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IsiXhosa/English

INkqubo yeMathematika yokuPhucula yeBanga R Grade R Mathematics Improvement Programme



INdibano yoCweyo 10 • Workshop 10

Incwadi yokuSebenzela yoMthathinxaxheba • Participant's Workbook

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

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Overview

Purpose

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

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

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

Learning outcomes

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

Workshop content

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

Amagqabantshintshi

Injongo

Le yeyeshumi kwezilishumi elinambini iindibano zocweyo zeNkqubo yeMathematika yokuPhucula yeBanga R (iNkqubo yeMathematika) neyinxalenye yeProjekthi yeBanga R yokuPhucula yeMathematika noLwimi yeSebe leMfundo laseGauteng (Gauteng Department of Education (GDE)).

Injongo yale ndibano yocweyo kukuncedisa ootitshala ukuba baphumeze iNkqubo yeMathematika eziklasini zabo. Abathathinxaxheba bazakuba nethuba lokucamngca ngokuphumeza kwabo iNkqubo yeMathematika baze baxoxe ngocwangciso, ukufundisa nokuhlola kwabo. Bazakuphinda baqwalasele nenkqubela yabafundi, ukukhula komfundi ngamnye kunye neemfuno zokufunda. Abathathinxaxheba bazakucamngca ngeendlela ezifanelekileyo zokuhlola ezizakugcina inkqubela yomfundi. Indibano yocweyo iphonononga umxholo weKota 4 iiVeki 1–3 kunye nokuphunyezwa kwawo eklasini.

Ubhekiso kwiiNkalo zomXholo weMathematika weBanga R luthathwe *kwiNkcazelo yePolisi yeKharityhulam nokuHlola (CAPS): IBanga R iMathematika (idrafti yokugqibela)*, 2011, iSebe leMfundo esiSiseko, yaseMzantsi Afrika.

Iziphumo zokufunda

- ◆ Ukuthetha ngokuphunyezwa kweKota 3 iiVeki 7–10
- ◆ Ukucamngca ngokusebenzisa imigaqo ekhokela ukufundisa imathematika kwiBanga R
- ◆ Ukuluqonda nangakumbi uqwalaselo oluqhubekayo lomfundi kwiBanga R
- ◆ Ukucamngca ngeendlela ezingekho sikweni kwiBanga R
- ◆ Ukucamnga ngeengxaki nokufumana izisombululo zokuphumeza iNkqubo yeMathematika
- ◆ Ukuceba umxholo weNkqubo yeMathematika oza kufundiswa kwiKota 4 iiVeki 1–3

Umxholo wendibano yocweyo

- ◆ Ukuvula nocamngco (1 iyure)
 - ◆ Iseshoni 1: Uqwalaselo nohlolo (1 iyure)
- ITI
- ◆ Iseshoni 2: Imigaqo ekhokelayo yokufundisa imathematika kwiBanga R (1 iyure)
 - ◆ Iseshoni 3: Ukwazisa amanani u10 no0 (1 iyure)
- ISIDLO SASEMINI
- ◆ Iseshoni 4: Ukucwangciselela ukufundisa (1½ iiyure)
 - ◆ Imisebenzi yokuqukumbela (30 imizuzu)

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.

Ukuvula nocamngco

1 iyure

Ucamngco luquka ukucinga nokuthetha ngamava akho kwanoko ukufundileyo.

Ucamngco ngokuphunyezwa

Nanku *Umsebenzi ekubuyelwa nawo esikolweni* osuka kwiNdibano yoCweyo 9.



