarolo gore ga se barutwana botlhe ba tlaa supang fa ba tlhaloganya megopolopalo eno ka nako e le nngwe (**molawana wa maemo**).

Mo Mophatong wa R, barutwana ga ba dire ditiro tsa dipalo jaaka go tlhakanya le go ntsha, go atisa le go arola. Megopolo eno e agelelwa ka iketlo ka go dirisa tlhotlhomiso le ka go rarabolola dipalo. Sekao: *Ke na le diapole di le tharo. Ke ja e le nosi. Ke setse ka diapole di le kae*?

Learners need to understand the relationship between numbers. Activities that involve breaking down and building up numbers help learners to understand the relationships between numbers and the value of numbers. For example: *5 is made up of 2 and 3, 1 and 4.*

Demonstration

Watch the demonstration of a 'shake-and-break' game and then discuss your observations in your group.

 **Activity 13**

Discuss the demonstration you have just watched.

1. What number concepts could the learners learn by playing this game?

_____

_____

Combining (adding) and separating (subtraction).

2. What questions did the facilitator use that highlighted addition and subtraction?

_____

_____

_____

_____

How many counters do I have in this hand? And in this hand? When I put them together how many do I have?
How did you break up your counters?
How many do you have on each lid? When you put them together how many do you have?
If you take the ones on this lid away how many will you have left?

Not all learners will demonstrate an understanding of these number concepts at the same time (**level principle**).

Barutwana ba tlhoka go tlhaloganya kamano magareng ga dinomore. Ditirwana tse di akaretsang go tlhatlhamolola le go aga dinomore di thusa barutwana go tlhaloganya kamano magareng ga dinomore le boleng jwa tsona. Sekao: *5 e dirilwe ka 2 le 3, 1 le 4.*

Tiragatso

Lebelela tiragatso ya motshameko wa 'tshikinya le go thuba' mme morago lo buisane ka ga se lo se etseng tlhoko mo setlhopheng sa lona.

Tirwana 13

Buisanang ka ga tiragatso e lo sa tswang go e lebelela.

1. Barutwana ba ka ithuta megopolopalo efe ka go tshameka motshameko ono?

_____

_____

Go kopanya (go tlhakanya) le go aroganya (go ntsha).

2. Mofatlhosi o dirisitse dipotso dife tse di bonaladitseng go tlhakanya le go ntsha?

_____

_____

_____

_____

Ke na le dibadi di le kae mo seatleng seno? Mo go seno? Fa ke di kopanya ke na le tse kae?
O tlhatlhamolotse jang dibadi tsa gago?
O na le di le kae mo sekhurumelong se sengwe le se sengwe? Fa o di kopanya o na le di le kae?
Fa o ntsha tse di mo sekhurumelong seno o tlaa bo o setse ka di le kae?

Ga se barutwana botlhe ba tlaa supang fa ba tlhaloganya megopolopalo eno ka nako e le nngwe (**molawana wa maemo**).

Session 5: Planning for teaching **1 hour**

Facilitator's notes

- Refer participants to Appendix A: Term 1 Weekly Content Summary (Weeks 6–9).
- Read the whole class, teacher-guided and workstation activities sections.
- Have participants work in groups to complete **Activity 14**.

Term 1 Content Summary (Weeks 6–9)

Appendix A: Term 1 Weekly Content Summary (Weeks 6–9) outlines the main Content Area Focus for each week, the topics to be covered, the new knowledge and practise focus for each week, and suggested activities for whole class, teacher-guided and independent group work for the week.

Activity 14

Look at Appendix A: Term 1 Weekly Content Summary (Weeks 6–9). Answer the questions.

