



GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

GGT 2030
GROWING GAUTENG TOGETHER

Sesotho/English

Lenaneo le Ntlafaditsweng la Mmetse la Kereiti ya R Grade R Mathematics Improvement Programme



Wekshopo ya 10 • Workshop 10
Buka ya Mosebetsi ya Monkakarolo • 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**.

The development and production of the training and classroom resources for the Grade R Mathematics and Language Improvement Project were made possible by generous project funding from the **United States Agency for International Development** and the **Zenex Foundation**.

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.

ACKNOWLEDGEMENTS

Special thanks to:

- The Gauteng Department of Education Curriculum, Teacher Education and Special Education Directorate officials for their contribution to the adaptation of our materials.
- The Western Cape Education Department (WCED) officials and teachers for their contribution to the successful implementation of the Grade R Mathematics Programme (R-Maths) in the Western Cape between 2016 and 2019.
- The R-Maths writing team: SDU staff and consultants.



The Grade R Mathematics Improvement Programme is adapted from *R-Maths*, first published in 2017 by the Schools Development Unit, University of Cape Town. Copyright of *R-Maths* is held by the University of Cape Town.

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Projeke ya Mmetse wa Kereiti ya R le Ntlafatso ya Puo ke bohato ba pele ba **Lefapha la Thuto la Gauteng (Gauteng Department of Education)** le molekane wa lona wa sehlooho, **Gauteng Education Development Trust**.

Ntshetsopele le tlhahiso ya mehlodi ya thupelo le ya phaposi ya borutelo bakeng sa Projeke ya Mmetse wa Kereiti ya R le Ntlafatso ya Puo di ile tsa tswelletswa ke tshehetso ka ditjhelete ya diprojeke e fanweng ke **United States Agency for International Development** le **Zenex Foundation**.

Projeke ya Mmetse wa Kereiti ya R le Ntlafatso ya Puo e tsamaiswa ke **JET Education Services** mmoho le **Schools Development Unit** ya **UCT** le **Wordworks** jwaloka balekane ba setegeniki.

Schools Development Unit (SDU) ya **University of Cape Town (UCT)** ke molekane wa setegeniki wa mmetse bakeng sa Projeke ya Mmetse wa Kereiti ya R le Ntlafatso ya Puo. SDU ke yuniti e kahara School of Education sa UCT e tsepameng ho ntshetsopele ya porofeshene ya matitjhere ho Mmetse, Saense, Tsebo ya ho Bala le ho Ngola/Puo le Bokgoni ba Bophelo ho tloha ho Kereiti ya R ho isa ho Kereiti ya 12. SDU e fana ka mangolo a botitjhere le a dithuto tse kgutshwane tse ananetsweng tsa UCT, mosebetsi o theilweng dikolong, ntshetsopele ya disebediswa le diphuputso bakeng sa ho tshehetsa ho ruta le ho ithuta dikarolong tsohle tsa Afrika Borwa.

DITEBOHO

Diteboho tse kgethehileng ho:

- Baofisiri ba Botsamaisi ba Kharikhulamo, Botsamaisi ba Thuto ya Matitjhere le Botsamaisi ba Thuto e Kgethehileng ba Lefapha la Thuto la Gauteng, bakeng sa nyehelo ya bona ntlafatsong ya disebediswa tsa rona tsa thuto.
- Baofisiri le matitjhere a Western Cape Education Department (WCED) ka nyehelo ya bona bakeng sa ho kenngwa tshebetsong ka kotleho ha Grade R Mathematics Programme (*R-Maths*) mane Western Cape pakeng tsa 2016 le 2019.
- Sehlopha se ngolang sa *R-Maths*. Basebetsi le baeletsi ba SDU.



Lenaneo le Ntlafaditsweng la Mmetse la Kereite ya R le ntlafaditswe ho tloha ho *R-Maths*, e ileng ya phatlalatswa lekgetlo la pele ka 2017 ke Schools Development Unit, University of Cape Town. Tokelo ya kgatiso ya *R-Maths* e tshwerwe ke University of Cape Town.

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Overview

Purpose

This is the tenth 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 continue assisting teachers to implement the Maths Programme in their classrooms. Participants will have the opportunity to reflect on their implementation of the Maths Programme and discuss their planning, teaching and assessment. They will also consider learner progress, and individual developmental and learning needs. Participants will reflect on appropriate assessment strategies for capturing learner progress. The workshop explores the content for Term 4 Weeks 1–3 and its classroom implementation.

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

Learning outcomes

- ◆ To reflect on the implementation of Term 3 Weeks 7–10
- ◆ To reflect on the use of the guiding principles of teaching maths in Grade R
- ◆ To deepen understanding of continuous learner observation in Grade R
- ◆ To reflect on informal forms of assessment in Grade R
- ◆ To reflect on challenges and find solutions to implementing the Maths Programme
- ◆ To map out the Maths Programme content to be taught in Term 4 Weeks 1–3

Workshop content

- ◆ Opening and reflection (1 hour)
 - ◆ Session 1: Observation and assessment (1 hour)
- TEA
- ◆ Session 2: The guiding principles of teaching maths in Grade R (1 hour)
 - ◆ Session 3: Introducing numbers 10 and 0 (1 hour)
- LUNCH
- ◆ Session 4: Planning for teaching (1½ hours)
 - ◆ Closing activities (30 minutes)

Tjhebokakaretso

Sepheo

Ena ke ya leshome ya diwekshopo tse leshome le metso e mmedi tsa Lenaneo le Ntlafaditsweng la Mmetse la Kereiti ya R (Lenaneo la Mmetse), tse etsang karolo ya Lefapha la Thuto la Gauteng (GDE) Projeke ya Mmetse wa Kereiti ya R le Ntlafatso ya Puo.

