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

Ndzetelavutivi wa 8 ● Workshop 8
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

Contents

Overview

Workshop content

Leswi nga endzeni

Nkatsakanyo

Vundzeni bya ndzetelavutivi

Overview

Purpose

This is the eighth 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 observations. They will explore how the guiding principles of teaching maths in Grade R should inform their planning, teaching and assessment. They will also consider learner progress, and individual developmental and learning needs. The workshop explores the content for Term 3 Weeks 4–6 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 1–3
- To explore play-based strategies to support teaching maths in Grade R
- To deepen the understanding of the Maths Programme's topics
- To reflect on challenges and find solutions to implementing the Maths Programme
- To map out the Maths Programme content to be taught in Term 3 Weeks 4–6

Workshop content

- Opening and reflection (1 hour)
- Session 1: Measurement (1 hour)

TEA

- Session 2: Measurement (continued) (1 hour)
- Session 3: Revisiting Grade R maths topics (1 hour)

LUNCH

- Session 4: Planning for teaching (1½ hours)
- Closing activities (30 minutes)

Nkatsakanyo

Xikongomelo

Lowu i wa vunhungu 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 pfuna vadyondzisi ku tirhisa Matematiki etikamareni to dyondzela ta vona. Vatekaxiave va ta kuma xivandlanene xa ku ehleketisisa hi mayelana na mixiyaxiyo ya vona. Va ta valanga hilaha milawu yo letela ya ku dyondzisa matematiki eka Giredi ya V yi faneleke ku letela hakona nkunguhato, madyondziselo na makambelelo. Va ta tlhela va anakanya hi ku ya emahlweni ka mudyondzi, na swilaveko swa nhluvukiso na ku dyondza swa mudyondzi hi un'weun'we. Ndzetelavutivi lowu wu valanga vundzeni bya Mavhiki ya 4–6 ya Kotara ya 3 na ku tirhisiwa ka byona 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 1–3 ya Kotara ya 3
- Ku valanga maqhinga lama simekiweke eka ntlangu ku seketela ku dyondzisa matematiki eka Giredi ya V
- Ku tiyisa ntwisiso wa tinhlokomhaka ta Nongonoko wa Matematiki
- Ku ehleketisisa hi 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 4–6 ya Kotara ya 3

Vundzeni bya ndzetelavutivi

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

TIYA

- Sexini ya 2: Mpimo (wu yisiwa emahlweni) (1 ya awara)
- Sexini ya 3: Ku tlhelela eka tinhlokomhaka ta matematiki ta Giredi ya V (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**

Here is the *Take back to school task* from Workshop 7.

Take back to school task (Workshop 7)

1. Use the Term 3 Weekly Planning Template in Appendix A to plan and implement Term 3 Weeks 1–3 of the Maths Programme.
2. Document how you used the **'Check that learners are able to'** observation list (in the eye box) during each of the teacher-guided activities.
3. Write an evaluation of what worked well, what did not work so well and what you could do differently to improve teaching and learning.
4. Bring your evaluation to the next workshop.

Activity 1

1. In your group, share your successes and challenges with implementing the Maths Programme in Term 3 Weeks 1–3.

_____
_____
_____

2. Discuss your use of the **'Check that learners are able to'** observation list (in the eye box) during each of the teacher-guided activities.

_____
_____
_____

3. Share strategies for improving teaching and learning for the challenges you identified.

_____
_____
_____

4. Write the main points of your discussion on flipchart paper. Report back on your discussion to the large group.

Ku pfula na ku ehleketisisa

1 ya awara

Hi lexi *Xintirhwana xo tlhelela na xona exikolweni* kusuka eka Ndzetelavutivi wa 7.

Xintirhwana xo tlhelela na xona exikolweni (Ndzetelavutivi wa 7)

1. Tirhisa Thempuleti ya Nkunguhato wa Vhiki na Vhiki ya Kotara ya 3 leyi nga eka Xiengetelwa xa A ku kunguhata na ku tirhisa Mavhiki ya 1–3 ya Kotara ya 3 ya Nongonoko wa Matematiki.
2. Tsala hilaha u tirhiseke hakona nxaxamelo wo xiyaxiya wa '**Kamba leswaku vadyondzi va kota ku**' (ebokisini ra mahlo) hi nkarhi wa wun'wana na wun'wana wa migingiriko leyi leteriwaka hi mudyondzisi.
3. Tsala nkambelo wa leswi swi tirheke kahle swinene, na leswi swi nga tirhangiki kahle swinene na leswi a wu ta swi endla hi ku hambana ku antswisa madyondziselo na madyondzelo.
4. Tana na nkambelo wa wena eka ndzetelavutivi lowu landzelaka.

