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EDUCATION
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GROWING GAUTENG TOGETHER

Setswana/English

Lenaneotokafatso la Dipalo tša Mophato R Grade R Mathematics Improvement Programme



Thutano 6 • Workshop 6
Bukatiro ya Batsayakarolo • Participant's Workbook

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 kgonthitswe 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 tlase ga School of Education sa UCT e e totileng tokafatso ya boporofesenele jwa barutabana mo Divalong, 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 lebiswa segolobogolo go:

- Batlhankedi ba Lefapha la Thuto la Gauteng mo Lephatheng la Kharikhulamo, Bokaedi jwa Thuto ya Barutabana le Thuto e e Kgethegileng ka ntlha ya seabe sa bona go dirisa dibukana tseno tsa rona.
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Porojeke ya Lenaneotokafatso la Dipalo tsa Mophato R le tserwe go tswa mo *R-Maths*, e phasaladitswe lwantlha ka 2017 ke Schools Development Unit, ya University of Cape Town. Tetlokhopi ya *R-Maths* e tshwerwe ke University of Cape Town.

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Overview

Purpose

This is the sixth 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 assist teachers with the implementation of the Maths Programme in their classrooms, especially the Content Areas covered in Term 2 Weeks 8–10. Participants will reflect on their ongoing assessment of learners' progress and will document developmental concerns related to the learners that may require special interventions and support. Participants will also reflect on teaching strategies that strengthen learners' problem-solving skills.

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 2 Weeks 4–7
- ◆ To explore strategies to support teaching maths in Grade R
- ◆ To reflect on the Maths Programme's principles in the weekly plan
- ◆ To engage with the Maths Programme content of Term 2 Weeks 8–10 (Space and Shape (Geometry); Measurement; Numbers, Operations and Relationships)
- ◆ To apply knowledge of informal, continuous assessment to learning and teaching

Workshop content

- ◆ Opening and reflection (1 hour)
 - ◆ Session 1: Space and Shape (Geometry) (1 hour)
- TEA
- ◆ Session 2: Measurement (1 hour)
 - ◆ Session 3: Numbers, Operations and Relationships (1 hour)
- LUNCH
- ◆ Session 4: Numbers, Operations and Relationships (45 minutes)
 - ◆ Session 5: Term 2 Assessment (1 hour)
 - ◆ Closing activities (15 minutes)

Thadiso

Maitlhommo

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

Maitlhommo a thutano eno ke go thusa barutabana go diragatsa Lenaneo la Dipalo mo diphaposiborutelong tsa bona, segolobogolo Dikaroloteng tse di dirilweng mo Kgweditharong ya 2 Dibeke 8–10. Batsayakarolo ba tlaa sedisisa tswelelo peleng e e tsweletseng ya tlhatlhobo ya barutwana mme ba tlaa kwala matshwenyego a kgolo a a amanang le barutwana ba ba ka tlhokang tsereganyo le tshegetso e e kgethegileng. Batsayakarolo gape ba tlaa sedisisa malepa a go ruta a a tiisang dikgono tsa barutwana tsa go rarabolola 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 2 Dibeke 4–7
- ◆ Go tlhotlhomisa ditogamaano tsa go tshegetsa go ruta dipalo mo Mophatong wa R
- ◆ Go sedisisa melawana ya Lenaneo la Dipalo mo lenaneong la beke le beke
- ◆ Go lebelela diteng tsa Lenaneo la Dipalo la Kgweditharo 2 Dibeke 8–10 (Boalo le Popego (Jeometri); Tekanyo; Dinomore, Ditiro le Dikamano)
- ◆ Go diragatsa kitso, tlhatlhobotsweledi e e sa tlhomamang mo go ithuteng le mo go ruteng

Diteng tsa thutano

- ◆ Pulo le Tshedisiso (Ura e le 1)
 - ◆ Karolo 1: Boalo le Popego (Jeometri) (Ura e le 1)
- TEE
- ◆ Karolo 2: Tekanyo (Ura e le 1)
 - ◆ Karolo 3: Dinomore, Ditiro le Dikamano (Ura e le 1)
- DIJOTSHEGARE
- ◆ Karolo 4: Dinomore, Ditiro le Dikamano (Metsotso e le 45)
 - ◆ Karolo 5: Tlhatlhobo ya Kgweditharo 2 (Ura e le 1)
 - ◆ Ditirwana tsa tswalelo (Metsotso e le 15)

Opening and reflection

1 hour

Here is the *Take back to school* task from Workshop 5.



Take back to school task (Workshop 5)

1. Continue to use the Record of Continuous Assessments in *Activity Guide: Term 2* to assess your learners. Make use of your ongoing observation notes to build up evidence of what learners understand and can do.
2. Identify any concerns you have about individual learner's emerging grasp of maths concepts.
3. Bring copies of rubrics that you used for maths assessment to the next workshop.
4. Bring a completed assessment record for one learner to the next workshop.
5. Use *Activity Guide: Term 2* to plan and implement Weeks 4–7 of the Maths Programme, including creating a maths area with a focus on the concept for each week.
6. Make notes on what worked well, what did not work so well and what you could do differently to improve teaching and learning.



Activity 1

1. In your groups, discuss your progress in implementing Term 2 Weeks 4–7.
 - ◆ What worked well (strengths)?
 - ◆ What did not work well (challenges)?
 - ◆ What could you do to improve teaching and learning in your classroom?

Record the main points of your discussion on flipchart paper to share with the other groups later.

Seno ke *Tirwana e o e busetsang kwa sekolong* go tswa mo Thutanong ya 5.



