GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

GGT 2030
GROWING GAUTENG TOGETHER

Xitsonga/English

Nongonoko wa Antswiso wa Matematiki wa Giredi ya V
Grade R Mathematics Improvement Programme

Ndzetelavuti wa 10 ● Workshop 10
Buku ya Ntirho ya Vatekaxiave ● 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.

Programme conceptualisation and management: Cally Kuhne and Tholisa Matheza
Translation and publishing project management: Arabella Koopman
Translation: Maurice Hlangwani
Editing (Xitsonga): Gezani Chabalala
Illustrations: Jiggs Snaddon-Wood

Phurojeke ya Antswiso wa Matematiki na Tindzimi ya Giredi ya V i matshalatshala ya **Ndzawulo ya Dyondzo ya Gauteng (Gauteng Department of Education)** na mutirhisaninkulu wa yona, **Gauteng Education Development Trust**.

Nhluvukiso na vuhumelerisi bya swipfuno swa vuleteri na swa le kamareni ro dyondzela swa Phurojeke ya Antswiso wa Matematiki na Tindzimi ya Giredi ya V swi endliwile swi koteka hi timali ta tiphurojeke to hananiwa kusuka eka **United States Agency for International Development** na **Zenex Foundation**.

Phurojeke ya Antswiso wa Matematiki na Tindzimi ya Giredi ya V yi fambisiwa hi **JET Education Services** na **Schools Development Unit** ya **UCT** na **Wordworks** tanihi vatirhisani va xithekiniki.

Schools Development Unit (SDU) leyi nga eka **University of Cape Town** (UCT) i mutirhisani wa xithekiniki wa matematiki eka Phurojeke ya Antswiso wa Matematiki na Tindzimi ya Giredi ya V. SDU i yuniti leyi kumekaka eka School of Education ya le UCT leyi yi kongomisaka eka nhluvukiso wa xiphurofexinali wa vadyondzisi eka Matematiki, Sayense, Litheresi/Ririmi na Swikili swa Vutomi kusuka eka Giredi ya V kufika eka Giredi ya 12. SDU yi nyika mithwaso ya vudyondzisi na tikhoso to koma ta UCT leti pfumeleriweke, ntirho lowu kumekaka exikolweni, nhluvukiso wa timatheriyali na ndzavisiso ku seketela madyondziselo na madyondzelo eka mivangu ya Afrika-Dzonga hinkwayo.

SWIKHENSO

Ku khensa ko hlawuleka eka:

- Vakulukumba va Ndzawulotsongo ya Kharikhulamu, Dyondzo ya Vadyondzisi na Dyondzo yo Hlawuleka ta Ndzawulo ya Dyondzo ya Gauteng eka vuhoxaxandla bya vona ku fambelanisa matheriyali wa hina.
- Vakulukumba na vadyondzisi va Western Cape Education Department (WCED) eka vuhoxaxandla bya vona eka nsimeko lowu humeleleke wa Grade R Mathematics Programme (R-Maths) eKapa-Vupeladyambu exikarhi ka 2016 na 2019.
- Xipano xo tsala xa *R-Maths*: Vatirhi na vatsundzuxi va SDU.

Ku vumbiwa ka nongoti na malawulelo ya nongonoko: Cally Kuhne na Tholisa Matheza
Vuhundzuluxeri na malawulelo ya phurojeke ya vukandziyisi: Arabella Koopman
Vuhundzuluxeri bya Xitsonga: Maurice Hlangwani
Vuhleri na vuhlayisisi bya Xitsonga: Gezani Chabalala
Swifaniso: Jiggs Snaddon-Wood

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Overview

Purpose

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

The purpose of this workshop is to continue assisting teachers to implement the Maths Programme in their classrooms. Participants will have the opportunity to reflect on their 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)

Nkatsakanyo

Xikongomelo

Lowu i wa vukhume wa khumembirhi ya miletelavutivi ya Nongonoko wa Antswiso wa Matematiki wa Giredi ya V (Nongonoko wa Matematiki), leyi yi vumbaka xiphemu xa Phurojeke ya Antswiso wa Matematiki na Tindzimi ya Giredi ya V ya Ndzawulo ya Dyondzo ya Gauteng (Gauteng Department of Education) (GDE).

Xikongomelo xa ndzetelavutivi lowu i ku pfuneta vadyondzisi ku tirhisa Nongonoko wa Matematiki etikamareni ta vona to dyondzela. Vatekaxiave va ta kuma xivandlanene xa ku ehleketisisa hi mayelana na ku tirhisiwa ka Nongonoko wa Matematiki kutani va kanela nkunguhato, madyondziselo na madyondzelo ya vona. Va ta tlhela va anakanya hi ku ya emahlweni ka mudyondzi, na swilaveko swa nhluvukiso na ku dyondza swa mudyondzi hi un'weun'we. Vatekaxiave va ta ehleketisisa hi mayelana na maqhinga ya makambelelo lama faneleke ya ku rhekoda ku ya emahlweni ka mudyondzi. Ndzetelavutivi lowu wu valanga vundzeni bya Mavhiki ya 1–3 ya Kotara ya 4 na ku tirhisiwa ka wona ekamareni ro dyondzela.

