Uhlelo Lokuthuthukisa Izibalo Zebanga R

Grade R Mathematics Improvement Programme

Umhlahlandlela Wokuqonda Isifundo

Concept Guide

IsiZulu | English

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Concept Guide

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.

This edition of the mathematics materials has benefitted from collegial engagement with Wordworks colleagues and has been improved by their alignment with the materials of the Language Improvement Programme. It has been enriched by the work of officials of the Gauteng Department of Education's Early Childhood Development and Foundation Phase Curriculum Sub-Directorates at District and Provincial level who have made valuable contributions to the content of the materials and engaged constructively to ensure alignment with provincial policies, practices and values.

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- The *R-Maths* writing team: WCED Early Childhood Development officials, Cally Kuhne, Karen Kaimowitz, Bev Da Costa, Meryl Glaser, Sue Bailie, Sue Connolly, Sue Heese.

Programme conceptualisation and management: Cally Kuhne and Tholisa Matheza
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IsiZulu editing and proofreading: Busisiwe Pakade
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Illustrations: Jiggs Snaddon-Wood
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Uhlelo Lokuthuthukisa Izibalo neziLimi Zebanga R luyisinyathelo **soMnyango WezeMfundo wesiFundazwe saseGauteng (Gauteng Department of Education)** kanye nomlingani wawo osemqoka, i-**Gauteng Education Development Trust**.

Ukuthuthukiswa nokukhiqizwa kokuqeqeshwa kanye nezinsiza zasekilasini zoHlelo Lokuthuthukisa Izibalo neziLimi Zebanga R kuphumelele ngenxa yoxhaso olunobubele lwephrojekthi oluphuma kwi-**United States Agency for International Development** kanye ne-**Zenex Foundation**.

Uhlelo Lokuthuthukisa Izibalo neziLimi Zebanga R luphethwe yi-**Jet Education Services** ehlangene ne-**Schools Development Unit** yase-**UCT** ne-**Wordworks** njengabalingani abangochwepheshe ngamakhono athile.

I-**Schools Development Unit** (SDU) e-**University of Cape Town** (UCT) iwumlingani owuchwepheshe wezibalo kuHlelo Lokuthuthukisa Izibalo neziLimi Zebanga R. I-SDU iyingxenye ephakathi ku-School of Education sase-UCT egxile ekuthuthukiseni kobungcweti bothisha eziBalweni, Isayensi, Ukwazi Ukufunda Nokubhala/Ulimi kanye namaKhono Empilo kusuka Ebangeni R kuya Ebangeni le-12. I-SDU inikeza iziqu zobuthishela kanye nezifundo zesikhathi esifushane ezivunywe i-UCT, umsebenzi osekelwe esikoleni ukuthuthukiswa kwezinto kanye nocwaningo ukuze kusekwe ukufundisa nokufunda kuzo zonke izimo zaseNingizimu Afrika.

Lokhu kuhlelwa kwezinto zezibalo kuphunyeleliswe ukuhlanganyela nabasebenzi baka-Wordworks kwase kwenziwa ngcono ngokuqondanisa kwabo izinto zoHlelo Lokuthuthukisa Ulimi. Icetshiswe umsebenzi wezikhulu zomkhakha wohlelo lweziFundo wokuThuthukiswa kwaBantwana Abancane kanye nesiGaba esiyisiSekelo ezingeni lesiFunda kanye nelesiFundazwe koMnyango wezeMfundo wesiFundazwe saseGauteng, okuyibona abenze iminikelo ebalulekile kokuqukethwe kwezinto futhi bazibandakanya ngokwakhayo ukuqinisekisa ukuqondana, nemigomo yesifundazwe, okwenziwayo kanye nokungamagugu.

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Kubongwa ngokukhethekile:

- Izikhulu zomkhakha woHlelo Lwezifundo, Umkhakha Wokufunda kothisha kanye nomkhakha wokuFunda okukhethekile woMnyango WezeMfundo wesiFundazwe saseGauteng, ngokuzinikela kwabo ukulungisa izinsiza kufunda zethu.
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Ukuhunyushwa kwesiZulu: Bongi Nzimande
Ukuhlela nokuhlolisiswa kwesiZulu: Busisiwe Pakade
Ukuhlela nokuhlolisiswa kwesiNgisi: Ilse von Zeuner, Kathleen Sutton
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Ukuhlelwa kokuthayipha: Jenny Wheeldon
Ukudizayinwa kokungaphakathi: Magenta Media
Ukudizayinwa kwekhava: Jacqui Botha

Contents

Okuqukethwe

Foreword from the Head of Department

GAUTENG
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REPUBLIC OF SOUTH AFRICA

GGT 2030
GROWING GAUTENG TOGETHER

Dear Teacher/Practitioner

Welcome to the training for the Grade R teachers/practitioners. The Gauteng Department of Education (GDE) has prioritised Early Childhood Development as its Strategic Goal 1. This is to ensure that we can lay a solid foundation and seamless transition of learners to Grade 1.

The Grade R Mathematics and Language Improvement Project has been developed to provide the much-needed classroom-based *support* for the Grade R teachers/practitioners in Gauteng. It is about classroom practices with exciting techniques and methodology most appropriate for Grade R teaching and learning. This is in response to a study that reported that 65% of children across South Africa have not mastered the skills required to be able to succeed in Literacy and Numeracy when entering Grade 1. This project is intended to support the Grade R teachers/practitioners to address this challenge.

The Department's expectation is that you are ready to learn and be a more empowered Grade R teacher/practitioner. Your commitment to the training process and thereafter the implementation of *lessons* learnt in *your* classroom, will contribute to the improvement of Grade R learner readiness for Grade 1.

We trust that this intervention will help enhance your potential, innovation and creativity as you lay an important foundation for learning for our children. This project would not have been possible without the support of our partners. The GDE is grateful for the support of the GEDT, Zenex Foundation and USAID who contributed to this initiative.

I trust you will learn a great deal from this training programme and improve the learning experience of the young children in your care.

Yours sincerely

Mr Edward Mosuwe
Head of Department: Gauteng Department of Education
3 June 2020

Isendlalelo esiphuma eNhlokweni yoMnyango

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GROWING GAUTENG TOGETHER

Thisha/Msebenzi othandekayo

Siyakwamukela kuloku kuqeqeshwa kothisha/kwabasebenzi Bebanga R. UMnyango WezeMfundo wesiFundazwe saseGauteng (Gauteng Department of Education (GDE)) ubeke phambili ukuThuthukiswa koHlelo lwaBantwana abaNcane njengeNhloso eYisu loku-1. Lokhu kuwukuqinisekisa ukuthi sakha isisekelo esiqinile kanye nenguquko engenankinga ezinganeni ukuya eBangeni loku-1.

Uhlelo Lokuthuthukisa Izibalo neziLimi Zebanga R yenzelwe ukunika *ukweseka* okudingeka kakhulu okweyeme ekilasini kothisha/abasebenzi beBanga R eGauteng. Imayelana nezindlela zokusebenza ezinamasu kanye nezindlela ezijabulisayo ezilungele ukufunda nokufundisa eBangeni R. Lokhu kuyimpendulo yocwaningo olwabika ukuthi izingane ezingama-65% kuyo yonke iNingizimu Afrika azinawo amakhono adingekayo ukuze zikwazi ukuphumelela eziLimini naseziBalweni uma zingena eBangeni loku-1. Le phrojekthi ihlose ukweseka othisha/abasebenzi beBanga R ukuze babhekane nale nselelo.

UMnyango ulindele ukuthi wena ukulungele ukufunda futhi ube uthisha/umsebenzi weBanga R ohlome ngokuphelele. Ukuzibophezela kwakho kule nqubo yokuqeqeshwa kanye nasemuva kokwenza *izifundo* ezifundwe ekilasini *lakho*, kuyoba nomthelela wokwenza ngcono umfundi weBanga R ukuthi alungele iBanga loku-1.

Siyathemba ukuthi lokhu kungenelela kuzosiza ukwenza ngcono amandla akho, ukwenza kabusha kanye nobuhlakani ngesikhathi ubeka isisekelo esibalulekile sokufunda kwezingane zethu. Le phrojekthi ibingeke yenzeke ngaphandle kosizo lwabalingani bethu. UMnyango wezeMfundo waseGauteng, uyabonga ngokwesekwa yi-GEDT, i-Zenex Foundation kanye ne-USAID abaphonse esivivaneni kulesi sinyathelo.

Ngiyethemba ukuthi uzofunda izinto eziningi kulolu hlelo lokuqeqeshwa bese wenza kangcono indlela yokufunda kwezingane ezincane ozinakekelayo.

Ozithobayo

UMnu. Edward Mosuwe

INhloko yoMnyango: UMnyango wezeMfundo waseGauteng

3 kuNhlangulana 2020

SECTION 1

Grade R Mathematics Improvement Programme (Grade R Maths)

Introduction

Grade R Maths is an early maths programme for Grade R that is aligned to and extends the content of Grade R Mathematics in CAPS. The Grade R Maths programme:

- is designed to provide a framework for teaching and learning maths in Grade R
- is based on a set of teaching principles that encourage successful learning
- explains the concepts that are important for young children's maths development
- sequences Grade R maths content and gives practical ideas for the classroom
- gives teachers detailed guidance that supports their lesson planning.

The word 'maths' is used in different ways in this book. Here is how it is used and what each term means:

- **maths** is the body of knowledge called 'mathematics' that includes concepts, skills and applications
- **Grade R Mathematics** is the curriculum in the Curriculum and Assessment Policy Statement (CAPS)
- **Grade R Maths** is the name of this early maths programme for Grade R
- **maths in Grade R** is the kind of maths learning that takes place in Grade R.

In this guide, the word 'children' is used to talk about children before they enter Grade R. The word 'learner/s' is used to talk about children in Grade R.

Features of the *Concept Guide* include:

- information about teaching and learning maths
- **'In practice'** boxes that give examples of how the principles and ideas in this book could be used with or by learners
- **glossary** boxes that give the meaning of words that may be new or difficult to understand
- a glossary list of all the new words used in this book.

ISIGABA SOKU-1

Uhlelo Lokuthuthukisa Izibalo Zebanga R (i-*Grade R Maths*)

Isingeniso

U-*Grade R Maths* uhlelo lwezibalo lokuqala oluqondaniswe futhi lwandisa ulwazi Lwezibalo Zebanga R ku-CAPS. Uhlelo lwe-*Grade R Maths*:

- lwakhelwe ukunika uhlaka lokufundisa nokufunda izibalo Ebangeni R
- lususelwe emigomeni emiselwe yokufundisa egqugquzela ukufunda ngempumelelo
- luchaza ulwazi olubalulekile ngokuthuthuka kwezibalo zezingane
- ukulandelanisa ulwazi lwezibalo Zebanga R nokunika imibono ngekilasi
- inika othisha umhlahlandlela oweseka uhlelo lwezifundo zabo.

Igama 'izibalo' lisetshenziswe ngezindlela ezihlukene kule ncwadi. Bona ukuthi isetshenziswa kanjani nokuthi itemu ngalinye lichaza ukuthini:

- **izibalo** zingumzimba wolwazi ohlanganisa ulwazi, amakhono kanye nokusebenzisa
- **Izibalo Zebanga R** ikharikhulamu ekuSitatimende Senqubomgomo Yohlelo Lwezifundo Nokuhlola (CAPS)
- **i-*Grade R Maths*** igama lalolu hlelo lokuqala Lwebanga R
- **izibalo Ebangeni R** uhlobo lokufunda izibalo olwenzeka Ebangeni R.

Kulo mhlahlandlela igama 'izingane' lisetshenziswe ukukhuluma ngezingane ngaphambi kokungena Ebangeni R. Igama 'um-/abafundi' lisetshenziswe ukukhuluma ngezingane Ebangeni R.

Izimpawu *zoMhlahlandlela Wokuqonda Isifundo* zihlanganisa:

- ulwazi ngokufundisa nokufunda izibalo
- amabhokisi **'Uma sekwenziwa'** anika izibonelo zokuthi imigomo namacebo kungasetshenziswa kanjani kuleli bhuku ngabafundi noma nabafundi
- amabhokisi **eglosari** anika incazelo yamagama okungenzeka ukuthi masha noma alukhuni ukuwaqonda
- uhlu lweglosari yamagama amasha asetshenziswe kuleli bhuku.

Grade R Maths

There are four parts to Grade R Maths:

- the *Concept Guide*
- four *Activity Guides* – one for each school term – that provide Grade R teachers with weekly suggestions for teaching and learning maths
- a *Poster Book* with eleven posters
- a classroom *Resource Kit* with maths apparatus for individual and small group learning and teaching.

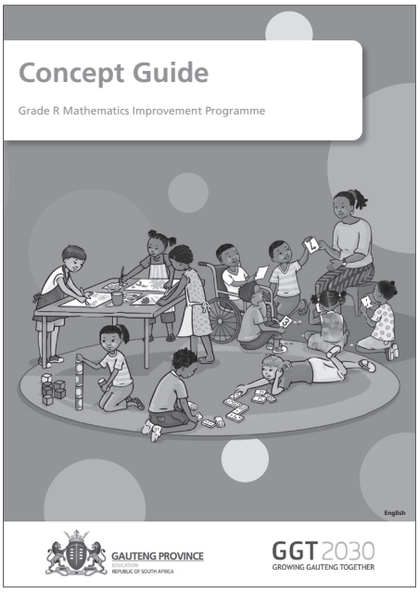


Figure 1 The *Concept Guide*

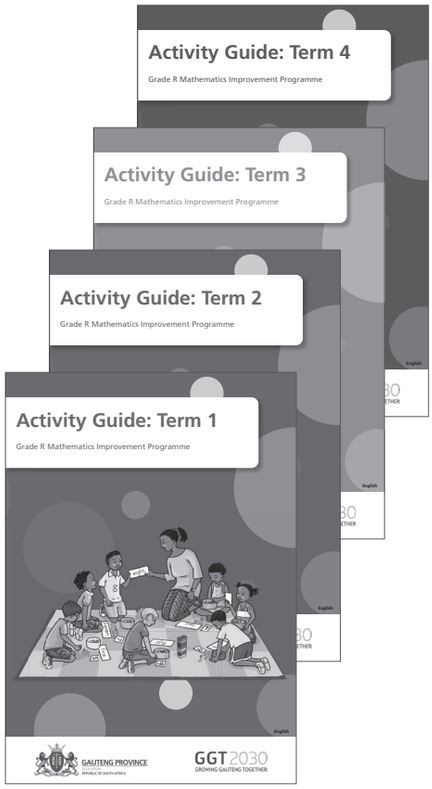


Figure 2 *Activity Guides Term 1–4*

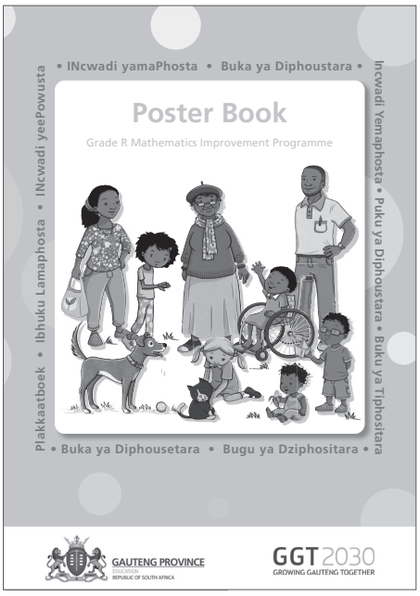


Figure 3 The *Poster Book*

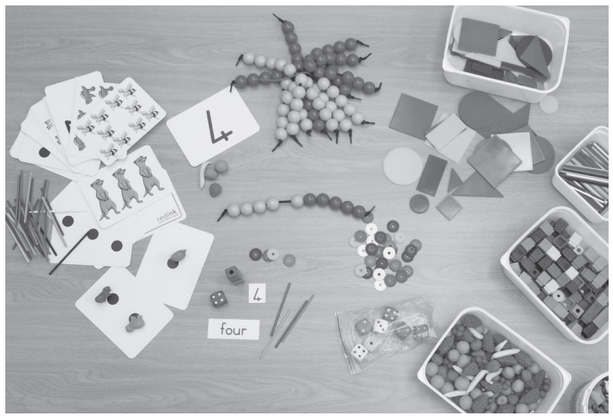


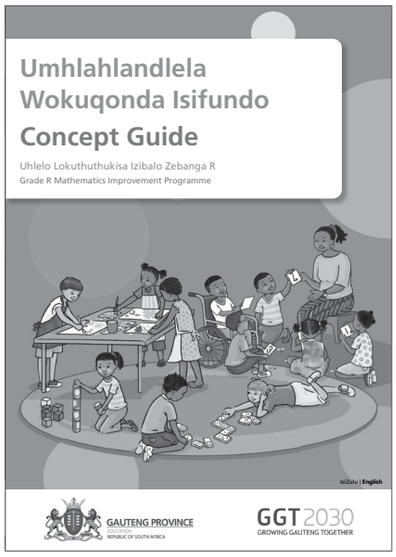
Figure 4 *Resource Kit*

You can find more information on each of the Grade R Maths components in this *Concept Guide*.

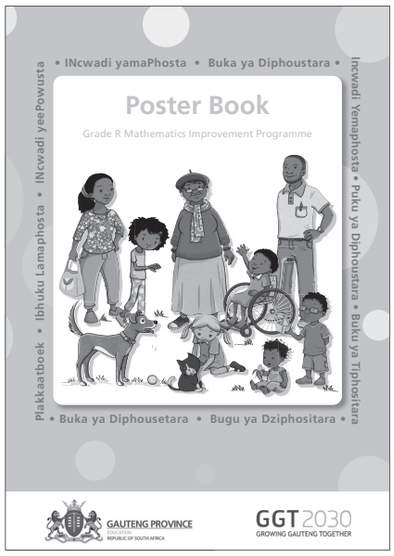
U-*Grade R Maths*

Kunezingxenye ezine zika-*Grade R Maths*:

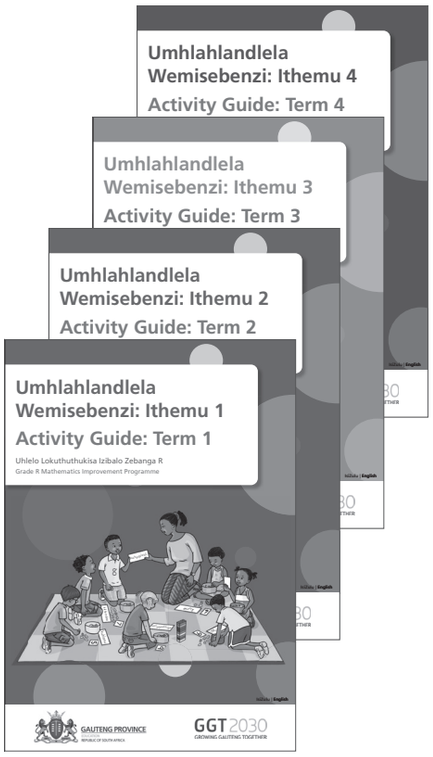
- *Umhlahlandlela Wokuqonda Isifundo*
- *Imihlahlandlela Yemisebenzi* emine – owodwa ithemu ngayinye – enikeza othisha Bebanga R imibono yamasonto onke yokufundisa nokufunda izibalo
- *Ibhuku Lamaphosta* elinamaphosta ayishumi nanye
- *Ikhithi Yezinsiza* zasekilasini ezinezinto zokusebenza zezibalo zokufundisa nokufunda ngayedwana noma ngamaqembu.



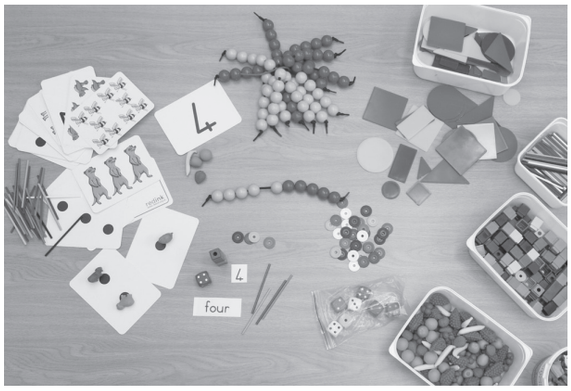
Umfanekiso 1 *Umhlahlandlela Wokuqonda Isifundo*



Umfanekiso 3 *Ibhuku Lamaphosta*



Umfanekiso 2 *Imihlahlandlela Yemisebenzi* Ithemu Yoku-I kuya kweyesi-4



Umfanekiso 4 *Ikhithi Yezinsiza*

Ungathola olunye ulwazi ngezingxenye ze-*Grade R Maths* kulo *Mhlahlandlela Wokuqonda Isifundo*.

The guiding principles of teaching maths in Grade R

Grade R Maths encourages an approach to teaching and learning that is stimulating and motivating for learners. Learners will develop the knowledge and skills that they will build on in later grades. Education research in classrooms has highlighted a set of teaching **principles**, which contribute to successful learning. The Grade R Maths programme is built on eight of these principles.

GLOSSARY

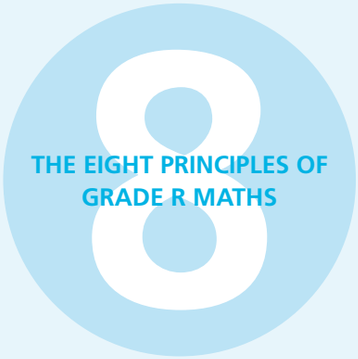
principle
a general rule that is accepted to be true

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

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

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

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



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.

Figure 5 Principles of the Grade R Maths programme

Imigomo elawula ukufundiswa kwezibalo Ebangeni R

U-*Grade R Maths* ukhuthaza indlela yokufundisa nokufunda ekhaliphisayo negqugquzelayo kubafundi. Abafundi bazothuthukisa ulwazi namakhono abangakhela kuwona emabangeni alandelayo. Ucwaningo lwezemfundo emakilasini lugqamise uhlelo **lwemigomo** yokufundisa olulekelela ekufundeni okuyimpumelelo. Uhlelo lwe-*Grade R Maths* lwakhelwe phezu kwale migomo eyisishiyagalombili.

IGLOSARI

umgomo
umthetho ojwayelekile owamukelwa njengoyiqiniso

1. **Umgomo wesimo.** Ukufunda kwenzeka ezimweni ezihlelekile futhi ezifanelekile.

2. **Umgomo womsebenzi.** Kumele abafundi bazibandakanye kwinqubo yokufunda nokufundisa.

3. **Umgomo wokudlala.** Abantwana bafunda kangcono ekudlaleni okukhululekile nasemisebenzini eyimidlalo eholwayo.

4. **Umgomo wamazinga.** Abafundi badlula emazingeni amaningi okuqonda nokuthuthuka.

5. **Umgomo wokuxhumana.** Ukufunda kwenzeka uma kunokuxhumana kanye nokwabelana kwemibono.

6. **Umgomo wokuholwa.** Ukufunda kwenzeka uma othisha besiza abafundi ukuthuthukisa ulwazi olusha.

7. **Umgomo wokumbandakanya.** Ukufunda kwenzeka endaweni lapho kwamukelwa wonke umuntu abe yingxenye, aphathwe kahle, ahlonishwe futhi abambe iqhaza.

8. **Umgomo wokwenza.** Ukufunda kuqiniswa ngokwenza amakhono amasha kanye nolwazi.

8 IMIGOMO EYISISHIYAGALOMBILI YE-*GRADE R MATHS*

Although these eight teaching principles are listed separately, they are all linked.

The next part of the *Concept Guide* takes you through the eight principles on which Grade R Maths is based. Each principle has:

- a definition
- an 'In practice' box
- more information about the principle.

1. The context principle

Definition

Learning takes place when a situation (or context) is meaningful to the learner. Very often, the best kinds of maths problems involve maths ideas that come from real-life situations. Learners find it easier to explore solutions to problems that they are able to relate to because of their life experiences.

In practice ...

There are opportunities for learning maths in almost all daily classroom and home activities. The challenge for teachers and parents is to be aware of these opportunities and to use them to build on what learners already know.

More about the context principle

Early maths at home

Young children's experiences at home and in outdoor play, lay the foundations for their understanding of important maths **concepts**.

Babies, toddlers and young children use their senses to learn about the world around them. They show an interest in basic shapes, create simple patterns and can learn to count before they come to school. They learn about the world as they talk, eat and play, while acquiring maths concepts at the same time. For example:

- When they try to fit things that are too big into their mouths, they are developing an understanding of size.
- When they use boxes and toilet roll inners to build imaginary cars, they are developing a sense of shape.
- When they try to lift an object that is too heavy to carry, they are beginning to understand the concept of mass.
- When they see similarities and differences between small collections of objects, they are matching, sorting and comparing.

Young children start to form ideas about maths concepts long before they are taught maths at school.

GLOSSARY

concept
an idea or thought. In other words, it cannot be touched. Maths concepts include number, counting, space, addition and subtraction.

Nakuba yonke le migomo eyisishiyagalombili ibhalwe ngokuhlukana, yonke ixhumene.

Ingxenye elandelayo *yoMhlahlandlela Wokuqonda Isifundo* ikuthatha ikuyise emigomeni eyisishiyagalombili okuyiyo okwakhelwe kuyo u-*Grade R Maths*. Umgomo ngamunye:

- unencazelo
- unebhokisi 'Uma sekwenziwa'
- unolwazi olwengeziwe mayelana nomgomo.

1. Umgomo wesimo

Incazelo

Ukufunda kwenzeka uma isimo (ingqikithi) sinomqondo. Kaningi izinhlobo ezinhle zezinkinga zibandakanya amacebo ezibalo aqhamuka ezimweni zangempela zempilo. Abafundi bakuthola kulula ukubheka izixazululo ezinkingeni abakwazi ukuzihlanganisa nazo ngenxa yezinto abazifundile empilweni.

Uma sekwenziwa ...

Kunamathuba okufunda izibalo cishe kuyo yonke imisebenzi yasekilasini nasekhaya. Inselele kothisha nabazali ukuba bawazi lawa mathuba nokuwasebenzisa ukwakhela kulokho osekwaziwa abafundi.

Okunye ngomgomo wesimo

Izibalo zokuqala ekhaya

Izifundo zempilo zezingane ezincane ekhaya noma emidlalweni yangaphandle zibeka isisekelo sokuqonda kwabo **ulwazi** olubalulekile lwezibalo.

Izingane, abagaqayo kanye nezingane ezincane basebenzisa izinzwa ukufunda ngomhlaba obazungezile. Bathatheka kwizimo eziyisisekelo, ukwakha amaphethini alula futhi bafunde ukubala ngaphambi kokuthi beze esikoleni. Bafunda ngomhlaba ngesikhathi bekhuluma, bedla futhi bedlala bazuze ulwazi lwezibalo ngesikhathi esifanayo. Isibonelo:

- Uma bezama ukufaka izinto ezinkulu emlonyeni yabo bathuthukisa ulwazi lwabo lobukhulu.
- Uma besebenzisa amabhokisi nengaphakathi lephepha lasendlini encane ukwenza izimoto eziqanjiwe, bathuthukisa umqondo wesimo.
- Uma bezama ukuphakamisa into esinda kakhulu ukuyithwala, baqala ukuqonda isisindo.
- Uma bebona ukufana nomehluko phakathi kwamaqoqo amancane ezinto, bayaqondanisa, bahlunge futhi baqhathanise.

Izingane ezincane ziqala ukwakha imibono mayelana nolwazi lwezibalo ngaphambi kokuthi zifundiswe izibalo esikoleni.

IGLOSARI

ulwazi
umbono noma umcabango. Ngamanye amagama, ungeyithinte. Ulwazi lwezibalo luhlanganisa izinombolo, ukubala, indawo, ukuhlanganisa nokususa.

The everyday activities of children at home are full of opportunities for early maths. For example:

- during daily routines, e.g. mealtimes, washing, getting dressed and putting things away
- when they use objects, e.g. putting lids onto plastic tubs and cutting with scissors
- as they play, e.g. when they share things, pretend to cook or pretend to drive a taxi
- when they draw and paint
- when they imitate adults counting.

These activities build children's self-confidence. At the same time, they develop their knowledge and understanding of the world around them.

Figure 6 Using daily activities to explore maths concepts

Young children's understanding of maths develops over time.

- They learn that numbers have an amount or quantity attached to them that does not change, e.g. when a three-year-old holds up three fingers to show the quantity 'three'.
- They may repeat a series of numbers, e.g. 'one, two, three, six, ten'. When they do this they are copying adults by using counting words without having a deeper understanding of what they mean.

As children play on their own and with other children, and as they **interact** with the adults around them, they start to develop ideas about the concepts of number, shape, space and measurement.

The concepts that children develop at home during their daily activities are sometimes called their 'everyday knowledge'. An example of this is when children put out enough bowls for everyone eating a meal and then put out one spoon per bowl. As they do this, they are learning about one-to-one matching.

GLOSSARY

interact
communicate with other people; do activities with other people

Imisebenzi yansuku zonke yabafundi igcwele amathuba ezibalo zokuqala. Isibonelo:

- ngesikhathi senqubo yansukuzonke, isib. isikhathi sokudla, ukugeza, ukugqoka kanye nokuqoqa izimpahla
- uma besebenzisa izinto, isib. ukubeka izivalo ezitsheni zepulasitiki, nokusika ngezikele
- ngesikhathi bedlala, isib. uma babelana ngezinto, benza sengathi bayapheka noma benza sengathi bashayela itekisi
- uma bedweba futhi bependa
- uma belingisa abantu abadala bebala.

Le misebenzi yakha ukuzethemba ezinganeni. Ngesikhathi esifanayo zithuthukisa ulwazi lwazo nokuqonda umhlaba ozizungezile.

Umfanekiso 6 Ukusebenzisa imisebenzi yansukuzonke ukuhlola ulwazi lwezibalo

Ukuqonda izibalo zezingane ezincane kuthuthuka ngokuhamba kwesikhathi.

- Zifunda ukuthi izinombolo zinenani noma isamba noma ubungako okuhlanganiswe nakho okungaguquki, isib. uma ingane eneminyaka emithathu ibamba iminwe emithathu ukukhombisa ubungako 'bokuthathu'.
- Zingaphinda izinombolo eziningana, isib. 'kunye, kubili, kuthathu, isithupha, ishumi'. Uma zenza lokhu zilingisa abantu abadala ngokusebenzisa amagama okubala zingenako ukuqonda okugcwele ukuthi zichaza ukuthini.

Uma izingane zizidlalela ngokwazo, noma nezinye izingane, noma **zixhumana** nabantu abadala eziseduze nabo, ziqala ukuthuthukisa imibono yazo ngolwazi lwenombolo, isimo, indawo nesilinganiso.

Ulwazi abantwana abaluthuthukisa ekhaya ngesikhathi benza imisebenzi yansukuzonke lubuye lwaziwe ngokuthi 'ulwazi lwansukuzonke'. Isibonelo salokhu ukuthi uma abafundi bebeka izindishi zabo bonke abantu abadlayo futhi babeke isipuni ngasinye endishini. Ngesikhathi benza lokhu, bafunda ngokuqondanisa okunye nokunye.

IGLOSARI

ukuxhumana
xhumana nabanye abantu; yenza imisebenzi nabanye abantu

Maths in the school context

Many people think maths is just about numbers and doing sums, but this is just one part of maths, called arithmetic. Maths actually includes many different concepts and skills. It also includes different ways of using these concepts and skills. These are called '**applications**'. So when we talk about maths we mean maths concepts, skills and applications.

Children use maths concepts every day even if they don't think of it as doing maths. They apply maths concepts when they fill a cup without it overflowing, know which container to use to fit in all the blocks, go shopping or say how many of something we have.

GLOSSARY

applications
different ways of using maths concepts and skills, e.g. checking your change in a shop, counting out your taxi fare, or dividing a packet of peanuts between three friends

Figure 7 We all use maths concepts in our daily lives – choosing the right size box.

At school, children build on this knowledge when, for example, they sort objects into groups and then compare the number of objects in each group. Then they learn to count using the correct sequence of numbers and use one-to-one correspondence to find the total number in a collection. This is called 'school knowledge'.

Everyday knowledge
comparing, sorting, matching, saying number names, learning about more/less, bigger/smaller, light/heavy

School knowledge
Symbols and words

Numbers, Operations and Relationships | Patterns, Functions and Algebra | Space and Shape (Geometry) | Measurement | Data Handling

Figure 8 The link between everyday knowledge and school knowledge

Izibalo esimweni sesikole

Abantu abaningi bacabanga ukuthi izibalo zimayelana nezibalo nokubala kodwa lokhu kuyingxenye yezibalo ebizwa ngokuthi i-aritimethiki. Eqinisweni izibalo zifaka ulwazi namakhono ahlukene. Zifaka nezindlela ezihlukene zokusebenzisa lolu lwazi namakhono. Zibizwa ngokuthi '**ukusebenzisa**'. Ngakho-ke uma sikhuluma ngezibalo sichaza ulwazi lwezibalo, amakhono nokusebenzisa.

Izingane zisebenzisa ulwazi lwezibalo nsuku zonke noma ngabe azicabangi ngalokhu njengokwenza izibalo. Zisebenzisa ulwazi lwezibalo uma zigcwalisa inkomishi ngaphandle kokuthi ichichime, ukwazi ukuthi ungasebenzisa siphi isitsha ukufaka wonke amabhulokhi, ukuyothenga noma ukusho ukuthi zingaki izinto esinazo.

IGLOSARI

ukusebenzisa
izindlela ezihlukene zokusebenzisa ulwazi lwezibalo namakhono, isib. ukubheka ushintshi wakho esitolo, ukubala imali yakho yokugibela itekisi noma ukuhlukanisa iphakethe lamakinati phakathi kwabangani abathathu

Umfanekiso 7 Sonke siyalusebenzisa ulwazi lwezibalo empilweni yethu yansukuzonke – ukukhetha ubukhulu obuyibona bebhokisi.

Esikoleni, izingane zakhela phezu kwalolu lwazi uma, isibonelo, zihlunga izinto ngamaqoqo bese ziqhathanisa inani lezinto ngazinye eqoqweni ngalinye. Zibe sezifunda ukubala zisebenzisa ukulandelana kwezinombolo okuyikhona bese zisebenzisa okukodwa kokukodwa okuhambisanayo ukuthola isamba eqoqweni. Lokhu kubizwa ngokuthi 'ulwazi lwesikole'.

Ulwazi lwansuku zonke
ukuqhathanisa, ukuhlunga, ukuqondanisa, ukusho amagama ezinombolo, ukufunda ngokukhulu/okuncane, okukhudlwana/okuncanyana, okulula/okusindayo

Ulwazi lwesikole
Izimpawu namagama

Izinombolo, Izimpawu kanye Nobudlelwane Bazo

Amaphethini, Amafankshini kanye ne-Aljebhra

Indawo Nesimo (Ijiyometri)

Isilinganiso

Ukusetshenziswa Kolwazi

Umfanekiso 8 Ukuxhumana phakathi kolwazi lwansukuzonke kanye nolwazi lwesikole

When children arrive in Grade R, they come with their experiences as well as their understanding and ideas about the world. This is their everyday knowledge. Everyday knowledge will not be the same for all children as it depends on the child's family, community and culture. Everyday knowledge is sometimes called **prior knowledge** and teachers use it to build on what learners already know and can do.

GLOSSARY

prior knowledge
what learners know from before and can already do

In Grade R, learners should have the chance to explore, investigate and experiment with new ideas. They should also be encouraged to talk with their teacher and other learners about what they are doing and thinking. Learners need the right kind of teaching to help them:

- think and talk about their experiences using maths language
- build new maths knowledge
- deepen their understanding of maths
- develop a positive attitude to maths.

They need to engage in activities at home and at school that allow them to explore maths concepts, and to see maths as fun and enjoyable.

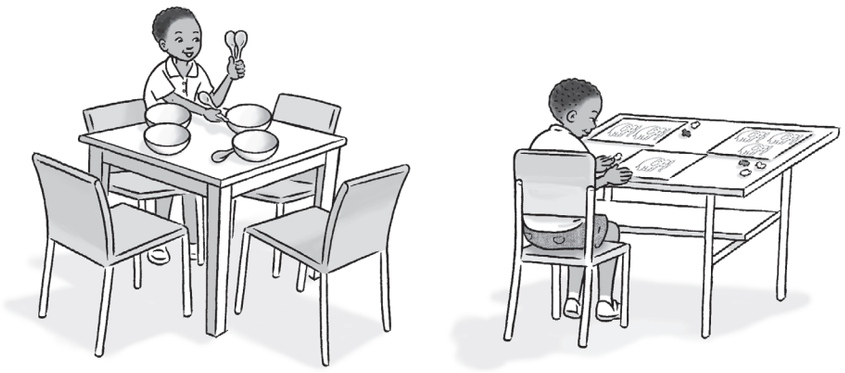


Figure 9 Counting and one-to-one matching at home and at school

Creating a maths learning environment

Teachers should create a classroom environment in which learners:

- feel safe and secure
- are confident enough to express themselves
- participate in all activities.

The physical environment for maths learning should include:

- resources (such as games, construction materials and puzzles) that are organised so that learners can see what is available and choose what they need to use
- opportunities to explore and investigate
- opportunities for learners to use materials to solve problems and record their solutions
- opportunities for learners to use maths language, like 'more', 'bigger than', 'corner' and also numbers

Uma izingane zifika Ebangeni R zifika nesipiliyoni kanye nokuqonda nemibono mayelana nomhlaba. Lokhu kuwulwazi lwansukuzonke. Ulwazi lwansukuzonke ngeke lufane kuzona zonke izingane njengoba luncike emndenini womntwana, umphakathi nesiko. Ulwazi lwansukuzonke lubuye lubizwe ngokuthi **ulwazi lwangaphambili** futhi othisha balusebenzisa ukwakhela kulokho abafundi abakwaziyo nalokho abakwazi ukukwenza.

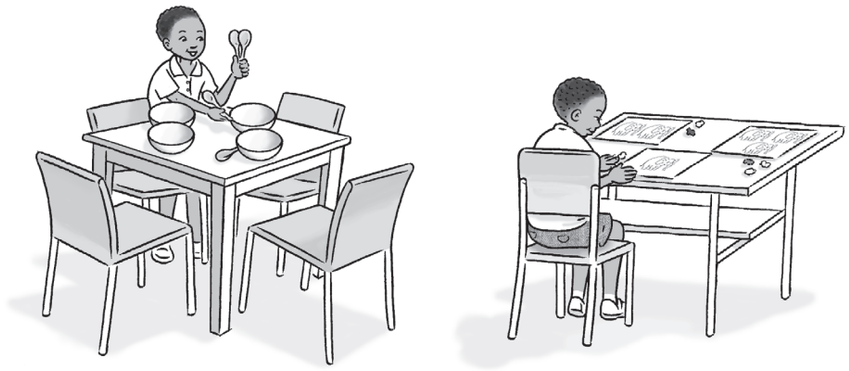
IGLOSARI

ulwazi lwangaphambili
okwaziwa ngabafundi phambilini futhi asebekwazi ukukwenza

Ebangeni R, kumele abafundi bathole ithuba lokubheka, ukuphenya futhi bahlole imibono emisha. Kumele bagqugquzelwe ukukhuluma nothisha wabo nabanye abafundi mayelana nabakwenzayo nabakucabangayo. Abafundi badinga uhlobo lokufundisa oluyilo ukubasiza:

- ukucabanga nokukhuluma ngesipiliyoni sabo besebenzisa ulimi lwezibalo
- ukwakha ulwazi olusha lwezibalo
- ukujulisa ukuqonda kwabo izibalo
- ukuthuthukisa isimo somqomdo esihle ngezibalo.

Badinga ukuzibandakanya emisebenzini ebavumela ukuhlola ulwazi lwezibalo ekhaya nasesikoleni futhi babone izibalo njengento emnandi nejabulisayo.



Umfanekiso 9 Ukubala nokuqondanisa ngakunye ngakunye ekhaya nasesikoleni

Ukudala indawo yokufunda izibalo

Othisha kumele badale isimo sasekilasini lapho abafundi:

- bezizwa bephephile
- bezithemba ngokwanele ukuthi bazikhulumele
- babamba iqhaza kuyo yonke imisebenzi.

Indawo yokufunda izibalo kumele imbandakanye:

- izinsiza (imidlalo, izinto zokwakha namaphazili) ezihlelwe ukuze abafundi babone okukhona bese bekhetha abafuna ukukusebenzisa
- amathuba okuhlola nokuphenya
- amathuba okuthi abafundi basebenzise izinto ukuxazulula izinkinga nokuqopha izixazululo zabo
- amathuba okuthi abafundi basebenzise ulimi lwezibalo, njengokuthi, ‘okuningi’, ‘okukhulu kuno’, ‘ekhoneni’-kanye nezinombolo

- activities that involve **observing**, **matching**, **comparing**, **sorting** and **ordering**.

In practice ...

- Set up a maths-rich area in your classroom. Use a table against a wall so that labels, pictures and objects can be displayed and discussed.
- Arrange the weather chart, calendar, number line (number washing line) and number friezes in this area and use these for daily discussions.
- Display the learners' work in this area.
- Encourage the learners to bring items from home for discussion. Add these to the display table and give the learners who brought them an opportunity to talk about them.

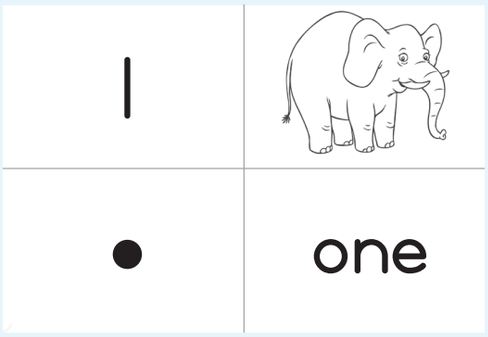


Figure 10 Number frieze

Figure 11 The maths area

2. The activity principle

Definition

The activity principle means learning by doing things yourself. Learners should be actively involved in their own learning. Learning maths in Grade R should consist of enjoyable, hands-on activities that involve everyday objects and meaningful experiences. Wherever possible the activities should provide learners with the opportunities to use their whole bodies and their senses, especially sight, hearing and touch.

GLOSSARY

observing
using our senses to find out about objects, events and attitudes. We need to observe to gather information about the world, e.g. looking and listening carefully to what is happening around us.

matching
identifying the same attribute in two or more objects, e.g. all the yellow objects. Matching is an important skill for learning one-to-one correspondence.

comparing
looking for similarities and differences between two or more objects, e.g. 'these are both animals, but one of them is blue and the other one is red'. Comparing is about finding the relationship between objects based on specific features. This skill leads to the ability to classify objects.

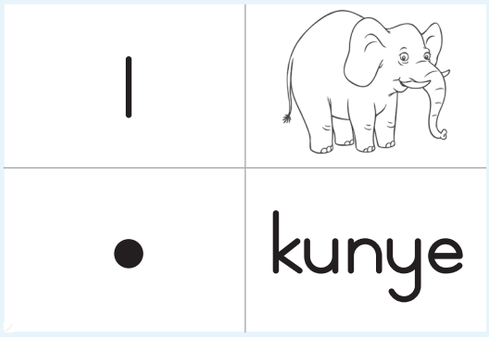
sorting
finding things that are the same, or alike, and grouping them by specific features. First sort by one feature, such as colour, e.g. 'all the green shapes'. Then sort by two features, such as colour and size, e.g. 'all the small, green shapes'.

ordering
lining up three or more objects or events in a sequence, e.g. the daily classroom routine, the learners' morning routine ('after I wake up I get out of bed, wash my face, eat my breakfast …') or the events in a story

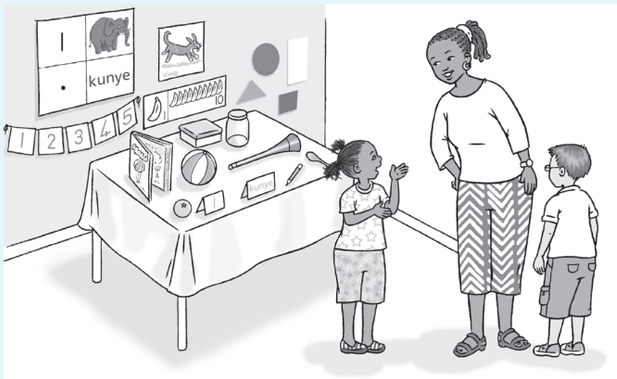
- imisebenzi ehlanganisa **ukuqaphela**, **ukuqondanisa**, **ukuqhathanisa**, **ukuhlunga** kanye **nokuhleleka**.

Uma sekwenziwa ...

- Yenza indawo egcwele izinto zezibalo ekilasini lakho. Sebenzisa itafula elincike obondeni ukuze amalebula, izithombe nezinto kungabekwa futhi kuxoxwe.
- Hlela ishadi lesimo sezulu, ikhalenda, inkabamudwa (ulayini wokuneka izingubo wezinombolo) nebhoda yezinombolo kule ndawo bese uzisebenzisela izingxoxo zansukuzonke.
- Khangisa ngomsebenzi wabafundi kule ndawo.
- Gqugquzela abafundi ukuthi beze nezinto emakhaya okungaxoxwa ngazo. Beka nalezi zinto etafuleni lokukhangisa bese unika abafundi abafike nazo ithuba lokuthi baxoxe ngazo.



Umfanekiso 10 Ibhoda yezinombolo



Umfanekiso 11 Indawo yezibalo

2. Umgomo womsebenzi

Incazelo

Umgomo womsebenzi uchaza ukufunda ngokuzenzela izinto. Kumele abafundi babambe iqhaza ekufundeni kwabo. Ukufunda izibalo Ebangeni R kumele kufake imisebenzi ejabulisayo eyenziwa ngezandla futhi embandakanya izinto zansukuzonke nemilando ebalulekile. Uma kungenzeka imisebenzi kumele inike abafundi amathuba okusebenzisa imizimba yonke nezinzwa kakhulukazi eyokubona, eyokuzwa neyokuthinta.

IGLOSARI

ukuqaphela
ukusebenzisa izinzwa ukuthola ngezinto, izigameko, nesimo sengqondo. Kudinga siqaphele ukuqoqa ulwazi mayelana nomhlaba, isib. ukubuka nokulalela kahle ukuthi kwenzekani kokusizungezile.

ukuqondanisa
ukukhomba izimpawu (ama-athribhuthi) ezifanayo ezintweni ezimbili nangaphezulu, isib. zonke izinto eziphuzi. Ukuqondanisa kuyikhono elibalulekile lokufunda ukubheka okukodwa kokukodwa okuhambisanayo.

ukuqhathanisa
ukubheka okufanayo nomehluko phakathi kwezinto ezimbili noma eziningi, isib. 'lezi izilwane zombili kodwa esisodwa sazo siluhlaza okwesibhakabhaka kanti esinye sibomvu'. Ukuqhathanisa kumayelana nokuthola ubudlelwane phakathi kwezinto kubhekwe izici ezithile. Leli khono liholela ekukwazini ukuhlukanisa izinto.

ukuhlunga
ukuthola izinto ezifanayo noma ezinokufana uziqoqela ndawonye ngezici ezithile. Kuqala hlunga ngesici esisodwa njengombala, isib. 'zonke izimo eziluhlaza'. Bese uhlunga ngezici ezimbili njengombala nobukhulu, isib. 'zonke izimo ezimnyama eziluhlaza'.

ukuhleleka
ukumisa izinto ezintathu noma eziningi noma izigameko ngokulandelana, isib. inqubo yansukuzonke yekilasi, inqubo yasekuseni yabafundi ('uma sengivukile ngiyehla embhedeni, ngigeze ubuso, ngidle ibhulakufesi ...') noma izigameko endabeni

Grade R learners should learn to count and order numbers through songs and rhymes, using actions and big movements, such as clapping, jumping and stomping to represent numbers as they count. Rote counting, copying numbers from the board and writing number symbols between lines with a pencil are not the best way to learn about numbers.

Learners should physically look for and pack out collections of objects that they can count and label with number word and symbol cards. They should write number symbols in the sand, form them using Plasticine, paint them, or trace them on their friend's back. This approach is aligned with emergent writing and links the formation of the number symbol with the number name.

When introducing a new number, it is a good idea to connect the number name, symbol, physical actions and collections of objects through a story. This can be done by encouraging learners to count objects in a picture, or to recall the number of things in a story, or they can clap, jump or show their fingers to represent the number in a story.

In practice ...

The teacher does the following:

- Plans hands-on activities that are suitable for the learners' ages, levels of development and their interests.
- Makes connections between what the learners already know and can do, and the new ideas, language, concepts and/or skills that are to be learnt.

The learners:

- are free to experiment, investigate and ask questions
- together, share ideas and ask questions.

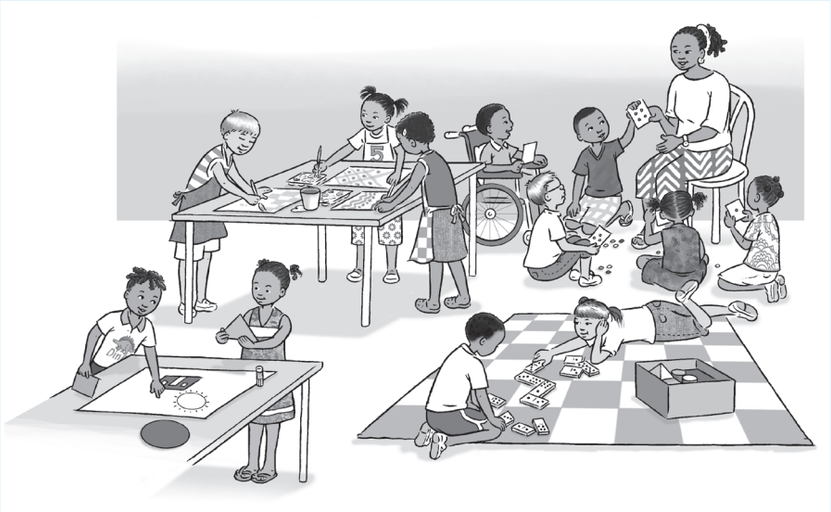


Figure 12 Children learn in hands-on activities.

Kumele abafundi Bebanga R bafunde ukubala nokuhlela izinombolo ngamaculo nemilolozelo besebenzisa ukunyakaza nokunyakaza okukhulu njengokushaya izandla, ukugxuma nokwehla ngesikhathi bebala. Ukubala sakuhuba ukukopisha izinombolo uzisusela ebhodini, ukubhala izimpawu zezinombolo phakathi kwemigqa ngepensela akuzona izindlela ezinhle zokufunda ngezinombolo.

Kumele abafundi babheke ngokwabo futhi bapakishe amaqoqo ezinto abangazibala bafake amalebuli ngegama lenombolo ngebizonombolo kanye namakhadi ezimpawu. Kumele babhale izimpawu zezinombolo emhlabathini, bazakhe besebenzisa upulasitiki, bazipende, noma bazibhale emhlane womngane wabo. Le ndlela iqondaniswe nokubhala okuqhamukayo bese kuxhumanisa ukwakheka kophawu lwenombolo negama lenombolo.

Uma wethula inombolo entsha kuwumbono omuhle ukuxhumanisa igama lenombolo, uphawu, okwenziwa ngomzimba, kanye nokuqoqa izinto usebenzisa indaba. Lokhu kungenziwa ngokugqugquzela abafundi ukuthi babale izinto esithombeni, noma bakhumbule idlanzana lezinto endabeni noma bashaye izandla, bagxume noma bakhombise ngeminwe yabo ukuze imele inombolo endabeni.

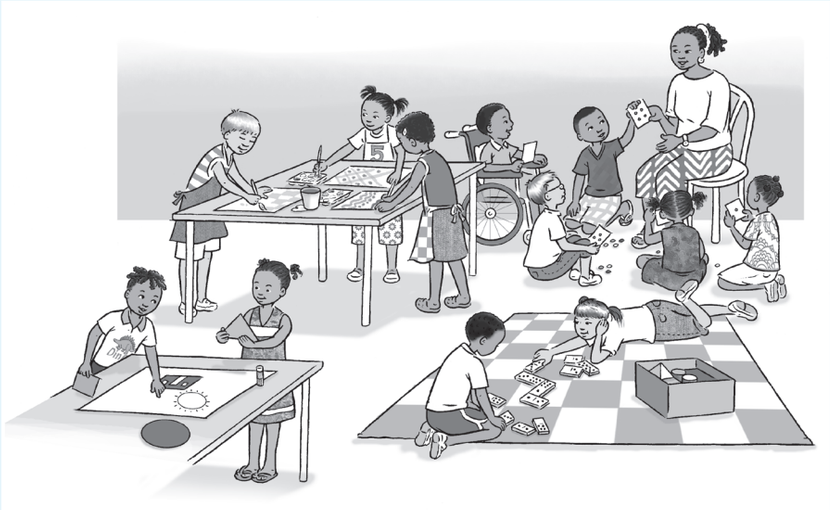
Uma sekwenziwa ...

Uthisha wenza okulandelayo:

- Uhlela imisebenzi efanele neminyaka yabafundi, izinga lokuthuthuka kanye nezinto abazithandayo.
- Wenza ukuxhumana phakathi kwalokhu abafundi asebekwazi nabakwazi ukukwenza, imibono emisha, ulimi, ulwazi namakhono okumele afundwe.

Abafundi:

- bakhululekile ukuvivinya, baphenye futhi babuze imibuzo
- ndawonye, babelane ngemibono futhi babuze imibuzo.



Umfanekiso 12 Izingane zifunda ngokuzimbandakanya mathupha emsebenzini.

3. The play principle

Definition

Play consists of activities that are enjoyable and that promote a child's growth and development. Play has behavioural, social, physical, cognitive and emotional rewards. Play allows learners to be actively involved in their own learning and exploration of their environment. Learning in Grade R should consist of enjoyable, hands-on activities and experiences that make use of many concrete objects and **symbols**.

GLOSSARY

symbols
things that represent or stand for something else, such as a number symbol, logo or road sign

Learning through play

For children, learning and play are not separate activities. Play can mean many things, such as outdoor physical activities; playing with sand or water; pretend play with friends or alone; playing with blocks and construction toys; or playing listening games, guessing games or card games. Although some play activities need extra time and resources, children often enjoy playing with everyday objects and simple home-made materials. Play is how children learn at home and at school. It is not something that learners do only in their 'free time' or when a teacher is not around.

Learners need many opportunities to:

- explore their environment using their senses, e.g. physical activities done outdoors, such as climbing and running, or games with rules that have to be followed, such as hopscotch and ball games
- investigate and solve problems, e.g. using construction materials to make a tower, or using water or sand to fill containers
- practise what they already know or can do, e.g. playing structured games, such as snakes and ladders or dominoes.

Five types of play

Researchers have identified five types of play that can be seen in all cultures and that support the physical, social, emotional and cognitive development of a child.

- **Physical play** includes active exercise, fine motor practice and rough-and-tumble play. It is important for gross and fine motor coordination and for building strength and endurance.
- **Play with objects** includes exploring, investigating and experimenting with different obejcts in their world. This develops their thinking and problem-solving skills.
- **Symbolic play** is when children use a toy, object, picture, drawing or other mark-making to represent real-life objects.
- **Pretence and socio-dramatic play** involves dressing-up and role-playing. This promotes cognitive and social development and helps children to manage their own behaviour and thinking.
- **Games with rules** encourage children to follow the rules of a game, and to learn to share and take turns as well as help one another.

3. Umgomo wokudlala

Incazelo

Ukudlala kuqukethe imisebenzi ejabulisayo futhi ekhuthaza ukukhula nokuthuthuka komntwana. Ukudlala kunomvuzo ngokokuziphatha, ngakwezenhlalo, ngokomzimba, ngokomqondo, nangokomoya. Ukudlala kuvumela abafundi ukuba babambe iqhaza ekufundeni kwabo nokuhlola indawo yabo. Ukufunda Ebangeni R kumele kube nemisebenzi ejabulisayo abazimbandakanya mathupha nezifundo zempilo ezisebenzisa izinto ezithintekayo **nezimpawu**.

IGLOSARI

nezimpawu
izinto ezimele enye into, njengophawu lwenombolo, uphawu, uphawu lomgwaqo

Ukufunda ngokudlala

Ngokwezingane ukufunda nokudlala akuyona imisebenzi ehlukene. Ukudlala kungasho izinto eziningi njengemisebenzi yangaphandle; ukudlala ngesihlabathi namanzi; ukulingisa ukudlala nomngani noma wedwa; ukudlala ngamabhulokhi namathoyisi okwakha; noma ukudlala imidlalo yokulalela, imidlalo yokuqagela noma imidlalo yamakhadi. Yize eminye imidlalo idinga isikhathi esengeziwe nezinsiza, izingane zijwayele ukujabulela ukudlala ngezinto zansukuzonke kanye nezinto ezenziwe ngezinto zasekhaya. Ukudlala kuyindlela yokufunda ekhaya nasesikoleni. Akuyona into abafundi abayenza 'ngesikhathi sabo esikhululekile' noma uthisha engekho.

Abafundi badinga amathuba oku:

- hlola indawo besebenzisa izinzwa, isib. ukudlala ngokomzimba okwenzelwa phandle, njengokugibela, ukugijima, noma imidlalo enemithetho okumele ilandelwe njengehophoskoshi nemidlalo yebhola
- phenya baxazulule izinkinga, isib. besebenzisa izinto zokwakha umbhoshongo, noma usebenzise amanzi noma isihlabathi ukugcwalisa izitsha
- benze lokhu asebekwazi futhi abakwazi ukukwenza, isib. ukudlala imidlalo ehleliwe njengezinyoka nezitebhisi namadomino.

Izinhlobo ezinhlanu zokudlala

Abacwaningi babheke izinhlobo ezinhlanu zokudlala ezingabonakala emasikweni futhi ezesekela ukuthuthuka komzimba, inhlalo, umphefumulo nomqondo wengane.

- **Ukudlala ngokomzimba** kuhlanganisa ukuzivocavoca, ukuzijwayeza ukunyakazisa imisipha emincane kanye nomdlalo ongenamthetho ombandakanya ukujahana nokugingqika phansi. Kubalulekile ngokuphathelene nokusebenzisana kwemisipha emincane kanye nemikhulu kanye nokuthuthukisa amandla kanye nokuqinisela.
- **Ukudlala ngezinto** kufaka ukubheka, ukuphenya, nokuhlola ngezinto ezihlukene emhlabeni wabo. Lokhu kuthuthukisa ikhono lokucabanga kanye nelokuxazulula izinkinga.
- **Ukudlala okungokomfanekiso** ilapho izingane zisebenzisa ithoyizi, into, isithombe, ukudweba noma enye into eshiya umaka emele izinto zempilo ngqo.
- **Ukulingisa nomdlalo wezenhlalo** kuhlanganisa ukugqoka nokulingisa. Lokhu kukhuthaza ukuthuthuka komqondo nezenhlalo futhi kusiza izingane ukuthi ziziphathe kahle futhi zicabange.
- **Imidlalo enemithetho** ikhuthaza izingane ukuthi zilandele imithetho yomdlalo nokufunda ukwabelana nokushintshana kanye nokusizana.

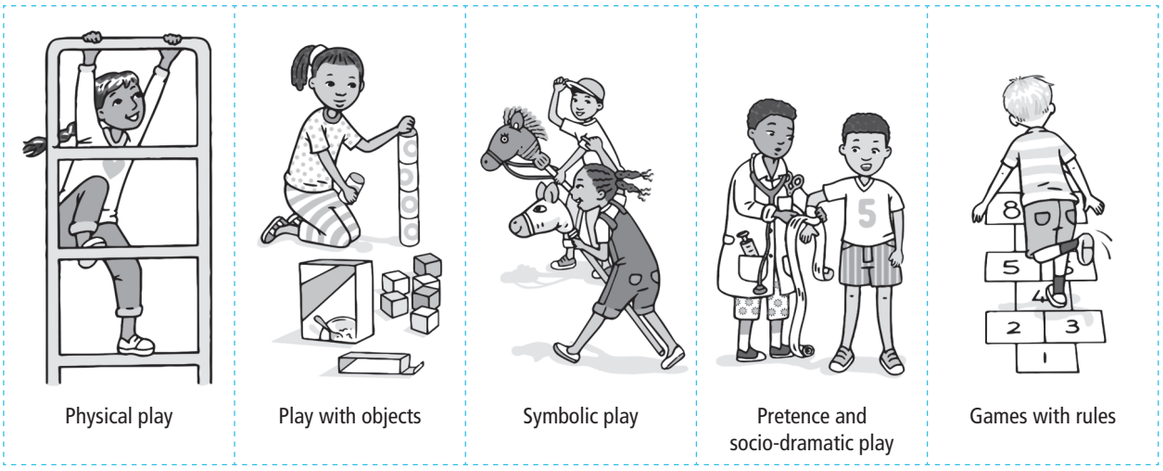


Figure 13 Types of play

The play-based approach

The play-based approach to teaching and learning recognises that at times children learn best from free-play activities which are initiated and directed by the child without adult involvement. At other times learners learn best from guided-play activities that are directed by the teacher for the whole class or small groups. A well-planned teaching and learning programme should include a balance of all the different types of play activities.

Learning maths concepts through play

Play often involves children taking on adult roles. For example, they might imitate adults preparing food, or a pilot flying an airplane, or a teacher teaching a class. In these games, they often use objects in their environment and pretend that they are other things, e.g. a wooden construction block 'becomes' a chopping board for chopping vegetables. In this kind of play, children use one object to 'stand for' or represent another one.

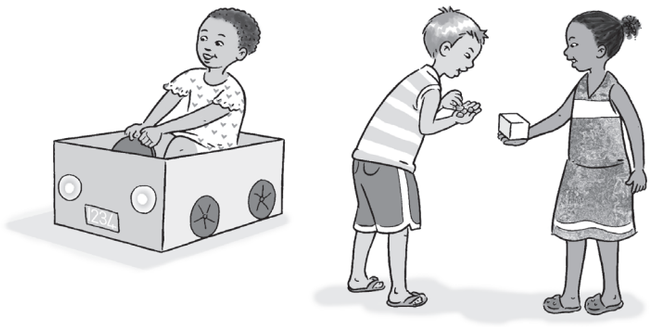
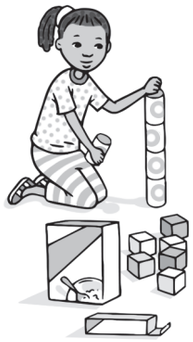


Figure 14 A cardboard box can represent a car, a wooden block can represent an apple and stones can represent money.

When children play and draw they use objects and pictures to represent real-life things. This is the beginning of learning that symbols can represent real things. They learn:

- that a drawing of two people can represent two real people.
- that symbols can represent other things, e.g. '2' stands for two things and this can be two of anything.

Ukudlala ngokomzimba



Ukudlala ngezinto

Ukudlala okungokomfanekiso

Ukulingisa nomdlalo wezenhlalo

Imidlalo enemithetho

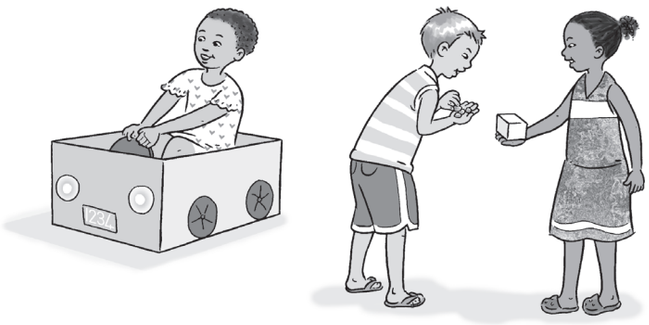
Umfanekiso 13 Izinhlobo zokudlala

Indlela encike ekudlaleni

Indlela encike ekudlaleni iqaphela ukuthi izingane zifunda kahle kakhulu emidlalweni ekhululekile eqalwe yaqondiswa ingane kungekho muntu omdala. Kwesinye isikhathi abafundi bafunda kahle uma imidlalo eqashiwe iqondiswe nguthisha ekilasini lonke noma amaqembu amancane. Uhlelo lokufundisa nokufunda elihlelwe kahle kumele lifake zonke izinhlobo zemidlalo.