Umsebenzi ekubuyelwa nawo esikolweni (INDIBANO yoCweyo 9)

1. Sebenzisa *isiKhokelo semiSebenzi: Ikota 3* ukucwangcisa nokusebenza kwiKota 3 iiVeki 7–10 zeNkqubo zeMathematika.
2. Yenza amanqaku ngoko kusebenze kakuhle, okungasebenzanga kakuhle nendlela ohlangabezane ngayo nemingeni ngethuba ukuphumeza uKota 3 iiVeki 7–10.
3. Bhala izimvo zakho encwadini oyisebenzisela ukugcina inkqubela yomfundi ngamnye (incwadi yoqwalaselo lomfundi). Sebenzisa uluhlu lokuqwalasela luka- **'Qwalasela ukuba abafundi bayakwazi uku-'** (ibhokisi eneliso) ngexesha lemisebenzi ekhokelwa ngutitshala ukukhokela uqwalaselo nezimvo zakho.
4. KwiNdibano yoCweyo elandelayo yiza nencwadi yakho yoqwalaselo lomfundi namanqaku owenzileyo xa ucamngca ngosuku ngalunye lokufundisa.
5. Yiza nekopi yeKota 3: Umzekelo weRekhodi yoHlolo oluQhubekayo (ethathwe *kwisiKhokelo semiSebenzi: Ikota 3*) kwindibano yocweyo elandelayo.



Umsebenzi 1

1. Kwiqela lakho, yenzani inqaku lephephandaba malunga nokufundisa nokufunda imathematika kwiBanga R. Sebenzisa iNkqubo yeMathematika nendlela oza kukwenza ngayo eklasini njengesiseko senqaku lakho. Quka oku kulandelayo:
 - ◆ kutheni ibalulekile imathematika kwiBanga R
 - ◆ iimpumelelo nemingeni yakho ukuphumeza iNkqubo yeMathematika kwiiKota 1, 2 no3
 - ◆ ubuchule obusebenzisileyo ukuhlangabezana nemingeni.

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. Bhala inqaku lephephandaba kwifliptshathi.
3. Uza kubonisa inqaku lakho kwamanye amaqela uze uphendule nayiphi imibuzo abanayo.

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.



Iseshoni 1: Uqwalaselo nohlolo

1 iyure

Uqwalaselo kwiBanga R

Uqwalaselo luyinxalenye yenkqubo yokufundisa, ukufunda nohlolo. KwiBanga R, indlela yohlolo olungundoqo luqwalaselo. Utitshala uqokelela ulwazi malunga nabafundi ngexesha lemisebenzi yeklasi yonke, imisebenzi yamaqela amancinci nokuzidlalela (ngaphakathi nangaphandle eklasini). Ngexesha lomsebenzi okhokelwa ngutitshala, ukusebenzisana kwakho nomfundi ngamnye kubanika ulwazi olufanelekileyo ngenkqubela yabo. Ngokubhala phantsi inkqubela yabafundi, ukuqonda iikhonsepthe ezithile zemathematika encwadini yakho amathuba wonke, wakha umfanekiso opheleleyo womfundi ngamnye.

Uqwalaselo olunenjongo

Ukuze uqwalaselo lusebenze kakuhle, utitshala kufuneka aqonde kwaye azi into amakagxile kuyo.

Kumsebenzi olandelayo, uza kuziqhelisa izakhono zakho zoqwalaselo. *Lo ngumsebenzi womntu ngamnye. Kubaluleke kakhulu ukuba ungaxeleli mntu ngoqwalaselo lwakho.*



Umsebenzi 2

Jonga ifoto yabafundi ababini beBanga R bedlala ngeebhloko. Bhala phantsi okuqwalaselayo ngeli xesha ujonge ifoto.



My observations:



Video 1

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

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

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

Objective observation involves:

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

Endikuqwalaseleyo:



Ividiyo 1

1. Bukelani ividiyo yeqela labafundi lidlala umdlalo kaBingo. Bhala okuqwalaseleyo kubafundi.

2. Zeziphi izinto eziyinyani othe waziqwalasela izeziphi eziluqikelelo? Yiya kuluhlu lwakho ubhale u'N' okanye u'Q' ecaleni kwengxelo.