Tirwana e o e busetsang kwa sekolong (Thutano ya 5)

1. Tswelera go dirisa Rekoto ya Ditlhatlhobotsweledi mo *Kaeding ya Ditirwana: Kgweditharo 2* go tthatlhoa barutwana ba gago. Dirisa dintlha tsa gago tsa kelotlhoko e e tsweleng pele go kgobokanya bopaki jwa se barutwana ba se tlhaloganyang le se ba kgonang go se dira.
2. Tlhaola matshwenyego mangwe le mangwe a o nang le ona ka ga go tshwarelela megopolopalo ka gangwe go go itshupang ga morutwana ka esi.
3. Tlala ka dikhophi tsa diruburiki tse o di diriseditseng tthatlho ya dipalo kwa thutanong e e latelang.
4. Tlela morutwana a le mongwe rekoto ya tthatlho e e weditsweng kwa thutanong e e latelang.
5. Dirisa *Kaedi ya Ditirwana: Kgweditharo 2* go rulaganyetsa le go diragatsa Dibeke 4–7 tsa Lenaneo la Dipalo, go akaretsa go tlhama lefelo la dipalo le le totileng mogoplo wa beke nngwe le nngwe.
6. Kwala dintlha ka ga se se dirileng sentle, se se sa dirang sentle le gore o ka dirang ka tsela e e farologaneng go tokafatsa go ruta le go ithuta.



Tirwana 1

1. Mo ditlhopheng tsa lona, buisanelang tswelelopele ya lona mo go diragatseng Kgweditharo 2 Dibeke 4–7.
 - ◆ Ke eng se se diregileng sentle thata (dithata)?
 - ◆ Ke eng se se sa diragalang sentle (dikgwetlho)?
 - ◆ Ke eng se o neng o tshwanetse go se dira go tokafatsa go ruta le go ithuta mo phaposiborutelong ya gago?

Rekota dintlha tsa bothokwa mo dipuisanong tsa gago ka ga pampiri ya tshatephetogi go arogana le ditlhopha tse dingwe kgantele.

2. Discuss how successful you were in:
 - ◆ recording notes about individual learners after each teacher-guided activity in Weeks 4–7.
 - ◆ completing the Term 2: Record of Continuous Assessments on pages 190–193 of *Activity Guide: Term 2* for each learner.

Record the main points of your discussion on your flipchart paper.

3. Discuss one learner’s areas of success and/or difficulty and how you recorded these. Record the main points of your discussion on your flipchart paper.

In the *Take back to school* task in Workshop 5 you were asked to bring copies of the learner assessment rubrics you use as part of the Maths Programme to this workshop. In Activity 2, your group will discuss these rubrics and how assessment information is captured and shared. In Session 5, we will discuss rubrics in more detail.



Activity 2

1. In your groups, share examples of maths rubrics you have used as part of your assessment process.
2. Discuss how you capture the learners’ progress on the SA-SAMS system and how this information is shared with parents.

Record the main points of your discussion on flipchart paper to share with the other groups later.

2. Buisanang ka ga gore o ne o atlegile go le kae:
 - ◆ go rekota dintlha ka ga barutwana ka nosi morago ga tirwana e e kaelwang ke morutabana mo Bekeng 4–7.
 - ◆ go feleletsa Kgweditharo 2: Rekoto ya Ditlhatlhobotsweledi mo ditsebeng 190–193 tsa *Kaedi ya Ditirwana: Kgweditharo 2* ya morutwana mongwe le mongwe.

Rekota dintlha tsa bothokwa tsa dipuisano tsa lona mo pampiring ya gago ya tšhatephetogi.

3. Buisanang ka ga moo morutwana mongwe o atlegileng le/kgotsa moo a nang le bothata gona le gore o rekotile tseno jang. Rekota dintlha tsa bothokwa tsa puisano ya lona mo pampiring ya gago ya tšhatephetogi.

Mo *Tirwaneng e o e busetsang kwa sekolong* mo Thutanong 5, o ne o kopilwe go tla ka dikhophi tsa diruburiki tsa tlhatlhobo ya barutwana e o e dirisang jaaka karolo ya Lenaneo la Dipalo mo thutanong eno. Mo *Tirwaneng 2*, setlhopha sa gago se tlaa buisana ka ga diruburiki tseno le gore tshedimosetso ya tlhatlhobo e tsentswe le go arogangwa jang. Mo karolong 5, re tlaa buisana ka ga diruburiki ka botlalo.



Tirwana 2

1. Mo ditlhophong tsa lona, aroganang dikao tsa diruburiki tsa dipalo tse lo di dirisitseng jaaka karolo ya lona ya tlhatlhobo.
2. Buisanang tebang le gore lo rekota jang tswelelopele ya barutwana mo matlhamaganyaneng a *SA-SAMS* le gore tshedimosetso eno e arogangwa jang le batsadi.

Rekota dintlha tsa bothokwa mo dipuisanong tsa lona mo pampiring ya tšhatephetogi go di aroganya le ditlhopha tse dingwe kgantele.

 **Video 1**

Watch the video of a teacher observing a group of learners completing a maths activity. Listen to her talking about how she observes and records her learners' progress and how she deals with their different levels of competence.

Discuss how you deal with learners who are not achieving success in the structured weekly plans, as well as those learners who exceed expectations.

The **level principle**: Not all learners progress at the same speed. Some learners need more time to consolidate a skill or concept while others grasp ideas more quickly. The challenge for teachers is to accommodate learners at different levels and to adapt the weekly plan to provide support or extension activities where necessary.



 **Video 1**

Lebelela video ya morutabana a ela setlhopha sa barutwana tlhoko fa ba dira tirwana ya dipalo. Mo reetse a bua ka ga ka moo a elang tlhoko tswelelopele ya bona le go e rekota le ka moo a diranang ka teng le maemo a bona a a farologaneng a bokgoni.