Questions	Week 6	Week 7	Week 8	Week 9
What is the Content Area Focus for the week?	Patterns, Functions and Algebra	Space and Shape (Geometry)	Measurement	Numbers, Operations and Relationships
What are the key concepts that learners will be learning?	Patterns Number 3 Sequencing numbers	2-D shapes Figure ground Position Oral counting	Length/height Time	Estimation More and less Position Problem solving
What new knowledge is introduced?	Identifying patterns Copying patterns Number 3 Sequencing numbers 1–3	2-D triangles Figure ground Position: in front of, behind	Sequencing time: day and night; light and dark Length: height chart Position: on, under, on top Counting backwards 5–1	Estimation Numbers in familiar contexts One more, one less Position: up/down
What skills are being practised?	Oral counting 1–5 Counting objects 1–5 Reinforce number concepts 1 and 2	Circle, square Counting objects 1–5 Reinforce number concept 1–3 Sequence numbers 1–3 Symmetry Big, small	Oral counting 1–10 Sequencing numbers 1–3 Counting objects 1–5 Reinforce 1–3	Oral counting 1–10 Counting backwards from 5 Sequence numbers 1–3 Count objects 1–5 Number concept 1–3 Problem solving Circle, square, triangle

Karolo 5: Go ithulaganyetsa go ruta

Ura e le 1

Dintlha tsa mofatlhosi

- Kopa batsayakarolo go lebelela Mametlelelo A: Kgweditharo 1 Khutshwafatso ya Diteng tsa Beke le Beke (Dibeke 6–9).
- Buisa dikarolwana tsa ditirwana tsa phaposiborutelo yotlhe, tse di kaelwang ke morutabana le tsa seteišenetiro.
- A batsayakarolo ba dire ka ditlhopha go wetsa **Tirwana 14.**

Kgweditharo 1 Khutshwafatso ya Diteng (Dibeke 6–9)

Mametlelelo A: Kgweditharo 1 Khutshwafatso ya Diteng tsa Beke le Beke (Dibeke 6– 9) e thadisa Karoloteng e e Lebeletsweng ya beke le beke, ditlhogo tse di tshwanetseng go lejwa, kitso e ntšhwa le ikatiso e e lebeletsweng ya beke e nngwe le e nngwe, le ditirwana tse di tshikhintsweng tsa phaposiborutelo yotlhe, tirwana e e kaelwang ke morutabana le tirwana ya boikemedi ya beke.

Tirwana 14

Lebelela Mametlelelo A: Kgweditharo 1 Khutshwafatso ya Diteng tsa Beke le Beke (Dibeke 6–9). Araba dipotso.

Dipotso	Beke 6	Beke 7	Beke 8	Beke 9
Karoloteng e e Lebeletsweng mo bekeng eno ke efe?	Dipaterone, Ditiro le Alejebera	Boalo le Popego (Jeometeri)	Tekanyo	Dinomore, Ditiro le Dikamano
Barutwana ba tlaa bo ba ithuta megopolo efe ya botlhokwa?	Dipaterone Nomore 3 Go latedisanya dinomore	Dipopego tsa 2-D Bodilo jwa setswantsho Maemo Go balela kwa godimo	Boleele/bogodimo Nako	Tekanyo Feta le tlase Maemo Tharabololo ya dipalo
Go tlaa tlhagisiwa kitso efe e ntšhwa?	Go tlhaola dipaterone Go kopolola dipaterone Nomore 3 Go latedisanya dinomore 1–3	Dikhutlotaro tsa 2-D Bodilo jwa setswantsho Maemo: fa pele ga le kwa morago	Go latedisanya nako: lesedi le lefifi; motshegare le bosigo Boleele: tšhate ya bogodimo Maemo: mo, tlase, mo godimo Go balela kwa morago 5–1	Tekanyo Dinomore mo bokaelong jo bo tlwaelegileng Feta ka nngwe, kwa tlase ka nngwe Boemo: godimo/tlase
Ke dikgono dife tse di diragadiwang?	Go balela kwa godimo 1–5 Go bala dilo 1–5 Go gatelela megopolopalo 1 le 2	Sediko, khutlonne Go bala dilo 1–5 Gatelela megopolopalo 1–3 Go latedisanya dinomore 1–3 Tekano Kgolo, nnye	Go bala dilo 1–10 Go latedisanya dinomore 1–3 Go bala dilo 1–5 Go gatelela 1–3	Go balela kwa godimo 1–10 Go balela kwa morago go tloga mo go 5 Go latedisanya dinomore 1–3 Go bala dilo 1–5 Mogopolopalo 1–3 Tharabololo ya dipalo Sediko, khutlonne, khutlotharo

Activity Guide: Term 1: Weeks 6, 7, 8 and 9

Refer to Weeks 6, 7, 8 and 9 in *Activity Guide: Term 1*. Complete Activity 15 in your group.

