

Luhlelo Lwekwenta Kancono Tibalo TeLibanga R Grade R Mathematics Improvement Programme



**Umhlanganosikolo 9 • Workshop 9
Incwadzi Yekusebentela Yemhlanganyeli • Participant's Workbook**

The Grade R Mathematics and Language Improvement Project is an initiative of the **Gauteng Department of Education** and its key partner, the **Gauteng Education Development Trust**.

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

The Grade R Mathematics and Language Improvement Project is managed by **JET Education Services** with **UCT's Schools Development Unit** and **Wordworks** as technical partners.

The **Schools Development Unit** (SDU) at the **University of Cape Town** (UCT) is the mathematics technical partner to the Grade R Mathematics and Language Improvement Project. The SDU is a unit within UCT's School of Education that focuses on teachers' professional development in Mathematics, Science, Literacy/Language and Life Skills from Grade R to Grade 12. The SDU offers teacher qualifications and approved UCT short courses, school-based work, materials development and research to support teaching and learning in all South African contexts.

ACKNOWLEDGEMENTS

Special thanks to:

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



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

The Grade R Mathematics Improvement Programme is licensed under a Creative Commons Attribution 4.0 International Licence [Attribution-NonCommercial-ShareAlike].



This licence allows re-users to distribute, remix, adapt, and build upon the material in any medium or format for non-commercial purposes only, and only so long as attribution is given to the creator. If you remix, adapt, or build upon the material, you must license the modified material under identical terms. To view the full conditions for this licence, visit: <https://creativecommons.org/licenses/by-nc-sa/4.0/>

Programme conceptualisation and management: Cally Kuhne and Tholisa Matheza

Translation and publishing project management: Arabella Koopman

Translation co-ordination (Nguni languages): Pumeza Ngobozana

Translation: Bukiwe Malangwane

Editing (Siswati): Thobile Mbatha

Illustrations: Jiggs Snaddon-Wood

Umklamo Wetibalo TeLibanga R Nekwenta Kancono Lulwimi lisu lelasungulwa **Litiko Letemfundvo laseGauteng (Gauteng Department of Education)** kanye nemlingani walo lomkhulu i-**Gauteng Education Development Trust**.

Lokwentiwa nekukhicitwa kwetinsita tekucecesha netaseklasini kweTibalo TeLibanga R neMklamo Wekwenta Kancono Lulwimi kwenteka ngena yekwesekelwa ngalokunemusa ngetimali letibuya ku-**United States Agency for International Development** kanye ne-**Zenex Foundation**.

Lomklamo Wetibalo TeLibanga R Nekwenta Kancono Lulwimi uphetfwe yi-**JET Education Services** ikanye ne-**UCT's Schools Development Unit** ne-**Wordworks** njengebalingani betebuchwepheshe.

Le-Schools Development Unit (SDU) e-**University of Cape Town** (UCT) ingumlingani wetebuchwepheshe wetibalo kuloMklamo Wetibalo TeLibanga R Nekwenta Kancono Lulwimi. Le-SDU iyiyunithi lengekhatsi e-UCT School of Education lebukene nekutfufukiswa kwabothishela ngekwebungcweti kuTibalo, Isayensi, Kufundza nekubhala/Lulwimi Nemakhono Ekuphila kusuka kuLibanga R kuya kuLibanga le-12. Le-SDU iniketa ticu tebuthishela kanye netifundvo letifishane letivunywe yi-UCT, umsebenti lophatsele nesikolo, kwentiwa kwemethiriyeli nekucwaninga kusekela kufundzisa kuto tonkhe tingcikitsismo taseNingizimu Afrika.

EMAVI EKUBONGA

Kubongwa ngalokukhetsekile ku:

- Tikhulu Tekharikhulamu Yelitiko Letemfundvo laseGauteng, teMfundvo Yabothishela neteBacondzisi Bemfundvo Lekhetsekile ngeligalelo labo kulkuguculwa kwemethiriyeli yetfu.
- Tiphatimandla te-Western Cape Education Department (WCED) nabothishela ngeligalelo labo ekuphumeleiseni kusetjentiswa kwale-Grade R Mathematics Programme (R-Maths) eNshonalanga Kapa emkhatsini wa-2016 na-2019.
- Licembu lelibhala i-R-Maths: Basebenti nabonjingalwati be-SDU, netiphatsimandla te-WCED.



Loluhlelo Lwekwenta Kancono Tibalo TeLibanga R lususelwe ku-R-Maths, Iwashicilelwa kwekucala nga-2017 yi-Schools Development Unit, University of Cape Town. Lilungelokucamba le-R-Maths ligodlw yi-University of Cape Town.

Luhlelo Lwekwenta Kancono Tibalo TeLibanga R lunemvume (ilayisensi) yalo ngaphansi kwe-Creative Commons Attribution 4.0 International Licence [Attribution-NonCommercial-ShareAlike].



Lelayisensi ivumela basebentisi labasebentisa kabusha kutsi basabalalise, bahlanganise kabusha, kwetayela, kanye nekwakhela etukwalemethiriyeli nganoma nguyiphi indlela noma ifomethi ngetinjongo lekungasito tekutsengisa kuphela, futsi kuphela uma i-athribhuyithi inikwa umsunguli. Uma uyihlanganisa kabusha, uyenta ifanele tidzingo takho, noma wakhela etukwalemethiriyeli, kufanele ube nelayisensi yalemethiriyeli leguculiwe ngaphansi kwemigomo lefananako. Kute ubone imibandzela lephelele yalelayisensi, vakashela:

<https://creativecommons.org/licenses/by-nc-sa/4.0/>

Kufaka luhlelo kungcikitsimo nekuphatsa: Cally Kuhne naTholisa Matheza

Kuphatsa umklamo wekuhumusha nekushicilea: Arabella Koopman

Kuchumanisa tekuhumusha (tilwimi tesiNguni): Pumeza Ngobozana

Kuhumusha Siswati: Bukiwe Malangwane

Kuhlela nekulungisa emaphutsa eSiswati: Thobile Mbatha

Kudvweba imidvwebo: Jiggs Snaddon-Wood

Contents

Overview

Purpose	page 6
Learning outcomes	page 6
Workshop content	page 6

Workshop content

Opening and reflection	page 8
Session 1: Numbers, Operations and Relationships	page 12
Session 2: Numbers, Operations and Relationships (continued)	page 18
Session 3: Calculation in Grade R	page 22
Session 4: Planning for teaching	page 30
Closing activities	page 32
Appendix A: Term 3 Weekly Planning Template	page 34
Workshop 9 Evaluation Form	page 42

Lokucuketfwe

Sibutsetelo

Inhloso	likhasi 7
Imiphumela yekufundza	likhasi 7
Lokucuketfwe kwemhlanganosikolo	likhasi 7

Lokucuketfwe kwemhlanganosikolo

Kuvula nekubuyeketa	likhasi 9
Iseshini 1: Tinombolo, Ema-ophareshini neBudlelwane	likhasi 13
Iseshini 2: Tinombolo, Ema-ophareshini neBudlelwane (kuyachubeka)	likhasi 19
Iseshini 3: Kubala kuLibanga R	likhasi 23
Iseshini 4: Kuhlelala kufundzisa	likhasi 31
Imisebenti yekuvala	likhasi 33
Sengeto A: Ithemplethi Yekuhlelala Liviki leThemu 3	likhasi 35
Lifomu Lekuhlolisisa Umhlanganosikolo 9	likhasi 43

Overview

Purpose

This is the ninth 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 3 Weeks 7–10 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 4–6
- ◆ To explore play-based strategies to support teaching maths in Grade R
- ◆ To deepen understanding of number concept in the Numbers, Operations and Relationships Content Area and to link these to the implementation of maths in the Grade R classroom
- ◆ To deepen understanding of appropriate 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 3 Weeks 7–10

Workshop content

- | | |
|----------------------------------------------------|----------|
| ◆ Opening and reflection | (1 hour) |
| ◆ Session 1: Numbers, Operations and Relationships | (1 hour) |

TEA

- | | |
|----------------------------------------------------------------|----------|
| ◆ Session 2: Numbers, Operations and Relationships (continued) | (1 hour) |
| ◆ Session 3: Calculation in Grade R | (1 hour) |

LUNCH

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

Sibutsetelo

Inhloso

Lona ngumhlanganosikolo wemfica walelishumi nakubili yeLuhlelo Lwekwenta Kancono Tibalo TeLibanga R (Luhlelo Lwetibalo), loyinceny yeLitiko Letemfundvo laseGauteng (Gauteng Department of Education (GDE) Umklamo Wetibalo TeLibanga R Nekwenta Kancono Lulwimi.

Inhloso yalomhlanganosikolo kusita bothishela kutsi bafezekise Luhlelo Lwetibalo emaklasini abo. Bahlanganyeli batawuba nelitfuba lekubuyeketa loko labakwentile ekufezekiseni Luhlelo Lwetibalo baphindze futsi bakhulume ngekulungiselewa, kufundzisa kanye nekuhlola kwabo. Batawuphindze futsi bacabange ngenchubekelbili yemfundzi, kanye nekutfutfuka kwangamunye netidzingo tekufundza. Bahlanganyeli batawubuyeketa emasubuciko ekuhlola lafanele ekubhala inchubekelbili yebafundzi. Lomhlanganosikolo wehlwaya lokucuketfwe kweThemu 3 Emaviki 7–10 nekufezekiswa kwawo eklasini.

Emareferensi kuMikhakha Yalokucuketfwe Tibalo Telibanga R atsetfwe *kuSitatinende Senchubomgom Yekharikhulamu Nekuhlola (i-CAPS): Tibalo TeLibanga R (Luhlaka Lwekugcina)*, 2011, Litiko Letemfundvo Lesisekelo, laseNingizimu Afrika.

Imiphumela yekufundza

- ◆ Kubuyeketa kufezekiswa kweThemu 3 Emaviki 4–6
- ◆ Kwehlwaya emasubuciko lamiselwe ekudlaleni kwesekela kufundzisa tibalo teLibanga R
- ◆ Kujulisa kuvisisa umcondvo wetinombolo kuMkhakha Walokucuketfwe weTinombolo, Ema-ophareshini neBudlelwane kanye nekuchumanisa loku ekufezekisweni kwetibalo eklasini leLibanga R
- ◆ Kujulisa kuvisisa kweluhlolo lolufanele kuLibanga R
- ◆ Kubuyeketa tinsayeya tetisombululo tekufezekisa Luhlelo Lwetibalo
- ◆ Kuhlela lokucuketfwe kweLuhlelo Lwetibalo lokutawufundziswa kuThemu 3 Emaviki 7–10

Lokucuketfwe kwemhlanganosikolo

- ◆ Kuvula nekubuyeketa (1 li-awa)
- ◆ Iseshini 1: Tinombolo, Ema-ophareshini neBudlelwane (1 li-awa)

LITIYA

- ◆ Iseshini 2: Tinombolo, Ema-ophareshini neBudlelwane (kuyachubeka) (1 li-awa)
- ◆ Iseshini 3: Kubala kuLibanga R (1 li-wa)

KUDLA KWASEMINI

- ◆ Iseshini 4: Kuhlelela kufundzisa (1½ ema-awa)
- ◆ Imisebenti yekuvala (30 emaminitsi)

Opening and reflection

1 hour

Reflection involves thinking and talking about your experiences and what you have learnt. Consider the Maths workshops you have attended and complete the sentences the facilitator displays.