Sepheo sa wekshopo ena ke ho thusa matitjhere ho kenya tshebetsong Lenaneo la Mmetse ka diphaposing tsa bona tsa borutelo. Bankakarolo ba tla fumana monyetla wa ho ikgopotsa ka ho kenya tshebetsong Lenaneo la Mmetse le ho buisana ka ho rera, ho ruta le ditekanyetso tsa bona. Hape ba tla lemoha kgatelopele ya baithuti, le ditlhoko tsa ho ithuta le tsa ntshetsopele tsa moithuti ka mong. Bankakarolo ba tla ikgopotsa ka mawa a tekanyetso a lokelang bakeng sa ho rekota kgatelopele ya baithuti. Wekshopo ena e sibolla dikahare tsa Kotara ya 4 Dibeke tsa 1–3 le ho kenngwa tshebetsong ha yona diphaposing tsa borutelo.

Dintlha tse buang ka Dikarolo tsa Dikahare tsa Mmetse wa Kereiti ya R di nkilwe ho *Setatemente sa Leano la Kharikhulamo le Tekanyetso (SLKT): Mmetse wa Kereiti ya R (Moralo wa Moshwelella)*, 2011, Lefapha la Thuto ya Motheo, Afrika Borwa.

Diphetho tsa ho ithuta

- ◆ Ho shebisisa ho kenya tshebetsong ha Kotara ya 3 Dibeke tsa 7–10
- ◆ Ho ikgopotsa tshebediso ya dintlhatheo tse tataisang ho ruta mmetse Kereiting ya R
- ◆ Ho tebisa kutlwisiso ya ditemoho tse tswelang tsa baithuti Kereiting ya R
- ◆ Ho ikgopotsa ka mekgwa e sa hlophiswang ya tekanyetso Kereiting ya R
- ◆ Ho sekaseka diphephetso le ho fumana ditharollo bakeng sa ho kenya tshebetsong Lenaneo la Mmetse
- ◆ Ho ngola ka ho hlaka dikahare tsa Lenaneo la Mmetse tse lokelang ho rutwa Kotareng ya 4 Dibekeng tsa 1–3

Dikahare tsa wekshopo

- ◆ Pulo le boikgopotso (Hora e 1)
- ◆ Karolo ya 1: Temoho le tekanyetso (Hora e 1)

TEYE

- ◆ Karolo ya 2: Dintlhatheo tse tataisang ho ruta mmetse Kereiting ya R (Hora e 1)
- ◆ Karolo ya 3: Ho tsebisa dinomoro 10 le 0 (Hora e 1)

DIJO TSA MOTSHEARE

- ◆ Karolo ya 4: Ho etsa moralo bakeng sa ho ruta (Dihora tse 1½)
- ◆ Diketsahalo tsa ho kwala (Metsotso e 30)

Opening and reflection

1 hour

Reflection involves thinking and talking about your experiences and what you have learnt.

Reflection on implementation

Here is the *Take back to school task* from Workshop 9.



Take back to school task (Workshop 9)

1. Use *Activity Guide: Term 3* to plan and implement Term 3 Weeks 7–10 of the Maths Programme.
2. Make notes of what worked well, what did not work well and how you resolved any challenges during your implementation of Term 3 Weeks 7–10.
3. Write comments in the book that you use to keep track of each learner’s progress (learner observation book). Use the ‘**Check that learners are able to**’ observation list (eye box) during each of the teacher-guided activities to guide your observations and comments.
4. Bring your learner observation book and the notes you made when reflecting on each day’s teaching to the next workshop.
5. Bring a copy of the Term 3: Exemplar Record of Continuous Assessments (from *Activity Guide: Term 3*) to the next workshop.



Activity 1

1. In your group, prepare a newspaper article on teaching and learning maths in Grade R. Use the Maths Programme and your classroom implementation of it as the basis for your article. Include the following:
 - ◆ why maths in Grade R is important
 - ◆ your successes and challenges with implementing the Maths Programme in Terms 1, 2 and 3
 - ◆ strategies you used to resolve challenges.

Boikgopotso bo kenyeletsa ho nahana le ho bua ka boitsebelo ba hao le tseo o ithutileng tsona.

Boikgopotso ba ho kenya tshebetsong

Mosebetsi wa kgutlela le yona sekolong ke ona o tswang ho Wekshopo ya 9.



Mosebetsi wa kgutlela le yona sekolong (Wekshopo ya 9)

1. Sebedisa *Tataiso ya Diketsahalo: Kotara ya 3* bakeng sa ho rera le ho kenya tshebetsong Kotara ya 3 Dibeke tsa 7–10 tsa Lenaneo la Mmetse.
2. Etsa dinoutso tsa dintho tse sebeditseng hantle, tse sa sebeditsang hantle le kamoo o ileng wa rarolla diphephetso tse itseng nakong ya ho kenya tshebetsong ha Kotara ya 3 Dibeke tsa 7–10.
3. Ngola ditshwaelo ka hara buka eo o e sebedisang ho latela kgatelopele ya moithuti ka mong (buka ya temoho ya moithuti). Sebedisa lenane la ditemoho (lebokoso la leihlo) la '**Lekola hore baithuti ba kgona ho**' nakong ya ketsahalo ka nngwe ya tse tataiswang ke titjhere bakeng sa ho tataisa ditemoho le ditshwaelo tsa hao.
4. Tloo le buka ya hao ya ditemoho tsa moithuti le dinoutso tseo o di entseng ha o ntse o ikgotsoa ho ruta ha letsatsi ka leng ho wekshopo e latelang.
5. Tloo le khopi ya Kotara ya 3: Rekoto ya Mohlala ya Tekanyetso e Tswellang (ho tswa ho *Tataiso ya Diketsahalo: Kotara ya 3*) wekshopong e latelang.