Activity 15

Find Weeks 6, 7, 8 and 9 in *Activity Guide: Term 1*. Answer the questions.

1. What is the Content Area Focus for each week?
2. What topics and new knowledge are taught in each week?
3. How does the 'Practise' content link to the previous week?
4. What do you need to get ready before teaching each week?
5. Read the whole class activities and small group activities.
6. Discuss in your small group how you will plan and organise your class for these four weeks of teaching.

Remember that in Grade R assessment is informal and continuous. We need to observe learners throughout the day, inside and outside the classroom. The eye icon reminds us that we need to observe the learners while they are busy, and we need to listen carefully while they are talking to us and to their peers.

The Maths Programme is designed around the rotation of small groups during a week and the teacher pays special attention to one group a day, watching and listening as the learners complete specific tasks. This time gives the teacher the opportunity to carefully observe each learner and gather information on their progress.

Look at the shaded block at the end of the teacher-guided activity: '**Check that learners are able to**'. The teacher makes a mental note of each learner and once the learners have left for the day she writes down her observations in a dedicated observation book that has space for each learner's notes.

Closing activities

Facilitator's notes

- **Lessons learnt:** Ask participants to think about what they have learnt during the workshop and to complete **Activity 16** individually.
- **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.

Kaedi ya Ditirwana: Kgweditharo 1: Dibeke 6, 7, 8 le 9

Lebelele Dibeke 6, 7, 8 le 9 mo *Kaeding ya Ditirwana: Kgweditharo 1*. Dira Tirwana 15 mo setlhopheng sa gago.

Tirwana 15

Batla Dibeke 6, 7, 8 le 9 mo *Kaeding ya Ditirwana: Kgweditharo 1*. Araba dipotso.

1. Karoloteng e e Lebeletsweng ya beke e nngwe le e nngwe ke efe?
2. Ke setlhogo le kitso e fe e ntšhwa tse di rutiwang mo bekeng e nngwe le e nngwe?
3. Diteng tsa 'Ikatise' di golagana jang le beke e fetileng?
4. O tlhokang go ipaakanya pele ga o ruta beke e nngwe le e nngwe?
5. Buisa ditirwana tsa phaposiborutelo yotlhe le tsa ditlhopha tse dinnye?
6. Mo setlhopheng sa gago se sennye, buisanang gore lo tlaa rulaganya jang diphaposiborutelo tsa lona mo dibekeng tse nne tseno tsa go ruta.

Gopola gore mo Mophatong wa R, tlhatlhobo ke e e sa tlhomamang mme e bile ke e e tswelelang. Re tlhoka go ela barutwana botlhe tlhoko letsatsi lotlhe, mo gare le kwa ntle ga phaposiborutelo. Aekhone ya leitlho e re gopotsa gore re tlhoka go ela barutwana tlhoko fa ba ntse ba dira, le gore re tlhoka go reetsa ka kelotlhoko fa ba bua le rona le balekane ba bona.

Lenaneo la Dipalo le thadilwe go lebeletswe tikologo ya ditlhopha tse dinnye mo gare ga beke mme morutabana a lebelele setlhopha se le sengwe mo letsatsing, a ba lebeletse le go ba reetsa fa barutwana ba dira ditirwana tse di rileng. Nako eno a naya morutabana tšhono go ela tlhoko morutwana yo mongwe le yo mongwe ka kelotlhoko le go kokoanya tshedimosetso ka ga tswelelopele ya bona.

Lebelela boloko e e ntshofaditsweng kwa bokhutlong jwa tirwana e e kaelwang ke morutabana: '**Tlhola gore a barutwana ba kgona go**'. Morutabana a tseye dintlha ka ga morutwana yo mongwe le yo mongwe mo tlhogong mme fa barutwana ba na le letsatsi ba tsamaile a kwale tse a di etseng tlhoko mo bukeng e e tlhaoletsweng go ela tlhoko e e nang le sebaka sa go ka kwala dintlha ka ga morutwana mongwe le mongwe.