Buisanang ka mokgwa o o dirang ka teng ka barutwana ba ba sa fitlheleleng katlego mo mananeong a a rulaganeng a beke le beke mmogo le barutwana ba ba dirang go feta ka mo ba solofetsweng go dira ka teng,

Molawana wa maemo: Ga se barutwana botlhe ba ba tswelelang pele ka lebelo le le lekanang. Barutwana bangwe ba tlhoka nako e ntsi go tsolotanya kgono kgotsa mogopolo fa ba bangwe ba tshwarelela dikakanyo ka bonakonyana. Kgwetlho ya barutabana ya go akaretsa barutwana ba ba mo maemong a a farologaneng le go dira gore lenaneo la beke le beke le tlamele ka tshegetso kgotsa ditirwana tsa katoloso mo go tlhokagalang.



Session 1: Space and Shape (Geometry)

1 hour

This workshop focuses on teaching the content of Term 2 Weeks 8–10. The focus of Term 2 Week 8 is Space and Shape (Geometry).

Terms 1–4 Content overview: Space and Shape (Geometry)

Refer to the content overview for Space and Shape (Geometry) on pages 126–131 of the *Concept Guide* and complete Activity 3.

Properties of shapes

Learners need many opportunities to compare and sort shapes according to their properties and to describe the similarities and differences of shapes.



Activity 4

The facilitator will give your group a set of shapes.

1. Sort the shapes.
2. Discuss why you sorted them in this way.
3. Sort the shapes in another way.
4. Discuss why you sorted them in this way.

Karolo 1: Boalo le Popego (Jeometeri)

Ura e le 1

Thutano eno e tobile go ruta diteng tsa Kgweditharo 2 Dibeke 8–10. Se se lebeletsweng mo Kgweditharong 2 Beke 8 ke Boalo le Popego (Jeometeri).

Dikgweditharo 1–4 Thadiso ya diteng: Boalo le Popego (Jeometeri)

Lebelela thadiso ya diteng tsa Boalo le Popego (Jeometeri) mo ditsebeng 126–131 tsa *Kaedi ya Mogopolo* mme o dire Tirwana 3.

Diponagalo tsa dipopego

Barutwana ba tlhoka ditšhono tse dintsi go bapisa le go rulaganya dipopego ka tatelano go ya ka diponagalo tsa tsona le go tlhalosa ditshwano le dipharologano tsa dipopego.



Tirwana 4

Mofatlhosi o tlaa neela setlhopha sa gago sete ya dipopego.

1. Rulaganya dipopego.
2. Tlhalosa gore ke ka ntlha yang o di rulagantse ka tsela e.
3. Rulaganya dipopego ka tsela e nngwe.
4. Tlhalosa gore ke ka ntlha yang o di rulagantse ka tsela e.

Term 2 Content Summary: Week 8

Refer to Appendix A: Term 2 Weekly Content Summary (Weeks 8–10). Read the content overview for Week 8: Space and Shape (Geometry) on page 20 of *Activity Guide: Term 2*.

The Space and Shape (Geometry) Content Area was also the focus of Term 2 Weeks 3 and 4. In previous workshops, you have discussed the Space and Shape concepts that need to be covered.

The Weekly Content Summary for Week 8 provides an overview of planning for the week: whole class activities, teacher-guided activities and workstation activities done in independent small groups.



Activity 5

1. Take a few minutes to familiarise yourself with the Week 8 content in Appendix A: Term 2 Weekly Content Summary (Weeks 8–10).
2. Match this with the content on pages 138–153 of *Activity Guide: Term 2*. Identify how the whole class, teacher-guided and workstation activities link with the Week 8 content in Appendix A.

Kgweditharo 2 Khutshwafatso ya Diteng: Beke 8

Lebelela Mametlelelo A: Kgweditharo 2 Khutshwafatso ya Diteng ya Beke le Beke (Dibeke 8–10). Buisa thadiso ya diteng tsa Beke 8: Boalo le Popego (Jeometeri) mo tsebeng ya 21 ya *Kaedi ya Ditirwana: Kgweditharo 2*.

Karoloteng ya Boalo le Popego (Jeometeri) le yona e ne e lebeletswe ke Kgweditharo 2 Dibeke 3 le 4. Mo dithutanong tse di fetileng, o buile ka megopolo ya Boalo le Popego e e tlhokang go ka lebelelwa.

Khutshwafatso ya Diteng ya Beke le Beke ya Beke 8 e neelana ka thadiso ya go rulaganyetsa beke yotlhe: ditirwana tsa phaposiborutelo yotlhe, ditirwana tse di kaelwang ke morutabana le ditirwana tsa seteišenetiro tse di dirilweng mo ditlhopheng tse dinnye tse di ikemetseng.



Tirwana 5

1. Tsaya metsotso e le mmalwa go itlwaetsa diteng tsa Beke 8 mo Mametlelelong A: Khutshwafatso ya Diteng tsa Beke le Beke tsa Kgweditharo ya 2 (Dibeke 8–10).
2. Nyalanya seno le diteng mo ditsebeng 138–153 tsa *Kaedi ya Ditirwana: Kgweditharo 2*. Lemoga ka moo phaposiborutelo yotlhe, ditirwana tse di kaelwang ke morutabana le tsa seteišenetiro di golaganang le diteng tsa Beke 8 mo Mametlelelong A.

Session 2: Measurement

1 hour

The focus of Term 2 Week 9 is Measurement.

Terms 1–4 Content overview: Measurement

Refer to the content overview for Measurement on pages 132–135 of the *Concept Guide*.



Activity 6

1. What Measurement concepts are covered in Term 2?

2. What are the differences between the Maths Programme content and the CAPS content?

Directly comparing objects: length

In Term 1 of the Maths Programme the focus of the Measurement Content Area was time (day, night, days of the week, sequencing events, etc.) and the height chart. In Term 2 Week 9, the focus is on using non-standard units to measure and compare length.