Nghingiriko wa 1

1. Entlaweni wa n'wina, avelanani ku humelela ka n'wina na mitlhontlho ya n'wina hi ku tirhisa Nongonoko wa Matematiki lowu nga eka Mavhiki ya 1–3 ya Kotara ya 3.

_____
_____
_____

2. Kanelani ntirhiso wa wena wa nxaxamelo wo xiyaxiya wa '**Kamba leswaku vadyondzi va kota ku**' (ebokisini ra mahlo) hi nkarhi wa wun'wana na wun'wana wa migingiriko leyi leteriwaka hi mudyondzisi.

_____
_____
_____

3. Avelanani maqhinga ya ku antswisa madyondziselo na madyondzelo ya mitlhontlho leyi mi yi kumeke.

_____
_____
_____

4. Tsalani timhakakulu ta nkanelo wa n'wina eka phepha ra chati yo pfula. Nyikani xiviko hi mayelana na nkanelo wa n'wina eka ntlawa lowukulu.

Video 1

Watch the video of a teacher working with a small group of learners during the teacher-guided activity in Term 3 Week 3.

Observe how the teacher:

- has prepared the small group activity
- manages the transitions between the eight tasks
- uses questions to guide the learners
- records her observations of what has been learnt using the **'Check that learners are able to'** observation list.

_____
_____
_____
_____
_____

Vhidiyo ya 1

Hlalelani vhidiyo ya mudyondzisi a ri karhi a tirha na ntlawa lowutsongo wa vadyondzi hi nkarhi wa nghingiriko lowu leteriwaka hi mudyondzisi eka Vhiki ra 3 ra Kotara ya 3.

Xiyaxiyani hilaha mudyondzi a:

- lulamiseke hakona nghingiriko wa ntlawa lowutsongo
- lawulaka hakona ku cinca exikarhi ka swintirhwana swa nhungu
- tirhisaka hakona swivutiso ku letela vadyondzi
- rhekodaka hakona mixiyaxiyo ya yena ya leswi swi dyondziweke hi ku tirhisa nxaxamelo wo xiyaxiya wa '**Kamba leswaku vadyondzi va kota ku**'.

_____
_____
_____
_____
_____

Session 1: Measurement **1 hour**

In Terms 1 and 2, time and length were the focus of Measurement. This session will revisit these topics and expand the discussion of Measurement to include mass, and capacity and volume.

Measurement is about finding out 'how much' there is of something. In Grade R, the focus of measurement is on:

- time
- length
- mass
- capacity and volume.

In the next activity, you will explore each of these measurement concepts.

Learners in Grade R measure informally, by direct comparison and by using non-standard units of measurement. Learners develop their estimation skills during informal measurement activities. They estimate how long or how heavy they think something is and then use a non-standard measuring instrument to find out how accurate their estimation was.

 **Activity 2**

With your group, move to the measurement workstation you have been assigned to and answer the questions in your *Participant's Workbook*. Rotate to the next workstation when you receive the signal.

Length

Refer to page 210 of the *Concept Guide*. What vocabulary did you use during this activity?

_____

_____

Sexini ya 1: Mpimo

1 ya awara

Eka Tikotara ta 1 na 2, nkarhi na vulehi a swi ri swona nkongomo wa Mpimo. Sexini leyi yi tlhelela eka tinhlokomhaka leti na ku ndlandlamukisa nkanelo wa Mpimo ku katsa ntiko, na vundzeni na vholomu.

Mpimo wu hi mayelana na ku kumisisiwa leswaku ku na 'swo tala kufika kwihi' swa xin'wana. Eka Giredi ya V, nkongomo wa mpimo wu le ka:

- nkarhi
- vulehi
- ntiko
- vundzeni (khapasithi) na vholomu.

Eka nghingiriko lowu landzelaka, mi ta valanga wun'wana na wun'wana wa minongoti leya mpimo.