Ukufunda ulwazi lwezibalo ngokudlala

Ukudlala kumbandakanya izingane zithatha indawo yokuba abantu abadala. Isibonelo, bangalingisa abantu abadala uma belungisa ukudla noma umshayeli wendiza eshayela indiza, noma uthisha efundisa ikilasi. Kule midlalo bajwayele ukusebenzisa izinto ezisendaweni yabo balingise ukuthi bayizinto ezithile, isib. ibhulokhi yokhuni yokwakha 'iba' ibhodi lokuqobela imifino. Kulolu hlobo lomdlalo, izingane zisebenzisa into eyodwa 'ukuthi imele' enye.



Umfanekiso 14 Ibhokisi lekhadibhodi lingamela imoto, ibhulokhi lokhuni lingamela i-apula namatshe angamela imali.

Uma izingane zidlala futhi zidweba zisebenzisa izinto nezithombe ukumela izinto zangempela empilweni. Lokhu kungukuqala kokufunda ukuthi izimpawu zingamela izinto zangempela. Bafunda:

- ukuthi umdwebo ungamela abantu ababili bangempela.
- ukuthi izimpawu zingamela ezinye izinto, isib. '2' umele izinto ezimbili futhi kungaba okubili kwanoma yini.

- about abstract thoughts and ideas, e.g. printing with a block and talking about the printed shape helps children to recognise the properties of a square.
- how things **relate** to each other, e.g. some containers fit into each other, some blocks can support other blocks, construction toys have some pieces that fit together, but not all of them do.

GLOSSARY

relate
how objects and ideas are connected to each other

There are many other play activities that promote maths learning. Here are some examples.

- When learners use different-sized containers, sand and water to build sandcastles, they explore the concepts of capacity (more/less), size (big/small) and quantity (many/fewer).
- Games, such as hopscotch and skipping, encourage children to use counting and to recognise patterns.
- Children can explore the shape and size of objects by putting objects (such as boxes and balls) in a 'feely bag', choosing one object and describing it.

In practice ...

Plan activities that interest learners and make them curious about maths.

- Encourage fantasy play by starting a game, e.g. place chairs in a row to make a train. Then ask a learner to be at the front as the train driver or on the second or third chair as a passenger. In this way, learners have fun, but also learn concepts such as position and number order.
- Join in and share activities with learners as they play. Show your enjoyment and involvement by thinking aloud and talking about what is happening in the activity, e.g. 'I filled three cups with water – one, two, three. Now I've filled one more so, look, there are four. Look how neatly they are lined up!' Discussion is an important way to teach maths language to children.
- Notice how learners talk about their ideas about counting, combining and sharing during their play, and repeat their findings back to them, e.g. 'You counted out five red beads and then counted out five blue beads. Let's count how many beads you have. That's right, ten beads.'
- Help children to think about symbols during fantasy play. Suggest how one thing might represent another, e.g. 'You could turn that table upside down and use it as your boat.'

4. The level principle

Definition

Skills and concepts build on one another. This is called **developmental progression**. Learners build their knowledge on what they already know and can already do. Good teaching depends on the teacher first finding out what learners already know and understand, and then using activities and everyday situations to build on that to help them learn new knowledge and skills.

GLOSSARY

developmental progression
order in which skills and concepts build on one another

- mayelana nokusebenzisa imicabango nemibono, isibonelo: ukuphrinta ngebhulokhi futhi ukukhuluma ngesimo esiphrintiwe kusiza ukuthi izingane ziqaphele ukwakheka kwesikwele.
- izinto **zihlobana** kanjani, isibonelo: ezinye izitsha zingena kwezinye, amanye amabhulokhi asekela amanye amabhulokhi, amathoyisi okwakha anezingcezu ezikwazi ukuhlangana kodwa akuzona zonke ezikwazi ukuhlangana.

IGLOSARI

hlobanisa
ukuthi izinto nemibono kuhlangana kanjani

Ikhona neminye imidlalo ekhuthaza ukufunda izibalo. Nazi ezinye izibonelo:

- Uma abafundi besebenzisa izitsha ezihlukene ngobungako, isihlabathi namanzi amakhasela esihlabathi babheka ulwazi ngomthamo (okudlulele/okungezansi), ubungako (okukhulu/okuncane) kanye nenani (okuningi/okumbalwa).
- Imidlalo njengehophoskoshi nokujomba kugqugquzela izingane ukuthi zisebenzise ukubala ukuze ziqaphele amaphethini.
- Izingane zingabheka ukuma nobukhulu bezinto ngokufaka izinto (njengamabhokisi namabhola) 'esikhwameni sokuzwa', ukhethe into eyodwa bese uyayichaza.

Uma sekwenziwa...

Hlela imisebenzi ethokozelwa ngabafundi ibenze bafise ukwazi ngezibalo.

- Gqugquzela umdlalo wokuzenzisa ngokuqala umdlalo, isib. beka izihlalo zilandelane ukwenza isitimela. Cela umfundi ukuba abe phambili njengomshayeli wesitimela noma esihlalweni sesibili noma sesithathu njengomgibeli. Ngale ndlela abafundi bayakujabulela kanti futhi bafunda ngolwazi lwesikhundla kanye nokuhleleka kwezinombolo.
- Hlanganyela wabelane ngemisebenzi nabafundi ngesikhathi bedlala. Khombisa ukujabula nokuzimbandakanya ngokucabanga kuzwakale nokuxoxa ngokwenzekayo kulowo msebenzi, njengokuthi, 'Ngigcwalise izinkomishi ezintathu ngamanzi – kunye, kubili, kuthathu. Manje sengigcwalise enye futhi, buka, asemane. Buka ukuthi abekwe alandelana ngobunono obunjani!' Ukuxoxa kuyindlela ebalulekile yokufundisa abafundi ulimi lwezibalo.
- Qaphela ukuthi abafundi baxoxa kanjani ngemibono yabo yokubala uhlanganisa futhi wabelane ngesikhathi sokudlala, futhi uphindisele kubona okutholakele abakutholile, isib. 'Ubale ubuhlalu obubomvu futhi wabala ubuhlalu obuluhlaza okwesibhakabhaka. Asibale ukuthi bungaki ubuhlalu onabo. Kuyiqiniso ubuhlalu obuyishumi.'
- Lekelela izingane ukucabanga ngezimpawu ngesikhathi somdlalo wokuzenzisa. Yenza isiphakamiso ukuthi into ingayimela kanjani enye, isib. 'Ungalibhekisa phansi lelo tafula bese ulisebenzisa njengesikebhe.'

4. Umgomo wamazinga

Incazelo

Amakhono nolwazi kwakhela phezu kokunye. Lokhu kubizwa ngokuthi **ukuthuthuka okuqhubekayo**. Abafundi bakhela phezu kolwazi lwalokho asebekwazi nasebekwazi ukukwenza. Ukufundisa okuhle kweyeme kuthisha ethola ukuthi yini abafundi abayaziyo nabayiqondayo, bese kusetshenziswa imisebenzi nezimo zansukuzonke ukwakhela kukho ukusiza ukuthi bafunde ulwazi olusha namakhono.

IGLOSARI

ukuthuthuka okuqhubekayo
ukuhleleka lapho amakhono nolwazi kwakhela phezu kokunye

Each learner in your class will have had different experiences. This means that they are all at different starting points in Grade R. Each learner's prior knowledge is the starting point for what he or she will learn. Learners can use what they know already to learn new maths concepts and skills.

In practice ...

- Plan games and activities that are appropriate for observing learners' prior knowledge.
- Observe what learners do and say when they play, and how they manage different activities.
- Record individual learners' strengths and needs.
- Plan new activities that build on each learner's prior knowledge and current understanding.

More about the level principle

Differentiation

Learners in a Grade R classroom are all a similar age, but they each have individual personalities, needs, abilities, strengths and challenges. They differ in:

- their home experience
- their cultural background
- their socio-economic background
- their language level
- their interests
- their prior knowledge
- their readiness to learn
- the pace at which they need to learn
- the support they need from teachers and others to learn.

Teachers need to continuously observe and record each learner's progress and development in maths. Differentiation means that what you teach and the way in which you teach it needs to take into account the different abilities or developmental levels of your learners.

To use this approach, teachers need to observe each learner during activities and determine what they understand and are able to do successfully, and then use this information to plan activities and support for the learners. Some learners may understand a new idea that is presented in an activity, with just a little support from the teacher. Other learners might need more time, more demonstrations, more examples and more support from the teacher to achieve the same level of understanding.

Consider the example of learners in a Grade R class who are all learning about the same topic – position in space (on/under, in front of/behind).

- Some learners will understand the difference between these positions with a little time and explanation from the teacher. They will soon be ready to move on to the next concept – positions in space found in pictures.

Umfundi ngamunye ekilasini lakho uzobe enezifundo zempilo ezihlukile. Lokhu kuchaza ukuthi bonke baqala ezindaweni ezingafani Ebangeni R. Ulwazi lwangaphambili lomfundi ngamunye luyisiqalo salokho azokufunda. Abafundi bangasebenzisa asebakwazi ukufunda ulwazi olusha lwezibalo namakhono.

Uma sekwenziwa ...

- Ukuhlela imidlalo nemisebenzi elungele ukubheka ulwazi lwangaphambili lomfundi.
- Ukuqaphela okwenziwa nokushiwo ngabafundi lapho bedlala nokuthi bayiphatha kanjani imisebenzi ehlukene.
- Ukuqopha amandla nezidingo zabafundi.
- Ukuhlela imisebenzi emisha eyakhela phezu kolwazi lwangaphambili lwabafundi kanye nokuqonda kwabo kwamanje.

Okunye ngomgomo wamazinga

Ukwahlukanisa

Abafundi ekilasini Lebanga R bawunyaka ofanayo, kodwa banokuziphatha okuhlukile, izidingo, amakhono, amandla nezinselelo. Bahluka lapha:

- ngezifundo zempilo zasekhaya
- isikompilo
- isizinda ngokwenhlalo nomnotho
- izinga lolimi lwabo
- abakuthandayo
- ulwazi lwaphambilini
- ukulungela kwabo ukufunda
- izinga abadinga ukufunda ngalo
- ukusekelwa abakudinga kothisha nabanye ukuze bafunde.

Kudinga ukuthi othisha babheke futhi baqophe ngokuqhubekayo inqubekela phambili yomfundi ngamunye kanye nokuthuthuka ezibalweni. Ukwahlukanisa kuchaza ukuthi okufundisayo nendlela okufundisa ngayo kubheka amakhono ahlukene noma ukuthuthuka okuhlukene kwabafundi bakho.

Ukusebenzisa le ndlela othisha kudinga ukuthi baqaphele umfundi ngamunye ngesikhathi semisebenzi bese bebona ukuthi yini abayiqondayo futhi abakwazi ukuyenza ngokuyimpumelelo bese usebenzisa lolu lwazi ukuhlela imisebenzi nokusekelwa kwabafundi. Abanye abafundi bangawuqonda umbono obekwe emsebenzini, ngosizo oluncane nje oluphuma kuthisha. Abanye abafundi bangadinga isikhathi esithe xaxa, ukukhonjiswa okwengeziwe, izibonelo kanye nokwesekwa okukhulu kuthisha ukuze bazuze izinga elifanayo lokuqonda.

Cabanga ngesibonelo sabafundi Basebangeni R abafunda ngesihloko esisodwa – indawo lapho ikhona (ngaphezu/ngaphansi, ngaphambi kwe-/ngemuva).

- Ngesikhashana kanye nencazelo evela kuthisha, abanye abafundi bazowuqonda umehluko phakathi kwalezi zikhundla. Bazosheshe bakulungele ukuqhubekela kolunye ulwazi – indawo lapho ikhona okutholakala ezithombeni.

- Other learners may need more time and explanation from the teacher while working on activities. They will also move on to the next concept, but it will take them longer and they will need more support.

In practice ...

You can use differentiation in your teaching by:

- being aware of similarities and differences amongst your learners
- planning the best way to teach each learner based on their strengths
- changing what is taught so that it takes into account the ability, **sensory perceptual skills**, prior knowledge, interests and cultural background of all learners
- adjusting, where necessary, what you expect each learner to have learnt by the end of the activity
- thinking about learners' personalities as well as their abilities when you decide how to group learners so that they can learn from and support each other in their groups
- using appropriate activities and resources
- teaching different learners at different rates, e.g. some learners may require more time to complete activities or answer questions than other learners
- using small group activities so that you can focus on individual learners and provide appropriate support for them if they need it
- planning activities for those learners who need more challenging tasks.

GLOSSARY

sensory perceptual skills
using your senses to gather information about your environment, for example: seeing, hearing, touching, smelling and tasting

5. The interaction principle

Definition

Learning involves communication and the sharing of ideas. Learners should be encouraged to talk with the teacher and with each other about what they are thinking and doing. Sharing ideas, asking questions and explaining what they are doing helps them to develop their understanding of concepts. It also helps them learn to use maths language with confidence.

In practice ...

- The classroom atmosphere needs to be relaxed so that learners feel free to ask questions and to share their ideas with each other while they are busy solving problems.
- Young learners need to be taught to use maths words correctly so that they can use them to express their ideas and thinking, e.g. learning to describe a ball as 'round' rather saying it is 'a circle'.

- Abanye abafundi bangadinga isikhathi esengeziwe nencazelo evela kuthisha ngesikhathi benza imisebenzi. Bayoqhubekela kolunye ulwazi kodwa kuyobathatha isikhashana futhi bayodinga ukusekelwa okwengeziwe.

Uma sekwenziwa ...

Ungasebenzisa ukwahlukana ekufundiseni kwakho ngokuthi:

- wazi okufanayo nokwahlukile kubafundi bakho
- uhlele indlela enhle yokufundisa umfundi ngamunye ubheke emandleni akhe
- ushintshe okufundiswayo ukuze kubhekwe ikhono, **amakhono okuqonda izinzwa**, ulwazi lwangaphambili, okuthandwayo, kanye nesikompilo lwabo bonke abafundi
- ukulungisa lapho kufanele, yini olindele ukuthi umfundi ngamunye useyifundile ekupheleni komsebenzi
- ukucabanga ngobunjalo babafundi nangamakhono abo bese unquma ukuthi uzobahlukanisa kanjani ngamaqembu ukuze bafunde kwabanye futhi bathole ukwesekana emaqenjini
- ukusebenzisa imisebenzi nezinsiza ezifanele
- ukufundisa abafundi abahlukene ngamazinga ahlukene, isibonelo, abanye abafundi badinga isikhathi esengeziwe ukuqeda umsebenzi noma ukuphendula imibuzo kunabanye abafundi
- ukusebenzisa imisebenzi yamaqembu amancane ukuze ugxile kulowo mfundi ngamunye ukumunikeza usizo
- ukuhlela imisebenzi yabafundi abadinga imisebenzi ebaphonsela inselele.

IGLOSARI

amakhono okuqonda izinzwa
ukusebenzisa izinzwa ukuqoqa ulwazi ngendawo yakho, isibonelo: ukubona, ukuzwa, ukuthinta, ukunuka nokunambitha

5. Umgomo wokuxhumana

Incazelo

Ukufunda kufaka ukuxhumana nokwabelana ngemibono. Kumele abafundi bagqugquzelwe ukukhuluma nothisha kanye nabanyengalokho abakucabangayo nabakwenzayo. Ukwabelana ngemibono, ukubuza imibuzo nokuchaza ukuthi benzani kusiza ekuthuthukiseni ukuqonda kwabo izinto. Kusiza futhi ukuthi bafunde ulimi lwezibalo ngokuzethemba.

Uma sekwenziwa ...

- Isimo sasekilasini kudinga ukuthi sibe ngesikhululekile ukuze abafundi bazizwe bekhululekile ukubuza imibuzo futhi babelane ngemibono ngesikhathi bematasatasa nokuxazulula izinkinga.
- Abafundi abancane kumele bafundiswe ukusebenzisa ulimi lwezibalo ngokuyikho ukuze bakwazi ukulusebenzisa uma besho imibono nemicabango yabo, isib. ukufunda ukuchaza ibhola njenge ‘ndilinga’ kunokuthi ‘isiyingi’.

Learners tend to say, '*too small*'. Reinforce the maths language by repeating what the learner has said, but use '*too short*' instead.

Figure 15 Teachers can guide children to use maths language.

More about the interaction principle

Communication: Active listening and speaking

We learn best when we do something and talk with another person, in pairs or groups. Learners need to develop skills in communicating and need to know how to be part of a conversation. They should learn to listen actively to what the other person is saying, and respond appropriately. This means that they need to be able to:

- listen to what is being said
- respond in a way that is appropriate
- take turns in speaking and listening.

In practice ...

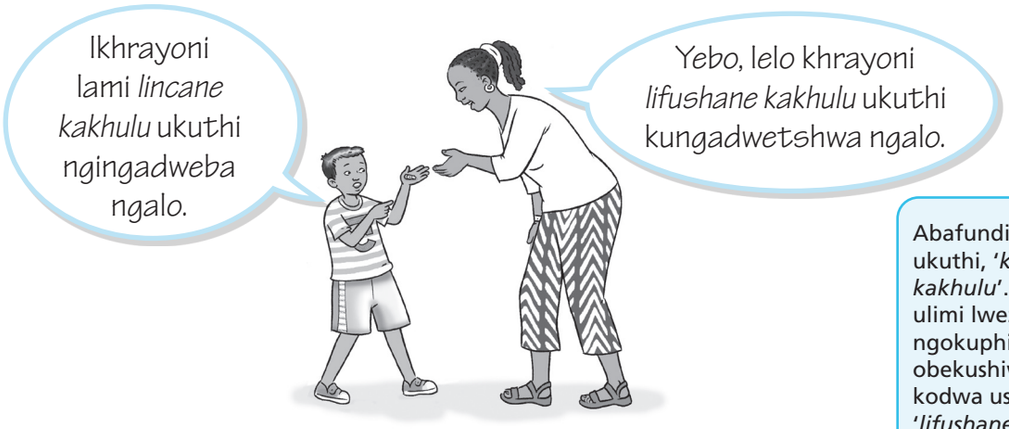
Help learners to develop good listening and speaking skills by providing opportunities for them to:

- join in a conversation or discussion
- listen carefully in a focused way
- share or express their thoughts and ideas
- give responses and feedback
- ask questions
- follow instructions.

When teachers listen to learners actively, learners:

- are encouraged to share their ideas, questions, problems and opinions
- feel that the teacher is interested in them and cares about whether they understand something
- develop their own active listening skills.

Responding in an appropriate way to something is an important part of communication, and of teaching and learning. When learners get a proper response to their questions or ideas, they believe that their ideas are important and have value. It also models for them how to respond appropriately.



Abafundi bajwayele ukuthi, '*kuncane kakhulu*'. Gcizelela ulimi lwezibalo ngokuphindaphinda obekushiwo umfundi, kodwa usebenzise '*lifushane kakhulu*' esikhundleni salokho.

Umfanekiso 15 Abafundi bangasiza abafundi ukusebenzisa ulimi lwezibalo.

Okunye ngomgomo wokuxhumana

Ukuxhumana: Ukulalela nokukhuluma ngokucophelela

Sifunda kahle uma senza okuthile futhi sixoxa nomunye umuntu, ngababili noma ngamaqembu. Kumele abafundi bathuthukise amakhono okuxhumana futhi bazi ukuthi bangaba kanjani yingxenye yenkulumo. Kumele bafunde ukulalela ngokucophelela entweni eshiwo omunye umuntu, futhi baphendule ngokufanele. Lokhu kusho ukuthi kumele bakwazi:

- ukulalela okushiwoyo
- ukuphendula ngendlela efanele
- ukushintshana uma bekhuluma futhi belalele.

Uma sekwenziwa ...

Siza abafundi ukuthuthukisa amakhono amahle okulalela nokukhuluma ngokubanikeza amathuba:

- okuhlanganyela enkulumeni noma engxoxweni
- okulalela ngokucophelela ngendlela egxilile
- okwabelana noma ukusho imicabango nemibono
- okunikeza izimpendulo kanye nembuyisambiko
- okubuza imibuzo
- okulandela imiyalo.

Uma othisha belalela abafundi ngokucophelela, abafundi:

- bayagqugquzeleka ukwabelana ngemibono imibuzo, izinkinga kanye nemibono
- bezwa ukuthi uthisha unentshisekelo ngabo futhi uyakukhathalela ukuthi bayayiqonda yini into ethile
- bathuthukisa amakhono abo okulalela ngokucophelela.

Ukuphendula ngendlela efanele entweni kuyingxenye ebalulekile yokuxhumana, nokufundisa nokufunda. Uma abafundi bethola impendulo eyiyo ngemibuzo yabo, noma imibono, bakholwa ukuthi imibono yabo ibalulekile futhi. Kubuye kusize ukubakhombisa ukuthi bangaphendula kanjani ngokufanele.

In practice ...

You can respond appropriately to your learners by:

- never allowing them to feel they have asked a stupid question
- sometimes repeating a question they ask, so that they know they are being listened to
- encouraging them to ask clear questions by rephrasing one of their questions, or asking them to repeat it in a different way
- trying to answer their questions in ways that are meaningful to them, e.g. by drawing on what they already know, and/or by using examples from their experience.

The role of language in maths

We all use language to communicate. We use it to share ideas and information, and to describe **abstract** ideas. Language is also important for maths. We need it to describe, understand, question, think, reason, explain and represent maths concepts.

The language of maths includes the words and symbols we use to communicate or share maths ideas or concepts. Sometimes we use everyday language, but maths language is **exact** and specific. You can read more about everyday knowledge and school knowledge on pages 16–23. Here are three examples of this.

- In everyday language the word 'half' might be used to describe something that is more or less shared into two parts of a similar size. However, in maths, 'half' means two parts of a whole that has been divided equally. The two parts are exactly the same size or number.
- In everyday language we might say, 'The teacher is big.' However, in maths we would say, 'The teacher is tall', and measure his/her height, counting 'one', 'two', 'three', and so on as we measure.
- In everyday language we might say that the triangle is a pointy shape. However, in maths we would say that a triangle has three straight sides and three corners.

GLOSSARY

abstract
an idea, a thought or a feeling

exact
precise, accurate

Figure 16 Maths language is exact.

Uma sekwenziwa ...

Ungaphendula ngokufanele kubafundi bakho ngokuthi:

- ungabavumeli bazizwe sengathi babuze umbuzo owubulima
- ngesinye isikhathi uphinde umbuzo abawubuzayo, ukuze bazi ukuthi bayalalelwa
- ubagqugquzele ukuthi babuze imibuzo ecacile ngokuwulungisa umbuzo wabo noma ubacele ukuthi bawusho ngenye indlela
- uzame ukuphendula imibuzo ngendlela ezwakalayo kubona, isib. ukudweba lokho asebekwazi, futhi/noma usebenzise izibonelo ngezifundo zabo zempilo.

Iqhaza lolimi ezibalweni

Sonke siyalusebenzisa ulimi ukuthi sixhumane. Silusebenzisa ukwabelana ngemibono nolwazi, ukuchaza **imicabango yethu ejulile**. Ulimi lubalulekile futhi ezibalweni. Siludingela ukuchaza, ukuqonda, ukubuza, ukumela ulwazi lwezibalo.

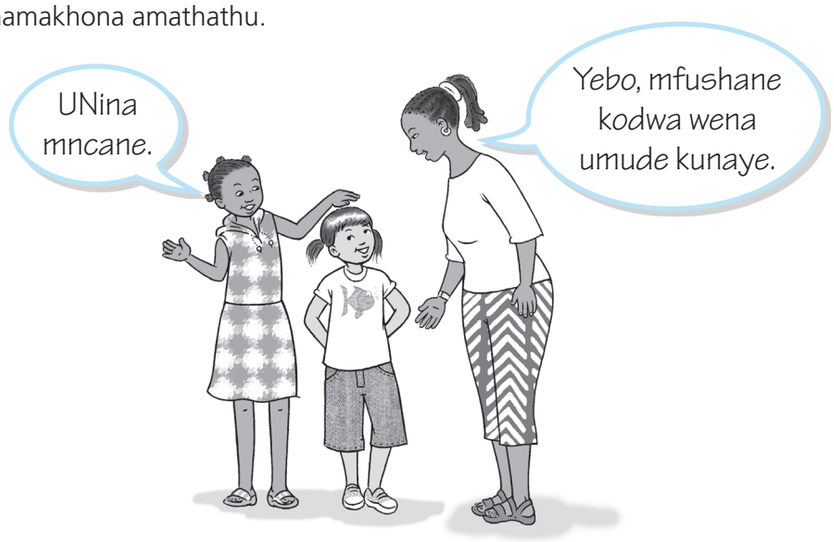
Ulimi lwezibalo lumbandakanya amagama nezimpawu esizisebenzisa ukuxhumana noma ukwabelana ngemibono noma ulwazi. Ngesinye isikhathi sisebenzisa ulimi lwansukuzonke kodwa ulimi lwezibalo **lushaya emhlolweni**. Ungafunda ngolwazi lwansukuzonke nolwazi lwesikole emakhasini 16–23. Nazi izibonelo zalokhu.

- Ngolimi lwansukuzonke igama 'isigamu' lingasetshenziswa ukuchaza into engaphezulu noma ngaphansi ehlukaniswa kabili ngokulinganayo. Nokho ezibalweni 'isigamu' sisho izingxenye ezimbili zokukodwa okuphelele okuhlukaniswe ngokulinganayo. Izingxenye ezimbili zifana ncimishi ngobungako noma ngenombolo.
- Ngolimi lwansukuzonke singathi, 'Uthisha mkhulu.' Nokho, ezibalweni, singathi 'Uthisha mude', bese sikala ubude, sibala, 'kunye', 'kubili', 'kuthathu', njalonjalo uma sikala.
- Ngolimi lwansukuzonke singathi unxantathu unesimo sokucija. Nokho, ezibalweni, singathi unxantathu unamacala aqondile amathathu namakhona amathathu.

IGLOSARI

okusebenzisa ukucabanga
umbono, umcabango noma umuzwa

shaya emhlolweni
ngqo, okunembayo



Umfanekiso 16 Ulimi lwezibalo lushaya emhlolweni.

Developing children's maths language

Part of learning new concepts involves learning new language. Teachers need to guide learners as they gradually begin to understand and use new maths language at school and in their daily lives. They need to introduce Grade R learners to the correct maths vocabulary that will allow them to follow instructions, ask questions and express their thinking and reasoning. Learners acquire new language and maths at the same time. As they learn new words, they learn more concepts, then they learn more words and more concepts, and so they become more and more successful in their maths tasks.

In practice ...

Learners who know the meaning of the words 'round' and 'flat' can describe the mathematical properties of objects. For example, through their play they come to realise that round objects roll and objects with flat sides slide. Learners who do not know the terms 'round' or 'flat' can only draw limited conclusions about the objects they explore – boxes slide and balls roll. These learners need to be encouraged to learn the appropriate new language to extend their conceptual understanding and knowledge.

Figure 17 Developing maths language through play

Encourage learners to use their home language as much as possible. This helps to develop their general language abilities and thinking skills. In South Africa, many Grade R learners learn through their second or third language. Maths teaching can help to develop their ability to use these languages if they are given opportunities to talk about what they are doing during maths activities, to share their ideas and to discuss their reasoning.

Ukuthuthukisa ulimi lwezibalo lwezingane

Ingxenye yokufunda ulwazi olusha, imbandakanya ukufunda ulimi olusha. Kumele othisha basize abafundi ngesikhathi beqala kancane ukuqonda nokusebenzisa ulimi olusha lwezibalo empilweni yabo yansukuzonke. Kudinga bethulele abafundi Bebanga R ulimi lwezibalo oluyilo oluzobavumela ukuthi balandele imiyalo, babuze imibuzo futhi basho abakucabangayo. Abafundi bazuza ulimi olusha kanye nezibalo ngesikhathi esisodwa. Ngesikhathi befunda kabanzi bafunda amagama amasha nolunye ulwazi bese bephumelela emisebenzini yabo yezibalo.

Uma sekwenziwa ...

Abafundi kumele bazi incazelo yamagama 'indilinga' nelithi 'isicaba' ukuthi angachaza izimpawu zezibalo ezintweni. Isibonelo, ngokudlala bafinyelela ekwazini ukuthi izinto eziyindilinga ziyagqingqika bese izinto eziyisicaba ziyashushuluza. Abafundi abangawazi lawa magama 'indilinga' noma 'isicaba' bangafinyelela esiphethweni esingaphelele ngezinto abazihlolayo – amabhokisi ayashushuluza. bese amabhola ayagingqika. Laba bafundi kumele bagqugquzelwe ukufunda ulimi olusha olufanele ukuze banezezele ukuqonda kwabo nolwazi.

Umfanekiso 17 Ukuthuthukisa ulimi lwezibalo ngokudlala

Gqugquzela abafundi ukuthi basebenzise ulimi lwabo lwasekhaya ngangokunokwenzeka. Lokhu kusiza ukuthuthukisa amakhono abo olimi ajwayelekile kanye namakhono okucabanga. ENingizimu Afrika, abafundi abaningi Bebanga R bafunda ngolimi lwabo lwesibili noma lwesithathu. Ukufundisa izibalo kungasiza ukuthuthukisa amakhono abo okusebenzisa lezi zilimi uma benikezwe amathuba okuthi bakhulume ngokuthi benzani ngesikhathi somsebenzi wezibalo, ukwabelana ngemibono nokuxoxa ngemicabango yabo.

Learning correct maths vocabulary

Learners need the vocabulary to talk and think about maths concepts. For example, they need to know words such as these to describe:

Figure 18

- quantity (a lot, more, many, fewer)

Figure 19

- calculation (add, take away)

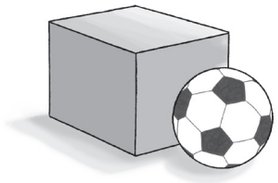


Figure 20

- shape (round, square)

Figure 21

- position (first, second, third, last, before, after, between)

Figure 22

- size (big, small)

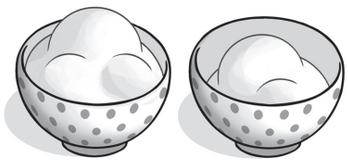


Figure 23

- measurement (more, less, long, wide, full, heavy, tall, short, morning, night)

Encourage learners to use maths vocabulary by using it yourself when you speak with them about maths concepts, and by rephrasing what they say into maths language. At the end of each Content Area in Section 3 there is a full list of maths vocabulary specific to the Content Area.

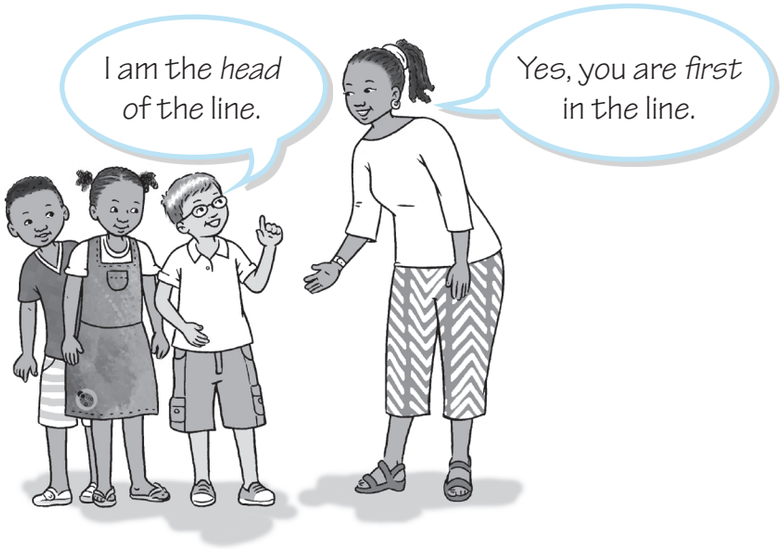


Figure 24 Encourage learners to use maths vocabulary.

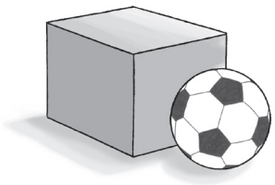
Ukufunda amagama alungile asetshenziswa ezibalweni
Abafundi badinga amagama ukukhuluma nokucabanga ngolwazi lwezibalo. Isibonelo, badinga ukwazi ukuchaza amagama anjengalawa:

Umfanekiso 18

- ubuningi (kakhulu, okuningi, abaningi, okumbalwa)

Umfanekiso 19

- ukubala (hlanganisa, susa)



Umfanekiso 20

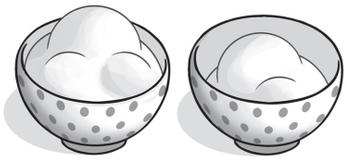
- isimo (indilinga, isikwele)

Umfanekiso 21

- isikhundla (okokuqala, okwesibili, okwesithathu, okokugcina, ngaphambi, ngemuva, phakathi)

Umfanekiso 22

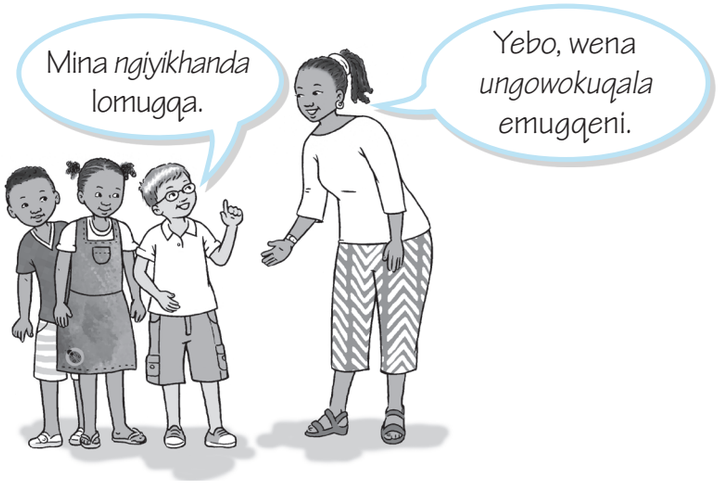
- ubungako (okukhulu, okuncane)



Umfanekiso 23

- isilinganiso (okuningi, okuncane, okude, okubanzi, okugcwele, okusindayo, okude, okufushane, ekuseni, ebusuku)

Gqugquzela abafundi ukuthi basebenzise amagama asetshenziswa ezibalweni ngokuthi uwasebenzise wena uma ukhuluma nabo mayelana nolwazi lwezibalo, futhi ngokuphinda usho abakushoyo ngolimi lwezibalo. Ekupheleni Kwengxenye Yolwazi esigabeni sesi-3 kunohlu lwamagama asetshenziswa ezibalweni aqondene Nengxenye Yolwazi.



Umfanekiso 24. Gqugquzela abafundi ukuthi basebenzise ulwazi lwamagama ezibalo.

Maths focuses on the relationship between things. Learners need the language to think and talk about these relationships, including:

- comparisons between collections (many, few, more, fewer)
- comparison of size and measurement (big/small, taller/shorter, heaviest/lightest)
- comparison of shape (three sides, four sides, round or curved)
- position in space (in front of, behind, under, next to, between)
- the order of things (first, last, second, next, before, after, between)
- comparisons between the amount of something (more, less, the same).

Understanding and using symbols

Symbols are all around us. The signs that learners see in their everyday environment often have both words and symbols on them. Learners learn that these words and symbols have meaning. For example, symbols show you when to cross the road or how much something costs.

Figure 25 A stop sign and the numeral '2' are both symbols.

Young children experiment with written symbols through their drawing and early writing attempts. In Grade R, understanding maths language builds the foundation for using maths symbols correctly.

Reasoning and predicting

Learners also need the language to:

- follow and comment on someone else's **reasoning**
- explain their own thinking and use this to **predict** what will happen next. They need language to describe a pattern and to say what will come next if the pattern is continued.

GLOSSARY

reasoning
the thinking behind an idea or statement

predict
to say or estimate what will happen in the future

Figure 26 Predicting what shape comes next in the sequence.

In practice ...

To encourage maths language development, learners need plenty of opportunities to:

- play
- spend time with and communicate with adults and other children
- talk about their ideas and reasoning.

Izibalo zigxila kubudlelwano phakathi kwezinto. Abafundi badinga ulimi ukucabanga ngazo lezi zinto nokukhuluma ngobudlelwano kwazo, okufaka:

- ukuqhathanisa phakathi kwamaqoqo ezinto (okuningi, okumbalwa, okudlulele, okungaphansana)
- ukuqhathanisa izinto ngobungako nesilinganiso (okukhulu/okuncane, mujana/mfushanyana, kusinda kakhulu/kulula kakhulu)
- ukuqhathanisa isimo (amacala amathathu, amacala amane, indilinga noma ezigobile)
- isikhundla endaweni (ngaphambili, ngemuva, ngaphansi, eceleni kwe-, phakathi)
- ukulandelana kwezinto (okokuqala, okokugcina, okwesibili, okulandelayo, ngaphambili, emuva, phakathi)
- ukuqhathanisa phakathi kwenani lento (okuningi, okuncane, okufanayo).

Ukuqonda nokusebenzisa izimpawu

Izimpawu zikhona nxazonke emphakathini. Izimpawu abafundi abazibonayo ezinsukwini zonke emphakathini zijwayele ukuba namagama kanye nezimpawu kuzona. Abafundi bayawafunda lawa magama nezimpawu nezincazelo zawo. Isibonelo, izimpawu zikhombisa ukuthi kufanele uwele umgwaqo nini noma ibiza malini into ethize.

2

Umfanekiso 25 Uphawu lokuma nenombolo '2' kokubili kuyizimpawu.

Izingane ezincane zenza umsebenzi ngezimpawu ezibhaliwe nezimpawu ezibhaliwe uma benza imidwebo nokubhala okokuqala besaqala ukubhala. Ebangeni R, ukuqonda ulimi lwezibalo kwakha isisekelo sokusebenzisa izimpawu zezibalo ngendlela efanele.

Ukucabanga nokuqagela

Abafundi bayaludinga futhi ulimi:

- ukulandela nokuphawula **ngomcabango** womunye umuntu
- ukuchaza ngendlela yabo khona bezokwazi **ukuqagela** ukuthi yini elandelayo ezokwenzeka. Bayaludinga ulimi lokuchaza iphethini nokusho ukuthi yini elandelayo uma iphethini iqhubeka.

IGLOSARI

ngomcabango
umcabango ngombono othile noma isitatimende

ukuqagela
ukusho noma ukucabangela okuzokwenzeka ngomuso

Umfanekiso 26 Ukuqagela ukuthi yisiphi isimo esilandelayo.

Uma sekwenziwa ...

Ukugqugquzela ukuthuthuka kolimi lwezibalo, abafundi badinga amathuba amaningi:

- ukudlala
- ukuchitha isikhathi bekhulumisana nabantu abadala nezinye izingane
- ukukhuluma ngemibono yabo nemicabango.

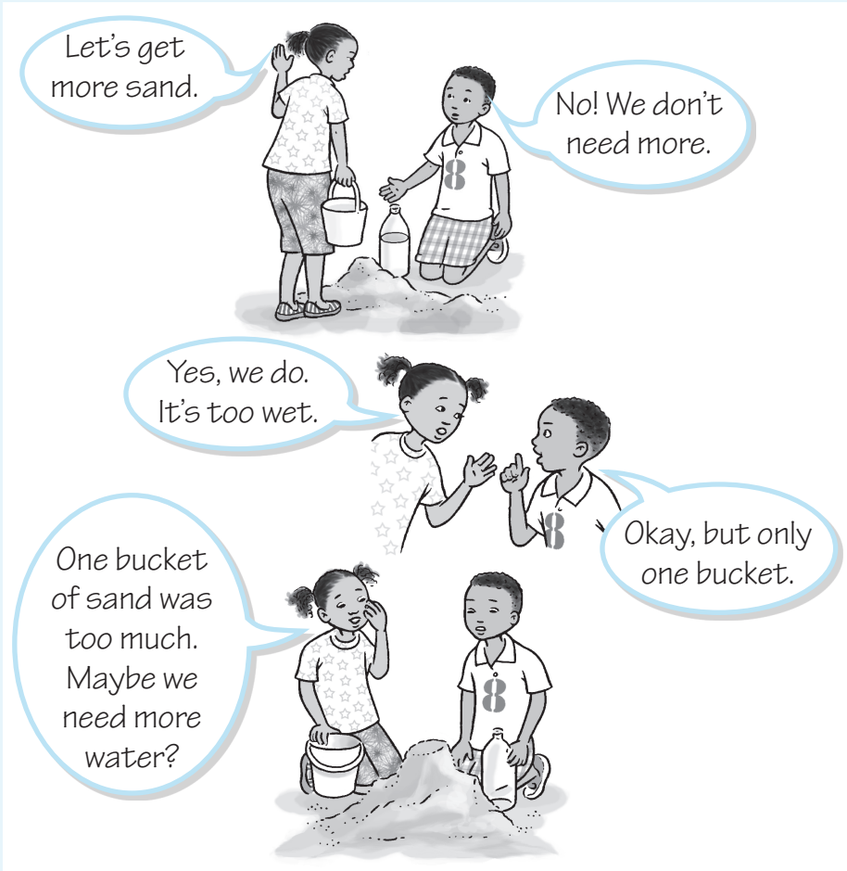


Figure 27 Play is an opportunity to use maths language.

Notice how learners use maths language when they:

- talk about what they are doing
- describe their experiences outside of school, e.g. setting the dinner table, playing a game or explaining how they got from home to school
- make up words when the don't yet know the correct maths language for something, e.g. describing a corner as a 'sharp end' or naming 'eleven' as 'eleventeen'
- predict what will happen, e.g. 'The tower will fall over if I put more blocks on the top.'

6. The guidance principle

Definition

Teachers guide learners in understanding new knowledge. They organise the teaching and learning situation to create opportunities for learners to focus on specific tasks and materials so that the learners can explore an idea and share their thinking about a maths problem. Teachers model what to do and ask guiding questions to help learners solve the problem. This is sometimes called **mediation**. Through mediation, learners develop new knowledge, behaviours and strategies for solving problems that they can use in other contexts.

GLOSSARY

mediation
a joint activity where a person who knows more or has more highly developed skills guides others to learn something new

Umfanekiso 27 Ukudlala kuyithuba lokusebenzisa ulimi lwezibalo.

Qaphela ukuthi abafundi balisebenzisa kanjani ulimi lwezibalo uma:

- bekhuluma ngento abayenzayo
- bechaza izipiliyoni zabo zangaphandle kwesikole, njengokulungisa itafula lokudla isidlo sakusihlwa, ukudlala umdlalo nokuchaza ukuthi bagoduka kanjani uma bephuma esikoleni
- ukwakha amagama uma bengalwazi ulwimi lwezibalo olufanele lokuchaza into ethize, njengokuchaza ikhona njengento 'ecijile' noma ukuqamba 'ishumi nanye' nge'sishumi nanye'
- ukuqagela ukuthi kuzokwenzekani njengokuthi, 'Ithawa izowa uma ngifaka amabhulokhi ngaphezulu.'

6. Umgomo wokuholwa

Incazelo

Othisha basiza abafundi ekuqondeni ulwazi olusha. Kufanele bahlele ukufundisa nokufunda ngendlela eyenza kuvele amathuba abafundi ukuthi bagxile kumsebenzi othize nokusebenzisa izinto zokusiza khona abafundi bezokwazi ukuhlola umbono nokwaba imicabango yabo ngenkinga. Othisha kufanele bakhombise okuzokwenziwa babuze nemibuzo yokusiza abafundi bafike kwimpendulo. Lokhu kubuye kubizwe ngokuthi **ukulamula**. Ngokulamula, abafundi bakha ulwazi olusha, isimilo kanye namasu wokuxazulula izinkinga abangazisebenzisa kwezinye izimo.

IGLOSARI

ukulamula
umsebenzi wokuhlanganyelwa lapho kukhona umuntu owazi okuningi noma onamakhono athuthukile akwazi ukufundisa abanye into entsha

In practice ...

How to use mediation in the classroom

1. Identify what concepts and skills the learners already know and plan an appropriate activity.
2. Give the learners an activity that focuses on the new concept or skill.
3. Model the activity or show the learners how to complete it.
4. Give feedback to the learners on what they are doing.
5. Give hints or clues to assist learners, but don't provide the solution.
6. Prompt the learners by asking questions about what they are doing.
7. Encourage learners to ask questions so that they make new connections and discoveries for themselves.
8. Give the learners another activity that they complete on their own, using the concept or skill they have learnt. In this activity, they should practise using the new skill or knowledge in different ways. Guide and support them, but in a less hands-on way.
9. Give the learners more activities and gradually withdraw your guidance and support, allowing them to do things on their own.

More about the guidance principle

Teaching approaches

Teaching involves using different approaches at different times:

- Direct instruction involves very little discussion. Learners might ask questions, but these are mostly to do with following the instructions. Direct instruction should be a very small part of teaching.
- Guided instruction involves teachers and learners working together to solve a problem or learn a new concept or skill. The teacher gives guidance and support until the learners are able to do the activity on their own. In Grade R Maths this is called a teacher-guided activity.

Structured activities

- Structured activities are teaching and learning activities, often guided by the teacher. They focus on a particular maths concept or skill.
- In the Grade R Maths programme, structured activities are divided into:
  - whole class activities
  - small group teacher-guided activities
  - small group independent activities
  - free choice activities.

Asking questions

Good questioning techniques are essential for teaching. Grade R Maths encourages teachers to use open-ended questions that stimulate maths thinking. These kinds of questions are found in problems and investigations. Open-ended questions also help teachers to gather information about learners' level of understanding and knowledge.

Uma sekwenziwa ...

Ukusebenzisa ukulamula ekilasini

1. Bheka ukuthi yiluphi ulwazi namakhono abafundi abawaziyo bese uhlela umsebenzi ofanele.
2. Nikeza abafundi umsebenzi ogxile ekufundeni ulwazi noma ikhono elisha.
3. Khombisa umsebenzi kubafundi noma ubakhombise indlela yokuwenza.
4. Tshela abafundi ukuthi umsebenzi wabo uqhuba kanjani.
5. Banikeze amasikisela kodwa ungabanikezi izixazululo.
6. Khuthaza abafundi ngokubabuza imibuzo ngabakwenzayo.
7. Gqugquzela abafundi ukuthi babuze imibuzo khona bezokwenza ukuxhumana okusha bathole izinto ezintsha ngokwabo.
8. Nikeza abanye abafundi omunye umsebenzi abangawuqeda bebodwa, besebenzisa ulwazi noma ikhono abalifundile. Kulo msebenzi, kufanele benze ikhono elisha, noma bafunde ulwazi ngezindlela ezahlukahlukene. Bahole ubaphe nokwesekwa kodwa ubanikeze isikhala sokuzenzela.
9. Nikeza abafundi umsebenzi omunye bese kancane kancane ususa ukubasekela ekwenzeni izinto zabo.

Okunye ngomgomo wokuholwa

Izindlela zokufundisa

Ukufundisa kuhlanganisa izindlela ezahlukene zokufundisa ngezikhathi ezahlukene:

- Iziyalo eziqondile azidingi inkulumo eningi. Abafundi kungenzeka babuze imibuzo, kodwa emininingi imayelana nokulandela iziyalo. Iziyalo eziqondile ziyingxenye encane ekufundiseni.
- Iziyalo ezesekiwe zihlanganisa othisha nabafundi besebenzisana ndawonye ukuxazulula inkinga noma bafunde umqondo noma ikhono elisha. Uthisha uhlahla indlela bese eseka abafundi baze bakwazi ukuzenzela umsebenzi bebodwa. Ohlelweni luka-*Grade R Maths*, lokhu kubizwa ngokuthi umsebenzi oholwa uthisha.

Imisebenzi ehlelekile

- Imisebenzi ehlelekile ziyimisebenzi yokufundisa nokufunda, imvamisa eholwa uthisha. Bagxila ikakhulukazi kulwazi lwezibalo noma kwikhono.
- Ohlelweni luka-*Grade R Maths* imisebenzi ehlelekile ihlukaniswe kanje:
  - imisebenzi yekilasi lonke
  - imisebenzi yamaqembu amancane eholwa uthisha
  - imisebenzi yamaqembu amancane asebenza ngokukhululeka
  - imisebenzi ekhethwe ngokukhululeka.

Ukubuza imibuzo

Amaqhinga okubuza imibuzo abalulekile uma kufundiswa. U-*Grade R Maths* ugqugquzela othisha ukuthi babuze imibuzo evulekile ekhuthaza ukucabanga ngezibalo. Le mibuzo itholakala phakathi ezinkingeni nasekuphenyeni. Imibuzo evulekile isiza nothisha ukuthi baqoqe ulwazi nokuqonda kwabafundi.

Closed questions (Low order questions)	Open-ended questions (Higher order questions)
Questions that have a limited or 'yes'/'no' response.	Questions that have more than one possible answer.
Example: Is this a triangle? Example: Is this a triangle or a square?	Example: What can you tell me about triangles? Example: How is a triangle different from a square?

In practice ...

- Ask open-ended questions that give learners opportunities to think independently and communicate their thinking. Avoid using closed questions that focus only on remembering facts, or that have only 'yes'/'no' answers.
- Give learners some time to try to answer a question so that they can think, organise their thoughts and then express them in words.

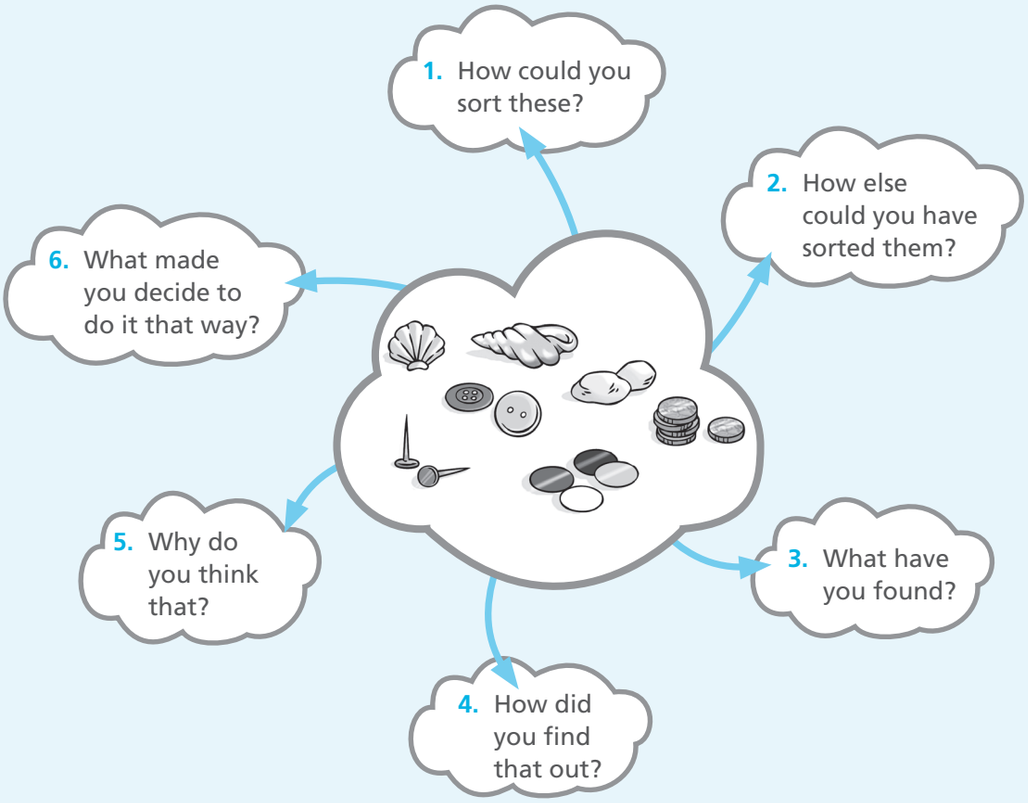


Figure 28 Open-ended questions

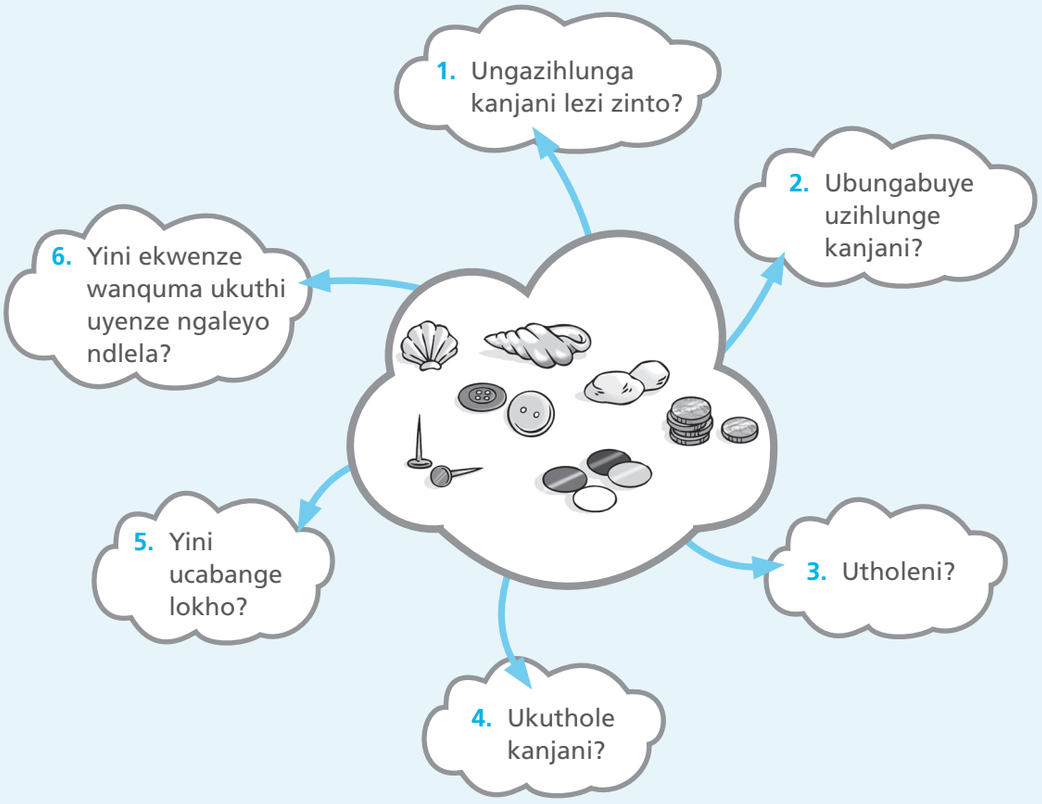
Problem solving

Learners encounter problems that they cannot solve immediately. Grade R teachers should support learners to develop skills to approach these problems more and more independently. This includes adequate time to talk about the problem, try out ideas, learn from mistakes, play with the problem and adapt their ideas based on investigations.

Imibuzo evalekile (Imibuzo edinga okuyisisekelo)	Imibuzo evulekile (Imibuzo edinga babone futhi bakhumbule okuthile)
Imibuzo enempendulo ka-'yebo' noma 'cha'	Imibuzo engabe nezimpendulo eziningi.
Isibonelo: Ngabe unxantathu lo? Isibonelo: Ngabe unxantathu noma isikwele?	Isibonelo: Yini ongangitshela yona ngonxantathu? Isibonelo: Unxantathu uhluke ngani kwisikwele?

Uma sekwenziwa ...

- Buza abafundi imibuzo evulekile ebanikeza ithuba lokuzicabangela okunokuzimela nokuthi baxoxe ngemicabango yabo. Uzame ukungasebenzisi imibuzo egxila ekukhumbuleni amaqiniso noma enempendulo ewu 'yebo'/'cha'.
- Nikeza abafundi isikhathi sokuphendula umbuzo khona bezocabanga impendulo, bayihlele kahle bese bephendula besebenzisa amagama.



Umfanekiso 28 Imibuzo evulekile

Ukuxazulula izinkinga

Abafundi bahlangabezana nezinkinga abangakwazi ukuzixazulula ngokushesha. Othisha Bebanga R kufanele basekele abafundi ukuze bezothuthukisa amakhono ukuze basombulule izinkinga bodwa. Lokhu kudinga isikhathi sokukhuluma ngenkinga okubhekenwe nayo, kuzanywe imibono, kufundwe ngamaphutha, bese kushintshwa imicabango ngenxa yemiphumela yemicabango.

In practice ...

- Learners do most of the talking.
- Learners are encouraged to try out ideas and make mistakes.
- Learners share their thinking with the teacher and other learners.
- Teachers listen to learners' ideas.
- Teachers' questions are generally open ended and guide learners' thinking.

7. The inclusivity principle

Definition

Respect for **diversity** and inclusion are children's rights. They are essential if we want all children to learn and develop to their full potential. Teachers need to be aware of each learner's identity, needs and interests.

Every South African classroom is diverse. There are many different children and each one brings their own identity, personality, capabilities, interests and background. **Inclusivity** is the practice of ensuring that all children, regardless of diversity, are included in all classroom activities, especially those learners who would otherwise be excluded or marginalised. Disability is *one* of the reasons why children are often excluded, but importantly, social, emotional, physical and attitudinal issues also present barriers to learning. Teachers who have an inclusive mindset, welcome and embrace diversity amongst their learners.

Inclusive education means that all children attend school in age-appropriate classes. They are welcomed, encouraged to participate in all aspects of the school and are supported to learn and achieve their full potential.

GLOSSARY

diversity
a range of people with a variety of differences of, for example, identity, personality, capabilities, interests and background

inclusivity
the practice of ensuring that all children, regardless of their differences, are included in all classroom activities

In practice ...

- All learners have a right to feel special, participate and be included in classroom activities and discussions. This includes children who have disabilities, behavioural issues or other barriers to learning.
- All learners, their parents and the school staff should be welcome, included, treated fairly and respected regardless of culture, ethnicity, race, sex, gender identity, sexual orientation, physical or intellectual ability, religion or socio-economic status.

Uma sekwenziwa ...

- Abafundi bakhuluma kakhulu.
- Abafundi bayakhuthazwa ukuthi bazame eminye imibono benze amaphutha.
- Abafundi babelana ngemicabango yabo nothisha kanye nabanye abafundi.
- Othisha balalela imibono yabafundi.
- Imibuzo yothisha ijwayele ukuthi ivuleke bese othisha behola imicabango yabafundi.

7. Umgomo wokumbandakanya

Incazelo

Ukuhlonipha **ukwahlukahlukana** nokuhlanganisa kungamalungelo abantwana. Lokhu kubalulekile ekufundeni nasekuthuthukiseni amandla abo. Othisha badinga ukuthi babazi abafundi ukuthi bangobani, izidingo kanye nezinto abazithandayo.

Wonke amakilasi aseNingizimu Afrika ahlukahlukene. Ziningi izingane ezihlukile futhi zifika nobubona, amakhono, izintshisekelo kanye nemvelaphi. **Ukumbandakanya** kungumkhuba wokuqinisekisa ukuthi abafundi, ngaphandle kokuhlukahluka, bafakwe kumsebenzi wasekilasini, ikakhulukazi labo bafundi okujwayelekile ukuthi bangabi ingxenye noma babekwe eceleni banganakwa emphakathini. Ukukhubazeka *esinye* sezizathu zokuthi abantwana bazizwe bengayona ingxenye kakhulukazi ekuhlalisaneni nabantu, ngokozwelo, ngokomzimba nangendlela yokubuka izinto kungalungile kuphinde kulethe izinqinamba ekufundeni. Othisha abanemicabango yokumbandakanya, bamukela futhi basingathe ukuhlukahluka kwabafundi.

Imfundo ebandakanyayo ichaza ukuthi bonke abantwana bafunda emakilasini nabantwana abalingana nabo ngeminyaka. Bayemukelwa, bakhuthazwe ukuthi babe ingxenye yezinto ezenziwayo esikoleni basekwe ekufundeni khona bezofinyelela kukona konke okusemandleni abo.

IGLOSARI

ukwahlukahlukana
abantu abaningi abanokwahlukana okuningana, isibonelo: ububona, ukuziphatha, amakhono, abakuthandayo

ukumbandakanya
umkhuba wokuqinisekisa ukuthi bonke abantwana, ngaphandle kokuhluka kwabo, babe ingxenye yomsebenzi wonke wasekilasini

Uma sekwenziwa ...

- Bonke abafundi banelungelo lokuzizwa bekhethekile, babambe iqhaza, babandakanye emsebenzini wasekilasini kanye nezingxoxo. Lokhu kufaka nezingane ezikhubazekile, ezinezinkinga nokuziphatha noma ezinye izingqinamba ekufundeni.
- Bonke abafundi, abazali babo kanye nabasebenzi basesikoleni kufanele bamukelwe, bebaliwe kanti futhi bephethwe kahle ngaphandle kwamasiko abo, ubuzwe babo, ibala, ubulili, ubulili obungobakho, izinkambiso zobulili, awengqondo noma awomzimba, inkolo noma kwezenhlalo nakwezomnotho.

More about the inclusivity principle

Different learning styles

Diversity is not only about our physical characteristics, beliefs, or faith, it can also include how we learn new skills. Not all children learn in the same way. There is a diverse range of learning styles that are appropriate to each learner. For example, not all learners can follow the teacher's instructions by only listening to what she is saying. Some learners would benefit from seeing a picture that represents what they have to do. Others may need an action or hands-on activity to fully understand an instruction or concept.

In practice ...

Successful teachers are able to identify the learning needs of each learner in their class and to then adapt activities to best suit each learner's needs. The following eight learning styles are appropriate for learning and teaching in Grade R:

- Visual (Spatial): Visual learning involves the use of pictures or diagrams to remember information. Some learners understand and remember information easier when it is represented as pictures or diagrams.
- Auditory (Aural-Musical): Auditory learning depends on listening to information to fully understand and remember it. Some learners learn best when they can listen to the teacher, or to a song or recording.
- Verbal (Linguistic): Verbal learning involves speaking and expressing ideas out loud, and drawing or writing to fully understand and remember information.
- Physical (Kinaesthetic): Physical learning takes place when the learner is involved in a physical, hands-on activity. These learners use their bodies and sense of touch (tactile) to understand information.
- Logical (Mathematical): Logical learning involves the use of logic and reason to make sense of information. Logical learners will use logic and look for reasons when they are learning new things.
- Social (Interpersonal): Social learning involves learning with others. Some learners prefer to learn as part of a group or with a friend.
- Solitary (Intrapersonal): Solitary learning involves learning on your own. Some learners concentrate best when they can focus on their thoughts and feelings on their own, without being distracted by others.
- Naturalist (Nature): Naturalist learning takes place in nature. Some learners learn and understand best when they can explore and investigate nature through outdoor experiences, such as observing animals, gardening, taking care of the earth or exploring the environment.