Reflection on implementation

The *Take back to school task* from Workshop 8, required you to do the following:

- ◆ Use *Activity Guide: Term 3* to plan and implement Term 3 Weeks 4–6 of the Maths Programme.
- ◆ Write comments in the book that you use to keep track of each learner’s progress (learner observation book), and use the ‘**Check that learners are able to**’ observation list during each of the teacher-guided activities to guide your observations and comments.
- ◆ 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.

In the next activities make use of your learner observation book and the notes you made when reflecting on each day’s teaching.



Activity 1

1. In your group, share your successes and challenges with implementing the Maths Programme in Term 3 Weeks 4–6. Share strategies for improving teaching and learning for the challenges you identified.

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.

Show members of your group your learner observation book.

Select one learner and discuss your observations of this learner’s progress.

Kuvula nekubuyeketa

1 li-awa

Kubuyeketa kufaka ekhatsi kucabanga nekukhuluma ngaloko lohlangabetene nako kanye naloko lokufundzile. Cabanga ngemihlanganosikolo yeTibalo loyihambele bese ucedzela imisho lebekwe ngumfundzisi.

Kubuyeketa nekufezekisa

Umsebenti wekubuyisela emuva esikolweni weMhlanganosikolo 8, ukudzinge kutsi wente naku lokulandzelako:

- ◆ Kusebentisa *Inkhombandlela Yemsebenti: Ithemu 3* kulungiselela nekufezekisa Ithemu 3 Emaviki 4–6 eLuhlelo Lwetibalo
- ◆ Bhala kuphawula encwadzini lobhalela kuyo inchubekelbili yemfundzi ngamunye (incwadzi yekubukisisa bafundzi) Sebentisa luhlu lweku '**Hlola kutsi bafundzi bayakhona ku'** (libhokisi leliso) ngesikhatsi semsebenti loholwa nguthishela ngamunye kukhombindlela kuphawula nekubukisisa kwakho.
- ◆ Bhala emanotsi ngaloko lokusebente kahle kakhulu nekutsi utisombulule kanjani tinsayeya takho ngesikhatsi sekufezekisa Ithemu 3 Emaviki 4–6.

Kulemisebenti lelandzelako sebentisa incwadzi yekubukisisa bafundzi kanye nemanotsi lowasebentise ngesikhatsi ubuyeketa kufundzisa kwelilanga ngalinye.



Umsebenti 1

1. Yabelana ngemasubuciko ekwenta kancono kufundzisa nekufundza kwetinsayeya lohlangabetene nato nawufezekisa Luhlelo Lwetibalo kuThemu 3 Emaviki 4–6. Yabelana ngemasubuciko ekwenta kancono kufundzisa nekufundza letinsayeya lotitfolile.

2. Coca ngekusebentisa kwakho luhlu lwekubukisisa '**Hlola kutsi bafundzi bayakhona ku**' (kulibhokisi leliso) ngesikhatsi sangamunye wemisebenti leholwa nguthishela.
Khombisa emalunga elicembu lakho incwadzi yekubukisisa bafundzi.
Khetsa umfundzi munye bese ukhulula ngekubukisisa kwakho inchubekelbili yalomfundzi.

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



Video 1

Watch the video of a teacher working with a small group of learners during the teacher-guided activity in Term 3 Week 6. The focus of our observation in this workshop is on how the teacher mediates the number activities.

Observe how the teacher works through the six activities. Notice:

- ◆ how she poses problems
- ◆ the language she uses when asking questions
- ◆ how she sets up each activity
- ◆ the questions she asks to guide the learners.



Activity 2

Refer to the teacher-guided activity (pages 114–117) in Week 6 of *Activity Guide: Term 3*.

1. Discuss how you managed this teacher-guided activity with your class.

2. Did you face any challenges? If so, how did you solve them?

-
-
-
- Bhala phasi emaphuzu labalulekile engcogco yakho ephepheni leflipushadi. Bika ngengcogco yakho ecenjini lelikhulu.



Ividiyo 1

Bukela ividiyo yathishela asebenta nelicembu lelincane lebafundzi ngesikhatsi semsebenti loholwa nguthishela kuThemu 3 Liviki 6. Kugcila kwetfu kwalomhlanganosikolo kusekutseni thishela uyingenelela kanjani imisebenti yetinombolo.

Bukisisa kutsi thishela usebenta kanjani kulemisebenti lesitfupha. Caphela kutsi:

- ◆ utibeka kanjani tinkinga
 - ◆ lulwimi lalusebentisako uma abuta imibuto
 - ◆ uwakha kanjani umsebenti ngamunye
 - ◆ imibuto layibutako kukhomba bafundzi indlela.
-
-
-
-
-



Umsebenti 2

Fundza umsebenti loholwa nguthishela (emakhasi 114–117) kuLiviki 6 leNkhombandlela Yemsebenti: Ithemu 3.

- Khuluma ngekutsi uwuphetse kanjani kanye neliklasi lakho lomsebenti loholwa nguthishela.
-
-
-

- Uhangabetene netinsayeya? Uma ngabe kunjalo, utisombulule kanjani?
-
-
-

Session 1: Numbers, Operations and Relationships

1 hour

In previous workshops we have discussed the Numbers, Operations and Relationships Content Area. In this session we will revisit different number topics and expand our discussion to further understand number concept. We will explore the following aspects of number and connect them to classroom practice:

- ◆ oral counting
- ◆ subitising
- ◆ representing number
- ◆ counting objects
- ◆ ordinal numbers
- ◆ calculating.

Oral counting

Children learn the correct order of number words as they play, sing, and repeat rhymes.