Mikongomiso eka Swiyenge swa Vundzeni wa Matematiki wa Giredi ya V swi tekiwa kusuka eka *Xitatimente xa Pholisi ya Kharikhulamu na Makambelelo (XIPHOKHAMA): Matematiki wa Giredi ya V (Mpfapfarhuto wo Hetelela),* 2011, Ndzawulo ya Dyondzo ya Masungulo, Afrika-Dzonga.

Mivuyelo ya dyondzo

- Ku ehleketisisa hi matirhelo ya Mavhiki ya 7–10 ya Kotara ya 3
- Ku ehleketisisa hi mayelana na milawu yo letela ya ku dyondzisa matematiki eka Giredi ya V
- Ku tiyisa ntwisiso wa nxiyaxiyo wa vadyondzi lowu yaka emahlweni eka Giredi ya V
- Ku ehleketisisa hi mayelana na mixaka ya nkamafundza ya makambelelo eka Giredi ya V
- Ku ehleketisisa hi mayelana na mitlhontlho na ku kuma switshunxo swa ku tirhisa Nongonoko wa Matematiki
- Ku kunguhata vundzeni bya Nongonoko wa Matematiki lebyi faneleke ku dyondzisiwa eka Mavhiki ya 1–3 ya Kotara ya 4

Vundzeni bya ndzetelavutivi

- Ku pfula na ku ehleketisisa (1 ya awara)
- Sexini ya 1: Nxiyaxiyo na makambelelo (1 ya awara)

TIYA

- Sexini ya 2: Milawu yo letela ya ku dyondzisa matematiki ekaGiredi ya V (1 ya awara)
- Sexini ya 3: Ku tivisa tinomboro ta 10 na 0 (1 ya awara)

LANCI

- Sexini ya 4: Nkunguhato wa ku dyondzisa (1½ wa tiawara)
- Migingiriko yo pfala (30 wa timinete)

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.

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Ku pfula na ku ehleketisisa **1 ya awara**

Vuehleketisisi byi khumba ku ehleketa na ku vulavula hi mayelana na mitokoto ya wena leswi u swi dyondzeke.

Vuehleketisisi hi mayelana na matirhiselo

Hi lexi *Xintirhwana xo tlhelela na xona exikolweni* kusuka eka Ndzetelavutivi wa 9.

Xintirhwana xo tlhelela na xona exikolweni (Ndzetelavutivi 9)

1. Tirhisa *Xiletelo xa Migingiriko*: Kotara ya 3 ku kunguhata na ku tirhisa Mavhiki ya 7–10 ya Kotara ya 3 ya Nongonoko wa Matematiki.
2. Endla tinoti ta leswi swi tirheke kahle swinene, leswi swi nga tirhangiki kahle swinene na hilaha u ololoxeke hakona mitlhontlho yihi kumbe yihi eka matirhiselo ya wena ya Mavhiki ya 7–10 ya Kotara ya 3.
3. Tsala swibumabumelo ebukwini leyi u yi tirhisaka ku landzelerisa ku ya emahlweni ka mudyondzi un'wana na un'wana (buku ya nxiyaxiyo wa vadyondzi). Tirhisa nxaxamelo wo xiyaxiya wa '**Kamba leswaku vadyondzi va kota ku**' (bokisi ra mahlo) hi nkarhi wa wun'wana na wun'wana wa migingiriko leyi leteriwaka hi mudyondzisi ku letela mixiyaxiyo na swibumabumelo swa wena.
4. Tana na buku ya wena ya nxiyaxiyo wa vadyondzi na tinoti leti u ti endleke loko u ri karhi u ehleketisisa hi mayelana na madyondziselo ya siku rin'wana na rin'wana eka ndzetelavutivi lowu landzelaka.
5. Tana na khopi ya Kotara ya 3: Rhekodo ya Xikombiso xa Makambelelo lama Yaka Emahlweni (kusuka eka *Xiletelo xa Migingiriko: Kotara ya 3*) eka ndzetelavutivi lowu landzelaka.