Okuningi ngomgomo wokumbandakanya

Izindlela ezahlukene zokufunda

Ukuhlukahluka akukona ngokuma kwethu komzimba, inkolelo, noma ukholo kuphela, kungabuye kufake nendlela esifunda ngayo amakhono amasha. Izingane azifundi ngendlela efanayo zonke. Kunezindlela eziningi ezahlukene zokufunda ezifanele umfundi ngamunye. Isibonelo, akuzona zonke izingane ezikwazi ukulandela imiyalo kathisha ngokulalela into eshiwo uthisha. Abanye abafundi bangafunda ngokubona isithombe esimele le nto okufanele bayenze. Abanye bangadinga isenzo noma ukusizwa ngokuphelele ukuze bezoqonda imiyalo noma ulwazi.

Uma sekwenziwa ...

Othisha abaphumelele bayakwazi ukubona izidingo zokufunda zabafundi ngamunye ekilasini bese bekwazi ukushintsha umsebenzi ukuthi uhlangabezane nezidingo zabafundi ngamunye ngamunye. Lezi zindlela eziyishiyagalombili zokufunda zilungile ekufundeni nasekufundiseni Ebangeni R:

- Okubukwayo (Isikhala): Ukufunda ngokubuka kudinga kusetshenziswe izithombe noma imidwebo ukukhumbula ulwazi. Abanye abafundi baqonda futhi bakhumbule ulwazi kangcono uma benikezwa izithombe nemidwebo.
- Okulalelwayo (Okuzwakalayo-Okuwumculo): Ukufunda ngokuzwa kweyeme ekulaleleni ulwazi khona uzokwazi ukuqonda ulwazi nokuthi ulukhumbule. Abanye abafundi bafunda kangcono uma belalela uthisha noma iculo noma okuqoshiwe.
- Okukhulunywayo (Okungamazwi): Ukufunda ngamazwi kudinga kukhulunywe kuxoxwe ngemibono kuzwakale ngaphandle kanye nokudweba nokubhala khona ulwazi luzokhumbuleka luqondakale kahle.
- Okuphathelene nomzimba (i-*Kinaesthetic*): Ukufunda ngomzimba kwenzeka uma umfundi ezimbandakanya nomsebenzi womzimba nowezandla. Laba bafundi basebenzisa imizimba yabo kanye nomuzwa wokuthinta ukuze baqonde ulwazi.
- Okwengqondo (Okwezibalo): Ukufunda ngokuqonda kuhlanganisa ukusebenzisa ukuqonda nokulandela ukuze ulwazi luzwakale kangcono. Abafundi abacabanga ngokuqonda basebenzisa ukuqonda babheke nezizathu uma befunda izinto ezintsha.
- Kwezenhlalo (Oxhumana nabanye): Ukufunda ngokwezenhlalo kudinga ukufunda nabanye. Abanye abafundi bakhetha ukufunda bephakathi kwiqembu noma nomngani.
- Ngayedwana (Ukuzibandakanya): Ukufunda ngayedwana kungokufunda wedwa. Abanye abafundi bayaphazanyiswa abanye.
- Okwezemvelo (Imvelo): Abafunda ngokwemvelo bafunda uma behleli emvelweni. Abanye abafundi bafunda kangcono uma bekwazi ukuhamba izwe baphenye imvelo ngokuba bathole isipiliyoni saphandle, njengokubuka izilwane, ukusebenza engadini, ukunakekela umhlaba noma ukuhlola imvelo.

Barriers to learning maths

A **barrier to learning** is anything that prevents a child from being able to learn effectively. Barriers can be linked directly to the child (intrinsic), for example, cognitive impairment, grief or a broken arm. Barriers can also be outside of the child (extrinsic), for example, poverty, neglect or an overcrowded classroom.

Language is a very important learning tool. In South Africa this often presents as both an intrinsic and extrinsic barrier to learning, particularly where a child's home language is different from the language of teaching and learning.

Many children experience one or more barriers to learning. They may need more practice and support than other learners do. Barriers to learning are factors that make it difficult for some learners to learn maths. Examples of barriers are shown in the following diagram.

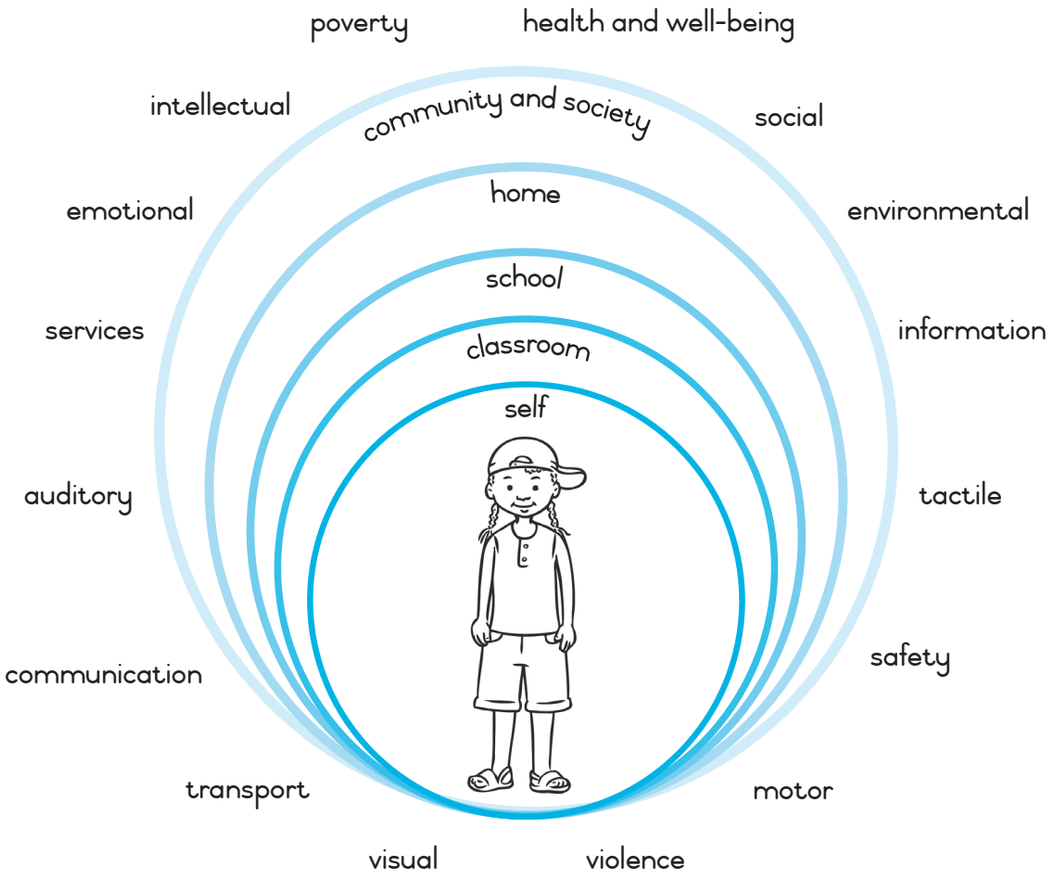


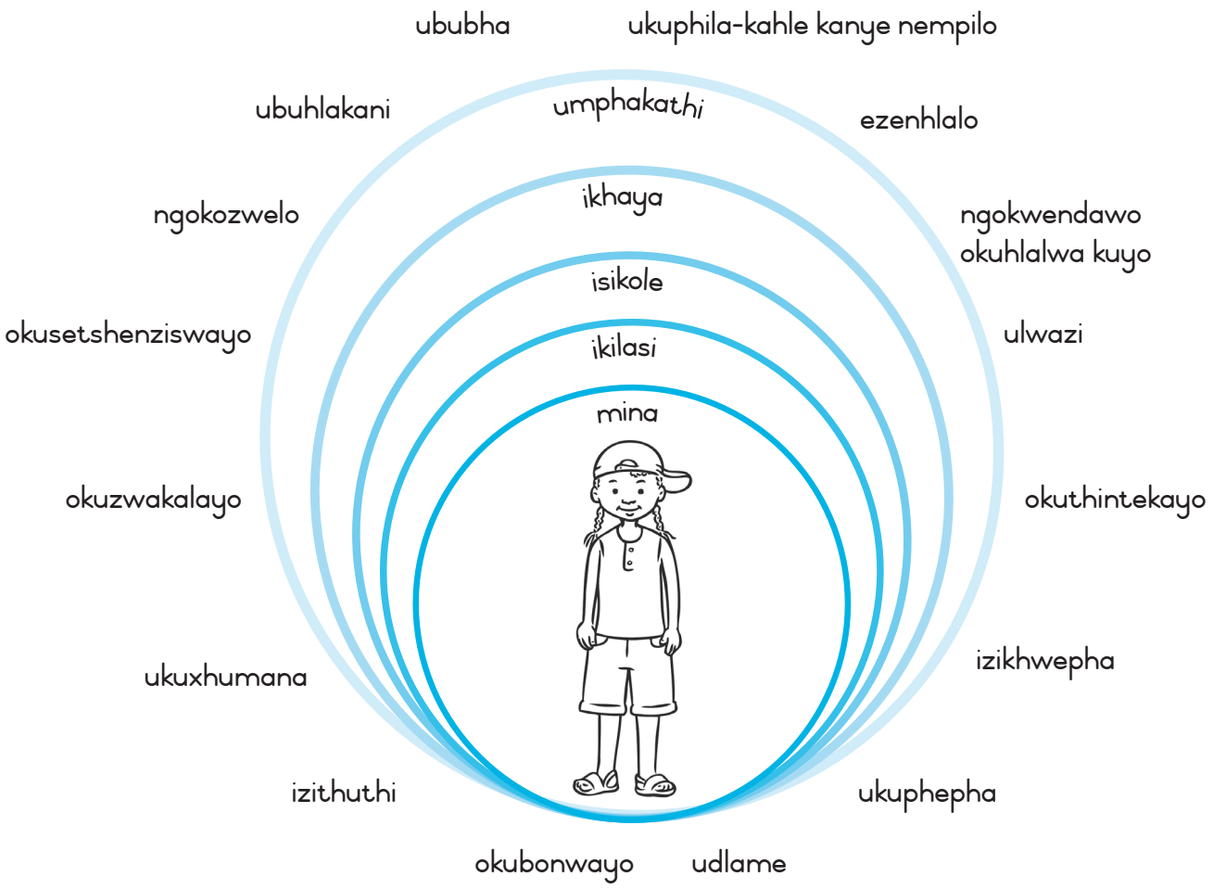
Figure 29 Barriers to learning

Izingqinamba ekufundeni izibalo

Ingqinamba ekufundeni inoma yini evimbela ingane ukuba ikwazi ukufunda ngempumelelo. Izingqinamba zingaxhumeka ngqo enganeni (zangaphakathi), njengokuthi, ukuthikamezeka ngokwengqondo, usizi noma ukuphuka kwengalo. Izingqinamba futhi zingaba ngaphandle kwengane (zangaphandle), isibonelo, ububha, ukunganakwa noma ikilasi eligcwele kakhulu.

Ulimi luyithuluzi lokufunda elibalulekile. ENingizimu Afrika lokhu kuvame ukwethula zozimbili izingqinamba zokufunda zangaphandle nezangaphakathi, ikakhulukazi uma ulimi lwasekhaya lwengane luhlukile kulolo olokufunda nokufundisa.

Izingane eziningi ziba nezingqinamba ekufundeni ezingaba ngaphezu kweyodwa. Zidinga ukwenza kakhulu kanye nokwesekwa okungaphezu kwabanye abafundi. Izingqinamba ekufundeni yizo eziyimbangela ezenza kube nzima kwabanye abafundi ukufunda izibalo. Izibonelo zezingqinamba zikhonjisiwe kulo mdwebo olandelayo.



Umfanekiso 29 Izingqinamba ekufundeni

In practice ...

Some of the ways in which you can include all learners in your Grade R classroom are the following:

- Plan your lessons, activities and materials to make them suitable for the needs of different learners, e.g. a maths problem based on a picture might need to include a detailed description in order to help a learner to focus on the important aspects of the picture.
- Use many different practical activities with real objects.
- Allow learners more time and support to complete activities, to think and/or to answer questions, if they need it.
- It may be helpful to discuss, with a colleague or the school support team, the level you are working at with a learner to make sure you are offering him/her the best support possible. You may also need to follow up with the child's parents or caregivers and the district-based support team to provide the learner with all possible opportunities for learning and development.

Schools must ensure that all classrooms and teachers have adequate and appropriate resources to accommodate all the learners, despite barriers to learning. This includes:

- teachers trained to identify barriers to learning
- diverse teaching strategies
- an adequate classroom set up
- managed class size
- classroom assistants.

In practice ...

- Screen all learners when they are admitted to Grade R and record your findings on a Learner Profile according to the national policy on Screening, Identification, Assessment and Support (SIAS) for all learners.
- Develop an Individual Support Plan (ISP) for any learners experiencing barriers to learning. This information should be shared with the parents and/or caregivers so that they are aware of any additional needs and the support plan for their child.
- Collaborate with the School Based Support Team to provide the necessary support. A learner is referred to the District Based Support Team if additional support is required.

Uma sekwenziwa ...

Ezinye zezindlela zokumbandakanya bonke abafundi ekilasini lakho Lebanga R kufaka lokhu okulandelayo:

- Hlela izifundo zakho, imisebenzi nezinto zokwenza zihambisane nezidingo zabafundi abahlukahlukene, isib. izinkinga ezisekwe yisithombe zingadinga incazelo enemininingwane ukuze kusizwe abafundi bagxile ezintweni ezimqoka zesithombe.
- Sebenzisa imisebenzi eminingi yokwenziwa nezinto zangempela.
- Nikeza abafundi isikhathi esiningi kanye nokwesekwa ukuqeda imisebenzi, ukucabanga kanye/noma ukuphendula imibuzo, uma bekudinga.
- Kungaba usizo ukuxoxa, nosebenza nabo noma iqembu lesikole lokweseka, izinga osebenza ngalo nomfundi uqinisekise ukuthi umnikeza konke ukweseka okuhle ongakwazi ukunikeza. Kungadingeka ukuba ubuye ulandelele kubazali bengane noma abayinakekelayo neqembu lokweseka lesiFunda ukunikeza umfundi amathuba wonke angenzeka okufunda nokuthuthuka.

Izikole kumele ziqinisekise ukuthi wonke amakilasi kanye nothisha banezinsiza ezanele ezifanele ukulekelela bonke abafundi, yize benezingqinamba zokufunda. Lokhu kumbandakanya:

- othisha abaqeqeshelwe ukukhomba izingqinamba zokufunda
- izindlela zokufundisa ezahlukile
- ukulungisa ikilasi ngezinto ezanele
- ukuphatha ubungako bekilasi
- abasizi basekilasini.

Uma sekwenziwa ...

- Bheka izinkinga kubo bonke abafundi uma bemukelwa Ebangeni R uqophe yonke imiphumela kuPhrofayili Yomfundi uhambise ngokomgomo kazwelonke Wokubheka Izinkinga, Ukuzikhomba Ukuzihlola kanye Nosizo (Screening, Identification, Assessment and Support (SIAS)) wabafundi bonke.
- Yenza Uhlelo Lokusiza Umfundi Ngamunye (Individual Support Plan (ISP)) lwanoma yimuphi umfundi ohlanagabezana nezingqinamba zokufunda. Lolu lwazi lwaziswe abazali kanye/noma ababanakekeli ukuze bazi ngezidingo ezengeziwe kanye nohlelo lokweseka lomntwana wabo.
- Sebenzisana Neqembu Elakhelwe Isikole Lokusekela ukuze kunikwe ukweseka okufanele. Umfundi uthunyelwa Eqenjini Elakhelwe Isikole Ukusekela uma kudingeka ukweseka okungezelelwe.

Perceptual and motor development

The development of perceptual and motor skills in young learners is extremely important in laying a foundation for all future maths development and learning. Sensory perception means using the senses to get information about the environment. Sensory perceptual skills are important for learning maths because they help us understand:

- the way things are linked
- similarities and differences
- size, shape and pattern
- space and position
- symbols and their meanings.

Perceptual skills allow us to make sense of the world around us. Sensory information is collected by our five senses, for example, what our eyes see, ears hear, skin feels, tongue tastes and nose smells.

This information is sent to our brain. The brain processes, organises and remembers this information so that we can use it later for everyday activities, such as reading, drawing, writing, cutting, completing puzzles, completing maths problems, enjoying a story, dressing, finding our shoes in the cupboard, singing, as well as many other skills.

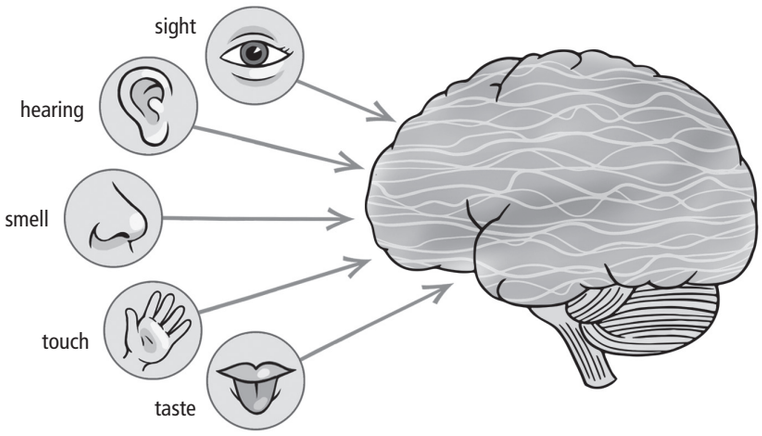


Figure 30 Our five senses

In practice ...

Observe learners playing outside and inside with different equipment.

Can they:

- tell the difference between different sounds, different words?
- spot the difference between two pictures or groups of objects?
- remember what they have seen and heard?
- repeat a list of words or numbers in the correct order?
- respond to different sounds, their names, instructions?
- feel the difference between smooth and rough?
- taste the difference between sweet and sour while blindfolded?

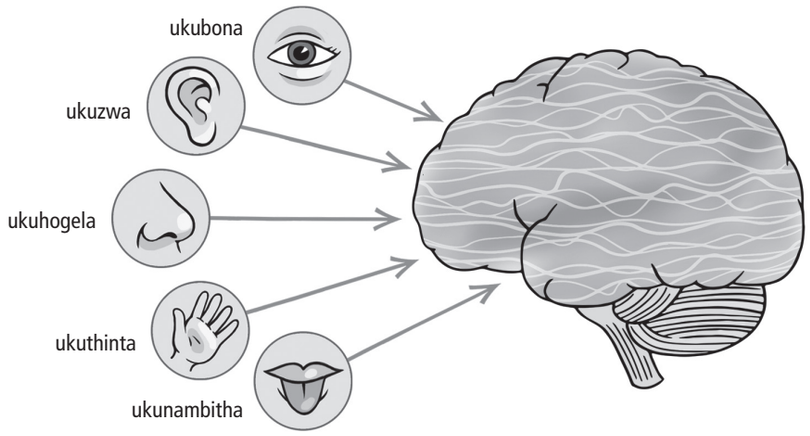
Ukuthuthuka kokuqonda kanye nezikhwepha

Ukuthuthuka kokuqonda kanye namakhono ezikhwepha kubafundi abasebancane kusemqoka kakhulu ukwendlala isisekelo sakho konke ukuthuthuka kwezibalo okuzayo kanye nokufunda. Ukuqonda kwezinzwa kusho ukusebenzisa izinzwa ukuthola ulwazi mayelana nendawo. Amakhono okuqonda izinzwa asemqoka ekufundeni izibalo ngoba asilekelela ukuqonda:

- indlela izinto ezixhumene ngayo
- okufanayo kanye nokuhlukile
- ubungako, isimo nephethini
- indawo nokuma
- izimpawu nezincazelo zazo.

Amakhono okuqonda asivumela ukuba senze umqondo ngomhlaba osizungezile. Ulwazi lwezinzwa luqoqwa izinzwa zethu ezinhlanu, njengokuthi, yini ebonwa amehlo ethu, ezwiwa yizindlebe, ukuzwela kwesikhumba, okunambithwa wulimi, okuhogelwa yikhala.

Lolu lwazi luthunyelwa emqondweni wethu. Umqondo uyathumela, uhlele futhi ukhumbule lolu lwazi ukuze sikwazi ukulusebenzisa ngesinye isikhathi emisebenzini yansuku zonke, njengokufunda, ukudweba, ukubhala, ukusika, ukuqedela amaphazile, ukuqedela izinkinga zezibalo, ukujabulela indaba, ukugqoka, ukuthola isicathulo sakho ekhabetheni, ukucula kanye namanye amakhono amaningi.



Umfanekiso 30 Izinzwa zethu ezinhlanu

Uma sekwenziwa ...

Qaphela abafundi uma bedlala ngaphandle nangaphakathi besebenzisa izinto zokudlala ezehlukahlukene.

Bayakwazi:

- ukusho umehluko phakathi kwemisindo, amagama ahlukahlukene?
- ukukhomba umehluko phakathi kwezithombe ezimbili noma amaqoqo ezinto?
- ukukhumbula lokho abakubonile nabakuzwile?
- ukuphinda ohlwini lwamagama noma lwezinombolo ngokulandelana kwazo?
- ukuphendula emisindweni enhlobonhlobo, amagama awo, nemiyalelo?
- ukuzwa umehluko phakathi kokushelelayo nokumagudlugudlu?
- ukunambitha umehluko phakathi kokunoshukela nokumuncu ngesikhathi kuvalwe amehlo?

Motor skills are actions that involve using our muscles. We use the big muscles in our bodies for gross motor activities, e.g. kicking a ball, running and jumping. We use smaller muscles for fine motor activities, e.g. cutting, writing and drawing.

Sensory perceptual motor development includes the following:

- visual perception
- auditory perception
- tactile perception
- kinaesthetic perception.

Grade R Maths recognises the importance of these skills for the development of maths concepts in Grade R learners.

Visual perception
Visual perception is the ability of the brain to use what the eyes see and to interpret this information. Visual perception skills are important for manipulating objects, drawing, reading and writing in maths.

Visual discrimination

Visual discrimination is the ability to see similarities and differences between objects. For example, to recognise what is the same and what is different between 2-D shapes, such as a picture of a square and a rectangle.

Visual motor coordination

Visual motor coordination is the ability of the eyes, brain and body muscles to work together to perform actions. In maths, it is important for activities, such as handling objects, drawing and writing.

Activities that help develop visual motor coordination include:

- ball and beanbag games
- using building blocks
- playing with objects that roll or slide
- drawing patterns
- cutting and pasting
- threading.

Visual closure

Visual closure is the ability to complete objects, pictures or drawings that are incomplete. In other words, the learner is able to recognise or identify a whole object even though the total picture is incomplete. Learners who struggle with visual closure will, for example, find it difficult to complete puzzles. They may also have difficulty describing what is missing in a picture that shows only the right side of the face or body, or completing the picture.

Izikhwepha ziwumnyakazo ohlanganisa ukusetshenziswa kwemisipha. Sisebenzisa imisipha emikhulu emizimbeni yethu ukwenza imisebenzi edinga amandla, isib. ukukhahlela ibhola, ukugijima kanye nokugxuma. Sisebenzisa imisipha emincane ukwenza imisebenzi engadingi amandla, isibonelo, ukusika, ukubhala, kanye nokudweba.

Izinzwa zokuqonda ukuthuthuka kwezikhwepha zihlanganisa lokhu okulandelayo:

- ukufunda ngokubuka
- ukufunda ngokulalela
- ukuqonda ngokuthinta
- ukufunda ngokusebenzisa umzimba.

U-*Grade R Maths* uyakwazisa ukubaluleka kwala makhono ukuze kuthuthukiswe izingxenye zolwazi lwezibalo kubafundi Bebanga R.

Ukuqonda ngokubona
Ukuqonda ngokubona ikhono lengqondo ukusebenzisa lokho okubonwa amehlo bese kuhumusha ulwazi. Amakhono okuqonda ngokubona abalulekile uma kusetshenziswa izinto, imidwebo, ukufunda nokubhala ezibalweni.

Ukwehlukanisa ngokubona

Ukuhlukanisa ngokubona ikhono lokubona okufanayo kanye nokwehlukile phakathi kwezinto. Njengokuthi nje, ukubona ukuthi yini efanayo kanye nokuthi yini ehlukile phakathi kwezimo ezinhlangothi mbili ezifana nezithombe zesikwele kanye nonxande.

Ukuxhumana kwezinzwa zokubona

Ukuxhumana kwezinzwa zokubona ikhono lokuba amehlo, ingqondo nemisipha yomzimba isebenze ndawonye ukwenza umnyakazo. Ezibalweni, kubalulekile emisebenzini efana nokubanjwa kwezinto, ukudweba kanye nokubhala.

Imisebenzi elekelela ukuthuthukiswa kwezinzwa zokubona imbandakanya:

- ibhola kanye nemidlalo yesikhwama esinobhontshisi
- ukusebenzisa amabhulokhi okwakha
- ukudlala ngezinto ezigingqikayo noma ezishushuluzayo
- ukudweba amaphethini
- ukusika kanye nokunamathisela
- ukutshutsha.

Ukuqedela okubonwayo

Ukuqedela okubonwayo ikhono lokuqedela into, izithombe noma imidwebo engaphelele. Ngamanye amazwi umfundi uyakwazi ukubona noma akhombe into ephelele noma ngabe isithombe sonke asiphelele. Abafundi abanezinkinga ngokuqedela abakubonayo bayoba, njengokuthi kuyinkinga ukuqedela amaphazile. Bayobuye futhi babe nenkinga yokuchaza ukuthi yini engekho esithombeni esikhombisa kuphela uhlangothi lwesokudla ebusweni noma emzimbeni, noma ukuqedela isithombe.

Form constancy and form perception (recognition)

Form constancy is the ability to tell the difference between forms and symbols, even though their size and position might change. In other words, it means being able to recognise the constant characteristics of something. For example, a circle is a circle because of its shape. It remains a circle even if it is blue, purple, large or small, in a book or drawn in the sand. In the same way, the number symbol '5' remains the same whether it is written in different colours or in big or small writing.

Visual figure-ground perception

Visual figure-ground perception is the ability to recognise the difference between objects that are in the foreground and those that are in the background. You can help learners to develop this skill by asking them to identify particular objects in a picture or in a collection of objects, e.g. 'Find the girl with red pants in the picture' or 'Find the box with oranges in the picture' or 'Find your shoes in this pile of all of our shoes'.

Visual sequencing

Visual sequencing is the ability to place objects or items in the correct order after looking at them or observing them. Help learners to develop this skill by asking them to look at a pattern of different coloured beads on a string and then repeat the pattern themselves.

Visual motor integration

Visual motor integration is the ability to make sense of visual information and then use it in another activity that uses motor skills. Learners use visual information and fine motor skills when, for example, they copy numbers or draw objects in front of them.

Visual conceptualising

Visual conceptualising is the ability to make pictures in your mind (mental images) based on experiences, observations or other visual information. Learners use this skill when, for example, they draw pictures of something like a room in their homes or of their families.

Ubunjalo bomumo kanye nokuqonda umumo (ukubona)

Ubunjalo bomumo kuyikhono lokusho umehluko ezimweni kanye nasezimpawini, noma ngabe ubungako kanye nendawo kungashintsha. Ngamanye amagama kusho ukukwazi ukubona izimpawu zobunjalo bento. Njengokuthi, indilinga iyindilinga ngenxa yesimo. Ihlala iyindilinga noma ingaba luhlaza okwesibhakabhaka, isabukhwebezane, inkulu noma incane, isencwadini noma idwetshwe emhlabathini. Ngendlela efanayo inombolo '5' ihlala injalo noma ngabe ibhalwe ngemibala eyehlukene noma imibhalo emikhulu noma emincane.

Ukuqonda okubonwayo phakathi kokunye

Ukuqonda okubonwayo phakathi kokunye ikhono lokubona umehluko phakathi kwezinto ezingaphambili nalezo ezingemuva. Ungabasiza abafundi ukuthuthukisa leli khono ngokubacela bakhombe into ethile esithombeni noma kuzinto eziqoqelwe ndawonye, isib. 'Thola intombazane egqoke ibhulukwe elibomvu esithombeni' noma 'Thola ibhokisi lamawolintshi esithombeni' noma 'Thola isicathulo sakho kule ngqumbi yezicathulo zethu sonke'.

Ukulandelanisa okubonwayo

Ukulandelanisa okubonwayo ikhono lokubeka izinto noma okuthile ngendlela yokulandelana emva kokuzibuka noma kokuziqaphela. Lekelela abafundi ukuthuthukisa leli khono ngokucela ukuba babuke iphethini elinobuhlalu obunemibala olusentanjeni bese beziphindela bona leli phethini.

Ukuxhumana kokubonwayo nokwenza

Ukuxhumana kokubonwayo nokwenza kuyindlela yokwenza umqondo olwazini olubonwayo bese ulisebenzisa komunye umsebenzi osebenzisa amakhono okwenza. Abafundi basebenzisa ulwazi abalubonayo namakhono okubamba okulula uma, isibonelo, bekopisha izinombolo noma bedweba izinto eziphambi kwabo.

Ukwakha imibono

Ukwakha umbono yikhono lokuzakhela izithombe emqondweni wakho (izithombe zengqondo) kusekelwe ulwazi, ukuqaphela noma olunye ulwazi olubonakalayo. Abafundi basebenzisa leli khono njengokuthi, badweba izithombe zezinto njengekamelo emakhaya abo noma lemindeni yabo.

Auditory perception
Auditory perception is the ability of the brain to use what the ears hear and to interpret this information. Auditory perception is important for developing language skills, following and understanding instructions as well as sharing and discussing ideas and information.

Auditory discrimination

Auditory discrimination is the ability to recognise similarities and differences in sound, e.g. being able to hear the difference between the words 'rectangle' and 'triangle'.

Auditory memory

Auditory memory is the ability to store and remember something you have heard. Learners use this skill when they follow a set of instructions or repeat a number sequence that is read aloud, e.g. 4, 6, 8, 1.

Auditory figure-ground perception

Auditory figure-ground perception is the ability to recognise or isolate a sound from other sounds. It is also the ability to focus on a particular sound separately from background noise. This skill allows learners to focus on what someone in their group is saying without being distracted by the noise of other groups talking.

Auditory sequencing

Auditory sequencing is the ability to remember the objects or items in the correct order after hearing a list. For example, the order of the numbers from 1 to 10 or months of the year. Asking learners to describe a few of the day's events in order helps to develop this skill.

Tactile and kinaesthetic perception
Tactile perception is the ability to use the sense of touch to explore your environment. Kinaesthetic perception is the awareness of body movements and position in space. They work together to provide the brain with information. An activity that helps to develop learners' tactile and kinaesthetic perception is to ask learners to shut their eyes, then to feel and describe a number of different objects in a bag or pillowcase. For example, they could say it has corners or it is round.

Ukulalela ngokucophelisisa
Ukulalela ngokucophelisisa ikhono lengqondo lokusebenzisa lokho izindlebe ezikuzwayo bese kuhunyushwa lolo lwazi. Ukulalela ngokucophelelisisa kubalulekile ukuthuthukisa amakhono olimi ukulandela nokuqonda imiyalelo kanye nokwabelana nokuxoxa ngemibono kanye nolwazi.

Ukulalela ngokwehlukanisa

Ukulalela ngokwehlukanisa ikhono lokubona okufanayo kanye nokwehlukene emisindweni, isib. ukwazi ukuzwa umehluko phakathi kwamagama 'unxande' no'nxantathu'.

Ukuzwa ukhumbule

Ukuzwa ukhumbule ikhono lokukwazi ukugcina futhi ukhumbule okuthile okuzwile. Abafundi basebenzisa leli khono uma belandela imiyalelo ehleliwe noma bephinda ukulandelana kwezinombolo ezifundwa kuzwakale, isib. 4, 6, 8, 1.

Ukuqonda umsindo olalelwayo phakathi kweminye

Ukuqonda umsindo olalelwayo phakathi kweminye ikhono lokubona noma lokuhlukanisa umsindo kweminye imisindo. Kuyikhono futhi lokugxila emsindweni othile ngokwehlukile kweminye imisindo ezwakalayo ngemuva. Leli khono livumela abafundi ukugxila kulokho okushiwo omunye eqenjini labo ngaphandle kokuba baphazanyiswe umsindo wamanye amaqembu akhulumayo.

Ukulandelanisa ukulalela

Ukulandelanisa ukulalela ikhono lokukhumbula izinto noma okuthile ngokulandelana emva kokuzwa uhlu. Njengokuthi nje, ukuhleleka kwezinombolo kusuka ku-1 kuya ku-10 kokukodwa kuya koku -yishumi noma izinyanga zonyaka. Ukucela abafundi bachaze imicimbi embalwa yosuku ngokulandelana kuyasiza ukuthuthukisa leli khono.

Ukuqonda okuthintwayo kanye nokunyakaza komzimba
Ukuqonda okuthintwayo ikhono lokusebenzisa izinzwa zokuthinta ukwazi ngendawo abakuyo. Ukuqonda ngokunyakaza komzimba ukwazi ngeminyakazo yomzimba kanye nokuma nendawo. Kusebenza ndawonye ukunikeza ingqondo ulwazi. Umsebenzi olekelela abafundi bathuthukise ukuqonda okuthintwayo kanye nokunyakaza komzimba ukucela abafundi bavale amehlo, bathinte bese bechaza izinto eziningana ezisesikhwameni noma esikhwameni somcamelo. Njengokuthi nje, bangasho ukuthi inamakhona/iyindilinga.

8. The practice principle

Definition

Learners should have plenty of time to practise new skills and knowledge. When learners get regular practice in what they have already learnt, they get better at it and become more confident. They enjoy repetition and practice. The Grade R teacher should provide repeated opportunities for learners to practise and improve new skills.

In practice ...

- Counting and problem solving are done every day as regular activities – even if the focus is on other concepts, such as shape or measurement.
- Provide varied materials and tasks so that learners can practise newly learnt skills in different ways.
- Maths concepts can also be practised across the curriculum, for example, in Home Language and Life Skills activities, such as stories, drama, painting and obstacle courses.

More about the practice principle

Using rhymes, songs and stories

Singing songs and repeating rhymes together, and sharing stories is an enjoyable, non-competitive way of learning. Children learn maths concepts and skills when they repeat rhymes and songs, and listen to stories again and again. They learn and practise:

- number names (e.g. 'There were three little meerkats …')
- the order of number names
- forward and backward counting
- counting groups of things
- informal calculations, e.g. adding and subtracting
- the sequence of events.

In practice ...

- Add movement, rhythm and music to songs, rhymes and stories to make them even more enjoyable. Experiences that use all our senses help learners to remember things more easily.
- Encourage parents and other caregivers to learn the stories, songs and rhymes you use with the learners. In this way, they become an important link for children between home and school activities.

8. Umgomo wokwenza

Incazelo

Abafundi kumele babe nesikhathi esanele sokwenza amakhono nolwazi olusha. Uma abafundi bekwenza njalo lokho asebekufundile, babangcono kakhulu bese beba nokuzithemba. Bayakujabulela ukuphindaphinda nokwenza. Uthisha Webanga R kumele anikeze amathuba aphindaphindiwe okwenza ukuze abafundi benze kangcono amakhono amasha.

Uma sekwenziwa ...

- Ukubala kanye nokuxazulula izinkinga kwenziwa nsukuzonke njengemsebenzi eyenziwa njalo – noma ngabe okuqondwe kukho kukwezinye izingxenye zolwazi ezinjengomumo noma isilinganiso.
- Nikeza izinhlobonhlobo zezinsizakusebenza nemisebenzi ukuze abafundi bakwazi ukwenza amakhono amasha abawafundile ngezindlela ezehlukene.
- Izingxenye zolwazi lwezibalo zingenziwe kulo lonke uhlelo lokufunda nokufundisa, isib. Olimini Lwasekhaya kanye Nakumakhono Empilo emisebenzini enjengezindaba, imidlalo, ukupenda nasezinkundleni zokuphazamisa.

Okwenezelelwe ngomgomo wokwenziwayo

Ukusebenzisa imilolozelo, amaculo kanye nezindaba

Ukucula amaculo nokuphindaphinda isigqi ndawonye, nokuhlanganyela ezindabeni kuyindlela ejabulisayo, engenakho ukuqhudelana uma kufundwa. Abafundi bafunda ulwazi Lwezibalo namakhono uma bephindaphinda isigqi kanye namaculo, balalele izindaba ziphindwa kaningi. Bafunda bese benza:

- amagama ezinombolo (isib. 'Bekunobubhibhi obuthathu obuncane …')
- ukulandelana kwamagama ezinombolo
- ukubala uya phambili kanye nokubala uya emuva
- ukubala izinto ezingamaqoqo
- ukubala okungahleliwe, isib. ukuhlanganisa nokususa
- ukulandelanisa izigameko.

Uma sekwenziwa ...

- Faka umnyakazo, isigqi nomculo emaculweni, isigqi nezindaba uzenze zibe nesasasa elinezezelekile. Ukusebenzisa zonke izinzwa kusiza abafundi ukukhumbula izinto kalula kakhulu.
- Gqugquzela abazali kanye nabanye abahlala nezingane ukufunda izindaba, amaculo, imilolozelo nezinkondlo ozisebenzisayo nabafundi. Ngale ndlela, ziba ukuxhumanisa okubalulekile ezinganeni phakathi kwemisebenzi yasekhaya neyasesikoleni.

Maths integration across the Grade R daily programme

Teachers need to make connections between maths, the daily routine and other subjects (e.g. Home Language and Life Skills), as well as between maths and learners' daily lives. Teachers should take advantage of all opportunities to practise maths skills.

In practice ...

Learners are more likely to show an interest in learning maths, and find it easier to understand, if they can see how maths has meaning and usefulness in their own lives. Teachers can help by doing the following:

- Being more aware of how maths is part of their own personal and professional lives.
- Showing learners how maths is used in daily life, e.g. when you use money to buy something.
- Integrating maths activities into other classroom and outdoors experiences, such as:
  - using ordinal numbers 'first', 'second' and 'third' when learners line up
  - referring to position and direction when learners are playing
  - talking about 'more' and 'less' when learners share fruit, bread and/or juice.
- Making connections with maths concepts, such as size, measurement, time, estimation, counting, comparisons, shape and/or distance when you read stories to the learners.

Teach maths concepts during the Grade R maths focus time and look for other opportunities to develop maths language and concepts throughout the day. This:

- helps learners develop an understanding of how different areas of knowledge are related
- ensures a more holistic or complete learning experience
- gives learners more opportunities to practise what they have learnt.

Ukuxhumana kweziBalo ohlelweni lonke lwansukuzonke Lwebanga R

Othisha kumele bakwazi ukwenza ukuxhumana phakathi kwezibalo, izinhlelo zokwenziwa njalo kanye nezinye izifundo (isib. Ulimi Lwasekhaya kanye Namakhono Empilo), nokuhambisana okuphakathi kwezibalo kanye nempilo yansukuzonke yabafundi. Othisha kumele benze yonke imizamo emihle namathuba okuzijwayeza amakhono ezibalo.

Uma sekwenziwa ...

Abafundi kungenzeka bakhombisa uthando ekufundeni izibalo, bakuthole kulula ukuqondisisa uma bengabona ukuthi izibalo zenza umqondo futhi zinosizo ezimpilweni zabo. Othisha bangasiza ngokwenza lokhu okulandelayo:

- Baqikelele kakhulu ukuthi izibalo ziyingxenye nakubo ngokwabo kanye nangokwe-phrofeshini.
- Bakhombise abafundi ukuthi izibalo zisetshenziswa kanjani empilweni yansukuzonke, isib. uma usebenzisa imali uthenga okuthile.
- Bexhumanisa imisebenzi yezibalo neminye imisebenzi yasekilasini kanye nolwazi lwemidlalo yangaphandle, njengo:
  - kubala esebenzisa izinombolo ngesikhundla ‘okokuqala’, ‘okwesibili’ kanye ‘nokwesithathu’ ngesikhathi abafundi bemi emgqeni
  - ukhombisa isikhundla kanye nezinkomba uma abafundi bedlala
  - ukhulume ‘ngokuningi’ kanye ‘nokuncane’ uma abafundi behlephulelana izithelo, isinkwa kanye/noma ijusi
- Kwenziwe ubudlelwane nezinkundla zolwazi lwezibalo ezinjengobungako, isilinganiso isikhathi ukubala, ukuqhathanisa, umumo kanye/nobude uma ufundela abafundi izindaba.

Fundisa izingxenye zolwazi lwezibalo ngesikhathi esihlelelwe ukufundisa izibalo Ebangeni R futhi ubheke amathuba okuthuthukisa ulimi lwezibalo kanye nezingxenye zolwazi kulo lonke usuku. Lokhu:

- kusiza abafundi ukuthuthukisa ukuqondisisa ukuthi izingxenye zolwazi zihlobene kanjani
- kuqinisekisa ukufunda okuhlangene noma ulwazi lokufunda okuphelele
- kunika abafundi amathuba amaningi okuzijwayeza lokho abakufundile.

SECTION 2

Mathematics in the Grade R Daily Programme

Introduction

The Grade R Maths programme has been developed to strengthen and support the Grade R Mathematics curriculum. Grade R Maths:

- includes and extends the CAPS Grade R Mathematics content outlined in the five Content Areas
- encourages inquiry-based learning by suggesting ways to extend learners' natural curiosity to explore their surroundings
- provides activities that encourage learners to investigate and explore maths concepts
- encourages teachers to talk with learners about their thinking and to help them express their ideas
- suggests ways for learners to plan, observe and gather information, and then to compare, sort, classify and interpret their findings
- provides appropriate materials and resources.

Mathematics Content Areas

Mathematics in the Foundation Phase (including Grade R) covers five Content Areas. Each Content Area contributes towards the learner developing specific maths knowledge and skills. The Content Areas are:

- Numbers, Operations and Relationships
- Patterns, Functions and Algebra
- Space and Shape (Geometry)
- Measurement
- Data Handling

You can find out more about each Content Area in the CAPS and in Section 3 of this guide (page 110).

Weighting of Mathematics Content Areas

CAPS suggests that the instructional time for Mathematics in Grade R should be 23 hours per week. However, CAPS does not provide a weighting or a breakdown for Grade R of the time that should be spent

ISIGABA SESI-2

Izibalo Ohlelweni Lwansuku zonke Ebangeni R

Isingeniso

Uhlelo lokufundisa u-*Grade R Maths* lwakhelwe ukuqinisa nokweseka ukufunda nokufundiswa Kwezibalo Ebangeni R. U-*Grade R Maths* u:

- faka ukunezelela kukaCAPS olwazini Lwezibalo Ebangeni R olwethulwe Ezingxenyeni Zolwazi ezinhlanu
- gqugquzela indlela yokufunda yokubuza ngolwazi ngokuphakamisa izindlela zokukhulisa kubafundi ivuso lemvelo lokuzitholela ezindaweni eziseduze kwabo
- nika imisebenzi egqugquzela abafundi ukuba bazifunele futhi bazitholele izingxenye zolwazi lwezibalo
- gqugquzela othisha ukuba bakhulume nabafundi ngalokho abakucabangayo futhi babalekelele ukuba babeke imibono yabo
- phakamisa izindlela zokuba abafundi bahlele, baqaphele futhi bazihlanganisele ulwazi, bese beluqhathanisa, baluhlele, buhlukanise futhi bachaze ngabakutholile
- nikeza izinto zokusebenza ezifanele kanye nezinsiza.

Izingxenye Zolwazi Lwezibalo

Izibalo Emazingeni Aphansi (sifaka Nebanga R) Zinezingxenye Zolwazi ezinhlanu. Ingxenye ngayinye Yolwazi inomthelelela ekuthuthukiseni umfundi azi ulwazi ngqo lwezibalo namakhono. Izingxenye Zolwazi yilezi:

- Izinombolo, Izimpawu kanye Nobudlelwane Bazo
- Amaphethini, Amafankshini kanye ne-Aljebhra
- Indawo Nesimo (Ijiyometri)
- Isilinganiso
- Ukusetshenziswa Kolwazi

Ungathola okuningi Ngengxenye Yolwazi ngayinye ku-CAPS kanye Nasesigabeni sesi-3 salesi siqondiso (ikhasi le-111).

Isisindo Sezingxenye Zolwazi Lwezibalo

U-CAPS uphakamisa ukuthi isikhathi sokufundisa Izibalo Ebangeni R singaba amahora angama-23 ngesonto. Kodwa-ke u-CAPS awusinikezi isisindo noma ukucazululwa kwesikhathi Ebangeni R okumele sichithwe

on each Content Area for each term. The weighting of Mathematics Content Areas serves two primary purposes:

- It gives guidance on the amount of time needed to address the content within each Content Area adequately.
- It gives guidance on how much weighting to give to the different parts of the Grade R Mathematics curriculum during assessment.

The Grade R Maths programme suggests an approximate weighting of the Content Areas. This is based on the following:

- All Content Areas are equally important even though the same amount of time might not be spent on each one.
- Some Content Areas need more time for concept development, e.g. Numbers, Operations and Relationships, and Space and Shape (Geometry).

The Grade R Maths programme focuses on a specific Content Area each week whilst ensuring consolidation and integration of new knowledge. The *Activity Guide* for each term organises the content and number of weeks around this weighting to ensure that the CAPS Content Area topics and key conceptual development are covered. The table below shows the number of content focus weeks needed for each Content Area each term.

Table 1 Number of weeks per Content Area for each term

Weighting of Grade R Mathematics Content							
Content Area	**Topic**	**Term 1 weeks**	**Term 2 weeks**	**Term 3 weeks**	**Term 4 weeks**	**Total number of weeks per year**	**Total % of time**
Numbers, Operations and Relationships	Counting Number recognition Number sense (relationships) Problem solving Calculations	3	4	5	5	17	42,5
Patterns, Functions and Algebra	Identify, copy, extend and create own patterns	1	1	1	1	4	10
Space and Shape (Geometry)	Position, orientation and view 3-D objects and 2-D shapes Symmetry	4	3	2	2	11	27,5
Measurement	Time	1				4	10
	Length		1				
	Mass			1			
	Capacity/Volume				1		
Data Handling	Collecting, sorting, representing and analysing objects/information	1	1	1	1	4	10
Total weeks		10	10	10	10	40	100

Engxenyeni Yolwazi ngayinye ethemini ngayinye. Isisindo Sezingxenye Zolwazi Lwezibalo sisinikeza izinhloso ngqangi ezimbili:

- Sisinikeza umhlahlandlela wenani lesikhathi ukwethula ulwazi kuleyo Ngxenye Yolwazi lwezibalo.
- Sisinikeza umhlahlandlela wobungako besisindo okumele sinikwe izingxenye Zezibalo ekufundiseni nangesikhathi sokuhlola Ebangeni R.

Uhlelo lwe-*Grade R Maths* luphakamisa isilinganiso sesisindo Sezingxenye Zolwazi. Lokhu kususelwa kulokhu okulandelayo:

- Zonke Izingxenye Zolwazi zibaluleke ngokufanayo noma ngabe isikhathi esichithwa kungxenye ngayinye singefane.
- Ezinye Zezingxenye Zolwazi zidinga isikhathi esiningi ukuthuthukisa ulwazi, isib. Izinombolo, Izimpawu kanye Nobudlelwane Bazo kanye Nendawo Nesimo (Ijiyometri).

Uhlelo lwe-*Grade R Maths* lubheke ngqo Engxenyeni YoLwazi ngesonto ngalinye libe liqikelela ukubumbana kanye nokuxhumanisa ulwazi olusha. *Umhlahlandlela Womsebenzi* Wethemu ngayinye ihlela ulwazi nenamba yamasonto kubhekiswe esisindweni kuqinisekiswe ukuthi izihloko Zezingxenye Zolwazi eziku-CAPS nokuthuthukiswa kolwazi olusemqoka kwenziwe. Ithebula elingezansi likhombisa inombolo yamasonto yolwazi okugxilwe kulo oludingekayo Ngengxenye Yolwazi ngethemu ngayinye.

Ithebula loku-1 Inombolo yamasonto Ngengxenye Yolwazi ithemu ngayinye

Isisindo Solwazi Lwezibalo Ebangeni R							
Ingxenye Yolwazi	**Isihloko**	**Ithemu Yoku-1 amasonto**	**Ithemu Yesi-2 amasonto**	**Ithemu Yesi-3 amasonto**	**Ithemu Yesi-4 amasonto**	**Inani lamasonto ngonyaka**	**Isamba % sesikhathi**
Izinombolo, Izimpawu kanye Nobudlelwane Bazo	Ukubala Ukubona izinombolo Ulwazi lwezinombolo (ubudlelwane) Amasu okuxazulula izinkinga Ukubala	3	4	5	5	17	42,5
Amaphethini, Amafankshini kanye ne-Aljebhra	Ukukhomba, ukopishe, unwebe amaphethini akho	1	1	1	1	4	10
Indawo Nesimo (Ijiyometri)	Isikhundla, isimo nokubukeka kwento Izinto ezinhlangothi ntathu (ezingu-3-D), kanye nezimo ezinhlangothimbili (ezingu-2-D) Ukuhlukanisa izingxenye ezifana nse	4	3	2	2	11	27,5
Isilinganiso	Isikhathi	1				4	10
	Ubude		1				
	Isisindo			1			
	Umthamo/Ivolumu				1		
Ukusetshenziswa Kolwazi	Ukuqoqa, ukuhlela, ukwethula nokuhlaziya izinto/ulwazi	1	1	1	1	4	10
Inani lamasonto		10	10	10	10	40	100

Maths and the Grade R daily programme

The daily programme

The Grade R daily programme is a timetable that has its own unique features. It is not the same as the timetables used in other grades in the school. It provides for the learners' developmental needs whilst addressing CAPS policy requirements.

The Grade R daily programme diagram (Figure 31) includes a breakdown of approximate time as a guide for teachers. These times need to be flexible in Grade R, but there should be:

- 4 hours and 36 minutes per day (or 23 hours per week) of learning and teaching contact time
- activities that cover three subjects: Home Language (10 hours per week), Mathematics (7 hours per week) and Life Skills (6 hours per week).

Each of the subjects has a daily focused session and is also integrated into other activities throughout the day. The daily programme in Figure 31 highlights focused maths time as well as opportunities for incidental maths learning. Maths learning takes place in:

- whole class sessions where learners interact as one large group with the teacher
- small group teacher-guided sessions where up to eight learners work with the teacher
- small group sessions where up to eight learners work independently on activities at tables (workstations)
- free choice sessions where learners choose for themselves what they would like to do from a selection of activities set out by the teacher (own choice).

Izibalo kanye nohlelo losuku Ebangeni R

Uhlelo losuku

Uhlelo losuku Lwebanga R liwukuhleleka kwesikhathi esinezimpawu zalo olwehlukile. Alufani nohlelo lwezikhathi olusetshenziswa kwamanye amabanga esikoleni. Lunikeza abafundi izidingo zokuthuthuka libe lethula izidingo zenqubomgomo u-CAPS.

Umdwebo wohlelo losuku Lwebanga R (Umfanekiso 31) ufaka ukwabiwa kwesikhathi esilinganisiwe njengomhlahlandlela kothisha. Lezi zikhathi zingenziwa ngokukhululekile Ebangeni R kodwa zingaba:

- amahora ama-4 kanye nemizuzu engama-36 ngosuku (noma amahora angama-23 ngesonto) okufunda nesikhathi sokuba nothisha
- imisebenzi ehlelelwe izifundo ezintathu: Ulimi Lwasekhaya (amasonto ayi-10 ngesonto), Izibalo (amahora ayi-7 ngesonto) kanye Namakhono Empilo (amahora ayi-6 ngesonto).

Isifundo ngasinye sineseshini ekugxilwe kuyo ngosuku kanti futhi sinokuxhumana neminye imisebenzi osukwini lonke. Uhlelo losuku Emfanekisweni wama-31 ugqamisa isikhathi sokugxila ezibalweni kanye namathuba okufunda izibalo kungahlosiwe. Ezibalweni ukufunda kwenzeka:

- kuseshini yekilasi lonke lapho abafundi besebenza ndawonye njengeqembu elikhulu besebenza nothisha
- kuseshini yeqembu elincane eliholwa uthisha lapho abafundi abangaba isishiyagalombili besebenza nothisha
- kuseshini yeqembu elincane lapho abafundi abangaba yisishiyagalombili bezisebenzela ngokuzimela emisebenzini esetafuleni (ezindaweni zokusebenzela)
- umsebenzi okhethwe ngokukhululeka lapho abafundi bezikhethela bona ukuthi yini abafisa ukuyenza emisebenzini ekhethwe yahlelwa uthisha (bayazikhethela).

GRADE R DAILY PROGRAMME

Time guidelines	
	ARRIVAL and FREE PLAY
20	GREETING, WEATHER CHART, SHOW AND TELL, REGISTER, BIRTHDAYS, NEWS Language, Mathematics, Life Skills
50	**FOCUS on MATHEMATICS** Whole class and side activities
26	**FREE PLAY and TIDY UP INSIDE**
40	**FOCUS on LIFE SKILLS** Whole class and side activities
10	**TOILET ROUTINE** Language, Mathematics, Life Skills
20	**REFRESHMENTS** Language, Mathematics, Life Skills
30	**FREE PLAY and TIDY UP OUTSIDE**
10	**TOILET ROUTINE** Language, Mathematics, Life Skills
50	**FOCUS on LANGUAGE** Whole class and side activities
20	**STORY EVERY DAY**
REST/QUIET TIME and DEPARTURE	
Teaching programme totals 4 h 36 min per day	

FANTASY PLAY
ROLE-PLAY
CONSTRUCTION PLAY
BLOCKS
EDUCATIONAL TOYS
PERCEPTUAL GAMES
PUZZLES
BOOK CORNER
QUIET TIME

BALLS
WATER PLAY
SAND PLAY
ROLE-PLAY
MOVEMENT GAMES
EDUCATIONAL TOYS
SWINGS
WHEEL TOYS
JUNGLE GYM
TYRES

MATHEMATICS
(1 h 24 min)
FOCUS TIME:
50 min per day
Numbers, Operations and Relationships
Patterns, Functions and Algebra
Space and Shape (Geometry)
Measurement
Data Handling

PLUS INTEGRATION:
34 min per day
Use opportunities during other focus times as well as during inside/outside free play, greeting, toilet and refreshment routines.

LIFE SKILLS
(1 h 12 min)
FOCUS TIME:
40 min per day
Personal and Social Well-being
Beginning Knowledge
Creative Arts
Physical Education

PLUS INTEGRATION:
32 min per day
Use opportunities during other focus times as well as during inside/outside free play, greeting, toilet and refreshment routines.

LANGUAGE
(2 h)
FOCUS TIME:
50 min per day
Listening and Speaking
Emergent Reading
Phonological and Phonemic Awareness
Emergent Writing
Emergent Handwriting

PLUS INTEGRATION:
70 min per day
Show and tell (10 min)
Story every day (20 min)
For the remaining 40 min, use opportunities during other focus times as well as during inside/outside free play, greeting, toilet and refreshment routines.

Figure 31 GDE exemplar Grade R Daily Programme

UHLELO LOSUKU LWEBANGA R

Umhlahlandlela wokuhlelwa kwesikhathi	UKUFIKA kanye NOKUDLALA NGOKUKHULULEKA
20	UKUBINGELELA, ISHADI LESIMO SEZULU, KHOMBISA FUTHI UTSHELE, IREJISTA, IZINSUKU ZOKUZALWA, IZINDABA Ulimi, Izibalo, Amakhono Empilo
50	**UKUGXILA EZIBALWENI** Umsebenzi wekilasi lonke kanye nemisebenzi eseceleni
26	**UKUDLALA NGOKUKHULULEKA kanye NOKUQOQA NGAPHAKATHI**
40	**UKUGXILA kuMAKHONO EMPILO** Umsebenzi wekilasi lonke kanye nemisebenzi eseceleni
10	**INQUBO YOKUYA ENDLINI YANGASESE** Ulimi, Izibalo, Amakhono Empilo
20	**ISIKHATHI SEZIDLO** Ulimi, Izibalo, Amakhono Empilo
30	**UKUDLALA NGOKUKHULULEKA kanye NOKUQOQA NGAPHANDLE**
10	**INQUBO YOKUYA ENDLINI YANGASESE** Ulimi, Izibalo, Amakhono Empilo
50	**UKUGXILA OLIMINI** Umsebenzi wekilasi lonke kanye nemisebenzi eseceleni
20	**INDABA ZONKE IZINSUKU**
UKUPHUMULA/ISIKHATHI SOKUTHULA kanye NOKUGODUKA	
Uhlelo lokufunda selulonke lungamahora ama-4 nemizuzu engama-36 ngosuku	

UMDLALO WOKUZENZISA
UKULINGISA
INDAWO YOKWAKHA
AMABHULOKHI
AMATHOYIZI OKUFUNDISA
IMIDLALO YOKUQONDA
AMAPHAZILI
IKHONA LEZINCWADI
ISIKHATHI SOKUTHULA

AMABHOLA
UMDLALO WAMANZI
UMDLALO WASESIHLABATHINI
UKULINGISA
IMIDLALO ENYAKAZISA UMZIMBA
AMATHOYIZI AFUNDISAYO
OZWINGI
AMATHOYIZI ANAMASONDO
IJANGILIJIMU
AMATHAYA

IZIBALO
(Ihora nemizuzu engama-24)
ISIKHATHI SOKUGXILA:
Imizuzu engama-50 ngosuku
Izinombolo, Izimpawu kanye Nobudlelwane Bazo
Amaphethini, Amafankshini kanye ne-Aljebhra
Indawo Nesimo (Ijiyometri)
Isilinganiso
Ukusetshenziswa Kolwazi

KUHLANGANISWA NOKUXHUMANA:
Imizuzu engama-34 ngosuku
Sebenzisa amathuba ngezikhathi sokugxila kanjalo nangaphakathi/ngaphandle kudlalwa ngokukhululekile, ukubingelela, inqubo yokuya endlini yangasese kanye nesezidlo.

AMAKHONO EMPILO
(Ihora nemizuzu eyi-12)
ISIKHATHI SOKUGXILA:
Imizuzu engama-40 ngosuku
Okuqondene Nomuntu Uqobo kanye Nokuphila Emphakathini
Ulwazi Lokuqala
Ubuciko Bokusungula
Isifundo Sokuzivocavoca

KUHLANGANISWA NOKUXHUMANA:
Imizuzu engama-32 ngosuku
Sebenzisa amathuba ngezikhathi sokugxila kanjalo nangaphakathi/nangaphandle kudlalwa ngokukhululekile, ukubingelela, inqubo yokuya endlini yangasese kanye nesezidlo.

ULIMI
(Amahora ama-2)
ISIKHATHI SOKUGXILA:
Imizuzu engama-50 ngosuku
Ukulalela Nokukhuluma
Ukufunda Kokuqala
Ulwazi Lokuhlukanisa kanye Nokuzwa Imisindo
Ukubhala Kokuqala
Ukubhala Kahle Ngesandla Kokuqala

KUHLANGANISWA NOKUXHUMANA:
Imizuzu engama-70 ngosuku
Ukukhombisa kanye nokutshela (imizuzu eyi-10)
Indaba zonke izinsuku (imizuzu engama-20)
Ngemizuzu engama-40 esele sebenzisa amathuba ngezikhathi sokugxila kanjalo nangaphakathi/ngaphandle kudlalwa ngokukhululekile, ukubingelela, inqubo yokuya endlini yangasese kanye nesezidlo.

Umfanekiso 31 Isibonelo se-GDE Sohlelo Losuku Ebangeni R

Grade R Mathematics time allocation

The time allocated to Grade R Mathematics is seven hours per week and 1 hour 24 minutes (84 minutes) per day. Each day this time is made up of:

- 50 minutes of focused maths learning and teaching activities
- 34 minutes of integrated learning, structured activities and independent learner activities inside and outside the classroom.

Figure 32 shows a suggestion of how you could use the daily allocation of 1 hour 24 minutes.

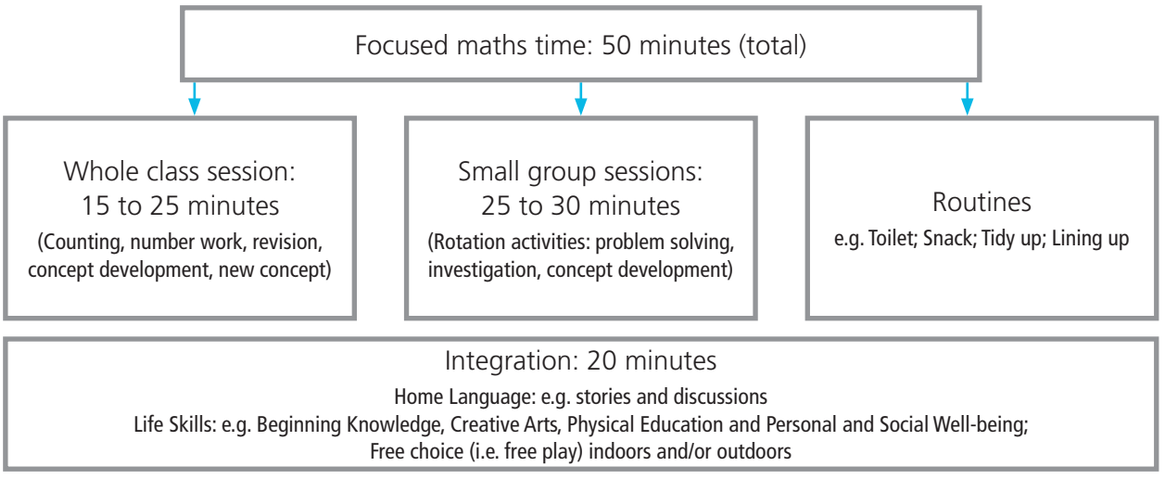


Figure 32 Suggested use of daily maths time

Figure 33 shows how each day's maths focus time is structured in Grade R Maths.