As we know, oral counting involves saying the number words in order. Learners sequence numbers during routine oral counting activities and during transitions. Songs, rhymes and actions make oral counting fun, but the focus is on the order of the numbers. Once learners can repeat a sequence of numbers in the correct counting order, they begin to talk about the relationship between the numbers, e.g., which number is *before*, *between* or *after* another number.



Activity 3

In your group, discuss how the following activities have promoted learning the sequence of counting words in your class:

- ◆ songs and rhymes
- ◆ number washing line
- ◆ jumping tracks.

Isehini 1: Tinombolo, Ema-ophareshini neBudlelwane

1 li-awa

Kulemihlanganasikolo leyendlulile sikhulume ngeMkhakha Walokucuketfwe weTinombolo, Ema-ophareshini neBudlelwane. Kuleseshini sitawubuyela emuva kutihloko letehlukene bese sikhulisa ingcogco yetfu kute kutsi sichubeke sivisise umcondvo wetinombolo. Sitawehlwaya letinhlangotsi letilandzelako tetinombolo bese sitichumanisa nalokwentiwa eklasini.

- ◆ kubala ngemlomo
- ◆ isabhithayizingi
- ◆ kumelela tinombolo
- ◆ kubala ema-objekthi
- ◆ tinombolondzawo
- ◆ kubala.

Kubala ngemlomo

Bantswana bafundza kuhleleka kwemagama etinombolo ngesikhatsi badlala, bahlabela, kanye nekuphindzaphindza tingucuko.

Njengobe sati, kubala ngemlomo kufaka ekhatsi kusho emagama etinombolo ngekulandzelana. Bafundzi balandzelanisa tinombolo ngesikhatsi senhlalayenta yemisebenti yekubala ngemlomo nangesikhatsi setingucuko. Tingoma, tilandzelo netento tenta kubala ngemlomo kube yintfo lejabulisako kepha kugcila ekuhlelekeni kwetinombolo. Uma bafundzi sebakwati kuphindzaphindza kulandzelana kwetinombolo ngekuhleleka lokufanele, babese bacala kukhuluma ngebudlelwane lobusemkhatsini wetinombolo, sib. nguyiphi inombolo *lephambili, emkhatsini* noma *ngemuva* kwalenye inombolo.



Umsebenti 3

Ecenjini, khuluma ngekutsi lemisebenti lelandzelako ikukhutsate njani kufundza kulandzelana kwemagama ekubala eklasini lakho:

- ◆ tingoma netilandzelo
- ◆ lilayini lekweneka letinombolo
- ◆ indlela yekuzupha.



Activity 4

Read the information on pages 138–143 and look at the diagram at the top of pages 144–145 of the *Concept Guide*.

In your group, discuss the following aspects of number:

- ◆ different ‘meanings’ of number

- ◆ different kinds of numbers

Learners in Grade R work mostly with the whole numbers 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10. (In Grade 1 this is extended to 20 and beyond.) We focus on counting and representing number in different ways and provide opportunities for learners to engage with numbers in different contexts.

Subitising



Activity 5

Observe the facilitator. Each time she/he flashes a card, say as quickly as you can ‘how many’ dots you see.

1. Did you count each dot one by one? Why not?

2. What do you think the benefit is of reinforcing the skill of subitising?



Umsebenti 4

Fundza lolwatiso kumakhasi 138–143 bese ubuka ledayagramu lesetulu kumakhasi 144–145 eNkhombandlela *Yemfundzi*.

Ecenjini lakho, khuluma ngetinhlangotsi taletinombolo letilandzelako:

- ◆ ‘tinshokutsi’ tetinombolo letehlukene

- ◆ tinhlobo tetinombolo letehlukene

Bafundzi beLibanga R basebenta kakhulu ngetinombolo letiphelele 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 ne-10. (KuLibanga 1 loku kuyelulwa kuye ku-20 nekwendlula lapho.) Sigcila ekubaleni nekumelela tinombolo ngetindlela letehlukene kanye nekunika bafundzi ematfuba ekusebenta ngetinombolo etimeni letehlukene.

Isabhithayizingi



Umsebenti 5

Bukisisa umfundzisi. Sikhatsi ngasinye uma aveta likhasi, shano ngekushesha longakhona ngako ngesikhatsi utsi ubona emacashati ‘lamangaki’.

1. Ubale licashati ngalinye ngalinye? Kungani ungakenti njalo?

2. Ucabanga kutsi yini inzuzo yekugcizelela lelikhono lesabithayizingi?

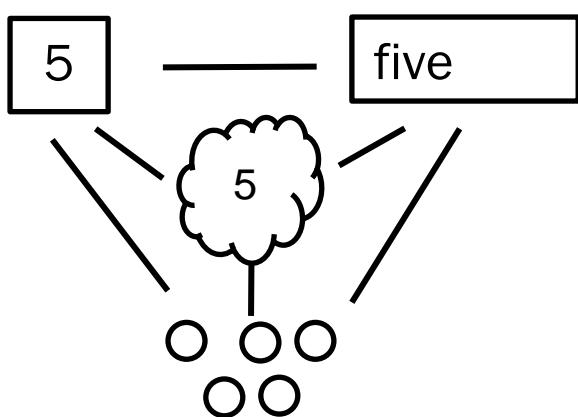
3. What activities that reinforce the ability to subitise have you used in your Term 1 and 2 maths sessions?

Refer to pages 144–147 of the *Concept Guide*.

Representing number

A number is an abstract concept. It is an idea that exists in your head. We can't see numbers, so we have to find different ways to represent (show) the number that is being referred to. Learners need to make the connection between the idea of a number, e.g., 5, and its different representations, like a collection of objects, a symbol, a word. They also need to understand that if we say, 'how many' sweets, claps, houses, birthdays, etc., five always refers to the same number of these things.

