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GROWING GAUTENG TOGETHER

Setswana/English

Lenaneotokafatso la Dipalo tša Mophato R Grade R Mathematics Improvement Programme



Thutano 10 • Workshop 10
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**.

Tlhabolole 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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- 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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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)

Thadiso

Maitlhomomo

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

Maitlhomomo a thutano eno ke go thusa barutabana go diragatsa Lenaneo la Dipalo mo diphaposiborutelong tsa bona. Batsayakarolo ba tlaa nna le tšhono ya go sedisisa dikelotlhoko tsa bona. Ba tlaa tlhotlhomisa ka moo melawana ya kaelo ya go ruta dipalo tsa Mophato R e tlaa tshwaelang mo thulaganyetsong, go ruteng le mo tlhatlhobong. Gape e tlaa ela tlhoko tswelolepele ya morutwana, mmogo le ditlhokego tsa kgolo le go ithuta tsa morutwana ka nosi. Thutano e lekeletsa diteng tsa Kgweditharo 4 Dibeke 1–3 le tiragatso ya tsona mo phaposiborutelong.

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 3 Dibeke 7–10
- ◆ Go sedisisa tiriso ya melawana e e kaelang ya go ruta dipalo mo Mophatong wa R
- ◆ Go tiisa go tshaloganya kelotlhoko e e tswelletseng pele ya morutwana mo Mophatong wa R
- ◆ Go sedisisa mefuta ya tlhatlhobo e e sa tlhomamang mo Mophatong wa R
- ◆ Go sedisisa dikgwetlho le go batla ditharabololo tsa go diragatsa Lenaneo la Dipalo
- ◆ Go rulaganya diteng tsa Lenaneo la Dipalo tse di tshwanetseng go rutiwa mo Kgweditharong 4 Dibeke 1–3

Diteng tsa thutano

- ◆ Pulo le tshedisiso (Ura e le 1)
 - ◆ Karolo 1: Kelotlhoko le tlhatlhobo (Ura e le 1)
- TEE
- ◆ Karolo 2: Melawana e e kaelang ya go ruta dipalo mo Mophato R (Ura e le 1)
 - ◆ Karolo 3: Go tlhagisa dinomere 10 le 0 (Ura e le 1)
- DIJOTSHEGARE
- ◆ Karolo 4: Go ithulaganyetsa go ruta (Diura di le 1½)
 - ◆ Ditirwana tsa tswalelo (Metsotso e le 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.

Tshedisiso e akaretsa go akanya le go bua ka ga maitemogelo a gago le se o se ithutileng.

Tshedisiso mo tiragatsong

Tirwana e o e busetsang kwa sekolong ke eno go tswa mo Thutanong ya 9.



Tirwana e o e busetsang kwa sekolong (Thutano 9)

1. Dirisa *Kaedi ya Ditirwana: Kgweditharo 3* go rulaganya le go diragatsa Kgweditharo 3 Dibeke 7–10 tsa Lenaneo la Dipalo.
2. Kwala dintlha tsa se se dirileng sentle thata, se se sa dirang sentle le gore ba rarabolotse jang dikgwetlho dingwe ka nako ya tiragatso ya Kgweditharo 3 Dibeke 7–10.
3. Kwala ditshwaelo mo bukeng tse o di dirisang go ela tlhoko tswelelopele ya morutwana (buka ya ngwana ya kelotlhoko). Dirisa lenanekelotlhoko (lebokoso la leitlho) la '**Ela tlhoko gore barutwana ba kgona go**'. Ka nako ya ditirwana tse dingwe le tse dingwe tse di kaelwang ke morutabana go kaela dikelotlhoko le ditshwaelo tsa gago.
4. Tlaya ka buka ya morutwana ya kelotlhoko le dintlha tse o di kwadileng fa o sedisisa thuto ya letsatsi le lengwe le le lengwe mo thutanong e e latelang.
5. Tlaya ka khophi ya Kgweditharo 3: Rekoto ya Sekai sa Ditlhatlhobotsweledi (go tswa mo *Kaeding ya Ditirwana: Kgweditharo 3*) kwa thutanong e e latelang.