Nghingiriko wa 1

1. Entlaweni wa n'wina, lulamisani atikili ya phephahungu hi mayelana na ku dyondzisa na ku dyondza matematiki eka Giredi ya V. Tirhisani Nongonoko wa Matematiki na matirhiselo ya n'wina ya le kamareni ro dyondzela ya wona tanihi masungulo ya atikili ya n'wina. Katsani leswi landzelaka eka xikombelo lexi:
   - hikwalahokayini matematiki eka Giredi ya V wu ri wa nkoka
   - ku humelela na mitlhontlho ya n'wina hi ku tirhisa Nongonoko wa Matematiki lowu nga eka Kotara ya 1, 2 na 3.
   - maqhinga lama mi ya tirhiseke ku ololoxa mitlhontlho.

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_____

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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. Tsalani atikili ya phephahungu eka phepha ra chati yo pfula.
3. Mi ta andlala atikili ya n'wina eka mitlawa leyin'wana kutani mi hlamula swivutiso swa vona.

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.

Sexini ya 1: Nxiyaxiyo na makambelelo **1 ya awara**

Nxiyaxiyo eka Giredi ya V

Nxiyaxiyo i xiphemu xa nkoka xa phurosese ya madyondziselo, madyondzelo na makambelelo. Eka Giredi ya V, maendlelokulu ya makambelelo i nxiyaxiyo. Vadyondzisi va hlengeleta vuxokoxoko hi mayelana na vadyondzi hi nkarhi wa migingiriko ya tlilasi hinkwayo, ya mitlawa leyitsongo na ku tlanga va tshunxekile (endzeni na le handle ka kamara ro dyondzela). Hi nkarhi wa migingiriko leyi leteriwaka hi mudyondzisi, n'wangulano wa wena na vadyondzi hi un'weun'we wu nyika vuxokoxoko bya nkoka hi mayelana na ku ya emahlweni. Hi ku rhekoda ku ya emahlweni ka vadyondzi eka ku twisisa minongoti ya matematiki yo karhi ebukwini ya wena ya tinotsi hi endlelo leri yaka emahlweni, u aka xifaniso xo hetiseka xa mudyondzi un'wana na un'wana.

Nxiyaxiyo lowu nga na xikongomelo

Leswaku nxiyaxiyo wu tirha kahle, vadyondzisi va fanele ku twisisa na ku tiva leswi va faneleke ku kongomisa eka swona.

Eka nghingiriko lowu landzelaka, u ta titoloveta swikili swa wena swa nxiyaxiyo. *Lowu i nghingiriko wa munhu hi un'weun'we. I swa nkoka swinene leswaku u nga vulavuli na munhu wihi kumbe wihi hi mayelana na mixiyaxiyo ya wena.*

Nghingiriko wa 2

Languta xinepe xa vana va Giredi ya V vambirhi va ri karhi va tlanga hi tibuloko. Tsala leswi u swi xiyaxiyaka loko u languta xinepe lexi.

My observations:

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_____
_____
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_____

 **Video 1**

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

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_____

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.

Mixiyaxiyo ya mina:

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Vhidiyo ya 1

1. Hlalelani vhidiyo ya ntlawa wa vadyondzi va ri ku tlangeni ka ntlangu, Bingo. Tsala mixiyaxiyo ya wena ya vadyondzi.

_____
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2. Xana hi yihi ya mixiyaxiyo ya wena yi nga ntiyiso naswona hi yihi yi nga vuehleketeleri? Hlaya nxaxamelo wa wena kutani u tsala 'N' kumbe 'V' ekusuhi na xitatimente xin'wana na xin'wana.

Loko hi tsala leswi hi **ehleketaka** leswaku mudyondzi a nga kota ku swi endla kumbe a nge koti ku swi endla, kumbe leswi mudyondzi a swi twaka, hi endla vuehleketeleri. Ndlela yi ri yoxe ya ku tiva leswi mudyondzi a swi ehleketaka kumbe a swi twaka, i ku n'wi vutisa leswaku a ku byela.

Nxiyaxiyo lowu nga na xikongomelo wu khumba ku:

- hlamusela ntsena leswi u swi vonaka na ku swi twa
- rhekoda leswi mudyondzi a nga eku swi endleni na ku swi vula hi vuenti byo tala hilaha swi kotekaka hakona
- nga ri ku ahlula – papalata ku nyika mianakanyo na mavonelo ya wena
- xiyaxiya mudyondzi un'wana na un'wana nkarhi na nkarhi, eka migingiriko yo hambanahambana na hi mikarhi yo hambanahambana ya siku.

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?

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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.

Nghingiriko wa 3

1. Ehleketa hi mayelana na mixiyaxiyo ya wena ya un'we wa vadyondzi va wena eka Kotara ya 3. Xana i vutivi byihi na swikili swihi swa matematiki mudyondzi loyi a nga eku swi hluvukiseni?