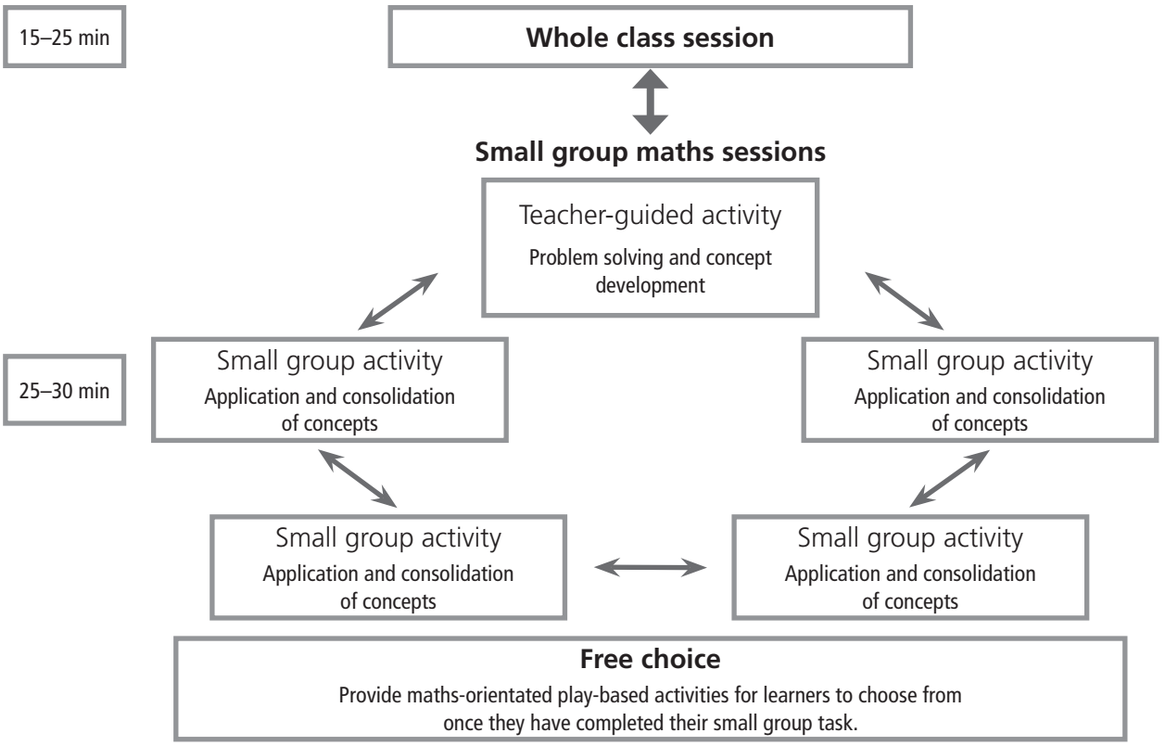


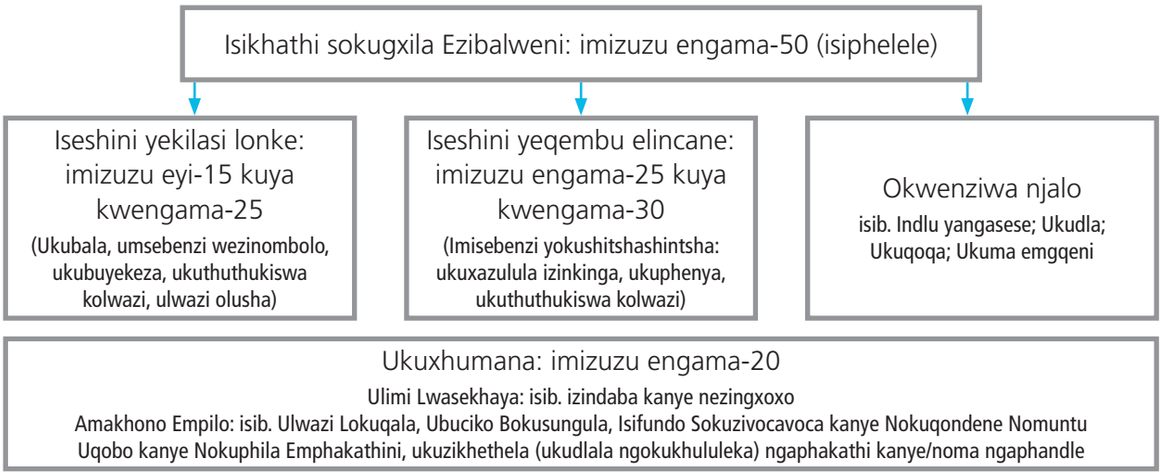
Figure 33 Daily maths focus time in Grade R Maths

Ukwabiwa kwesikhathi Sezibalo Ebangeni R

Isikhathi esabelwe Izibalo Ebangeni R amahora ayi-7 ngesonto kube ihora nemizuzu engama-24 (imizuzu engama-84) ngosuku. Ngosuku lesi sikhathi senziwa:

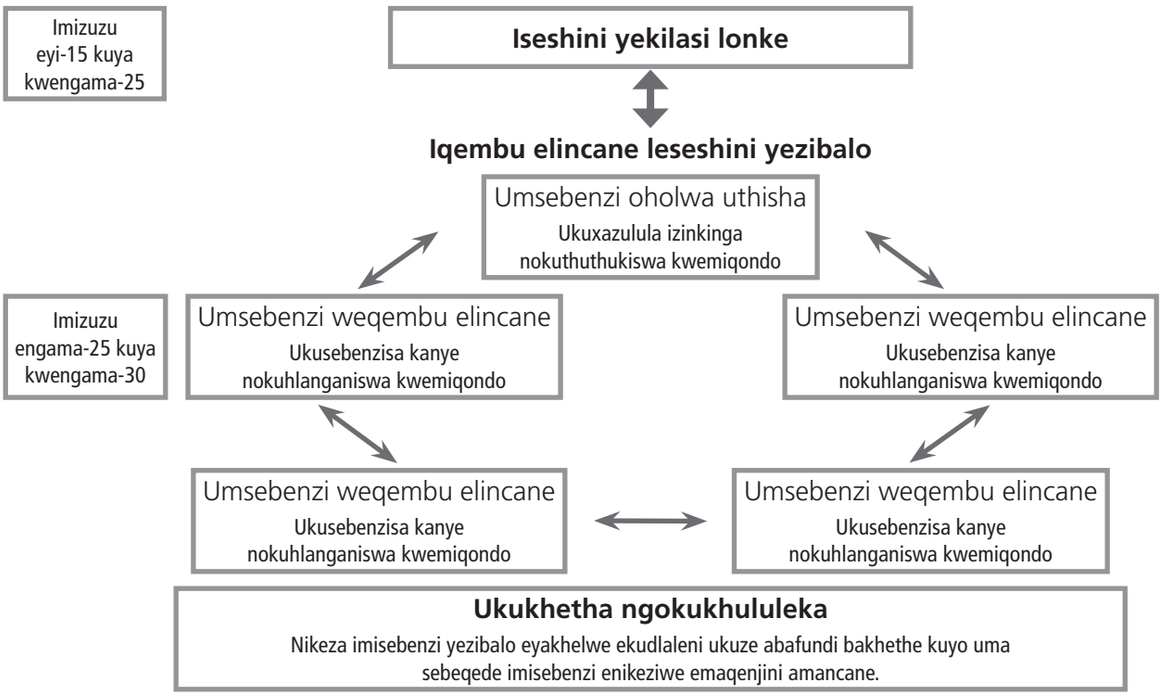
- imizuzu engama-50 kugxilwe ekufundeni Izibalo nasemisebenzini ezofundiswa
- imizuzu engama-34 okufunda okuxhumene, imisebenzi ehleliwe kanye nemisebenzi abafundi abayenza ngokuzimela ngaphakathi kanye nangaphandle kwekilasi.

Umfanekiso 32 ukhombisa isiphakamiso sokuthi ungakusebenzisa kanjani ukwabiwa kwehora nemizuzu engama-24 nsukuzonke.



Umfanekiso 32 Isiphakamiso sokusebenzisa isikhathi sezibalo

Umfanekiso 33 ukhombisa ukuthi usuku ngalunye lumi kanjani ngesikhathi sokugxila ku-*Grade R Maths*.



Umfanekiso 33 Isikhathi sokugxila sansukuzonke ku-*Grade R Maths*

Additional activities that can be offered to learners include:

- puzzle building
- playdough activities
- construction activities
- educational games
- book corner – 'reading'
- DBE workbooks and worksheets.

Once the focused maths session has been completed, all learners participate in tidying up and then transition to the next part of the daily programme.

How to organise your classroom for the daily maths session

Follow these guidelines to help you put the Grade R Maths programme into practice in your classroom every day.

The Grade R Mathematics focus time should be organised and planned for a combination of whole class and small group activities. Different-sized groups fulfil different teaching and learning goals. The choice of a large or smaller group will depend on the teaching or assessment activity that the teacher has planned. Managing a large class is challenging, especially if the teacher plans to focus on individual learners and includes learners with barriers to learning.

Whole class maths sessions

Whole class maths sessions are usually between 15 and 25 minutes long and all the learners sit in a circle together with the teacher.

The following maths activities can be done in whole class maths sessions:

- consolidating and practising previously taught concepts
- introducing a new concept
- extending the concept that is the main focus of the week
- oral/rote counting (rhymes, songs, sequencing numbers)
- mental maths (posing problems, memory games)
- giving instructions for the tasks to be done in the small group context whilst you are busy with the teacher-guided activity.

Imisebenzi engezelelwe enganikezwa abafundi imbandakanya:

- ukwakha amaphazile
- imisebenzi yobumba lokudlala
- imisebenzi yokwakha
- imidlalo yokufunda
- ikhona lezincwadi – 'ukufunda '
- Izincwadi Zomnyango Wezemfundo Eyisisekelo (DBE) namapheshana okusebenzela.

Uma iseshini yokugxila ezibalweni isiphelile bonke abafundi babamba iqhaza ekuqoqeni bese beshintshela engxenyeni elandelayo yohlelo losuku.

Lingahlelelwa kanjani ikilasi iseshini yezibalo zansukuzonke

Landela le mihlahlandlela ezokusiza ukubeka uhlelo lwe-*Grade R Maths* lokwenziwa ekilasini lakho zonke izinsuku.

Isikhathi sokugxila Ezibalweni Ebangeni R kumele sihlelwe senzelwe ukuhlanganisa imisebenzi yekilasi kanye neyeqembu elincane. Ukwehluka kobungakho bamaqembu luphelelisa ukwehlukana kwemigomo yokufundisa nokufunda. Ukukhethwa kweqembu elikhulu noma elincane kweyame emsebenzini ozofundiswa noma ozohlolwa ngjengokuhlela kukathisha. Ukuphatha ikilasi elikhulu kuyinkinga ikakhulukazi uma uthisha ehlele ukugxila kubafundi ngamunye abuye ahlanganise nabafundi abanezingqinamba ekufundeni.

Iseshini yezibalo yekilasi lonke

Amaseshini ezibalo ekilasi lonke avame ukuthatha imizuzu ephakathi kwengama-15 kanye nengama-25 ubude bese abafundi bonke behlala babe yisikokela nothisha.

Le misebenzi yezibalo elandelayo ingenziwa ngeseshini yezibalo nekilasi lonke:

- ukuqinisa nokwenza ulwazi oselufundisiwe
- ukwethula ulwazi olusha
- ukwelula ulwazi okuyilo okugxilwe kulo esontweni
- ngomlomo/ubala njalo ngokufanayo (isigqi, amaculo, ukuhlela izinombolo)
- izibalo zekhanda (ukwethula izinkinga, imidlalo yokukhumbula)
- ukunika imiyalelo yemisebenzi enikeziwe ezokwenziwa eqenjini elincane ukunika imiyalelo yemisebenzi enikeziwe ezokwenziwa esimweni samaqembu amancane uma usabambekile nemisebenzi eholwa uthisha.

Figure 34 A whole class maths session

Small group maths sessions

In small group sessions, the class is divided into five groups of learners. Each day, one group works with the teacher (teacher-guided activity) while the other four groups work independently on maths activities that the teacher has planned.

The advantage of planning for small group teacher-guided and independent activities is that:

- Fewer resources are required for a small group than a whole class, for example, scissors, counters, blocks, etc.
- Every learner has an opportunity to handle the materials and resources.
- It encourages interpersonal skills, for example, sharing, taking turns, talking and listening.
- Learners take responsibility for group tasks, such as tidying up.
- The teacher can pitch instructions and questions at the level of the group.
- The teacher can observe each learner individually to ensure independent skills.

Using small groups gives teachers the opportunity to group learners with similar levels of skill and ability. In other words, the teacher is able to group learners according to the level of support they need in order to learn effectively.

Over the course of five days, the groups rotate to a different activity each day. This means that in a week all learners have the opportunity to complete the **teacher-guided focused activity** and four other small group activities (**a total of five different maths activities**). The four independent activities (or **side activities**) should be set out at four **workstations** around the classroom – either at the tables where the learners are seated or stand, or on the mat, or outside. The groups rotate over the course of a week, depending on how the teacher has planned the activities.

Umfanekiso 34 Iseshini yezibalo yekilasi lonke

Amaseshini amaqembu amancane ezibalo

Kumaseshini amaqembu amancane, ikilasi lihlukaniswa libe amaqembu ayisihlanu abafundi. Usuku ngalunye, iqembu elilodwa lisebenza nothisha (umsebenzi oholwa nguthisha) ngesikhathi lawa amanye amaqembu amane esebenza ngokuzimela emsebenzini yezibalo ebihlelwe uthisha.

Ubuhle bokuhlelela amaqembu amancane aholwa uthisha nemisebenzi yokuzimela ukuthi:

- Zincane izinsiza kufundisa ezidingekayo eqenjini elincane kunekilasi lonke, isib. izikelo, izinto zokubala, amabhulokhi, njll.
- Wonke umfundi uyalithola ithuba lokubamba izinto kanye nezinsiza kufundisa.
- Kugqugquzela amakhono okusebenzisana, ubeka, isibonelo, ukuphana, ukunikezana amathuba, ukukhuluma nokulalelana.
- Abafundi benza okufanele emisebenzini yeqembu, njengokuqoqa.
- Uthisha anganyusa ukufundisa kanye nokubuza imibuzo esezingeni leqembu.
- Uthisha uzokwazi ukuqapha umfundi ngamunye ukuqinisekisa amakhono okuzimela.

Ukusebenzisa amaqembu amancane kunika uthisha ithuba lokwenza iqoqo labafundi abanamazinga alinganayo okwenza kanye amakhono. Ngamanye amazwi, uthisha uyakwazi ukwenza amaqembu abafundi ngokwezinga lokusizwa abalundingayo ukuze bafunde ngokufaneleyo.

Ezinsukwini ezinhlanu ezihlelelwe ukufunda, iqembu liyashintsha lenze umsebenzi ohlukile wosuku. Lokhu kusho ukuthi ngesonto bonke abafundi bayalithola ithuba lokuqeda **umsebenzi okugxilwe kuwo oholwa uthisha** kanye neminye imisebenzi emine yamaqembu amancane (**inani lemisebenzi emihlanu eyehlukene yezibalo**). Imisebenzi emine yokuzimela (noma **imisebenzi eseceleni**) kumele ibekwe kahle **eziteshini zokusebenzela** ezine ezindaweni ezihleliwe ekilasini kungaba sematafuleni lapho abafundi behlela khona noma bema khona, noma kumata, noma ngaphandle. Amaqembu ashintshane ngesikhathi isonto liqhubeka, kuye ngokuthi uthisha uyihlele kanjani imisebenzi.

In practice ...

Ways of grouping learners for maths

The continuous observation of learners during outdoor and indoor activities will give teachers insight into the learners' abilities and interests. These insights will help you divide learners into different groups. The groups could be based on ability or could be determined by the learners' competence in a new skill.

- Ability groups: In these groups, learners are on a similar developmental level. Sometimes it is easier to teach new maths concepts using ability groups as some learners will need more time to complete a task, while others will need more challenging tasks. At times you may want learners with barriers to work with you to consolidate concepts, such as one-to-one correspondence and counting collections, or you might want to extend more advanced learners by giving them challenging maths problems.
- Mixed-ability groups: In these groups, learners have different levels of skill and understanding of a concept. These kinds of groups work well for construction, measurement, patterning and sorting activities, and games.

Whichever way you choose to group the learners, the groups should not remain the same over an extended time and each group should have their own symbol (picture or shape) and name.

Teacher-guided small group activities

In the teacher-guided activity, the teacher works with one group of learners while the other groups are busy completing the planned activities at one of the other four workstations.

The following activities are best suited to the teacher-guided small group context:

- consolidating and practising previously taught concepts
- deepening an understanding of a new concept.

In practice ...

Tips for teacher-guided small group maths activities

- Complete activities that focus on the Grade R Mathematics concept planned for that week.
- Work with the learners on the floor or at a table.
- Make the session interactive, with both you and the learners joining in.
- The focus should be on working orally and practically with the learners.

Uma sekwenziwa ...

Izindlela zokwenza amaqembu abafundi ezibalweni

Ukuqaphela abafundi ngokuqhubekayo ngesikhathi semisebenzi yangaphandle neyangaphakathi kuzonika othisha ukubona lokho abafundi abangakwazi ukukwenza nogqozi. Lokhu kuqonda kuzokusiza ukuhlukanisa abafundi emaqenjini ehlukahlukene. Amaqembu angenzelwa kusisekelo samakhono noma ngendlela yokuzimisela komfundi emakhonweni amasha.

- Amaqembu amakhono: Kula maqembu, abafundi basezingeni lokuthuthuka elifanayo. Kwesinye isikhathi kulula ukufundisa ulwazi olusha lwezibalo usebenzisa amaqembu anamakhono afanayo njengoba abanye abafundi badinga isikhathi esiningi sokuqeda umsebenzi onikeziwe kanti abanye badinga amathaski abanika inselele. Kwesinye isikhathi ungafuna abafundi abanezingqinamba ekufundeni basebenze nawe ukugcizelela ulwazi olufana nokunye kokunye kanye nokubala iqoqo lezinto noma ungafisa ukunweba kakhulu abafundi abaphambili ubanike izibalo ezinenselelo.
- Amaqembu anamakhono axubile: Kula maqembu, abafundi bahlukene emazingeni amakhono kanye nokuqonda. Lezi zinhlobo zamaqembu zisebenza kahle ekwakheni, isilinganiso, amaphethini nemisebenzi yokuhlela, kanye nemidlalo.

Noma iyiphi indlela oyikhethayo ukwenza amaqembu abafundi, amaqembu akumele ahlale efana isikhathi eside futhi iqembu lingaba nophawu lalo (isithombe noma umumo) kanye negama.

Imisebenzi eholwa uthisha emaqenjini amancane

Emisebenzini eholwa uthisha, uthisha usebenza neqembu elilodwa labafundi ngesikhathi amanye amaqembu esebenza eqedela imisebenzi ehleliwe esiteshini esisodwa kwezine zokusebenza.

Imisebenzi elandelayo ilungele kahle imisebenzi eholwa uthisha esimweni samaqembu amancane:

- ukuhlanganisa kanye nokwenza ulwazi obelufundisiwe
- ukujulisa ukuqonda ulwazi olusha.

Uma sekwenziwa ...

Amathiphu emisebenzi eholwa uthisha emaqenjini amancane ezibalweni

- Qedela imisebenzi egxile olwazini Lwezibalo Zebanga R oluhlelelwe lelo sonto.
- Sebenza nabafundi phansi noma etafuleni.
- Yenza amaseshini okusebenzisana, wena nabafundi abazozihlanganisa.
- Ukugxila kungaba ekusebenzeni ngomlomo kanye nokwenziwa nabafundi.

Figure 35 Matching counters and number cards

Small group activities

The following activities are best suited to the small group context where learners work independently of the teacher:

- consolidating and practising previously taught concepts
- investigating the new concept that is the main focus of the week
- practising the concept that is the main focus of the week.

In practice ...

Tips for planning and managing independent small group maths activities

- Learners with a range of different abilities must be able to complete the activities.
- The activities must be meaningful for learners.
- The activities must be clear and simple enough to be completed without learners having to ask the teacher for help.
- If learners are working slowly, explore the reasons. Change or adapt the activity if necessary.
- Learners need to be responsible for completing their activities and should not need to disturb the teacher who will be busy with the teacher-guided activity.
- Teach the learners simple rules for what to do and how to behave during small group activities: how to tidy/pack up their work when done; how to behave in the transition activities. Repeat the rules daily until the learners know and can follow them automatically. This takes time! Be consistent. Gently correct learners if they challenge the rules.

Free choice activities

Additional activities should be provided for those learners who complete their individual small group activity before the end of the maths session. These activities should serve as reinforcement of the maths content you

Umfanekiso 35 Izinto zokubala eziqondanisa amakhadi ezinombolo

Imisebenzi yamaqembu amancane

Le misebenzi elandelayo ifanele kakhulu amaqembu amancane lapho abafundi besebenza ngokuzimela ngaphandle kukathisha:

- ukuhlanganisa kanye nokwenza ulwazi olufundiwe
- ukuphenya ngolwazi olusha okungalo okugxilwe kukho kuleli sonto
- ukwenza ulwazi esingalo okugxilwe kulo esontweni.

Uma sekwenziwa ...

Amathiphu okuhlela nokuphatha amaqembu amancane azimele emisebenzini yezibalo

- Abafundi abanohla lwamakhono ehlukene kumele bakwazi ukuqeda umsebenzi.
- Imisebenzi kumele yenze umqondo kubafundi.
- imisebenzi kumele icace futhi ibe lula ngokwanele iqedwe ngaphandle kokuba abafundi bacele usizo kuthisha.
- Uma abafundi besebenza kancane, thola izizathu. Ushintshe noma uwubeke kwelinye izinga umsebenzi uma kunesidingo.
- Abafundi kumele bazimisele ukuqeda imisebenzi yabo futhi akudingeki baphazamise uthisha ozobe ebambekile emsebenzini oholwa uthisha.
- Fundisa abafundi imithetho elula kokumele bakwenze nokuthi kumele baziphathe kanjani ngesikhathi semisebenzi yamaqembu amancane: baqoqe kanjani/ukubeka umsebenzi wabo uma sebeqedile; baziphathe kanjani uma sekuwumsebenzi wokushintsha. Phinda imithetho nsukuzonke baze bazi abafundi futhi bayilandele ngokungalandelelwa. Lokhu kuthatha isikhathi! Kwenze njalo. Balungise kahle abafundi uma befaka inselele nemithetho.

Imisebenzi ekhethwe ngokukhululeka

Imisebenzi engezelelwe ayinikezwe labo bafundi abaqeda imisebenzi yabo emaqenjini amancane ngaphambi kokuphela kweseshini yezibalo. Le misebenzi izosetshenziswa ukugcizelela ulwazi lwezibalo olufundisile.

have taught. Learners should choose an activity from those set out by the teacher. These activities should have a maths focus, for example, a puzzle, stacking blocks, drawing, colouring, moulding, sorting shapes or role-play.

Moving between activities (transitions)

A transition is the time when learners move from one activity to another. For example, after the maths whole class session is over, the classroom needs to be tidied and prepared for the next session. Transition times should be used to practise Mathematics, Home Language and Life Skills, e.g. oral counting, clapping patterns.

Teachers who plan and manage transitions are more likely to have calm, organised classrooms with happy, cooperative and stress-free learners.

In practice ...

Tips for emphasising maths during transitions

- Give the learners enough warning before they need to change activities, e.g. 'In two minutes we are going to complete the session.'
- Give clear instructions, e.g. 'First pack away what you are doing and then line up quietly at the door/sit in a ring.'
- Use 'attention grabbers', such as counting the number of claps, number songs and rhymes, and number signals (counting down/up).

Planning and preparing maths lessons

There are approximately 40 weeks in the year. You will need to plan and prepare thoroughly for each week.

In the week before the lesson

- Read the relevant sections of the *Concept Guide* and *Activity Guide*. These explain the content and concepts that will be taught, and give suggestions for appropriate activities and discussions.
- Plan and prepare the activities in the week before they will be taught.
- Identify the focus of assessment. (You can find more information on assessment on page 98.)
- Prepare the resources and organise the classroom for the week.
- Some resources need to be collected well in advance, e.g. egg boxes, toilet roll inners, yoghurt cups, milk bottles or objects for sorting.

During the week

- Focus on understanding the maths concept being taught that week.
- Read the relevant section in the *Concept Guide*.
- Each day, check that you have the resources needed for the following day's activities.
- Familiarise yourself with the activities well in advance. Teachers should never prepare while learners are sitting and waiting for an activity to begin.

Abafundi bakhethe umsebenzi kuleyo ebekwe uthisha eceleni. Le misebenzi mayibe nokugqxila ezibalweni, isibonelo, iphazile, ukutakisha amabhulokhi ukudweba, ukufaka umibala, ukubumba, ukuhlela umumo noma ukwenza samdlalo.

Ukusuka phakathi kwemisebenzi (ukushintsha)

Ukushintsha isikhathi lapho abafundi besuka komunye umsebenzi beya komunye. Njengokuthi nje emva kweseshini yezibalo nekilasi lonke isiphelile ikilasi lidinga ukuqoqa bese lilungiselelwa iseshini elandelayo. Izikhathi sokushintsha sisetshenziselwe ukwenza Izibalo, Ulimi Lwasekhaya kanye Namakhono Empilo, isib. ukubala ngomlomo, ukushaya izandla ngamaphethini.

Othisha abahlela futhi baphathe ushintsho basebenza ngokuthula, bahlele ikilasi ngokujabula, abafundi abazisebenzelayo futhi abangenangcindezi.

Uma sekwenziwa ...

Amathiphu okugcizelela izibalo ngesikhathi soshintsho

- Nika abafundi isikhathi esanele sokubaxwayisa ngaphambi kokuba bashintshe imisebenzi, isib. 'Sizoqeda le seshini emizuzwini emibili.'
- Nika imiyalelo ecacile, isib. 'Qalani ngokubeka lokhu enikwenzayo bese nima emgqeni ngokuthula ngasemnyango/hlalani nenze isikokela.'
- Sebenzisa 'izinto ezizokwenza bakunake' njengokubala ukushaywa kwezandla, amaculo ezinombolo nesigqi kanye nophawu lwenombolo (ukubala uya phansi/phezulu).

Ukuhlela nokulungiselela isifundo sezibalo

Kunamasonto acishe alinganiselwe emasontweni angama-40 onyakeni. Uzolindeleka ukuba uhlele futhi ulungiselele kahle isonto ngalinye.

Esontweni elingaphambi kwesifundo

- Funda ingxenye efanele yo*Mhlahlandlela Wokuqonda Isifundo* kanye *Nomhlahlandlela Womsebenzi*. Zonke zichaza okuzofundwa kanye nolwazi oluzofundiswa, kunike neziphakamiso zemisebenzi efanele kanye nezingxoxo.
- Hlela ulungiselele imisebenzi esontweni elingaphambi kokuba ifundiswe.
- Bheka okuzogxilwa kukho ekuhloleni. (Ungathola ulwazi oluningi mayelana nokuhlola ekhasini lama-99.)
- Lungisa izinsiza bese uhlelela ikilasi kulelo sonto.
- Ezinye izinsiza zidinga ukuqoqwa kusenesikhathi, isib. amabhokisi amaqanda, okungaphakathi kwamaroli ethoyilethiphepha, izinkomishi zeyogathi, amabhodlela obisi noma izinto zokuhlela.

Ngalelo sonto

- Gxila ekuqondisiseni ulwazi lwezibalo oluzofundiswa kulelo sonto.
- Funda ingxenye efanele yo*Mhlahlandlela Wokuqonda Isifundo*.
- Ngosuku ngalunye, bheka ukuthi unazo izinsiza ezidingekayo ngosuku olulandelayo.
- Zijwayeze imisebenzi kusenesikhathi esanele. Othisha akumele balungiselele ngesikhathi abafundi behleli belinde ukuthi umsebenzi uqale.

The Grade R Maths programme resources

The Grade R Maths programme has four components.

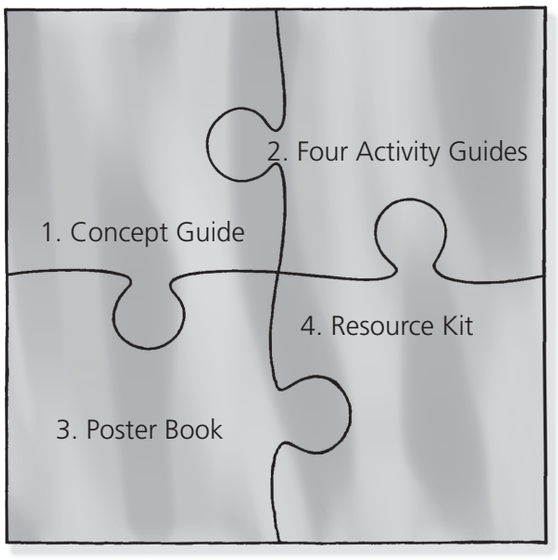


Figure 36 The components of the Grade R Maths programme

Concept Guide (this book)

This book provides:

- the principles behind the Grade R Maths programme for teaching maths to young learners
- guidance on how to organise your classroom for effective teaching and learning
- suggestions on how to teach maths in Grade R
- an outline of the maths content to be taught in the Grade R Maths programme
- guidelines on using Grade R Maths
- a glossary.

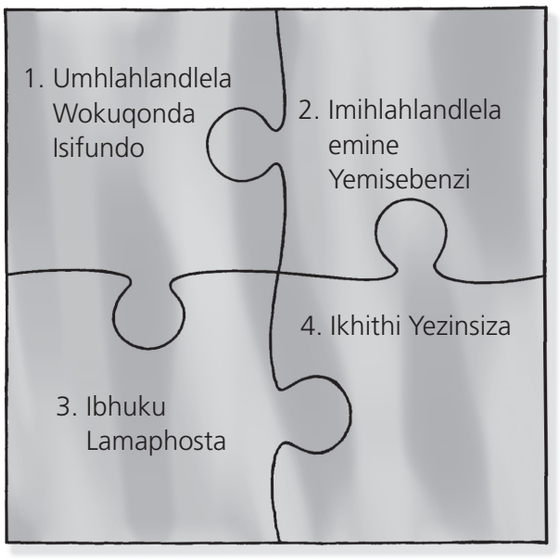
Activity Guides

There are four *Activity Guides* – one for each school term. Each *Activity Guide* includes:

- an overview of what will be covered in the term
- a maths concept area topic to be focused on in each week
- suggested activities for each week: whole class, and independent and teacher-guided small group activities
- teaching tips for planning and organising maths activities
- maths vocabulary that is learnt through the activities each week
- information on the resources that will be needed for the week
- resources, such as rhymes, songs, stories and templates.

Izinsiza zohlelo lwe-*Grade R Maths*

Uhlelo lwe-*Grade R Maths* lunezingxenye ezine.



Umfanekiso 36 Izingxenye zohlelo lwe-*Grade R Maths*

Umhlahlandlela Wokuqonda Isifundo (le ncwadi)

Le ncwadi ikunika:

- imigomo eyenzelwe uhlelo lwe-*Grade R Maths* ukufundisa izibalo kubafundi abancane
- isiphakamiso sokuthi ungalihlela kanjani ikilasi lakho ukuba nokufunda nokufundisa okunempumelelo
- iziphakamiso zokuthi ungazifundisa kanjani izibalo Ebangeni R
- ukugqanyiswa kolwazi lwezibalo oluzofundiswa ohlelweni lwe-*Grade R Maths*
- umhlahlandlela wokusebenzisa u-*Grade R Maths*
- iglosari.

Imihlahlandlela Yemisebenzi

Kukhona *Imihlahlandlela Yemisebenzi* emine – yinye ethemini ngayinye yesikole. *Imihlahlandlela Yemisebenzi* imbandakanya:

- ukubuka konke okuzokwenziwa ngethemu
- ulwazi lwezibalo nengxenye yesihloko okugxilwe kuso esontweni ngalinye
- iziphakamiso zemisebenzi zesonto ngalinye: imisebenzi yekilasi lonke, kanye neholwa uthisha emaqenjini amancane
- amathiphu okufundisa ukuhlela nokulungiselela imisebenzi yezibalo
- ulwazi magama lwezibalo olufundwa emisebenzini yesonto ngalinye
- ulwazi ngezinsiza ezizodingeka ngesonto
- izinsiza ezinjengemilolozelo, amaculo, izindaba kanye namathempulethi.

Poster Book

The *Poster Book* is a big book containing eleven posters. The posters are meant for use in whole class activities and small group teacher-guided activities. They help to link maths to everyday life and can be used in different ways, e.g. for counting, discussing position and direction, time (sequencing events) and problem solving.

Resource Kit

The *Resource Kit* contains essential teaching and learning materials that will be used regularly as part of the teacher-guided activities. The kit provides enough apparatus for a small group of six to eight learners. Each kit has the following as shown in Figure 4 on page 12:

- counting materials, e.g. coloured discs and sticks, fruit and animal counters, and Unifix blocks
- jumbo dice
- strings of ten structure beads
- number cards: number symbols (0–10) and number words (zero–ten)
- attribute blocks
- dot cards.

Other resources

- CAPS policy documents
- DBE workbook and other resources

Additional resources (not supplied) that are needed for Grade R Maths activities include:

- 'pizza box'
- a height chart
- jumbo playing cards
- dice: with numbers and shapes
- pretend-money: coins and notes
- a calendar for the current year
- a large analogue wall clock
- a balance scale
- puppets
- pattern blocks (attribute blocks) and cards
- pegboard and pegs
- beanbags
- large and small balls
- beads for counting, sorting, threading and patterning (and laces)
- building blocks and boards
- Lego: different sizes and shapes
- construction toys
- puzzles: 8, 12, 20, 36 and 48 pieces
- modelling clay/playdough
- cookie cutters

Ibhuku Lamaphosta

Ibhuku Lamaphosta liyincwadi enkulu equkethe amaphosta ayishumi nanye. Amaphosta enzelwe ukusetshenziswa emisebenzini yekilasi lonke kanye neyamaqembu amancane aholwa-uthisha. Asiza ukuxhumanisa izibalo nempilo yansuku zonke futhi ingasetshenziswa ngezindlela ezehlukene, isib. uma kubalwa, kuxoxwa ngendawo nezinkomba, isikhathi (ukulandelanisa izigameko) kanye nokuxazulula izinkinga.

Ikhithi Yezinsiza

Ikhithi Yezinsiza iqukethe izinto ezibalulekile zokufunda nokufundisa ezizosetshenziswa njalo njenge ngxenye yemisebenzi eholwa uthisha. Insiza inika izinto zokusebenza ezanele iqembu labafundi abayisi-6 kuya kwayisi-8. Insiza ngayinye inalokhu okulandelayo njengoba kukhonjisiwe emfanekisweni we-4 ekhasini lesi-13:

- izinto zokubala, isib. amadiski nezinduku ezinemibala, izithelo nezinto zokubala eziyizilwane, kanye namabhuloki axhumekayo
- idayisi elikhulu
- izintambo zobuhlalu obuhlelwe ngamashumi
- amakhadi ezinombolo: izimpawu zezinombolo (0 kuya ku-10) kanye namabizonombolo (iqanda kuya kokuyishumi)
- amabhulokhi ezimo
- amakhadi anamachashazi.

Ezinye izinsiza

- Idokhumenti yenqubomgomo ye-CAPS
- izincwadi Zomnyango Wezemfundo Eyisisekelo kanye nezinye izinsiza

Izinsiza ezingezelelwe (ezingalethwa) ezidingekayo emisebenzini ka-*Grade R Maths* zimbandakanya:

- 'ibhokisi le-pizza'
- ishadi lobude
- amakhadi okudlala ejambo
- idayisi: elinezinombolo nemimo
- imali yokudlala: ewuhlweza nengamaphepha
- ikhalenda lalowo nyaka
- iwashi elikhulu lezinti lasobondeni
- isikali sokuzimelela
- amaphaphethi
- amabhulokhi amaphethini (amabhulokhi ezimo) kanye namakhadi
- ibhodi lamaphekisi namaphekisi
- izikhwama ezinobhontshisi
- amabhola amakhulu namancane
- ubuhlalu bokubala, ukuhlela, ukutshutsha kanye nokwenza amaphethini (noleyisi)
- amabhulokhi okwakha kanye namabhodi
- i-*Lego*: ukuhlukahlukana kobungako nezimo
- amathoyizi okwakha
- amaphazili: ayi-8, ayi-12, angama-20, angama-36 kanye nezingcezu ezingama-48
- ubumba lokwakha/inhlama yokudlala
- izinsiza zokusika inhlama yamabhisikidi

- cardboard boxes of different shapes and sizes
- a variety of plastic bottles and containers for describing and comparing capacity
- mathematical games: Lotto, Ludo, snakes and ladders, jigsaw puzzles, dominoes (to include colour, shape, numbers, sequencing, matching, classification and memory games)
- sand and water play equipment
- stacking cups of different sizes
- apparatus for climbing, balancing, swinging and skipping
- a play shop with items to be bought with pretend money
- counters for sorting
- storage boxes: 40 litre, 5 litre and 2 litre.

Assessment in Grade R

In Grade R, assessment is a continuous, planned process of gathering, analysing and interpreting information about each learner. It should be mainly **formative** and informal. In other words, the information gathered about the learners' progress during assessment should help you to plan and/or adapt learning activities. In Grade R, assessment is used to make decisions about the best way to support each learner's development.

GLOSSARY

formative assessment
assessment that provides information while learning is taking place and measures learners' progress

Assessment is the link between CAPS subject content, and teaching and learning activities. You cannot assess what you have not taught. The purpose of assessment is to:

- establish the level of each learner
- guide planning and inform teaching
- encourage each learner's developmental progression
- help generate useful reports on learner's achievements.

In practice ...

Assessment tips

- Assessment should never make learners feel anxious or scared.
- Assessment activities should be appropriate and suited to each learner's attention span.
- While you are busy observing a small group of six to eight learners in the focused teacher-guided activity, the other learners should be busy working independently on activities in their small groups at different workstations.
- Work with one small group of six to eight learners each day on a specific activity (depending on the number of learners in the class). While the learners are engaged in the activity, carefully observe each learner in the small group and ask questions to gain insight into their thinking.
- Information about what learners know and can do (or 'evidence') should be collected continuously (daily) over time.
- Information about what you have observed should be recorded at the end of the day, after teaching time.

- amabhokisi amakhadibhodi ehlukene ngezimo nobungako
- izinhlobo ezehlukene zamabhodlela epulasitiki kanye nezinto zokufaka zokuchaza kanye nokuqhathanisa umthamo
- imidlalo yezibalo: i-*Lotto*, i-*Ludo*, izinyoka nezitebhisi, amaphazili, amadomino (imbandakanya imibala, izimo, izinombolo, ukulandelanisa, ukuqondanisa, ukwehlukanisa kanye nemidlalo yokukhumbula)
- izinto zokudlala ngesihlabathi kanye namanzi
- ukutakisha izinkomishi ezinobungako obungefani
- okusetshenziselwa ukunombela, ukuzimelela, ukushwibeka kanye nokugxuma
- isitolo sokudlala nezinto ezizothengwa ngemali yokudlala
- izinto zokubala zokuhlela
- amabhokisi okufaka: amalitha angama-40, amalitha ayi-5 kanye namalitha ama-2.

Ukuhlola Ebangeni R

Ebangeni R, ukuhlola kungokuqhubekayo, uhlelo lokuqoqa ulwazi oluhlelekile, ukuhlaziya kanye nokuhumusha ulwazi ngomfundi ngamunye. Kumele kube **ukuhlola okwazisayo** futhi okungahleliwe. Ngamanye amazwi, ulwazi oluqoqiwe ngenqubekela yomfundi ngesikhathi kuhlolwa kuyokusiza ukuhlela kanye/noma kuhambelane nemisebenzi yokufunda. Ebangeni R, ukuhlola kusetshenziselwa ukuthatha izinqumo ngezindlela ezinhle zokusekela ukuthuthukisa umfundi ngamunye.

IGLOSARI

ukuhlola okwakhayo
ukuhlola okunikeza ulwazi ngesikhathi kufundwa kanye nokubona inqubekela phambili yomfundi

Ukuhlola kuwukuxhumanisa phakathi kwezifundo nokuzofundwa ku-CAPS nemisebenzi yokufunda nokufundisa. Ungeke ukwazi ukuhlola lokho ongakufundisanga. Inhloso yokuhlola:

- ukuthola izinga lomfundi ngamunye
- ukuhlahla indlela yokuhlela kanye nokwazi ngokufundisa
- ukugqugquzela ukuqhubeka okunentuthuko komfundi ngamunye
- siza ukwenza imibiko esizayo ngemiphumela yomfundi.

Uma sekwenziwa ...

Amathiphu okuhlola

- Ukuhlola akumele kwenze abafundi bazizwe bekhathazekile noma besaba.
- Imisebenzi yokuhlola kumele ihambisane futhi ilungele isikhathi somfundi ngamunye sokunaka.
- Ngesikhathi usematasatasa uqaphe iqembu elincane elinabafundi abayisithupha kuya kwabayisishiyagalombili ugxile emsebenzini oholwa uthisha, abanye abafundi bangaba matasatasa besebenza ngabodwana emisebenzini emaqenjini amancane eziteshini zokusebenza ezehlukene.
- Sebenza neqembu elilodwa elincane elinabafundi abayisithupha kuya kwabayisishiyagalombili ngosuku benze umsebenzi othile (kuyoya ngenamba yabafundi ekilasini). Ngesikhathi abafundi begxile emsebenzini, qikekekela ukuqapha umfundi ngamunye eqenjini elincane bese ubuza imibuzo yokuthola ukuthi yini abayicabangayo.
- Ulwazi lokuthi abafundi bazini kanye nabangayenza (noma 'ubufakazi') buqoqwe ngokuqhubekayo (nsukuzonke) ngokuhamba kwesikhathi.
- Ulwazi ngalokho okuqaphile kuqophe ekupheleni kosuku, emva kwesikhathi sokufundisa.

It is best to use many different ways of assessing learners. Here are some examples.

- Observe learners during whole class, teacher-guided small group activities and free play inside and outside the classroom.
- Record learners' understanding of specific maths concepts during and after teacher-guided activities.
- Questions and conversations with individual learners or small groups of learners can help you understand the level and depth of learners' thinking and reasoning.
- Look carefully at the things that learners do and record (using pictures, drawings, objects and/or 'writing'). These show you what the learners understand and have achieved.
- Listening to and recording learners' responses (practical, oral, written) allows you to do continuous assessment.

You need to continually assess all learners':

- maths knowledge
- maths understanding
- maths skills
- responses to solving problems
- ways of doing things. (Learners use their own ways of solving maths problems. These may be quite different from your methods, but this does not make them incorrect.)

Continuous assessment is especially important for helping teachers plan activities, check on learners' progress and plan additional support for learners who experience barriers to learning. (You can find more information on barriers to learning on pages 58–61.)

Assessment tools

In Grade R the focus of assessment is not to give marks but to inform detailed description and keep track of learners' progress. Teachers should use the following tools for assessment.

Observation book

In Grade R the teacher should observe learners inside and outside the classroom, during free play and structured activities. These observations will give teachers critical information that should inform their planning and selection of tasks. During the focused mathematics time, the teacher will work with one small group each day. The teacher will plan a specific activity that is linked to a concept in CAPS. While the learners are engaged in this activity, the teacher will carefully observe each learner and ask questions to gain insight into the learner's thinking and level of understanding.

Once the learners have gone home, the teacher will record the findings of these and other incidental observations. It is useful to use an indexed book to separate learners according to the first letter of their name.

Kuhle kakhulu ukusebenzisa izindlela ezihlukene ukuhlola abafundi. Nazi izenye zezibonelo.

- Qaphela abafundi ngesikhathi sekilasi lonke, emisebenzini eholwa uthisha yamaqembu amancane nangokudlala okukhululekile ngaphakathi nangaphandle kwekilasi.
- Qopha okuqondwa abafundi ngolwazi ngqo lwezibalo ngesikhathi semisebenzi eholwa uthisha noma ngemuva kwayo.
- Imibuzo kanye nezingxoxo nabafundi ngamunye noma amaqembu amancane abafundi kungakusiza uqonde izinga nokujula kokucabanga nokucabangisisa kwabafundi.
- Bhekisisa izinto ezenziwa abafundi baziqopha (ukusebenzisa izithombe, ukudweba, izinto kanye/noma 'ukubhala'). Lezi zikhombisa ukuthi yini abafundi abayaziyo futhi bayizuze.
- Ukulalela nokuqopha izimpendulo zabafundi (okwenziwayo, okukhulunywayo, okubhalwayo) kukuvumela ukuba wenze ukuhlola okuqhubekayo.

Udinga ukuhlala uhlola bonke abafundi ngokuqhubekayo:

- ulwazi lwezibalo
- ukuqonda izibalo
- amakhono ezibalo
- izimpendulo zokuxazulula izinkinga
- indlela yokwenza izinto. (Abafundi basebenzisa izindlela zabo ukuxazulula izinkinga. Lezi zingehluka ezindleleni zakho kodwa akusho ukuthi zona azamukelekile.)

Ukuhlola okuqhubekayo kubaluleke ngokusemqoka ukusiza othisha ukuhlela imisebenzi, ukubheka inqubekela phambili yabafundi nokuhlela imisebenzi yokweseka labo bafundi abazithola benezingqinamba zokufunda. (Ungathola ulwazi oluningi ngezingqinamba zokufunda emakhasini ama-58 kanye nama-61.)

Amathuluzi okuhlola

Ebangeni R inhloso yokuhlola akukhona ukunika amamaki kodwa ukunika ulwazi oluchaza kabanzi nokulandelela ukuqhubeka komfundi. Othisha bangasebenzisa lawa mathuluzi alandelayo uma behlola.

Ibhuku lokuqaphela

Ebangeni R uthisha ufanele ukuqapha abafundi ngaphakathi kanye nangaphandle kwekilasi, ngesikhathi sokudlala okukhululekile nangemisebenzi ehleliwe. Lokhu kuqaphela kuzonika othisha ulwazi olusemqoka oluzozisa ukuhlela umsebenzi kanye nokukhetha imisebenzi enikezwayo. Ngesikhathi sokugxila ezibalweni, uthisha uzosebenza neqembu elilodwa elincane ngosuku. Uthisha uzohlela umsebenzi othile ozoxhumana nolwazi oluku-CAPS. Uma abafundi besenza lo msebenzi, uthisha uzoqaphela ngokuqikelela umfundi ngamunye bese embuza imibuzo yokuthola ulwazi ngokucatshangwa ngumfundi kanye nezinga lokuqonda.

Uma abafundi sebeye emakhaya, uthisha uzoqopha konke akutholile kanye nobekunganakiwe kuqashiwe. Kuyasiza ukusebenzisa ibhuku elinezinkomba ukuhlukanisa abafundi ngezinhlamvu zokuqala zamagama abo.

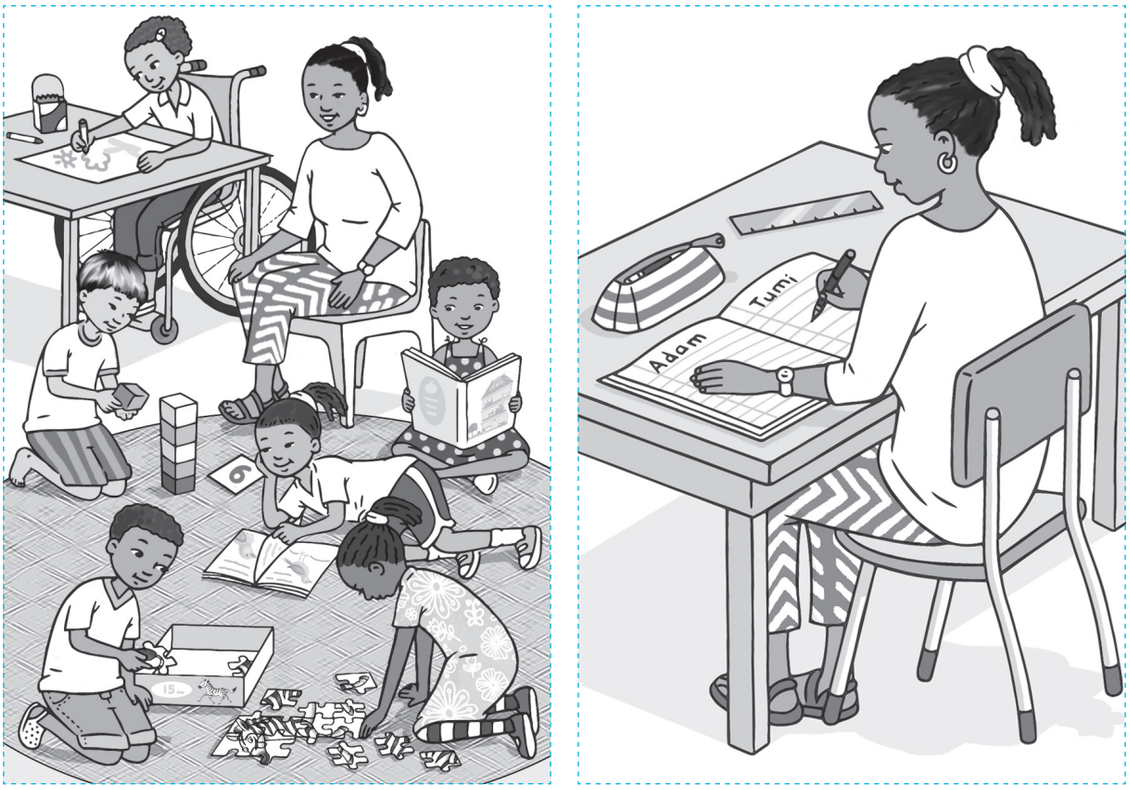
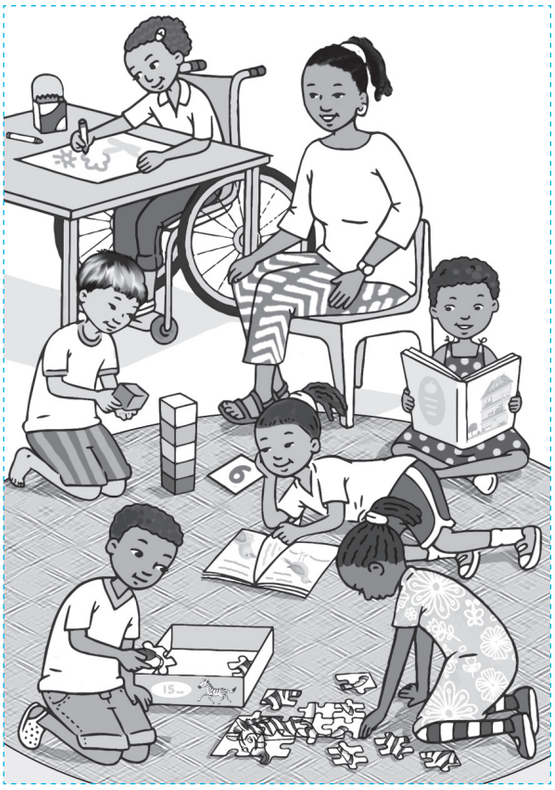


Figure 37 Observe learners then record your observations

Checklists

A checklist is a list of assessment criteria that gives a summary of each learner's skills and abilities for each subject. At the end of each *Activity Guide* of the Grade R Maths programme there is an assessment checklist for the term. This checklist provides a summary of the new content that has been taught during that term. The teacher can use symbols to show the learner's level of achievement. For example, use a tick if the skill was achieved, use a cross if it was not achieved, and use a dot to indicate that the learner is not fully competent, but is showing indications that they are on their way to achieving the skill.

Figure 38 gives an example of how the content the teacher needs to record, can be arranged. Learners' names are recorded in the first column followed by the assessment date. A symbol (✓ ✗ ●) should then be recorded next to each learner's name to correspond with the concept or skill listed in each column. This assessment tool is only useful if teachers have a very good knowledge of each learner, based on their continuous observations and the notes they recorded in their observation book.



Umfanekiso 37 Qaphela abafundi bese ubhala okuqaphelile

Uhla lokubheka ukuhlola

Uhla lokubheka okumele kuhlolwe enika okufingqiwe ngamakhono omfundi esifundweni ngasinye. Ekugcineni ko*Mhlahlandlela Womsebenzi* ngamunye wohlelo lwe-*Grade R Maths* kunohla lokubheka ukuhlola lwethemu. Uhla lokubheka ukuhlola lunika ulwazi olusha olufingqiwe lokufundisiwe ngethemu. Uthisha angasebenzisa izimpawu ukukhombisa izinga umfundi aphumelele ngalo. Njengokuthi, sebenzisa ithikhi uma ikhono liphumelele, usebenzise ikhilosi uma lingaphumelelanga, usebenzise ichashazi ukukhombisa ukuthi umfundi akaphumelelanga nhlobo, kodwa bayakhombisa ukuthi basendleleni yokuphumelela ekhonweni.

Umfanekiso 38 unikeza isibonelo ukuthi uthisha angalubhala kanjani ulwazi. Amagama abafundi abhalwe kukhalamu yokuqala kulandele usuku lokuhlola. Uphawu (✓ ✗ ●) lungabhalwa eduze kwegama lomfundi ukuze kuqondane nolwazi noma amakhono asohlwini kwikhalamu ngayinye. Leli thuluzi lokuhlola lisebenza kahle uma uthisha enolwazi oluhle kakhulu lomfundi ngamunye, olwesekwe ukuqaphela okuqhubekayo kanye nalokho abakuqophile ebhukwini lokuqaphela.

Term 1: Exemplar Record of Continuous Assessments

Key	NUMBERS, OPERATIONS AND RELATIONSHIPS													PATTERNS, FUNCTIONS AND ALGEBRA					COMMENTS	
✓ = competent ● = partially competent ✗ = not yet competent **Learners' names**	Counts forwards to 10	Estimates and counts objects 1–5	Counts backwards 5–1	Recognises numbers in familiar contexts	Understands ordinal numbers, e.g. lining up	Identifies dot/pictures cards 1–3	Identifies number symbols: 1	Identifies number names: one	Orders numbers: 1–3	Understands one-to-one correspondence	Distinguishes between many and fewer	Solves problems with concrete objects	Solves problems using fingers or counters	Identifies patterns in environment	Recognises the 'repeat' in patterns	Copies patterns using body percussion	Copies, completes and creates own patterns	Explains own pattern (repeating rule)		Final coding
Date																				

Figure 38 Exemplar checklist

Ithemu yoku-1: Isibonelo Serekhodi Lokuhlola Okuqhubekayo

Inkomba	IZINOMBOLO, IZIMPAWU KANYE NOBUDLELWANE BAZO													AMAPHETHINI, AMAFANKSHINI KANYE NE-ALJEBRA					UKUPHAWULA	
✓ = ufanele ● = ufanele kancane ✗ = akakafaneli **Amagama abafundi**	Ukubala uya phambili ufike ku-10	Ukulinganisa ubale izinto 1 kuya kwezi-5	Ukubala uhlehla kusuka koku-5 uya koku-1	Ukubona izinombolo ezimweni ezijwayelekile	Ukuqonda izinombolo ezisho isikhundla, isib. kumiwa emuggeni	Ukukhomba ichashazi/amakhadi anezithombe 1 kuya koku-3	Ukukhomba izimpawu zezinombolo: oku-1	Ukukhomba amagama ezinombolo: kunye	Ukuhlela izinombolo: 1 kuya ku-3	Ukuqonda okukodwa kokukodwa	Ukuhlukanisa phakathi kokuningi nokuncane	Ukuxazulula izinkinga ngezinto eziphathekayo	Ukuxazulula izinkinga esebenzisa iminwe noma izinto zokubala	Ukubona amaphethini endaweni	Ukubona 'ukuphinda' kumaphethini	Ukukopisha amaphethini usebenzisa ukunyaka komzimba	Ukopisha, aqedele bese ezenzela amaphethini akhe.	Uchaza amaphethini akhe (umthetho wokuphindaphinda)		Amakhodi okugcina
Usuku																				

Rubrics

A rubric is another tool for assessing learners' achievements. It also consists of a list of criteria with a description of levels of performance for a particular skill. Each description explains what the learner actually does or produces during an assessment task for that criteria. A rubric needs to provide well-written descriptions and levels of performance so that these can be accurately matched against each learner's performance. The rubric then allows teachers to be more objective and consistent in their assessment and guides their planning of further teacher activities as it highlights the strengths and gaps in the learners' knowledge.

Figure 39 provides an example of a rubric for solving addition problems up to 10 in a practical way.

Criteria	Not achieved [1]	Elementary achievement [2]	Moderate achievement [3]	Adequate achievement [4]	Substantial achievement [5]	Meritorious achievement [6]	Outstanding achievement [7]
Solves addition problems practically up to 10.	Unable to solve problems practically.	Is able to solve problems practically, using concrete apparatus.	Is able to solve problems practically, but cannot explain solution method.	Is able to solve problems practically and describes solution method when prompted.	Is able to solve problems practically and describes solution method independently.	Is able to solve problems practically and is able to explain solution method.	Is able to solve problems practically and is able to explain solution method and suggest alternative methods.

Figure 39 Exemplar rubric

The level descriptors on the rubric can be linked to rating codes. The Department of Basic Education (DBE) provides a rating code and description of competence, and links these to percentages (see Figure 40). For reporting purposes the rating codes and descriptors could be converted to percentages.

Irubhrikhi

Irubhrikhi elinye ithuluzi lokuhlola ukuphumelela kwabafundi. Nayo iqukethe uhla lokuzohlolwa nokuchazwa kwamazinga okuqhuba kulelo khono. Incazelo ngayinye ichaza lokho umfundi akwenzayo noma akukhiqizayayo kuthaski yokuhlolwa kulokho okuzohlolwa. Irubhrikhi idinga ukunikeza incazelo ebhalwe kahle kanye namazinga okuphumelela ukuze konke lokhu kuhambisane nokuphumelela komfundi. Irubhrikhi ibe seyivumela uthisha ukuba aqonde ngqo futhi kufane ekuhlolweni kwabo futhi kunike umhlahlandlela ekuhleleni kwabo imisebenzi kathisha njengoba iveza ngokusobala okuhle kanye nezikhala olwazini lwabafundi.

Umfanekiso 39 unikeza isibonelo serubhrikhi yokuxazulula izinkinga kufike e-10 uma kuyindlela yokwenziwa.

Isici okubonwa ngaso	**Umphumela ongalungile** [1]	**Umphumela ongagculisi** [2]	**Umphumela olingene** [3]	**Umphumela ogculisayo** [4]	**Umphumela osezingeni elanelisayo** [5]	**Umphumela oncomekayo** [6]	**Umphumela ovelele** [7]
Ukuxazulula izinkinga zokuhlanganisa ngokwenza zifike e-10.	Akakwazi ukuxazulula izinkinga ngokwenza.	Uyakwazi ukuxazulula izinkinga ngokwenza, esebenzisa izinto eziphathekayo.	Uyakwazi ukuxazulula izinkinga ngokwenza, kodwa akakwazi ukuchaza indlela yesixazululo.	Uyakwazi ukuxazulula izinkinga ngokwenza, kodwa akakwazi ukuchaza indlela yesixazululo uma etshelwa ukuthi enze kanjalo.	Uyakwazi ukuxazulula izinkinga ngokwenza abuye achaze indlela yesixazululo ngokuzimela.	Uyakwazi ukuxazulula izinkinga ngokwenza futhi uyakwazi ukuchaza indlela yesixazululo.	Uyakwazi ukuxazulula izinkinga ngokwenza futhi uyakwazi ukuchaza indlela yesixazululo anike nezinye izindlela.

Umfanekiso 39 Isibonelo serubhrikhi

Amazinga achazayo kurubhrikhi angaxhunyaniswa nezimpawu zokulinganisa. Umnyango Wezemfundo Emabangeni Aphansi (DBE) unikeza uphawu lokulinganisa nencazelo yokuqhuba bese ikuxhamanisa konke lokhu kumaphesenti (buka Umfanekiso 40). Uma sekubikwa izimpawu zokulinganisa nezincazelo kungaguqulwa kuye kumaphesenti.

Rating code	Description of competence	Percentage
7	Outstanding achievement	80–100
6	Meritorious achievement	70–79
5	Substantial achievement	60–69
4	Adequate achievement	50–59
3	Moderate achievement	40–49
2	Elementary achievement	30–39
1	Not achieved	0–29

Figure 40 Rating code

In Grade R the focus of assessment is on describing performance rather than evaluating it against percentages. Reports that provide parents and other teachers with rich descriptions of behaviours and what learners produce, are far more valuable for assessing performance than percentages are. It is best to avoid negative evaluative assessments that fail learners early on in the system. Assessment should be used to gain insight into the learners' level of competence in order to adjust planning and teaching to accommodate and encourage each learner in the class.

You will need to record your assessment observations and other 'evidence' in a journal, and on an observation sheet or checklist. In this way, during the year, a complete picture of each learner, with all their strengths and weaknesses, is gradually built up.

Uphawu lokulinganisa	Incazelo yokuqhuba komfundi	Iphesenti
7	Umphumela ovelele	80–100
6	Umphumela oncomekayo	70–79
5	Umphumela osezingeni elanelisayo	60–69
4	Umphumela ogculisayo	50–59
3	Umphumela olingene	40–49
2	Umphumela ongagculisi	30–39
1	Umphumela ongalungile	0–29

Umfanekiso 40 Uphawu lokulinganisa

Ebangeni R ukuhlola kugxile ekuchazeni ukuphumelela kunokuhlola ngokumelele ngamaphesenti. Imibiko enikeza abazali kanye nabanye othisha ngencazelo enothile yokuziphatha kanye nalokho akukhiqizile, kubaluleke kakhulu ukuhlola ukuphumelela kunokwamaphesenti. Kungcono ukugwema ukuhlola okungekuhle okwenza abafundi bangaphumeleli kusaqala ohlelweni. Ukuhlola kusetshenziselwe ukuqonda kabanzi ngezinga lomfundi lolwazi ukuze kulunge ukuhlela kanye nokufundisa ukulungiselela nokugqugquzela umfundi ngamunye ekilasini.

Kuyomele uqophe ukuhlola okuqasheliwe kanye nobunye 'ubufakazi' kujenali, kanye nasephepheni lokuqaphela noma ohlwini lokubheka. Ngale ndlela, phakathi nonyaka, isithombe esiphelele ngomfundi ngamunye, nakho konke okuhle nokubenza ntekenteke, kuyakheka kancane kancane.

SECTION 3

Mathematics in Grade R

Introduction

This section of the *Concept Guide* provides an overview of the Content Areas of the Grade R Mathematics CAPS and:

- offers practical ideas for classroom implementation
- explains the maths concepts and content that teachers need to understand
- highlights the development of maths knowledge in young learners.

It also gives a breakdown of the Term 1–4 Grade R content (pages 114 to 137). The five CAPS Content Areas are:

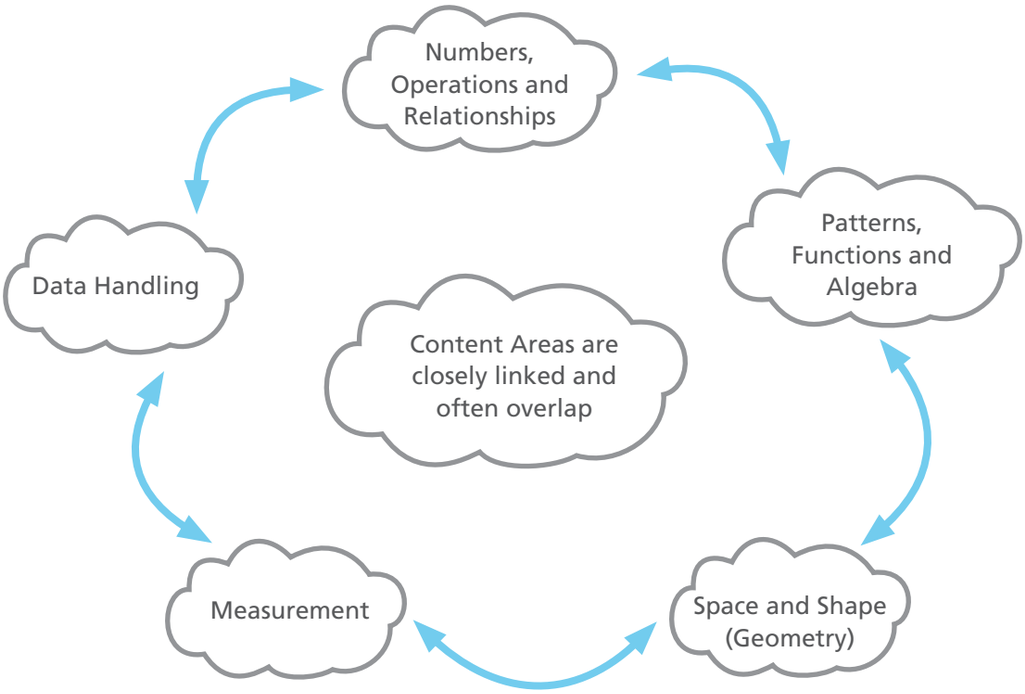


Figure 4.1 Grade R CAPS Mathematics Content Areas

Each Content Area is divided into topics. For each of these topics, this section of the *Concept Guide* provides:

- an explanation of the topic, which includes identifying specific concepts and skills
- teaching suggestions in the 'In practice' boxes
- an explanation of maths terms.