Vadyondzi va le ka Giredi ya V va pima hi ndlela ya nkamafundza, hi mfananiso wo kongoma na hi ku tirhisa tiyuniti leti nga riki ta ntolovelo ta mpimo. Vadyondzi va hluvukisa swikili swa vona swa nkumbetelo hi nkarhi wa migingiriko ya mpimo wa nkamafundza. Va kumbetela leswaku xin'wana xi lehile kufika kwihi kumbe xi tika kufika kwihi kutani endzhaku ka swona va tirhisa xitirho xo pima lexi nga riki xa ntolovelo ku kumisisa hilaha nkumbetelo wa vona wu nge kwatsa hakona.

Nghingiriko wa 2

Na ntlawa wa wena, fambani eka xitichi xo tirhela xa mpimo lexi mi vekiweke eka xona kutani mi hlamula swivutiso leswi nga eka *Buku ya Ntirho ya Vatekaxiave*. Cincanani ku ya eka xitichi xo tirhela lexi landzelaka loko mi kuma xikoweto.

Vulehi

Kongomisa eka pheji ya 211 ya *Xiletelo xa Minongoti*. Xana i ntivomarito wihi u wu tirhiseke eka nghingiriko lowu?

_____

_____

Find the answer to each of the following and identify the non-standard unit of measurement you used.

	Estimate (guess)	**Non-standard unit of measurement**	**Length**
1. Who has the longest shoe?			
2. Who is the shortest?			
3. How long is your *Participant's Workbook*?			
4. Who has the longest arm?			
5. How wide is your table?			
6. How many hand spans is the height of the door?			

Capacity and volume

Refer to page 210 of the *Concept Guide*. What vocabulary did you use during this activity?

_____

_____

Find the answer to each of the following and identify the non-standard unit of measurement you used.

	Estimate (guess)	**Non-standard unit of measurement**	**Capacity or volume**
1. Which two containers of water will fill the jug?			
2. Which bottle holds the most cups of water?			
3. How many cups of water do you think it will take to fill the vase?			
4. How many cups of water will it take to half-fill the vase?			
5. Which container on the table has the least amount of water in it?			
6. Which two containers have the same amount of water?			

Kuma nhlamulo ya xin'wana na xin'wana xa leswi landzelaka kutani u kuma yuniti leyi nga riki ya ntolovelo ya mpimo leyi tirhisiweke.

	Kumbetela (vhumba)	**Tiyuniti leti nga riki ta ntolovelo ta mpimo**	**Vulehi**
1. Xana i mani a nga na ntangu yo leha kutlula hinkwato?			
2. Xana i mani a nga koma kutlula hinkwenu?			
3. Xana *Buku ya Ntirho ya Vatekaxiave* yi lehile kufika kwihi?			
4. Xana i mani a nga na voko ro leha kutlula hinkwawo?			
5. Xana tafula ra n'wina ri lehile kufika kwihi?			
6. Xana i vunavi byingani bya swandla byi nga eka vulehelahenhla bya rivanti leri?			

Vundzeni na vholomu

Kongomisa eka pheji ya 210 ya *Xiletelo xa Minongoti*. Xana i ntivomarito wihi u wu tirhiseke eka nghingiriko lowu?

_____

_____

Kuma nhlamulo ya xin'wana na xin'wana xa leswi landzelaka kutani u kuma yuniti leyi nga riki ya ntolovelo ya mpimo leyi tirhisiweke.

	Kumbetela (vhumba)	**Tiyuniti leti nga riki ta ntolovelo ta mpimo**	**Vundzeni kumbe vholomu**
1. Xana i tikhontheni timbirhi tihi ta mati ti nga ta tata jeke leyi?			
2. Xana i bodhlela rihi ri pangaka tikhapi to tala ta mati?			
3. Xana i tikhapi tingani ta mati u ehleketaka leswaku ti ta tata nkambana?			
4. Xana swi ta teka tikhapi tingani ta mati ku tata hafu ya nkambana?			
5. Xana i khontheni yihi leyi nga etafuleni yi nga na mati matsongo kutlula hinkwawo eka yona?			
6. Xana i tikhontheni timbirhi tihi ti nga na mpimo wo fana wa mati?			

Mass

Refer to page 210 of the *Concept Guide*. What vocabulary did you use during this activity?

_____

_____

Find the answer to each of the following and identify the non-standard unit of measurement you used.

	Estimate (guess)	**Non-standard unit of measurement**	**Mass**
1. Whose handbag in your group is the heaviest?			
2. Which book in your group is the lightest?			
3. Who is the heaviest in your group? Who is the lightest?			
4. Which fruit is the heaviest?			
5. Which bottle weighs the most?			