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_____
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_____

2. Kongomisa eka (3) kufika eka (5) ya *Xintirhwana xo tlhelela na xona exikolweni* kusuka eka Ndzetelavutivi wa 9 (pheji ya 9).
   - Kanelani ntirhiso wa wena wa nxaxamelo wo xiyaxiya wa '**Kamba leswaku vadyondzi va kota ku**' (bokisi ra mahlo) hi nkarhi wa migingiriko leyi leteriwaka hi mudyondzisi.
   - Komba swirho swa ntlawa wa wena buku ya wena ya nxiyaxiyo wa vadyondzi.
   - Cincanani ku kanela ku kanela ku ya emahlweni ka mudyondzi. Xana i swikili swihi swa matematiki u swi xiyaxiyeke? Xana u swi tiva njhani? (Xana hi swihi leswi mudyondzi loyi a nga swi endla na ku swi vula?)
   - Hlamusela hi laha u rhekodeke hakona vuxokoxoko lebyi hi ku tirhisa Kotara ya 3: Rhekodo ya Xikombisi ya Makambelelo lama Yaka Emahlweni.
   - Xana u kotile ku tirhisa endlelo leri **hambanisiweke** eka madyondziselo na madyondzelo etlilasini ya wena. Loko swi ri tano, njhani?

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_____

Makambelelo eka Giredi ya V

Makambelelo eka Giredi ya V ya tirhisiwa ku teka swiboho hi mayelana na ndlela ya kahle swinene ku seketela nhluvukiso wa mudyondzi un'wana na un'wana. Hi nkarhi wa migingiriko leyi leteriwaka hi mudyondzisi, migingiriko ya tlilasi hinkwayo xikan'we na migingiriko yin'wana leyi nga eka nongonoko wa siku na siku, u ta va na swivandlanene swa ku xiyaxiya vadyondzi na ku kuma ntwisiso eka ku ya emahlweni ka vona. Vuxokoxoko lebyi byi fanele ku letele nkunguhato wa wena wa madyondziselo na madyondzelo yo yisa emahlweni.

Matafula ya makambelelo lama yaka emahlweni lama nga eka XIPHOKHAMA na le ka *Swiletelo swa Migingiriko* swa Nongonoko wa Matematiki ya simekiwile ehenhla ka vundzeni lebyi byi dyondzisiweke eka kotara yin'wana na yin'wana naswona ya nga tirhisiwa ku komisa ku ya emahlweni ka mudyondzi endzeni ka kotara.

Lemuka leswaku swikili na matikhomelo swi fanele ku xiyaxiyiwa eka mikarhi yo talanyana ku endlela leswaku tipatironi ta nhluvukiso eka nkarhi wo lehanyana ti rhekodiwa.

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.

Sexini ya 2: Milawu yo letela ya ku dyondzisa matematiki eka Giredi ya V **1 ya awara**

Eka vuleteri bya Nongonoko wa Matematiki hinkwabyo, hi kongomisile eka milawu yo letela ya ku dyondzisa matematiki eka Giredi ya V na hilaha leyi yi hlanganisiwaka hakona eka maendlelo ya le kamareni ro dyondzela ya siku na siku. Yin'wana ya milawu leyi ya olova swinene ku yi kuma na ku yi tirhisa kutlula yin'wana. Tanihi vadyondzisi hi fanele ro tshamela ku lemuka leswaku hi yi tirhisa njhani, kwihi na hi nkarhi muni milawu leyi etikamareni ta hina to dyondzela.

 **Nghingiriko wa 4**

Muhumelerisi u ta nyika wun'we wa milawu yo letela ya ku dyondzisa matematiki eka Giredi ya V eka ntlawa wa n'wina. Mi ta kuma xifaniso xa nawu lowu.

1. Entlaweni wa n'wina, kanelani swivutiso leswi landzelaka:
   - Xana hi kwihi ku twisisa ka wena ka nawu lowu ‘loko wu ri eku tirheni’?
   - Xana Nongonoko wa Matematiki wu endla swi koteka ku hlanganisa nawu lowu eka madyondziselo ya wena ya siku na siku?
   - Sweswi se u tirhiseke Nongonoko wa Matematiki ku ringana tikotara tinharhu, xana hi byihi vuehleketisisi bya wena hi mayelana na nawu lowu?
   - Xana madyondziselo ya wena ya ta khumbeka njhani loko nawu lowu a wo va wu nga ri kona eka endlelo ra wena ra le kamareni yo dyondzela?

2. Namarhetani xifaniso lexi ehenhla ka xipandzu xa phepha ra chati yo pfula. Tsalani swibumabumelo swa n'wina ehansi ka xifaniso lexi ku endlela leswaku mi kota ku avelana leswi na ntlawa lowukulu.

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

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

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

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. **Nawu wa mbangu.** Ku dyondza swi humelela eka swiyimo swo tivikana na ku va leswi faneleke.