Ketsahalo ya 1

1. Sehlotshwaneng sa lona, hlophisang atikele ya koranta mabapi le ho ruta le ho ithuta mmetse Kereiting ya R. Sebedisang Lenaneo la Mmetse le ho kenngwa tshebetsong ha lona phaposeng ya borutelo jwaloka motheo wa atikele ya lona. Kenyeletsang tse latelang:
 - ◆ hobaneng ha mmetse o le bohlokwa Kereiting ya R
 - ◆ dikatleho le diphephetso tsa lona ha le ne le kenya tshebetsong Lenaneo la Mmetse Dikotareng tsa 1, 2 le 3
 - ◆ mawa ao le a sebedisitseng ho rarolla diphephetso tseo.

2. Write the newspaper article on flipchart paper.
3. You will present your article to the other groups and answer any of their questions.

2. Ngolang atikele ya koranta pampiring ya fliptjhate.
3. Le tla hlahisa atikele ya lona dihlotshwaneng tse ding mme le arabe dipotso dife kapa dife tsa bona.

Session 1: Observation and assessment

1 hour

Observation in Grade R

Observation is an important part of the process of teaching, learning and assessment. In Grade R, the main assessment method is observation. Teachers gather information about learners during whole class activities, small group activities and free play (inside and outside the classroom). During the teacher-guided activities, your interaction with individual learners provides valuable information about their progress. By recording the learners' progress in understanding specific maths concepts in your notebook on an ongoing basis, you build up a complete picture of each learner.

Objective observation

For observation to be effective, teachers need to understand and know what to focus on.

In the next activity, you will practise your observation skills. *This is an individual activity. It is very important that you do not talk to anyone about your observations.*



Activity 2

Look at the photograph of two Grade R learners playing with blocks. Write down what you observe when you look at the photograph.



Karolo ya 1: Temoho le tekanyetso

Hora e 1

Temoho Kereiting ya R

Temoho ke karolo ya bohlokwa tsamaisong ya ho ruta, ho ithuta le tekanyetso. Kereiting ya R, mokgwa wa tekanyetso wa sehlooho ke temoho. Matitjhere a bokella tlhahisoleseding e mabapi le baithuti nakong ya diketsahalo tsa tlelase yohle, diketsahalo tsa dihlotshwana le papadi ya bolokolohi (kahare le ka ntle ho phaposi ya borutelo). Nakong ya diketsahalo tse tataiswang ke titjhere, kgokahano ya hao le baithuti ka bomong e fana ka tlhahisoleseding ya bohlokwa mabapi le kgatelopele ya bona. Ka ho rekota kgatelopele ya baithuti ya ho utlwisisa mareo a itseng a mmetse bukeng ya hao ya dinoutso nako le nako, o bopa setshwantsho se felletseng sa moithuti ka mong.

Temoho e sa nkeng lehlakore

Hore temoho e tle e sebetse hantle, matitjhere a lokela ho utlwisisa le ho tseba seo ba lokelang ho tsepamisa maikutlo ho sona.

Ketsahalong e latelang, le tla sebedisa bokgoni ba lona ba ditemoho. *Ena ke ketsahalo ya motho ka bomong. Ho bohlokwa haholo hore o se ke wa bua le mang kapa mang ka tseo o di lemohang.*



Ketsahalo ya 2

Sheba setshwantsho sena sa baithuti ba babedi ba Kereiti ya R ba bapalang ka diboloko. Ngola seo o se lemohang ha o shebile setshwantsho sena.



My observations:



Video 1

1. Watch the video of a group of learners playing the game, Bingo. Write down your observations of the learners.

2. Which of your observations are facts and which are assumptions? Go through your list and write an 'F' or 'A' next to each statement.

When we write what we **think** a learner can or cannot do, or what a learner is feeling, we are making assumptions. The only way to know what a learner is thinking or feeling, is to ask them to tell you.

Objective observation involves:

- ◆ describing only what you see and hear
- ◆ recording what the learner is doing and saying in as much detail as possible
- ◆ not judging – avoid giving your own ideas and opinions
- ◆ observing each learner regularly, in different activities and at different times of the day.

Ditemoho tsa ka:



Video ya 1

1. Shebellang video ya sehlopha sa baithuti ba bapalang papadi, Bingo. Ngola ditemoho tsa hao ka baithuti bao.

2. Ke dife ho ditemoho tsa hao tseo e leng dintlha mme ke dife tseo e leng dikgopolotaba? Sheba lenane la hao lohle mme o ngole 'N' kapa 'K' pela polelo ka nngwe.

Ha re ngola seo re **nahanang** hore moithuti a ka se etsa kapa a keke a se etsa, kapa kamoo moithuti a ikutlwang ka teng, re etsa dikgopolotaba. Tsela e le nngwe feela ya ho tseba seo moithuti a se nahanang kapa maikutlo a hae, ke ho mo kopa hore a o bolelle.

Temoho e sa nkeng lehlakore e kenyeletsa:

- ◆ ho hlalosa feela seo o se bonang le seo o se utlwang
- ◆ ho rekota seo moithuti a se etsang le ho se bua ka dintlha tse ngata kamoo o ka kgonang
- ◆ ho se ahlole – qoba ho fana ka mehopolo ya hao le maikutlo a hao
- ◆ ho dula o shebella moithuti ka mong nako le nako, diketsahalong tse fapaneng le ka dinako tse fapaneng tsa letsatsi.



Activity 3

1. Think about your observations of *one* of your learners in Term 3. What mathematical knowledge and skills is this learner developing?

2. Refer to (3) to (5) of the *Take back to school task* from Workshop 9 (page 8).
 - ◆ Discuss your use of the '**Check that learners are able to**' observation list (eye box) during teacher-guided activities.
 - ◆ Show members of your group your learner observation book.
 - ◆ Take turns to discuss a learner's progress. Which mathematical skills did you observe? How do you know? (What did the learner do and say?)
 - ◆ Explain how you captured this information using the Term 3: Exemplar Record of Continuous Assessments.
 - ◆ Did you manage to implement a differentiated approach to teaching and learning in your class. If so, how?