Ditirwana tsa tswalelo

Dintlha tsa mofatlhosi

- **Se o se ithutileng**: Kopa batsayakarolo go akanya ka ga se ba se ithutileng mo thutanong le go dira **Tirwana 16** ya motho ka nosi.
- **Tirwana e o e busetsang kwa sekolong**: Buisa tirwana eno. Botsa gore a go na le sengwe se se sa tlhakang mme se tlhoka go tlhalosiwa gape.
- **Tlhatlhobo**: Ntsha dikhophi tsa Foromo ya Tlhatlhobo ya Thutano mme o kope batsayakarolo go e tlatsa.
- **Thutano e e latelang**: Neela matlha a thutano e e latelang mme o tswale thutano.

Activity 16

Lessons learnt: Think about what you learnt during the workshop and complete the table.

Things I am already doing that work well	New ideas that I would like to try

Take back to school task

1. Read the *Concept Guide* pages that were referred to during this workshop.
2. Use *Activity Guide: Term 1* to plan and implement Weeks 6–9 of the Maths Programme, including creating a maths area with a focus on the concept for each week.
3. Write an evaluation of what worked well and what did not work so well. Bring your plan and evaluation to the next workshop.
4. Bring examples or photographs of work that learners did.

Evaluation

Complete the Evaluation Form.

Tirwana 16

Se o se ithutileng: Akanya ka ga se o se ithutileng ka nako ya thutano mme o tlatse papetla.

Dilo tse ke setseng ke di dira mme di dira sentle	Dikakanyo tse diswa tse ke ratang go di lekeletsa

Tirwana e o e busetsang kwa sekolong

1. Buisa ditsebe tsa *Kaedi ya Mogopolo* tse di neng di lebeletswe mo thutanong eno**.**
2. Dirisa *Kaedi ya Ditirwana: Kgweditharo 1* go rulaganyetsa le go diragatsa Dibeke 6–9 tsa Lenaneo la Dipalo, go akaretsa go tlhama lefelo la dipalo go tobilwe mogopolo wa beke e nngwe le e nngwe.
3. Kwala tshekatsheko ya se se atlegileng le se sa atlegang sentle. Tlaya le thulaganyo ya gago mmogo le tshekatsheko ya gago mo thutanong e e latelang.
4. Tlaya le dikao kgotsa ditshwantsho tsa tiro e barutwana ba e dirileng.

Tlhatlhobo

Tlatsa Foromo ya Tlhatlhobo.

APPENDIX A: TERM 1 WEEKLY CONTENT SUMMARY (WEEKS 6–9)

Term 1: Activity Plan

<table>
<tr><th colspan="5">Week 6</th></tr>
<tr><td colspan="5">CONTENT AREA: PATTERNS, FUNCTIONS and ALGEBRA</td></tr>
<tr><td colspan="5">TOPIC: Geometric patterns
INTRODUCE NEW KNOWLEDGE: Identify patterns, copy patterns, complete patterns, introduce number 3, sequencing numbers 1–3. Making groups the same.
PRACTISE: Oral counting 1–5, counting objects 1–5, number concept 1 and 2, circle, square, big and small, forwards and backwards</td></tr>
<tr><td colspan="2">Whole class activities</td><td>Teacher-guided activity</td><td colspan="2">Workstation activities</td></tr>