Xa sibhala into **esicinga** ukuba umfundi unokukwazi okanye akanakukwazi ukuyenza, okanye indlela aziva ngayo umfundi, senza uqikelelo. Inye indlela yokwazi ukuba ucinga ntoni okanye uziva njani umfundi, kukubabuza ukuze bakuxelele.

Injongo yoqwalaselo iquka:

- ◆ ukuchaza into oyibonayo noyivayo kuphela
- ◆ ukubhala phantsi into eyenziwa ngumfundi nayithethayo ngokweenkcukacha ezicace kangangoko
- ◆ akugwebi – lumkela ukunika izimvo neembono ezizezakho
- ◆ ukuqwalasela umfundi ngamnye rhoqo, kwimisebenzi eyahlukileyo ngamaxesha ahlukeneyo emini.



Activity 3

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

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

Assessment in Grade R

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

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

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



Umsebenzi 3

1. Cinga ngothe wakuqwalasela kumfundi omnye kwiKota 3. Ingasesiphi isakhono esikhulayo semathematika somfundi?

2. Khangela ku(3) ukuya ku(5) kuMsebenzi ekubuyelwa nawo esikolweni osuka kwiNdibano yoCweyo 9 (iphepha 9).

- ◆ Xoxani ngokusetyenziswa kukaluka- **‘Qwalasela ukuba abafundi bayakwazi uku-’** uluhlu loqwalaselo (kwibhokisi yeliso) ngexesha lemisebenzi ekhokelwa ngutitshala.
- ◆ Bonisa amalungu eqela lakho incwadi yoqwalaselo yabafundi.
- ◆ Nikanani amathuba ukuxoxa ngenkqubela yomfundi. Zeziphi izakhono zemathematika oziqwalaseleyo? Wazi njani? (Wenze ntoni kwaye utheni umfundi?)
- ◆ Chaza indlela olufake ngayo ulwazi usebenzisa iKota 3: Umzekelo weRekhodi yoHlolo oluQhubekayo.
- ◆ Ingaba ukwazile ukusebenzisa inkqubo ekhethekileyo yokufundisa nokufunda eklasini yakho. Ukuba kunjalo, kanjani?

Uhlolo kwiBanga R

Uhlolo kwiBanga R lusetyenziselwa ukwenza izigqibo ngeyona ndlela ichanekileyo yokuxhasa ukukhulisa umfundi ngamnye. Ngexesha lemisebenzi ekhokelwa ngutitshala, imisebenzi yeklasini yonke kunye neminye imisebenzi ekwinkqubo yemihla ngemihla, uya kuba namathuba okuqwalasela abafundi uqonde kwaye ubone nenkqubela yabo. Olu lwazi luya kuba sisikhokelo kwisicwangciso sakho sokufundisa nokufunda.

Iitheyibhile zohlolo oluqhubekayo kwiCAPS neziKhokelo zemiSebenzi zeNkqubo yeMathematika zisekwe kumxholo obufundiswa kwikota nganye kwaye zingasetyenziswa ukushwankathela inkqubela yomfundi ngamnye kule kota.

Qaphela ukuba izakhono nendlela yokuziphatha kufuneka iqwalaselwe kwiimeko ezininzi ukuze iipateni zophuhliso zirekhodwe njengokuba ixesha lihamba.

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.

Ishoni 2: Imigaqo ekhokelayo yokufundisa imathematika kwiBanga R

1 iyure

Kulo lonke ixesha loqeqesho kwiNkqubo yeMathematika, besibhekiselela kwimigaqo ekhokela ukufundisa imathematika kwiBanga R nendlela efakwa ngayo kwinkqubo yemihla ngemihla yokuziqhelisa eklasini. Eminye imigaqo ilula ukuphawuleka nokuyisebenzisa kuneminye. Njengokuba singootitshala kufuneka sisoloko siyazi indlela, indawo nexesha esiya kuyisebenzisa kuyo le migaqo eziklasini zethu.



Umsebenzi 4

Umbhexeshi uya kunika omnye wemigaqo ekhokela ukufundisa imathematika kwiBanga R kwiqela lakho. Uya kufumana umfanekiso walo migaqo.