Time

Refer to page 210 of the *Concept Guide*. What vocabulary did you use during this activity?

_____

_____

Find the answer to each of the following and identify the non-standard unit of measurement you used.

	Estimate (guess)	**Non-standard unit of measurement**	**Time**
1. Who arrived the earliest this morning?			
2. Who arrived the latest?			
3. How long does it take to walk from your chair to the car?			
4. Who walked the fastest from their chair to the car?			
5. Would it take longer to eat lunch or drive to school?			

Ntiko

Kongomisa eka pheji ya 210 ya *Xiletelo xa Minongoti*. Xana i ntivomarito wihi u wu tirhiseke eka nghingiriko lowu?

_____

_____

Kuma nhlamulo ya xin'wana na xin'wana xa leswi landzelaka kutani u kuma yuniti leyi nga riki ya ntolovelo ya mpimo leyi tirhisiweke.

	Kumbetela (vhumba)	**Tiyuniti leti nga riki ta ntolovelo ta mpimo**	**Ntiko**
1. Xana i beke ya voko ya mani entlaweni wa n'wina yi tikaka kutlula hinkwato?			
2. Xana i buku yihi entlaweni wa n'wina yi vevukaka kutlula hinkwato?			
3. Xana i mani a tikaka kutlula hinkwenu entlaweni wa n'wina? Xana i mani a vevukaka kutlula hinkwenu?			
4. Xana i muhandzu wihi wu tikaka kutlula hinkwayo?			
5. Xana i bodhlela rihi ri tikaka ngopfu?			

Nkarhi

Kongomisa eka pheji ya 210 ya *Xiletelo xa Minongoti*. Xana i ntivomarito wihi u wu tirhiseke eka nghingiriko lowu?

_____

_____

Kuma nhlamulo ya xin'wana na xin'wana xa leswi landzelaka kutani u kuma yuniti leyi nga riki ya ntolovelo ya mpimo leyi tirhisiweke.

	Kumbetela (vhumba)	**Tiyuniti leti nga riki ta ntolovelo ta mpimo**	**Nkarhi**
1. Xana i mani a fikeke wa ha ri nkarhi kutlula hinkwenu mixo lowu?			
2. Xana i mani a fikeke ro hetelela kutlula hinkwenu?			
3. Xana swi teka nkarhi wo leha kufika kwihi ku famba kusuka exitulwini xa wena kuya emovheni?			
4. Xana i mani a fambeke hi ku hatlisa kutlula hinkwenu kusuka exitulwini xa yena kuya emovheni?			
5. Xana swi nga teka nkarhi wo lehanyana ku dya lanci kumbe ku chayela ku ya exikolweni?			

Session 2: Measurement (continued) **1 hour**

Activity 3

Consider the measurement activities that you have just experienced in Activity 2. How is your classroom set up to provide similar learning experiences?

_____
_____
_____
_____

In Grade R, Measurement focuses on estimating, weighing, comparing and ordering objects according to how heavy or light they are.

Learners may find it difficult to understand that a small object can be heavier than a larger object. They need many opportunities to explore small heavy objects, small light objects, big heavy objects and big light objects.

Video 2

Watch the video of comparing the mass of one object against another.

Discuss these questions.

- What do you see happening?
- What concepts are being taught and learnt?
- What skills are being practised?
- What are the learners doing and saying?
- How is the teacher mediating learning?

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Sexini ya 2: Mpimo (wu yisiwa emahlweni)

1 ya awara

Nghingiriko wa 3

Anakanyani hi migingiriko ya mpimo leyi ma ha ku yi tokotaka eka Nghingiriko wa 2. Xana kamara ro dyondzela ra wena ri lulamisiwa njhani ku nyika mitokoto ya ku dyondza yo fana?

_____
_____
_____
_____

Eka Giredi ya V, Mpimo wu kongomisa eka ku kumbetela, ku pima ntiko, ku fananisa na ku landzelelanisa michumu ku ya hi ku yi tika kumbe yi vevuka kufika kwihi.

Vadyondzi va nga ha kuma swi tika ku twisisa leswaku nchumu wutsongo wu nga tika kutlula nchumu wukulu. Va lava swivandlanene swo tala ku valanga michumu yo tika leyitsongo, michumu yo vevuka leyitsongo, michumu yo tika leyikulukumba na michumu yo vevuka leyikulukumba.