8. **Nawu wo titoloveta.** Ku dyondza swi tiyisisiwa hi ku titoloveta swikili na vutivi byintshwa.

2. **Nawu wa nghingiriko.** Vadyondzi va fanele ku nghenelela hi ku kongoma eka endlelo ro dyondza-dyondzisa.

7. **Nawu wa nkatsahinkwavo.** Ku dyondza swi humelela eka mbangu laha munhu un'wana na un'wana a amukeriwaka, a katsiwaka, a khomiwa hindlela leyinene, a xiximiwaka naswona a kota ku teka xiave.

NHUNGU WA MILAWU YA
GRADE R MATHS

3. **Nawu wa mitlangu.** Vana va dyondza kahle migingiriko yo tlanga va ri voxe na le ka migingiriko yo tlanga leyi leteriwaka.

6. **Nawu wa ndzetelo.** Ku dyondza swi humelela loko vadyondzisi va letela vadyondzi eka ku hluvukisa vutivi byintshwa.

5. **Nawu wa n'wangulano.** Ku dyondza swi humelela loko ku ri na mbulavurisano na avelano wa mianakanyo.

4. **Nawu wa levhele.** Vadyondzi va hundza hi le ka tilevhele to hambanahambana ta ntwisiso na nhluvuko.

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.

Sexini ya 3: Ku tivisa tinomboro ta 10 na 0

1 ya awara

Ku tivisa nomboro ya 10

Tinyumerali ta khume leti nga tirhisiwa eka sisiteme ya hina ya tinomboro ya nkoka wa ndhawu i 0, 1, 2, 3, 4, 5, 6, 7, 8 na 9. Tinyumerali leti ti tirhisiwa ku yimela tiyuniti (van'we) na ku yimela nomboro leyi nga riki na makumu ya mikoka, tanihi xikombiso:

- vakhume
- madzana
- magidi, na swo kota sweswo.

Vadyondzi eka Xiyimo xa Masungulo va fanele ku twisisa leswaku nyumerali yin'we yi nga tirhisiwa ku yimela mikoka yo hambanahambana, swi ri karhi swi leteriwa hi xiyimo xa nyumerali leyi eka nomboro. Tanihi xikombiso, eka yin'wana na yin'wana ya tinomboro leti nga laha hansi '3' yi na nkoka wo hambanahambana:

- eka 3, nkoka wa yona i 'nharhu'
- eka 31, nkoka wa yona i 'makumenharhu'
- eka 349, nkoka wa yona i 'madzananharhu'.

Nkoka wa ndhawu i nongoti wo tika eka vadyondzisi ku wu twisisa. Valavisisi va kumile leswaku vadyondzi vo tala kufika eka malembe ya nhungu hi vukhale va ehleketa leswaku '1' eka 15 yi vula 'n'we'.

Eka Giredi ya 1 vadyondzi va valanga sisiteme ya nomboro ya khume ya le tshakwini, va ri karhi va tirha hi tinomboro kusuka eka 11 kuya emahlweni. Va endla vuyimeri bya tinomboro leti hi mitlawa ya vakhume na van'we hi yin'weyin'we (tiyuniti). Loko va tirha hi tinomboro ta 11–19, va sungula ku twisisa leswaku eka nomboro yo fana na 14, nyumerali ya 1:

- a yi vuli 1
- yi yimela 10 ra van'we
- hikokwalaho, ku tlhela ku va khume ri1 (ntlawa wu1 wa khume).

Va tlhela va twisisa leswaku nyumerali ya 4 eka 14, yi yimela 4.

XANA A WU SWI TIVA?

Eka Xiyimo xa Masungulo, vadyondzi va vulavula hi mayelana na 'vakhume' na 'tiyuniti' tanihi 'mitlawa ya khume' na 'van'we' hi yin'weyin'we. Swi yimela tinomboro ta tidijiti timbirhi na tinomboro ta tidijiti tinharhu hi ku tirhisi maendlelo yo ntlawahata na ku ndlandlamukisa makhadi ya tinomboro.

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 you answer.

_____
_____
_____
_____

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

_____
_____
_____
_____

A hi tivisi nkoka wa ndhawu eka Giredi ya V. Nkongomo eka giredi leyi wu le ka ku twisisa nkoka wa tinomboro ta 0–10 na le ka ku aka nongoti wa tinomboro wo tiya endzeni ka vunavi. Loko vadyondzi va ri na nongoti wa kahle wa tinomboro kufika eka 10, vutivi lebyi byi nga ndlandlamuxiwa eka Giredi ya 1 na le ka tigiredi tin'wana.