ISIGABA SESI-3

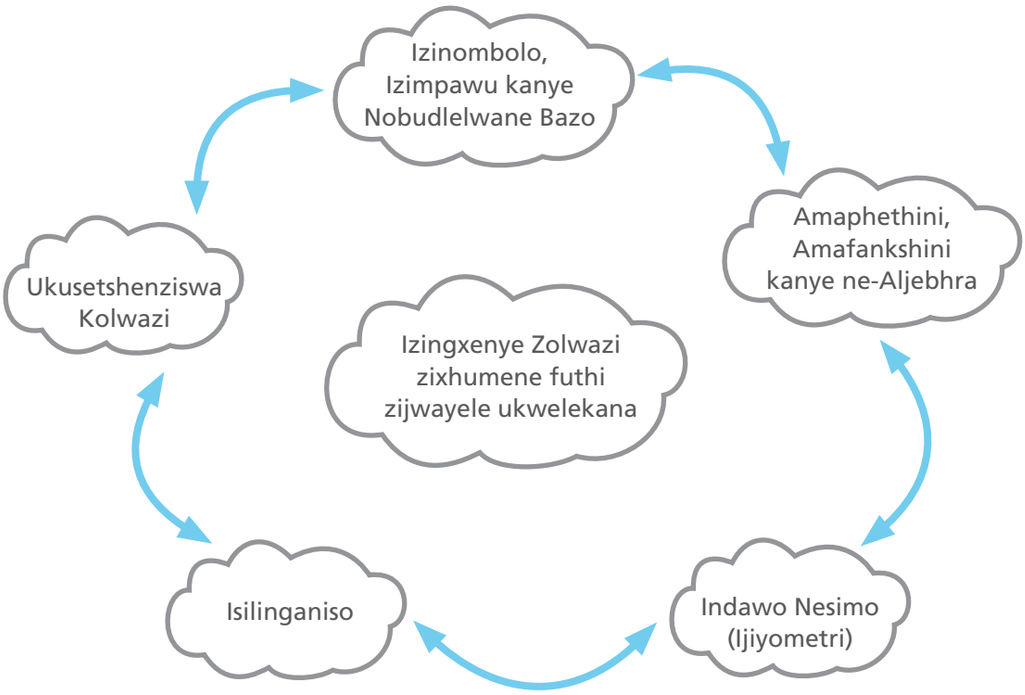
Izibalo Ebangeni R

Isingeniso

Lesi sigaba *Somhlahlandlela Wokuqonda Isifundo* sinika ulwazi jikelele lweziNgxenye Zolwazi lwe-CAPS Lwezibalo Zebanga R futhi:

- sinika imibono esebenzayo engasetshenziswa ekilasini
- sichaza ulwazi lwezibalo nokuqukethwe okudinga ukuthi othisha bakuqonde
- iqhakambisa ukuthuthuka kolwazi lwezibalo kubafundi abancane.

Lesi sigaba siphinde sicozulule ulwazi Lwezibalo Zebanga R ngamathemu kusuka kweyoku-1 kuya kweyesi-4 (amakhasi ayi-114 kuya kwayi-137). Izingxenye zoLwazi ze-CAPS ezinhlanu yilezi:



Umfanekiso 41 Izingxenye Zolwazi lwe-Lwezibalo Zebanga R ku-CAPS

Ingxenye Yolwazi ngayinye ihlukaniswe ngezihloko. Esihlokweni ngasinye, lesi sigaba *soMhlahlandlela Wokuqonda Isifundo* sihlinzeka:

- incazelo yesihloko, okufaka nokukhomba ulwazi namakhono athize
- amasu okufundisa asemabhokisini 'Uma sekwenziwa'
- incazelo yamagama asetshenziswa ezibalweni.

Although the Content Areas reflect particular strands of maths development, they are all closely linked and often overlap during activities. For example, when learners are focusing on a measurement task, they will integrate skills from another Content Area, for example, Numbers, Operations and Relationships, and so also use their knowledge of numbers, counting and skills of comparison. Learners have opportunities to apply their knowledge and skills in different contexts.

In practice ...

While teachers focus specifically on these Content Areas during the maths focus time, they should also remember to make the most of other opportunities in the daily programme to:

- use maths language to introduce and reinforce concepts
- model the use of a wide range of vocabulary linked to number, shape, space, measurement and data handling.

Here are some practical ways to do this:

- Provide bought, recycled and natural materials for learners to sort, compare and order.
- Provide resources to role-play buying and selling, weighing and measuring.
- Make sets of pictures to show the sequence of events during the day and the weather during the week.
- Observe and talk about shape and patterns in pathways, fences, vegetable gardens.
- Plan activities and games where learners use their physical and mathematical skills to follow and give directions.
- Link stories and outdoor play to maths.

Mathematics content

The content overview that follows provides a table of the Grade R Maths content to be taught in the Grade R year. It shows what content is to be taught each term.

- The text in blue is the content from the Grade R CAPS for Mathematics.
- The text descriptions and content in black have been added to extend and build on CAPS.
- The topics are sequenced to show a developmental progression from one topic to another.

Yize iziNgxenye Zolwazi ziveza izinhla ezithile zokuthuthukiswa kwezibalo, zixhumene zonke futhi zijwayele ukwelekana ngesikhathi sokwenziwa kwemisebenzi. Isibonelo, uma abafundi begxile emsebenzini wokulinganisa, bazohlanganisa amakhono aphuma kwenye Ingxenye Yolwazi, isibonelo, Izinombolo, Izimpawu kanye Nobudlelwane Bazo, futhi basebenzise ulwazi lwabo lwezinombolo, ukubala kanye namakhono okuqhathanisa. Abafundi banamathuba okusebenzisa ulwazi namakhono abo ezimweni ezihlukene.

Uma sekwenziwa ...

Ngesikhathi othisha begxila kulezi Zingxenye Zolwazi ngesikhathi sokugxila ezibalweni, kumele bakhumbule ukusebenzisa ngokuphelele amanye amathuba ohlelweni lwansukuzonke ukuze:

- basebenzise ulimi lwezibalo ukwethula nokuqinisa ulwazi
- bakhombise ukusebenza okuhlukene kwesilulumagama esixhumene nenombolo, isimo, indawo, isilinganiso kanye nokusetshenziswa kolwazi.

Nazi izindlela eziyizo ezingasetshenziselwa ukwenza lokhu:

- Hlinzeka ngezinto ezithengiwe, ezenziwe kabusha nezinto zemvelo ukuze abafundi bazihlunge, baziqhathanise futhi bazihlele.
- Hlinzeka ngezinsiza ukuze kulingiswe ukuthenga nokudayisa, ukukala nokulinganisa.
- Yenza amaqoqoqo ezithombe ukukhombisa ukulandelana kwezigameko zosuku nesimo sezulu sesonto.
- Qaphela futhi ukhulume ngesimo namaphethini ezindleleni, ezingcingweni, nasezingadini zemifino.
- Hlela imisebenzi nemidlalo lapho abafundi besebenzisa khona amakhono omzimba nezibalo ukulandela nokunikeza izinkomba.
- Xhumanisa izindaba nokudlalwa ngaphandle nezibalo.

Ulwazi Lwezibalo

Ulwazi jikelele olulandelayo lunika ithebula lolwazi lwe-*Grade R Maths* okudinga lufundiswe onyakeni weBanga R. Lukhombisa ulwazi okumele lufundiswe ngethemu ngayinye.

- Umbhalo oluhlaza okwesibhakabhaka ulwazi oluphuma ku-CAPS Wezibalo Zebanga R.
- Incazelo yemibhalo nolwazi olumnyama lwengezezelwe ukunweba nokwakhela ku-CAPS.
- Izihloko zilandelaniswe ukuze zikhombise inqubekela phambili yokuthuthuka kwesihloko esisodwa kuya kwesinye.

1. NUMBERS, OPERATIONS and RELATIONSHIPS					
	TOPIC	TERM 1	TERM 2	TERM 3	TERM 4
COUNTING					
1.1	**Count objects (Estimate and count objects to develop number sense)**	**Number range: 1–5** Count in ones: one-to-one correspondence: body parts and concrete objects Introduce the Helper's chart Introduce the concept of estimation (a reasonable guess) Dot cards: - identify number dots on cards, dominoes and dice (1–5) - match objects to pictures and dot cards Count 'how many' using fingers, dot cards, objects in and outside the classroom, pictures and actions, e.g. clapping hands, stamping feet	**Number range: 1–7** Estimate and count Count in ones: one-to-one correspondence: body parts and concrete objects Reinforce Helper's chart Dot cards: - identify number of dots on cards, dominoes and dice (1–6) - match objects to pictures and dot cards Use a range of contexts, objects and events for counting 'how many'. Fingers, dot cards, ten structure beads, other objects in and outside the classroom, pictures and actions, e.g. clapping hands, stamping feet Show 'one more/ one less' Clap many times/ fewer times	**Number range: 1–10** Estimate and count Count in ones: one-to-one correspondence; count all: - body parts - concrete objects Reinforce Helper's chart Dot cards: recognise collections of dots 1–5 and up to 3 more on cards, dice and dominoes Start at given number and 'count on' jumping along a number track, using ten structure beads, picture cards, number washing line Show 'one more/ one less; two more/ three less' Clap many times/ fewer times: - which number of claps are more/less, most/least	**Number range: 0–10 and beyond** Estimate and count Count in ones: one-to-one correspondence; count all: - body parts - concrete objects Reinforce Helper's chart Dot cards: recognise collections of dots 1–5 and up to 5 on dice (1–6) and dominoes Start at given number and 'count on' jumping along a number track, using ten structure beads, picture cards, number washing line Show 'one more/ one less; two more/ three less' Clap many times/ fewer times: - which number of claps are more/less, most/least Meaning of zero (nought) '0'
1.2	**Count forwards and backwards** **Oral or rote counting (rhythmic)**	**Counting forwards: 1–10** **Counting backwards: 5–1** Incidental counting using number rhymes and songs, daily routine, body movements, etc. Count in ones Number range: 1	**Counting forwards: 1–15** **Counting backwards: 7–1** Incidental counting using number rhymes and songs, daily routine, body movements, etc. Count in ones Number range: 1–4	**Counting forwards: 1–20** **Counting backwards: 10–1** Incidental counting using number rhymes and songs, daily routine, body movements, etc. Count in ones Number range: 1–7	**Counting forwards: 0–20 and beyond** **Counting backwards: 10–0** Incidental counting using number rhymes and songs, daily routine, body movements, etc. Count in: ones, twos Number range: 0–10

1. IZINOMBOLO, IZIMPAWU kanye noBUDLELWANE BAZO					
	ISIHLOKO	**ITHEMU 1**	**ITHEMU 2**	**ITHEMU 3**	**ITHEMU 4**
UKUBALA					
1.1	**Bala izinto (Qagela bese ubala izinto ukuze uthuthukise ulwazi lwezinombolo)**	**Ubudlelwane bobungako bezinombolo ezahlukene: 1 kuya 5** Bala ngakunye: okukodwa nokukodwa okuhambisanayo: izingxenye zomzimba izinsiza kufunda eziphathekayo Thula ishadi Labasizi Yethula ulwazi lokuqagela (ukuqagela ngokufanele) Amakhadi anamacashazi: - khomba amachashazi ezinombolo emakhadini, kumadomino kanye namadayisi (kusukela 1 kuya 5) - qondanisa izinto ezisezithombeni namakhadi anamachashazi Bala 'ukuthi kungaki' usebenzise iminwe, amakhadi anamachashazi, izinto ezingaphakathi ekilasini kanye nangaphandle, izithombe kanye neminyakazo, isib. ukushaya izandla, ukugxoba ngezinyawo	**Ubudlelwane bobungako bezinombolo ezahlukene: 1 kuya 7** Qagela bese ubala Bala ngakunye: okukodwa nokukodwa okuhambisanayo: izingxenye zomzimba izinsiza kufunda eziphathekayo Gcizelela ishadi Labasizi Amakhadi anamachashazi: - khomba inombolo yamachashazi emakhadini, kumadomino kanye namadayisi (kusukela 1 kuya 6) - qondanisa izinto ezithombeni nasemakhadini anamacashazi Sebenzisa izimo ezehlukene, izinto kanye nezigameko uma kubalwa 'kungaki'. Iminwe, amakhadi anamachashazi, ubuhlalu obuhleliwe obuyishumi, nezinye izinto ezingaphakathi nangaphandle kwekilasi, izithombe kanye neminyakazo, isib. ukushaya izandla, ukugxoba ngezinyawo Khombisa 'eyodwa enezelwe/eyodwa esusiwe' Shaya izandla izikhathi eziningi/nezimbalwa	**Ubudlelwane bobungako bezinombolo ezahlukene: 1 kuya 10** Qagela bese ubala Bala ngakunye: okukodwa nokukodwa okuhambisanayo; bala konke: - izingxenye zomzimba - izinsiza kufunda eziphathekayo Gcizelela ishadi Labasizi Amakhadi anamachashazi: bona amaqoqo anamachashazi kusuka 1 kuya 5 bese kunezezelwa 3 emakhadini, amadayisi kanye namadomino Qala enombolweni oyinikiwe bese 'ubala uqhubeke' weqa uhambisana nokulandelwa kwenombolo, kusetshenziswa ubuhlalu obuhleliwe obuyishumi, amakhadi anezithombe, ulayini wokuneka wezinombolo Khombisa 'eyodwa enezelwe/neyodwa esusiwe' Shaya izandla izikhathi eziningi/nezimbalwa: - Iyiphi inombolo eshayelwe izandla izikhathi eziningi noma ezimbalwa	**Ubudlelwane bobungako bezinombolo ezahlukene: 0 kuya 10 nangaphezulu** Qagela bese ubala Bala ngakunye: okukodwa nokukodwa okuhambisanayo; bala konke: - izingxenye zomzimba - izinsiza kufunda eziphathekayo Gcizelela ishadi Labasizi Amakhadi anamachashazi: bona amaqoqo amachashazi 1 kuya 5 bese kunezezelwa 5, amadayisi kanye namadomino kube (1 kuya 6) Qala enombolweni oyinikiwe bese 'ubala uqhubeke' weqa uhambisana nokulandelwa kwenombolo, kusetshenziswa ubuhlalu obuhleliwe obuyishumi, amakhadi anezithombe, ulayini wokuneka wezinombolo Khombisa 'eyodwa enezelwe/neyodwa esusiwe; okubili okunezelwe/okuthathu okususiwe' Shaya izandla izikhathi eziningi/nezimbalwa: - iyiphi inombolo eshayelwe izandla izikhathi eziningi noma ezimbalwa Ukuthi lichaaza ukuthini iqanda (igungcu) '0'
1.2	**Bala uye phambili ubuye uye emumva** **Ukubala ngomlomo noma ukubala ngesigqi**	**Ukubala uye phambili: 1 kuya 10** **Ukubala uye emumva: 5 kuya 1** Ukubala unganakile usebenzisa imilolozelo yezinombolo, amaculo, inqubo yansukuzonke, ukusetshenziswa komzimba nokunye Bala ngakunye Ubudlelwane bobungako bezinombolo ezahlukene: 1	**Ukubala uye phambili: 1 kuya 15** **Ukubala uya emuva: 7 kuya 1** Ukubala unganakile usebenzisa imilolozelo yezinombolo, amaculo, inqubo yansukuzonke, ukusetshenziswa komzimba nokunye Bala ngakunye Ubudlelwane bobungako bezinombolo ezahlukene: 1 kuya 4	**Ukubala uye phambili: 1 kuya 20** **Ukubala uye emuva: 10 kuya 1** Ukubala unganakile usebenzisa imilolozelo yezinombolo, amaculo, inqubo yansukuzonke, ukusetshenziswa komzimba nokunye Bala ngakunye Ubudlelwane bobungako bezinombolo ezahlukene: 1 kuya 7	**Ukubala uye phambili: 0 kuya 20 nangaphezulu** **Ukubala uye emuva: 10 kuya 0** Ukubala unganakile usebenzisa imilolozelo yezinombolo, amaculo, inqubo yansukuzonke, ukusetshenziswa komzimba nokunye Bala: ngakunye, ngakubili Ubudlelwane bobungako bezinombolo ezahlukene: 0 kuya 10

	TOPIC	TERM 1	TERM 2	TERM 3	TERM 4
1.3	**Number symbols and number names** **Recognise and identify number symbols and number names**	**Number symbols: 1, 2, 3** **Number names: one, two, three** Represent numbers using: - body (kinaesthetic) - objects (concrete) - pictures, drawings (semi-concrete) - dot cards (semi-concrete) Match with number symbol (abstract) and number name Number symbol: 1 Number name: one	**Number symbols: 4 and 5** **Number names: four, five** Represent numbers using: - body (kinaesthetic) - objects (concrete) - pictures, drawings (semi-concrete) - dot cards (semi-concrete) Match with number symbol (abstract) and number name Reinforce: 1, 2, 3 Reinforce: one, two, three Number symbol: 2, 3, 4 Number name: two, three, four	**Number symbols: 6, 7, 8** **Number names: six, seven, eight** Represent numbers using: - body (kinaesthetic) - objects (concrete) - pictures, drawings (semi-concrete) - dot cards (semi-concrete) Match with number symbol (abstract) and number name Reinforce: 1, 2, 3, 4, 5 Reinforce: one, two, three, four, five Number symbol: 5, 6, 7 Number name: five, six, seven	Number symbol: 0 to 10 Number name: zero (nought), eight, nine, ten Represent numbers using: - body (kinaesthetic) - objects (concrete) - pictures, drawings (semi-concrete) - dot cards (semi-concrete) Match with number symbol (abstract) and number name Reinforce all numbers
NUMBER RECOGNITION					
1.4	**Use numbers in familiar contexts**	Use numbers in familiar contexts: - age - numbers in pictures and dot cards - number card games - attendance register	Use numbers in familiar contexts: - address - numbers in pictures and dot cards - number card games - numbers in adverts/ flyers/birthday cards - attendance register	Use numbers in familiar contexts: - address, contact numbers - birthday - numbers in pictures and dot cards - number card games - numbers in adverts/ flyers/birthday cards - attendance register	Use numbers in familiar contexts: - address, contact numbers - numbers in pictures and dot cards - number card games - numbers in adverts/ flyers/birthday cards - attendance register
NUMBER SENSE (RELATIONSHIPS) **Describe, compare and order numbers**					
1.4	**Identify and describe whole numbers**	**Number range: 1–3** Identify and describe whole numbers up to 1, 2, 3 using collections and symbols (one more, one less than; before, after, between) Number range: 1	**Number range: 1–5** Identify and describe whole numbers 4, 5 using collections and symbols Reinforce numbers 1–3	**Number range: 1–8** Identify and describe whole numbers 6, 7, 8 using collections and symbols Reinforce numbers 1–5 Number range: 1–7	**Number range: 0–10** Identify and describe whole numbers 0, 9, 10 Reinforce numbers 1–8

	ISIHLOKO	ITHEMU 1	ITHEMU 2	ITHEMU 3	ITHEMU 4
1.3	**Izimpawu kanye namagama ezinombolo** **Bheka ukhombe izimpawu namagama ezinombolo**	**Izimpawu zezinombolo: 1, 2, 3** **Amagama ezinombolo: kunye, kubili, kuthathu** Ukumela izinombolo usebenzisa: - ukusetshenziswa komzimba - izinto (eziphathekayo) - izithombe, imidwebo (eziphatheka kancane) - amakhadi anamachashaza (eziphatheka kancane) Qondanisa nezimpawu zezinombolo (okusebenzisa ukucabanga) kanye namagama ezinombolo Uphawu lwenombolo: 1 Igama lenombolo: kunye	**Izimpawu zezinombolo: 4 no 5** **Amagama ezinombolo: kune, kuhlanu** Ukumela izinombolo usebenzisa: - ukusetshenziswa komzimba - izinto (eziphathekayo) - izithombe, imidwebo (eziphatheka kancane) - amakhadi anamachashaza (eziphatheka kancane) Qondanisa nezimpawu zezinombolo (okusebenzisa ukucabanga) kanye namagama ezinombolo Gcizelela: 1, 2, 3 Gcizelela: kunye, kubili, kuthathu Uphawu lwenombolo: 2, 3, 4 Igama lenombolo: kubili, kuthathu, kune	**Izimpawu zezinombolo: 6, 7 ,8** **Amagama ezinombolo: isithupha, isikhombisa, isishiyagalombili** Ukumela izinombolo usebenzisa: - ukusetshenziswa komzimba - izinto (eziphathekayo) - izithombe, imidwebo (eziphatheka kancane) - amakhadi anamachashaza (eziphatheka kancane) Qondanisa nezimpawu zezinombolo (okusebenzisa ukucabanga) kanye namagama ezinombolo Gcizelela: 1, 2, 3, 4, 5 Gcizelela: kunye, kubili, kuthathu, kune, kuhlanu Uphawu lwenombolo: 5, 6, 7 Igama lenombolo: kuhlanu, isithupha, isikhombisa	Izimpawu zezinombolo: 0 kuya e10 Amagama ezinombolo: iqanda, isishiyagalombili, isishiyagalolunye, ishumi Ukumela izinombolo usebenzisa: - ukusetshenziswa komzimba - izinto (eziphathekayo) - izithombe, imidwebo (eziphatheka kancane) - amakhadi anamachashaza (eziphatheka kancane) Qondanisa nezimpawu zezinombolo (okusebenzisa ukucabanga) kanye namagama ezinombolo Gcizelela zonke izinombolo
UKUBONA IZINOMBOLO					
1.4	**Sebenzisa izinombolo ezimweni ezijwayelekile**	Sebenzisa izinombolo ezimweni ezijwayelekile: - iminyaka - izinombolo ezithombeni nasemakhadini anamachashaza - imidlalo yamakhadi anezinombolo - irejista	Sebenzisa izinombolo ezimweni ezijwayelekile: - ikheli - izinombolo ezithombeni nasemakhadini anamachashaza - imidlalo yamakhadi anezinombolo - izinombolo ezisezikhangisweni/ emaphepheni/ kumakhadi osuku lokuzalwa - irejista	Sebenzisa izinombolo ezimweni ezijwayelekile: - ikheli, izinombolo zocingo - usuku lukuzalwa - izinombolo ezithombeni nasemakhadini anamachashaza - imidlalo yamakhadi anezinombolo - izinombolo ezisezikhangisweni/ emaphepheni/ kumakhadi osuku lokuzalwa - irejista	Sebenzisa izinombolo ezimweni ezijwayelekile: - ikheli, izinombolo zocingo - izinombolo ezithombeni nasemakhadini anamachashaza - imidlalo yamakhadi anezinombolo - izinombolo ezisezikhangisweni/ emaphepheni/ kumakhadi osuku lokuzalwa - irejista
ULWAZI LWEZINOMBOLO (UBUDLELWANE) **Chaza, qhathanisa bese uhlela izinombolo**					
1.4	**Khomba bese uchaza izinombolo eziphelele**	**Ubudlelwane bobungako bezinombolo ezahlukene: 1 kuya 3** Khomba bese uchaza iziinombolo eziphelele kufike ku 1, 2, 3 amaqoqo kanye nezimpawu (okuningi ngokukodwa, okuncane ngokukodwa; ngaphambi, emva, phakathi nendawo) Uhla lwenombolo: 1	**Ubudlelwane bobungako bezinombolo ezahlukene: 1 kuya 5** Khomba bese uchaza izinombolo eziphelele 4, 5 usebenzisa amaqoqo kanye nezimpawu Gcizelela izinombolo 1 kuya 3	**Ubudlelwane bobungako bezinombolo ezahlukene: 1 kuya 8** Khomba bese uchaza izinombolo eziphelele 6, 7, 8 usebenzisa amaqoqo kanye nezimpawu Gcizelela izinombolo 1 kuya 5 Ubudlelwane bobungako bezinombolo ezahlukene: 1 kuya 7	**Ubudlelwane bobungako bezinombolo ezahlukene: 0 kuya 10** Khomba bese uchaza izinombolo eziphelele 0, 9, 10 Gcizelela izinombolo 1 kuya 8

	TOPIC	TERM 1	TERM 2	TERM 3	TERM 4
	Compare numbers	Compare which of two given collections of objects are: - big, small - bigger, smaller - biggest, smallest Order more than two given collections of objects from smallest to biggest and biggest to smallest Many and fewer, e.g. incidental clapping, snack time, sharing equipment	Compare which of two given collections of objects are: - big, small - bigger, smaller - biggest, smallest More than, less than, equal to Many and fewer, e.g. incidental clapping	More than, less than, equal to Many and fewer Ask questions: 'Which was most/least?'	More than, less than, equal to Many and fewer Ask questions: 'Which was most/least?'
			Make equal groups (sets) of objects, e.g. children or objects in the classroom	Use objects to make equal groups (sets)	Use objects to make equal groups (sets)
		Breaking down and building up collections of 2 and 3, e.g. 3 could be: 1 and 1 and 1 OR 2 and 1 OR 1 and 2 OR nothing (zero) and 3	Breaking down and building up collections of 4 and 5, e.g. 4 could be: 1 and 1 and 1 and 1 OR 3 and 1 OR 2 and 2 OR nothing (zero) and 4	Use manipulatives to investigate and develop strategies for breaking down and building up collections to 8	Use manipulatives to investigate and develop strategies for breaking down and building up collections to 10
	Order (sequence) numbers	Order more than two given collections of objects from smallest to biggest and biggest to smallest	Order more than two given collections of objects from smallest to biggest and biggest to smallest	Order collections of objects from smallest to biggest and biggest to smallest	Order collections of objects from smallest to biggest and biggest to smallest Match number symbol card to collections
		Incidental ordering of numbers 'What comes next, after, between': - number/washing line - number track or ladder - number cards	Place number symbols in the correct counting order 'What comes next, after, between': - number/washing line - number track or ladder - number cards	Place number symbols in the correct counting order 'What comes next, after, between': - number/washing line - number track or ladder - number cards	Incidental: Number range: 0–10 Place number symbols in the correct counting order 'What comes next, after, between': - number/washing line - number track or ladder - number cards

	ISIHLOKO	ITHEMU 1	ITHEMU 2	ITHEMU 3	ITHEMU 4
	Qhathanisa izinombolo	Qhathanisa ukuthi yiliphi iqoqo kwamabili anikeziwe: - elikhulu nelincane - elikhulu ngokuthe xaxa kanye nelincanyana - elikhulu kakhulu nelincane kakhulu Hlela amaqoqo angaphezu kwamabili ezinto ozinikiwe kusuka kokuncane kakhulu kuya kokukhulu kakhulu kanye nokukhulu kakhulu kuya kokuncane kakhulu Okuningi nokumbalwa, isib. ukushaya izandla kunganakiwe, isikhathi sokudla okuncane, ukwabelana ngezinsiza	Qhathanisa ukuthi yiliphi iqoqo kwamabili anikeziwe: - elikhulu nelincane - elikhulu ngokuthe xaxa kanye nelincanyana - elikhulu kakhulu nelincane kakhulu Okuningi kunokunye, okuncane kunokunye, okulinganayo Okuningi nokumbalwa, isib. ukushaya izandla kunganakiwe	Okuningi kunokunye, okuncane kunokunye, okulinganayo Okuningi nokumbalwa Buza imiibuzo: 'Yikuphi okuningi kakhulu/okuncane kakhulu?'	Okuningi kunokunye, okuncane kunokunye, okulinganayo Okuningi nokumbalwa Buza imiibuzo: 'Yikuphi okuningi kakhulu/okuncane kakhulu?'
			Akha amaqembu alinganayo (amasethi) ezinto, isib. izingane noma izinto ezisekilasini	Sebenzisa izinto ukwenza amaqembu alinganayo (amasethi)	Sebenzisa izinto ukwenza amaqembu alinganayo (amasethi)
		Ukuhlakaza kanye nokwakha amaqoqo oku-2 noku-3, isib. oku-3 kungaba: oku-1 kanye noku-1 kanye noku-1 NOMA oku-2 kanye noku-1 NOMA oku-1 kanye noku-2 NOMA okungekho (iqanda) kanye noku-3	Ukuhlakaza kanye nokwakha amaqoqo oku-4 noku-5, isib. oku-4 kungaba: oku-1 kanye noku-1 kanye noku-1 NOMA oku-3 kanye noku-1 NOMA oku-2 kanye noku-2 NOMA okungekho (iqanda) kanye noku-4	Sebenzisa izinto ezisetshenziselwa ukufunda ukuze uphenye kanye nokwenza amaqhinga okuhlakaza kanye nokwakha amaqoqo kuya 8	Sebenzisa izinto ezisetshenziselwa ukufunda ukuze uphenye kanye nokwenza amaqhinga okuhlakaza kanye nokwakha amaqoqo kuya 10
	Ukuhleleka (ukulandelana) kwezinombolo	Hlela amaqoqo amabili nangaphezulu anikeziwe ezinto kusukela kokuncane kakhulu kuya kokukhulu kakhulu kanye nokukhulu kakhulu kuya kokuncane kakhulu	Hlela amaqoqo amabili nangaphezulu anikeziwe ezinto kusukela kokuncane kakhulu kuya kokukhulu kakhulu kanye nokukhulu kakhulu kuya kokuncane kakhulu	Hlela amaqoqo ezinto kusukela kokuncane kakhulu kuya kokukhulu kakhulu kanye nokukhulu kakhulu kuya kokuncane kakhulu	Hlela amaqoqo ezinto kusukela kokuncane kakhulu kuya kokukhulu kakhulu kanye nokukhulu kakhulu kuya kokuncane kakhulu Qondanisa uphawu lwekhadi lezinombolo neqoqo
		Ukuhlela izinombolo unganakile 'Yini elandelayo, kulandeleni, phakathi nendawo': - izinombolo/kulayini wokuneka izingubo - ukulandela izinombolo/isitebhisi sezinombolo - amakhadi ezinombolo	Beka izimpawu zezinombolo ngendlela ehlelekile yokubala 'Yini elandelayo, kulandeleni, phakathi nendawo': - izinombolo/kulayini wokuneka izingubo - ukulandela izinombolo/isitebhisi sezinombolo - amakhadi ezinombolo	Beka izimpawu zezinombolo ngendlela ehlelekile yokubala 'Yini elandelayo, kulandeleni, phakathi nendawo': - izinombolo/kulayini wokuneka izingubo - ukulandela izinombolo/isitebhisi sezinombolo - amakhadi ezinombolo	Unganakile: Ubudlelwane bobungako bezinombolo ezahlukene 0 kuya10 Beka uphawu lwezinombolo ngendlela ehlelekile yokubala 'Yini elandelayo, kulandeleni, phakathi nendawo': - izinombolo/kulayini wokuneka izingubo - ukulandela izinombolo/isitebhisi sezinombolo - amakhadi ezinombolo

	TOPIC	TERM 1	TERM 2	TERM 3	TERM 4
	Ordinal numbers	Incidentally develop an awareness of first, second, third … last, next Introduce during: - refreshment/snack time and toilet routine - in everyday contexts, across subjects, lining up, e.g. 'Who was first/ last/second to come in the door'	Incidentally develop an awareness of first, second, third, fourth, last, next In everyday contexts: daily routine – lining up, snack time, toilet routine Integrate: Life Skills, physical development and art activities (where appropriate), outdoor activities, e.g. races Line up objects or manipulatives and discuss position	Incidentally develop an awareness of first, second, third, fourth, fifth, last, next Reinforce ordinal numbers in the daily routine and integrate during the day and in outdoor activities, e.g. races Place learners and objects in a row and identify ordinal position in one direction, e.g. left to right	Incidentally develop an awareness of first, second, third, fourth, fifth, sixth, last, next Reinforce ordinal numbers in the daily routine and integrate during the day and in outdoor activities, e.g. races Place learners and objects in a row and identify ordinal position in both directions, e.g. left to right and right to left
1.5	**Place value**	No CAPS content for Grade R (focus on number concept of numbers 1–9 and zero, 1.1 and 1.4)			
SOLVE PROBLEMS IN CONTEXT					
1.6	**Problem-solving techniques**	**Number range: 1–3** Solve problems in everyday contexts Uses the following techniques: - concrete apparatus, e.g. counters - counting all in ones	**Number range: 1–5** Solve problems in everyday contexts Uses the following techniques: - concrete apparatus, e.g. counters - physical number ladder - ten structure beads - counting all in ones Number range: 1–4	**Number range: 1–8** Solve problems in everyday contexts Uses the following techniques: - concrete apparatus, e.g. counters - physical number ladder - ten structure beads - counting all in ones - counting on Number range: 1–7	**Number range: 0–10** Solve problems in everyday contexts Uses the following techniques: - concrete apparatus, e.g. counters - physical number ladder - ten structure beads - counting all in ones - counting on Number range: 0–10
1.7	**Addition and subtraction** Orally solve word problems (story sums) and explain own solutions to problems involving addition and subtraction with answers up to 10	Investigate addition and subtraction in everyday activities through the use of manipulatives and stories Orally solve problems that involve numbers 1–3 using counters, stories, pictures	Orally solve problems that involve numbers 1–5 using objects, stories, pictures Use counters and orally solve problems that involve the numbers 2, 3 and 4 Reinforce the solving of problems that involve numbers 1 to 4	Orally solve problems that involve numbers 1–8 using objects, stories, pictures Introduce terminology (add to/add, take away/ subtract) Use counters and orally solve problems that involve the numbers 5, 6 and 7 Reinforce the solving of problems that involve numbers 1 to 7	Orally solve problems that involve numbers 0–10 using objects, stories and pictures Use terminology (add and subtract) Use counters and orally solve problems that involve the numbers 8, 9 and 10 Reinforce the solving of problems that involve numbers 1 to 10
1.8	**Repeated addition leading to multiplication**	No CAPS content for Grade R			

	ISIHLOKO	ITHEMU 1	ITHEMU 2	ITHEMU 3	ITHEMU 4
	Izinombolo ezisho isikhundla	Unganakile thuthukisa ukuqonda okokuqala, okwesibili, okwesithathu … okokugcina, okulandelayo Yethula ngesikhathi: - sokudla okwenziwa njalo nangenqubo yasendlini yangasese - ngokwesimo sansukuzonke, zonke izifundo, ukuma emugqeni, isib. 'Ubani obengowokuqala/ owokugcina/ owesibili ukungena emnyango'	Unganakile thuthukisa ukuqonda kokokuqala, okwesibili, okwesithathu, okwesine, okokugcina, okulandelayo Ngokwezimo zansukuzonke: okwenziwa nsukuzonke – ukuma emgqeni, isikhathi sokudla okubamba umphefumlo, isikhathi sokuya ngasese Xhumanisa: Amakhono Empilo, ukuthuthuka komzimba kanye nemisebenzi yobuciko (lapho kufanele), imisebenzi yangaphandle, isib. imijaho Misa izinto emgqeni noma okusetshenziselwa ukufunda bese kuxoxwa ngesikhundla	Unganakile thuthukisa ukuqonda kokokuqala, okwesibili, okwesithathu, okwesine, okwesihlanu, okokugcina, okulandelayo Gcizelela izinombolo ezisho isikhundla ohlelweni losuku bese uzixhumanisa osukwini lonke nasemisebenzini yangaphandle, isib. imijaho Beka abafundi nezinto ngokulandelana bese bekhomba izikhundla zezinombolo ezikunkomba eyodwa, isib. kwesokunxele kuya kwesokudla	Unganakile thuthukisa ukuqonda kokokuqala, okwesibili, okwesithathu, okwesine, okwesihlanu, okwesithupha, okokugcina, okulandelayo Gcizelela izinombolo ezisho isikhundla ohlelweni losuku bese uzixhumanisa osukwini lonke nasemisebenzini yangaphandle, isib. imijaho Beka abafundi nezinto ngokulandelana bese bekhomba izikhundla zezinombolo ezinkombeni zombili, isib. kwesokunxele kuya kwesokudla kanye kwesokudla kuya kwesokunxele
1.5	**Ubungako benani lezinombolo**	Alukho ulwazi luka-CAPS lweBanga R (kugxilwe kulwazi lwezinombolo 1 kuya 9 kanye neqanda, 1.1 no 1.4)			
UKUXAZULULA IZINKINGA NGOKWESIMO					
1.6	**Amaqhinga okuxazulula izinkinga**	**Ubudlelwane bobungako bezinombolo ezahlukene: 1 kuya 3** Xazulula izinkinga ngezimo zansukuzonke Sebenzisa lawa maqhinga alandelayo: - izinsiza kusebenza eziphathekayo, isib. izinto zokubala - ukubala konke ngakunye	**Ubudlelwane bobungako bezinombolo ezahlukene: 1 kuya 5** Xazulula izinkinga ngezimo zansukuzonke Sebenzisa lawa maqhinga alandelayo: - izinsizakusebenza eziphathekayo, isib. izinto zokubala - ishadi lesitebhisi sezinombolo - ubuhlalu obuhleliwe obuyishumi - ukubala konke ngakunye Ubudlelwane bobungako bezinombolo ezahlukene: 1 kuya 4	**Ubudlelwane bobungako bezinombolo ezahlukene: 1 kuya 8** Xazulula izinkinga ngezimo zansukuzonke Sebenzisa lawa maqhinga alandelayo: - izinsizakusebenza eziphathekayo, isib. izinto zokubala - ishadi lesitebhisi sezinombolo - ubuhlalu obuhleliwe obuyishumi - ukubala konke ngakunye - bala uqhubeke Ubudlelwane bobungako bezinombolo ezahlukene: 1 kuya 7	**Ubudlelwane bobungako bezinombolo ezahlukene: 1 kuya 10** Xazulula izinkinga ngezimo zansukuzonke Sebenzisa lawa maqhinga alandelayo: - izinsizakusebenza eziphathekayo, isib. izinto zokubala - ishadi lesitebhisi sezinombolo - ubuhlalu obuhleliwe obuyishumi - ukubala konke ngakunye - ukubala uqhubeke Ubudlelwane bobungako bezinombolo ezahlukene: 0 kuya 10
1.7	**Ukuhlanganisa nokususa** Xazulula ngomlomo izinkinga zezibalo zamagama (zengxoxo) uchaze izixazululo ezinkingeni kufaka: ukuhlanganisa nokususa nezimpendulo kufinyelela 10	Phenya ukuhlanganisa kanye nokususa emisebenzini yansukuzonke ngokusebenzisa izinto zokusetshenziswa nezindaba Ngomlomo xazulula izinkinga ezimbandakanya izinombolo 1 kuya 3 usebenzisa izinto zokubala, izindaba, izithombe	Ngomlomo xazulula izinkinga ezimbandakanya izinombolo 1 kuya 5 usebenzisa izinto, izindaba, izithombe Sebenzisa izinto zokubala ubuye uxazulule ngomlomo izinkinga ezifaka izinombolo 2, 3 kanye 4 Gcizelela ukuxazululwa kwezinkinga ezifaka izinombolo 1 kuya 4	Ngomlolmo xazulula izinkinga ezimbandakanya izinombolo 1 kuya 8 usebenzisa izinto, izindaba, izithombe Yethula uhlelo lwamagama (hlanganisa no-/hlanganisa, thatha/susa) Sebenzisa izinto zokubala ubuye uxazulule ngomlomo izinkinga ezifaka izinombolo 5, 6 kanye 7 Gcizelela ukuxazululwa kwezinkinga ezifaka izinombolo 1 kuya 7	Ngomlomo xazulula izinkinga ezimbandakanya izinombolo 0 kuya 10 usebenzisa izinto, izindaba kanye nezithombe Sebenzisa uhlelo lwamagama (hlanganisa kanye nokususa) Sebenzisa izinto zokubala ubuye uxazulule ngomlomo izinkinga ezifaka izinombolo 8, 9 kanye 10 Gcizelela ukuxazululwa kwezinkinga ezifaka Izinombolo 1 kuya 10
1.8	**Ukuhlanganisa okuphindaphindayo okuholela ekuphindaphindeni**	Alukho ulwazi luka-CAPS lweBanga R			

	TOPIC	TERM 1	TERM 2	TERM 3	TERM 4
1.9	Grouping and sharing leading to division (equal sharing and grouping with whole numbers up to 10 with answers that incl. remainders)	Introduce concept of equal sharing: - during daily activities - stories and pictures - one-to-one sharing	Equal sharing: - during daily activities - stories and pictures - one-to-one sharing	Equal sharing: - grouping - half - use concrete objects	Equal sharing: - grouping - half and double - use concrete objects
1.10	Sharing leading to fractions	No CAPS content for Grade R (focus on problem solving with remainders that can be shared, 1.9)			
1.11	Money		Develop an awareness of South African coins: 10c, 20c, 50c, R1, R2, R5 Identify colour and animals Identify similarities and differences Sort play money according to colour and size Provide play money in the house corner	Develop an awareness of South African bank notes: R10, R20, R50, R100, R200 Identify similarities and differences between notes Sort play money according to colour and size Provide play money in the house corner	Provide play money in the house corner
CONTEXT-FREE CALCULATIONS: OPERATIONS					
1.12	Techniques	No CAPS content for Grade R (focus on counting all and counting on, 1.1 and 1.6)			
1.13	Addition and subtraction: solves verbally-stated addition and subtraction problems		Number range: 1–5 Orally solves addition and subtraction problems with solutions up to 5 Number range: 1–4	Number range: 1–8 Orally solves addition and subtraction problems with solutions up to 8 Number range: 1–7	Number range: 1–10 Orally solves addition and subtraction problems with solutions up to 10 Number range: 1–10
1.14	Repeated addition leading to multiplication	No CAPS content for Grade R			
1.15	Division	No CAPS content for Grade R (focus on equal sharing, 1.9)			
1.16	Mental maths	Begin each whole class and teacher-guided activity with mental maths and do mental maths where incidental learning opportunities arise Counting everyday objects Counting forwards and backwards Ordinal counting Estimating Problem solving Memory games			
1.17	Fractions	No CAPS content for Grade R (focus on equal sharing, 1.9)			

	ISIHLOKO	ITHEMU 1	ITHEMU 2	ITHEMU 3	ITHEMU 4
1.9	**Ukwenza iqoqo nokwabelana okuholela ekuhlukaniseni (ukwenza iqoqo nokwabelana ngokulinganayo ngezinombolo eziphelele kuya e-10 nezimpendulo ezifaka izinsalela)**	Yethula ulwazi lokuhlukanisa ngokulinganayo: - ngesikhathi somsebenzi wansukuzonke - izindaba nezithombe - ukwabelana omunye nomunye	Ukwabelana ngokulinganayo: - ngesikhathi somsebenzi wansukuzonke - izindaba nezithombe - ukwabelana omunye nomunye	Ukwabelana ngokulinganayo: - ukwenza amaqoqo - uhhafu - ukusebenzisa izinto eziphathekayo	Ukwabelana ngokulinganayo: - ukwenza amaqoqo - uhhafu nokuphinda kabili - ukusebenzisa izinto eziphathekayo
1.10	**Ukwabelana okuholela emaqhuzwini**	Alukho ulwazi luka-CAPS lweBanga R (kugxilwe ekuxazululeni izinkinga ezinezinsalela ezingakwazi ukuba kwabelwane, 1.9)			
1.11	**Imali**		Thuthukisa ulwazi ngemali ewuhlweza yaseNingizimu Afrika: 10c, 20c, 50c, R1, R2, R5 Ukubona umbala nesilwane esisemalini ewuhlweza Ukubona okufanayo nokuhlukile emalini ewuhlweza Hlela imali yokudlala ngombala kanye nangobukhulu nangobungako Hlinzeka ngemali yokudlala egunjini lezinto zasekhaya	Thuthukisa ulwazi ngemali engamaphepha yaseNingizimu Afrika: R10, R20, R50, R100, R200 Bona okufanayo nokuhlukile emalini engamaphepha Hlela imali yokudlala ngombala kanye nangobukhulu nangobungako Hlinzeka ngemali yokudlala egunjini lezinto zasekhaya	Hlinzeka ngemali yokudlala egunjini lezinto zasekhaya
UKUBALA OKUKHULULEKILE: UKUSEBENZA NGEZINOMBOLO					
1.12	**Amasu**	Alukho ulwazi luka-CAPS lweBanga R (kugxilwe ekubaleni konke nasekubaleni uqhubeke, 1.1 no 1.6)			
1.13	**Ukuhlanganisa nokususa: xazulula izinkinga zokuhlanganisa nokususa ezishiwo ngomlomo**		Ubudlelwane bobungako bezinombolo ezahlukene: 1 kuya 5 Ngomlomo xazulula izinkinga zokuhlanganisa kanye nokususa nesixazululo kufike 5 Ubudlelwane bobungako bezinombolo ezahlukene: 1 kuya 4	Ubudlelwane bobungako bezinombolo ezahlukene: 1 kuya 8 Ngomlomo xazulula izinkinga zokuhlanganisa kanye nokususa nesixazululo kufike ku-8 Ubudlelwane bobungako bezinombolo ezahlukene: 1 kuya 7	Ubudlelwane bobungako bezinombolo ezahlukene: 1 kuya 10 Ngomlomo xazulula izinkinga zokuhlanganisa kanye nokususa nesixazululo kufike 10 Ubudlelwane bobungako bezinombolo ezahlukene: 1 kuya 10
1.14	**Ukuhlanganisa okuphindayo okuholela ekuphindaphindeni**	Alukho ulwazi luka-CAPS lweBanga R			
1.15	**Ukuhlukanisa**	Alukho ulwazi luka-CAPS lwebanga R (kugxilwe ekwabelaneni ngokulinganayo, 1.9)			
1.16	**Izibalo zekhanda**	Qala umsebenzi wekilasi lonke kanye nomsebenzi oholwa uthisha ngezibalo zekhanda futhi uzenze izibalo zekhanda lapho kuvela amathuba okufunda unganakile Bala izinto zansukuzonke Bala uya phambili kanye nokuya emuva Bala ngokwezikhundla Ukuqagela Ukuxazulula izinkinga Imidlalo yokukhumbula			
1.17	**Amaqhezu**	Alukho ulwazi luka-CAPS lweBanga R (gxila ekwabelaneni ngokulinganayo, 1.9)			

2. PATTERNS, FUNCTIONS and ALGEBRA					
	TOPIC	TERM 1	TERM 2	TERM 3	TERM 4
2.1 GEOMETRIC PATTERNS					
	Identify patterns	Identify patterns in familiar everyday environment, e.g. clothes, objects and environment Recognise the 'repeat' in patterns			
	Copy and extend simple repeating patterns using physical objects and drawings	Copy and complete patterns Copy patterns using body percussion Copy, complete and create own patterns Introduce language: What comes next? What comes before? How is it the same? How is it different?	Copy and extend patterns with pictures Copy a given pattern using coins Describe the repeat in patterns Copy a given pattern using 3-D concrete objects and 2-D shapes, coins, beads, etc.	Copy and extend own pattern with pictures Copy vertical and horizontal patterns using concrete objects Extend simple repeating patterns	Copy and extend own patterns with pictures Copy a noise (sound/ auditory) pattern Use physical objects and draw patterns
	Creates own repeating patterns	Create own pattern using physical objects, drawings, geometric patterns Explain own pattern (repeating rule): - one colour, two shapes - one shape, two colours	Create own pattern with pictures Explain own pattern (repeating rule): - two colours, two shapes - two shapes, two colours	Create own pattern with pictures Explain own pattern (repeating rule): - three/four colours, different shape, etc.	Create own pattern Explain own pattern (repeating rule): - three/four colours, different shape, etc.
2.1	**Number patterns**	No CAPS content for Grade R (focus on counting: ordering numbers in ones and twos, 1.2)			

2. AMAPHETHINI, AMAFANKSHINI kanye ne-ALJEBHRA					
	ISIHLOKO	**ITHEMU 1**	**ITHEMU 2**	**ITHEMU 3**	**ITHEMU 4**
2.1 AMAPHETHINI EJIYOMETHRI					
	Khomba amaphethini	Khomba amaphethini ezindaweni ezijwayelekile zansukuzonke, isib. izingubo, izinto kanye nasendaweni Bona 'ukuphindana' emaphethinini			
	Kopela futhi unwebe amaphethini alula aphindaphindayo usebenzisa izinto eziphathekayo kanye nemidwebo	Kopela futhi uqedele amaphethini Kopela amaphethini usebenzisa umsindo owenza ngokushaya umzimba Kopela, qedela bese uqamba awakho amaphethini Yethula ulimi: Yini elandelayo? Yini eza kuqala? Ifana kanjani? Yehluke kanjani?	Kopela bese wandisa amaphethini ngezithombe Kopela iphethini oyinikiwe usebenzisa imali ewuhlweza Chaza ukuphindana ephethinini Kopela iphethini olinikeziwe usebenzisa izinto ezinhlangothi ntathu (3-D) eziphathekayo kanye nezimo ezingonhlangothi mbili (2-D), imali ewuhlweza, ubuhlalu, njll.	Kopela bese wandisa amaphethini ngezithombe Kopela amaphethini amile navundlile usebenzisa izinto eziphathekayo Nweba amaphethini alula aphindayo	Kopela bese wandisa amaphethini ngezithombe Kopela iphethini yomsindo (umsindo/ okuzwakalayo) Sebenzisa izinto ezibonakalayo bese udweba amaphethini
	Qamba awakho amaphethini aphindaphindayo	Qamba eyakho iphethini sebenzisa izinto ezibonakalayo, imidwebo, amaphethini ejiyomethri Chaza iphethini yakho (umthetho wokuphindaphinda): - umbala owodwa, izimo ezimbili - isimo esisodwa, imibala emibili	Qamba eyakho iphethini ngezithombe Chaza iphethini yakho (umthetho wokuphindaphinda): - imibala emibili, izimo ezimbili - izimo ezimbili, imibala emibili	Qamba eyakho iphethini ngezithombe Chaza iphethini yakho (umthetho wokuphindaphinda): - okuthathu/imibala emine, izimo ezihlukahukene, njll.	Qamba eyakho iphethini Chaza iphethini yakho (umthetho wokuphindaphinda): - okuthathu/imibala emine, izimo ezihlukahlukene, njll.
2.1	**Amaphethini ezinombolo**	Alukho ulwazi luka-CAPS lweBanga R (kugxilwe ekubaleni: ukuhleleka kwezinombolo ngazinye nangazimbili, 1.2)			

3. SPACE and SHAPE (GEOMETRY)					
	TOPIC	**TERM 1**	**TERM 2**	**TERM 3**	**TERM 4**
3.1	**Position, orientation and views** Describes one 3-D object in relation to another (e.g. in front and behind)	Spatial relationships Position of the child in relation to their surroundings Position of two or more objects in relation to the learner: - in front of and behind - on, on top, under, below - in and out, inside and outside - up and down - next to and between	Spatial relationships Position of the child in relation to their surroundings Position of two or more objects in relation to the learner: - on and under - on top of and underneath - in front of and behind	Spatial relationships Position of two or more objects in relation to each other and to one another: - in front of and behind - on, on top, under, bottom and below - next to - middle - left and right - pegboard work Describe objects from different perspectives, e.g. a doll house from the front, the back, the side depending on where you stand	Spatial relationships Position of two or more objects in relation to each other and to the learners and in relation to one another: - in front of and behind - on top of, under, above, below - top and bottom - next to, between and middle - left and right The position of two or more objects in relation to each other
	Follow directions (alone and/or as a member of a group or team) to move/ place self within a specific space (directionality)	Directionality – forwards and backwards Up and down Games such as tracking the train Obstacle course – following a direction Physical Education and music	Directionality – forwards and backwards Obstacle course – following a direction Outdoor activities Incidental: left and right	Forwards and backwards Arrow chart Left and right	Forwards and backwards Up and down Upwards and downwards Left and right Where does the sound come from?
3.2	**3-D objects**				
	Recognise, identify and name three-dimensional objects in the classroom	Introduce and explore Compare and sort: - balls - boxes with square and rectangular faces (sides)			

3. INDAWO neSIMO (IJIYOMETHRI)					
	ISIHLOKO	**ITHEMU 1**	**ITHEMU 2**	**ITHEMU 3**	**ITHEMU 4**
3.1	**Isikhundla indawo nokubukeka kwayo** Chaza isimo ezinhlangothi ntathu (3-D) ngokuhlobana kwazo (isib. ngaphambili nangemuva)	Ubudlelwane nendawo akuyo Indawo lapho ingane ikhona kuhambelana nendawo emzungezile Ukuma kwezinto ezimbili nangaphezulu maqondana nomfundi: - ngaphambi kwe-nasemuva - ngaphezu, phezu kwe-, ngaphansi kanye nangezansi - phakathi kanye naphandle, ngaphakathi kanye nangaphandle - ngenhla nangezansi - eduze kwe kanye naphakathi	Ubudlelwane nendawo akuyo Indawo lapho ingane ikhona kuhambelana nendawo emzungezile Ukuma kwezinto ezimbili nangaphezulu ngokuphathelene nomfundi: - ngaphezu nangaphansi - phezu kwe- kanye nangaphansi - ngaphambi kwe-kanye nangemuva	Ubudlelwane nendawo akuyo Isikhundla sezinto ezimbili nangaphezulu ngokuphathelene nazo kanye nenye kwenye: - ngaphambi kwe-kanye nasemuva - ngaphezu, phezu kwe-, ngaphansi kanye nangezansi - eduze kwe- - phakathi nendawo - kwesokunxele kanye nakwesokudla - umsebenzi webhodi lamaphekisi Ukuchaza izinto unikeze imiqondo eyahlukene yezinto, isib. unodoli, indlu ngaphambili, ngasemuva, eceleni kuye ngokuthi umi kuphi	Ubudlelwane nendawo akuyo Isikhundla sezinto ezimbili nangaphezulu ngokuphathelene nazo kanye nabafundi futhi nokuphathelene nabo komunye nomunye: - ngaphambi kwe-, kanye nasemuva - phezu kwe-, ngaphansi, ngaphezu, ngaphansi - ngaphezu nangaphansi - eduze kwe-, phakathi kanye naphakathi nendawo - kwesokunxele kanye nakwesokudla Isikhundla sezinto ezimbili nangaphezulu ngokuphathelene nazo
	Landela imiyalelo (ngayedwa noma ngamaqoqo nangamaqembu) agudlukele noma aye endaweni thizeni (okwenkombandlela)	Ngokwenkombandlela – phambili nasemuva Phezulu kanye naphansi Imidlalo efana nokulandelela isitimela Ukweqa izinto eziyinqinamba – ukulandela imiyalelo Imisebenzi yokuthuthukiswa kwezicubu zomzimba kanye nomculo	Ngokwenkombandlela – phambili nasemuva Ukweqa izinto eziyizingqinamba – ulandela izinkomba Ukulandela izinkomba Imisebenzi yangaphandle Unganakile: esokunxele kanye nesokudla	Phambili nasemuva Ishadi lemicibisholo Kwesokunxele kanye nakwesokudla	Phambili nasemuva Phezulu naphansi Ukwenyuka nokwehla Kwesokunxele kanye nakwesokudla Uphumaphi umsindo?
3.2	**Izinto ezinhlangothi ntathu (3-D)**				
	Bheka, khomba bese usho izinto ezinhlangothi ntathu (3-D) ekilasini	Yethula bese uhlola Qhathanisa futhi uhlele: - amabhola - amabhokisi anobuso (amacala) ayisikwele nokukanxande			

	TOPIC	TERM 1	TERM 2	TERM 3	TERM 4
	Describe, sort and compare 3-D objects	Introduce Tidy-up chart (sorting toys) Sort 3-D objects according to (one attribute): - size (big/small) - colour - shape Identify and explore 3-D objects: flat, round, square or rectangular shape Objects that roll Objects that slide	Sort 3-D objects according to similarities and differences: - size - colour - shape	Sort 3-D objects according to similarities and differences (two attributes): - size - colour - shape Explore 3-D objects: flat, round, square or rectangular shape	Sort 3-D objects according to (two or more attributes): - size - colour - shape Explore 3-D objects: flat, round, square or rectangular shape
	Build 3-D objects	**Ongoing** Provide building blocks and construction materials during free play inside on a daily basis Explore with building blocks	**Ongoing** Provide building blocks and construction materials during free play inside on a daily basis Explore with building blocks Use building blocks and recycled materials to build own constructions	**Ongoing** Provide building blocks and construction materials during free play inside on a daily basis Build own construction by copying from a given construction example Copy the same construction from a design or picture card	**Ongoing** Provide building blocks and construction materials during free play inside on a daily basis Ongoing during free play inside
3.3	**2-D shapes**				
	Recognise, identify and name two-dimensional shapes in the classroom	Introduce Tidy-up/ Helper's chart Recognise learner symbol and name Introduce 2-D shapes: circle, square, triangle, rectangle Puzzles (minimum 6 pieces)	Recognise learner symbol and name Recognise, identify and name 2-D shapes: circle, square and triangle Puzzles (minimum 12 pieces)	Recognise and identify learner name Reinforce: circle, square, triangle Compare rectangles and squares Puzzles (minimum 18 pieces)	Identify learner name Reinforce: rectangle Recognise, identify and name 2-D shapes: circle, square, triangle, rectangle Puzzles (minimum 24 pieces)
	Describe, sort and compare 2-D shapes	Sort 2-D shapes according to: - colour - shape Circle: curved line Square: 4 sides, straight lines, corners Triangle: 3 sides, straight lines, corners	Sort 2-D shapes according to similarities and differences: - shape Reinforce triangle Reinforce circle and square	Sort 2-D shapes according to: - colour - shape (curved line, three or four lines) Reinforce circle, square and triangle	Sort 2-D shapes according to: - size - colour - shape

	ISIHLOKO	ITHEMU 1	ITHEMU 2	ITHEMU 3	ITHEMU 4
	Chaza, hlela ubuye uqhathanise izinto ezinhlangothi ntathu (3-D)	Yethula ishadi lokuqoqa (ukuqoqa amathoyisi) Hlela izinto ezinhlangothi ntathu (3-D) (nge-athributhi eyodwa): - ubungako (okukhulu/ okuncane) - umbala - isimo Khomba uphinde uhlole izinto ezingonhlangothi ntathu (3-D): izicaba, izindilinga, izikwele noma izimo ezingonxande Izinto eziginqikayo Izinto ezishelelayo	Hlela izinto ezinhlangothi ntathu (3-D) ngokufana nangokuhluka kwazo: - ubungako - umbala - isimo	Hlela izinto ezinhlangothi ntathu (3-D) ngokufana nangokuhluka kwezinto (ama-athribhuthi amabili): - ubungako - umbala - isimo Hlola izinto ezingonhlangothi ntathu (3-D): izicaba, izindilinga, izikwele noma izimo ezingonxande	Hlela izinto ezinhlangothi ntathu (3-D) (ngama-athribhuthi amabili nangaphezulu): - ubungako - umbala - isimo Hlola izinto ezingonhlangothi ntathu (3-D): izicaba, izindilinga, izikwele noma izimo ezingonxande
	Yakha izinto ezinhlangothi ntathu (3-D)	**Kuyaqhubeka** Hlinzeka abafundi ngamabhulokhi okwakha neizinto zokudlala zokwakha ngesikhathi sokudlala ngokukhululeka ngaphakathi nsukuzonke Dlala ngamabhuloki okwakha	**Kuyaqhubeka** Hlinzeka abafundi ngamabhulokhi okwakha nezinto zokudlala zokwakha ngesikhathi sokudlala ngokukhululeka ngaphakathi nsukuzonke Dlala ngamabhuloki okwakha Sebenzisa amabhulokhi okwakha kanye nezinto ezenziwe kabusha ukuzakhela okwakho	**Kuyaqhubeka** Hlinzeka abafundi ngamabhulokhi okwakha nezinto zokudlala zokwakha ngesikhathi sokudlala ngokukhululeka ngaphakathi nsukuzonke Bakha isakhiwo sabo ngokukopela kwisibonelo sesakhiwo esinikeziwe Kopela isakhiwo esifanayo ususela emdwebeni othize noma ikhadi lesithombe	**Kuyaqhubeka** Hlinzeka abafundi ngamabhulokhi okwakha nezinto zokudlala zokwakha ngesikhathi sokudlala ngokukhululeka ngaphakathi nsukuzonke Kuyaqhubeka ngesikhathi sokudlala ngokukhululeka ngaphakathi
3.3	**Izimo ezinhlangothi mbili (2-D)**				
	Bona, khomba bese usho izimo ezinhlangothi mbili (2-D) ekilasini	Yethula ishadi lokuQoqa neshadi lokuSiza Bona uphawu kanye negama lomfundi Yethula izimo ezingonhlangothi mbili (2-D): indilinga, isikwele, unxantathu, unxande Amaphazili (okungenani izingcezu eziyi-6)	Bona uphawu kanye negama lomfundi Bona, khomba bese usho izimo ezinhlangothi mbili (2-D): izindilinga, izikwele kanye nonxantathu Amaphazili (okungenani izngcezu eziyi-12)	Bona bese ukhomba igama lomfundi Gcizelela: indilinga, isiskwele, unxantathu Qhathanisa unxande kanye nesikwele Amaphazili (okungenani izngcezu eziyi-18)	Khomba igama lomfundi Gcizelela: unxande Bona, khomba bese usho izimo ezingonhlangothi mbili (2-D): indilinga, isikwele, unxantathu, unxande Amaphazili (okungenani izngcezu ezingama-24)
	Ukuchaza, ukuhlela kanye nokuqhathanisa izimo ezinhlangothi mbili (2-D)	Hlela izimo ezinhlangothi mbili (2-D): - ngombala - ngesimo Indilinga: umugqa ogobile Isikwele: sinamacala ama-4, imigqa eqondile, amakhona Unxantathu: unamacala ama-3, imigqa eqondile, amakhona	Hlela izimo ezinhlangothi mbili (2-D) ngokufana nangokuhluka kwezinto: - ngesimo Gcizelela unxantathu Gcizelela indilinga kanye nesikwele	Hlela izimo ezinhlangothi mbili (2D): - ngombala - isimo (umugqa ogobile, imigqa emithathu noma emine) Gcizelela indilinga, isikwele kanye nonxantathu	Hlela izimo ezinhlangothi mbili (2D): - ngobungako - ngombala - ngesimo

	TOPIC	TERM 1	TERM 2	TERM 3	TERM 4
	Figure-ground perception **Geometric shapes**	Introduce figure-ground perception (identify objects and shapes – 'I spy with my little eye') Introduce circle, square and triangle	Reinforce figure-ground perception through sorting, matching and grouping activities and tidy-up routine Reinforce triangle Shape conservation (form constancy of triangle)	Reinforce figure-ground perception through sorting, matching and grouping activities and tidy-up routine Reinforce square Shape conservation (form constancy of shapes learnt to date)	Reinforce figure-ground perception through sorting, matching and grouping activities and tidy-up routine Reinforce circle, triangle, square and rectangle Shape conservation (form constancy of shapes learnt to date)
3.4	**Symmetry (Recognise line of symmetry in self, and own environment)**	Identify body parts Awareness of body in terms of: - one's body has two sides - the one side, the other side, leading to left and right - top/bottom - back/front - crossing midline (physical activities) Activities to be done during physical development – using rhymes and songs, and during Creative Arts	Crossing midline – performing actions Applying crossing the midline during Life Skills (physical development) – using rhymes and songs, and during Creative Arts	Crossing midline (chalkboard activities) Applying crossing the midline during Life Skills (physical development)	Develop an awareness that there is symmetry in objects Applying crossing the midline during Life Skills (physical development)