<tr><td>Day 1</td><td>Introduce number 3 number frieze story.</td><td rowspan="5">Play a movement game using symbols 1 and 2.
Match and order dot picture/number cards 1–3.
Simple pattern using counters. Discuss the pattern, use counters to copy the pattern.
Problem solving 1–3. Making groups the same.</td><td>Activity 1</td><td>Frame a picture using pattern and draw three objects.</td></tr>
<tr><td>Day 2</td><td>Uses different sized and coloured circles to make simple patterns. Discuss patterns (repetition, differences, similarities).</td><td>Activity 2</td><td>Fingerprint counting.</td></tr>
<tr><td>Day 3</td><td>Body percussion patterns and problem solving.</td><td>Activity 3</td><td>Pattern cards using counters and sticks.</td></tr>
<tr><td>Day 4</td><td>Using big and small circles and objects to make simple patterns. Identify patterns in classroom.</td><td>Activity 4</td><td>Template with playdough – make 3.</td></tr>
<tr><td>Day 5</td><td>Problem solving 1–3. Making groups the same.</td><td></td><td></td></tr>
<tr><th colspan="5">Week 7</th></tr>
<tr><td colspan="5">CONTENT AREA: SPACE and SHAPE (GEOMETRY)</td></tr>
<tr><td colspan="5">TOPIC: Recognise, identify and name 2-D shapes: triangle; describe and compare 3-D objects and 2-D shapes: triangles; sort 2-D shapes; figure ground; symmetry
INTRODUCE NEW KNOWLEDGE: Triangle; figure ground; position (in front and behind); oral counting 1–10
PRACTISE: Oral counting 1–10, sequencing number 1–3, counting objects 1–5, reinforce number concept 1–3, what number before/after, circle, square, symmetry, big and small</td></tr>
<tr><td colspan="2">Whole class activities</td><td>Teacher-guided activity</td><td colspan="2">Workstation activities</td></tr>
<tr><td>Day 1</td><td>Introduce triangle and its properties.</td><td rowspan="5">Oral counting.
Touch and count using number towers 1–3 (Unifix blocks).
One-to-one correspondence.
Properties of a triangle (2-D).
Sort and compare 3-D objects and 2-D shapes into two groups, one of triangles and one not triangles.</td><td>Activity 1</td><td>Triangle activity – cut and decorate four triangles.</td></tr>
<tr><td>Day 2</td><td>Identify triangle shapes in Poster Book, problem solving.</td><td>Activity 2</td><td>Butterfly prints – symmetry.</td></tr>
<tr><td>Day 3</td><td>In front of and behind; midline crossing.</td><td>Activity 3</td><td>Shape person – use pre-cut shapes.</td></tr>
<tr><td>Day 4</td><td>Compare biggest and smallest. Bigger and smaller.</td><td>Activity 4</td><td>Shape puzzles – (minimum six pieces).</td></tr>
<tr><td>Day 5</td><td>Symmetry.</td><td></td><td></td></tr>
</table>