Vhidiyo ya 2

Hlalelani vhidiyo ya ku fananisa ntiko wa nchumu wun'we eka wun'wana.

Kanelani swivutiso leswi.

- Xana hi swihi leswi mi swi vonaka swi ri eku humeleleni?
- Xana i minongoti yihi yi nga eku dyondzisiweni na ku dyondziwa?
- Xana i swikili swihi leswi swi nga eku titolovetiweni?
- Xana hi swihi leswi vadyondzi va nga eku swi endleni na ku swi vula?
- Xana mudyondzisi u pfuneta njhani ku dyondza?

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Session 3: Revisiting Grade R maths topics

1 hour

As you know, the Maths Programme is designed to introduce new knowledge and build on this progressively across the weeks and terms. During this session, we will revisit Content Areas and topics that we have dealt with in previous workshops and we will discuss how these topics have been presented in the Maths Programme.

 **Activity 4**

The facilitator will give a topic to each group to discuss.

You are required to prepare a presentation on your understanding of the topic and how the Maths Programme deals with the development of the concepts and skills related to it. Read the relevant information associated with your topic in the *Concept Guide* (pages 138–219).

You will receive ONE of the following topics:

1. How are shapes introduced and consolidated in the Maths Programme? Refer to Term 3, Week 4, Days 1, 2 and 3 to support your discussion.

2. Position and direction are difficult concepts for young children to grasp. How does the Maths Programme present these topics in Terms 1, 2 and 3? Refer to Term 3, Week 4, Days 4 and 5 to support your discussion.

3. Term 3, Week 4, Day 5 deals with the topic of symmetry. Explain your understanding of this topic. Share your experiences of teaching symmetry and how your learners have demonstrated their understanding of it.

4. Dot cards are used throughout the Maths Programme. Discuss the value of using this resource and if/how it contributes to building number concept. Refer to Term 3, Weeks 4 and 6 to support your discussion.

5. Discuss the routine that is used to introduce a new number in the Maths Programme. Explain how this routine builds on and consolidates the development of number concept. Refer to Term 3, Week 6 to support your discussion.

Sexini ya 3: Ku tlhelela eka tinhlokomhaka ta matematiki ta Giredi ya V **1 ya awara**

Tanihilaha mi swi tivaka hakona, Nongonoko wa Matematiki wu endleriwile ku tivisa vutivi byintshwa na ku aka ehenhla ka leswi hi ndlela leyi yaka emahlweni eka mavhiki hinkwawo na tikotara hinkwato. Hi nkarhi wa sexini leyi, hi ta tlhelela eka Swiyenge swa Vundzeni na tinhlokomhaka leti mi tirhaneke na tona eka miletelavutivi ya nkarhi lowu nga hundza naswona hi ta kanela hilaha tinhlokomhaka leti ti andlariweke hakona eka Nongonoko wa Matematiki.

 **Nghingiriko wa 4**

Muhumelerisi u ta nyika ntlawa wun'wana na wun'wana nhlokomhaka ku yi kanela.

Mi fanele ku lulamisa andlalo hi mayelana na ntwisiso wa n'wina wa nhlokomhaka leyi na hilaha Nongonoko wa Matematiki wu tirhanaka hakona na nhluvukiso wa minongoti na swikili leswi fambelanaka na wona. Hlayani vuxokoxoko lebyi faneleke lebyi fambelanaka na nhlokomhaka ya n'wina eka *Xiletelo xa Minongoti* (tipheji ta 138–219).

Mi ta kuma YIN'WE ya tinhlokomhaka leti landzelaka:

1. Xana swivumbeko swi tivisiwa na ku tiyisiwa njhani eka Nongonoko wa Matematiki? Kongomisani eka Kotara ya 3, Vhiki ra 4, Masiku ya 1, 2 na 3 ku seketela nkanelo wa n'wina.

2. Xiyimo na tlhelo i minongoti yo tika eka vana lavatsongo ku yi twisisa. Xana Nongonoko wa Matematiki wu ti andlala njhani tinhlokomhaka leti eka Tikotara ta 1, 2 na 3? Kongomisani eka Kotara ya 3, Vhiki ra 4, Masiku ya 4 na 5 ku seketela nkanelo wa n'wina.