Activity 7

1. **Direct comparison**

Choose a partner to stand next to. The rest of your group members should compare your heights.

- ◆ Who is taller? _____
- ◆ Who is shorter? _____
- ◆ Find a third person who is taller than both of these people.

2. **Using non-standard units of measurement**

Choose three objects (e.g. a key, a cellphone, a purse).

- ◆ Use one of these items at a time to measure this *Participant's Workbook*.
- ◆ Report your findings to the group.

Karolo 2: Tekanyo

Ura e le 1

Kgweditharo 2 Beke 9 e tobile Tekanyo.

Dikgweditharo 1–4 Thadiso ya diteng: Tekanyo

Lebelela thadiso ya diteng tsa Tekanyo mo ditsebeng 132–135 tsa *Kaedi ya Mogopolo*.



Tirwana 6

1. Ke megopolo efe ya Tekanyo e e lebilweng mo Kgweditharong 2?

2. Dipharologano magareng ga diteng tsa Lenaneo la Dipalo le diteng tsa PPKT ke dife?

Go bapisa dilo ka tllhamalalo: boleele

Mo Kgweditharong 1 ya Lenaneo la Dipalo, Karoloteng ya Tekanyo e ne e tobile nako (motshegare, bosigo, malatsi a beke, go latedisanya ditiragalo, j.j.) le tšhate ya bogodimo. Mo Kgweditharong ya 2 Beke 9, go lebeleletswe tiriso ya diyuniti tse di sa tllhomamang go lekanya le go bapisa boleele.



Tirwana 7

1. **Papiso ka tllhamalalo**

Tllhopha molekane yo o ka emang fa thoko ga gagwe. Ditokololo tse dingwe tsothle tsa setllhopha sa gago ba bapise bogodimo jwa lona.

- ◆ Ke mang yo moleejana? _____
- ◆ Ke mang yo mokhutshwanyane? _____
- ◆ Batla motho wa boraro yo moleejana go na le batho ba babedi bano.

2. **Go dirisa diyuniti tse di sa tllhomamang tsa tekanyo**

Tllhopha dilo tse tharo (sk. selotlolo, selefounu, sepatšhe).

- ◆ Dirisa e le nngwe ya dilwana tseno ka nako e le nngwe go lekanya *Bukatiro* eno ya *Batsayakarolo*.
- ◆ Begela setllhopha diphitllhelelo tsa gago.

Term 2 Content Summary: Week 9

Refer to Appendix A: Term 2 Weekly Content Summary (Weeks 8–10). Read the content overview for Week 9: Measurement on page 20 of *Activity Guide: Term 2*.

Read the whole class activities for Week 9 on pages 154–165 of *Activity Guide: Term 2*.



Activity 9

In your groups, discuss how length is taught during the whole class activities in Week 9.

1. What could you do if a learner is not yet able to compare and order objects according to length – long/longer and short/shorter by the end of Week 9?

2. What could you do if some learners complete a workstation activity successfully quicker than planned?

Kgweditharo 2 Khutshwafatso ya Diteng: Beke 9

Lebelela Mametlelelo A: Kgweditharo 2 Khutshwafatso ya Diteng ya Beke le Beke (Dibeke 8–10). Buisa thadiso ya Diteng tsa Beke 9. Tekanyo mo tsebeng ya 21 ya *Kaedi ya Ditirwana: Kgweditharo 2*.

Buisa ditirwana tsa phaposiborutleo yotlhe tsa Beke 9 mo ditsebeng 154–165 tsa *Kaedi ya Ditirwana: Kgweditharo 2*.



Tirwana 9

Mo ditlhopheng tsa lona, buisanang ka ga moo boleele bo rutiwang ka teng ka nako ya ditirwana tsa phaposiborutelo yotlhe mo Bekeng ya 9.

1. O ne o ka dirang fa morutwana a sa kgone go bapisa le go rulaganya dilo ka go dirisa boleele – telele/telejana le khutshwane/khutshwanyane mo bofelong jwa Beke 9?

2. O ne o ka dirang fa barutwana bangwe ba dira tirwana ya seteišenetiro ka bonako ka katlego go feta ka moo go rulagantsweng ka teng?

Session 3: Numbers, Operations and Relationships

1 hour

The focus of Term 2 Week 10 is Numbers, Operations and Relationships.

Terms 1–4 Content overview: Numbers, Operations and Relationships

The Numbers, Operations and Relationships Content Area was also the focus in Weeks 1, 2 and 5 of Term 2, and you discussed the number concepts that need to be covered in previous workshops. Look at the content overview for Numbers, Operations and Relationships on pages 114–123 of the *Concept Guide*.



Activity 10

What number concepts still need to be covered in Term 2?

Problem solving

Teachers need to provide learners with many opportunities to solve problems so that they can apply their maths knowledge and skills in new contexts. All games and activities involve problem solving. Word problems in maths introduce a specific type of problem solving that involves solving addition, subtraction, multiplication and division problems. In Grade R learners solve addition and subtraction problems by counting and using concrete apparatus to help them find a solution. They use grouping and one-to-one sharing to solve multiplication and division problems.

The biggest challenge in presenting word problems to learners, is to ensure that there is appropriate questioning and use of language. When teachers present a word problem, they need to listen carefully to learners' responses and guide them to solve the problem using a strategy that is suitable for their level of understanding.

The posters in the *Poster Book* have been designed to provide learners with a set of pictures that relate to their lives and provide contexts for solving real-life problems.

In Week 10 Day 4 (page 180 of *Activity Guide: Term 2*), Poster 1 is used to encourage learners to solve problems that involve numbers 1–5.