	ISIHLOKO	ITHEMU 1	ITHEMU 2	ITHEMU 3	ITHEMU 4
	Ukubona izinto ngokuqonda phakathi kwezinye Izimo esazibalomdwebo	Yethula ukubona izinto ngokuqonda phakathi kwezinye (khomba izinto nezimo – 'ngihlola ngehlwana lami') Yethula indilinga, isikwele, nonxantathu	Gcizelela ukubona izinto ngokuqonda phakathi kwezinye ngokuhlela, ukuqhathanisa nokwenza amaqoqo kanye nenqubo yokuqoqa Gcizelela unxantathu Ukulondolozwa kwezimo (isimo esingashintshi sikanxantathu)	Gcizelela ukubona izinto ngokuqonda phakathi kwezinye ngokuhlela, ukuqhathanisa nokwenza amaqoqo kanye nenqubo yokuqoqa Gcizelela iskwele Ukulondolozwa kwezimo (izimo ezingashintshi esezifundiwe kuze kube manje)	Gcizelela ukubona izinto ngokuqonda phakathi kwezinye ngokuhlela, ukuqhathanisa nokwenza amaqoqo kanye nenqubo yokuqoqa Gcizelela indilinga unxantathu, isikwele kanye nonxande Ukulondolozwa kwezimo (izimo ezingashintshi esezifundiwe kuze kube manje)
3.4	**Ukuhlukanisa izingxenye ezifana nse (Ukubona umugqa ohlukanisa kabili kuyena kufane nse kanye nezinto ezisendaweni aphila kuyo)**	Khomba izitho zomzimba Ulwazi lomzimba ngokuthi: - umzimba womuntu unezinhlangothi ezimbili - uhlangothi olulodwa, olunye uhlangothi kuye ngakwesokunxele nakwesokudla - phezulu/phansi - emuva/phambili - ukweqa umugqa ophakathi (ukuthuthukiswa izicubu zomzimba) Imisebenzi ingenziwa ngesikhathi kuthuthukiswa izicubu zomzimba – kusetshenziswa imilolozelo namaculo, nangesikhathi sobuCiko bokuSungula	Ukweqa umugqa ophakathi – ukwenza iminyakazo Ukweqa umugqa ophakathi ngesikhathi sesifundo samaKhono eMpilo (ukuthuthukiswa izicubu zomzimba) – kusetshenziswa imilolozelo namaculo, nangesikhathi sobuCiko bokuSungula	Ukweqa umugqa ophakathi (imidlalo yasebhodini) Kufundwa izibalo kuphanjaniswe izandla ngesikhathi sesifundo samaKhono eMpilo (ukuthuthukiswa izicubu zomzimba)	Thuthukisa ulwazi lokuthi zikhona izinto ezifana nse nxazombili Kufundwa izibalo kuphanjaniswe izandla ngesikhathi sesifundo samaKhono eMpilo (ukuthuthukiswa izicubu zomzimba)

4. MEASUREMENT					
	TOPIC	**TERM 1**	**TERM 2**	**TERM 3**	**TERM 4**
4.1	**Time**	Introduce both concepts day/night, light/dark, morning/afternoon/night (tonight) Introduce **daily programme** with pictures displayed from left to right and arrow to show the activities as the day progresses Introduce **weather chart** (daily) with name of the day, date and month with song and rhyme, flash cards and display labels and symbols and pictures on a calendar representing the week **Days of the week** (daily) sequence learnt through a song or rhyme Indicate birthdays, outings, special days, holidays during the week Sequence months of the year through a song Develop an awareness of the time concept Introduce **seasons chart** summer, autumn, winter, spring Introduce the **birthday chart** and own age, date of birth (day and month) Develop an awareness of reading direction	**Daily programme** (ongoing) Reinforce the sequencing of recurring events in one day **Weather chart** (daily) with day, date and month song and rhyme, flash cards and display labels, symbols and pictures on a weekly calendar **Days of the week** (ongoing) repeat song or rhyme daily Develop an awareness of what the learner does from the time he/she wakes up until going to school Develop an awareness of what happens between suppertime and bedtime **Birthday chart** continuous whenever a learner has a birthday **Seasons chart** summer, autumn, winter, spring	**Daily programme** (ongoing) Reinforce the sequencing of recurring events in one day **Weather chart** (daily) with day, date and month song and rhyme, flash cards and display labels, symbols and pictures on a weekly calendar **Days of the week** (ongoing) **Seasons chart** (ongoing) **Birthday chart** continuous whenever a learner has a birthday	**Daily programme** (ongoing) Reinforce the sequencing of recurring events in one day **Weather chart** (daily) with day, date and month song and rhyme, flash cards and display labels, symbols and pictures on a weekly calendar **Days of the week** (ongoing) **Seasons chart** (ongoing) **Birthday chart** continuous whenever a learner has a birthday

4. ISILINGANISO					
	ISIHLOKO	**ITHEMU 1**	**ITHEMU 2**	**ITHEMU 3**	**ITHEMU 4**
4.1	**Isikhathi**	Yethula imiqondo yomibili imini/ ubusuku, ukukhanya/ ubumnyama, ekuseni/ ntambama/ubusuku (lobusuku) Yethul **uhlelo lwansukuzonke** ngezithombe ezikhangiswe kusuka kwesokunxele kuya kwesokudla kanye nomcibisholo okhombisa imisebenzi ngokuqhubeka kosuku Yethula **ishadi lesimo sezulu** (nsukuzonke) libe nosuku, ilanga nenyanga besebenzisa imilolozelo, izingqwembe zamagama kanye namalebula okukhangisa nezimpawu kanye nezithombe ezisekhalendeni elimele isonto **Izinsuku zesonto** (nsukuzonke) ngokulandelana zifundwa ngeculo noma umlolozelo Khombisa izinsuku zokuzalwa, ukuvakasha, izinsuku ezikhethekile, amaholide aphakathi nesonto Landelisa izinyanga zonyaka ngomculo Thuthukisa uqwashise ngolwazi lwesikhathi Yethula **ishadi lezikhathi zonyaka** ihlobo, ikwindla, ubusika, intwasahlobo Yethula **ishadi lezinsuku** zokuzalwa neminyaka yakhe uqobo, usuku lokuzalwa (usuku nenyanga) Thuthukisa uqwashise ngokufundwa kwenkombandlela	**Uhlelo lwansukuzonke** (luyaqhubeka) Gcizelela ukulandelaniswa kwezehlakalo eziphindwayo osukwini olulodwa **Ishadi lesimo sezulu** (nsukuzonke) libe nosuku, ilanga nenyanga besebenzisa imilolozelo, izingqwembe zamagama kanye namalebula okukhangisa nezimpawu kanye nezithombe ezisekhalendeni lesonto **Izinsuku zesonto** (kuyaqhubeka) phinda iculo noma umlolozelo nsukuzonke Thuthukisa ulwazi lomfundi lokwazi izinto azenzayo uma evuka kuze kufike isikhathi sokuya esikoleni Thuthukisa ulwazi lokwenzeka phakathi kwesikhathi sesidlo sasebusuku kanye nesikhathi sokulala **Ishadi lezinsuku zokuzalwa** liyaqhubeka njalo uma umfundi egubha usuku lokuzalwa **Ishadi lezikhathi zonyaka** ihlobo, ikwindla, ubusika, intwasahlobo	**Uhlelo lwansukuzonke** (luyaqhubeka) Gcizelela ukulandelaniswa kwezehlakalo eziphindwayo osukwini olulodwa **Ishadi lesimo sezulu** (nsukuzonke) libe nosuku, ilanga nenyanga besebenzisa imilolozelo, izingqwembe zamagama kanye namalebula okukhangisa nezimpawu kanye nezithombe ezisekhalendeni lesonto **Izinsuku zesonto** (kuyaqhubeka) **Ishadi lezikhathi zonyaka** (kuyaqhubeka) **Ishadi lezinsuku zokuzalwa** liyaqhubeka njalo uma umfundi egubha usuku lokuzalwa	**Uhlelo lwansukuzonke** (luyaqhubeka) Gcizelela ukulandelaniswa kwezehlakalo eziphindwayo osukwini olulodwa **Ishadi lesimo sezulu** (nsukuzonke) libe nosuku, ilanga nenyanga besebenzisa imilolozelo, izingqwembe zamagama kanye namalebula okukhangisa nezimpawu kanye nezithombe ezisekhalendeni lesonto **Izinsuku zesonto** (kuyaqhubeka) **Ishadi lezikhathi zonyaka** (kuyaqhubeka) **Ishadi lezinsuku zokuzalwa** liyaqhubeka njalo uma umfundi egubha usuku lokuzalwa

	TOPIC	TERM 1	TERM 2	TERM 3	TERM 4
4.2	**Length** Concretely compare and order objects using appropriate vocabulary to describe length	During daily routines introduce the concept of length: long and short, tall, taller and tallest Introduce a height chart Learners can compare their heights against something in the class, e.g. cupboard: - measure with hands (visual and incidental) - measure with footprints/feet	During daily routines explore the concept of length: long and short, tall, taller and tallest Compare and order two or more objects by placing them next to each other Use appropriate vocabulary to describe length: longest and shortest, longer and shorter Height chart comparison: learners discover whether they have grown since last term	Estimate the length of different objects Estimate and measure the length of different objects using feet, hands, a piece of string, a stick Height chart comparison: learners discover whether they have grown since last term	Measure the height of learners with a tape measure Height chart comparison: learners discover whether they have grown since last term
4.3	**Mass** Works concretely comparing and ordering objects using appropriate vocabulary	Incidental learning indoors and outdoors Continuous during water and sand play	Incidental learning indoors and outdoors Continuous during water and sand play	Introduce concept of mass by comparing the masses of different objects: - light/heavy - lighter/heavier - lightest/heaviest	Reinforce the language of mass during indoor and outdoor activities
4.4	**Capacity/Volume** Works concretely comparing and ordering objects using appropriate vocabulary	Incidental learning indoors and outdoors: empty/full, more than, less than Continuous during water and sand play	Incidental learning indoor and outdoor activities Water/sand play Use containers to compare amounts using familiar containers	Introduce the measuring concept of capacity by comparing how much various containers hold: - empty/full - more than/less than	Continuous during water and sand play Reinforce the language of capacity/ volume during indoor and outdoor activities
4.5	**Perimeter and Area**	No CAPS content for Grade R			

	ISIHLOKO	ITHEMU 1	ITHEMU 2	ITHEMU 3	ITHEMU 4
4.2	**Ubude** Qhathanisa kubonakale uhlele izinto eziphathekayo usebenzisa ulwazi magama ukuchaza ubude	Ngesikhathi senqubo yansukuzonke yethula ulwazi ngobude: okude nokufishane, okujana, nokude kakhulu Yethula ishadi lobude Abafundi baqhathanisa ubude babo nezinto ezisekilasini, isib. Ikhabethe: - linganisa usebenzisa izandla (bebona futhi benganakile) - kala umaka wonyawo/izinyawo	Ngesikhathi senqubo yansukuzonke hlola ulwazi ngobude: okude nokufishane, okujana, okude kakhulu Qhathanisa bese uhlela izinto ezimbili noma ezintathu ngokuzibeka enye eceleni kwenye Sebenzisa ulwazimagama olufanele ukuchaza ubude: okude kakhulu kanye nokufishane kakhulu, okujana kanye nokufishane kunokunye Ukuqhathanisa ishadi lobude: abafundi babheka ukuthi sebekhulile yini kusukela ngethemu edlule	Qagela ubude bezinto ezahlukene Qagela bese ulinganisa ubude bezinto ezahlukene usebenzisa izandla, izinyawo, isinqamu sentambo, induku Ukuqhathanisa ishadi lobude: abafundi babheka ukuthi sebekhulile yini kusukela ngethemu edlule	Linganisa ubude babafundi usebenzisa intambo yokukala Ukuqhathanisa ishadi lobude: abafundi babheka ukuthi sebekhulile yini kusukela ngethemu edlule
4.3	**Isisindo** Usebenza ngokuphathekayo eqhathanisa futhi ehlela izinto esebenzisa ulwazimagama olufanele	Ukufunda unganakile ngaphakathi kanye nangaphandle Kuyaqhubeka ngesikhathi somdlalo wamanzi nesihlabathi	Ukufunda unganakile ngaphakathi kanye nangaphandle Kuyaqhubeka ngesikhathi somdlalo wamanzi nesihlabathi	Yethula ulwazi ngesisindo ngokuqhathanisa izisindo zezinto ezihlukene: - okulula/okusindayo - okulula kakhudlwana/ okusinda kakhudlwana - okulula kakhulu/ okusinda kakhulu	Gcizelela ulimi lwesisindo ngesikhathi semisebenzi yangaphakathi neyangaphandle
4.4	**Umthamo/Ivolumu** Usebenza ngokuphathekayo eqhathanisa futhi ehlela izinto esebenzisa ulwazimagama olufanele	Ukufunda unganakile ngaphakathi kanye nangaphandle: akunalutho/kugcwele, kuningi kuno-, kuncane kuno- Kuyaqhubeka ngesikhathi somdlalo wamanzi nesihlabathi	Ukufunda unganakile ngaphakathi kanye nangaphandle Umdlalo wamanzi nesihlabathi Sebenzisa izitsha ukuqhathanisa inani ngezitsha ezijwayelekile	Yethula ulwazi lokukala umthamo ngokuqhathanisa ukuthi izitsha ezinhlobonhlobo zimumatha kangakanani: - okungenalutho/ okugcwele - okuningi kunokunye/ okuncane kunokunye	Kuyaqhubeka ngesikhathi somdlalo wamanzi nesihlabathi Gcizelela ulimi lomthamo/ivolumu ngesikhathi semisebenzi yangaphakathi kanye nangaphandle
4.5	**Umjikelezo kanye nobungako Bendawo**	Alukho ulwazi luka-CAPS lweBanga R			

5. DATA HANDLING					
	TOPIC	**TERM 1**	**TERM 2**	**TERM 3**	**TERM 4**
5.1	**Collect and sort objects** Collect and sort physical objects according to one attribute, e.g. size of leaves	Introduce the concept of data handling: - collect and sort data, e.g. How many boys/girls in the class? - sort the data by letting learners stand in a boy/girl row	Collect objects (twigs of different sizes/ lengths) Sort the collected objects (twigs)	Pose a question: 'Are names with six letters the most popular?' Collect data to answer the question using the learners' name cards Sort the name cards according to the number of letters in each name	Collect data: Whose birthdays are in which month? Sort the data according to the relevant birthday month of each learner Collect data: e.g. What is your favourite playdough colour? Select one block representing the colour of his/her choice of playdough for the week Collect data: Which mode of transport do learners use to come to school? Sort the collected data (walk, with parent's car, taxi or bus)
5.2	**Represent sorted collections of objects**	Represent the graph using concrete objects Make a graph representing the data using blocks or shapes Make a pictograph	Draw a graph to display data (twigs) Draw a picture as a record of collected objects	Draw a graph by pasting each name card below the relevant column Make a pictograph	Draw a graph representing the learners' birthdays in each month Use real objects to make a graph, such as blocks to represent the colour of playdough you plan to make, e.g. blue, yellow, green Draw a pictograph representing the learners who walk and come by taxi, car, bus
5.3	**Discuss and report on sorted collections of objects**	Read and interpret data by using playdough to make a representation of the number of boys and girls in the class Answer questions based on own sorting of objects How many big leaves did you draw? Which are the most: the big leaves or the small leaves? How many/more/ less/same as?	Read and interpret graphs using questions Answer questions based on own picture or own sorted objects	Read and interpret data by counting the number cards in each column and coming to a conclusion	Read and interpret graphs using questions to determine which month has the most birthdays According to the choice of the learners, the colour of the playdough for the week will be, for example, yellow Read and interpret graphs (How many walk, come by taxi, bus, etc.?)

5. UKUSETSHENZISWA KOLWAZI					
	ISIHLOKO	**ITHEMU 1**	**ITHEMU 2**	**ITHEMU 3**	**ITHEMU 4**
5.1	**Qoqa uhlele izinto** Qoqa futhi uhlele izinto ngokophawu (i-athribhuthi) olulodwa, isib. ubungako bamaqabunga	Yethula ulwazi ngokusetshenziswa kolwazi: - qoqa bese uhlela ulwazi, isib. Mangaki amantombazana/ abafana ekilasini? - hlela ulwazi ngokuthi uvumele abafundi benze umugqa wabafana/ wamantombazane	Qoqa izinto (izindukwana ezinobungako obungalingani/ ubude) Hlela izinto eziqoqiwe (izindukwana)	Buza umbuzo: 'Ngabe amagama anezinhlamvu eziyisithupha iwona ajwayelekile?' Qoqa ulwazi ukuphendula umbuzo usebenzisa amakhadi anamagama abafundi Hlela amakhadi amagama ngokwenani lezinhlamvu zamagama egameni ngalinye	Qoqa ulwazi: Ezobani izinsuku zokuzalwa ezikuyiphi inyanga? Hlela ulwazi ngokwezinyanga zokuzalwa zomfundi ngamunye Qoqa ulwazi: isib. Yimuphi umbala wobumba lokudlala owuthandayo? Khetha ibhuloki elilodwa elimele umbala wobumba lokudlala azikhethele lona ngalelo sonto Qoqa ulwazi: Basebenzisa luphi uhlobo lwento yokuhamba uma beza esikoleni? Hlela ulwazi oluqoqiwe (abahamba ngezinyawo, ngemoto yabazali, ngetekisi noma ibhasi)
5.2	**Bonisa amaqoqo ezinto ezihleliwe**	Bonisa igrafu usebenzisa izinto eziphathekayo Yenza igrafu emele izinto eziqoqiwe usebenzisa amabhuloki noma izimo Yenza igrafu yezithombe	Dweba igrafu ukukhangisa ulwazi (izindukwana) Dweba isithombe esitshengisa izinto eziqoqiwe	Dweba igrafu ngokunamathisela ikhadi legama ngalinye ngezansi kwekholomu efanele Yenza igrafu yezithombe	Dweba igrafu emele izinsuku zokuzalwa zabafundi inyanga ngayinye Sebenzisa izinto zangempela ukwenza igrafu njengamabhuloki, ukumela umbala wobumba lokudlala ofisa ukulwenza, isib. oluhlaza okwesibhakabhaka, ophuzi, oluhlaza okotshani Dweba igrafu yezithombe emele abafundi abahamba ngezinyawo, nabeza ngetekisi, imoto noma ibhasi
5.3	**Xoxa futhi ubike ngamaqoqo ahleliwe ezinto**	Funda bese uhumusha ulwazi ngokusebenzisa ubumba lokudlala ukubonisa inani labafana kanye namantombazana ekilasini Baphendula imibuzo ngezithombe zabo noma izinto abazihlelile Mangaki amaqabunga amakhulu owadwebile? Yimaphi amaningi: amakhulu noma amancane amahlamvu? Kungaki/okuningi/ okuncane/okufanayo?	Funda bese uhumusha igirafu besebenzisa imibuzo Phendula imibuzo ngezithombe zabo noma izinto zabo abazihlelile	Funda bese uhumusha ngokubala inani lamakhadi ezinombolo kukhalamu ngayinye ukuze bafinyelele esiphethweni	Funda bese uhumusha igirafu besebenzisa imibuzo ukuthola ukuthi iyiphi inyanga enezinsuku eziningi zokuzalwa kwabafundi Ngokuzikhethela kwabafundi umbala wobumba lokudlala ozosebenza ngesonto kuzoba, isib. ophuzi Funda bese uhumusha amagrafu (Bangaki abahamba ngezinyawo, abeza ngetekisi, ibhasi, nokunye?)

Numbers, Operations and Relationships

Understanding number

Children develop a sense of number and counting through their everyday experiences. They use these to begin to make connections between the different meanings of number. They discover that numbers can be used differently in different situations. For example, 'five' can be used:

- to express an amount ('how muchness'): 'I have five sweets.'
- to express the order of things: 'She is the fifth person in the row.'
- as a measure: 'He is five years old.'
- as a label: 'We live at number five.'
- in a calculation: '2 + 3 = 5'

Numbers are ideas or concepts of quantity (how much). Learners begin to understand that 'five' means that there are five of something, and that five can be the fifth position in a row, or 'five' can tell us how many things there are. Numbers communicate specific, detailed information about collections and quantities of objects, events or actions.

Figure 4.2 Different meanings of 'five'

Numbers are abstract concepts. They are not objects themselves. They describe something about other objects. For example, just like the word 'green' can be used to describe the colour of an apple, the number 'six' can be used to describe the number of apples in a collection. If someone asks you to give them a plate you can hand them the physical object, but if someone asks you to give them 'five' you can't pick that up and

Izinombolo, Izimpawu kanye Nobudlelwane Bazo

Ukuqonda izinombolo

Izingane zithuthukisa ulwazi lwezinombolo nokubala ngezinto abazifundayo nsukuzonke. Zisebenzisa lokhu ukuze ziqale ukuhlanganisa phakathi kwezincazelo ezihlukene zenombolo. Zithola ukuthi izinombolo zingasetshenziswa ngokuhlukile ezimweni ezihlukene. Isibonelo, kungasetshenziswa 'kuhlanu':

- ukuveza inani ('ubukhulu obungakanani'): 'Nginamaswidi amahlanu.'
- ukuveza ukuhleleka kwezinto: 'Ungumuntu wesihlanu emgqeni.'
- njengesilinganiso: 'Uneminyaka yobudala emihlanu.'
- njengelebula: 'Sihlala kwanombolo 5.'
- ekubaleni: '2 + 3 = 5'

Izinombolo ziyimibono noma imicabango ngenani (kungaki). Abafundi baqala ukuqonda ukuthi 'kuhlanu' kuchaza ukuthi kukhona okuhlanu kwento ethile, nokuthi okuhlanu kungaba isikhundla sesihlanu emgqeni, noma 'kuhlanu' angasitshela ukuthi zingaki izinto ezikhona. Izinombolo zazisa ngemininingwane okuyiyona yona echazayo ngamaqoqo nangenani lezinto, izigameko noma izenzo.

Umfanekiso 42 Izincazelo ezihlukene zo-'kuhlanu'

Izinombolo ziyimiqondo engabonakali. Azizona izinto uqobo. Zichaza okuthile mayelana nezinto. Isibonelo, njengegama 'okuluhlaza okotshani' lingasetshenziselwa ukuchaza umbala we-apula, inombolo 'isithupha' ingasetshenziswa ukuchaza inani lama-apula eqoqweni. Uma umuntu ecela ukuthi umnike ipuleti ungamnika lona uqobo, kodwa uma umuntu ecela ukuthi umnike 'okuhlanu' awukwazi ukukuthatha lokho bese umnikeza. Ungacabanga ukubanika uphawu olumele inombolo '5' olubhalwe

hand it to them. You might think of giving them the numeral '5' written on a card or you might give them five sticks, or show five fingers. It is impossible to show the number itself because it is an idea in our heads, so we find ways of showing or representing the number, such as using a collection of objects, a picture or a symbol, such as a numeral or a word.

In practice ...

Help learners build new maths knowledge and concepts based on their everyday experiences:

- Draw on learners' prior knowledge when introducing new maths concepts.
- Use practical situations to model new maths concepts.
- Make links between everyday activities and concepts.
- Plan activities that build on and deepen learners' understanding of a maths concept.

Figure 43 illustrates a simple progression from everyday activities to more complex concepts of number in Grade R. It starts with everyday activities that have links to numbers and initial number concepts and progresses to more complex concepts of number.

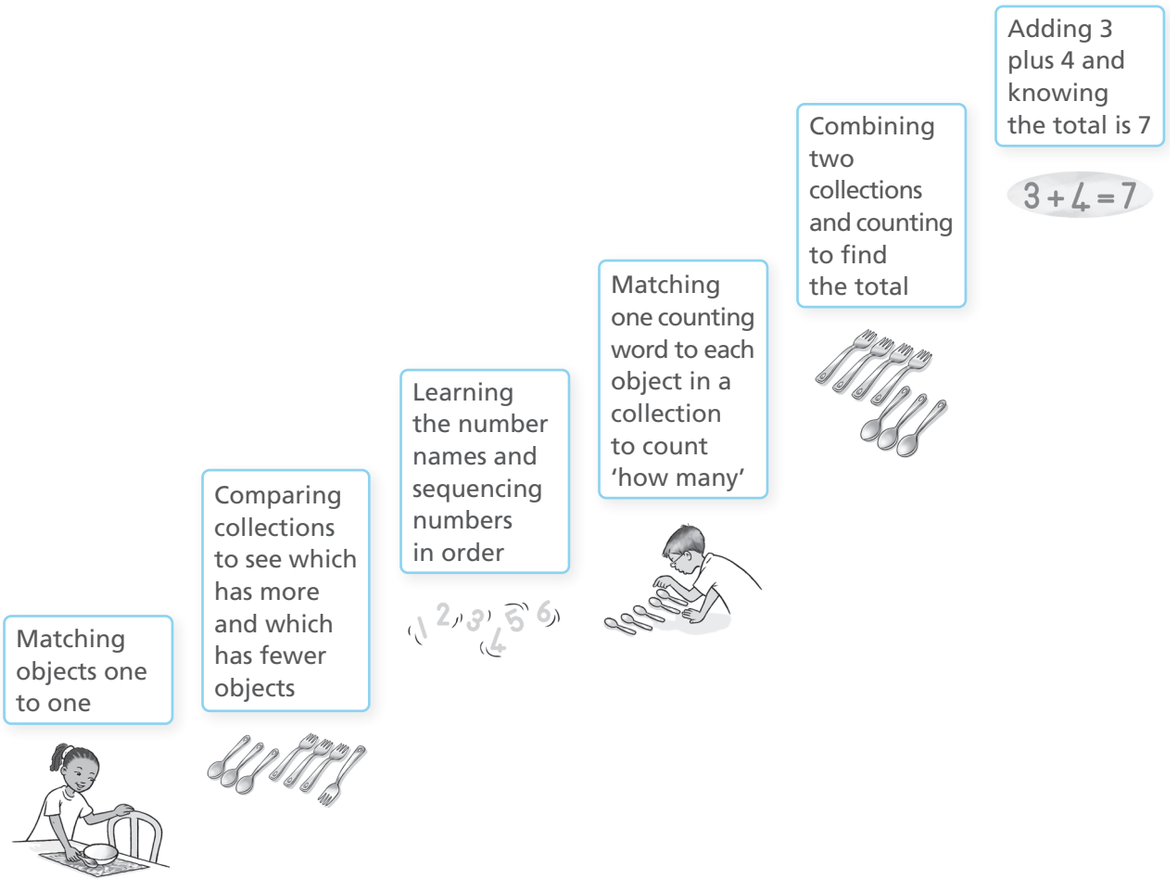


Figure 43 Progression

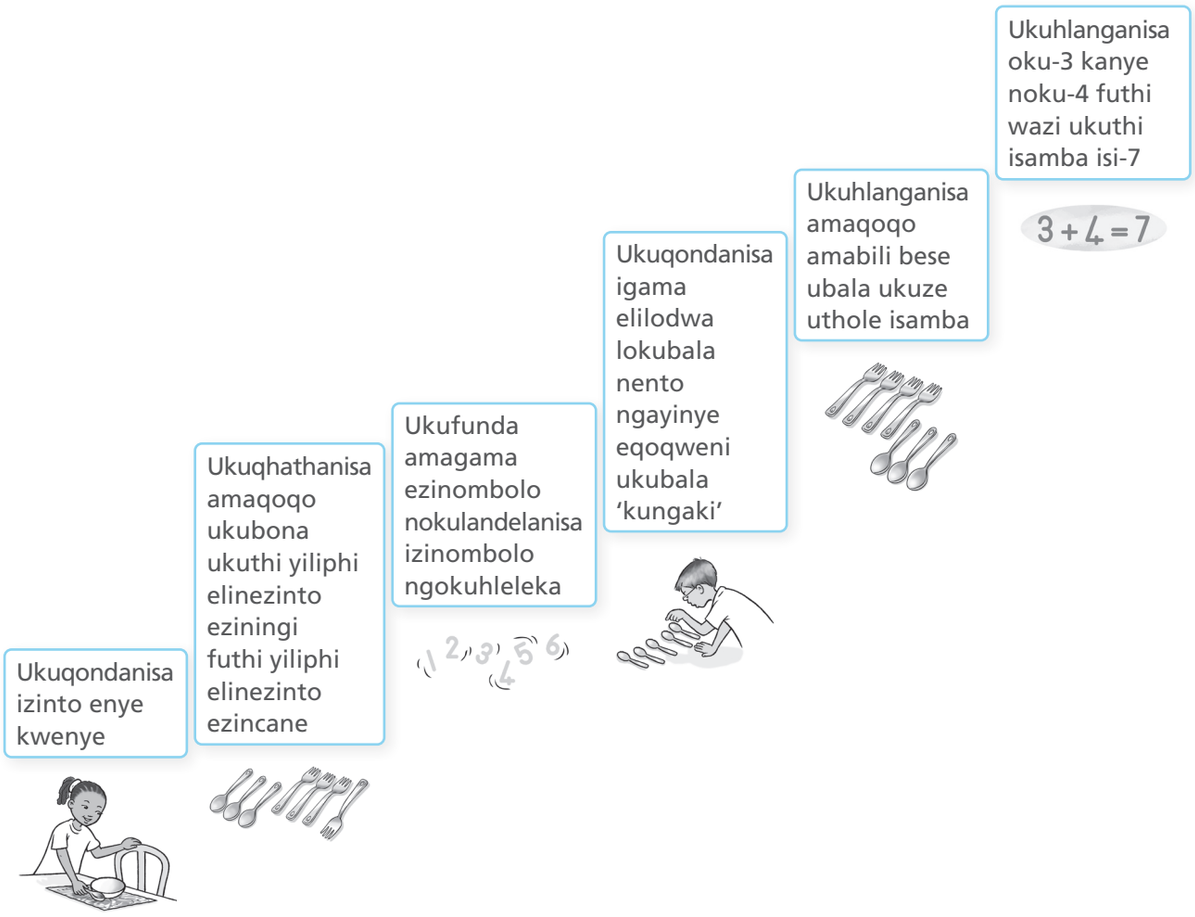
ekhadini noma ungamunika izinduku ezinhlanu, noma ukhombise iminwe emihlanu. Akunakwenzeka ukukhombisa inombolo uqobo ngoba iwumbono osemakhanda ethu, ngakho-ke sithola izindlela zokukhombisa noma zokumela inombolo, njengokusebenzisa iqoqo lezinto, isithombe, noma uphawu, njengenombolo noma igama.

Uma sekwenziwa ...

Siza abafundi ukwakha ulwazi olusha lwezibalo kanye nolwazi olwesekelwe kwabakufunda nsukuzonke:

- Sebenzisa ulwazi lwaphambilini lwabafundi uma wethula ulwazi olusha lwezibalo.
- Sebenzisa izimo ezijwayelekile ukubonisa ulwazi olusha lwezibalo.
- Hlanganisa phakathi kwemisebenzi yansukuzonke nolwazi.
- Hlela imisebenzi eyakhela futhi ijulise ukuqonda kwabafundi ulwazi lwezibalo.

Umfanekiso 43 ukhombisa ukuqhubeka okulula kusuka emisebenzini yansukuzonke kuya olwazini olulukhuni lwenombolo eBangeni R. Kuqala ngemisebenzi yansukuzonke enokuxhumana nezinombolo kanye nolwazi lokuqala lwenombolo kuqhubeke kuye kulwazi lwenombolo olubukhuni.



Umfanekiso 43 Inqubekelaphambili

Representing number

During Grade R, learners use symbols to **represent** words, images and ideas. Children first learn to represent ideas or actions through fantasy play, for example, a learner's arms are the aeroplane wings as she zooms around the room, or a learner might use a plastic lid as a steering wheel to drive a car.

GLOSSARY

represent
to use objects, symbols or actions to stand for an idea or concept

Learners begin to represent numbers using their fingers and then gradually start to use other methods, such as objects, drawings, pictures or symbols. Learners progress:

- from using actual objects to represent numbers, e.g. lemons, sweets, pencils, leaves
- to using pictures or drawings to represent the objects, e.g. a drawing of a lemon, person, car
- to using counters to represent the objects or pictures, e.g. plastic discs to show the number of lemons
- to using marks to represent the physical objects and pictures, e.g. circles, dots, tally marks
- to using written number symbols and number words, e.g. '2' or 'two'.

Here are some different ways of representing 'five'.

Figure 44 Different representations of 'five'

Different kinds of numbers

There are different kinds of number in the number system. **In Grade R we focus only on understanding and using whole numbers (counting numbers).**

In higher grades, learners will learn that:

- **integers** include whole numbers and negative numbers
- **rational numbers** include whole numbers, negative numbers, decimals and fractions.

Ukumela inombolo

Ngesikhathi seBanga R, abafundi basebenzisa izimpawu **ukumela** amagama, izithombe kanye nemibono. Izingane ziqala zifunde ukumela imibono noma izenzo ngomdlalo wokuzenzisa, isibonelo, izingalo zomfundi zingamaphiko ebhanoyi njengoba ezungeza egumbini, noma umfundi angasebenzisa isivalo sepulasitiki njengesiteringi sokushayela imoto.

IGLOSARI

ukumela
ukusebenzisa izinto, izimpawu noma izenzo ukumela umbono noma ulwazi

Abafundi baqala ukumela izinombolo uma besebenzisa iminwe bese beqala kancane ukusebenzisa ezinye izindlela njengezinto, imidwebo, izithombe noma izimpawu. Abafundi baqhubekela:

- ekusebenziseni izinto zangempela ukumela izinombolo, isib. olamula, amaswidi, amapensela, amahlamvu
- ekusebenziseni izithombe noma imidwebo ukumela izinto, isib. umdwebo kalamula, umuntu, imoto
- ekusebenziseni izinto zokubala ukumela izinto eziphathekayo noma izithombe, isib. amadiski epulasitiki ukukhombisa inani lolamula
- ekusebenziseni omaka ukumela izinto eziphathekayo nezithombe, isib. izindilinga, amacashazi, ukuhlanganisa amamaki
- ekusebenziseni izimpawu zezinombolo ezibhaliwe namabizonombolo, isib. '2' noma 'kubili'.

Nazi ezinye izindlela ezihlukene zokumela 'kuhlanu'.

Umfanekiso 44 Ukumela 'okuhlanu' okwehlukene

Izinhlobo ezihlukene zezinombolo

Kunezinhlobo ezihlukene zenombolo ohlelweni lwezinombolo. **Ebangeni R sigxila kuphela ekuqondeni nasekusebenziseni izinombolo eziphelele (izinombolo zokubala)**.

Emabangeni aphezulu, abafundi bazofunda ukuthi:

- **izinombolo eziphelele** zimbandakanya izinombolo eziphelele kanye nezinombolo eziphikayo
- **izinombolo zonke** zimbandakanya izinombolo eziphelele, izinombolo eziphikayo, ingxenye ebalwa ngamashumi (amadesimali) kanye namaqhezu.

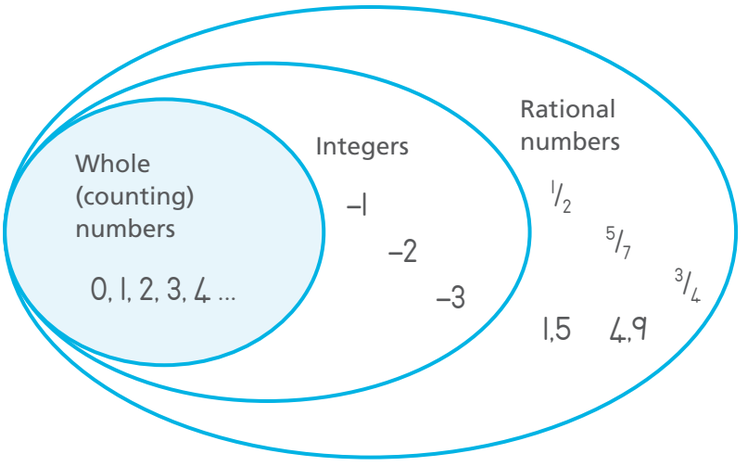


Figure 4.5 In Grade R the focus is on whole numbers.

Subitising

Subitising involves immediately recognising, without counting, the number of items in small collections. Subitising is an early skill that exists before learning number names and symbols or learning to count. Subitising forms a strong foundation for counting collections of objects and for early calculation.

GLOSSARY

subitising
the cognitive ability to immediately recognise the total number of objects in a collection without counting

Perceptual subitising

Perceptual subitising is the ability to immediately perceive the number of objects in a small collection. Young children are able to perceive or recognise the difference between a number of objects in a collection, without counting, and can say which is more or which is fewer without knowing number names or symbols. Often, they can use their fingers to match and show the same number of objects. Gradually they learn to match number names to the collection and will be able to say, without counting, that there are one, three, two, five objects in a collection. This form of subitising is only possible with a small number of objects and most children and adults can accurately do this up to five.

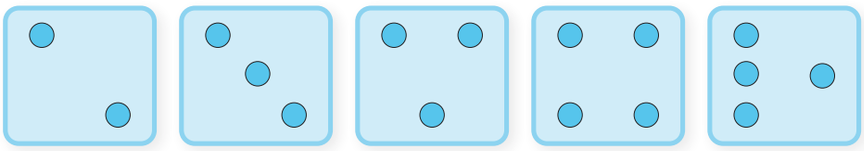
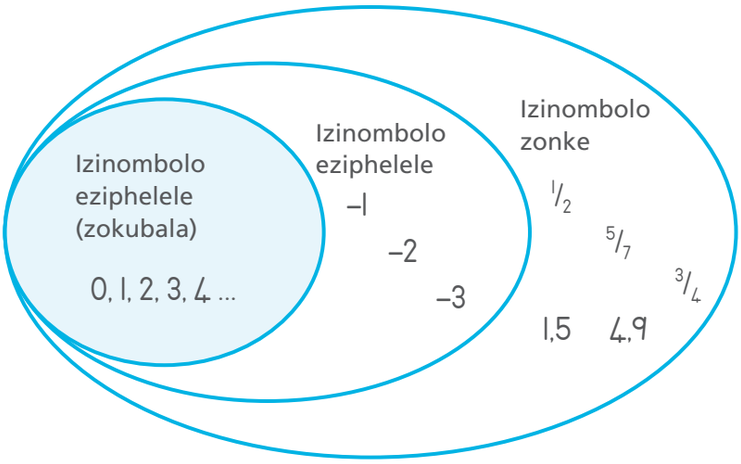


Figure 4.6 Dot arrangements for two, three and four

Conceptual subitising

In Grade R the learners' ability to recognise 'how many' objects there are in a collection increases. It can extend to amounts larger than five by making use of number images, such as the arrangement of the dots on dice, dominoes and ten-frames.



Umfanekiso 4.5 Ebangeni R kugxilwa ezinombolweni eziphelele.

Ukubona isamba ungabalanga

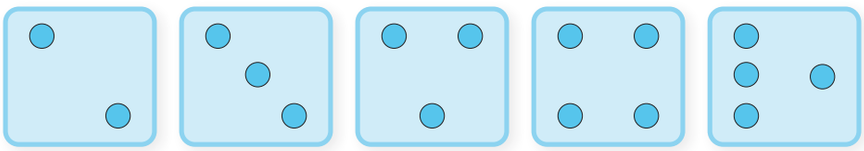
Ukubona isamba ungabalanga kumbandakanya ukusheshe ubone, ngaphandle kokubala, inani lezinto ngamaqoqo amancane. Ukubona isamba ungabalanga ikhono lokuqala elikhona ngaphambi kokufunda amagama ezinombolo nezimpawu noma ukufunda ukubala. Ukubona isamba ungabalanga kwakha isisekelo esiqinile sokubala amaqoqo ezinto kanye nokubala kwasekuqaleni.

IGLOSARI

ukubona isamba ungabalanga ikhono lokukwazi ukuthi usheshe ubone inani lezinto emaqoqweni ngaphandle kokubala

Ukuqonda ukubona isamba ungabalanga

Ukubona isamba ungabalanga ikhono kokusheshe uqaphele inani lezinto eqoqweni elincane. Izingane ezincane ziyakwazi ukuqaphela noma ukubona umahluko phakathi kwenani lezinto eqoqweni, ngaphandle kokubala, futhi angasho ukuthi yikuphi okuningi noma yikuphi okuncane ngaphandle kokwazi amagama ezinombolo noma izimpawu. Ngokuvamile bangasebenzisa iminwe yabo ukuqondanisa nokukhombisa inani elifanayo lezinto. Kancane kancane bafunda ukuqondanisa amagama ezinombolo neqoqo futhi bazobe sebekwazi ukuthi, ngaphandle kokubala kuneyodwa, ezimbili, ezintathu, ezinhlanu izinto eqoqweni. Le ndlela yokubona isamba ungabalanga yenzeka kuphela ngenani elincane lezinto futhi izingane eziningi nabantu abadala bangakwenza lokhu ngobuchule baze bafike kokuhlanu.



Umfanekiso 4.6 Ukuhlelwa kwamachashazi okubili, okuthathu nokune

Ukubona isamba engqondweni ungabalanga

Ebangeni R ikhono labafundi lokuqaphela izinto 'ezingaki' eqoqweni liyakhula. Lingaqhubekela emananini amakhulu kunokuhlanu ngokusebenzisa lokhu kuhleleka kwamachashazi emadayisini, amadomino kanye nezinhlaka zokuyishumi.

In the examples below, by using conceptual subitising, learners can immediately recognise that these cards each show seven objects.

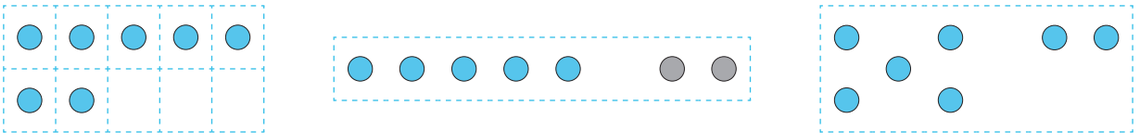


Figure 47 Dot arrangements for seven

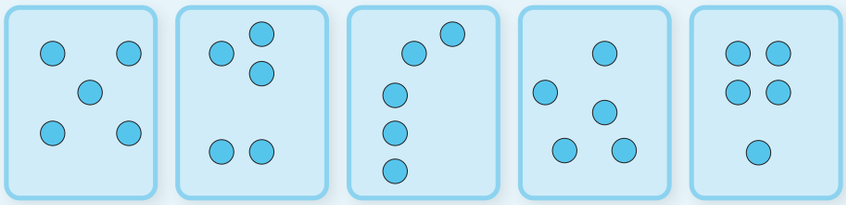
This extended form of subitising is called conceptual subitising. It is based on part–whole knowledge and enables learners to quickly identify numbers larger than five.

In practice ...

Learners enjoy playing games that involve quickly showing a small number of objects before hiding them, then asking how many there were. Matching and counting games will consolidate subitising, for example, recognising a number of objects without counting. This will help the learners with memorising number combinations to ten and early calculations (addition and subtraction).

Dot cards can be used to:

- present different number arrangements from one to five
- support the development of recognition of small numbers
- associate number names with small collections
- match counters to the dots.



A B C D E

Figure 48 Dot cards

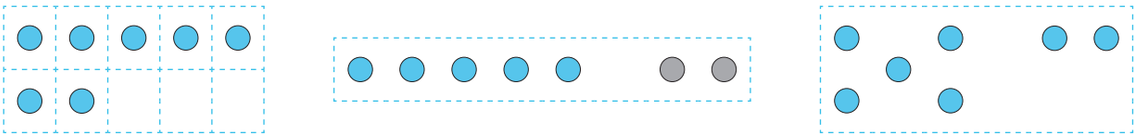
Activities such as dominoes and dice games provide fun opportunities to practise subitising skills.

Counting

Counting is a complex skill that needs lots of practice. Learners develop it as they practise counting real objects. Often they begin by imitating the counting of older learners and adults.

There are two activities that involve counting. The first is oral or rote counting that involves memorising the names and order of the counting numbers, often in a rhyme or song. The second is counting objects one by one to find out 'how many'.

Ezibonelweni ezingezansi, ngokusebenzisa ukubona isamba engqondweni ungabalanga, abafundi bangasheshe babone ukuthi lawa makhadi ngalinye akhombisa izinto eziyisikhombisa.



Umfanekiso 47 Ukuhlelwa kwamachashazi kokuyisikhombisa

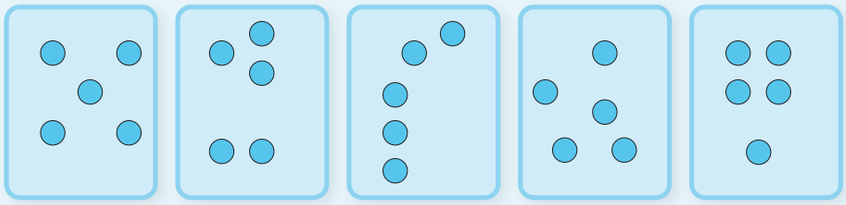
Le ndlela enwetshiwe yokubona isamba ungabalanga ibizwa ngokuthi ukubona isamba engqondweni ungabalanga. Yesekelwe olwazini oluyingxenye yokuphelele futhi lusiza abafundi ukuthi basheshe babone izinombolo ezinkulu kunokuhlanu.

Uma sekwenziwa ...

Abafundi bayakujabulela ukudlala imidlalo embandakanya ukuveza ngokushesha inani elincane lezinto ngaphambi kokuzicashisa bese ubuza ukuthi bezingaki. Imidlalo yokuqondanisa nokubala izoqinisa ukubona isamba ungabalanga, isibonelo, ukubona inani lezinto ngaphandle kokubala. Lokhu kuzosiza abafundi ngenhlanganisela yezinombolo zekhanda kuze kufike eshumini kanye nokubala kokuqala (ukuhlanganisa nokususa).

Amakhadi anamacashazi angasetshenziswa:

- ukwethula ukuhlelwa kwezinombolo kusuka kokukodwa kuya kokuhlanu
- ukukhuthaza ukuthuthukiswa kokuqashelwa kwezinombolo ezincane
- ukuhlanganisa amagama ezinombolo namaqoqo amancane
- ukuqondanisa izinto zokubala namacashazi.



A B C D E

Umfanekiso 48 Amakhadi anamacashazi

Imisebenzi njengamadomino nemidlalo yamadayisi inikeza amathuba amnandi okulolonga amakhono okubona isamba ungabalanga.

Ukubala

Ukubala kuyikhono elilukhuni elidinga ukuzilolonga okuningi. Abafundi bayalithuthukisa ngesikhathi bezilolonga bebala izinto zangempela. Ngokujwayelekile baqala ngokulingisa ukubala kwabafundi abadadlana kanye nabantu abadala.

Kunemisebenzi emibili embandakanya ukubala. Owokuqala ukubala ngomlomo noma ukubala ngesigqi okumbandakanya ukukhumbula ngekhanda amagama kanye nokuhleleka kwezinombolo zokubala, ngokuvamile ngomlolozelo noma ngomculo. Owesibili ukubala izinto ngazinye ngazinye ukuthola ukuthi 'kungaki'.

Oral counting

In Grade R, learners learn the correct order of number names and repeat the sequence daily, counting out loud. This kind of **oral counting** is also called **rote** or **acoustic counting**. The purpose of counting out loud is to help learners understand that when we count, there is a set order for the number names, beginning at one, and then following with two, three, four. Initially, learners do not fully understand the meaning of the number names and might skip numbers in a counting sequence.

Reciting a rhyme or series of numbers orally means repeating the numbers from memory. Even when learners count in steps of two, five and ten they are using their knowledge of this number order. Learning number names and repeating them in the correct order does not necessarily mean that learners can count. This is different from counting to find out 'how many'.

GLOSSARY

oral counting/ rote counting/ acoustic counting
counting out loud, saying the numbers in the correct order

rational counting/ resultative counting
counting objects to find out 'how many'

Counting objects

Counting objects is also called **rational** or **resultative counting**. This means that objects or events are matched with a number name. To count 'how many', learners need to realise that each object in a collection gets a number name ('one, two, three, four …') and that you count each object only once.

With plenty of hands-on activities and guidance from the teacher, learners begin to understand and apply the following counting principles:

1. **One-to-one correspondence principle:** Matching one, and only one, counting word to each object in the collection being counted. Initially learners might count the same object twice, skip an object or forget which objects have been counted. It is useful for learners to touch and move objects as they count.
2. **Stable order principle:** Number names are always arranged in the same fixed order, e.g. one is followed by two, two is followed by three, three is followed by four, and so on.
3. **Cardinal principle:** The last number name said when counting a collection, represents the total number in the collection.
4. **Abstraction principle:** Learners understand that even if groups with the same number of objects look very different (e.g. five grapes, five people, five houses) they have the same numerosity, i.e. 'fiveness'. They realise that counting can be applied to objects, pictures, colours, shapes, or even actions or sounds.
5. **Order-irrelevance principle:** The order of counting the objects in a collection does not matter. Learners need to understand that however we arrange the objects, the total number of objects in the collection remains the same.

Ukubala ngomlomo

Ebangeni R, abafundi bafunda ukuhleleka okuyikho kwamagama ezinombolo bese bephinda ukulandelanisa nsukuzonke, bebala kakhulu kuzwakale. Le ndlela **yokubala ngomlomo** ibuye ithiwe **i-rote** noma **ukubala ngesigqi**. Inhloso yokubala kakhulu kuzwakale wukusiza abafundi ukuthi baqonde ukuthi uma sibala, kunohlelo olubekiwe lwamagama ezinombolo kuqala ngokunye bese kulandela okubili, kuthathu, kune. Ekuqaleni abafundi abayiqondi ngokuphelele incazelo yamagama ezinombolo futhi bangazeqa izinombolo lapho bebala ngokulandelanisa.

Ukuhaya imilolozelo noma uchungechunge lwezinombolo ngomlomo kusho ukuphindaphinda izinombolo ngekhanda. Noma ngabe abafundi babala ngezinyathelo zokubili, zokuhlanu neshumi basebenzisa ulwazi lwabo lwaloku kuhleleka kwenombolo. Ukufunda amagama ezinombolo nokuwaphindaphinda ngohlelo olufanele akuchazi ukuthi abafundi bangabala. Lokhu akufani nokubala ukuze uthole ukuthi 'kungaki'.

IGLOSARI

ukubala ngomlomo/i-rote/ ukubala ngesigqi
ukubala kakhulu kuzwakale, esho izinombolo ngokulandelana kwazo

ukubala okunomphumela
ukubala izinto ukuze uthole ukuthi 'zingaki'

Ukubala izinto

Ukubala izinto kwaziwa futhi ngokuthi **ukubala okunomphumela**. Lokhu kuchaza ukuthi izinto noma izigameko ziqondaniswa negama lenombolo. Ukubala ukuthi 'kungaki', abafundi kumele baqonde ukuthi into ngayinye eqoqweni ithola igama lenombolo ('kunye, kubili, kuthathu, kune …') nokuthi into uyibala kanye kuphela.

Ngokuzibambela mathupha emisebenzini kanye nokuholwa nguthisha, abafundi baqala ukuqonda bese besebenzisa le migomo yokubala elandelayo:

1. **Umgomo wokukodwa kokukodwa okuhambisanayo:** Ukuqondanisa okukodwa, nokukodwa vo, igama lokubala entweni ngayinye eqoqweni elibalwayo. Ekuqaleni abafundi bangabala into kabili, beqe into noma bakhohlwe ukuthi yiziphi zinto asebezibalile. Kuyabasiza abafundi ukuthi bazithinte izinto noma bazihambise ngesikhathi bebala.
2. **Umgomo wokuhleleka okuzinzile:** Njalo amagama enombolo ahlelwa ngendlela efanayo engajiki, isib. kunye kulandelwa okubili, okubili kulandelwa okuthathu, okuthathu kulandewa okune njalonjalo.
3. **Umgomo wenhloko:** Igama lenombolo yokugcina eshiwo ngesikhathi kubalwa iqoqo imela isamba eqoqweni.
4. **Umgomo wokusengqondweni:** Abafundi baqonda ukuthi noma ngabe amaqoqo anenani elifanayo lezinto ebukeka ehlukene (isib. amagilebhisi amahlanu, abantu abahlanu, izindlu ezinhlanu) anobunani obufanayo, okungukuthi 'ubuhlanu'. Bathola ukuthi ukubala kungasetshenziswa ezintweni, ezithombeni, emibaleni, ezenzweni imbala noma emisindweni.
5. **Umgomo wokuhleleka okungahambelani:** Ukuhleleka kokubala izinto eqoqweni akusho lutho. Abafundi badinga ukwazi ukuthi noma singazihlela kanjani izinto, inani lezinto eqoqweni lihlala lifana.

Figure 49 Example of the abstraction principle

Once learners have understood and can apply all five of these counting principles, we can confidently say that they can count.

In practice ...

With practice, learners understand that counting can be used to compare collections of objects. Once learners know the counting sequence or order of the counting numbers they:

- begin to understand that each number in the counting sequence is one bigger than the number before and one smaller than the next number.
- can mentally compare numbers and see that two is one more than one, and that three is one more than two.
- realise that numbers grow by one each time and that any number in the counting sequence is exactly one more than the previous number.

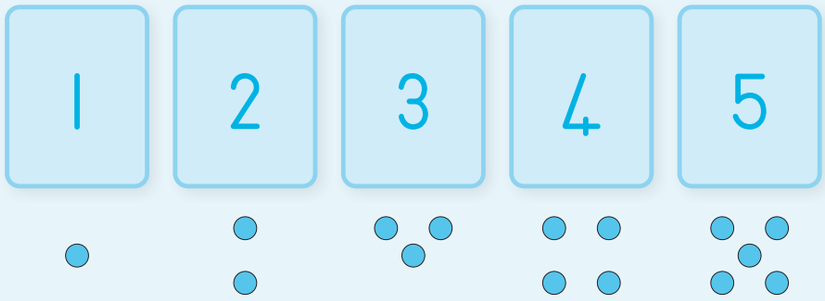


Figure 50 Counters represent number quantities in order.

Estimation

Although counting is about finding the exact number of objects in a collection, learners also need to develop estimation skills so that they can say 'about' how many objects there are in a collection. They need to be able to use terms such as 'a lot', 'few', 'more', 'too many' or 'the same as'. Estimating is about learners using their understanding of number to make sensible and accurate guesses about quantities and amounts while realising that an estimate does not need to be exactly right. Learners are often reluctant to make a guess in case it is incorrect.

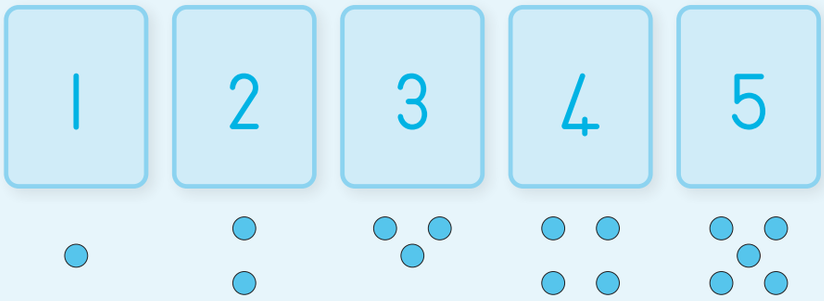
Umfanekiso 49 Isibonelo somgomo wokusengqondweni

Uma abafundi sebeqonda futhi sebekwazi ukusebenzisa yonke le migomo emihlanu, sesingasho ngokuzethemba ukuthi bayakwazi ukubala.

Uma sekwenziwa ...

Ngokuzijwayeza, abafundi baqonda ukuthi ukubala kungasetshenziswa ukuqhathanisa amaqoqo ezinto. Uma abafundi sebekwazi ukulandelana kokubala noma uhlelo lwezinombolo zokubala:

- baqala ukuqonda ukuthi inombolo ngayinye ekubaleni okulandelanayo iyinombolo enkudlwana kunale ephambi kwayo futhi incanyana kunale elandelayo.
- bangaqhathanisa ngekhanda izinombolo bese bebona ukuthi okubili kukhulu kunokukodwa, nokuthi okuthathu kukhulu ngokukodwa kunokubili.
- bathola ukuthi izinombolo zikhula ngokukodwa ngesikhathi sinye nokuthi inombolo noma iyiphi ekubaleni okulandelanayo inkulu ngokukodwa ncimishi kunenombolo edlule.



Umfanekiso 50 Izinto zokubala zimela amanani ezinombolo ngokuhleleka.

Ukuqagela

Nakuba ukubala kuwukuthola inani eliyilo lezinto eqoqweni, abafundi bayadinga futhi ukuthuthukisa amakhono okuqagela ukuze bakwazi ukusho ukuthi ‘cishe’ zingaki izinto eziseqoqweni. Badinga ukuthi bakwazi ukusebenzisa amagama njengokuthi ‘okukhulu’, ‘okuncane’, ‘okuningi’, ‘okuningi kakhulu’ noma ‘okufanayo no-’. Ukuqagela kuwukuthi abafundi besebenzisa ukuqonda kwabo inombolo ukwakha ukuqagela okunomqondo futhi okushaya khona mayelana nobungako namanani ngenkathi bethola ukuthi okuqageliwe akudingeki ukuthi kube ngokuyikhona ngempela. Abafundi bavame ukuba manqikanqika ukuqagela uma kwenzeka kungeyikhona.

In practice ...

Although learners may not yet be able to count a number of objects precisely, they can find an answer by estimation.

- Based on the visual image, learners can see that there are more objects or items in a picture. They can say which has more or which has fewer.
- Learners can find the answer by using one-to-one matching of the objects from two collections to compare which collection has the most and which has the least.
- Learners can compare the number of items in two pictures by drawing a line around the same number of items in each picture.
- Learners can also use their hands to cover a number of items, for example, four ice creams in each picture. It would be clear that there are more ice creams uncovered in the first picture.

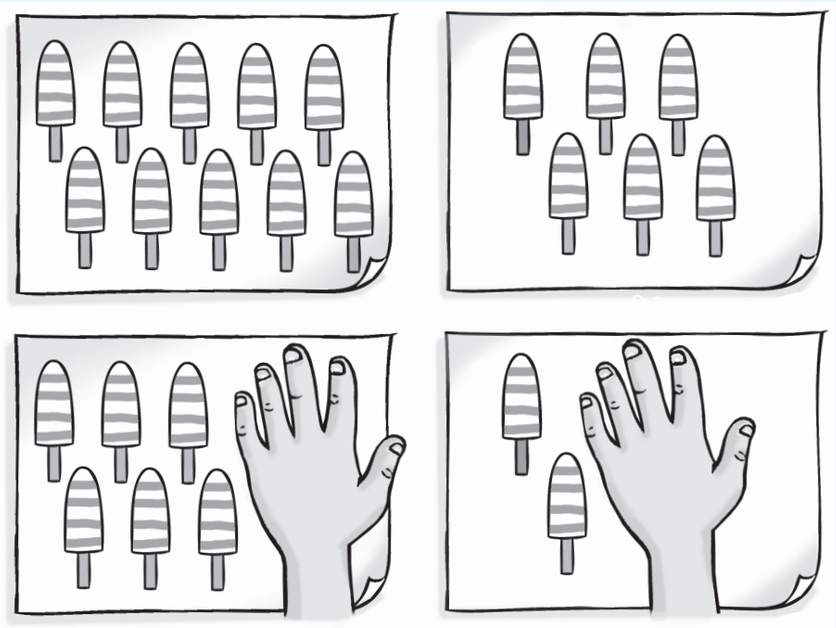


Figure 51 Estimating based on the visual image that is seen

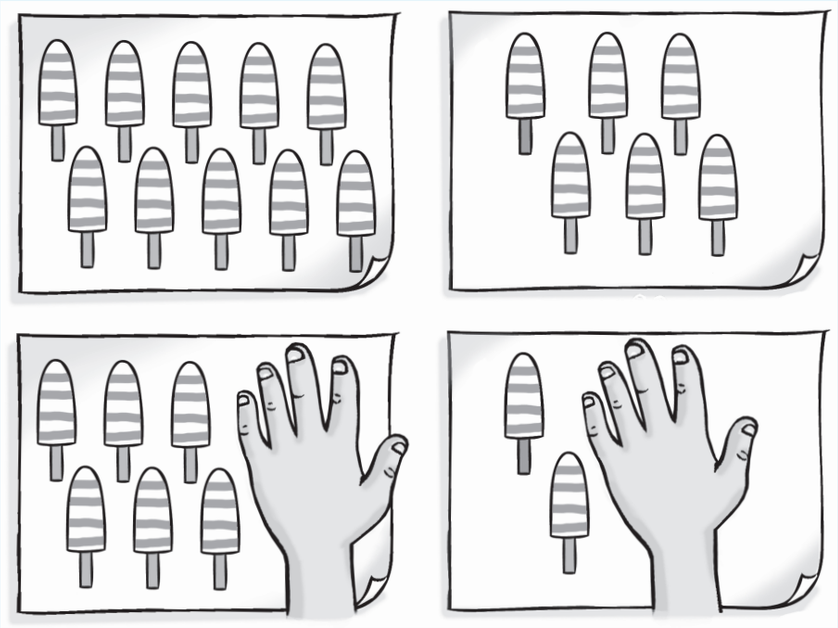
Ordinal numbers

Ordinal numbers are used to describe the place or position of a person or object, for example, in a line or row. Learners understand that if they run a race they don't come 'three' they come 'third'. In the same way, they know that they don't stand 'one' in line but rather 'first'.

Uma sekwenziwa ...

Nakuba abafundi bengeke bakwazi ukubala inani lezinto ngokuyikho, bangayithola impendulo ngokulinganisa.

- Ngokusekelwe esithombeni esibonakalayo abafundi bangabona ukuthi kunezinto eziningi esithombeni. Bangasho ukuthi yisiphi esinokuningi noma yisiphi esinokuncanyana.
- Abafundi bangathola impendulo ngokusebenzisa ukuqondanisa okukodwa kokukodwa kwezinto ezisemaqoqweni amabili ukuqhathanisa ukuth yiliphi iqoqo elinokuningi kakhulu nokuthi yiliphi elinokuncane kakhulu.
- Abafundi bangaqhathanisa inani lezinto ezithombeni ezimbili ngokudweba ulayini bakokolozele inani elifanayo lezinto esithombeni ngasinye.
- Abafundi bangasebenzisa futhi izandla zabo ukumboza inani lezinto, isibonelo, o-ayisikhilimu abane esithombeni ngasinye. Kungacaca ukuthi baningi o-ayisikhilimu abambulwayo esithombeni sokuqala.



Umfanekiso 51 Ukuqagela okwesekelwe phezu kwesithombe esibonakalayo esingabonwa

Izinombolo ezisho isikhundla

Izinombolo ezisho isikhundla zisetshenziswa ukuchaza indawo noma isikhundla somuntu noma sento, isib. kulayini noma emgqeni. Abafundi bayaqonda ukuthi uma begijima umjaho abaphumi ‘kuthathu’ kodwa baphuma ‘isithathu’. Ngendlela efanayo, bayazi ukuthi abami ‘kunye’ emugqeni kodwa ‘ekuqaleni’.

Figure 52 First, second and third positions

Calculating

A good understanding of number and counting is important for learning how to calculate. Learners first need to understand the relationship between numbers: comparison, ordering and partitioning numbers (breaking down and building up) in order to learn number operations, such as addition, subtraction, multiplication and division.

Activities and experiences that involve breaking down and building up numbers, adding to and comparing collections are the beginning of the concept of combining (addition) and separating (subtraction). Grade R learners are also exposed to addition and subtraction during their everyday games and activities, e.g. when they play 'shop' together or have to share toys. For subtraction, learners need to take part in practical activities that involve 'taking away', in other words, finding how many are left in a collection of objects when some have been removed. Initially learners will use counting strategies to solve problems involving addition or subtraction, e.g. counting all the objects in two collections to reach a total amount when the two collections are combined, or counting how many coins are left when some have been given away.