Learners need to internalise the 'how muchness' or numerosity of the number. To communicate this concept to learners, teachers need to introduce the idea using concrete objects, for example, counters. To help learners understand the concept of a number, they need to realise that numbers can be represented in different ways. Learners also need to make the connection between different representations of the number, for example an object, picture, symbol and word.



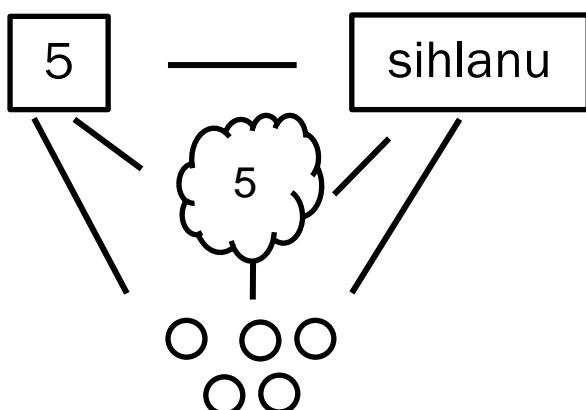
3. Nguyiphi imisebenti loyisebentisile yekugcizelela bukhoni bekwenta isabithayizingi kumaseshini etibalo eThemu 1 neye-2
-
-
-
-

Fundza emakhasi 144–147 eNkhombandlela Yemcondvo.

Kumelela inombolo

Inombolo ingumcondvo longaphatseki. Ngumbono losenhloko yakho. Siyatibona tinombolo, ngako-ke sifanele kutsi sitfole tindlela letehlukene tekumelela (kutikhombisa) lenombolo lekubhekiswe kuyo. Bafundzi badzinga kwenta luchumano emkhatsini wembono wenombolo, sib., 5, kanye nekumelelwa kwayo lokwehlukene, njengeliccogco lema-objekthi, lumphawu, ligama. Bafanele kutsi futsi bavisise kutsi uma sitsi, ‘mangaki’ emaswidi, kushaya tandla, tindlu, emalanga ekutalwa, sib., sihlanu sihlala shisho lona lelo nani lenombolo letintfo.

Bafundzi badzinga kucabanga ‘ngebungaki’ noma kubaluleka lokufananako kwenombolo. Kukhuluma nebafundzi ngalomcondvo, bothishela badzinga kwetfula lombono basebentisa ema-objekthi lacondzile laphatsekako, sibonelo, tibali. Kusita bafundzi bavisise umcondvo wetinombolo, bafanele kutsi babone kutsi tinombolo tingamelelwa ngetindlela letehlukene. Bafundzi nabo badzinga kutsi bente luchumano emkhatsini wekumelelwa kwenombolo, sibonelo i-objekthi, sitfombe, lumphawu kanye neligama.



Session 2: Numbers, Operations and Relationships (continued)

1 hour

Counting objects

To count '**how many**', learners need to realise that each object in a group has a number name and that you count each object only once.

There are five counting principles that describe the process of learning to count. Once learners have understood and can apply all five of these counting principles, we are able to say that they can count.



Activity 6

Read the information on pages 148–151 of the *Concept Guide*.

1. Use the apparatus provided to demonstrate these principles as they are explained in the *Concept Guide*.
2. Discuss each principle in your group and make your own notes in the table below to explain your understanding of each principle.

One-to-one correspondence principle	
Stable order principle	
Cardinal principle	
Abstraction principle	
Order-irrelevance principle	

Iseshini 2: Tinombolo, Ema-ophareshini neBudlelwane (kuyachubeka)

1 li-awa

Kubala ema-objekthi

Kubala kutsi '**kungaki**', bafundzi badzinga kubona kutsi i-objekthi ngayinye kuligcogco itfolo ligama lenombolo nekutsi futsi ubala i-objekthi ngayinye kanye kuphela.

Kunemitsetfomgomo yekubala lesihlanu lechaza inchubo yekufundza kubala. Uma bafundzi sebavisa futsi sebakhona nekuyisebentisa yonkhe yosihlanu lemitsetfomgomo, siyakhona kusho kutsi sebayakwati kubala.



Umsebenti 6

Fundza lwatiso kumakhasi 148–151 eNkhombandlela Yemfundzi.

1. Sebentisa emathulusi laniketiwe kukhombisa lemitsetfomgomo ngesikhatsi ichazwa kuNkhombandlela Yemcondvo.
2. Khulumu ngemtsetfomgomo ngamunye futsi utakhele akho emanotsi kulelithebuli lelingentasi kuchaza kuvisisa kwakho lemitsetfomgomo.

Umtsetfosimo wekucondzanisa kwakunye nakunye	
Umtsetfosimo wekulandzelana lokusimeme	
Umtsetfosimo wekulandzelana lokusimeme	
Umtsetfosimo wekungaphatseki ngesandla	
Umtsetfosimo wekulandzelana lokungahlobani	

Ordinal numbers

We have discussed the kinds of numbers that tell you 'how many'. These are called **cardinal numbers**.

There are also numbers that indicate the position of something or someone in a series or order. These are called **ordinal numbers**.



Activity 7

Arrange the animal counters on your table according to the facilitator's instructions.
Answer her/his questions about the position of the animal counters.

Tinombolondzawo

Sikhulumile ngaletinombolo letikutjela kutsi ‘kungaki’. Leti tibitwa ngekutsi **tinombolo tekhadinali**.

Kuphindze futsi kube netinombolo letikhombisa sikhundla sentfo noma umuntfu kuluchungechunge noma kuhleleka. Tibitwa ngekutsi **tinombolondzawo**.



Umsebenti 7

Hlela tibali tetilwane etafuleni lakho ngekuya kweticondziso temfundzisi. Phendvula imibuto yakhe mayelana nesikhundla setibali tetilwane.