MAMETLELELO A: KGWEDITHARO 1 KHUTSHWAFATSO YA DITENG TSA BEKE LE BEKE (DIBEKE 6–9)

Kgweditharo 1: Thulaganyo ya ditirwana

<table>
<tr><th colspan="4">Beke 6</th></tr>
<tr><td colspan="4">KAROLOTENG: DIPATERONE, DITIRO le ALEJIBORA</td></tr>
<tr><td colspan="4">SETLHOGO: Dipaterone tsa jeometeri
TLHAGISA KITSO E NTŠHWA: Tlhaola dipaterone, kopolola dipaterone, feleletsa dipaterone, tlhagisa nomore 3, go latedisanya dinomore 1–3. Go dira gore ditlhopha di tshwane.
IKATISE: Go balela kwa godimo 1–5, mogopolopalo 1 le 2, sediko, khutlonne, kgolo le nnye, kwa pele le kwa morago</td></tr>
<tr><td colspan="2">Ditirwana tsa phaposiborutelo yotlhe</td><td>Tirwana e e kaelwang ke morutabana</td><td colspan="2">Ditirwana tsa seteišenetiro</td></tr>
<tr><td>Letsatsi 1</td><td>Go tlhagisa kanelo ya nomorekgabisi ya nomore 3.</td><td rowspan="5">Tshameka motshameko wa motshikhinyego o dirisa matshwao 1 le 2.
Nyalanya le go rulaganya setshwantshorontho/dikaratapalo 1–3.
Paterone e e bonolo ka go dirisa dibadi. Buisanang ka ga paterone, dirisa dibadi go kopolola paterone. Go rarabolola dipalo 1–3. Go dira gore ditlhopha di tshwane.</td><td>Tirwana 1</td><td>Foreima setshwantsho ka go dirisa paterone mme o thale dilo di le tharo.</td></tr>
<tr><td>Letsatsi 2</td><td>Dirisa didiko tsa bogolo le mebala e e farologaneng go dira dipaterone tse di bonolo. Buisanang ka ga dipaterone (poeletso, dipharologano, ditshwano).</td><td>Tirwana 2</td><td>Go bala ka kgatisomonwana.</td></tr>
<tr><td>Letsatsi 3</td><td>Dipaterone tsa motshikhinyego wa mmele le go rarabolola dipalo.</td><td>Tirwana 3</td><td>Dira paterone ya dikarata ka go dirisa dibadi le dikota.</td></tr>
<tr><td>Letsatsi 4</td><td>Go dirisa didiko le dilo tse dikgolo le tse dinnye go dira dipaterone tse di bonolo. Tlhaola dipaterone mo phaposiborutelong.</td><td>Tirwana 4</td><td>Thempoleiti ka tege ya go tshameka – dira 3.</td></tr>
<tr><td>Letsatsi 5</td><td>Go rarabolola dipalo 1–3. Go dira gore ditlhopha di tshwane.</td><td></td><td></td></tr>
<tr><th colspan="4">Beke 7</th></tr>
<tr><td colspan="4">KAROLOTENG: BOALO le POPEGO (JEOMETERI)</td></tr>
<tr><td colspan="4">SETLHOGO: Lemoga, tlhaola mme o neele maina a dibopego tsa 2-D: khutlotharo; tlhalosa mme o bapise dilo tsa 3-D le dibopego tsa 2-D: dikhutlotharo; rulaganya dibopego tsa 2-D; bodilo jwa setshwantsho; tekano
TLHAGISA KITSO E NTŠHWA: Khutlotharo; bodilo jwa setshwantsho; boemo (fa pele le kwa morago); go balela kwa godimo 1–10
IKATISE: Go balela kwa godimo 1–10, go latedisanya nomore 1–3, go bala dilo 1–5, go gatelela mogopolopalo 1–3, ke nomore efe pele/morago ga sediko, 7khutlonne, tekano, kgolo le nnye</td></tr>
<tr><td colspan="2">Ditirwana tsa phaposiborutelo yotlhe</td><td>Tirwana e e kaelwang ke morutabana</td><td colspan="2">Ditirwana tsa seteišenetiro</td></tr>
<tr><td>Letsatsi 1</td><td>Tlhagisa khutlotharo le diponagalo tsa yona.</td><td rowspan="5">Go balela kwa godimo
Kgoma mme o bale ka go dirisa ditora tsa dinomore 1–3 (Dibolokokgogedi).
Tsamaelano ya nngwe ka nngwe
Diponagalo tsa khutlotharo (2-D).
Rulaganya mme o bapise dilo tsa 3-D le dibopego tsa 2-D ka ditlhopha tse pedi, e nngwe ya dikhutlotharo le e nngwe e e seng ya dikhutlotharo.</td><td>Tirwana 1</td><td>Tirwana ya dikhutlotharo – segolola mme o kgabise dikhutlotharo di le nne.</td></tr>
<tr><td>Letsatsi 2</td><td>Tlhaola dibopego tsa khutlotharo mo Bukeng ya Diphousetara, go rarabolola dipalo.</td><td>Tirwana 2</td><td>Kgatiso ya dirurubele – tekano.</td></tr>
<tr><td>Letsatsi 3</td><td>Fa pele ga le fa morago; makgabaganyo a molagare.</td><td>Tirwana 3</td><td>Motho yo o bopilweng – dirisa dibopego tse di segolotsweng go sa le gale.</td></tr>
<tr><td>Letsatsi 4</td><td>Bapisa tse dikgolo go gaisa le tse dinnye go gaisa. Kgolwane le Nnyenyana.</td><td>Tirwana 4</td><td>Diphazele tsa dibopego – (dikarolwana tse thataro bonnye).</td></tr>
<tr><td>Letsatsi 5</td><td>Tekano.</td><td></td><td></td></tr>
</table>