Karolo 3: Dinomore, Ditiro le Dikamano

Ura e le 1

Kgweditharo 2 Beke 10 e tobile Dinomore, Ditiro le Dikamano.

Dikgweditharo 1–4 Thadiso ya diteng: Dinomore, Ditiro le Dikamano

Karoloteng ya Dinomore, Ditiro le Dikamano le yona e ne e tobilwe mo Dibekeng 1, 2 le 5 tsa Kgweditharo 2, mme e bile lo buisanetse megopolopalo e e tlhokang go lebiwa mo dithutanong tse di fetileng. Lebelela thadiso ya diteng tsa Dinomore, Ditiro le Dikamano mo ditsebeng 114–123 tsa *Kaedi ya Mogopolo*.



Tirwana10

Ke megopolo efe ya dipalo e e tlhokang go lebiwa mo Kgweditharong ya 2?

Tharabololo ya dipalo

Barutabana ba tlhoka go neela barutwana ditšhono tse dintsi tota go rarabolola dipalo gore ba kgone go diragatsa kitso le dikgono tsa bona tsa dipalo mo makaelong a mašwa. Metshameko le ditirwana tsotlhe di akaretsa tharabololo ya dipalo. Dipalofoko mo dipalong di tlhagisa mofuta o o rileng wa tharabololo ya dipalo o o akaretsang dipalo tsa go rarabolola go tlhakanya, go ntsha, go atisa le go arola. Mo Mophatong wa R, barutwana ba rarabolola dipalo tsa go tlhakanya le go ntsha ka go bala le go dirisa didiriswa tse di tshwaregang go ba thusa go bona karabo. Ba dirisa go baya ka ditlhopho le karogano ya nngwe ka nngwe go rarabolola dipalo tsa go atisa le go arola.

Kgwetlho e kgolo mo go tlhagisetseng barutwana dipalofoko, ke go netefatsa gore go na le go botsa le tiriso ya puo go go maleba. Fa barutabana ba tlhagisa palofoko, ba tlhoka go reetsa ditsibogo tsa barutwana ka tlhoafalo le go ba kaela go rarabolola dipalo ka go dirisa malepa a a maleba le maemo a bona a go tlhaloganya.

Diphousetara mo *Bukeng ya Diphousetara* di diretswe go tlamela barutwana ka sete ya ditshwantsho tse di amanang le matshelo a bona le go tlamela ka makaelo a tharabololo ya dipalo tse di leng mo botshelong jwa leruri.

Mo Bekeng 10 Letsatsi 4 (tsebe 181 ya *Kaedi ya Ditirwana: Kgweditharo 2*), *Phousetara 1* e diriswa go rotloetsa barutwana go rarabolola dipalo tse di akaretsang dinomore 1–5.



Activity 11

In your groups, refer to Poster 1. Think of appropriate word problems for each of these skills:

- ◆ comparing
- ◆ matching
- ◆ counting
- ◆ addition
- ◆ subtraction
- ◆ grouping
- ◆ equal sharing.

When you do word-problem activities with your learners, allow them to use their fingers or counters to help them solve the problems.

One of the sections in Numbers, Operations and Relationships is, 'Solve problems in context'. In your groups, read the content overview for Term 2 for this section on page 120 of the *Concept Guide*. Then complete Activity 12.



Activity 12

Reflect on Activity 11.

1. What concepts and skills are taught and learnt in the topic: Problem-solving techniques?

2. What concepts and skills are taught and learnt in topic: Addition and subtraction?



Tirwana 11

Mo ditlhopheng tsa lona, lebelelang Phousetara1. Akanya ka ga mafokopalo a a maleba a kgono nngwe le nngwe ya dikgono tseno:

- ◆ go bapisa
- ◆ go nyalanya
- ◆ go bala
- ◆ go tlhakanya
- ◆ go ntsha
- ◆ go kgaoganya ka ditlhopha
- ◆ go arogana ka go lekana.

Fa o dira ditirwana tsa dipalofoko le barutwana ba gago, ba letle go dirisa menwana kgotsa dibadi go ba thusa go rarabolola dipalo.

E nngwe ya dikarolo mo Dinomoreng, Ditiro le Dikamano ke, 'Rarabolola dipalo mo bokaelong'. Mo ditlhopheng tsa lona, buisetsang karolo eno thadiso ya diteng tsa Kgweditharo 2 mo tsebeng ya 121 ya *Kaedi ya Mogopolo*. Morago dira Tirwana 12.



Tirwana 12

Sedisisa Tirwana 11.

1. Ke megopolo le dikgono dife tse di rutiwang le go ithutiwa mo setlhogong: Malepa a tharabololo ya dipalo?

2. Ke megopolo le dikgono dife tse di rutiwang le go ithutiwa mo setlhogong: Go tlhakanya le go ntsha?

Estimation

Learners develop estimation skills and make a 'sensible' guess about 'how many objects' there are in a collection. During measurement activities, they estimate how heavy or how long something is, or how many cups will fill a jug before they do the actual measuring.



Activity 13

The facilitator will show you two jars. Estimate how many objects are in each jar and respond to her questions.

Learners need to be able to use terms such as: *too few, too many, more than, enough, not enough, nearly, close to, about the same, just under, just over.*

Teachers can plan estimation activities that encourage learners to make sensible guesses about the quantity of a group of objects or the measurement of an object.

Term 2 Content Summary: Week 10

Refer to Appendix A: Term 2 Weekly Content Summary (Weeks 8–10). Read the content overview for Week 10: Numbers, Operations and Relationships on page 20 of *Activity Guide: Term 2*.



Activity 14

1. What are the topics for Week 10?

2. What new knowledge is introduced in this week?

3. What skills from previous weeks are practised?

Refer to the estimation activities in Week 10 (*Activity Guide: Term 2*, pages 174 (Day 1), 176 (Day 2) and 178 (Day 3)).