Multiplication, division and fractions are not formally taught in Grade R, but learners use these concepts when they solve problems that involve making groups of objects and when they share something equally. Activities that involve repeated addition and repeated subtraction lay the foundation for the concepts of multiplication and division. These activities also help to establish relationships between addition and multiplication, and subtraction and division, which need to be understood later on at school.

In practice ...

Present learners with problems that explore making equal groups and equal sharing, for example:

- Ask three learners to each take two counters. Together count the total number of counters, e.g. two and two is four and two is six (repeated addition).

Umfanekiso 52 Isikhundla owokuqala, owesibili, owesithathu

Ukubala

Ukuqonda inombolo nokubala kubalulekile ukuze ufunde ukuthi kubalwa kanjani. Abafundi badinga ukuqonda kuqala ubudlelwane phakathi kwezinombolo: ukuqhathanisa, ukuhleleka nokwahlukanisa izinombolo (ukuhlakaza nokwakha) ukuze bafunde ukusebenza ngezinombolo njengokuhlanganisa, ukususa, ukuphindaphinda kanye nokuhlukanisa.

Imisebenzi nezifundo zempilo ezimbandakanya ukuhlukanisa nokwakha izinombolo, ukuhlanganisa nokuqhathanisa amaqoqo kuwukuqala kolwazi lokuhlanganisa (ukuhlanganisa) kanye nokususa (ukususa). Abafundi Bebanga R bahlangabezana nokuhlanganisa nokususa emidlalweni nemisebenzi yabo yansukuzonke, isib. uma bedlala 'isitolo' ndawonye noma uma kumele babelane ngamathoyizi. Ukuze basuse, abafundi badinga ukubamba iqhaza emisebenzini eyenziwayo embandakanya 'ukususa', ngamanye amazwi ukuthola ukuthi zingaki ezisele eqoqweni lezinto uma ezinye sezisusiwe. Ekuqaleni abafundi bazosebenzisa amasu okubala ukuxazulula izinkinga ezimbandakanya ukuhlanganisa noma ukususa, isib. ukubala zonke izinto emaqoqweni amabili ukuze kufikwe esambeni esiphelele uma amaqoqo amabili ehlanganisiwe, noma ukubala ukuthi zingaki izinhlamvu zemali ezisele uma ezinye sekunikelwe ngazo.

Ukuphindaphinda, ukuhlukanisa kanye namaqhezu akafundiswa ngokomthetho Ebangeni R, kodwa abafundi basebenzisa lolu lwazi ukuxazulula izinkinga ezimbandakanya ukwenza amaqoqo ezinto kanye nalapho babelana ngokulingana into. Imisebenzi embandakanya ukuhlanganisa okuphindekile nokususa okuphindekile yakha isisekelo solwazi lokuphindaphinda kanye nokuhlukanisa. Le misebenzi ibuye isize ukwakha ubudlelwane phakathi kokuhlanganisa nokuphindaphinda, kanye nokususa nokuhlukanisa, okudinga ukuthi kuqondwe ngokuhamba kwesikhathi esikoleni.

Uma sekwenziwa ...

Nikeza abafundi izinkinga ezihlola ukwenza amaqoqo alinganayo nokwabelana ngokulingana, isibonelo:

- Cela abafundi abathathu ukuthi bathathe izinto zokubala ezimbili umuntu ngamunye. Ndawonye balani inani eliphelele lezinto zokubala njengokuthi okubili nokubili kusho okune kanye nokubili kusho okuyisithupha (ukuhlanganisa okuphindwayo).

- Place six counters on the mat. Remove two at a time as you say, 'six take away two is four, take away two is two and take away two leaves nothing' (repeated subtraction).
- Give learners cut-out circles. Ask them to make equal groups on each circle using counters, e.g. two in each circle.
- Ask learners to share objects equally between them, e.g. share 15 counters between three learners.
- Ask learners to share objects where the remainder must be shared, e.g. share two apples equally between three learners.

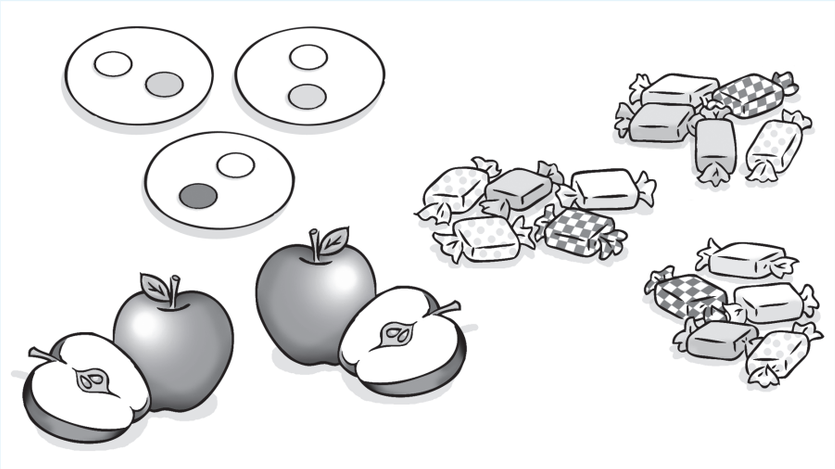
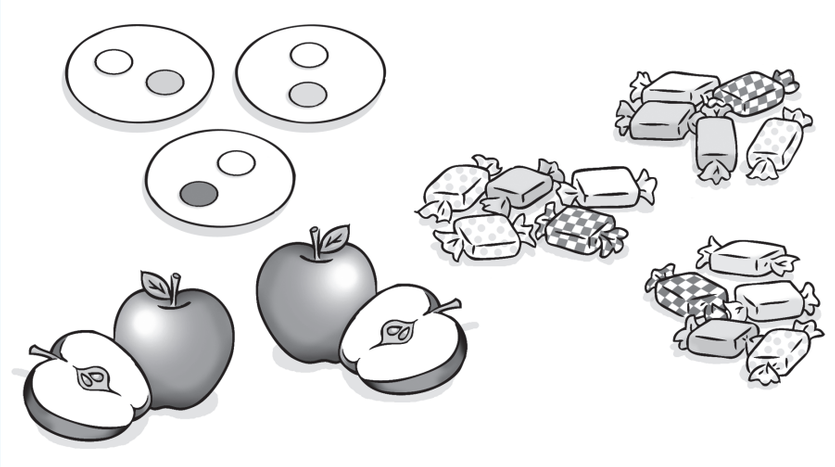


Figure 53 Using objects for calculations

Questions to ask for Numbers, Operations and Relationships

- Can you arrange these in a different way?
- How many are there?
- How many can you count?
- Who has more/fewer?
- What number comes before …? What number comes after …? What number is between … and …?
- How many more are in this group?
- If we share these equally between us, how many will we each have?
- If I cover some of these, how many are hidden?
- What number is this? (showing a number card or written numeral)
- Can you put the number cards in order?
- Who is standing first, second, …?
- If you have two of these and I give you two more, how many will you have?
- If I have three of these and I give you one, how many will I have?

- Beka izinto zokubala eziyisithupha kumata. Susa ezimbili ngesikhathi, ngesikhathi uthi, 'isithupha ususa okubili kusala okune, ususe okubili kusala okubili bese ususa okubili akusali lutho' (ukusasa okuphindaphindwayo).
- Nikeza abafundi izindilinga ezisikiwe. Bacele ukuthi benze amaqembu alinganayo endilingeni ngayinye besebenzisa izinto zokubala, isib. ezimbili endilingeni ngayinye.
- Cela abafundi babelane izinto ngokulinganayo phakathi kwabo, isib. aba izinto zokubala eziyi-15 ngokulinganayo phakathi kwabafundi abathathu.
- Cela abafundi ukuthi babelane ngezinto lapho okusele bezokwabelana ngakho, isib. abelana ngama-apula amabili phakathi kwabafundi abathathu.



Umfanekiso 53 Ukusebenzisa izinto ukubala

Imibuzo ongayibuza ngeziNombolo, Izimpawu kanye Nobudlelwane Bazo

- Ungazihlela lezi ngendlela ehlukile?
- Zingaki ezikhona?
- Zingaki ongazibala?
- Ubani onokuningi/okuncanyana?
- Iyiphi inombolo eza kuqala …? Iyiphi inombolo eza kamuva …? Iyiphi inombolo ephakath i … ne-…?
- Mangaki amanye akuleli qembu/qoqo?
- Uma sabelana ngokulingana, mangaki azotholwa umuntu ngamunye?
- Uma ngimboza okunye kwalokhu, kungaki okufihlekile?
- Iyiphi le nombolo? (khombisa ikhadi elinenombolo noma inombolo ebhaliwe)
- Ungawabeka amakhadi ezinombolo ngokuhleleka?
- Ubani ome kuqala, okwesibili, …?
- Uma unalezi ezimbili bese ngikunika ezimbili futhi, zingaki ozoba nazo?
- Uma nginalezi ezintathu bese ngikunika eyodwa, zingaki engizoba nazo?

Vocabulary for Numbers, Operations and Relationships

Count and recognise numbers

- match, sort, compare
- number
- one, two, three … twenty and beyond
- none, nothing, empty, nought, zero
- how many …?
- count (up) to
- count on (from, to)
- count back (from, to)
- count in ones, twos … tens …
- more, many, few, fewer
- fewer than, greater than, most, least
- too many, too few, enough, not enough
- every other
- group, collection
- nearly, close to, about the same as
- how many left over, remaining
- just over, just under

Compare and order numbers

- match, sort, compare, order
- the same number as, as many as
- one more, two more, …
- one less, two less, …
- in front of, behind, next, next to, between
- first, second, third … tenth
- last, before, after

Of **two** objects/amounts: greater, more, larger, bigger, less, fewer, smaller

Of **three** or more objects/amounts: greatest, most, biggest, largest, least, fewest, smallest

Operations with numbers

Addition and subtraction

- match, compare
- add, more, and
- together, altogether
- double/half
- one more, two more, …
- how many more to make …?
- how many more is … than …?
- take away, subtract
- one less, two less, …
- how many are left/left over?
- difference between

Ulwazimagama lweziNombolo, Izimpawu kanye Nobudlelwane Bazo

Bala futhi uqaphele izinombolo

- qondanisa, hlunga, qhathanisa
- inombolo
- kunye, kubili, kuthathu … amashumi amabili nangaphezulu
- akukho, lutho, akukho lutho, igungqu, iqanda
- kungaki …?
- bala (kufike) ku-
- qhubeka ubale (kusuka, kuya)
- bala uhlehle (kusuka, kuya)
- bala ngakunye, ngakubili … ngamashumi …
- okuningi kakhulu, okuningi, okumbalwa, okumbadlwana
- okuncane kuno-, okukhulu kuno-, okuningi kakhulu, okuncane kakhulu
- okuningi kakhulu, okumbalwa kakhulu, kwanele, akwanele
- omunye nomunye
- iqembu, iqoqo
- cishe, eduze no-, okucishe kufane ne-
- kungaki okusele, okusekhona
- ngaphezulu kancane, ngaphansi kancane

Qhathanisa futhi uhlele izinombolo

- qondanisa, hlunga, qhathanisa, ukuhleleka
- inombolo efana no-, okuningi njenge-
- okuningi ngokukodwa, okuningi ngokubili, …
- ngaphansi ngokukodwa, ngaphansi ngokubili, …
- ngaphambi kwe-, emuva, olandelayo, duze kwe-, phakathi
- okokuqala, okwesibili, okwesithathu … okweshumi
- okokugcina, ngaphambi, ngemuva

Ezintweni **ezimbili**/amanani: okukhudlwana, okuningi, okukhudlwana, okuncane, okumbadlwana, okuncanyana

Ezintweni **ezintathu** nangaphezulu/amanani: okukhulu kakhulu, okuningi kakhulu, okukhulu kakhulu besilinganiso, okuncane kakhulu, okumbalwa kakhulu, okuncane kakhulu

Ukusebenza ngezinombolo

Ukuhlanganisa nokususa

- qondanisa, qhathanisa
- hlanganisa, okuningi, kanye
- ndawonye, ngokuphelele
- phinda kabili/isigamu
- okukodwa futhi, okunye okubili, …
- kungaki okusamele kwenziwe …?
- okuningi kangakanani … kune- …?
- thatha, susa
- okuncane ngokukodwa, okuncane ngokubili, …
- kungaki okusele/okusekhona?
- umahluko phakathi kwe-

Multiplication and division

- bundles, groups of two, three, …
- share fairly/equally
- share, share between/among
- share one/more than one at a time
- is the same as, different from
- how many left over, remaining

Equivalence

- match, compare
- exactly the same
- same as, different from
- makes
- equal to
- equal groups

Estimate

- match, compare
- guess how many; estimate
- nearly, close to
- about the same
- just under, just over
- too many, too few, enough, not enough

Patterns, Functions and Algebra

Pattern is all around us. Children encounter patterns and **sequences** in people's behaviour, in daily routines, days of the week, months of the year, in weather cycles, in music and art, and in their built environment. For example:

- clothes

Figure 54 Patterns in clothes

GLOSSARY

pattern
the regular sequence of objects, movements or events that are repeated in a predictable way

sequence
the particular order in which objects, movements or events follow each other

Ukuphindaphinda nokuhlukanisa

- izinqwaba, amaqoqo okubili, okuthathu, …
- aba ngobulungiswa/ngokulinganayo
- aba, aba phakathi/phakathi kwa-
- aba okukodwa/ngaphezu kokukodwa ngesikhathi
- kufana ne-, okuhlukene ku-
- kungaki okusele, okusekhona

Ukulingana

- qondanisa, qhathanisa
- okufana ncimishi
- kufana no-, okuhlukile ku-
- kwenza
- kulingana no-
- amaqembu alinganayo

Qagela

- qondanisa, qhathanisa
- qagela ukuthi kungaki; linganisa
- cishe, duze kwe-
- cishe okufanayo
- ngaphansi nje, ngaphezulu nje
- okuningi kakhulu, okumbalwa kakhulu, kwanele, akwanele

Amaphethini, Amafankshini kanye ne-Aljebhra

Iphethini isizungezile. Izingane zihlangana namaphethini **nokulandelana** ekuziphatheni kwabantu, kwinqubo yansukuzonke, izinsuku zesonto, izinyanga zonyaka, emijikelezweni yesimo sezulu, emculweni nasebucikweni, kanye nakwimvelo yabo eyakhiwe. Isibonelo:

- izingubo

Umfanekiso 54 Amaphethini ezingubeni

IGLOSARI

iphethini
ukulandelana okujwayelekile kwezinto, ukunyakaza noma izigameko eziphindwa ngendlela eqagelekayo

ukulandelanisa
ukuhleleka okuthile lapho izinto, ukunyakaza noma izigameko zilandelana

- buildings

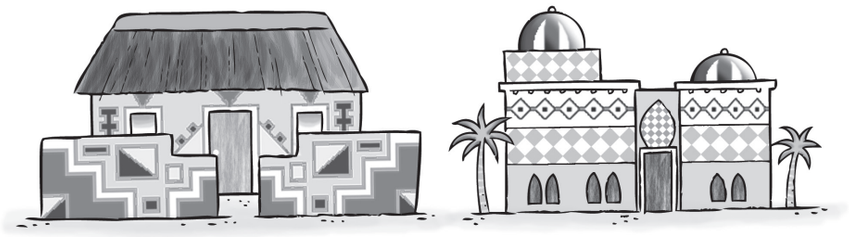


Figure 55 Patterns in buildings

- nature

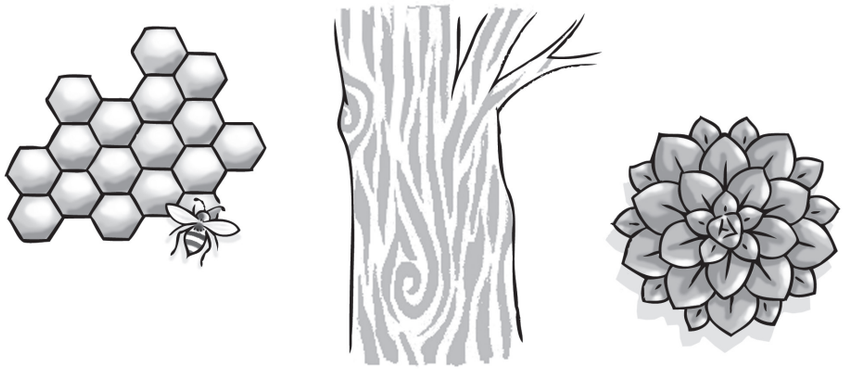


Figure 56 Patterns in nature

Identifying patterns

Young children tend to focus on the colour and attractiveness of a picture or object, e.g. a piece of wrapping paper, and will say it has a 'pretty pattern'. Most of these patterns are **irregular patterns**. We can see that there is a repetition of objects, colours or shapes, but we cannot tell how the repetition works.

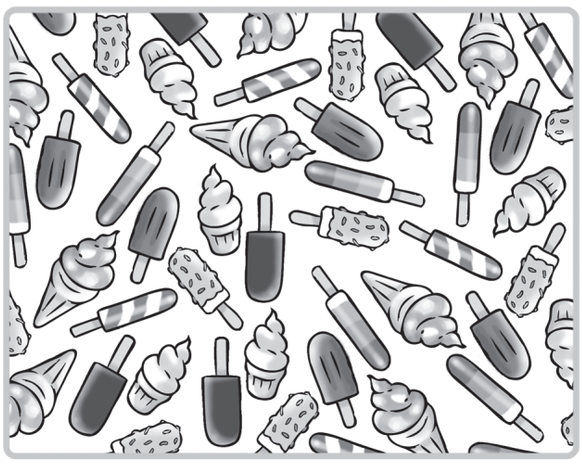
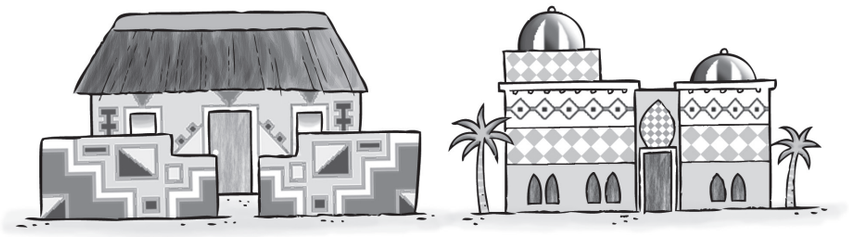


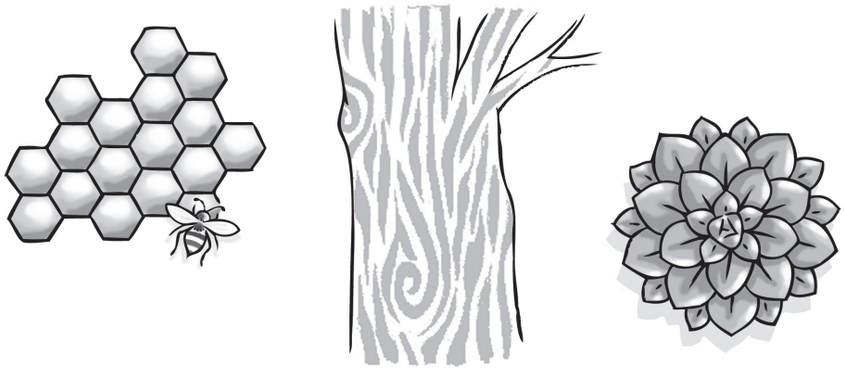
Figure 57 Irregular patterns

- izakhiwo



Umfanekiso 55 Amaphethini ezakhiweni

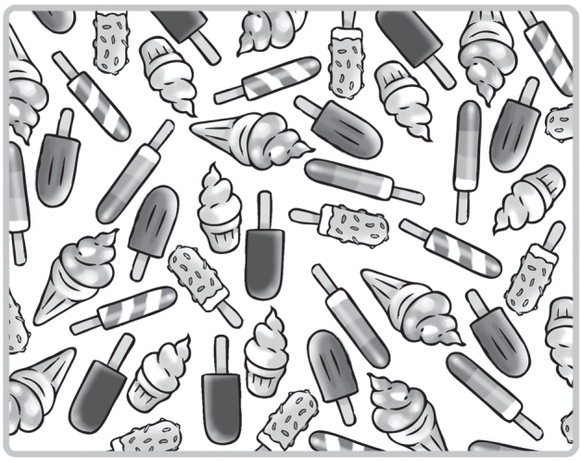
- imvelo



Umfanekiso 56 Amaphethini emvelweni

Ukukhomba amaphethini

Izingane ezincane zivame ukugxila embaleni kanye nokuheha kwesithombe noma sento, isib. ucezu lwephepha lokugoqa, bese bethi 'inephethini elihle'. Iningi lalawa maphethini **angamaphethini angahlelekile**. Siyabona ukuthi kunokuphindaphindeka kwezinto, imibala noma izimo kodwa asikwazi ukusho ukuthi kusebenza kanjani ukuphindaphinda.



Umfanekiso 57 Amaphethini angahlelekile

Teachers should draw learners' attention to patterns inside and outside the classroom. For example, point out how the bricks in a wall are arranged, the paving tiles in a path or the markings on animals.

Figure 58 Patterns around us

In a **regular pattern** we can see how the **elements** in a pattern are repeated and we can predict the order or sequence that the pattern will follow, e.g. in the pattern below we can see that the circle and square are repeated and we can predict that the next shape in the sequence will be a circle, followed by a square, and so on.

GLOSSARY

elements
the objects, movements or events in a pattern

Figure 59 Circle, square pattern

In Grade R, learners may be able to recognise a pattern, but they may not be able to identify or describe 'what makes the pattern'. Teachers can help learners identify patterns by asking them what makes a particular pattern and how the elements are sequenced. For example, in the pattern above: 'Which shape is first? Which shape is next? What shape do you think will come next?'

Different types of patterns

Geometric patterns

A geometric pattern is a pattern that is made of lines and geometric shapes that are arranged in a repeated order, for example, a rhombus, rectangle, square or pentagon. Geometric patterns can be found all around us, e.g. on floor tiles and wrapping paper.

Figure 60 Geometric patterns

Kufanele othisha bahuhele abafundi emaphethinini asekilasini nangaphandle kwekilasi. Isibonelo, khombisa ukuthi izitini zihlelwe kanjani odongeni, amathayili okugandaya endleleni noma omaka ezilwaneni.

Umfanekiso 58 Amaphethini asizungezile

Ephethinini ejwayelekile siyazibona **izinto ezisephethinini** ukuthi ziphindwe kanjani futhi singaqagela ukuthi ukuhleleka noma ukulandelana kuzolandelana kanjani, isib. kule phethini engezansi, siyabona ukuthi indilinga nesikwele kuphindaphindiwe futhi singaqagela ukuthi isimo esilandelayo kuloku kuhleleka kuzoba indilinga, elandelwa yisikwele, njalonjalo.

IGLOSARI

izinto ezisephethinini
izinto, ukunyakaza noma izigameko ephethinini

Umfanekiso 59 Iphethini eyindilinga, eyisikwele

Ebangeni R abafundi bangakwazi ukubona iphethini kodwa bangangakwazi ukukhomba noma ukuchaza 'yini eyakha iphethini'. Othisha bangasiza abafundi ekukhombeni amaphethini ngokubabuza ukuthi yini eyakha iphethini elithile nokuthi izakhi zilandelana kanjani. Isibonelo, ephethinini engenhla: 'Isiphi isimo esiqalayo? Isiphi isimo esilandelayo? Uma ucabanga isiphi isimo esizolandela?'

Izinhlobo ezihlukene zamaphethini

Amaphethini asazibalomdwebo

Iphethini esazibalomdwebo iphethini eyakhiwe ngemigqa kanye nezimo ezisazibalomdwebo ezihlelwe ngendlela enokuphindaphinda, isibonelo, isikwele esitshekile, unxande, isikwele noma unxanhlanu. Amaphethini asazibalomdwebo angatholakala endaweni esizungezile, isib. amathayili aphansi kanye nephepha lokugoqa.

Umfanekiso 60 Amaphethini asazibalomdwebo

Repeating patterns

Repeating patterns are made up of a repeated sequence of elements, for example, shapes, colours, sounds, objects, movement or events. In a repeating pattern, the same elements are repeated regularly.

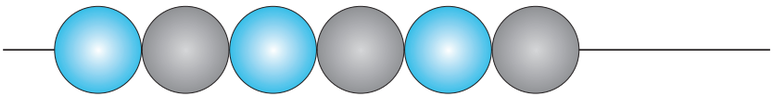


Figure 61 AB pattern

Start by introducing learners to patterns with only one **attribute** that differs, e.g. colour or shape, and provide a long enough repeat sequence so that learners can work out the pattern.

Learners can then recognise more challenging patterns, such as ABB or AABB patterns.

GLOSSARY

attribute
a feature or characteristic of something, for example, colour or shape

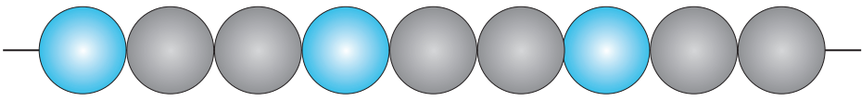


Figure 62 ABB pattern

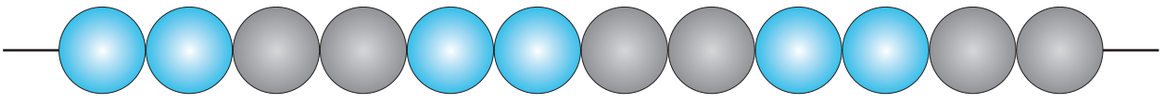


Figure 63 AABB pattern

Gradually introduce learners to patterns that have two or more attributes, such as colour and shape.

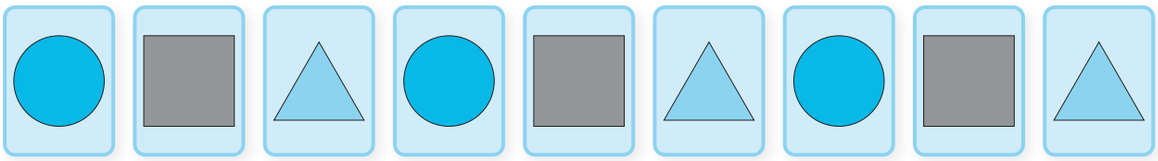


Figure 64 ABC pattern

Growing patterns

Growing patterns are different from repeating patterns in that the pattern increases or decreases in size in each sequence. In the pattern in Figure 65, the number of coloured blocks increases by one in each sequence of blocks.

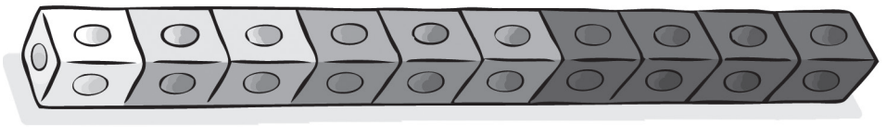
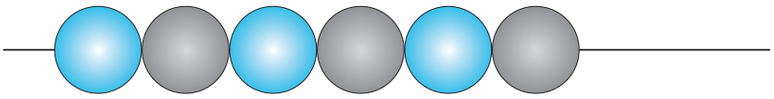


Figure 65 Growing pattern

Amaphethini aphindaphindayo

Amaphethini aphindaphindayo enziwe ngezakhi eziphindaphinda ukulandelana, isib. izimo, imibala, imisindo, izinto, ukunyakaza noma izigameko. Ephethinini ephindaphindayo, izakhi ezifanayo ziphindaphindwa njalo.



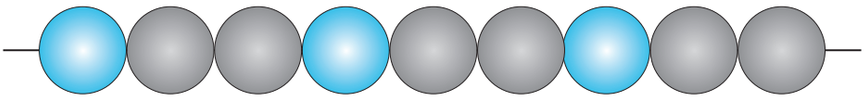
Umfanekiso 61 Iphethini AB

Qala ngokwazisa abafundi kumaphethini **anophawu (i-athribhuthi)** olulodwa kuphela oluhlukile, isib. umbala noma isimo, bese unikeza ukulandelana okuphindaphindwayo okude ukuze abafundi bezoyisebenza iphethini.

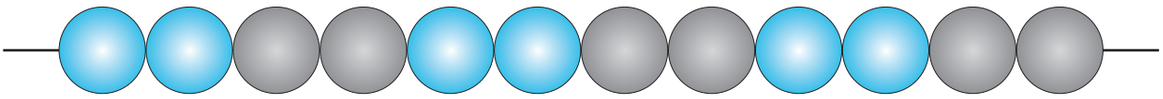
Abafundi sebengaqaphela amaphethini aphonsa inselele kakhulu njengamaphethini ABB noma AABB.

IGLOSARI

uphawu (i-athribhuthi)
isimo noma isici sento njengombala noma isimo

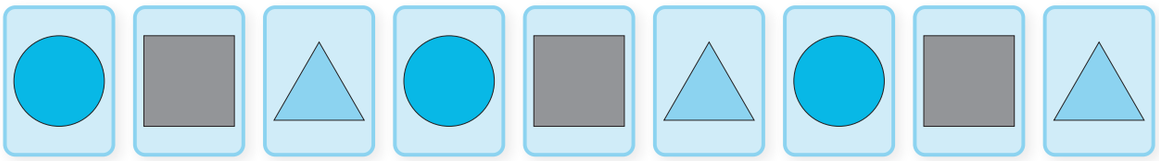


Umfanekiso 62 Iphethini ABB



Umfanekiso 63 Iphethini AABB

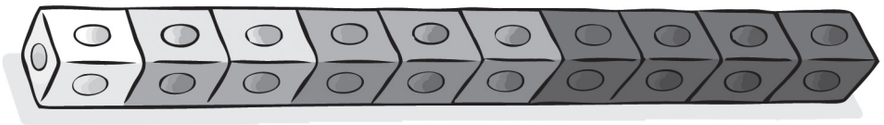
Ngenisa kancane abafundi kumaphethini anezimpawu (ama-athribhuthi) ezimbili nangaphezulu, njengombala nesimo.



Umfanekiso 64 Iphethini ABC

Amaphethini akhulayo

Amaphethini akhulayo ahlukile kulawa aphindayo ngoba iphethini iyanyuka noma iyehla ngobungako ngokulandelana ngakunye. Ephethinini Esemfanekisweni 65, inombolo yamabhulokhi anombala ikhula ngokukodwa ngokulandelana ngakunye kwamabhulokhi.



Umfanekiso 65 Iphethini ekhulayo

Learners can associate the pattern with the sequence of numbers and recognise that the number increases by one each time.

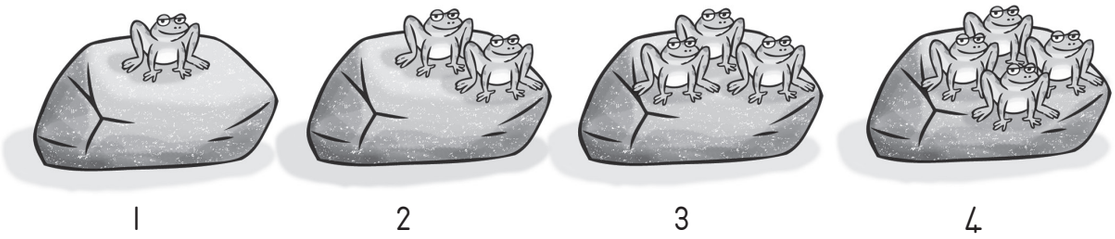


Figure 66 Growing pattern

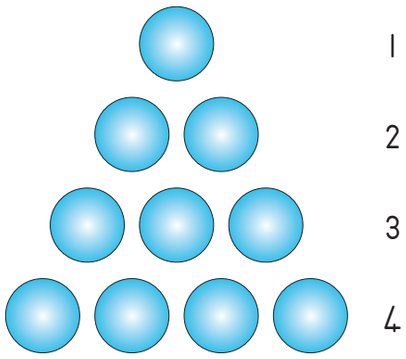


Figure 67 Growing pattern

In the pattern below, the sequence increases by two each time.

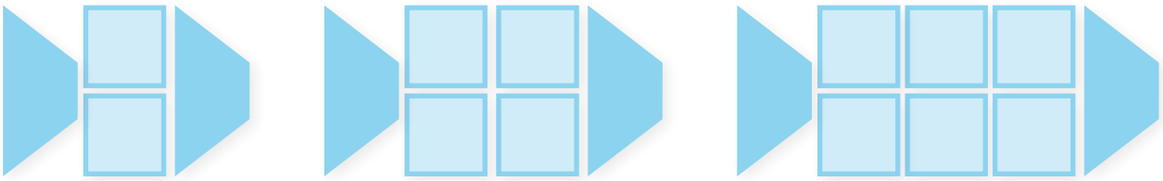


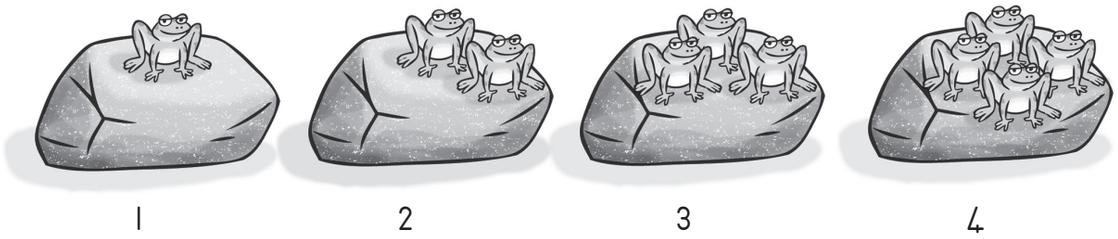
Figure 68 Growing pattern

Patterning skills – what learners need to know

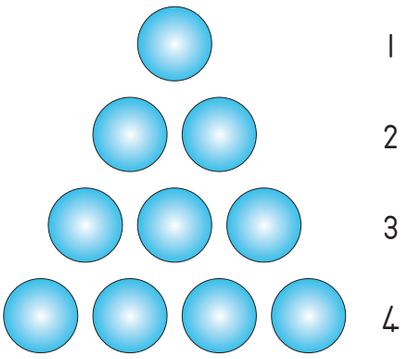
Learners' skills will vary, but generally Grade R learners will work towards being able to:

- match and sort objects according to one or more attribute, e.g. shape, colour, sound
- compare similarities and differences in two or more objects
- talk about patterns that arise from daily experiences
- recognise patterns in their environment, e.g. fence posts, bricks, paving
- identify patterns
- copy patterns that others have made
- extend patterns that others have started

Abafundi bangahlanganisa iphethini nokulandelana kwezinombolo futhi baqaphele ukuthi izinombolo zikhula ngokukodwa ngesikhathi.

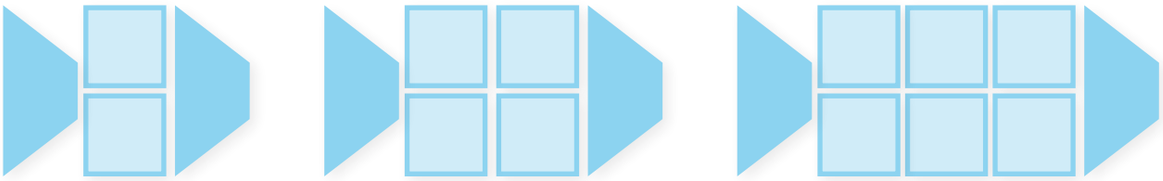


Umfanekiso 66 Iphethini ekhulayo



Umfanekiso 67 Iphethini ekhulayo

Ephethinini engezansi, ukulandelana kuyakhula ngokubili ngesikhathi.



Umfanekiso 68 Iphethini ekhulayo

Amakhono okwenza amaphethini – yini okumele yaziwe abafundi

Amakhono abafundi ayohluka kodwa abafundi beBanga R ngokujwayelekile bayosebenzela ukuthi bakwazi:

- ukuqondanisa futhi bahlunge izinto ngokophawu (i-athribhuthi) olulodwa noma eziningi, isib. isimo, umbala, umsindo
- ukuqhathanisa ukufana nomehluko ezintweni ezimbili nangaphezulu
- ukukhuluma ngamaphethini usukela ezifundweni zabo zansukuzonke zempilo
- ukuqaphela amaphethini endaweni abahlala kuyo, isib. izigxobo zocingo, izitini, upavumente
- ukukhomba amaphethini
- ukukopisha amaphethini enziwe ngabanye
- ukunweba amaphethini aqalwe ngabanye

- create their own patterns at various levels of difficulty such as:

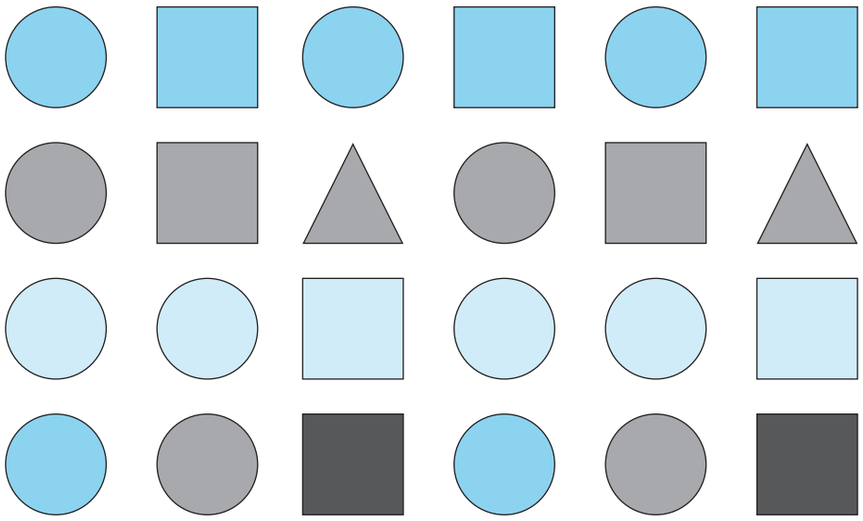


Figure 69 Creating patterns

- tell what is missing if part of a pattern is hidden.

In practice ...

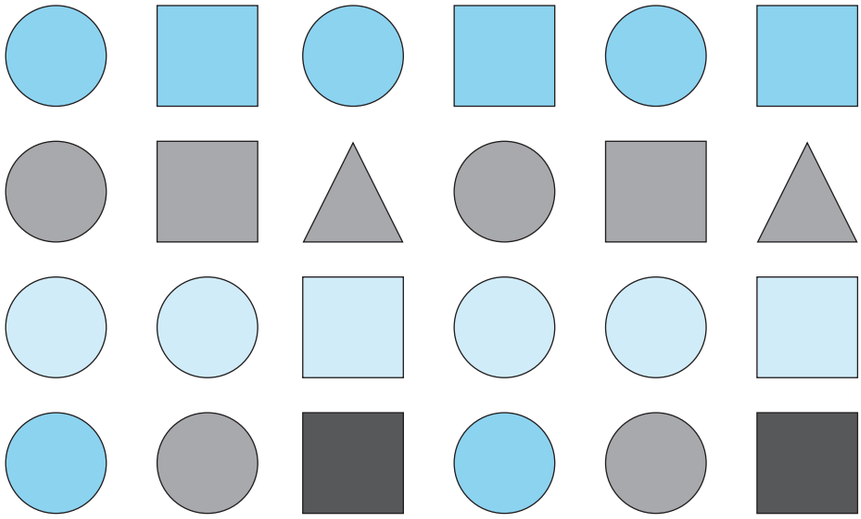
Teachers should guide learners to recognise and make patterns and provide opportunities for them to observe, describe and discuss patterns, focusing on activities that involve:

- talking about 'what makes the pattern'
- exploring patterns using objects, pictures and rhythm, such as clapping, in the maths focus time as well as in creative art, music and physical activities outdoors
- making their own patterns and talking about how and why they have sequenced elements in a particular way
- drawing patterns and using different colours and shapes, and to talk about the way the pattern is repeated.

Questions to ask for Patterns, Functions and Algebra

- Can you see a pattern? Tell me about it.
- What comes first, last, next, after, before?
- Are these two patterns the same? What is different? How could you make them the same?
- Can you copy this pattern? What will come next in the pattern?
- What must I do to extend this pattern?
- Can you tell me what your pattern is? Could you make a different pattern? What is missing in this pattern?

- baqambe awabo amaphethini ngokwahlukana kwamazinga obukhuni njengokuthi:



Umfanekiso 69 Ukuqamba amaphethini

- landisa ukuthi yini engekho uma ingxenye yephethini ifihliwe.

Uma sekwenziwa ...

Othisha kumele basize abafundi ukuthi baqaphele futhi benze amaphethini futhi baveze amathuba okuba babone, bachaze futhi baxoxe ngamaphethini, bagxile emisebenzini embandakanya:

- ukukhuluma ngokuthi 'yini eyenza iphethini'
- ukuhlola amaphethini usebenzisa izinto, izithombe nesigqi, njengokushaya izandla, ngesikhathi sokugxila ezibalweni kanye nakubuciko bokusungula, umculo nasemisebenzini yokuzivocavoca yangaphandle
- ukuzenzela awabo amaphethini futhi baxoxe ngokuthi bawalandelanise kanjani nesizathu sokwenza ngaleyo ndlela
- ukudweba amaphethini nokusebenzisa imibala ehlukene nezimo, kanye nokuxoxa ngendlela iphethini ephindwe ngayo.

Imibuzo yokubuza ngamaPhethini, Amafankshini kanye ne-Aljebhra

- Uyayibona iphethini? Ngitshele ngayo.
- Yikuphi okuza kuqala, kamuva, okulandelayo, ngemuva, ngaphambi?
- Ayafana lawa maphethini amabili? Yini okuhlukile? Ungawenza kanjani ukuthi afane?
- Ungayikopisha le phethini? Yini ezolandela ephethinini?
- Ngingenzani ukunweba le phethini?
- Ungangitshela ukuthi yini iphethini yakho? Kungenzeka wenze iphethini ehlukile? Yini engekho kule phethini?

Vocabulary for Patterns, Functions and Algebra

- match, compare, order, sequence
- start, beginning
- first, middle, last
- before, after, end
- which is next …?
- size
- big, bigger, biggest
- small, smaller, smallest
- same, different, difference
- colour names
- build the pattern
- recognise
- show, identify
- continue, carry on, extend
- copy
- repeat, again
- describe, explain
- what comes before/after?
- follows, between
- in a line, in a row
- space, spaced

Space and Shape (Geometry)

Young children explore shape and space during their everyday activities as they try to make sense of the forms and shapes around them, such as their mother's face, objects that move and their own bodies. They explore spatial concepts related to shape and space when they play with balls or get in and out of boxes and climb onto and under objects. They have observed different shapes in things in their homes and outside, such as clouds, buildings, leaves and vehicles.

Many children come to Grade R with some knowledge of different shapes and may be able to identify and draw shapes, such as circles and triangles. They may also have played with blocks, construction toys and puzzles. In Grade R, learners build on these experiences as they learn about space, shape, position, **orientation**, views and direction. They need plenty of opportunities to investigate and explore different everyday objects. These experiences of space and shape help to lay a solid foundation for understanding **geometry** in later grades.

GLOSSARY

orientation
how objects are placed in relation to each other

geometry
an aspect of mathematics that deals with properties, measurement and relationships of points, lines and angles of shapes in space

Ulwazimagama amaPhethini, Amafankshini ne-Aljebhra

- qondanisa, qhathanisa, hlela, ukulandelana
- qala, ekuqaleni
- okokuqala, okuphakathi, okokugcina
- ngaphambi, ngemuva, ukugcina
- iyiphi elandelayo …?
- ubungako
- okukhulu, okukhudlwana, okukhulu kakhulu
- okuncane, okuncanyana, okuncane kakhulu
- okufanayo, okuhlukile, umehluko
- amagama emibala
- yakha iphethini
- qaphela
- khombisa, khomba
- qhubeka, qhubekela phambili, nweba
- kopisha
- phinda, futhi
- chaza, cacisa
- yini eza ngaphambi/ngemuva?
- okulandelayo, phakathi nendawo
- emugqeni, zilandelana
- indawo, nokubekwa

Indawo Nesimo (Ijiyometri)

Izingane ezincane zihlola indawo nesimo ngesikhathi sokwenza imisebenzi yansukuzonke ngesikhathi zizama ukwenza umqondo ngezinhlobo zezimo ezizizungezile, njengobuso bomama bazo, izinto ezihambayo kanye nemizimba yazo. Zihlola umqondo ngokwendawo okuhambisana nesimo nendawo uma zidlala ibhola noma zingena ziphuma ebhokisini futhi zigibela phezulu nangaphansi kwezinto. Ziqaphelile izimo ezehlukene ezintweni ezisemakhaya azo nangaphandle, njengamafu, izakhiwo, amaqabunga kanye nezimoto.

Izingane eziningi zifika Ebangeni R zinalo ulwazana ngezimo ezehlukene kanti zingabuye zikwazi ukuzikhomba nokudweba izimo ezinjengezindilinga kanye nonxantathu. Zingabe zidlalile ngamabhulokhi, amathoyizi okwakha kanye namaphazile. Ebangeni R, abafundi bakhela kulolu lwazi njengoba befunda ngendawo, isimo, isikhundla, **ukuma**, ukubona nenkomba. Badinga amathuba enele okucwaninga nokuhlola izinto ezehlukile zansukuzonke. Lolu lwazi lwendawo nesimo kusiza ukwakha isisekelo sokuqonda **ijiyomethri** emabangeni eza kamuva.

IGLOSARI

ukuma
izinto zibekwe kanjani ngokuphathelene nayinye kuzo

ijiyomethri
okunye kwezibalo okusebenzelana nezimpawu, isilinganiso kanye nobudlelwane bamachashaza, imigqa nama-engeli ezimo endaweni

Space

Children orientate themselves in space using their own bodies. First they explore the relationship between themselves, other people and objects. Babies reach and grasp objects near to them, and then gradually start to move around and explore their environment using all their senses. They explore what happens when they push, pull, roll or turn different objects as they play with them, and when they do this they develop a sense of themselves in relation to the objects. They also learn the limitations of their own physical movement as they climb over and under chairs, into boxes, hide behind trees or look down from steps.

Position

Position in Grade R starts with the positions of objects in relation to the learner, and progresses to the position of objects in relation to other objects. Position vocabulary includes in, on, above, in front of, behind, in between, next to, and so on.

With the help of adults at home and teachers at school, Grade R learners can develop the vocabulary to describe space, position and direction as they play, look for objects or climb into and onto things.

In practice ...

There are many opportunities during the day for learners to think spatially and to use position vocabulary:

- in games
- when putting things away during tidy-up time
- when lining up
- when talking about where things are in pictures and stories.

To allow learners to explore their movements:

- create an obstacle course inside or outside using chairs, tyres, boxes and/or planks
- act out stories that use maths vocabulary about position, e.g. over and under, up and down, near and far, beside and between
- place objects in different positions and orientations
- ask learners to look at objects from different positions (view) and say what they see.

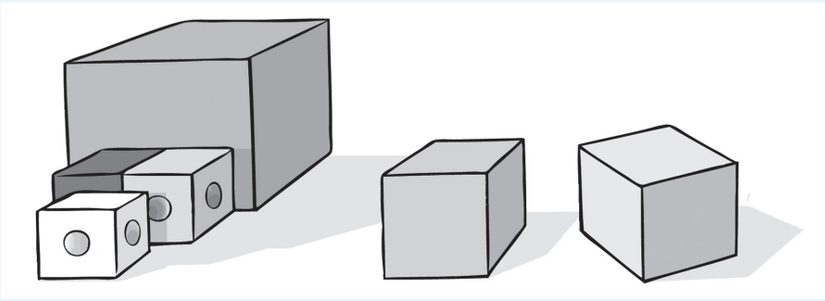


Figure 70 Exploring position

Indawo

Izingane zizijwayeza indawo ngokusebenzisa imizimba yazo. Ziqala ngokuhlola ubudlelwane phakathi kwazo, abanye abantu kanye nezinto. Izingane ezincane zifinyelela futhi zibambe izinto eziseduze kwazo, bese-ke ziqala kancane ukuhamba eduze zibheka indawo zisebenzisa izinzwa. Zihlola ukuthi kwenzekani uma ziphusha, zidonsa, zigingqa noma ziphendula izinto ezehlukene ngesikhathi zidlala ngazo, ngesikhathi zenza lokhu zithuthukisa ulwazi lokuzazi nobudlelwane nezinto. Ziphinde zifunde ngezingqinamba ezinazo ngeminyakazo yemizimba yazo njengoba zigibela ngaphezulu nangaphansi kwezihlalo, zingena emabhokisini, zicasha emva kwezihlahla noma zibuka phansi ezisetebhisini.

Isikhundla

Isikhundla Ebangeni R siqala ngezikhundla zezinto nomfundi, bese siqhubekela esikhundleni sezinto ngokuphathelene nezinye izinto. Ulwazimagama lwesikhundla, lumbandakanya okuphakathi, okuphezu, okungaphezu, okuphambi kwe-, okungemuva, okuphakathi nendawo, okuseduze kwe-, njalonjalo.

Ngosizo lwabadala ekhaya nothisha esikoleni, abafundi beBanga R bangathuthukisa ulwazimagama ukuchaza lapho ikhona, isikhundla kanye nenkomba ngesikhathi bedlala, bebheka izinto noma benompela, ngaphakathi noma ngaphezu kwezinto.

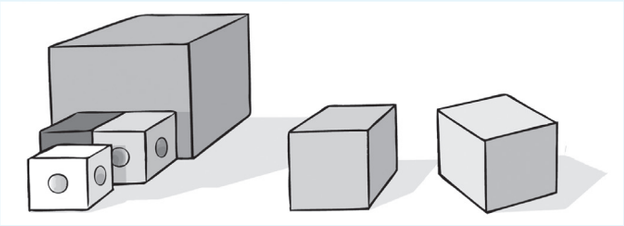
Uma sekwenziwa ...

Kunamathuba amaningi osukwini ukuba abafundi bacabange ngokwendawo futhi basebenzise ulwazimagama lwendawo lapho into ikhona:

- emidlalweni
- uma bebeka izinto ngesikhathi sokuqoqa
- uma bema emugqeni
- uma bexoxa ngokuthi izinto zikuphi esithombeni kanye nasezindabeni.

Ukuvumela abafundi bahlole iminyakazo yabo:

- yenza umzila oyisithiyo ngaphakathi noma ngaphandle usebenzisa izihlalo, amathayi, amabhokisi kanye/noma amapulangwe
- yenza samdlalo izindaba ezisebenzisa ulwazimagama lwezibalo ngendawo lapho ikhona, isib. ngale kanye nangaphansi, phezulu kanye nangaphansi, eduze kanye nakude, eceleni kanye naphakathi nendawo
- beka izinto ezindaweni ezihlukene kanye nezimo
- cela abafundi babuke izinto besezindaweni ezehlukene (ukubukeka kwazo) bese besho ukuthi babonani.



Umfanekiso 70 Ukuhlola indawo lapho ikhona

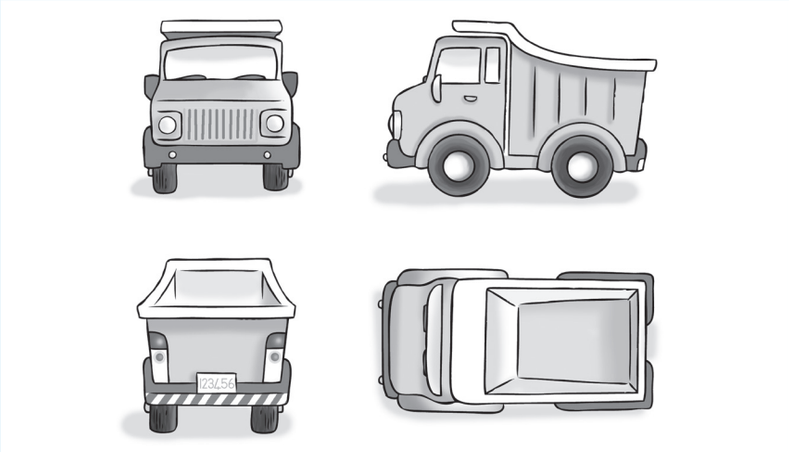


Figure 71 Different orientations

Direction

Learners in Grade R initially begin to show direction by pointing, then by using simple phrases like 'over there'. The concept of direction progresses from being about the position of where children are to where they are in relation to other things, e.g. go straight, turn, and so on.

In practice ...

Use direction vocabulary:

- during snack and tidy-up time
- when giving instructions about where to put things and how to get from one place to another
- when going on outings.

Perspective

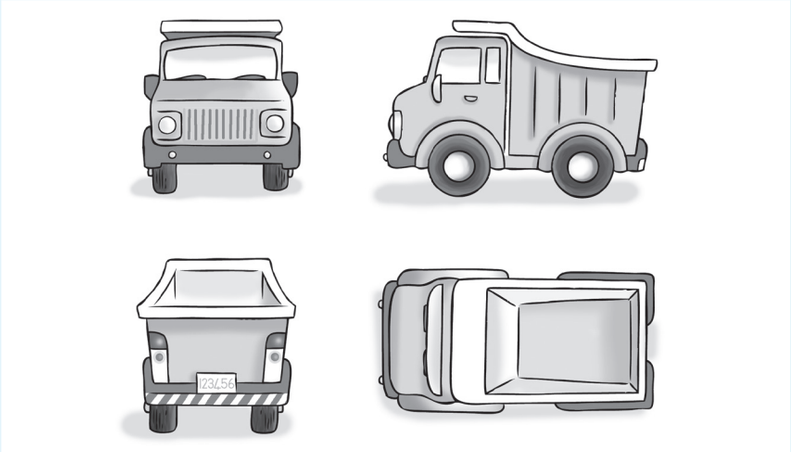
In Grade R, as learners' gain an increased understanding that when things are far away they look smaller, their concept of **perspective** develops.

GLOSSARY

perspective
the effect of distance or depth on the appearance of objects

In practice ...

- Observe people and objects outside the classroom and talk about why they look smaller.
- Close one eye and measure how big a person or object looks and talk about whether they are really that small.
- Focus attention on objects in pictures that appear to be small and talk about why this is so.



Umfanekiso 71 Ukuma okwehlukahlukene

Inkomba

Abafundi Ebangeni R baqala ukubonisa izinkomba ngokukhomba, bese besebenzisa amabinzana anjengokuthi 'laphaya'. Ulwazi ngezinkomba luqhubeka kusukela esikhundleni lapho izingane zikhona kuye lapho zikhona ngokwezinye izinto, isib. hamba uqonde, jika, njalonjalo.

Uma sekwenziwa ...

Sebenzisa ulwazimagama lwenkomba:

- ngesikhathi sezidlo kanye nokuqoqa
- uma unikeza imiyalelo ngokuthi izinto zibekwe kuphi kanye nokuthi ufika kanjani kwenye indawo usuka kwenye
- uma kuhanjwa kuvakashwa.

Indlela yokubuka into

Ebangeni R, njengoba abafundi bethola ukuqonda okunezezelwe ukuthi uma izinto zikude zibukeka zizincane, ulwazi lwabo **lokubuka into** luyathuthuka.

IGLOSARI

indlela yokubuka into
umphumela owenziwa ibanga noma ukujula ekubukekeni kwezinto

Uma sekwenziwa ...

- Qaphela abantu kanye nezinto ngaphandle kwekilasi bese ukhuluma ngokuthi kungani zibukeka zizincane.
- Vala iso elilodwa bese ulinganisa ukuthi umuntu noma into ibukeka inkulu kangakanani bese ukhuluma ukuthi zincane ngempela yini.
- Gxila ezintweni ezisezithombeni ezibonakala zizincane bese ukhuluma ngazo ukuthi kungani.

Shape

In Grade R, learners focus on recognising, identifying and naming **3-dimensional (3-D)** objects and **2-dimensional (2-D)** shapes. In everyday language, learners will say that they can look at the object from all sides, the top and the bottom. Mathematically we describe the **properties** of 3-D objects by their length, breadth (width) and height. In everyday language, learners will talk about 2-D shapes as pictures, but mathematically we talk about shapes as having length and breadth (width) to describe two dimensions.

Three-dimensional (3-D) objects

In Grade R, learners explore the properties of everyday 3-D objects. They build constructions using recycled household materials, such as boxes, cans, tubs, toilet roll inners and balls. They investigate and describe box- and ball-shaped objects. They compare and sort objects, and talk about similarities and differences.

GLOSSARY

2-dimensional (2-D)
a shape has two dimensions: length and breadth (width)

3-dimensional (3-D)
an object has three dimensions: length, breadth (width) and height

property
the characteristics of a 2-D shape or 3-D object, e.g. length, width, height, sides (faces), edges, corners

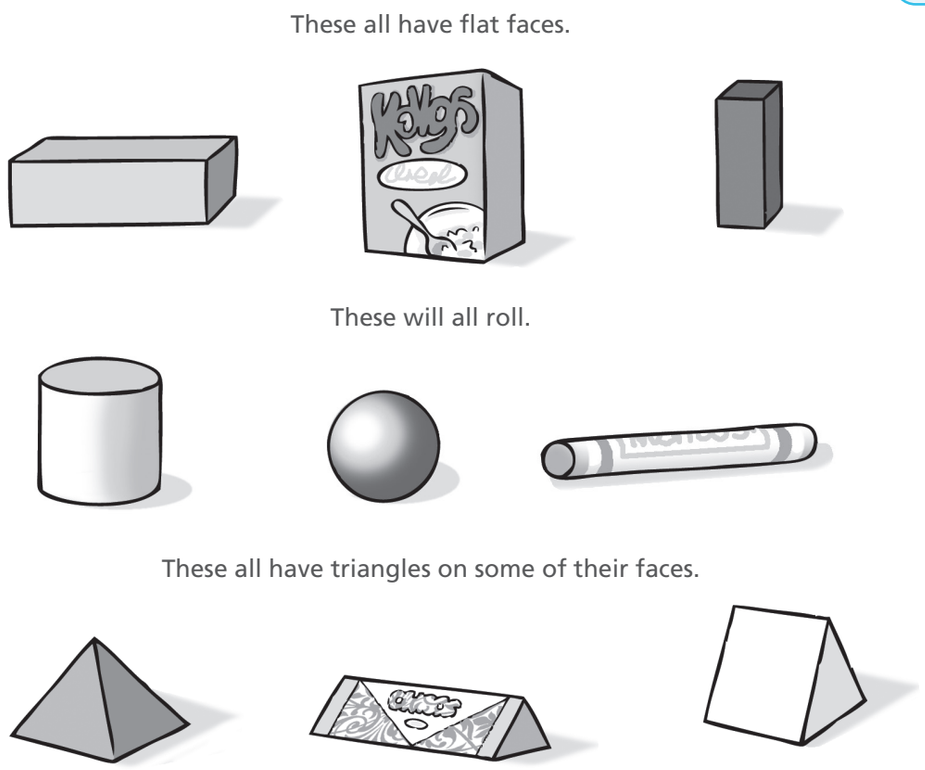


Figure 72 3-D objects

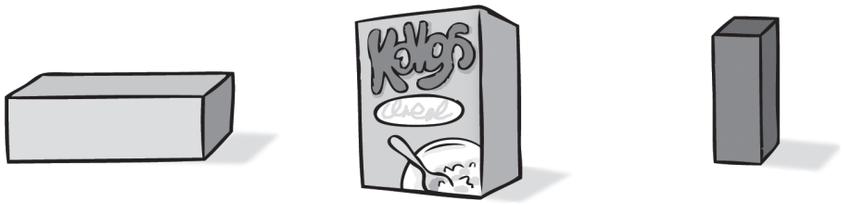
Isimo

Ebangeni R, abafundi bagxila ekuqapheleni, ekukhombeni kanye nasekuqambeni izinto **ezinhlangothi ntathu (3-D)** kanye nezimo **ezinhlangothi mbili (2-D)**. Olimini lwansukuzonke, abafundi bazokhuluma ngezimo ezinhlangothi mbili njengezithombe ukuthi bangayibuka into kuzo zonke izinhlangothi, phezulu noma ngaphansi. Ngokwezibalo uma sichaza **izimpawu** zezinto ezinhlangothi ntathu (3-D) ngobude, ububanzi, kanye nobude (nokuphakama). Olimini lwansuku zonke abafundi bazokhuluma ngezimo ezinhlangothi mbili (2-D) njengezithombe, kodwa ngokwezibalo sikhuluma ngezimo zinobude kanye nobubanzi ukuchaza onhlangothi mbili.

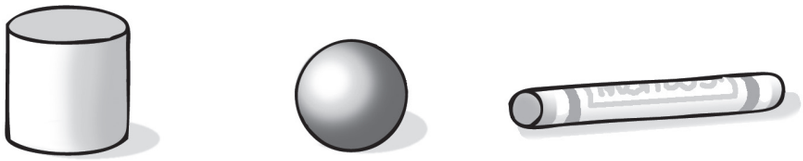
Izinto ezinhlangothi ntathu (3-D)

Ebangeni R, abafundi bahlola izimpawu zansukuzonke zezinto ezingonhlangothi ntathu (3-D). Bakha izakhiwo besebenzisa izinto zasekhaya ezenziwe kabusha ezifana namabhokisi, amakani, imigqomo, amaroli aphakathi ephepha lasendlini encane namabhola. Bahlola futhi bachaze izinto ezingamabhokisi kanye nezinto ezinesimo sebhola. Baqhathanisa futhi bahlele izinto, bakhulume ngokufanayo nokwehlukile.

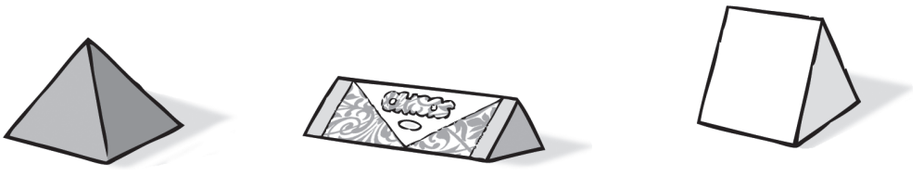
Zonke lezi zinobuso obuyisicaba.



Lezi zonke zizogingqika.



Zonke lezi zinonxantathu kobunye ubuso bazo.



IGLOSARI

izimo ezinhlangothi mbili (2-D)
isimo sinezinhlangothi ezimbili: ubude kanye nobubanzi

izinto ezinhlangothi ntathu (3-D)
into inezinhlangothi ezintathu: ubude, ububanzi kanye nokuphakama

izimpawu
ubunjalo besimo esiwunhlangothi mbili (2D) noma into engunhlangothi ntathu (3D), isib. ubude, ububanzi, ukuphakama, amacala (ubuso), unqenqema, amakhona

In practice ...

Learners can:

- Play with collections of 3-D objects including blocks, tins, boxes and balls.
- Describe objects. They can choose one object at a time. You can prompt their thinking through questioning, and introduce them to the correct names and properties of each object.
- Sort 3-D objects according to a particular property, such as straight edges or whether they can roll. This will allow learners to become familiar with, and to explore the properties of the objects.
- Describe these objects using everyday language, such as flat, smooth, pointy. As learners notice more properties they learn the appropriate names, e.g. edge, corner, surface or base, face. Sorting activities and discussions about objects are important because they help learners to understand, for example, that although a cardboard tube is tall and thin, while a drink can is much shorter, they are both cylinders.

Learners should be guided to recognise that it is the property of an object, such as the length, breadth or height, that we are focusing on when sorting and not the colour, size or other features.