3. Kotara ya 3, Vhiki ra 4, Siku ra 5 swi tirhana na nhlokomhaka ya ndzinganiso. Hlamuselani ntwisiso wa n'wina wa nhlokomhaka leyi. Avelanani mitokoto ya n'wina ya ku dyondzisa ndzinganiso na hilaha vadyondzi va n'wina va kombiseke hakona ntwisiso wa vona wa wona.

4. Makhadi ya mathonsi ya tirhisiwa eka Nongonoko wa Matematiki hinkwawo. Kanelani nkoka wa ku tirhisa xipfuno lexi na loko xi hoxa xandla/hilaha xi hoxaka xandla hakona eka ku akiwa ka nongoti wa nomboro. Kongomisani eka Kotara ya 3, Mavhiki ya 4 na 6 ku seketela nkanelo wa n'wina.

5. Kanelani nghingiriko wa siku na siku lowu wu tirhisiwaka ku tivisa nomboro yintshwa eka Nongonoko wa Matematiki. Hlamuselani hi vutalo hilaha nghingiriko wa siku na siku wu akaka hakona ehenhla ka na hilaha wu tiyisaka hakona nhluvukiso wa nongoti wa nomboro. Kongomisani eka Kotara ya 3, Vhiki ra 6 ku seketela nkanelo wa n'wina.

6. Explain how word problems are used to teach addition, subtraction, grouping (multiplication) and equal sharing (division). Discuss the importance of the use of language and the structure of the word problem. Also included a motivation for the use of fingers and concrete apparatus during problem-solving activities. Refer to Week 6, Day 5 and the teacher-guided activities to provide examples.

7. How does the Maths Programme facilitate learning how to sequence/order the counting numbers (oral counting)? Consider each of the resources below to support your discussion:
   - songs and rhymes
   - number washing line
   - jumping tracks
   - number symbol cards.

   How do these activities link to the concept of ordinal numbers? Refer to Term 3, Week 6 for examples to support your discussion.

8. A real understanding of counting is achieved when learners are able to count each object in a collection and know that the last count represents the total number of the collection. This is a difficult concept for learners to grasp. How does the Maths Programme provide opportunities for learners to develop the concept of cardinality?

6. Hlamusela hilaha swiphiqo swa marito swi tirhisiweke hakona ku dyondzisa ku hlanganisa, ku susa, ntlawahato (andziso) na avelano wo ringana (avanyiso). Kanelani nkoka wa ku tirhisa ririmi na xivumbeko xa xiphiqo xa marito. Tlhelani mi katsa nhlohlotelo wa ku tirhisiwa ka tintiho na xitirhisiwa xo khomeka hi nkarhi wa migingiriko ya ku ololoxa swiphiqo. Kongomisani eka Vhiki ra 6, Siku ra 5 na le ka migingiriko leyi leteriwaka hi mudyondzisi ku nyika swikombiso.

7. Xana Nongonoko wa Matematiki wu humelerisa njhani ku dyondza hilaha ku longoloxiwaka/landzelelanisiwaka hakona tinomboro to hlayela (ku hlayela ka swanomu)? Tekelani enhlokweni swipfuno leswi nga laha hansi ku seketela nkanelo wa n'wina:
   - tinsimu na tirhayimi
   - mugiva wa tinomboro
   - tindlela to tlulela
   - makhadi ya mifungho ya tinomboro.

   Xana migingiriko leyi yi xakelana njhani na nongoti wa tinomboro ta odinali? Kongomisani eka Kotara ya 3, Vhiki ra 6 ku kuma swikombiso swo seketela nkanelo wa n'wina.

8. Ntwisiso wa xiviri wa ku hlayela wu fikeleriwa loko vadyondzi va kota ku hlayela nchumu wun'wana na wun'wana lowu nga eka nhlengelo na ku tiva leswaku nhlayelo wo hetela wu yimela nhlayo hinkwayo ya nhlengelo. Lowu i ngonoti wo tika eka vadyondzi ku wu twisisa. Xana Nongonoko wa Matematiki wu nyika njhani swivandlanene swa vadyondzi ku hluvukisa nongoti wa ntsengo?

Session 4: Planning for teaching **1½ hours**

It is important to plan and prepare thoroughly for each week. This will allow you to feel confident about what you are doing and help you to focus on teaching and working with the learners. As you have already experienced in Terms 1 and 2, the Maths Programme is carefully structured, and the maths content is presented in a progressive developmental sequence. It has been designed to ensure that all the Grade R Mathematics content and skills are covered and learners are well prepared for Grade 1. Teachers need to be cautious about selecting activities from different weeks and leaving other activities out.