Tekanyetso

Barutwana ba nna le dikgono tsa tekanyetso le go fopholetsa go go 'utlwalang' ka ga gore go na le 'dilo di le kae' mo kokoanyong. Ka nako ya ditirwana tsa tekanyo, ba lekanyetsa gore selo se boima kgotsa se seleele go le kana kang, kgotsa gore ke dikopi di le kae tse di tlaa tlatsang jeke pele ga ba ka lekanyetsa ka nnete.



Tirwana 13

Mofatlhosi o tlaa go bontsha ditshodi tse pedi. Lekanyetsa gore setshodi se sengwe le se sengwe se na le dilo di le kae mme o tsibogele potso ya gagwe.

Barutwana ba tlhoka go bo ba kgona go dirisa mareo a etsa: *mmalwanyana thata, ntsi thata, go feta, lekana, go sa lekaneng, batlile, gaufi le, batlile go lekana, ka fa tlase, go se nene, kwa godimo go se nene.*

Barutabana ba ka rulaganya ditirwana tsa tekanyetso tse di rotloetsang barutwana go fopholetsa mo go utlwalang tebang le bokaakang jwa setlhopha sa dilo kgotsa tekanyetso ya selo.

Kgweditharo 2 Khutshwafatso ya Diteng: Beke 10

Lebelela Mametlelelo A: Kgweditharo 2 Khutshwafatso ya Diteng ya Beke le Beke (Dibeke 8–10). Buisa Thadiso ya Diteng ya Beke 10: Dinomore, Ditiro le Dikamano mo tsebeng ya 21 ya *Kaedi ya Ditirwana: Kgweditharo 2*.



Tirwana 14

1. Ditlhogo tsa Beke 10 ke dife?

2. Ke kitso efe e ntšhwa e e tlhagisiwang mo bekeng eno?

3. Ke dikgono dife tse di diragadiwang go tswa mo dibekeng tse di fetileng?

Lebelela ditirwana tsa tekanyetso mo Bekeng 10 (*Kaedi ya Ditirwana: Kgweditharo 2*, ditsebe 175 (Letsatsi 1), 177 (Letsatsi 2) le 179 (Letsatsi 3)).

Session 4: Numbers, Operations and Relationships

45 minutes

The Maths Programme focuses on one main Content Area each week. You will have noticed that even though when the weekly Content Area Focus is not ‘number’, the number routines continue every day of each week. The reason for this is that repetition and practice are essential for consolidating the learners’ developing number skills.

The whole class activities for each day of the week always start with three number routines:

- ◆ a song or rhyme
- ◆ oral counting
- ◆ counting objects.

These three number routines are planned to match the number range for each term.



Activity 15

Find the Term 2 daily number routines in *Activity Guide: Term 2* and complete the table. Week 1 has been done for you.

Week	Content Area Focus	Song or rhyme	Oral counting	Counting objects
1	Numbers, Operations and Relationships	A rhyme from Term 1	1–10 5–1	1–5 (birthday chart)
2				
3				

Karolo 4: Dinomore, Ditiro le Dikamano

Metsotso e le 45

Lenaneo la Dipalo le tobile Karoloteng e kgolo e le nngwe mo bekeng e nngwe le e nngwe. O ka tswa o lemogile gore lefa Karoloteng e e Lebeleletsweng ya beke le beke e sa toba 'nomore', moetlo wa dinomore o tswela pele letsatsi le letsatsi mo bekeng e nngwe le e nngwe. Lebaka ke gore poeletso le ikatiso di bothokwa go tsolotanya kgolo ya barutwana ya dikgono tsa dinomore.

Ditirwana tsa phaposiborutelo yotlhe tsa letsatsi le lengwe le le lengwe la beke di simolola ka moetlo wa dinomore di le tharo go le gale:

- ◆ pina kgotsa morumo
- ◆ go balela kwa godimo
- ◆ go bala dilo.

Meetlo e ya dinomore di le tharo e rulagantswe go nyalana le mofutapalo wa kgweditharo e nngwe le e nngwe.



Tirwana 15

Batla meetlo ya dinomore ya letsatsi le letsatsi ya Kgweditharo 2 mo *Kaeding* ya *Ditirwana: Kgweditharo 2* mme o tlatse papetla. O setse o diretswe ya Beke 1.

Beke	Karoloteng e e Lebeleletsweng	Pina kgotsa morumo	Go balela kwa godimo	Go bala dilo
1	Dinomore, Ditiro le Dikamano	Morumo go tswa mo Kgweditharong 1	1-10 5-1	1-5 (tšhate ya malatsi a botsalo)
2				
3				

4				
5				
6				
7				
8				
9				
10				

Having looked through the number content for Term 2, you will have noticed that the number routines are practised every day of each week regardless of the Content Area Focus and that the progression in number range increases across the term.

4					
5					
6					
7					
8					
9					
10					

Morago ga go lebelela diteng tsa dinomere tsa Kgweditharo 2, o tshwanetse wa bo o lemogile gore meetlo ya dinomere e ikatisetswa letsatsi le letsatsi la beke e nngwe le e nngwe go sa kgathalesege go lebeletse Karoloteng e e Lebeletsweng efe le gore kgolo ya mefutapalo e oketsega go ralala kgweditharo.

Session 5: Term 2 Assessment

1 hour

 **Video 2**

Watch the video of a teacher presenting word problems to a small group of learners.

Observe how each learner solves the problem. Notice how the teacher uses prompts when a learner has difficulty.

 **Activity 16**

Look at the rubric on page 106 of the *Concept Guide*.

In your groups, discuss how you would score each of the learners using this scale. Give reasons for your decisions based on the assessment criteria for each rating code.