1. Kwiqela lakho, xoxani ngale mibuzo ilandelayo:
 - ◆ Yintoni oyiqondayo ngalo migaqo 'xa usenziwa'?
 - ◆ Ingaba iNkqubo yeMathematika yenza kube lula ukusebenzisa lo migaqo ekufundiseni imihla ngemihla?
 - ◆ Njengokuba uyenzile iNkqubo yeMathematika kwiikota ezintathu, ingaba ucamngce njani ngalo migaqo?
 - ◆ Ingaba ungayichaphazela indlela ofundisa ngayo xa ungangabikho lo migaqo kwindlela oyisebenzisa eklasini?
2. Ncamathelisa umfanekiso kwiphepha lefliptshathi. Bhala izimvo zakho ngasezantsi komfanekiso ukuze wabelane ngawo neqela lonke.



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



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



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



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



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



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



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



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

THE EIGHT PRINCIPLES OF GRADE R MATHS



1. **Umgaqo womxholo.** Ukufunda kwenzeka kwiimeko ezinentsingiselo nezifanelekileyo.



2. **Umgaqo womsebenzi.** Abafundi kufuneka bathathe inxaxheba ngqo kwinkqubo yokufundiswa kwabo.



8. **Umgaqo wokuziqhelisa.** Ukufunda kuqakunjelwa ngokuziqhelisa kwizakhono ezitsha nolwazi.



7. **Umgaqo woquko.** Ukufunda kwenzeka kwimeko apho wonke umntu amkelekileyo, equkiwe, ephethwe kakuhle, enikwa imbeko kwaye ethathe inxaxheba.



3. **Umgaqo wokudlala.** Abantwana bafunda ngokugqibelela xa bezidlalela naxa besenza imisebenzi eyimidlalo ekhokelwayo.



6. **Umgaqo wokukhokela.** Ukufunda kwenzeka xa ootitshala bekhokela abafundi ekuphuhliseni ulwazi olutsha.



5. **Umgaqo wentsebenziswano.** Ukufunda kwenzeka xa kukho amathuba onxibelelwano nokwabelana ngamava.



4. **Umgaqo wenqanaba.** Abafundi badlula kumanqanaba ohlukeneyo okuqonda nophuhliso.

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.

Ishoni 3: Ukwazisa amanani u10 no0

1 iyure

Ukwazisa inani i10

Amanani alishumi asetyenziswe kwinkqubo yamanani exabiso lendawo ngu0, 1, 2, 3, 4, 5, 6, 7, 8 no9. La ngamanani asetyenziswa ukubonisa imivo (oononye) nokumela amaxabiso enani elingenakubalwa, umzekelo:

- ◆ amashumi
- ◆ amakhulu
- ◆ amawaka, njalonjalo.

Abafundi abakwiSigaba esisisiSeko kufuneka baqonde ukuba inani elinye liyakwazi ukusetyenziswa ukumela amaxabiso ohlukileyo, kuxhomekeke kwindawo elimi kuyo inani kwinani elo. Umzekelo, kwinani ngalinye kula angasezantsi u'3' unamaxabiso ohlukileyo:

- ◆ ku 3, ixabiso ngu 'ntathu'
- ◆ ku 31, ixabiso 'ngamashumi amathathu'
- ◆ ku 349, ixabiso 'ngamakhulu amathathu'.

Ixabiso lendawo yikhonsepthe ekunzima ukuba abafundi bayiqonde. Abaphandi bafumanise ukuba abafundi abaninzi ukuya kwiminyaka esibhozo bacinga ukuba u'1' ku15 uthetha ukuba 'inye'.

KwiBanga 1 abafundi baphonononga isiseko senani ushumi kwinkqubo yamanani, besebenza ngamanani ukusuka ku11 ukuya phambili. Babonisa la manani ngokwamaqela eshumi kunye neminqakathi. Xa besebenza ngamanani 11-19, baqala ukuqonda ukuba kwinani elifana no14, inani u1:

- ◆ alithethi u1
- ◆ umele oonye abali10
- ◆ ngoko ke, ikwalishumi eli1 (iqela eli1 leshumi).