Assessment in Grade R

Assessment in Grade R is used to make decisions about the best way to support each learner's development. During teacher-guided activities, whole class activities as well as other activities in the daily programme, you will have opportunities to observe learners and gain insight into their progress. This information should guide your planning for further teaching and learning.

The continuous assessment tables in CAPS and in the Maths Programme's *Activity Guides* are based on the content that has been taught each term and can be used to summarise each learner's progress during the term.

Note that skills and behaviours should be observed on several occasions so that patterns of development over time can be recorded.



Ketsahalo ya 3

1. Nahana ka ditemoho tsa hao tsa e *mong* wa baithuti ba hao ho Kotara ya 3. Moithuti eo o fumana tsebo le bokgoni bofe ba mmetse?

2. Shebang ho (3) ho isa ho (5) tsa *Mosebetsi wa kgutlela le yona sekolong* ho tswa ho Wekshopo ya 9 (leqephe la 9).
 - ◆ Buisanang ka tshebediso ya lona ya lenane la ditemoho la '**Lekola hore baithuti ba kgona ho**' (lebokoso la leihlo) nakong ya diketsahalo tse tataiswang ke titjhere.
 - ◆ Bontsha ditho tsa sehlopha sa hao buka ya hao ya ditemoho tsa baithuti.
 - ◆ Fanang sebaka sa ho buisana ka kgatelopele ya moithuti. Ke bokgoni bofe ba mmetse boo o bo lemohileng? O tseba jwang? (Moithuti o ile a etsa eng le hore o itse eng?)
 - ◆ Hlalosa kamoo o ileng wa bokella tlhahisoleseding ena o sebedisa Kotara ya 3: Rekoto ya Mohlala ya Tekanyetso e Tswellang.
 - ◆ Na o ile wa kgona ho kenya tshebetsong mokgwa o bontshang phapang ho ruteng le ho ithuteng ka tlelaseng ya hao. Ha ho le jwalo, jwang?

Tekanyetso Kereiting ya R

Tekanyetso Kereiting ya R e sebediswa ho etsa diqeto mabapi le tsela e lokileng ka ho fetisisa ya ho tshehetsa ntshetsopele ya moithuti ka mong. Ka nako ya diketsahalo tse tataiswang ke titjhere, diketsahalo tsa tlelase yohle esitana le diketsahalo tse ding le ho lenaneo la letsatsi le letsatsi, o tla ba le menyetla ya ho shebella baithuti mme o fumane lesedi mabapi le kgatelopele ya bona. Tlhahisoleseding ena e lokela ho tataisa moralo wa hao bakeng sa ho ruta le ho ithuta ho tswela pele.

Ditafole tsa tekanyetso e tswellang tse ho SLTK le ho *Ditataiso tsa Diketsahalo* tsa Lenaneo la Mmetse di theilwe ho dikahare tse rutilweng kotareng ka nngwe mme di ka sebediswa ho akaretsa kgatelopele ya moithuti ka mong kotareng.

Lemoha hore bokgoni le boitshwaro di lokela ho shebellwa diketsahalong tse ngatanyana ele hore ho tle ho rekotwe dipaterone tsa ntshetsopele nakong e itseng.

Session 2: The guiding principles of teaching maths in Grade R

1 hour

Throughout the Maths Programme training, we have referred to the guiding principles of teaching maths in Grade R and how these are incorporated into daily classroom practice. Some of the principles are easier to identify and implement than others. As teachers we need to be constantly aware of how, where and when we are using these principles in our classrooms.



Activity 4

The facilitator will assign one of the guiding principles of teaching maths in Grade R to your group. You will receive a picture of this principle.

1. In your group, discuss the following questions:
 - ◆ What is your understanding of this principle ‘in action’?
 - ◆ Does the Maths Programme make it possible to incorporate this principle in your daily teaching?
 - ◆ Now that you have implemented the Maths Programme for three terms, what are your reflections on this principle?
 - ◆ How would your teaching be affected if this principle was absent from your classroom approach?
2. Paste the picture onto a sheet of flipchart paper. Write your comments below the picture so that you can share these with the whole group.

Karolo ya 2: Dintlhatheo tse tataisang ho ruta mmetse Kereiting ya R

Hora e 1

Nakong yohle ya thupello ya Lenaneo la Mmetse, re ne re ntse re sheba ho dintlhatheo tse tataisang ho ruta mmetse Kereiting ya R le kamoo di kenyeleditsweng ho diketso tsa letsatsi le letsatsi tsa phaposing ya borutelo. Tse ding tsa dintlhatheo di bonolo ho hlwauwa le ho kenngwa tshebetsong ho feta tse ding. Jwalo ka matitjhere re hloka ho dula re lemoha hore re sebedisa dintlhatheo tsena jwang, kae le neng diphaposing tsa rona tsa borutelo.



Ketsahalo ya 4

Motsamaisi o tla abela sehlotshwana sa lona e nngwe ya dintlhatheo tse tataisang ho ruta mmetse Kereiting ya R. Le tla fumana setshwantsho sa ntlhatheo ena.

1. Sehlotshwaneng sa lona, buisanang ka dipotso tse latelang:
 - ◆ Le utlwisisa eng ka ntlhatheo ena ha 'e le tshebetsong'?
 - ◆ Na Lenaneo la Mmetse le etsa hore ho kgonahale ho kenyeletsa ntlhatheo ena ho ruteng ha hao ka letsatsi le letsatsi?
 - ◆ Jwale kaha o se o sebedisitse Lenaneo la Mmetse ka dikotara tse tharo, mehopolo ya hao ke efe mabapi le ntlhatheo ena?
 - ◆ Ho ruta ha hao ho ka ameha jwang haeba ntlhatheo ena e ka ba siyo ho mokgwa oo o o sebedisang ka phaposing ya hao ya borutelo?
2. Manamisa setshwantsho leqepheng la pampiri ya fliptjhate. Ngolang ditshwaelo ka tlasa setshwantsho seo ele hore le tle le abelane ka tsona le sehlopha sohle.