Session 3: Calculation in Grade R

1 hour

Learners need to understand the value of numbers and the relationships between them before they can do operations like addition and subtraction. They need to know, for example, 'how many' three is; 3 comes before 4, after 2 and between 2 and 4; and 3 is one more than 2 and one less than 4.

Working with counters, structure beads, dot cards, and the shake-and-break game provides opportunities for learners to understand that numbers can be built up or broken down. In this way, they gradually recognise that any number is made up of many different combinations of other numbers. For example, number 5 can be made up of:

- ◆ 4 and 1
- ◆ 1 and 1 and 1 and 2
- ◆ 0 and 5.

In Grade R, learners explore different ways of building up and breaking down numbers, and adding and subtracting using counters.



Activity 8

Read the information on pages 154–156 of the *Concept Guide*.

Think about how you have used the materials provided in the Maths Programme to help learners understand number operations (calculations) and relationships. Use the materials to demonstrate this.

1. How do learners explore the concept of number in the Maths Programme using the materials provided?
2. What questions could you ask that would guide their learning? (Refer to page 156 of the *Concept Guide* for examples of questions.)

Prepare to present your discussion to the whole group.

Isehini 3: Kubala kuLibanga R

1 li-awa

Bafundzi badzinga kuvisisa bukhulu betinombolo nebuldele wane emkhatsini wato ngembi kwekutsi bacale kwenta ema-ophareshini njengekuhlanganisa nekususa. Badzinga kwati, sibonelo, ku-3 ‘mungaki’; ku-3 uta ngemuva kwe-4, ngemuva kwa-2 nasemkhatsini waku-2 naku-4; na-3 kungetulu kwa-2 ngakunye kuphindze futsi kube ngaphasi kwa-4.

Kusebenta ngetibali, buhlalusakhiwo, emakhadi emacashati, kanye nemdlalo wekukhuhlutisa bese uyahlukanisa kuniketa umfundzi ngamunye ematfuba ekuvisisa kutsi tinombolo tingakhiwa tiphindze futsi tibhidlitwe. Ngalendlela lena, kancane kancane bacala kubona kutsi noma nguyiphi inombolo yakhiwa ngetinhlanganisela taletinye tinombolo letinyenti. Sibonelo, inombolo 5 ingakhiwa ngaloku:

- ◆ ku-4 naku-1
- ◆ ku-1 na-1 kanye na-1 na-2
- ◆ 0 na-5.

KuLibanga R, bafundzi behlwaya tindlela letehlukene tekwakha nekubhidlita tinombolo, nekuhlanganisa nekususa basebentisa tibali.



Umsebenti 8

Fundza lwatiso kumakhasi 154–156 eNkhombandela Yemfundzi.

Cabanga ngekutsi uyisebentise kanjani imethiriyeli loyinikiwe kuLuhlelo Lwetibalo kusita bafundzi bavisise ema-ophareshini etinombolo (kubala) kanye nebuldele wane. Sebentisa lemethiriyeli kukhombisa loku.

1. Bafundzi bawehlwaya kanjani umcondvo wetinombolo kuLuhlelo Lwetibalo basebentisa imethiriyeli labayinikiwe?
 2. Nguyiphi leminye imibuto longayisebentisa letawukhombie loka kufundza kwabo? (Fundza likhasi 157 leNkhombandela Yemcondvo tibonelo temibuto.)
-
-
-
-

Lungiselela kubika ngengcogco yakho ecenjini lonkhe.

Word problems

Grade R learners need to orally solve word problems involving addition, subtraction, and equal sharing and grouping. They also need to explain their own reasoning and ways of solving different problems.

Give learners plenty of time to think and let them use real objects (e.g. counters, fingers, structure beads) to solve the problems and check their answers.

When presenting a word problem to learners, it is important to encourage them to:

- ◆ find a strategy to solve the problem
- ◆ explain how they solved the problem
- ◆ say why they think their answer is correct.

Common addition and subtraction contexts can be presented as word problems. The way that the word problem is structured, determines how easy or difficult it is to solve. It is important to use clear, simple language when presenting word problems.

In Workshop 6 we looked at the importance of using clear, simple language and asking appropriate questions during problem-solving activities. We also designed real-world problems in contexts that learners could relate to. In Activity 9, you will discuss problem solving in more detail.



Activity 9

1. Look at the word problems below (page 26).
 - ◆ How would you solve each problem?
 - ◆ How do you think your Grade R learners would solve each problem?
 - ◆ Why are some of these problems more difficult than others?
 - ◆ Use the counters on your table to show how learners would solve the problems.

Tibalo temagama

Bafundzi belibanga R badzinga kusombulula tinkinga ngemlomo tibalo temagama letifaka ekhatsi kuflanganisa, kususa, kanye nekwaba ngalokulinganako kanye nekwenta emacembu. Lokunye futsi kutsi badzinga kuchaza tabo tindlela tekucabanga kanye netindlela tekusombulula tinkinga letehlukene.

Nika bafundzi sikhatsi lesinyenti sekucabanga futsi ubente basebentise ema-objekthi mbamba (sib. tibali, iminwe, buhlalusakhiwo) kusombulula letinkinga bese ubuka timphendvulo tabo.

Uma wetfula sibalo semagama kubafundzi, kubalulekile kutsi ubakhutsate:

- ◆ tfola emasubuciko ekusombulula lenkinga
- ◆ chaza kutsi bayisombulule kanjani lenkinga
- ◆ shano kutsi kungani bacabanga kutsi imphendvulo yabo ingiyo.

Kungetfulwa timo letetayelekile tekuhflanganisa nekususa njenetinkinga. Indlela sibalo semagama lesihlelwé ngayo, incuma kutsi kulula noma kulukhuni kangakanani kusisombulula. Kubalulekile kusebentisa lulwimi lolucacile futsi lolulula uma wetfula tibalo temagama.