Tirwana 1

1. Mo setlhopheng sa gago, baakanya athikele ya lekwalodikgang mo go ruteng le go ithuteng dipalo mo Mophatong wa R. Dirisa Lenaneo la Dipalo le tiragatso ya yona mo phaposiborutelo ya gago jaaka motsho wa athikele ya gago. Akaretsa tse di latelang:
 - ◆ goreng dipalo di le botlhokwa mo Mophatong wa R
 - ◆ katlego le dikgwetlho tsa gago mo tiragatsong ya Lenaneo la Dipalo mo Dikgweditharong 1, 2 le 3
 - ◆ malepa a o a dirisitseng go rarabolola dikgwetlho.

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. Kwala athikele ya lekwalodikgang mo pampiring ya tšhatephetogi.
3. O tlaa tthagisa athikele ya gago go ditlhopha tse dingwe le go araba dipotso 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 1: Kelotlhoko le tthatlhobo

Ura e le 1

Kelotlhoko mo Mophatong wa R

Kelotlhoko ke karolwana ya botlhokwa mo tsamaong ya go ruta, go ithuta le go tthatlhoba. Mo Mophatong wa R, tsela e kgolo ya go tthatlhoba ke ya go ela tlhoko. Barutabana ba kokoanya tshedimosetso ka ga barutwana ka nako ya ditirwana tsa phaposiborutelo yotlhe, tsa ditlhopha tse dinnye le tsa tshameko e e lokologileng (mo teng le kwa ntle ga phaposiborutelo). Ka nako ya ditirwana tse di kaelwang ke morutabana, tlhaeletsano ya gago le barutwana ka bosii e tlamela ka tshedimosetso ya botlhokwa tebang le tswelelopele ya bona. O aga setshwantsho se se feletseng sa morutwana yo mongwe le yo mongwe ka go rekota tswelelopele ya barutwana mo go tthaloganyeng megopolo e e riling ya dipalo mo bukeng ya gago ya go kwala dintlha ka gale.

Kelotlhoko e e sa gobeleteng

Barutabana ba tlhoka go tthaloganya le go itse gore ba tobe eng gore kelotlhoko e nne e nang le mosola.

Mo tirwaneng e e latelang, o tlaa ikatisa dikgono tsa kelotlhoko. *Eno ke tirwana ya motho ka nosi. Go botlhokwa gore o seke wa bua le ope ka ga dikelotlhoko tsa gago.*



Tirwana 2

Lebelela setshwantsho sa barutwana ba babedi ba Mophato R ba ba tshamekang ka diboloko. Kwala se o se etseng tlhoko fa o lebelela setshwantsho.



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.

Dikelothoko tsa me:



Video 1

1. Lebelela video ya setlhophha sa barutwana ba tshameka motshameko wa Bingo. Kwala dikelothoko tsa gago ka ga barutwana.

2. Ke dikelothoko dife tsa gago tse e leng dintlha le tse e leng phopholetso? Lebelela lenane la gago mme o kwale 'Nt' kgotsa 'Ph' go bapa le polelo e nngwe le e nngwe.

Fa re kwala se re **akanyang** morutwana o ka se dirang kgotsa o ka se se direng, kgotsa se morutwana o se ikutlwang, re a fopholetsa. Tsela ya go itse se morutwana o se akanyang kgotsa o se ikutlwang, ke fa o ba kopa go go bolelela.

Kelothoko e e sa gobelegeng e akaretsa:

- ◆ fa o tlhalosa fela se o se bonang le se o se utlwang
- ◆ fa o rekota se morutwana o se dirang le se o se buang ka go kwala dintlha tsotlhe tse di kgonagalang
- ◆ go sa athole – efoga go neela dikakanyo le megopolo ya gago
- ◆ fa o ela morutwana yo mongwe le yo mongwe tlhoko ka tlhomamo, mo ditirwaneng tse di farologaneng le ka dinako tse di farologaneng mo letsatsing.