1. The context principle. Learning takes place in meaningful and appropriate situations.



2. The activity principle. Learners should be directly involved in the learning-teaching process.



8. The practice principle. Learning is consolidated through practising new skills and knowledge.



7. The inclusivity principle. Learning takes place in an environment where everyone is welcomed, included, treated fairly, respected and can participate.



3. The play principle. Children learn best in free-play and guided-play activities.



6. The guidance principle. Learning takes place when teachers guide learners in developing new knowledge.



5. The interaction principle. Learning takes place when there is communication and sharing of ideas.



4. The level principle. Learners pass through various levels of understanding and development.

THE EIGHT PRINCIPLES OF GRADE R MATHS



1. **Ntlhatheo ya tikoloho.**
Ho ithuta ho etsahala maemong a nang le moelelo le a loketseng.



2. **Ntlhatheo ya diketsahalo.** Baithuti ba lokela ho nka seabo ka ho otloloha mokgwatshebetsong wa ho ruta le ho ithuta.



8. **Ntlhatheo ya boikwetliso.** Ho ithuta ho kgobokanngwa ka ho ikwetlisetsa bokgoni le tsebo tse ntjha.



7. **Ntlhatheo ya kenyeletso.** Ho ithuta ho etsahala tikolohong eo bohle ba amohelwang, ba kenyeletswang, ba tshwarwang ntle le leeme, ba hlontjhwang mme ba ka ba le seabo.

DINTLHATHEO TSE ROBEDI
TSA GRADE R MATHS



3. **Ntlhatheo ya ho bapala.** Bana ba ithuta hantle ho feta diketsahalong tsa ho bapala ka bolokolohi le tsa ho bapala ho tataiswang.



6. **Ntlhatheo ya tataiso.** Ho ithuta ho etsahala ha matitjhere a tataisa baithuti ho ntshetsa pele tsebo e ntjha.



5. **Ntlhatheo ya kgokahano.** Ho ithuta ho etsahala ha ho ena le dipuisano le ho abelana ka mehopolo.



4. **Ntlhatheo ya mekgahlelo.** Baithuti ba feta mekgahlelo e fapaneng ya kutlwisiso le ntshetsopele.

Session 3: Introducing numbers 10 and 0

1 hour

Introducing number 10

The ten numerals used in our place value number system are 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9. These numerals are used to represent units (ones) and to represent an infinite number of values, for example:

- ◆ tens
- ◆ hundreds
- ◆ thousands, and so on.

Learners in the Foundation Phase need to understand that the same numeral can be used to represent different values, depending on the position of the numeral in a number. For example, in each of the numbers below '3' has a different value:

- ◆ in 3, its value is 'three'
- ◆ in 31, its value is 'thirty'
- ◆ in 349, its value is 'three hundred'.

Place value is a difficult concept for learners to understand. Researchers have found that many learners up to the age of eight think that the '1' in 15 means 'one'.

In Grade 1 learners explore the base ten number system, working with numbers from 11 onwards. They represent these numbers with groups of tens and single ones (units). When they work with numbers 11–19, they begin to understand that in a number like 14, the numeral 1:

- ◆ does not mean 1
- ◆ represents 10 ones
- ◆ therefore, is also 1 ten (1 group of ten).

They also understand that the numeral 4 in 14, represents 4.

DID YOU KNOW?

In the Foundation Phase, learners talk about 'tens' and 'units' as 'groups of ten' and single 'ones'. They represent two-digit and three-digit numbers using grouping models and expanding number cards.

Karolo ya 3: Ho tsebisa dinomoro 10 le 0

Hora e 1

Ho tsebisa nomoro ya 10

Matshwao a dinomoro a leshome a sebedisitsweng sistiming ya rona ya dinomoro ya kemelapalo ke 0, 1, 2, 3, 4, 5, 6, 7, 8 le 9. Matshwao ana a sebediswa ho emela metso (bonngwe) le ho emela lenane le sa feleng la boleng, ho etsa mohlala:

- ◆ mashome
- ◆ makgolo
- ◆ dikete, jwalojwalo.

Baithuti ba Mophatong wa Motheo ba lokela ho utlwisisa hore letshwao la nomoro e le nngwe le ka sebediswa ho emela boleng bo fapaneng, ho ya ka boemo ba letshwao leo nomorong e felletseng. Ho etsa mohlala, nomorong ka nngwe e ka tlase, '3' e na le boleng bo fapaneng:

- ◆ ho 3, boleng ba yona ke 'tharo'
- ◆ ho 31, boleng ba yona ke 'mashome a mararo'
- ◆ ho 349, boleng ba yona ke 'makgolo a mararo'.

Kemelapalo ke lereo le thata bakeng sa baithuti ho le utlwisisa. Bafuputsi ba fumane hore baithuti ba bangata ho fihla dilemong tse robedi ba nahana hore '1' ho 15 e bolela 'nngwe'.

Kereiting ya 1 baithuti ba sibolla mokgwa wa desimale, ho sebetsa ka dinomoro ho tloha ho 11 ho ya pele. Ba emela dinomoro tsena ka dihlopha tsa mashome le tsa bonngwe (metso). Ha ba sebetsa ka dinomoro 11–19, ba qala ho utlwisisa hore nomorong e kang 14, letshwao la nomoro la 1:

- ◆ ha le bolele 1
- ◆ le bolela bonngwe ba 10
- ◆ kahoo, ke leshome le 1 (sehlopha se 1 sa leshome).

Hape ba utlwisisa hore letshwao la 4 ho 14, le emetse 4.