KuMhlanganosikolo 6 sibuke kubaluleka kwekusebentisa lululwimi lolucacile, lolulula kanye nekubuta imibuto lefanele ngesikhatsi semisebenti yekusombulula tinkinga. Siphindze futsi sakhe tibalo temagama mbamba esimeni bafundzi labangatimatanisa nato. KuMsebenti 9 utawukhuluma ngekusombulula inkinga ngalokubanti.



Umsebenti 9

1. Buka lesibalo semagama lesingentasi (likhasi 27).
 - ◆ Ungayisombulula kanjani inkinga ngayinye?
 - ◆ Ucabanga kutsi bafundzi beLibanga R bangayisombulula kanjani inkinga ngayinye?
 - ◆ Kungani letinkinga tilukhuni kakhulu kunaletinye?
 - ◆ Sebentisa letibali letisetafuleni lakho ukhombise bafundzi kutsi bangatisombulula kanjani letinkinga.

Combine	Separate
Laylah has 6 sweets. Malusi gives her 2 more. How many sweets does Laylah have altogether?	There are 8 sweets. Laylah eats 3 sweets. How many are left for Malusi?
Laylah has 5 sweets. How many more does she need to have 8?	Laylah has 8 sweets. Malusi eats some. There are 4 left. How many did Malusi eat?
Laylah had some sweets. Malusi gives her 2 more. Now she has 8. How many did Laylah start with?	Laylah had some sweets. She gave 6 sweets to Malusi. She has 2 sweets left. How many sweets did she start with?

2. Write a word problem that you could present to your Grade R learners for each of the following:

Addition: $4 + 5 =$

Subtraction: $7 - 3 =$

Equal sharing without a remainder: 8 shared between 4 learners

Hlanganisa	Hlukanisa
Laylah unemaswidi la-6. Malusi umupha 2. Laylah unamangaki emaswidi sekawonkhe?	Kunemaswidi la-8. Laylah udla emaswidi la-3. Malusi usalelwengulamangaki?
Laylah unemaswidi la-5. Udzinga kubanalamanye lamangaki kute kutsi abenala-8?	Laylah unemaswidi la-8. Malusi udla lamanye. Kusele la-4. Malusi udle mangaki?
Laylah bekanemaswidi. Malusi umuphalamanye la-2. Manje sewunala-8 Laylah bekanamangaki ekucaleni?	Laylah bekanemaswidi. Uphe Malusi emaswidi la-6. Usalelwengemaswidi la-2 Bekanamangaki emaswidi ekucaleni?

2. Bhala sibalo semagama longasetfula kubafundzi bakho beLibanga R ngakunyekwaloku lokulandzelako:

Kuhlanganisa: $4 + 5 =$

Kususa: $7 - 3 =$

Kwabelana ngalokulinganako lokunensalela: loku-8 kwabelwe bafundzi la-4

Equal sharing with a remainder: 5 shared between 2 learners

**Kwabelana ngalokulinganako lokungenansalela: loku-5 kwabelwe bafundzi
laba-2**

Session 4: Planning for teaching

1½ hours

This workshop session prepares participants for implementing Term 3 Weeks 7–10. By this stage of the year, the teacher will have noticed distinct differences between learners' levels of progress. Term 3 builds on the content of Terms 1 and 2. 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 Term 4.



Video 2

Watch the video of a teacher discussing how she deals with the range of learner competence in her class. Listen to what she says about planning and managing the difference between learners' ability levels and how she goes about her planning in order to support the learners' individual needs.

Note your ideas about differentiated teaching and learning in your classroom.



Activity 10

1. In your group, complete the planning templates for Term 3 Weeks 7–10 (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:
 - ◆ What challenges do you anticipate in implementing Weeks 7–10?
 - ◆ How can you solve each of these challenges in order to achieve successful implementation?
 - ◆ 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?

Isehini 4: Kuhlelela kufundzisa

1½ ema-awa

Leseshini yemhlanganosikolo ilungiselela bahlanganyeli kufezekisa Ithemu 3 Emaviki 7–10. Kulesigaba lesi semnyaka, thishela utawube sekacaphele kutsi umehluko emkhatsini wemazinga enhubukelembili yebafundzi. Ithemu 3 yakhela kulocuketfwe kuThemu 1 neye-2. Labanye bafundzi batawube sebakulungele loku, kantsi labanye bona batawube basadzinga kwesekelwa kanye nekuhlanganisa lokunyenti kunchubukelembili. Kubalulekile kulungiselela nekuhlelela lomehluko ekwatini kwebafundzi kucinisekisa kutsi konkhe lokucuketfwe nemakhono eTibalo teLibanga R kuyafundvwa, nekutsi futsi bafundzi batilungiselele Ithemu 4.



Ividiyo 2

Bukela levidiyo yathishela akhuluma ngekutsi ubukana kanjani nemkhakha wekwati kwebafundzi eklasini lakhe. Lalela kutsi batsini mayelana nekuhlela nekulawula umehluko emkhatsini wemazinga emakhono ebafundzi nekutsi uhlela kanjani kute kutsi akwati kwesekela tidzingo tebfundzi ngekwehlukana.

Bhala imibono yakho mayelana nekufundzisa nekufundza lokwehlukahlukene eklasini lakho.



Umsebenti 10

1. Ecenjini lakho, yenta ucedze emathemplethi eThemu 3 Emaviki 7–10 (Sengeto A).
2. Licembu lakho litawetfula sibutsetelo sengcogco yenu yekuhlela kulamanye emacembu. Bhala phasi emaphuzu labalulekile engcogco yakho ephepheni lefliphushadi. Faka timphendvulo talemibuto lelandzelako:
 - ◆ Ngutiphi tinsayeya locabanga kutsi utawuhlangabetana nato ekufezekiseni Emaviki 7–10?
 - ◆ Ungatisombulula kanjani tonkhe letinsayeya kute ufezekise ngalokuyimphumelelo?
 - ◆ Imisebenti leholwa nguthishela iwaveta njani ematfuba ekutsi thishela ahlole ngemphumelelo aphindze asekele bafundzi ngemphumelelo?
 - ◆ Yenta imisebeti yemacembu lamancane latimele inikete kutetayeta lokwenele lwati nemakhono lamasha?