<table>
<tr><th colspan="5">Week 8</th></tr>
<tr><td colspan="5">CONTENT AREA: MEASUREMENT</td></tr>
<tr><td colspan="5">TOPIC: Time: day and night; Length: compare and order objects to describe height
INTRODUCE NEW KNOWLEDGE: Sequencing day and night, light and dark; height chart; position (on, under, on top, below, next to, between); counting backwards 5–1
PRACTISE: Oral counting 1–10, counting backwards from 5, sequencing numbers 1–3, counting objects 1–5, reinforce number concept 1–3, patterns</td></tr>
<tr><th colspan="2">Whole class activities</th><th>Teacher-guided activity</th><th colspan="2">Workstation activities</th></tr>
<tr><td>Day 1</td><td>Day and night; light and dark.</td><td rowspan="5">Routine introduction.
Day and night; dark and light activities:
- blanket
- activity cards.
Day and night story and sequencing.
Position (on, under, below, on top, next to, between).
Pattern (animals).
Height chart.</td><td>Activity 1</td><td>Day and night activity – cutting out pictures.</td></tr>
<tr><td>Day 2</td><td>Introduce height chart; position vocabulary.</td><td>Activity 2</td><td>Draw from shortest to tallest.</td></tr>
<tr><td>Day 3</td><td>Height chart. Sorting day and night everyday objects.</td><td>Activity 3</td><td>Paste shapes from biggest to smallest.</td></tr>
<tr><td>Day 4</td><td>Poster – Day and night. Positional vocabulary: on, under, below and on top.</td><td>Activity 4</td><td>Day/night matching cards.</td></tr>
<tr><td>Day 5</td><td>Compare heights.
Movement-positions.</td><td></td><td></td></tr>
<tr><th colspan="5">Week 9</th></tr>
<tr><td colspan="5">CONTENT AREA: NUMBERS, OPERATIONS and RELATIONSHIPS</td></tr>
<tr><td colspan="5">TOPIC: Describe, order and compare numbers; estimation; problem-solving techniques; using numbers in familiar contexts; position
INTRODUCE NEW KNOWLEDGE: Estimation, numbers in familiar contexts, one more, one less, position (up/down)
PRACTISE: Oral counting 1–10, counting backwards from 5, sequencing numbers 1–3, counting objects 1–5, number concept 1–3, problem-solving techniques. Circle, square and triangle.</td></tr>
<tr><th colspan="2">Whole class activities</th><th>Teacher-guided activity</th><th colspan="2">Workstation activities</th></tr>
<tr><td>Day 1</td><td>Describe and order numbers 1–3.</td><td rowspan="5">Oral counting.
One-to-one correspondence.
Describe and order numbers 1–3.
Estimation.
Shake and break.</td><td>Activity 1</td><td>Playdough making 1–3 objects.</td></tr>
<tr><td>Day 2</td><td>Matching number representations 1–3.
Estimation.</td><td>Activity 2</td><td>Draw pictures 1–3 in shapes.</td></tr>
<tr><td>Day 3</td><td>Counting – one more/one less.
Position: up and down.</td><td>Activity 3</td><td>Pasting. Picture with three stars, two trees, one moon.</td></tr>
<tr><td>Day 4</td><td>Problem solving (more/less). Poster 1.</td><td>Activity 4</td><td>Puzzles (minimum six piece).</td></tr>
<tr><td>Day 5</td><td>Using number in familiar context: How old are you?</td><td></td><td></td></tr>
</table>

<table>
<tr><th colspan="5">Beke 8</th></tr>
<tr><td colspan="5">KAROLOTENG: TEKANYO</td></tr>
<tr><td colspan="5">SETLHOGO: Nako: motshegare le bosigo; bapisa mme o rulaganye dilo go tlhalosa bogodimo
TLHAGISA KITSO E NTŠHWA: Go latedisanya motshegare le bosigo, Lesedi le lefifi; tšhate ya bogodimo; boemo (mo go, tlase, mo godimo, fa tlase, gaufi le, magareng ga); go balela kwa morago 5–1
IKATISE: Go balela kwa godimo 1–10, go balela kwa morago go tloga ka 5, go latedisanya dinomore 1–3, go bala dilo 1–5, go gatelela megopolopalo 1–3, dipaterone</td></tr>
<tr><th colspan="2">Ditirwana tsa phaposiborutelo yotlhe</th><th>Tirwana e e kaelwang ke morutabana</th><th colspan="2">Ditirwana tsa seteišenetiro</th></tr>
<tr><td>Letsatsi 1</td><td>Motshegare le bosigo; lesedi le lefifi.</td><td rowspan="5">Tlhagiso ya meetlo.
Ditirwana tsa motshegare le bosigo; lefifi le lesedi:
- kobo
- dikarata tsa ditirwana.
Dikanelo tsa bosigo le motshegare le tatedisanyo.
Boemo (mo go, tlase, ka fa tlase, mo godimo, gaufi le, magareng ga).
Paterone (diphologolo).
Tšhate ya bogodimo.</td><td>Tirwana 1
Tirwana 2
Tirwana 3