Bakwaqonda nokuba inani 4 kwi14, limele u4.

UBUSAZI NA?

KwiSigaba esisisiSeko, abafundi bathetha 'ngamashumi' kunye 'nemivo' njengamaqela eshumi 'noononye' azimeleyo. Babonisa amanani anemivo emibini nemivo emithathu besebenzisa imizekelo yokwenziwa kwamaqela namakhadi okwandisa amanani.

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



Activity 5

IMPORTANT!

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

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

14 31 22 43

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

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

Asilazisi ixabiso lendawo kwiBanga R. Ekugxilwa kuko kweli banga kukuqonda ixabiso lamanani u0–10 nokwakha ingqikelomanani eluqilima kolu luhlu. Ukuba umfundi unayo ingqikelelo efanelekileyo yamanani ukuya kufika ku10, olu lwazi luyakwandiswa kwiBanga 1 nakwamanye amabanga.



Umsebenzi 5

OKUBALULEKILEYO!

Lo msebenzi ngowokuphuhlisa ulwazi lwakho nokukuxhobisa. Awubalungelanga abafundi beBanga R. MUSA ukuwazisa lo msebenzi kwiBanga R.

Sebenzisa izixhobo zokubala, izinti namakhadi amanani anikiweyo ukubonisa la manani alandelayo:

14 31 22 43

1. Bonisa inani ngalinye usebenzisa izixhobo zokubala: yenza amaqela eshumi noonye abahamba bodwa.
2. Bonisa inani ngalinye usebenzisa izixhobo zokubala nomtya: yenza iinyanda zeshumi noonye abahamba bodwa.
3. Lebhelisha iinyanda ngamakhadi amanani achanekileyo.
4. Thetha ngokuba mangaphi amaqela eshumi kwaye bangaphi oonye kwinani ngalinye.
5. Xoxani ngexabiso lenani ngalinye.
6. Sesiphi isixhobo ocinga ukuba sifanelekile ukubonisa iikhonsepthi 'zamaqela eshumi' ('amashumi') kunye 'noonye'? Cacisa impendulo yakho.

7. Ingaba uphawula ntoni ngexabiso lamanani kumanani owabonise ngamakhadi amanani?

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.

Abafundi beBanga R akukafuneki baliqonde ixabiso lendawo. Koko kufuneka:

- ◆ baqonde ixabiso ('ubungakanani') lamanani 0-10
- ◆ baqonde iindibanisela ezahlukeneyo zamanani ukuya kufika ku10
- ◆ baqonde ukuba nangona i10 lenziwe ngamanani u1 no0, ASINGO 1 + 0 linexabiso lalo ('ubungakanani')
- ◆ baqonde kwaye bakwazi ukubonisa amaxabiso ahlukeneyo ka1, 0 no10.



Umsebenzi 6

1. Kwiqela lakho, xoxani ngeembono zokufundisa inani u10 eklasini yeBanga R. Quka ukusetyenziswa kwemiboniso eyahlukeneyo.

2. Bonisa iimbono zakho kwiqela lonke.

Ukwazisa inani u0

KwiBanga R, abafundi kufuneka bamqonde ukuba uziro linani kwaye isimboli yenani yakhe ngu'0'.