Closing activities

30 minutes



Activity 11

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 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 Term 3: Exemplar Record of Continuous Assessments (from *Activity Guide: Term 3*) to the next workshop.

Evaluation

Complete the Evaluation Form.

Imisebenti yekuvala

30 emaminitsi



Umsebenti 11

Lubuyeketo lwemhlanganosikolo: Tsatsa emaminitsi lambalwa ucabange ngalolusuku. Buka yonkhe *Incwadzi Yekusebentela Yemhlanganyeli* utikhumbute ngaloko lokufundziwe. Bhala phasi imicabango yakho.

Yabelana ngelubuyeketo lwakho nelicembu lelikhulu.



Umsebenti wekubuyisela emuva esikolweni

1. Sebentisa *Inkhombandlela Yemsebenti: Ithemu 3* kuhlela nekufezekisa Ithemu 3 Emaviki 7–10 eLuhlelo Lwetibalo.
2. Bhala emanotsi aloko lokwenteke kahle kakhulu nekutsi tinsayeya utisombulule kanjani ngesikhatsi sekufezekisa Ithemu 3 Emaviki 7–10.
3. Bhala kuphawula encwadzini lobhalela kuyo inchubekelibili yemfundzi ngamuye (*incwadzi yekubukisisa bafundzi*) Sebentisa '**Hlola kutsi bafundzi bayakhona ku'** (libhokisi leliso) ngesikhatsi semsebenti loholwa nguthishela ngamunye kukhombindlela kuphawula nekubukisisa kwakho.
4. Wota nencwadzi yekubukisisa bafundzi bakho bese ubhala emanotsi lowente ngesikhatsi ubuyeketa kufundzisa kwelilanga ngalinye kuMhlanganosikolo lolandzelako.
5. Wota nekhophi yeThemu 3: Sibonelo seLirekhodi leLuhlolo Loluchubekako (*lesikuNkhombandlela Yemsebenti: Ithemu 3*) kumhlanganosikolo lolandzelako.

Kuhlolisisa

Gwalisa leLifomu Lekuhlolisisa.

APPENDIX A: TERM 3 WEEKLY PLANNING TEMPLATE

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			

SENGETO A: ITHEMPELETHI YEKUHLELELA LIVIKI LETHEMU 3

Ithemu 3: Luhlelolisu Lwemsebenti: Liviki _____

UMKHAKHA WALOKUCUKETFWE:				
SIHLOKO:				
YETFULA LWATI LOLUSHA:				
TETAYETE:				
Imisebenti yeliklasi lonkhe	Umsebenti loholwa nguthishela	Imisebenti yendzawo yekusebentela (imisebenti letimele yemacembu lamancane)	Umsebenti 1	Umsebenti 2
Lilanga 1			Umsebenti 3	Umsebenti 4
Lilanga 2				
Lilanga 3				
Lilanga 4				
Lilanga 5				

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			

Ithemu 3: Luhlelolisu Lwemsebenti: Liviki _____

UMKHAKHA WALOKUCUKETFWE:				
SIHLOKO:				
YETFULA LWATI LOLUSHA:				
TETAYETE:				
Imisebenti yeliklasi lonkhe	Umsebenti loholwa nguthishela	Imisebenti yendzawo yekusebentela (imisebenti letimele yemacembu lamancane)	Umsebenti 1	
Lilanga 1			Umsebenti 2	
Lilanga 2			Umsebenti 3	
Lilanga 3			Umsebenti 4	
Lilanga 4				
Lilanga 5				

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			

Ithemu 3: Luhlelolisu Lwemsebenti: Liviki _____

UMKHAKHA WALOKUCUKETFWE:				
SIHLOKO:				
YETFULA LWATI LOLUSHA:				
TETAYETE:				
Imisebenti yeliklasi lonkhe	Umsebenti loholwa nguthishela	Imisebenti yendzawo yekusebentela (imisebenti letimele yemacembu lamancane)	Umsebenti 1	
Lilanga 1			Umsebenti 2	
Lilanga 2			Umsebenti 3	
Lilanga 3			Umsebenti 4	
Lilanga 4				
Lilanga 5				

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			

Ithemu 3: Luhlelolisu Lwemsebenti: Liviki _____

UMKHAKHA WALOKUCUKETFWE:				
SIHLOKO:				
YETFULA LWATI LOLUSHA:				
TETAYETE:				
Imisebenti yeliklasi lonkhe	Umsebenti loholwa nguthishela	Imisebenti yendzawo yekusebentela (imisebenti letimele yemacembu lamancane)	Umsebenti 1	
Lilanga 1			Umsebenti 2	
Lilanga 2			Umsebenti 3	
Lilanga 3			Umsebenti 4	
Lilanga 4				
Lilanga 5				

Workshop 9 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?

Lifomu Lekuhlolisia Umhlanganosikolo 9

1. Lomhlanganosikolo ufinyelele yini ezingeni lebewulilindzele?

2. Yini lokufundzile kulomhlanganosikolo lokubalulekile lokukusite kakhulu?

3. Kukhona yini longakakutsandzi noma lokutfole kulukhuni?

4. Utakusebentisa kanjani eklasini leLibanga R loku lokufundzile?

5. Ikhona yini imibono lonayo yekwenta kancono imihlanganosikolo lechubekako?