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.



Tirwana 3

1. Akanya ka ga dikelotlhoko tsa gago ka ga *mongwe* wa barutwana ba gago mo Kgweditharong ya 3. Ke kitso le dikgono dife tsa dipalo tse morutwana yono a nnang le tsona?

2. Lebelela (3) go fitlha ka (5) ya *Tirwana e o e busetsang kwa sekolong* go tswa mo Thutanong ya 9 (tsebe 9).

- ◆ Buisanang ka ga tiriso ya lenane la kelotlhoko la **'Netefatsa gore barutwana ba kgona go'** (lebokoso la leitlho) ka nako ya ditirwana tse di kaelwang ke morutabana.
- ◆ Bontsha ditokololo tsa setlhopha sa gago buka ya gago ya go ela barutwana tlhoko.
- ◆ Refosanelang go buisana ka ga tswelelopele ya morutwana. O etse dikgono dife tsa dipalo tlhoko? O itse seo jang? (Morutwana o dirile le go bua eng?)
- ◆ Tlhalosa gore o kwadile tshedimose tso eno jang ka go dirisa Rekoto ya Sekai sa Tlhatlhobotsweledi ya: Kgweditharo 3.
- ◆ A o kgonne go diragatsa tsela e e fapologantsweng go ruta le go ithuta mo phaposiborutelong ya gago? Fa go le jalo, jang?

Tlhatlhobo mo Mophatong wa R

Tlhatlhobo mo Mophatong wa R e dirisetswa go tsaya ditshwetso ka ga tsela e e siameng thata go tshegetsatsa kgolo ya morutwana yo mongwe le yo mongwe. Ka nako ya ditirwana tse di kaelwang ke morutabana, ditirwana tsa phaposiborutelo yotlhe mmogo le ditirwana tse dingwe mo lenaneong la letsatsi le letsatsi, o tlaa nna le ditšhono go ela barutwana tlhoko le go nna mo seding tebang le tswelelopele ya bona. Tshedimose tso eno e tshwanetse go kaela go ithulaganya ga gago go tsweletsa go ruta le go ithuta.

Dipapetla tsa tlhatlhobotsweledi mo PPKT le mo *Kaeding ya Ditirwana* mo Lenaneong la Dipalo di ikaegile ka diteng tse di rutilweng mo kgweditharong e nngwe le e nngwe mme e bile di ka dirisiwa go khutshwafatsa tswelelopele ya morutwana yo mongwe le yo mongwe mo kgweditharong.

Ela tlhoko gore dikgono le maitsholo di tshwanetse tsa elwa tlhoko mo dipakeng tse dintsinjana gore dipaterone tsa kgolo mo nakong e e rileng di kgone go rekotiwa.

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 2: Melawana e e kaelang go ruta dipalo mo Mophato R

Ura e le 1

Go ralala katiso ya Lenaneo la Dipalo, re lebeletse melawana e e kaelag go ruta dipalo mo Mophato R le gore tseno di tsenyeleditswe jang mo tiragatsong ya letsatsi le letsatsi ya phaposiborutelo. Mengwe ya melawana eno go bonolo go e lemoga le go e dirisa go na le e mengwe. Re tlhoka go nna re le malala a laotswe gore re dirisa leng melawana eno, jang le gona kae jaaka barutabana.



Tirwana 4

Mofatlhosi o tlaa tlhaolela setlhopha sa gago mongwe wa molawana o o kaelang go ruta dipalo mo Mophato R. O tlaa neelwa setshwantsho sa molawana ono.