Abantwana abancinci bakufumana kunzima ukuqonda ikhonsepthe 'yento engekho'. Xa abafundi bejonge ipleyiti engenanto, isikhongozeli, ibhokisi okanye ibhegi basoloko besebenzisa amagama afana no-'iphelile', 'iphele yonke', 'ayikho eshiyekileyo', 'iphele tu' okanye 'akukho nto' ukuchaza imeko. Ootitshala mabazamkele ezi nkcazelo zichanekileyo, kodwa kufuneka bazise igama u'ziro'. Igama u'ziro' kufuneka lisetyenziswe ngendlela enye engajikajikiyo, naxa sekubalwa ukusuka phezulu okanye ukubuya umva, umz., xa ubala ubuya umva ukusuka kune: 'ne, ntathu, mbini, nye, ziro'. Isimboli u'0' makaxhonywe kucingo lokoneka amanani. Amakhadi amanani u0 mawasetyenziswe ukubonisa ukuba into (efana nepleyiti, isikhongozeli, isiciko, ibhokisi) ayinanto.



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.



Ividiyo 2

1. Bukelani ividiyo katitshala esazisa ekwadibanisa ikhonsepthe kaziro.

- ◆ Ubona kusenzeka ntoni?
- ◆ Yaziswa njani ikhonsepthe kaziro?
- ◆ Benze ntoni abafundi baza bathini?
- ◆ Ibiyintoni indima katitshala?
- ◆ Lube yintoni uncedo lokusebenzisa imisebenzi ehlukahlukileyo kwikhonsepthe nganye?

2. Bhala phantsi okuqwalaseleyo.

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?

Ishoni 4: Ukucwangcisa ukufundisa

1½ iiyure

Le shoni yendibano yocweyo ilungiselela abathathinxaxheba ukuba baphumeze iKota 4 iiVeki 1–3. Kwesi sithuba sonyaka, utitshala sele ekuqaphele ukwahluka okubonakalayo phakathi kwamazinga enkqubela yabafundi. IKota 4 yakhela phezu komxholo weeKota 1, 2 no2. Abanye abafundi bazakube bekulungele oku, ngeli lixa abanye besaza kudinga inkxaso kunye nokumanyaniswa kwinkqubela. Kubalulekile ukucwangcisa kwanokukulungiselela oku kwahluka kwizakhono zabafundi ukuqinisekisa ukuba wonke umxholo nobuchule beMathematika yeBanga R wenziwe, kwanokuba abafundi balilungele ngokwaneleyo iBanga 1.



Umsebenzi 7

1. Kwiqela lakho, yenzani iithempleyithi zeKota 4 iiVeki 1–3 (Isingeniso A).
2. Xoxani ngale mibuzo ilandelayo:
 - ◆ Yakhiwe kanjani iveki?
 - ◆ Ingaba umxholo wakhiwe njani kwizifundo ezingaphambili?
 - ◆ Ingaba imisebenzi yeklasu yonke iwenza ngempumelelo amathuba okuxoxa nokuphonononga ulwazi olutsha?
 - ◆ Ingaba umsebenzi okhokelwa ngutitshala umnika njani utitshala amathuba okuhlola nokuxhasa abafundi?
 - ◆ Ingaba imisebenzi ezimeleyo yamaqela amancinci iyalinika ithuba elaneleyo lokuziqhelisa ulwazi olutsha nezakhono?
 - ◆ Ungayilungiselela njani imisebenzi eyongezelelweyo ukuxhasa abafundi abangekazibambi kakuhle izakhono ezithile?
 - ◆ Cebisa ezinye iindlela zokwandisa amathuba okufunda kwabafundi asele bephambili.
 - ◆ Ungasebenza njani nomhlobo ukulungiselela iveki nganye?

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.

Imisebenzi yokuqukumbela

30 imizuzu



Umsebenzi 8

Ucamngco ngendibano yocweyo: Thatha imizuzu embalwa ucamngce ngomhla. Tyhila kwiNcwadi yokuSebenzela yoMthathinxaxheba uzikhumbuze ngoko kwenziweyo. Bhala phantsi iingcamango zakho.

- ◆ Ndifunde _____
- ◆ Andiyithandanga _____
- ◆ Ndikonwabele _____
- ◆ Ngoku ndiyaqonda _____
- ◆ Andikacacelwa yi- _____
- ◆ Ndingaluvuyela ulwazi olongezelelekileyo nge- _____

Yabelana neqela lonke ngento ubuyicamngca.