NA O NE O TSEBA?

Mophatong wa Motheo, baithuti ba bua ka 'mashome' le 'metso' jwaloka 'dihlopha tsa leshome' le tsa 'bonngwe'. Ba emela dinomoro tsa didijiti tse pedi le tsa didijiti tse tharo ba sebedisa dimmotlolo tsa ho bea ka dihlopha le dikarete tsa dinomoro tse atoloswang.

We do not introduce place value in Grade R. The focus in this grade is on understanding the value of the numbers 0–10 and on building a strong number concept within this range. If learners have a good concept of the numbers to 10, this knowledge can be extended in Grade 1 and other grades.



Activity 5

IMPORTANT!

This activity is for the development of your own knowledge and enrichment. It is not appropriate for Grade R learners. Do NOT introduce this activity in Grade R.

Use the counters, sticks and number cards provided to represent the following numbers:

14 31 22 43

1. Represent each number using counters: make groups of ten and single ones.
2. Represent each number using sticks and string: make bundles of ten and single ones.
3. Label the bundles with the correct number cards.
4. Talk about how many groups of ten and how many ones each number has.
5. Discuss the value of each numeral.
6. Which apparatus do you think was more appropriate for representing the concepts of 'groups of ten' ('tens') and 'ones'? Explain your answer.

7. What do you notice about the value of the numerals in the numbers you represented with the number cards?

Ha re tsebise kemelapalo Kereiting ya R. Tsepamo kereiting ena e ho kutlwisiso ya boleng ba dinomoro 0–10 le ho aha moelelo o matla wa dinomoro letotong lena. Haeba baithuti ba ena le moelelo o motle wa dinomoro ho fihlela ho 10, tsebo ena e ka atoloswa Kereiting ya 1 le dikereiting tse ding.



Ketsahalo ya 5

BOHLOKWA!

Ketsahalo ena e bakeng sa ntshetsopele le ntlafatso ya tsebo ya hao. Ha e a lokela baithuti ba Kereiti ya R. O SE tsebise ketsahalo ena Kereiting ya R.

Sebedisa dibadi, dithupa le dikarete tsa dinomoro tse fanweng bakeng sa ho emela dinomoro tse latelang:

14 31 22 43

1. Emela nomoro ka nngwe o sebedisa dibadi: etsa dihlopha tsa leshome le tsa bonngwe.
2. Emela nomoro ka nngwe o sebedisa dithupa le kgwele: etsa dingatana tsa leshome le tsa bonngwe.
3. Leibola dingatana ka dikarete tse nepahetseng tsa dinomoro.
4. Buang ka hore nomoro ka nngwe e na le dihlopha tse kae tsa leshome le bonngwe ba bakae.
5. Buisanang ka boleng ba letshwao la nomoro ka leng.
6. Ke sesebediswa sefe seo o nahanang hore se ne se lokile ho feta bakeng sa ho emela dikgopolo tsa 'dihlopha tsa leshome' (mashome) le 'bonngwe'? Hlalosa karabo ya hao.

7. O lemoha eng mabapi le boleng ba matshwao a dinomoro ho dinomoro tseo o di emetseng ka dikarete tsa dinomoro?

Grade R learners **do not need to understand place value**. They do need to:

- ◆ understand the value (the 'how muchness') of numbers 0–10
- ◆ understand the different combinations of numbers up to 10
- ◆ understand that even though 10 is made up of the numerals 1 and 0, it is NOT $1 + 0$ and it has its own value ('how muchness')
- ◆ understand and be able to represent the different values of 1, 0 and 10.



Activity 6

1. In your group, discuss ideas for teaching the number 10 in your Grade R classroom. Include the use of different representations.

2. Present your ideas to the whole group.

Introducing number 0

In Grade R, learners need to understand that zero is a number and the number symbol for it is '0'.

Young children find the concept of 'emptiness' difficult to understand. When learners are faced with an empty plate, container, box or bag they will often use words such as 'no more', 'all gone', 'nothing left', 'none' or 'empty' to describe the situation. Teachers should accept these correct descriptions, but should also introduce the word 'zero'. The word 'zero' should be used consistently, even when counting down or backwards, e.g., when counting backwards from four: 'four, three, two, one, zero'. The symbol '0' should be placed on the number washing line. The 0 number cards should be used to represent that an object (such as a plate, tub, lid, box) is empty.

Baithuti ba Kereiti ya R **ha ba hloke ho utlwisisa kemelapalo**. Ha ba hloke ho:

- ◆ utlwisisa boleng ('bokaalo') ba dinomoro 0–10
- ◆ utlwisisa metswako e fapaneng ya dinomoro ho isa ho 10
- ◆ utlwisisa hore esita le ha 10 e etswa ke matshwao a dinomoro 1 le 0, ha SE 1 + 0 mme e na le boleng ba yona ('bokaalo')
- ◆ utlwisisa le ho kgona ho emela boleng bo fapaneng ba 1, 0 le 10.



Ketsahalo ya 6

1. Sehlotshwaneng sa lona, buisanang ka mehopolo bakeng sa ho ruta nomoro ya 10 ka phaposing ya borutelo ya Kereiti ya R. Kenyeletsang tshebediso ya dikemelo tse fapaneng.

2. Hlahisang mehopolo ya lona sehlopheng sohle.

Ho tsebisa nomoro ya 0

Kereiting ya R, baithuti ba hloka ho utlwisisa hore ziro ke nomoro mme letshwao la nomoro bakeng sa yona ke '0'.