1. Mo setlhopheng sa gago, buisanang ka dipotso tse di latelang:
 - ◆ O tlhaloganyang ka molawana ono 'mo tiragatsong'?
 - ◆ A Lenaneo la Dipalo le dira gore go kgonagale go tsenyeletsa molawana ono mo ruteng ga gago letsatsi le letsatsi?
 - ◆ Ka jaanong o diragaditse Lenaneo la Dipalo dikgweditharo di le tharo, tshedisiso ya gago tebang le molawana ono ke efe?
 - ◆ Go ruta ga gago go ne go tlaa amega jang fa molawana ono o ka bo o ne o se yo mo mokgweng wa gago wa tiragatso mo phaposiborutelong?
2. Mamaretsa setshwantsho mo letlhareng la pampiri ya tšhatephetogi. Kwala ditshwaelo tsa gago fa tlase ga setshwantsho gore o kgone go ka arogana tseno le setlhopha sotlhe.



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.

THE EIGHT PRINCIPLES OF GRADE R MATHS



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.



1. **Molawana wa bokaelo.**
Go rutega go diragala mo maemong a a amogelesegang e bile a le maleba.



2. **Molawana wa ditirwana.**
Barutwana ba tshwanetse go nna le seabe ka tllhamalalo mo go rutweng le go ithuteng.



8. **Molawana wa tiragatso.** Go rutega go lotagangwa ka tiragatso ya dikgono tse dišwa le kitso.



7. **Molawana wa kakaretso.** Go rutega go diragala mo tikologong e mongwe le mongwe a ikutlwang a amogelesegile, a akarediwa, a tshwerwe sentle, a tlotliwa mme e bile a na le seabe.

MELAWANA E LE ROBEDI
YA GRADE R MATHS



3. **Molawana wa motshameko.** Barutwana ba rutega thata mo ditirwaneng tsa go tshameka ka tokologo le tse di kaelwang ke morutabana.



6. **Molawana wa go kaelwa.** Go rutega go diragala fa barutabana ba kaela barutwana mo go ageng kitso e ntšhwa.



5. **Molawana wa tirisano.** Thuto e diragala fa go na le tlhaeletsano le thefosano ya dikakanyo.



4. **Molawana wa maemo.** Barutwana ba feta mo maemong a a farologaneng a go tllhaloganya le kgolo.

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 3: Go tthagisa dinomore 10 le 0

Ura e le 1

Go tthagisa nomore 10

Dipalo tse di lesome tse di diriswang mo thulaganyong ya bolengpalo ke 0, 1, 2, 3, 4, 5, 6, 7, 8 le 9. Dipalo tseno di dirisiwa go tthagisa metso (bonngwe) le go tthagisa dipalo tsa dinomore tse di sa khutleng, sekao:

- ◆ masome
- ◆ makgolo
- ◆ dikete, jalo le jalo.

Barutwana ba Thuto ya Motheo ba tlhoka go tthaloganya gore palo e le nngwe e ka dirisiwa go tthagisa bolengpalo jo bo farologaneng, go ikaigile fela ka boemo jwa palo mo nomoreng. Sekao, mo go enngwe le e nngwe ya dinomore tse di mo tlase ga '3' e na le boleng jo bo farologaneng:

- ◆ mo go 3, palo ya yona ke 'tharo'
- ◆ mo go 31, palo ya yona ke 'masometharo'
- ◆ mo go 349, palo ya yona ke 'makgolotharo'.

Bolengpalo ke mogopolo o o thata go ka tthaloganngwa ke barutwana. Babatlisisi ba fitlheetse gore bontsi jwa barutwana go fitlha mo dingwageng tse robedi ba akanya gore '1' mo go 15 e kaya 'nngwe'.

Mo Mophatong wa R, barutwana ba lekeletsa thulaganyosomeng, ba dira ka dinomore go simologa ka 11 go ya kwa pele. Ba tthagisa dinomore tseno ka ditlhopha tsa masome le bonngwe ba le bosii (metso). Fa ba dira ka dinomore 11–19, ba simolola go tthaloganya gore mo nomoreng e e tshwanang le 14, palo 1:

- ◆ ga e kaye 1
- ◆ e emetse bonngwe ba le 10
- ◆ ka jalo, gape ke lesome le le 1 (setlhopha se le 1 sa lesome).