Karolo 5: Tlhatlhubo ya Kgweditharo ya 2 Ura e le 1

Video 2

Lebelela video ya morutabana a tlhagisetsa setlhopha se sennye sa barutwana dipalo tsa mafoko.

Ela tlhoko ka moo morutwana yo mongwe le yo mongwe a rarabololang palo ka teng. Ela tlhoko ka moo morutabana o neelang tlhotlheletso ka teng fa morutwana a na le bothata.

Tirwana 16

Lebelela ruburiki mo tsebeng ya 107 ya *Kaedi ya Mogopolo*.

Mo ditlhopheng tsa lona, buisanelang gore lo ya go abela jang barutwana ba bangwe le ba bangwe maduo lo dirisa sekala se. Tshegetsang ditshwetso tsa lona ka mabaka lo ikaegile ka mekgwa ya ditlhatlhubo mo khoutung e nngwe le e nngwe ya seemo.

Closing activities

15 minutes



Activity 17

Workshop reflection: Take a few minutes to reflect on the day. Page through your *Participant's Workbook* to remind yourself of what was covered. Write down any questions or comments to share with the group.



Take back to school task

1. Use *Activity Guide: Term 2* to plan and implement Weeks 8–10 of the Maths Programme.
2. Write an evaluation of what worked well, what did not work so well and what you could do differently to improve teaching and learning.
3. Bring your evaluation to the next workshop.

Evaluation

Complete the Evaluation Form.



Tirwana 17

Tshedisiso ya thutano: Tsaya metsotso e le mmalwa go sedisisa ka ga letsatsi. Phetlha Bukatiro ya Batsayakarolo ya gago go ikgopotsa se se dirilweng. Kwalang dipotso dingwe le dingwe kgotsa ditshwaelo tse lo ka di aroganang le setlhopha.



Tirwana e o e busetsang kwa sekolong

1. Dirisa *Kaedi ya Ditirwana: Kgweditharo 2* go rulaganyetsa le go diragatsa Dibeke 8-10 tsa Lenaneo la Dipalo.
2. Kwala tshekatsheko ya se o boneng se diregile sentle, se o bonnag se sa direga sentle le gore o ka dirang jang ka tsela e e farologaneng go tokafatsa go ruta le go ithuta.
3. Tlala ka tshekatsheko ya gago kwa thutanong e e latelang.

Tlhatlhobo

Tlatsa Foromo ya Tlhatlhobo.

APPENDIX A: TERM 2 WEEKLY CONTENT SUMMARY (WEEKS 8-10)

Term 2: Activity Plan

Week 8				
CONTENT AREA: SPACE AND SHAPE (GEOMETRY)				
TOPIC: Properties of shapes – compare same and different, sort according to properties; position; orientation and views				
INTRODUCE NEW KNOWLEDGE: Follow direction and midline crossing				
PRACTISE: Oral counting 1–20, counting backwards from 7, sequencing numbers 1–5, counting objects 1–7, reinforce number concept 1–5, what number comes before/after, practise using all shapes				
Whole class activities		Teacher-guided activity	Workstation activities	
Day 1	Forwards/backwards.	Counting – show me 1–3, 5–7 counters. Working with all taught shapes. Midline crossing. Position – direction. Forwards/backwards.	Activity 1	Sorting activity – using cut-out shapes. Make shapes using playdough and make a copy. Masking tape shapes – learners follow shapes using blocks. Match shapes using shape cards.
Day 2	Reinforce all shapes (I spy ...).			
Day 3	Shape game.			
Day 4	What can I do: Lost my ... (shape).			
Day 5	Obstacle course (requires a big space/outdoors). Midline crossing.			
Week 9				
CONTENT AREA: MEASUREMENT				
TOPIC: Length – compare and order objects using appropriate vocabulary to describe length				
INTRODUCE NEW KNOWLEDGE: Measuring and comparing length (long/short, longer/shorter, longest/shortest)				
PRACTISE: Oral counting 1–20, counting backwards from 7, counting objects 1–7, estimation 1–7, tall/short				
Whole class activities		Teacher-guided activity	Workstation activities	
Day 1	Longer/shorter (height).	Longer than/shorter than. Taller than/shorter than. Measurement with everyday objects.	Activity 1	Shorter/longer (pre-cut strips of different length). Wiggly worms (to make a poster shortest to longest). Measure blocks using string. Playdough and lined paper (different lengths).
Day 2	Comparing lengths of ribbons.			
Day 3	Sorting objects by length (coloured paper strips).			
Day 4	Height chart comparison (from Term 1).			
Day 5	Height chart comparison (taller/shorter than you).			

MAMETLELELO A: KGWEDITHARO 2 KHUTSHWAFATSO YA DITENG TSA BEKE LE BEKE (DIBEKE 8-10)