Bana ba banyenyane ba fumana lereo la 'lephaka' le le thata ho ka utlwisiswa. Ha baithuti ba shebane le sejana, lebokoso kapa mokotla o sa tshelang letho, hangata ba tla sebedisa mantswe a kang 'fedile', 'di ile', 'ha ho letho', 'ha eyo' kapa 'lephaka' ho hlalosa boemo boo. Matitjhere a lokela ho amohela ditlhaloso tsena tse nepahetseng, empa hape ba lokela ho tsebisa lentswe la 'ziro'. Lentswe lena 'ziro' le lokela ho sebediswa nako le nako, esitana le ha ho balwa ho ya pele kapa ho kgutlela morao, mohl., ha ho balwa ho kgutlelwa morao ho tloha ho nne: 'nne, tharo, pedi, nngwe, ziro'. Letshwao la '0' le lokela ho bewa moleng wa ho aneha dinomoro. Dinomoro tsa dikarete tsa 0 di lokela ho emela hore ntho e itseng (jwaloka sejana, setshelo, sekwahelo, lebokoso) ha e a tshela letho/e lephaka.



Video 2

1. Watch the video of a teacher introducing and consolidating the concept of zero.
 - ◆ What do you see happening?
 - ◆ How was the concept of zero introduced?
 - ◆ What did the learners do and say?
 - ◆ What was the role of the teacher?
 - ◆ What was the benefit of using a variety of activities to teach the concept?

2. Write down your observations.



Video ya 2

1. Shebellang video ya titjhere ya tsebisang le ho hokahanya lereo la ziro.
 - ◆ O bona ho etsahala eng?
 - ◆ Lereo la ziro le tsebisitswe jwang?
 - ◆ Baithuti ba ile ba etsa eng mme ba reng?
 - ◆ Seabo sa titjhere e ne e le sefe?
 - ◆ Molemo wa ho sebedisa diketsahalo tse fapaneng bakeng sa ho ruta lereo ke ofe?

2. Ngola ditemoho tsa hao.

Session 4: Planning for teaching

1½ hours

This workshop session prepares participants for implementing Term 4 Weeks 1–3. By this stage of the year, the teacher will have noticed distinct differences between learners' levels of progress. Term 4 builds on the content of Terms 1, 2 and 3. Some learners will be ready for this, while others will need support and more consolidation to progress. It is important to plan and prepare for this difference in learner competence to ensure that all the content and skills of Grade R Mathematics are covered, and learners are well prepared for Grade 1.



Activity 7

1. In your group, complete the planning templates for Term 4 Weeks 1–3 (Appendix A).
2. Discuss the following questions:
 - ◆ How is the week structured?
 - ◆ How does the content build on previous lessons?
 - ◆ Do the whole class activities successfully create opportunities for the discussion and exploration of new knowledge?
 - ◆ How does the teacher-guided activity provide opportunities for the teacher to assess and support the learners?
 - ◆ Do the independent small group activities allow for adequate practice of new knowledge and skills?
 - ◆ How could you prepare additional activities to support learners who have not yet mastered a particular skill?
 - ◆ Suggest some ways to extend learning opportunities for advanced learners.
 - ◆ How could you work with a colleague to prepare for each week?

Karolo ya 4: Ho etsa moralo bakeng sa ho ruta

Dihora tse 1½

Karolo ena ya wekshopo e lokisetsa bankakarolo bakeng sa ho kenya tshebetsong Kotara ya 4 Dibeke tsa 1–3. Mokgahlelong ona wa selemo, titjhere o tla be a eleletswe diphapang tse ikgethileng tse pakeng tsa maemo a baithuti a kgatelopele. Kotara ya 4 e ahella ho dikahare tsa Kotara ya 1, 2 le 3. Baithuti ba bang ba tla be ba loketse sena, ha ba bang ba tla hloka tshehetso le kgobokanyo e ngata bakeng sa ho hatela pele. Ho bohlokwa ho rera le ho lokisetsa phapang ena ya boitsebelo ba baithuti ho netefatsa hore dikahare tsohle le bokgoni bohle ba Mmetse wa Kereiti ya R di entswe, le hore baithuti ba se ba loketse Keteiti ya 1.



Ketsahalo ya 7

1. Sehlotshwaneng sa lona, tlatsang dithempleiti tsa moralo bakeng sa Kotara ya 4 Dibeke tsa 1–3 (Sehlomathiso A).
2. Buisanang ka dipotso tse latelang:
 - ◆ Beke e bopilwe jwang?
 - ◆ Dikahare di ahella jwang hodima dithuto tse fetileng?
 - ◆ Na diketsahalo tsa tlelase yohle di bopa menyetla ka katleho bakeng sa dipuisano le tshibollo ya tsebo e ntjha?
 - ◆ Ketsahalo e tataiswang ke titjhere e fana jwang ka menyetla bakeng sa titjhere ho lekanyetsa le ho tshehetsa baithuti?
 - ◆ Na diketsahalo tsa dihlotshwana tse ikemetseng di dumella tshebediso e lekaneng ya tsebo e ntjha le bokgoni bo botjha?
 - ◆ O ka lokisetsa jwang diketsahalo tsa tlatsetso ho tshehetsa baithuti ba esong ho utlwisisi hantle bokgoni bo itseng?
 - ◆ Etsa ditlhahiso tsa ditsela tse ding tsa ho atolosa menyetla ya ho ithuta bakeng sa baithuti ba seng ba hatetse pele.
 - ◆ O ka sebedisana jwang le mosebetsimmoho ho lokisetsa beke ka nngwe?

Closing activities

30 minutes



Activity 8

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 your thoughts.

- ◆ I learnt _____

- ◆ I did not like _____

- ◆ I enjoyed _____

- ◆ I now understand _____

- ◆ I'm still not clear about _____

- ◆ I would like more information on _____

Share your reflections with the whole group.



Take back to school task

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

Evaluation

Complete the Evaluation Form.



Ketsahalo ya 8

Boikgopotso ba wekshopo: Nkang metsotso e mmalwa ho ikgopotsa ka letsatsi leo. Phetlang buka ya lona ya *Buka ya Mosebetsi ya Monkakarolo* ho ikgopotsa ka tse seng di rutilwe. Ngola mehopolo ya hao fatshe.