 **Activity 5**

1. In your group, complete the planning templates for Term 3 Weeks 4–6 (Appendix A).
2. Your group will present an overview of your planning discussion to the other groups. Note the main points of your discussion on flipchart paper. Include answers to the following questions:
   - How could you work with a colleague to prepare for each week?
   - How is the week structured?
   - How do the topics build on previous lessons?
   - Do the whole class activities successfully open the way for 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?

Sexini ya 4: Nkunguhato wa ku dyondzisa

1½ wa tiawara

I swa nkoka ki kunguhata na ku lulamisela swinene vhiki rin'wana na rin'wana. Leswi swi ta ku pfumelela ku titwa u ri na vutitshembi hi mayelana na leswi u nga eku swi endleni na ku ku pfuna ku kongomisa eka ku dyondzisa vadyondzi na ku tirha na vadyondzi. Tanihilaha se u tokoteke eka Tikotara ta 1 na 2, Nongonoko wa Matematiki wu vumbiwile hi vukheta, naswona vundzeni bya matematiki byi andlariwile hi malongolokelo ya nhluvukiso lama yaka emahlweni. Wu dizayineriwile ku tiyisisa leswaku vundzeni na swikili swa Matematiki wa Giredi ya V swa angarheliwa naswona vadyondzi va lulamiseriwa kahle swinene kuya eka Giredi ya 1. Vadyondzisi va fanele ku va na vukheta hi mayelana na ku hlawula migingiriko kusuka eka mavhiki yo hambanahambana na ku siya migingiriko yin'wana.

Nghingiriko wa 5

1. Entlaweni wa n'wina, hetisani tithempuleti ta nkunguhato ta Mavhiki ya 4–6 ya Kotara ya 3 (Xiengetelwa xa A).
2. Ntlawa wa n'wina wu ta andlala nkatsakanyo wa nkanelo wa nkunguhato wa n'wina eka mitlawa leyin'wana. Tsalani timhakakulu ta nkanelo wa n'wina eka phepha ra chati yo pfula. Katsani tinhlamulo ta swivutiso leswi landzelaka:
   - Xana u nga tirha njhani na mutirhikulobye ku lulamisela vhiki rin'wana na rin'wana?
   - Xana vhiki leri ri vumbiwile njhani?
   - Xana tinhlokomhaka ti aka njhani ehenhla ka tidyondzotsongo ta nkarhi lowu nga hundza?
   - Xana migingiriko ya tlilasi hinkwayo yi pfula kahle ndlela ya 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 ku titoloveta ko enela ka vutivi byintshwa na swikili?

Closing activities

30 minutes

Activity 6

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.

_____
_____
_____
_____
_____

Share your reflections with the large group.

Take back to school task

1. Use *Activity Guide: Term 3* to plan and implement Term 3 Weeks 4–6 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 3 Weeks 4–6.
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 6

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

_____
_____
_____
_____
_____

Avelanani vuehleketisisi bya n'wina na ntlawa lowukulu.

Xintirhwana xo tlhelela na xona exikolweni

1. Tirhisa *Xiletelo xa Migingiriko: Kotara ya 3* ku kunguhata na ku tirhisa Mavhiki ya 4–6 ya Kotara ya 3 ya Nongonoko wa Matematiki.
2. Tsala swibumabumelo ebukwini leyi u yi tirhisaka ku landzelerisa ku ya emahlweni ka mudyondzi un'wana na un'wana (buku ya mixiyaxiyo ya vadyondzi). Tirhisa nxaxamelo wo xiyaxiya wa '**Kamba leswaku vadyondzi va kota ku**' (bokisi ra mahlo) hi nkarhi wun'wana na wun'wana wa migingiriko leyi leteriwaka hi mudyondzisi ku letela mixayaxiyo 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 4–6 ya Kotara ya 3.
4. Tana na buku ya wena ya mixiyaxiyo ya 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 3 WEEKLY PLANNING TEMPLATE

Term 3: 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="6"></td><td>Activity 1</td><td rowspan="6"></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 3

Kotara ya 3: 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				
Siku ra 5			**Nghingiriko wa 4**	

Term 3: 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 3: 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				
Siku ra 5			**Nghingiriko wa 4**	

Term 3: 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 3: 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				
Siku ra 5			**Nghingiriko wa 4**	

Workshop 8 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 8

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?

_____
_____
_____
_____