Kgweditharo 2: Thulaganyo ya ditirwana

Beke 8			
KAROLOTENG: BOALO LE POPEGO (JEOMETERI)			
SETLHOGO: Diponagalo tsa dipopego – bapisa tse di tshwanang le tse di farologaneng, rulaganya go ya ka dipongalao; boemo, tlwaetso le dipono			
TLHAGISA KITSO E NTŠHWA: Latela kaelo le molagare wa kgabaganyo			
IKATISE: Go balela kwa godimo 1–20, go balela kwa morago go tloga ka 7, go latedisanya dinomere 1–5, go bala dilo 1–7, go gatelela mogopolopalo 1–5, ke nomere efe e e tlang pele/morago, ikatise ka go dirisa dipopego tsothle			
Ditirwana tsa phaposiborutelo yotlhe		Tirwana e e kaelwang ke morutabana	Ditirwana tsa Seteišenetiro
Letsatsi 1	Kwa pele/kwa morago.	Go bala – mpontshe dibadi 1–3, 5–7. Go dira ka dipopego tse di rutilweng. Molagare wa kgabaganyo. Boemo– kaelo. Kwa pele/kwa morago.	Tirwana 1
Letsatsi 2	Gatelela dipopego tsothle (Ke ya setlhodi ...).		Tirwana 2
Letsatsi 3	Motshameko wa dipopego.		Tirwana 3
Letsatsi 4	Nka dirang: Ke latlhegetswe ke (popego) ... ya me.		Tirwana 4
Letsatsi 5	Sebakagoreletso (se tlhoka sebaka se setona/kwa ntle). Molagare wa kgabaganyo.		
Beke 9			
KAROLOTENG: TEKANYO			
SETLHOGO: Boleele –bapisa le go rulaganya dilo ka go dirisa tlotlofoko e e maleba go thalosa boleele			
TLHAGISA KITSO E NTŠHWA: Go lekanya le go bapisa boleele (leele/khutshwane, leejana/khutshwanyane, leele go gaisa/khutshwane go gaisa)			
IKATISE: Go balela kwa godimo 1–20, go balela kwa morago go simolola ka 7, go bala dilo 1–7, tekanyetso 1–7, telele/khutshwane			
Ditirwana tsa phaposiborutelo yotlhe		Tirwana e e kaelwang ke morutabana	Ditirwana tsa Seteišenetiro
Letsatsi 1	Leejana/khutshwanyane (bogodimo).	Leejana go na le/khutshwanyane go na le. Teleyenana go na le/khutshwanyane go na le. Tekanyo ka dilo tse di tlwaelegileng.	Tirwana 1
Letsatsi 2	Go bapisa boleele jwa diribone.		Tirwana 2
Letsatsi 3	Go rulaganya dilo ka boleele (dimikana tsa pampiri e e mmalafaditsweng).		Tirwana 3
Letsatsi 4	Papiso ya bogodimo jwa ditšhate (go tswa mo Kgweditharong 1).		Tirwana 4
Letsatsi 5	Papiso ya bogodimo jwa ditšhate (teleyenana/khutshwanyane go na le wena).		

Week 10

CONTENT AREA: NUMBERS, OPERATIONS AND RELATIONSHIPS

TOPIC: Describe, compare and order numbers; addition and subtraction (oral); problem solving

INTRODUCE NEW KNOWLEDGE: Breaking down and building up numbers, problem-solving techniques, addition and subtraction using concrete objects, numbers in familiar settings (address and phone number)

PRACTISE: Oral counting 1–20, counting backwards from 7, sequencing numbers 1–5, counting objects 1–7, reinforce number concept 1–5, what number comes before/after

Whole class activities		Teacher-guided activity	Workstation activities	
Day 1	Ordering, using numbers 1–5. Dot cards.	Ordering numbers and dot cards (1–5). Fewer/more/less than. Decomposition of numbers. Phone numbers and addresses.	Activity 1	Write numbers 1–5 and draw dots using white board markers and plastic sheets. Count sticks to match. Tracing shapes according to given number. Feely cups with number of objects – feel amount and show number symbol. Number matching pictures.
Day 2	Addition using concrete objects. Musical chairs.		Activity 2	
Day 3	Subtraction using concrete objects.		Activity 3	
Day 4	Problem solving. Poster 1.		Activity 4	
Day 5	Memory game: Address and phone number. Game: Making groups of 1–5 learners.			

Beke 10

KAROLOTENG: DINOMORE, DITIRO LE DIKAMANO

SETLHOGO: Tlhalosa, bapisa le go rulaganya dinomore ka tatelano; go tlhakanya le go ntsha (molomo); go rarabolola dipalo

TLHAGISA KITSO E NTŠHWA: Go tlhatlhamolola dinomore le go di kopanya, malepa a go rarabolola dipalo, go tlhakanya le go ntsha ka go dirisa dilo tse di tshwaregang, dinomore mo mafelong a a tlwaelegileng (aterese le nomore wa mogala)

IKATISE: Go balela kwa godimo 1-20, go balela kwa morago go simolola ka 7, go latedisanya dinomore 1-5, go bala dilo 1-7, gatelela mogopolopalo 1-5, ke nomore efe e e tlang pele/morago

Ditirwana tsa phaposiborutelo yotlhe		Tirwana e e kaelwang ke morutabana	Ditirwana tsa Seteišenetiro	
Letsatsi 1	Go rulaganya ka tatelano, ka go dirisa dinomore 1-5. Dikaratarontho.	Go rulaganya dinomore le dikaratarontho (1-5). Mmalwanyana/feta/nnye go. Tlhatlhamololo ya dinomre. Dinomore tsa mogala le diaterese.	Tirwana 1	Kwala dinomore 1-5 mme o thale marontho ka go dirisa ditshwai tsa boto e tshweu le matlhare a polasetiki. Bala dikota go nyalanya.
Letsatsi 2	Go tlhakanya ka go dirisa dilo tse di tshwaregang. Ditulo tse di nang le mmino.		Tirwana 2	Go thalelela dipopego go ya ka nomore e e neetsweng.
Letsatsi 3	Go ntsha ka go dirisa dilo tse di tshwaregang.		Tirwana 3	Kopi e e nang le dilo di le mmalwa - tshela bokaakang mme o bontshe letshwaopalo.
Letsatsi 4	Go rarabolola dipalo. Phousetara 1.		Tirwana 4	Ditshwantsho tsa go nyalanya dinomore.
Letsatsi 5	Motshameko wa tlhaloganyo: Aterese le nomore ya mogala. Motshameko: Go dira ditlhophha tsa barutwana ba le 1-5.			

Workshop 6 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 Tlhatlhubo ya Thutano 6

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?