 **Nghingiriko wa 5**

SWA NKOKA!
Nghingiriko lowu i wa nhluvukiso wa vutivi na mfuwiso wa wena n'wini. A wu fanelangi eka vadyondzi va Giredi ya V. U NGA tivisi nghingiriko lowu eka Giredi ya V.

Tirhisa swihlayeri, swimhandzana na makhadi ya tinomboro lama nyikiweke ku endla vuyimeri bya tinomboro leti landzelaka:

14 31 22 43

1. Endla vuyimeri bya nomboro yin'wana na yin'wana hi ku tirhisa swihlayeri: endla mitlawa ya khume na van'we hi yin'weyin'we.
2. Endla vuyimeri bya nomboro yin'wana na yin'wana hi ku tirhisa swimhandzana na ngoti: endla magaxa ya khume na van'we hi yin'weyin'we
3. Lebula magaxa lama hi makhadi ya tinomboro lama nga lulama.
4. Vulavulani hi mayelna na leswaku i mitlawa yingani ya khume na mitlawa yingani ya van'we nomboro yin'wana na yin'wana yi nga na yona.
5. Kanelani nkoka wa nyumerali yin'wana na yin'wana.

6. Xana i xitirhisiwa xihi u ehleketaka leswaku a xi fanerile swinene eka ku endla vuyimeri bya minongoti ya ‘mitlawa ya khume’ (‘vakhume’) na ‘van'we’? Hlamusela nhlamulo ya wena.

_____
_____
_____
_____

7. Xana hi swihi leswi u swi vonaka hi mayelana na nkoka wa tinyumerali leti nga eka tinomboro leti u endleke vuyimeri bya tona hi makhadi ya tinomboro?

_____
_____
_____
_____

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.

Vadyondzi va Giredi ya V a **va lavi ku twisisa nkoka wa ndhawu**. Va swi lava ku:

- twisisa nkoka (‘i swingani’) swa tinomboro ta 0–10
- twisisa mikatsano yo hambanahambana ya tinomboro kufika eka 10
- twisisa leswaku hambiloko 10 yi vumbiwa hi tinyumerali 1 na 0, A HI 1 + 0 naswona yi na nkoka wa yona n'wini (‘i swingani’)
- twisisa na ku kota ku endla vuyimeri bya mikoka yo hambanahambana ya 1, 0 na 10.

Nghingiriko wa 6

1. Entlaweni wa n'wina, kanelani mianakanyo ya ku dyondzisa nomboro ya 10 ekamareni ra wena ro dyondzela ra Giredi ya V. Katsa ntirhiso wa vuyimeri byo hambanahambana.

_____
_____
_____
_____
_____
_____
_____
_____

2. Andlalani miehleketo ya n'wina eka ntlawa hinkwawo.

Ku tivisa nomboro ya 0

Eka Giredi ya V, vadyondzi va fanele ku twisisa leswaku ziro i nomboro naswona mfungho wa nomboro wa yona i ‘0’.

Vana lavatsongo va kuma nongoti wa ‘vuhava’ wu tika ku wu twisisa. Loko vadyondzi va langutanile na puleti, khontheni, bokisi kumbe bege leyi nga hava nchumu kotala va tirhisa marito yo tanihi ‘a ka ha ri na nchumu’, ‘swi fambile hinkwaswo’, ‘a ku salangi nchumu’, ‘ku hava’ kumbe ‘ku hava nchumu’ ku hlamusela xiyimo. Vadyondzisi va fanele ku amukela tinhlamuselo leto lulama, kambe va fanele ku tlhela va tivisa rito ‘ziro’. Rito ‘ziro’ ri fanele ku tirhisiwa hi ndlela leyi fananaka, hambiloko ku hlayeriwa kuya ehansi kumbe kuya endzhaku, xik., loko ku hlayeriwa kuya endzhaku kusuka eka mune: ‘mune, nharhu, mbirhi, n'we, ziro’. Mfungho wa ‘0’ wu fanele ku vekiwa eka mugiva wa tinomboro. Makhadi ya nomboro ya 0 ya fanele ku tirhisiwa ku yimela nchumu wolowo (wo tanihi yi puleti, mfuku, xipfalo, bokisi) lowu nga hava nchumu.

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.

_____

_____

_____

_____

Vhidiyo ya 2

1. Hlalelani vhidiyo ya mudyondzisi a ri karhi a tivisa na ku tiyisa nongoti wa ziro.
   - Xana hi swihi leswi mi swi vonaka swi ri eku humeleleni?
   - Xana nongoti wa ziro wu tivisiwile njhani?
   - Xana hi swihi leswi vadyondzi va nga swi endla na ku swi vula?
   - Xana a ku ri wihi ntirho wa mudyondzisi?
   - Xana a wu ri wihi mbuyelo wa ku tirhisa mixakaxaka ya migingiriko ku dyondzisa nongoti lowu?