Gape ba tthaloganya gore palo 4 mo go 14, e emetse 4.

A O NE O ITSE?

Mo Thutong ya Motheo, barutwana ba bua ka 'masome' jaaka 'ditlhopha tsa lesome' le 'bonngwe' ba le bosii. Ba tthagisa dinomore tsa palo-pedi le palo-tharo ka go dirisa mmatlolo wa go baya ka ditlhopha le mekwalokatoloso.

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?

Ga re tthagise bolengpalo mo Mophatong wa R. Mo mophatong ono go tobilwe go tthaloganya palo ya dinomere 0–10 le go aga mogopolopalo o o tiileng mo mofuteng ono. Fa barutwana ba na le mogopolo o o siameng wa dinomere go fitlha ka 10, kitso eno e ka fetisetswa kwa Mophatong wa 1 le kwa mephatong e mengwe.



Tirwana 5

SENO SE BOTLHOKWA!

Tirwana eno ke ya go godisa kitso ya gago le go go matlafatsa. Ga e maleba le barutwana ba Mophato R. O SEKA wa tthagisa tirwana eno mo Mophatong wa R.

Dirisa dibadi, dikota le dikaratapalo tse di neetsweng go emela dinomere tse di latelang:

14 31 22 43

1. Tthagisa nomere e nngwe le e nngwe o dirisa dibadi: dira ditlhopha tsa lesome le bonngwe ba le bosì.
2. Tthagisa nomere e nngwe le e nngwe o dirisa dikota le mogala: dira dingatana tsa bonngwe ba le lesome bonngwe ba le bosì.
3. Tshwaya dingatana ka dikaratapalo tse di nepagetseng.
4. Buang ka ga gore go na le ditlhopha di le kae tsa lesome le gore nomere e nngwe le e nngwe e na le bonngwe ba le kae.
5. Buisanang ka ga bopalo jwa palo e nngwe le e nngwe.
6. Ke sediriswa sefe se o akanyang gore se ne se le maleba thata go tthagisa megopolo ya 'ditlhopha tsa lesome' ('masome') le 'bonngwe'? Tlhalosa karabo ya gago.

7. O lemogang ka ga bopalo jwa dipalo mo nomoreng e o e tthagisitseng ka dikaratapalo?

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.

Barutwana ba Mophato R **ga ba tlhoke go tlhaloganya bolengpalo**. Ba tlhoka go:

- ◆ tlhaloganya bopalo jwa ('bobokae') jwa dinomere 0–10
- ◆ tlhaloganya dikopanyo tse di farologaneng tsa dinomere go fitlhelela ka 10
- ◆ tlhaloganya gore le fa 10 e dirilwe ka dipalo 1 le 0, GA SE 1 + 0 le gore e na le bopalo jwa yona (('bobokae')
- ◆ tlhaloganya le go kgona go emela dipalo tse di farologaneng tsa 1, 0 le 10.



Tirwana 6

1. Mo setlhopheng sa gago, buisanang ka dikakanyo tsa go ruta nomere 10 mo diphaposiborutelong tsa lona tsa Mophato R. Akaretsang tirisano ya ditlhagiso tse di farologaneng.

2. Tlhagisetsa setlhopho sotlhe dikakanyo tsa gago.

Go tlhagisa nomere 0

Mo Mophatong wa R, barutwana ba tlhoka go tlhaloganya gore lefela ke nomere le gore letshwaopalo la yona ke '0'.