Tirwana 4</td><td>Tirwana ya bosigo le motshegare – go segolola ditshwantsho.
Thala go tloga go khutshwane go gaisa go ya go leele go gaisa.
Kgomaretsa dibopego go tloga go leele go gaisa go ya go khutshwane go gaisa.
Dikarata tsa nyalanyo tsa motshegare/bosigo</td></tr>
<tr><td>Letsatsi 2</td><td>Tlhagisa tšhate ya bogodimo; tlotlofoko ya boemo.</td></tr>
<tr><td>Letsatsi 3</td><td>Tšhate ya bogodimo. Go rulaganya dilo tse di tlwaelegileng tsa motshegare le bosigo.</td></tr>
<tr><td>Letsatsi 4</td><td>Phousetara – Motshegare le bosigo. Tlotlofoko ya boemo: mo go, tlase, ka fa tlase le mo godimo.</td></tr>
<tr><td>Letsatsi 5</td><td>Bapisa bogodimo.
Motsamao-boemo.</td></tr>
<tr><th colspan="5">Beke 9</th></tr>
<tr><td colspan="5">KAROLOTENG: DINOMORE, DITIRO le DIKAMANO</td></tr>
<tr><td colspan="5">SETLHOGO: Tlhalosa, rulaganya le go bapisa dinomore; tekanyetso; malepa a go rarabolola dipalo; go dirisa dinomore mo makaelong a a tlwaelegileng; boemo
TLHAGISA KITSO E NTŠHWA: Tekanyetso, dinomore mo makaelong a a tlwaelegileng, feta ka nngwe, boemo (godimo/tlase)
IKATISE: Go balela kwa godimo 1–10, go balela kwa morago go tloga mo go 5, go latedisanya dinomore 1–3, go bala dilo 1–5, mogopolopalo 1–3, malepa a go rarabolola dipalo. Sediko, khutlonne le khutlotharo.</td></tr>
<tr><th colspan="2">Ditirwana tsa phaposiborutelo yotlhe</th><th>Tirwana e e kaelwang ke morutabana</th><th colspan="2">Ditirwana tsa seteišenetiro</th></tr>
<tr><td>Letsatsi 1</td><td>Tlhalosa mme o rulaganye dinomore 1–3.</td><td rowspan="5">Go balela kwa godimo.
Tsamaelano ya nngwe ka nngwe.
Tlhalosa mme o rulaganye dinomore 1–3.
Tekanyetso.
Tshikhinya mme o tlhatlhamolole.</td><td>Tirwana 1
Tirwana 2
Tirwana 3

Tirwana 4</td><td>Tege ya go tshameka o dira dilo tsa 1–3.
Thala ditshwantsho 1–3 mo dipopegong.
Go kgomaretsa. Setshwantsho se se nang le dinaledi di le tharo, ditlhare di le pedi, ngwedi o le mongwe.
Diphazele (bonnye dikarolwana di le thataro).</td></tr>
<tr><td>Letsatsi 2</td><td>Go nyalanya ditlhagiso tsa dinomore 1–3.
Tekanyetso.</td></tr>
<tr><td>Letsatsi 3</td><td>Go bala – feta ka nngwe/tlase ka nngwe.
Boemo: godimo le tlase.</td></tr>
<tr><td>Letsatsi 4</td><td>Go rarabolola dipalo (feta/tlase). Phousetara 1.</td></tr>
<tr><td>Letsatsi 5</td><td>Go dirisa nomore mo bokaelong jo bo tlwaelegileng: O na le dingwaga di le kae?</td></tr>
</table>

Workshop 3 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?

_____
_____
_____
_____

Foromo ya Tlhatlhobo ya Thutano 3

1. A thutano e kgonne go fitlhelela ditsholofelo tsa gago?

_____
_____
_____
_____

2. Ke eng se o se ithutileng mo thutanong eno se se go thusitseng go gaisa?

_____
_____
_____
_____

3. A go na le sengwe se o sa se ratang kgotsa se se neng se go thatafalela?

_____
_____
_____
_____

4. O ya go diragatsa jang se o se ithutileng mo phaposiborutelong ya gago ya Mophato wa R?

_____
_____
_____
_____

5. A go na le se o se tshikhinyang go ka thusa go tokafatsa dithutano tse di latelang?

_____
_____
_____
_____