2. Tsala mixiyaxiyo ya wena.

_____

_____

_____

_____

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?

Sexini ya 4: Nkunguhato wa ku dyondzisa

1½ wa tiawara

Ndzetelavutivi lowu wu lulamisela vatekaxiave eka ku tirhisa Mavhiki ya 1–3 ya Kotara ya 4. Hi kwalomu ka xiteji lexi xa lembe, mudyondzisi u ta va a lemukile ku hambana loku nga erivaleni exikarhi ka tilevhele ta vadyondzi ta ku ya emahlweni. Kotara ya 4 yi aka ehenhla ka vundzeni bya Kotara ya 1, 2 na 3. Vadyondzi van'wana va ta va va lunghekerile leswi, loko van'wana va ta va va lava nseketelo na ku tiyisiwa swinene ku kota ku ya emahlweni. I swa nkoka ku kunguhata na ku lulamisela ku hambana loku eka vuswikoti bya mudyondzi ku tiyisisa leswaku vundzeni na swikili hinkwaswo swa Matematiki wa Giredi ya V swa angarheliwa, naswona vadyondzi va lulamerile kahle swinene ku ya eka Giredi ya 1.

Nghingiriko wa 7

1. Entlaweni wa n'wina, hetisani tithempuleti ta nkunguhato ta Mavhiki ya 1–3 ya Kotara ya 4 (Xiengetelwa xa A).
2. Kanelani swivutiso leswi landzelaka:
   - Xana vhiki leri ri vumbiwile njhani?
   - Xana vundzeni byi aka njhani kuya ehenhla eka tidyondzotsongo ta nkarhi lowu nga hundza?
   - Xana migingiriko ya tlilasi hinkwayo yi tumbuluxa hi ndlela leyi humelelaka swivandlanene swa nkanelo na mbalango wa vutivi byintshwa?
   - Xana nghingiriko lowu leteriwaka hi mudyondzisi wu nyika njhani swivandlanene swa mudyondzisi ku kambela na ku seketela vadyondzi?
   - Xana migingiriko ya mitlawa leyitsongo leyi tshunxekeke ya pfumelela vutitoloveti byo enela bya vutivi byintshwa na swikili swintshwa?
   - Xana u nga yi lulamisa njhani migingiriko yo engetela ku seketela vadyondzi lava va nga si tivaka xikili xo karhi?
   - Ringanyeta tindlela tin'wana ta ku engetela swivandlanene swa ku dyondza eka vadyondzi lava va antswaka.
   - Xana u nga tirha njhani na mutirhikulobye ku lulamisela vhiki rin'wana na rin'wana?

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.

Migingiriko yo pfala

30 wa timinete

Nghingiriko wa 8

Vuehleketisisi bya ndzetelavutivi: Teka timinete tingaritingani ku ehleketisisa hi mayelana na siku leri. Phendla *Buku ya Ntirho ya Vatekaxiave* ku titsundzuxa hi leswi swi angarheliweke. Tsala miehleketo ya wena

- Ndzi dyondze _____
  _____
- A ndzi tsakelangi _____
  _____
- Ndzi tiphine _____
  _____
- Sweswi ndzi twisisa _____
  _____
- A ndzi si va erivaleni hi mayelana na _____
  _____
- Ndzi ta tsakela vuxokoxoko byo tala hi mayelana na _____
  _____

Avelanani vuehleketisisi bya n'wina na ntlawa hinkwawo.

Xintirhwana xo tlhelela na xona exikolweni

1. Tirhisa *Xiletelo xa Migingiriko: Kotara ya 4* ku kunguhata na ku tirhisa Mavhiki ya 1–3 ya Kotara ya 4 ya Nongonoko wa Matematiki.
2. Tsala swibumabumelo ebukwini leyi u yi tirhisaka ku ku landzelerisa ku ya emahlweni ka mudyondzi un'wana na un'wana (buku ya nxiyaxiyo wa vadyondzi). Tirhisa nxaxamelo wo xiyaxiya wa '**Kamba leswaku vadyondzi va kota ku**' (bokisi ra mahlo) hi nkarhi wa wun'wana na wun'wana wa migingiriko leyi leteriwaka hi mudyondzisi ku letela mixiyaxiyo na swibumabumelo swa wena.
3. Endla tinotsi ta leswi swi tirheke kahle swinene, leswi swi nga tirhangiki kahle swinene na hilaha u ololoxeke hakona mitlhontlho yihi kumbe yihi eka matirhiselo ya wena ya Mavhiki ya 1–3 ya Kotara ya 4.
4. Tana na buku ya wena ya nxiyaxiyo wa vadyondzi na tinotsi leti u ti endleke loko u ri karhi u ehleketisisa hi mayelana na madyondziselo ya siku rin'wana na rin'wana eka ndzetelavutivi lowu landzelaka.