Bana ba banyane ba bona mogopolo wa 'lolea' o le thata go tlhaloganyega. Fa barutwana ba lebanwe ke sejana, setshodi, lebokoso kgotsa kgetsana e e lolea, go le gantsi ba dirisa mafoko a a tshwanang le 'ga go sa tlhole go na le', 'go ile gotlhe', 'ga go a sala sepe', 'sepe' kgotsa 'lolea' go tlhalosa maemo. Barutabana ba tshwanetse go amogela ditlhalosetso tseno jaaka tse di nepagetseng, mme gape ba tshwanetse ba tlhagisa lefoko 'lefela'. Lefoko 'lefela' le tshwanetse go dirisiwa ka tlhomamo, le fa go balelwa kwa tlase kgotsa kwa morago, sk., fa o balela kwa morago go tswa kwa go nne: 'nne, tharo, pedi, nngwe, lefela'. Letshwao '0' le tshwanetse go bewa mo mogaleng wa dinomere. Dikaratapalo tsa 0 di tshwanetse go dirisiwa go tlhagisa gore selo (jaaka sejana, setshodi, sekhurumelo, lebokoso) ga se na sepe.



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 2

1. Lebelela video ya morutabana a tthagisa le go tsolotanya mogopolo wa lefela.
 - ◆ O bona go diragalang?
 - ◆ Ke megopolo e le kae ya lefelo e e tthagisitsweng?
 - ◆ Barutwana ba dirileng kgotsa ba rileng?
 - ◆ Seabe sa morutabana e ne e le sefe?
 - ◆ Tshiamelo ya go dirisa ditirwana tsa mefutafuta go ruta mogopolo e nnile efe?

2. Kwala dikelothoko tsa gago.

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 4: Go ithulaganyetsa go ruta

Diura di le 1½

Karolo eno ya thutano e baakanyetsa batsayakarolo go diragatsa Kgweditharo 4 Dibeke 1–3. Mo pakeng eno ya ngwaga, morutabana o tshwanetse a bo a lemogile pharologano e e itlhaotseng magareng ga maemo a tswelolepele ya barutwana. Kgweditharo 4 e agelela mo ditennyeng tsa Kgweditharo 1, 2 le 3. Bangwe ba barutwana ba tlaa bo ba le malala a laotswe, fa ba bangwe ba tlaa tlhoka tshegetso le tsolotanyo e e rileng go tswelolela pele. Go botlhokwa go ithulaganyetsa le go ipaakanyetsa pharologano eno ya bokgoni jwa barutwana go netefatsa gore diteng tsothle le dikgono tsa Dipalo tsa Mophato R di lebeleletswe, le gore barutwana ba ipaakanyeditse Mophato 1 sentle.



Tirwana 7

1. Mo setlhopheng sa gago, tlatsa dithemopleiti tsa go ithulaganyetsa Kgweditharo 4 Dibeke 1–3 (Mametlelelo A).
2. Buisanang ka ga dipotso tse di latelang:
 - ◆ Beke e rulagantswe jang?
 - ◆ Diteng di ageletswe jang mo dithutong tse di fetileng?
 - ◆ A ditirwana tsa phaposiborutelo yotlhe di kgonne go tlhola ditšhono tsa go buisana le go tlhotlhomisa kitso e ntšhwa ka katlego?
 - ◆ Tirwana e e kaelwang ke morutabana e neelana jang ka ditšhono tsa gore morutabana a tlhatlhobe le go tshegetsa barutwana?
 - ◆ A ditirwana tse di ikemetseng tsa ditlhopha tse dinnye di letla ikatiso e e lekaneng ya kitso e ntšhwa le dikgono?
 - ◆ O ne o ka baakanya jang ditirwana tsa tlaleletso go tshegetsa barutwana ba ba iseng ba tshwarelele kgono e e rileng sentle?
 - ◆ Tshikhinya ditsela dingwe go atolosetsa barutwana ba ba setseng ba le kwa pele ditšhono tsa go ithuta.
 - ◆ O ne o ka dira jang le modiramongo go baakanyetsa beke e nngwe le e 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.