- ◆ Ke ithutile _____

- ◆ Ha ke a rata _____

- ◆ Ke natefetswe ke _____

- ◆ Jwale ke se ke utlwisisa _____

- ◆ Ke ntse ke eso hlakelwe ke _____

- ◆ Nka thabela tlhahisoleseding e nngwe mabapi le _____

Abelana ka dikgopolo tsa hao le sehlopha sohle.



Mosebetsi wa kgutlela le yona sekolong

1. Sebedisa *Tataiso ya Diketsahalo: Kotara ya 4* ho rera le ho kenya tshebetsong Kotara ya 4 Dibeke tsa 1–3 tsa Lenaneo la Mmetse.
2. Ngola ditshwaelo ka bukeng eo o e sebedisang ho boloka rekoto ya kgatelopele ya moithuti ka mong (buka ya ditemoho tsa baithuti). Sebedisa lenane la ditemoho la **'Lekola hore baithuti ba kgona ho'** (lebokoso la mahlo) nakong ya ketsahalo ka nngwe ya tse tataiswang ke titjhere ho tataisa ditemoho le ditshwaelo tsa hao.
3. Etsa dinoutso tsa dintho tse sebeditseng hantle, tse sa sebetsang hantle le kamoo o rarollotseng diphephetso dife kapa dife nakong ya ho kenya tshebetsong ha Kotara ya 4 Dibeke tsa 1–3.
4. Tloo le buka ya hao ya ditemoho tsa moithuti le dinoutso tseo o di entseng ha le ntse le ikgopotsa ho ruta ha letsatsi ka leng ho wekshopo e latelang.

Tlhahlobo

Tlatsa Foromo ya Tlhahlobo.

APPENDIX A: TERM 4 WEEKLY PLANNING TEMPLATE

Term 4: Activity Plan: Week ____

CONTENT AREA:				
TOPIC:				
INTRODUCE NEW KNOWLEDGE:				
PRACTISE:				
Whole class activities		Teacher-guided activity	Workstation activities (independent small group activities)	
Day 1			Activity 1	
Day 2			Activity 2	
Day 3			Activity 3	
Day 4			Activity 4	
Day 5				

SEHLOMATHISO A: KOTARA YA 4 THEMPLEITI YA MORALO WA BEKE LE BEKE

Kotara ya 4: Moralo wa Ketsahalo: Beke ya ____

KAROLO YA DIKAHARE:				
SEHLOOHO:				
TSEBISA TSEBO E NTJHA:				
HO ETSA:				
Diketsahalo tsa tlelase yohle		Ketsahalo e tataiswang ke titjhere	Diketsahalo tsa diteisheneng tsa tshebetso (diketsahalo tsa dihlotshwana tse ikemetseng)	
Letsatsi la 1			Ketsahalo ya 1	
Letsatsi la 2			Ketsahalo ya 2	
Letsatsi la 3			Ketsahalo ya 3	
Letsatsi la 4			Ketsahalo ya 4	
Letsatsi la 5				

Term 4: Activity Plan: Week ____

CONTENT AREA:				
TOPIC:				
INTRODUCE NEW KNOWLEDGE:				
PRACTISE:				
Whole class activities		Teacher-guided activity	Workstation activities (independent small group activities)	
Day 1			Activity 1	
Day 2			Activity 2	
Day 3			Activity 3	
Day 4			Activity 4	
Day 5				

Kotara ya 4: Moralo wa Ketsahalo: Beke ya ____

KAROLO YA DIKAHARE:				
SEHLOOHO:				
TSEBISA TSEBO E NTJHA:				
HO ETSA:				
Diketsahalo tsa tlelase yohle		Ketsahalo e tataiswang ke titjhere	Diketsahalo tsa diteisheneng tsa tshebetso (diketsahalo tsa dihlotshwana tse ikemetseng)	
Letsatsi la 1			Ketsahalo ya 1	
Letsatsi la 2			Ketsahalo ya 2	
Letsatsi la 3			Ketsahalo ya 3	
Letsatsi la 4			Ketsahalo ya 4	
Letsatsi la 5				

Term 4: Activity Plan: Week ____

CONTENT AREA:				
TOPIC:				
INTRODUCE NEW KNOWLEDGE:				
PRACTISE:				
Whole class activities		Teacher-guided activity	Workstation activities (independent small group activities)	
Day 1			Activity 1	
Day 2			Activity 2	
Day 3			Activity 3	
Day 4			Activity 4	
Day 5				

Kotara ya 4: Moralo wa Ketsahalo: Beke ya ____

KAROLO YA DIKAHARE:				
SEHLOOHO:				
TSEBISA TSEBO E NTJHA:				
HO ETSA:				
Diketsahalo tsa tlelase yohle		Ketsahalo e tataiswang ke titjhere	Diketsahalo tsa diteisheneng tsa tshebetso (diketsahalo tsa dihlotshwana tse ikemetseng)	
Letsatsi la 1			Ketsahalo ya 1	
Letsatsi la 2			Ketsahalo ya 2	
Letsatsi la 3			Ketsahalo ya 3	
Letsatsi la 4			Ketsahalo ya 4	
Letsatsi la 5				

Workshop 10 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 Tlhahlobo ya Wekshopo ya 10

1. Na wekshopo ena e fihletse ditebello tsa hao?

2. O ithutile eng ho wekshopo ena se o thusitseng ka ho fetisisa?

3. Na ho na le seo o sa kang wa se rata kapa seo o ileng wa thatafallwa ke ho se utlwisisa?

4. O tla sebedisa jwang seo o ithutileng sona mona phaposeng ya hao ya borutelo ya Kereiti ya R?

5. Na o na le ditlahiso tse itseng bakeng sa ho ntlafatsa diwekshopo tse ding tse tlang?