Nkambelo

Tatisa Fomo leya Nkambelo.

APPENDIX A: TERM 4 WEEKLY PLANNING TEMPLATE

Term 4: Activity Plan: Week ____

<table>
<tr><td colspan="5">CONTENT AREA:</td></tr>
<tr><td colspan="5">TOPIC:

INTRODUCE NEW KNOWLEDGE:

PRACTISE:</td></tr>
<tr><td colspan="2">Whole class activities</td><td>Teacher-guided activity</td><td colspan="2">Workstation activities (independent small group activities)</td></tr>
<tr><td>Day 1</td><td></td><td rowspan="5"></td><td>Activity 1</td><td rowspan="5"></td></tr>
<tr><td>Day 2</td><td></td><td>Activity 2</td></tr>
<tr><td>Day 3</td><td></td><td>Activity 3</td></tr>
<tr><td>Day 4</td><td></td><td>Activity 4</td></tr>
<tr><td>Day 5</td><td></td></tr>
</table>

XIENGETELWA XA A: THEMPULETI YA NKUNGUHATO WA VHIKI NA VHIKI WA KOTARA YA 4

Kotara ya 4: Kungu ra Migingiriko: Vhiki ra ____

<table>
<tr><td colspan="5">XIYENGE XA VUNDZENI:</td></tr>
<tr><td colspan="5">NHLOKOMHAKA:

TIVISA VUTIVI BYINTSHWA:

TITOLOVETI:</td></tr>
<tr><td colspan="2">Migingiriko ya tlilasi hinkwayo</td><td>Nghingiriko lowu leteriwaka hi mudyondzisi</td><td colspan="2">Migingiriko ya le ka xitichi xo tirhela (migingiriko ya mitlawa leyitsongo leyi tshunxekeke)</td></tr>
<tr><td>Siku ra 1</td><td></td><td rowspan="5"></td><td>Nghingiriko wa 1</td><td rowspan="5"></td></tr>
<tr><td>Siku ra 2</td><td></td><td>Nghingiriko wa 2</td></tr>
<tr><td>Siku ra 3</td><td></td><td>Nghingiriko wa 3</td></tr>
<tr><td>Siku ra 4</td><td></td><td>Nghingiriko wa 4</td></tr>
<tr><td>Siku ra 5</td><td></td></tr>
</table>

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: Kungu ra Migingiriko: Vhiki ra ____

XIYENGE XA VUNDZENI:				
NHLOKOMHAKA: **TIVISA VUTIVI BYINTSHWA:** **TITOLOVETI:**				
Migingiriko ya tlilasi hinkwayo		**Nghingiriko lowu leteriwaka hi mudyondzisi**	**Migingiriko ya le ka xitichi xo tirhela (migingiriko ya mitlawa leyitsongo leyi tshunxekeke)**	
Siku ra 1			**Nghingiriko wa 1**	
Siku ra 2			**Nghingiriko wa 2**	
Siku ra 3			**Nghingiriko wa 3**	
Siku ra 4			**Nghingiriko wa 4**	
Siku ra 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: Kungu ra Migingiriko: Vhiki ra ____

XIYENGE XA VUNDZENI:				
NHLOKOMHAKA: **TIVISA VUTIVI BYINTSHWA:** **TITOLOVETI:**				
Migingiriko ya tlilasi hinkwayo		**Nghingiriko lowu leteriwaka hi mudyondzisi**	**Migingiriko ya le ka xitichi xo tirhela (migingiriko ya mitlawa leyitsongo leyi tshunxekeke)**	
Siku ra 1			**Nghingiriko wa 1**	
Siku ra 2			**Nghingiriko wa 2**	
Siku ra 3			**Nghingiriko wa 3**	
Siku ra 4			**Nghingiriko wa 4**	
Siku ra 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?

_____
_____
_____
_____

Fomo ya Nkambelo ya Ndzetelavutivi wa 10

1. Xana ndzetelavutivi lowu wu fikelerile swilanguteriwa swa wena?

_____
_____
_____
_____

2. Xana u dyondzile yini eka ndzetelavutivi lowu wu ku pfuneke swinene?

_____
_____
_____
_____

3. Xana a ku ri na xilo xihi kumbe xihi lexi u nga xi tsakelangiki kumbe u veke na ku tikeriwa hi ku xi twisisa?

_____
_____
_____
_____

4. Xana u ta swi tirhisa njhani leswi u swi dyondzeke ekamareni ra wena ro dyondzela ra Giredi ya V?

_____
_____
_____
_____

5. Xana u na swiringanyeto swihi kumbe swihi swa ku antswisa miletelavutivi yo yisa emahlweni?

_____
_____
_____
_____