Tirwana 8

Tshedisiso ya thutano: Tsaya metsotso e le mmalwa go sedisisa ka ga letsatsi. Phetlha Bukatiro ya Batsayakarolo. ya gago go ikgopotsa se se dirilweng. Kwala dikakanyo tsa gago.

- ◆ Ke ithutile _____
- ◆ Ga ke a rata _____
- ◆ Ke itumeletse _____
- ◆ Jaanong ke tlhologanya _____
- ◆ Ke sa ntse ke sa tlhologanye sentle _____
- ◆ Ke tlhoka tshedimosetso e ntsinyana ka _____

Arogana tshedisiso ya gago le sethlopha sotlhe.



Tirwana e o e busetsang kwa sekolong

1. Dirisa *Kaedi ya Ditirwana: Kgweditharo 4* go rulaganya le go diragatsa Kgweditharo 4 Dibeke 1-3 tsa Lenaneo la Dipalo.
2. Kwala ditshwaelo mo bukeng tse o di dirisang go ela tlhoko tswelolepele ya morutwana (buka ya ngwana ya kelotlhoko). Dirisa lenanekelotlhoko (lebokoso la leitlho) la '**Ela tlhoko gore barutwana ba kgona go**'. Ka nako ya ditirwana tse dingwe le tse dingwe tse di kaelwang ke morutabana go kaela dikelotlhoko le ditshwaelo tsa gago.
3. Kwala dintlha tsa se se dirileng sentle thata, se se sa dirang sentle le gore ba rarabolotse jang dikgwetlho dingwe ka nako ya tiragatso ya Kgweditharo 4 Dibeke 1-3.
4. Tlala ka buka ya morutwana ya kelotlhoko le dintlha tse o di kwadileng fa o sedisisa thuto ya letsatsi le lengwe le le lengwe mo thutanong e e latelang.

Tlhatlhubo

Tlatsa Foromo ya Tlhatlhubo.

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				

MAMETLELELO A: KGWEDITHARO 4 THEMPOLEITI YA THUALAGANYO YA BEKE LE BEKE

Kgweditharo 4: Thulaganyo ya ditirwana: Beke ____

KAROLOTENG:				
SETLHOGO:				
TLHAGISA KITSO E NTŠHWA:				
IKATISE:				
Ditirwana tsa phaposiborutelo yotlhe		Tirwana e e kaelwang ke morutabana	Ditirwana tsa seteišenetiro (ditirwana tse di ikemetseng tsa sethophah se sennye)	
Letsatsi 1			Tirwana 1	
Letsatsi 2			Tirwana 2	
Letsatsi 3			Tirwana 3	
Letsatsi 4			Tirwana 4	
Letsatsi 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				

Kgweditharo 4: Thulaganyo ya ditirwana: Beke ____

KAROLOTENG:				
SETLHOGO:				
TLHAGISA KITSO E NTŠHWA:				
IKATISE:				
Ditirwana tsa phaposiborutelo yotlhe		Tirwana e e kaelwang ke morutabana	Ditirwana tsa seteišenetiro (ditirwana tse di ikemetseng tsa setlhopha se sennye)	
Letsatsi 1			Tirwana 1	
Letsatsi 2			Tirwana 2	
Letsatsi 3			Tirwana 3	
Letsatsi 4			Tirwana 4	
Letsatsi 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				

Kgweditharo 4: Thulaganyo ya ditirwana: Beke ____

KAROLOTENG:				
SETLHOGO:				
TLHAGISA KITSO E NTŠHWA:				
IKATISE:				
Ditirwana tsa phaposiborutelo yotlhe		Tirwana e e kaelwang ke morutabana	Ditirwana tsa seteišenetiro (ditirwana tse di ikemetseng tsa setlhopha se sennye)	
Letsatsi 1			Tirwana 1	
Letsatsi 2			Tirwana 2	
Letsatsi 3			Tirwana 3	
Letsatsi 4			Tirwana 4	
Letsatsi 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 Tlhatlhubo ya Thutano 10

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?