Umsebenzi ekubuyelwa nawo esikolweni

1. Sebenzisa *isiKhokelo semiSebenzi: Ikota 4* ukucwangcisa nokusebenza kwiKota 4 iiVeki Iiveki 1–3 zeNkqubo zeMathematika.
2. Bhala izimvo zakho encwadini oyisebenzisela ukugcina inkqubela yomfundi ngamnye (incwadi yoqwalaselo lomfundi). Sebenzisa uluhlu lokuqwalasela luka- **'Qwalasela ukuba abafundi bayakwazi uku-'** (ibhokisi eneliso) ngexesha lemisebenzi ekhokelwa ngutitshala ukukhokela uqwalaselo nezimvo zakho.
3. Yenza amanqaku ngoko kusebenze kakuhle, okungasebenzanga kakuhle nendlela ohlangabezane ngayo neningeni ngethuba ukuphumeza uKota 4 iiVeki 1–3.
4. KwiNdibano yoCweyo elandelayo yiza nencwadi yakho yoqwalaselo lomfundi namanqaku owenzileyo xa ucamngca ngosuku ngalunye lokufundisa.

Uhlolo

Gcwalisa iFomu yoHlolo.

APPENDIX A: TERM 4 WEEKLY PLANNING TEMPLATE

Term 4: Activity Plan: Week ____

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

ISINGENISO A: ITHEMPLEYITHI YESICWANGCISO SEVEKI NEVEKI KWIKOTA 4

Ikota 4: Isicwangciso semiSebenzi: Ivekhi ____

INKALO YOMXHOLO:				
ISIHLOKO:				
YAZISA ULWAZI OLUTSHA:				
ZIQHELISE:				
Imisebenzi yeklasi yonke		Umsebenzi okhokelwa ngutitshala	Imisebenzi yesitishi sokusebenzela (imisebenzi ezimeleyo yamaqela amancinci)	
Usuku 1			Umsebenzi 1	
Usuku 2			Umsebenzi 2	
Usuku 3			Umsebenzi 3	
Usuku 4			Umsebenzi 4	
Usuku 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				

Ikota 4: Isicwangciso semiSebenzi: Iveki ____

INKALO YOMXHOLO:				
ISIHLOKO:				
YAZISA ULWAZI OLUTSHA:				
ZIQHELISE:				
Imisebenzi yeklasi yonke		Umsebenzi okhokelwa ngutitshala	Imisebenzi yesitishi sokusebenzela (imisebenzi ezimeleyo yamaqela amancinci)	
Usuku 1			Umsebenzi 1	
Usuku 2			Umsebenzi 2	
Usuku 3			Umsebenzi 3	
Usuku 4			Umsebenzi 4	
Usuku 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				

Ikota 4: Isicwangciso semiSebenzi: Iveki ____

INKALO YOMXHOLO:				
ISIHLOKO:				
YAZISA ULWAZI OLUTSHA:				
ZIQHELISE:				
Imisebenzi yeklasi yonke		Umsebenzi okhokelwa ngutitshala	Imisebenzi yesitishi sokusebenzela (imisebenzi ezimeleyo yamaqela amancinci)	
Usuku 1			Umsebenzi 1	
Usuku 2			Umsebenzi 2	
Usuku 3			Umsebenzi 3	
Usuku 4			Umsebenzi 4	
Usuku 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?

IFomu yokuHlola yeNdibano yoCweyo 10

1. Ingaba indibano yocweyo ifikelele koko ubukulindele?

2. Ufunde ntoni kule ndibano yocweyo ekuncede kakhulu?

3. Ingaba ikhona into ongakhange uyithande okanye obenobunzima bokuyiqonda?

4. Uzakukusebenzisa njani oko ukufundileyo apha kwiklasi yakho yeBanga R?

5. Ingaba unazo iingcebiso zokuphucula nangakumbi iindibano zocweyo?