Grade R learners may ask what the name of an object is, e.g. a cube, cylinder or cone. In higher grades learners learn about the 3-D solids shown in Figure 73.

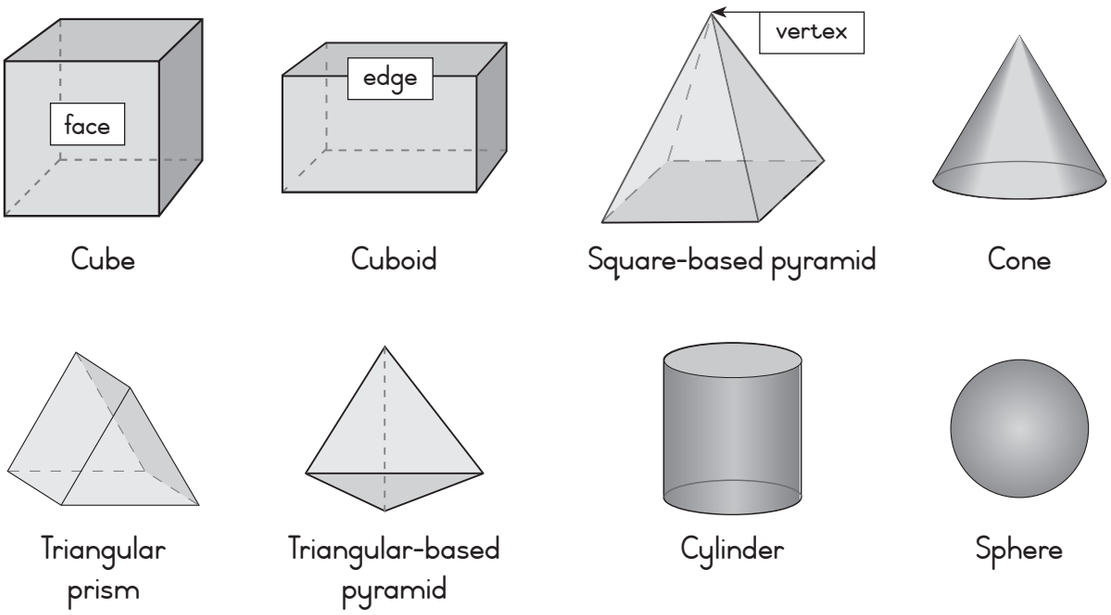


Figure 73 3-D solids

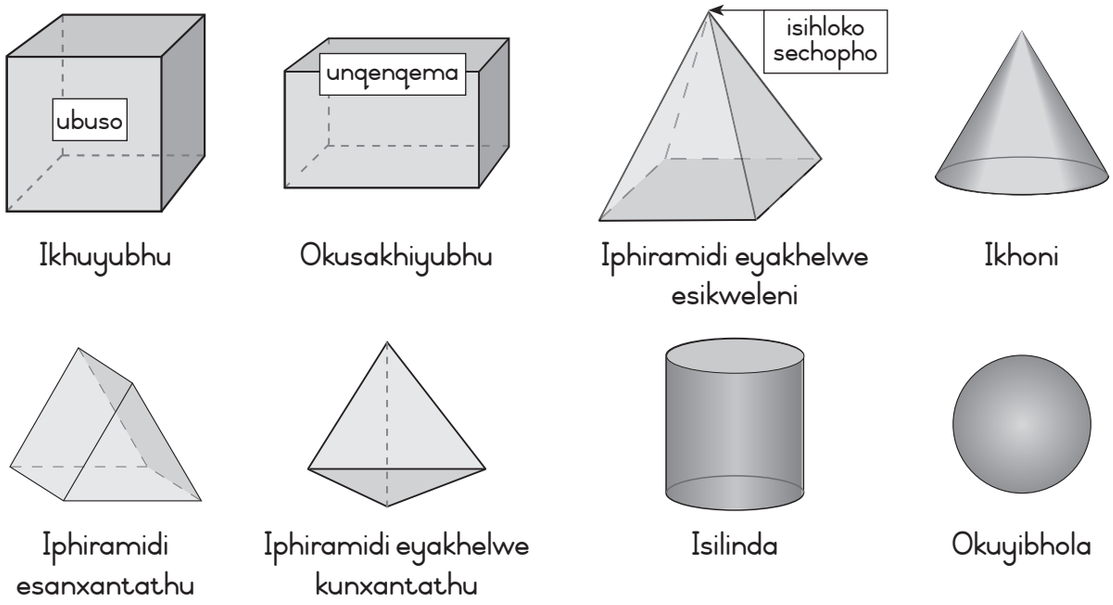
Uma sekwenziwa ...

Abafundi:

- Bangadlala ngokuqoqiwe okuyizinto ezinhlangothi ntathu (3-D) kumbandakanya amabhulokhi, amathini, amabhokisi kanye namabhola.
- Bangachaza izinto. Bangakhetha into eyodwa ngesikhathi. Ungabheka ngokushesha ukucabanga kwabo ngokubuza bese ubazisa ngamagama afanele kanye nophawu lwento ngayinye.
- Bangahlela izinto ezingonhlangothi ntathu (3-D) ngokophawu oluthile, njengamachopho aqondile noma kungenzeka yini zigingqike. Lokhu kuyovumela abafundi ukuthi bazi futhi bahlole izimpawu zezinto.
- Bangachaza lezi zinto besebenzisa ulimi lwansuku zonke njengokuthi isicaba, kuyashelela, kucijile. Ngesikhathi abafundi beqaphela izimpawu eziningana bafunda amagama afanele, isib. unqenqema, ikhona, indawo yangaphezulu noma isisekelo, ubuso. Ukuhlela imisebenzi kanye nokuxoxa ngezinto kubalulekile ngoba kusiza abafundi ukuqonda, isibonelo, njengokuthi noma ikhadibhodi elisamgqomo lilide futhi lizacile kanti ikani ledilinki lifushane kakhudlwana, kokubili kungamasilinda.

Abafundi kumele basizwe ukuqaphela ukuthi izimpawu zento, njengobude, ububanzi noma ukuphakama, sigxila kukona uma sihlela hhayi futhi ngombala, ubungako noma ezinye izici.

Abafundi beBanga R bangabuza ukuthi lithini igama lento, isib. ikhiyubhu, isilinda noma ikhoni. Emabangeni asezingeni eliphakeme abafundi bafunda ngonhlangothi ntathu abaqinile abakhonjiswe Emfanekisweni 73.



Umfanekiso 73 Izinto ezinhlangothi ntathu eziqinile (3-D)

Two-dimensional (2-D) shapes

In Grade R, learners recognise, identify and name 2-D shapes: circles, triangles, squares and rectangles. Inside and outside the classroom they see shapes and can explore the properties of these shapes in pictures and look for objects that 'look like' shapes, e.g. a road sign might look like a circle, the windowpane like a square, the door like a rectangle.

In practice ...

Learners can:

- Explore the properties of 2-D shapes inside and outside the classroom, such as circles, squares, rectangles and triangles.
- Look for objects that have a 'square' shape, referring to the side or face of a box, or a 'circle' shape, referring to a road sign or the base or edge of a cup.
- Describe 2-D shapes of various sizes and orientations in pictures.

Learners need to see a variety of 2-D shapes, e.g. different triangles (not just equilateral ones), and rectangles of different sizes. This helps the learners realise what particular shapes have in common, for example, that all triangles have three sides and three corners, but may not look exactly the same, and that rectangles have four sides regardless of the orientation.

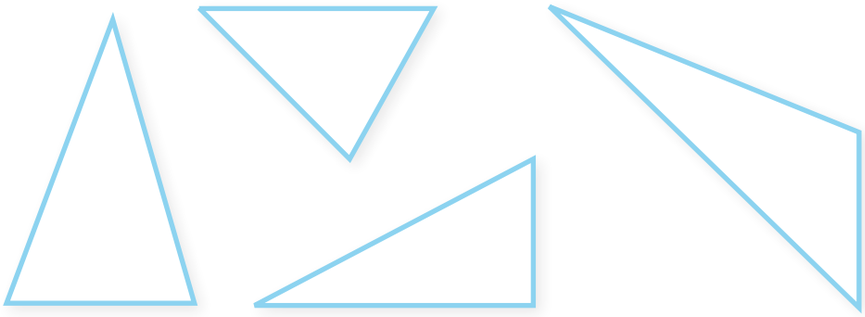


Figure 74 Shapes with three sides

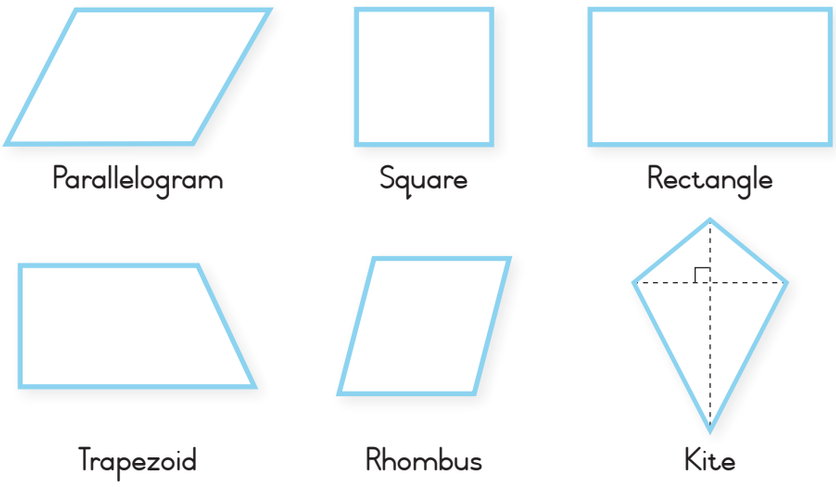


Figure 75 Shapes with four sides

Izimo ezinhlangothi mbili (2-D)

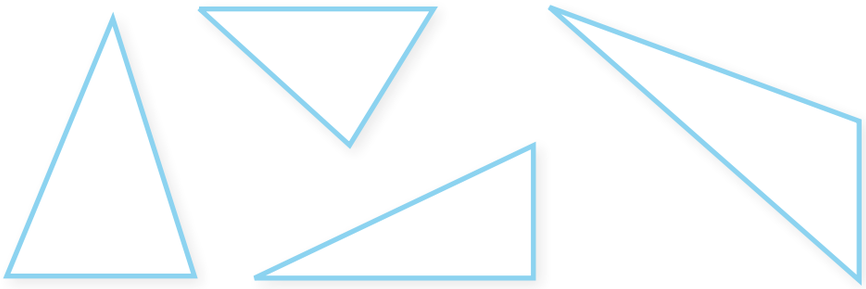
EBangeni R, abafundi baqapha, bakhombe futhi basho izimo ezingonhlangothi mbili (2-D): izindilinga, onxantathu, izikwele kanye nonxande. Ngaphakathi kanye nangaphandle kwekilasi babona izimo bese bekwazi ukuhlola izimpawu zalezi zimo ezithombeni bese bebheka izinto 'ezibukeka' njengezimo, isib. uphawu lomgwaqo lungabukeka njengendilinga, igilasi lewindi njengesikwele, umnyango njengonxande.

Uma sekwenziwa ...

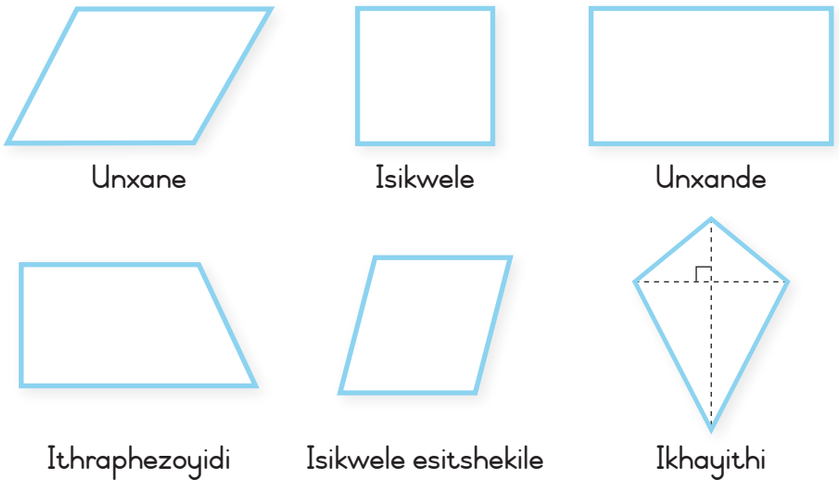
Abafundi:

- Bangabheka izimpawu zezimo ezingonhlangothi mbili (2-D) ngaphakathi kanye nangaphandle kwekilasi, njengezindilinga, izikwele, onxande kanye nonxantathu.
- Bangabuka izinto ezinezimo 'eziyizikwele' ubhekise ecaleni noma ebusweni bebhokisi noma isimo 'esiyindilinga' kubhekiswe ophawini lomgwaqo noma ingaphansi noma unqenqema lwenkomishi.
- Bangachaza izimo ezinhlangothi mbili (2-D) ezinobungako okwehlukene kanye nezimo ezithombeni.

Abafundi badinga ukubona izimo ezinhlangothi mbili (2-D) ezinhlobonhlobo, isib. onxantathu abahlukahlukene (hhayi abalinganayo kuphela) onxande abanobungako obuhlukahlukene. Lokhu kusiza abafundi babone ukuthi izimo ezithile zinani efanayo, isibonelo, ukuthi bonke onxantathu banamacala amathathu kanye namakhona amathathu kodwa angangabukeka efana nse, nokuthi onxande banamacala amane noma ngabe babekwe kanjani.



Umfanekiso 74 Izimo ezinamacala amathathu



Umfanekiso 75 Izimo ezinamacala amane

Give learners opportunities to explore 2-D shapes during independent play activities. Make a variety of materials available – plastic shapes (attribute blocks) and cardboard shapes of different colours and sizes – and then encourage learners to use them to create patterns, pictures and simple representations. During these activities, teachers can discuss with learners what they are doing and ask encouraging questions such as: 'Tell me about the pattern you are making.' 'That is a lovely house, how did you make it? Describe the steps to your partner.'

When Grade R learners begin to investigate and describe shapes and objects, they often use everyday language, such as flat, smooth, pointy. Gradually teachers can help them learn to focus on the lines of a shape or object and use maths terms to replace the everyday ones – sides, curved, straight, corner.

Learners' understanding of the properties of shapes develops as they are able to recognise **differences** and **similarities** between shapes. This can be done through sorting and classifying activities as well as through matching activities, such as deciding whether a shape will fit in a jigsaw or a construction, or playing shape lotto.

Figure 76 Differences and similarities of shapes

In practice ...

Go from 3-D to 2-D

Trace around learners and other objects in the classroom to see and talk about the 'picture' that is formed. Learners can dip objects in paint and press them on paper to make prints. They can also trace around the edge of objects and talk about the line and shape they create. Bowls, building blocks, toilet roll inners, and almost any recycled materials can be used to create shape pictures in this way.

Shape games

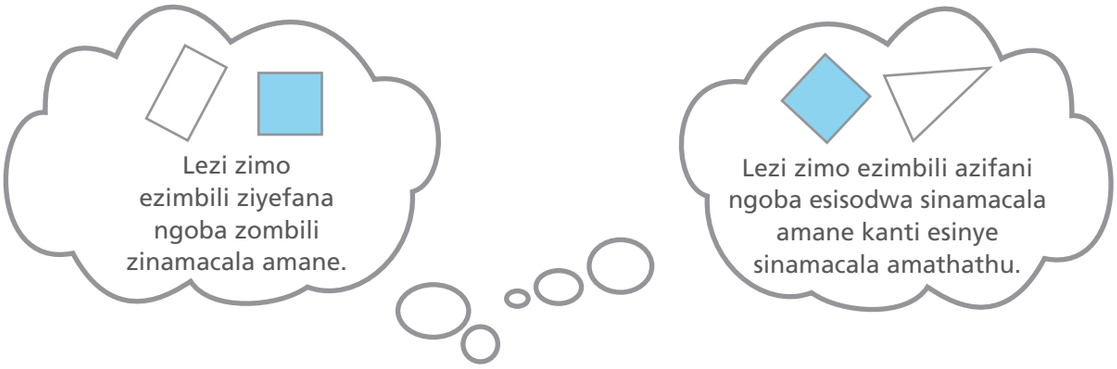
Learners play in pairs. One learner hides a shape or object behind her/his back and the other learner asks questions about it until she/he can guess what it is. 'Is it flat? Does it have three sides?'

Teachers can challenge learners to make as many different shapes as possible on a geoboard.

Nikeza abafundi amathuba okuhlola izimo ezingonhlangothi mbili (2-D) ngesikhathi semisebenzi yokudlala ngokuzimela. Hlinzeka ngezinto ezinhlobonhlobo – izimo zepulasitiki (amabhulokhi awuphawu (i-athribhuthi)) kanye nezimo zekhadibhodi ezinemibala ehlukene nobungako – bese ugqugquzela abafundi ukuthi bazisebenzise ukwenza amaphethini, izithombe nemidwebo elula. Ngesikhathi sale misebenzi, othisha bangaxoxa nabafundi ngalokho abakwenzayo bese bebuza imibuzo egqugquzelayo: 'Ngitshele ngephethini olenzayo.' 'Lena indlu enhle, ngabe uyenze kanjani? Chazela untanga wakho izinyathelo.'

Uma abafundi beBanga R beqala ukuphenya nokuchaza izimo nezinto, bavame ukusebenzisa ulimi lwansukuzonke njengokuthi okuyisicaba, okubushelelezi, okucijile. Kancane kancane othisha bangabasiza ukuthi bagxile emigqeni wesimo noma wento bese besebenzisa amagama ezibalo esikhundleni salawo ansukuzonke – amacala, kugobile, kuqondile, ikhona.

Ukuqonda kwabafundi izimpawu zezimo kuyathuthuka njengoba sebekwazi ukubona **okwehlukile** kanye **nokufanayo** phakathi kwezimo. Lokhu kungenziwa ngokuhlela kanye nokuhlukanisa imisebenzi kanye nangokuqondanisa imisebenzi njengokunquma ukuthi isimo sizolingana kuphazili yesithombe noma okwakhiwayo, noma umdlalo wesimo welotho.



Umfanekiso 76 Okwehlukile kanye nokufanayo kwezimo

Uma sekwenziwa ...

Suka kunhlangothi ntathu (3-D) uye kunhlangothi mbili (2-D)

Qopha ujikeleze izingane nezinye izinto ezisekilasini ukubona nokukhuluma 'ngesithombe' esakhiwe. Abafundi bangagcobhoza izinto kupende bese bezicindezela ephepheni ukwenza amaphrinti. Bangabuye baqophe bazungeze amachopho ezinto bese bexoxa ngomugqa kanye nesimo abasenzile. Izindishi, amabhulokhi okwakha, okungaphakathi kweroli yephepha lasendlini encane kanye nanoma yini yezinto ezenziwe kabusha ukwenza izithombe sesimo ngale ndlela.

Imidlalo yesimo

Abafundi badlala ngababili. Umfundi oyedwa ufihla isimo noma into ngemuva komhlane wakhe bese omunye umfundi ebuza imibuzo emayelana nayo aze akwazi ukuqagela ukuthi iyini. 'Ngabe iyisicaba? Ngabe inawo amacala amathathu?'

Othisha bangaphonsela abafundi inselele ukwenza izimo eziningi ezahlukahlukene ezingenzeka kujiyobhodi.

Build and take apart shapes

Once learners can identify 2-D shapes (square, circle, triangle, rectangle) and 3-D objects (boxes and balls), they are ready to build and then take apart shapes:

- Straws, sticks and other similar materials can be used with playdough to make shapes.
- Ask learners to make a shape and discuss it. 'That's a square. Can you turn it into a triangle?'

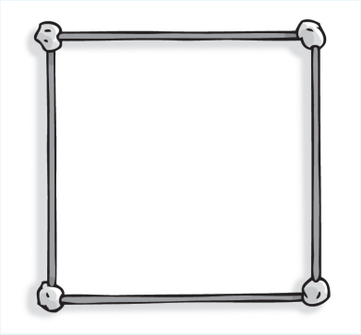


Figure 77 Building shapes

Construct shape pictures

Learners can use attribute blocks to create a picture.

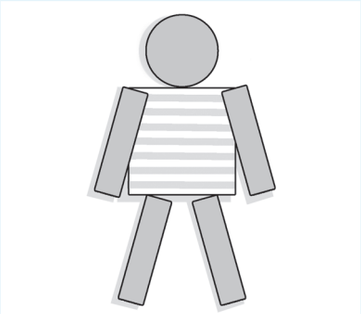


Figure 78 A shape picture

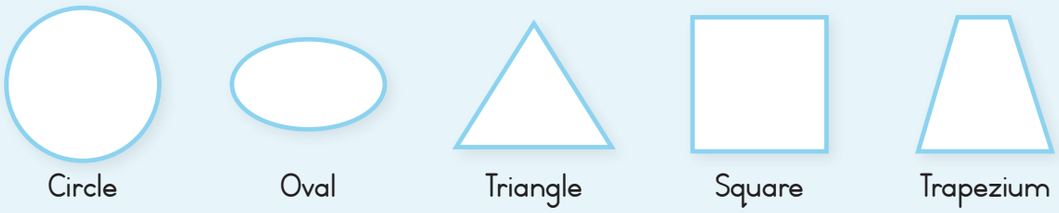
They can glue cut-out shapes onto paper to form other shapes or pictures.

They can roll, pinch and press playdough to make shapes and combine these to make new shapes.

Transformations

Learners slide, flip and turn shapes as they solve problems involving shapes, such as matching shapes in pictures, and copying shape patterns using attribute blocks.

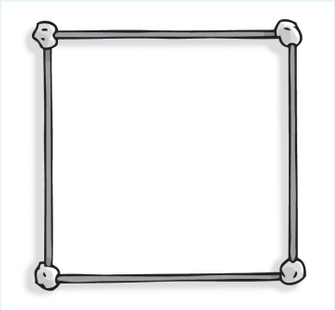
In higher grades learners will learn about a range of 2-D shapes. Learners in Grade R will often ask teachers and adults what a shape is called and the diagrams below provide a reference for these instances.



Ukwakha kanye nokuhlukanisa izimo

Uma abafundi sebekwazi ukukhomba izimo ezinhlangothi mbili (2-D) (isikwele, indilinga, unxantathu, unxande) kanye nezinto ezinhlangothi ntathu (3-D) (amabhokisi kanye namabhola), sebekulungele ukwakha bese behlukanisa izimo:

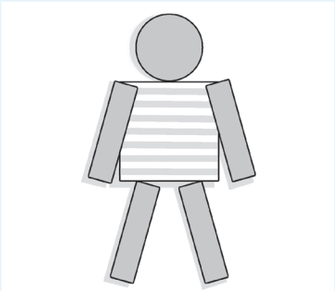
- Izinti, izinduku kanye nezinto zokusebenza ezifanayo zingasetshenziswa nobumba lokudlala ukwenza izimo.
- Cela abafundi bakhe isimo bese bexoxa ngaso. 'Leso isikwele. Ungasishintsha sibe unxantathu?'



Umfanekiso 77 Ukwakha izimo

Ukwakha izithombe zesimo

Abafundi bangasebenzisa amabhulokhi awuphawu (i-athribhuthi) ukwenza isithombe.



Umfanekiso 78 Isithombe sesimo

Bangasebenzisa izimo ezisikiwe bazinamathisele ephepheni ukwenza ezinye izimo noma izithombe.

Bangagingqa, bancinze futhi bacindezele ubumba lokudlala ukwenza izimo bese bezihlanganisa ukwenza izimo ezintsha.

Izinguquko

Abafundi bayashushuluza, bapheqe futhi baphendule izimo ngesikhathi bexazulula izinkinga ezimbandakanya izimo, njengokuqondanisa izimo ezithombeni, kanye nokukopisha amaphethini ezimo besebenzisa amabhulokhi ophawu.

Emabangeni aphakeme abafundi bazofunda ngezimo ezingonhlangothi mbili (2-D) ezihlukehlukene. Abafundi Ebangeni R bazovama ukubuza uthisha noma abadala ukuthi isimo sibizwa ngokuthini kanti umdwebo ongezansi unikeza izinkomba zalezo zikhathi.

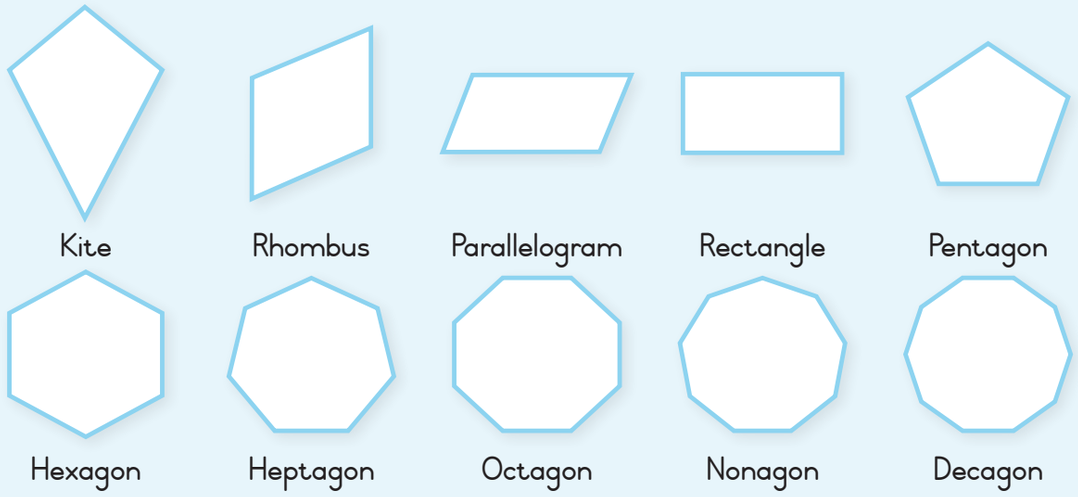


Figure 79 Range of 2-D shapes

Symmetry

Learners can notice symmetrical patterns all around them, in nature, in buildings, in paintings and objects. In the early years, **symmetry** is easiest understood as 'reflection' or 'mirroring'. Learners can explore this concept by folding and cutting shapes and pictures in half, or by drawing a picture on one half of a piece of paper using wax crayons, then folding the paper and rubbing the area behind their drawing and seeing the exact copy of what they have drawn reproduced on the other half of the page.

GLOSSARY

symmetry
when a shape or object can be divided into two equal halves along a central line

Symmetrical patterns can be found on our bodies, in nature, in the built environment and in pictures. Line symmetry divides the shape into two identical parts. The line can be horizontal or vertical.

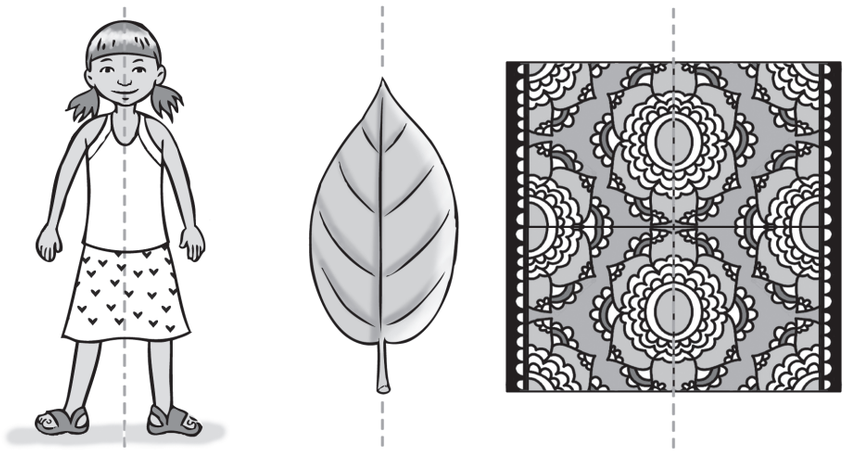
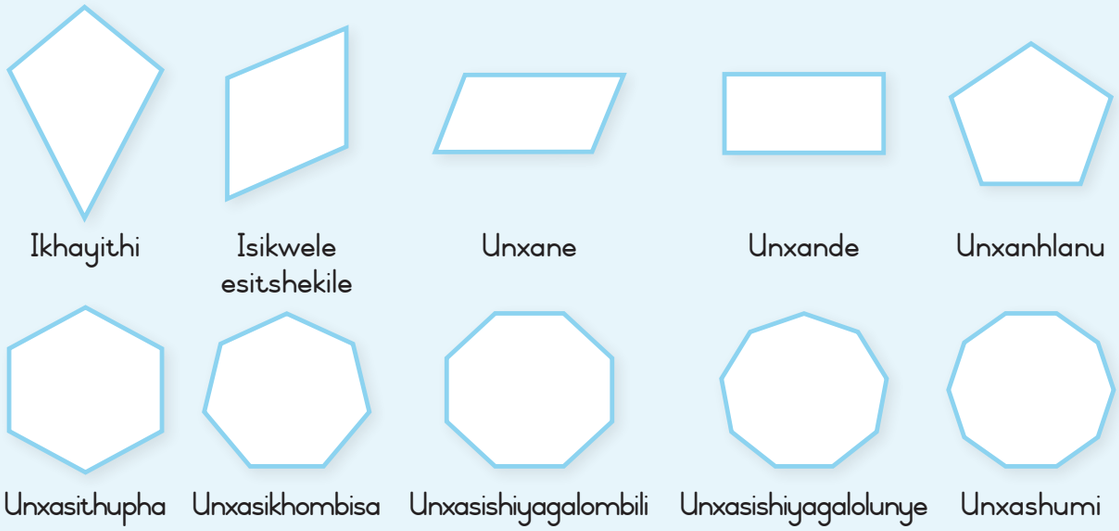


Figure 80 Line symmetry divides the shape into two identical parts.

In Grade R, learners explore symmetry by comparing objects and pictures. They learn that symmetry is not about being 'the same as', but rather about being identical, for example, a butterfly is symmetrical, but a hand is not.



Umfanekiso 79 Ububanzi bezimo ezinhlangothi mbili (2-D)

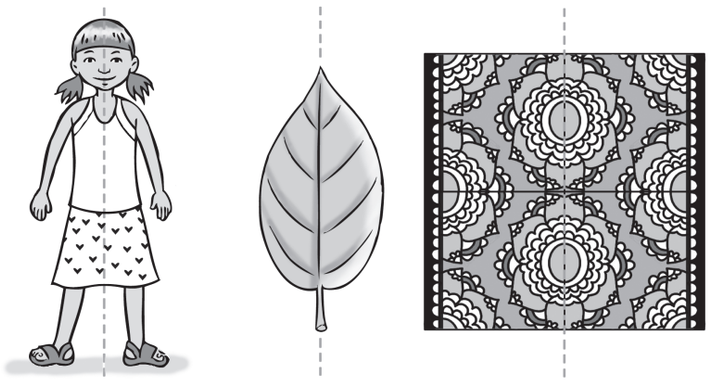
Ukuhlukanisa izingxenye ezifana nse

Abafundi bangaqaphela amaphethini ahlukanisa izingxenye ezifana nse eziseduze kwabo, kwimvelo, emabhilidini, kokupendiwe nezinto. Eminyakeni yokuqala, **ukuhlukanisa izingxenye ezifana nse** kulula ukukuqonda njengoku 'khombisa' noma 'ukuzibuka'. Abafundi bangaluhlola lolu lwazi ngokugoqa nokusika izimo kanye nezithombe zibe nguhhafu, noma badwebe isithombe kuhhafu wocezu lwephepha besebenzisa amakhilayoni ancibilikayo, bese begoqa iphepha bashukushe indawo engemuva komdwebo wabo babone okufana ngqo nalokho abebekudwebile sekukhiqizwe kulo hhafu omunye wekhasi.

Amaphethini ahlukanisa izingxenye ezifana nse angatholakala emizimbeni yethu, emvelweni, ezintweni ezakhiwe kanye nasezithombeni. Umugqa wokuhlukanisa izingxenye ezifana nse wehlukanisa isimo kabili izingxenye ezifanayo. Umugqa ungaba ovundlile noma umugqa othe mpo.

IGLOSARI

ukuhlukanisa izingxenye ezifana nse
uma isimo noma into ingahlukaniseka ibe ohhafu ababili abalinganayo maqondana nomugqa ophakathi nendawo



Umfanekiso 80 Umugqa wokuhlukanisa izingxenye ezifana nse uhlukanisa isimo kabili sibe izingxenye ezifanayo.

Ebangeni R, abafundi bahlola ukuhlukanisa izingxenye ezifana nse ngokuqhathanisa izinto nezithombe. Bafunda ukuthi ukuhlukanisa izingxenye ezifana nse akusikhona 'ukufana ne-' kodwa ukuba ngokufanayo, njengesibonelo, uvemvane luhlukaniseka izingxenye ezifana nse kodwa isandla asinjalo.

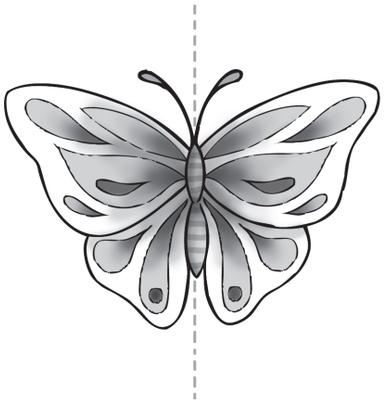


Figure 81 Symmetrical

Figure 82 Not symmetrical

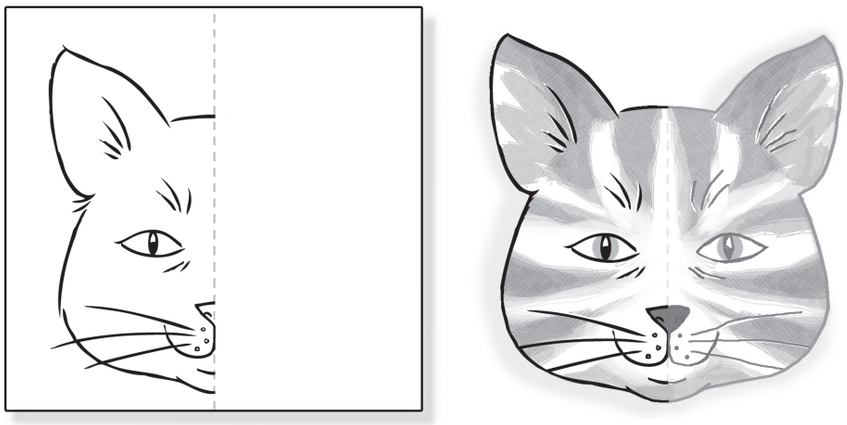
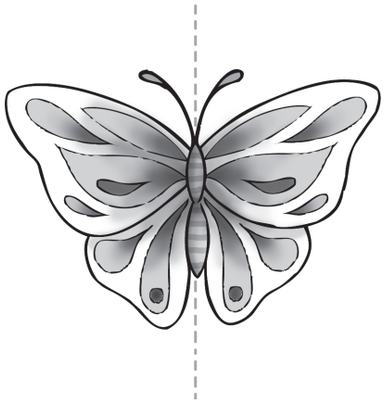


Figure 83 Folded piece of paper with image cut out and copied opposite to show symmetry.

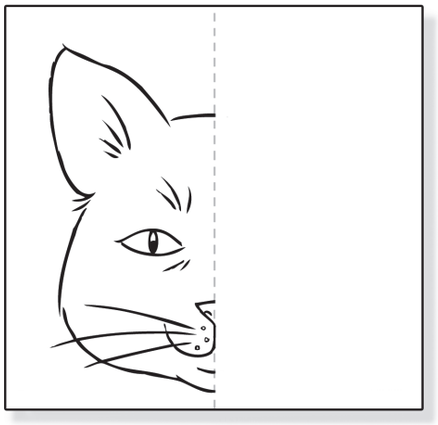
Questions to ask for Space and Shape (Geometry)

- Where are you standing?
- What is in front of/behind you?
- Can you tell me how to get from … to …?
- Can you show me how to move around the box, over the chair and under the table?
- What shape is this?
- How do you know it is a triangle/square/rectangle/circle?
- How many sides does this shape have?
- How many corners/points does this shape have?
- What can you tell me about the sides of this shape?
- What can you tell me about the line?
- What is the same/different about these two shapes?
- Why do they belong together?



Umfanekiso 81 Ukuhlukaniseka izingxenye ezifana nse

Umfanekiso 82 Ukungahlukaniseki izingxenye ezifana nse



Umfanekiso 83 Iphepha eligoqiwe elinesithombe esisikiwe sakopishwa saqondana ukukhombisa ukuhlukanisa izingxenye ezifana nse.

Imibuzo ongayibuza Ngendawo Nesimo (Ijiyomethri)

- Umi kuphi?
- Yini engaphambi/engemuva kwakho?
- Ungangitshela ngingafika kanjani ukusuka … kuya …?
- Ungangikhombisa ukuthi ulizungeza kanjani ibhokisi, ngaphezulu kwesihlalo kanye nangaphansi kwetafula?
- Isiphi lesi simo?
- Wazi kanjani ukuthi unxantathu/isikwele/unxande/indilinga?
- Sinamacala amangaki lesi simo?
- Sinamakhona amangaki/amachopho amangaki lesi simo?
- Yini ongangitshela yona ngala macala alesi simo?
- Yini ongangitshela yona ngolayini?
- Yini efanayo/ehlukile kulezi zimo ezimbili?
- Yini eyenza zibe ndawonye?

- Can you see anything in the classroom that looks like this shape?
- What would happen if I flipped this shape? What would happen if I turned this shape around?
- Can you use these shapes to make a model of that picture?
- Which of these objects can roll/slide?
- Can you put these objects on top of each other?
- Can these shapes fit together?
- Can you find an object with flat sides?
- Can you find an object with curved sides?
- How many edges/corners/points does the box have?
- What is the same/different about these two boxes?

Vocabulary for Space and Shape (Geometry)

Position and direction

- in, on, off, on top of, over, under, out, into, out of, top, bottom, above, below, between, in front of, behind, next to, upside down
- near, far, beside, side, inside, outside
- close, closer
- far, further
- near
- straight, turn
- around, along, through
- to, from, towards, away from
- opposite
- forward, backwards, sideways
- left, right

2-D shapes

- circle, square, rectangle, triangle
- line, side, edge, corner, point, sharp
- curved, straight

3-D objects

- block, box, bottom, top, sides, flat
- lines, straight, edge
- corner, sharp, point
- ball, round, curved

Symmetry

- same as
- left, right
- top, bottom

- Ikhona into oyibonayo ekilasini efana nalesi simo?
- Kungenzekani uma ngisiphenqa lesi simo? Kungenzekani uma ngisiguqula lesi simo?
- Ungasebenzisa lezi zimo ukwenza umfanekiso waleso sithombe?
- Yiziphi kulezi zinto ezingagingqika/ezingashushuluza?
- Ungazibeka lezi zinto enye phezu kwenye?
- Zingakwazi ukulingana lezi zimo?
- Ungayithola into enamacala ayisicaba?
- Ungayithola into enamacala agobile?
- Ngabe ibhokisi linamachopho/amakhona/amangaki?
- Yini efanayo/ehlukile ngala mabhokisi amabili?

Ulwazimagama Lwendawo Lesimo (Ijiyomethri)

Isikhundla kanye nezinkomba

- phakathi, phezu kwe-, eduze na-, ngaphezulu, ngaphansi, ngaphandle, koku, phezulu, phansi, ngenhla, phakathi kwa-, phambi kwe-, ngemuva, eduze kwe-, kubheke phansi
- eduzane, kude, eceleni, icala, phakathi, ngaphandle
- eduze, eduzanyana
- kude, kujana
- eduze
- qonda, jika
- ngokuzungeza, ngokulinganisene, phakathi kwa-,
- ku, kusuka, ubheke, kude ne-
- okubhekene
- ukuya phambili, ukuya emuva, emaceleni
- kwesokunxele, kwesokudla

Izimo ezingonhlangothi mbili (2-D)

- indilinga, isikwele, unxande, unxantathu
- umugqa, icala, unqenqema, ikhona, ichopho, bukhali
- okugobile, okuqondile

Izinto ezinhlangothi ntathu (3-D)

- ibhulokhi, ibhokisi, ngaphansi, phezulu, amacala, isicaba
- imigqa, iqondile, unqenqema
- ikhona, bukhali, khomba
- ibhola, indilinga, okugobile

Ukuhlukanisa izingxenye ezifana nse

- ngokufanayo
- kwesokunxele, kwesokudla
- phezulu, phansi

Measurement

Children are involved in **measurement** when they play and explore in their everyday lives. They come to Grade R with their own ideas of measurement, for example, that an adult is 'big', that something is too high to reach, that they need many things to fill a box, that it takes a long time to walk to the shop. They will compare which of two sweets is the biggest, which is the tallest block tower or which of two boxes is the heaviest. Conceptual understanding of different kinds of measures develops gradually and grows out of children's practical, day-to-day experiences and conversations with adults and friends, when, for example, they might take the biggest piece of bread or compare height or find out who has the smallest foot or who has made the tallest tower. They make decisions about which of two toy cars will fit into a garage and how many blocks they would need to make the garage bigger or smaller. They may measure out ingredients for cooking, pouring water or sand from a jug to see how many cups can be filled, or compare how heavy a bag of sugar and a box of oranges is.

GLOSSARY

measurement
'how much' of something, e.g. height, length, mass, volume, capacity

Measurements and the units we use to measure are about finding 'how much' there is of a particular thing. Measurement links with other maths areas, such as numbers, patterns, shape and data. Learners count how many units are needed to measure physical quantities, such as height, capacity, volume, length, weight, or non-physical quantities, such as time, money or temperature. They may estimate which of something is 'more' or 'less', for example, the scoops of ice cream in a bowl. They will base their estimation on the amount of space the ice cream takes up, not on the weight of the bowls or the number of scoops.

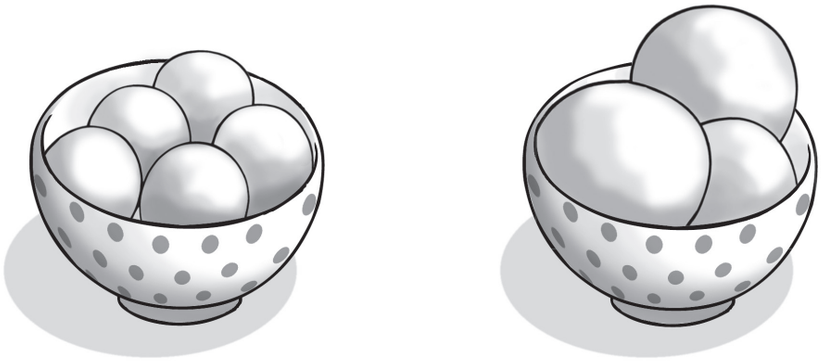


Figure 84 Estimating the amount of ice cream

In Grade R, measurement is practical and learners should do many hands-on activities that are meaningful to them. To understand measurement concepts, for example, how 'heavy' something is, learners need to pick up objects and compare their weight. Measurement is about determining the size or amount of one thing by comparing it with a non-standard unit, such as hands, feet, a pencil or a piece of string, or a standard unit of measurement, such as a centimetre or litre.

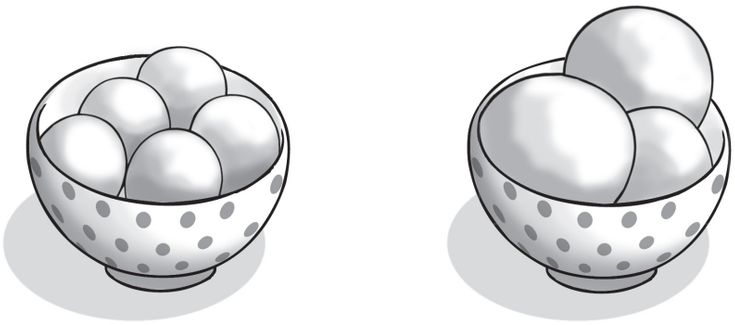
Isilinganiso

Abantwana bazimbandakanya **nesilinganiso** ngesikhathi bedllala futhi behlola empilweni yabo yansukuzonke. Bafika Ebangeni R benemibono yabo ngesilinganiso, njengokuthi nje umuntu omdala 'mkhulu', into ethile ikude kakhulu ukufinyelela kuyona, nokuthi badinga izinto eziningi ukugcwalisa ibhokisi, ukuthi kuthatha isikhathi eside ukuhamba ngezinyawo uya esitolo. Bazoqhathanisa ukuthi yimuphi uswidi omkhulu kakhulu kwababili, imuphi umbhoshongo wamabhulokhi omude kunayo yonke noma iliphi kulawa mabhokisi amabili elisinda kakhulu. Ukuqonda kolwazi lwezinhlobo ezehlukene zesilinganiso kuthuthuka kancane kancane bese kukhula ngesikhathi ingane yenza, izifundo zempilo usuku nosuku ithola ulwazi nokubamba izingxoxo nabadala kanye nabangane, uma njengokuthi nje bangathatha ucezu lwesinkwa olukhulu kunazo zonke noma baqhathanise ubude noma bathole ukuthi ubani ononyawo oluncane kakhulu noma ubani owenze umbhoshongo omude kakhulu. Benza izinqumo ngokuthi iyiphi ezimotweni ezimbili ezingamathoyizi ezokwazi ukungena egaraji nokuthi bazodinga amabhulokhi amangaki ukwenza igaraji libe likhudlwana noma libe lincanyana. Bangalinganisa izithako zokupheka, bathele amanzi noma isihlabathi esikujeke ukubona ukuthi zingaki izinkomishi ezingagcwala, noma baqhathanise ukuthi isikhwama sikashukela sisinda kangakanani kanye nebhokisi lamawolintshi.

Isilinganiso kanye namayunithi esiwasebenzisa ukulinganisa awukuthola 'kungakanani' lokho kwaleyo nto. Isilinganiso sixhumana nezinye izingxenye zezibalo, njengezinombolo, amaphethini, izimo kanye nolwazi. Abafundi babala ukuthi mangaki amayunithi adingekayo ukukala ubungako bezinto eziphathekayo njengokuphakama, umthamo, ivolumu, noma izinto ezingaphatheki njengesikhathi, imali noma izinga lokushisa. Bangaqagela ukuthi yini kulokhu 'okuningi' noma 'okuncane', isibonelo, izikuphu zika-ayisikhilimu endishini. Ukuqagela kwabo bayokususela kubungako bendawo ethathwa u-ayisikhilumu, hhayi esisindweni sendishi noma inani lezikuphu.

IGLOSARI

isilinganiso
'kungakanani' into, isib. ukuphakama, ubude, isisindo, ivolumu, umthamo



Umfanekiso 84 Ukuqagela inani lika-ayisikhilimu

Ebangeni R, isilinganiso siyenziwa futhi abafundi kumele benze imisebenzi emininingi yokuzenzela eyenza umqondo kubona. Ukuqonda ulwazi ngesilinganiso, njengokuthi into 'isinda' kangakanani, abafundi badinga ukuziqukula izinto bese beqhathanisa isisindo sazo. Isilinganiso simayelana nokunquma ubungako noma inani lento eyodwa ngokuyiqhathanisa nesikali esingekho emthethweni, njengezandla, izinyawo, ipensela noma isinqamu sentambo, noma isikali esisemthethweni, njengamasentimitha noma amalitha.

Teachers need to observe learners during the activities and talk with them about their ideas. Teachers can introduce new vocabulary while learners are comparing, for example, how long things are. When learners talk about something being 'big' or 'small' the teacher can model the use of the correct vocabulary by rephrasing their words. For example, when a learner says that someone is big or small teachers should encourage them to say what it is about the person that makes them big or small. Is it the height or the width or the weight of the person?

Figure 85 Using maths vocabulary

Once learners have decided what they want to measure (the attribute) they need to decide how they will measure a particular attribute, such as height.

Figure 86 Using hands to measure height

In this way, learners will begin to understand 'big' things aren't just large objects, and that they can look at them in terms of their length, height or weight.

Othisha badinga ukuqaphela abafundi ngesikhathi semisebenzi bakhulume nabo ngemibono yabo. Othisha bangethula amagama amasha ngesikhathi abafundi beqhathanisa, isibonelo, zinde kangakanani izinto. Uma abafundi bekhuluma ngento ukuthi 'inkulu' noma 'incane' uthisha angakhombisa ukusetshenziswa kolwazimagama olufanele ngokuwasho kabusha lawo magama. Njengokuthi nje, uma umfundi ethi umuntu mkhulu noma mncane othisha kumele babakhuthaze ukuba bachaze ukuthi yini eyenza bathi mkhulu noma mncane. Ngabe ubude noma ububanzi noma isisindo salowo muntu?

Umfanekiso 85 Ukusebenzisa ulwazimagama lwezibalo

Uma abafundi sebenqumile ukuthi bafuna ukulinganisa (uphawu (i-athribhuthi)), kumele bathathe isinqumo ukuthi bazolulinganisa kanjani lolo phawu (i-athribhuthi), njengobude.

Umfanekiso 86 Ukusebenzisa izandla ukulinganisa ukuphakama

Ngale ndlela abafundi bazoqala ukuqonda 'khulu' akukona nje izinto ezinkulu, futhi bangabuye babubuke ngokobude bayo, ukuphakama noma isisindo.

In practice ...

Learners also add or subtract when they solve measurement problems that involve number, for example, when they:

- compare amounts when pouring water or sand into different containers, they will realise they need 2 cups to fill a jug
- work out how many objects to place on either side of a balance scale to make the sides balance, they will realise that they need one more or fewer and count the total number
- construct block towers and add, subtract and count the number of blocks to make a tower taller or shorter.

Developing the concept of measurement

Learners should have plenty of opportunities to solve problems involving measurement and should have a range of appropriate containers that they can use in informal activities to investigate and find solutions for themselves. Learners need hands-on activities that involve comparisons by picking up, pouring, touching and talking about what they experience.

Figure 87 Containers for measurement activities

Different ways of measuring

Direct comparison

The focus of measurement is on comparing the attribute of something 'directly'. For example, measuring the length of a pencil against another pencil or comparing the height of two learners standing back to back.

Uma sekwenziwa ...

Abafundi baphinde bahlanganise noma basuse uma bexazulula izinkinga zokulinganisa ezimbandakanya izinombolo, njengokuthi uma:

- beqhathanisa inani uma bethela amanzi noma inhlabathi ezitsheni ezahlukahlukene, bazobona ukuthi badinga izinkomishi ezimbili ukugcwalisa ujeke
- bebala ukuthi zingaki izinto okumele zibekwe ecaleni ngalinye lesikali sokubhalansa ukuze amacala abhalanse, bazobona ukuthi badinga eyodwa noma eziningi noma ezimbalwa bese bebala inani selilonke
- benza umboshongo wamabhulokhi bese behlanganisa, basuse babale inani lamabhulokhi okwenza umbhoshongo omujana noma omfushane.

Ukuthuthukisa ulwazi lwesilinganiso

Abafundi kumele banikwe amathuba amaningi okuxazulula izinkinga ezimbandakanya ukulinganisa futhi babe nezitsha ezifanele ezehlukene abangakwazi ukuzisebenzisa emisebenzini engahleliwe ukuphenya bazitholele izixazululo. Abafundi badinga imisebenzi abazoyenza mathupha embandakanya ukuqhathanisa ngokucosha, bathele, bathinte futhi bakhulume ngabakufundayo.

Umfanekiso 87 Izitsha ezingasetshenziselwa isilinganiso

Izindlela ezehlukahlukene zokulinganisa

Ukuqhathanisa ngqo

Isilinganiso sigxila ekuqhathaniseni uphawu (i-athribhuthi) lwento 'ngqo'. Isibonelo, ukulinganisa ubude bepensela nelinye ipensela noma ukuqhathanisa ubude babafundi ababili bemi befulathelene.

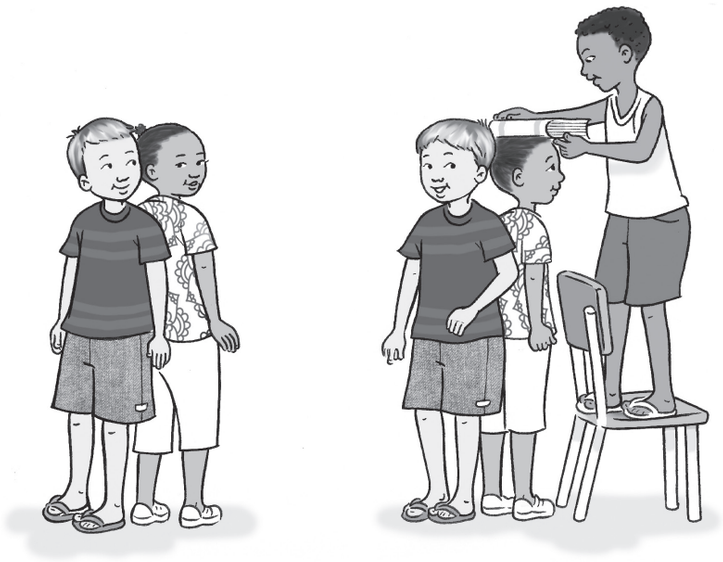


Figure 88 Comparing the height of two learners

'Max is taller than Lola.'
'How much taller is he?'

Comparisons can also involve ordering:
'Max is taller than Lola, but shorter than Elton.'

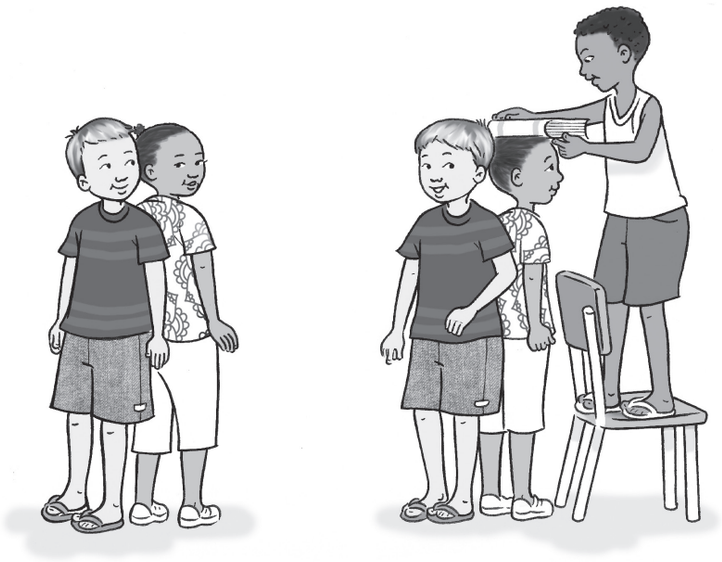
Figure 89 Tallest to shortest

Informal measuring

We measure informally, using **non-standard units** to measure, for example, when we use an arm's length to measure a piece of string, or use our feet to measure the size of a carpet.

GLOSSARY

non-standard unit
a unit of measurement that uses an object, such as a shoe, paper clip or cube; it can also be an informal item, such as a hand span, foot or body length



Umfanekiso 88 Ukuqhathanisa ubude babafundi ababili

'UMax mude kunoLola.'
'Mude kangakanani kunaye?'

Ukuqhathanisa kungabandakanya nokuhleleka futhi:
'UMax mude kunoLola kodwa mfushane kuno-Elton.'

Umfanekiso 89 Omude kakhulu kuya komfushane kakhulu

Ukulinganisa okungahlelekile

Silinganisa ngokungahlelekile, sisebenzisa **isikali esingekho emthethweni** ukulinganisa, njengokuthi uma sisebenzisa ubude bengalo ukulinganisa isinqamu sentambo, noma sisebenzisa izinyawo zethu ukulinganisa ubungako bukakhaphethi.

IGLOSARI

isikali esingekho emthethweni
iyunithi yokulinganisa esebenzisa izinto ezinjengezicathulo, ikiliphu yokubamba amaphepha noma ikhiyubhu; kungaba futhi into engahlelekile njengobude besandla, unyawo noma ubude bomzimba

Standard measuring unit

We use standard units, such as millilitres, litres, centimetres, metres, grams, kilograms, minutes and hours to compare the length of something, how heavy something is or how long it takes to do something. We use standard units to measure more accurately.

Estimation

Learners need to develop estimation skills during their informal measurement activities, for example, they should estimate how heavy they think something is before measuring, or how long they think something is based on the number of blocks they think they will need to measure it, or how long they think it will take to finish tidying up the classroom. They then use measuring instruments to find out how accurate their estimation was.

In practice ...

Learners begin to understand what measurement means and why we need to measure. They understand that:

- Measurement involves direct comparison and the use of non-standard units, such as hands and feet, and other units that are exactly the same size or length, such as blocks, string, counting straws.
- Each unit is a different size; they realise that each measure produces a different result.
- We use one standard unit to measure so that we all have the same outcome when comparing an attribute.

Learners need plenty of opportunities to make decisions themselves about what to measure and how to measure. They should compare the results of their measurements and use different units to measure the same objects.

In higher grades, when learners have acquired comparison and estimation skills, they begin to use standard units. Some Grade R learners may be exposed to measuring tools at home and these can be discussed informally at school, for example:

- measuring jugs, measuring spoons – to measure millilitres, litres
- rulers, tape measures – to measure centimetres, metres
- scales – to measure grams, kilograms
- watches and clocks – to measure minutes, hours.

Isikali sokulinganisa esisemthethweni

Sisebenzisa izikali ezisemthethweni ezinjengamamililitha, amalitha, amasentimitha, amamitha, amagremu, amakhilogremu, imizuzu kanye namahora ukuqhathanisa ubude bento ethile, into ethile isinda kangakanami noma kuthatha isikhathi esingakanani ukwenza into ethile. Sisebenzisa izikali ezisemthethweni ukulinganisa ngokunemba nakakhulu.

Ukuqagela

Abafundi badinga ukuthuthukisa amakhono okuqagela ngesikhathi semisebenzi yokulinganisa engahleliwe, njengokuthi nje kumele baqagele ukuthi bacabanga ukuthi into isinda kangakanani ngaphambi kokuba bayilinganise, noma bacabanga ukuthi into yinde kangakanani kusukela enanini lamabhulokhi abacabanga ukuthi bazowadinga ukulinganisa, noma bacabanga ukuthi bazothatha isikhathi esingakanani baqede ukuqoqa ekilasini. Babe sebesebenzisa izinto zokulinganisa ukuthola ukuthi ukulinganisa kwabo kunembile yini.

Uma sekwenziwa ...

Abafundi baqala ukuqonda ukuthi isilinganiso sisho ukuthini nokuthi kungani kudingeke silinganise. Baqonda ukuthi:

- Isilinganiso simbandakanya ukuqhathanisa ngqo kanye nokusebenzisa isikali esingekho emthethweni njengezandla nezinyawo, kanye namanye amayunithi afana ngqo ngobungako noma ubude obunjengamabhulokhi, izintambo, nezinti zokubala.
- Iyunithi ngayinye inobungako obuhlukile; bayabona ukuthi isilinganiso sikhiqiza imiphumela eyehlukile.
- Sisebenzisa isikali esisodwa esisemthethweni ukulinganisa ukuze sonke sibe nomphumela ofanayo uma siqhathanisa uphawu (i-athribhuthi).

Abafundi badinga amathuba amaningi ukuzenzela izinqumo zabo ngokuthi yini abazoyilinganisa nokuthi bazoyilinganisa kanjani. Kuzomele baqhathanise imiphumela yezilinganiso zabo bese besebenzisa amayunithi ehlukene ukulinganisa izinto ezifanayo.

Emabangeni aphakeme, lapho abafundi sebewatholile amakhono okuqhathanisa nawokuqagela, baqala ukusebenzisa isikali esisemthethweni. Abanye abafundi Bebanga R bangawabona amathuluzi okulinganisa ekhaya bese kuxoxwa ngawo ngokungahleliwe esikoleni, isibonelo:

- ujeke wokulinganisa, izipuni zokulinganisa – ukulinganisa amamililitha, amalitha
- amarula, amatheyiphu okulinganisa – ukulinganisa amasentimitha, amamitha
- izikali – ukulinganisa amagremu, amakhilogremu
- amawashi namawashi asodongeni – ukulinganisa amaminithi, amahora.

Time

The practical aspects of measurement – distance, capacity, weight – can be presented to learners through familiar activities and events, but time is a difficult abstract concept for learners to understand. This is partly because adults do not always use the language of time accurately, and use everyday expressions like, 'I will be there in a minute,' but then take much longer than that. Also, young children tend to live 'in the moment' and therefore recalling past events in order or predicting future events is more difficult for them. Learners need to understand how time passes in their own lives, so teachers need to relate time to the learners' daily experiences and events that are familiar to them.

- Sequencing events: Learners need to understand the language of time so that they can talk about the order in which a sequence of events occurs. Use the daily routine and stories to talk about the order of events during the day and the sequence of actions to complete a task – 'what happened next/before/after'.
- Units of time: Compare different units of time: school time is in the morning, home time is in the afternoon, bedtime is at night, two 'sleeps' until your birthday. Make a weather chart, keep a monthly calendar and record important events on a pictorial timetable. Talk about 'yesterday, today, tomorrow'. Gradually learners begin to understand how time builds into days of the week, months of the year and seasons.
- Rates of speed: Run and race outside. Use plastic guttering to make tracks to roll marbles along and ramps to push cars up and down. Dance to slow and fast music. Ask learners how long it takes them to brush their teeth or walk around the school. Talk about fast, quick and slow movements and activities.

Length

In Grade R, the focus is on estimating, measuring, comparing and ordering length and distance. Learners need to understand that in order to find out the length of something they need to measure it from one end to the other end. For example, they can measure and compare the length of a pencil using paper clips as non-standard units. The illustration below shows how the same pencil can be measured using two different units of measurement. In the first picture there are five paper clips and in the second picture there are three larger paper clips.

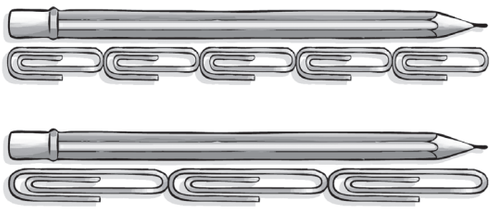


Figure 90 Measuring length with two different units of measurement

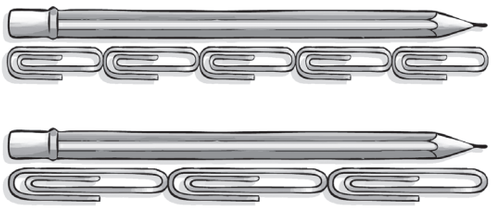
Isikhathi

Izingxenye zesilinganiso ezenzekayo – ibanga, umthamo, isisindo – kungethulwa kubafundi ngokwenza imisebenzi ejwayelekile kanye nezigameko, kodwa isikhathi siwulwazi olubukhuni olungabambeki ukuba abafundi baluqonde. Lokhu ngokunye kubangwa ukuthi abantu abadala abalusebenzisi njalo ulimi lwesikhathi ngokunembayo, bese besebenzisa izindlela zokukhuluma zansukuzonke njengokuthi, 'Ngizoba lapho emzuzwini,' kodwa bese kuthatha kade kunalokho. Kanjalo, nezingane ezincane ziphila 'emzuzwini' bese ngokunjalo zikhumbula izigameko ezidlule ukuze zikwazi ukuqagela izigameko zangomuso bese kuba nzima kakhulu kuzona. Abafundi badinga ukuqonda ukuthi isikhathi sidlula kanjani ezimpilweni zabo ngakho kudinga othisha bakwazi ukuhlanganisa isikhathi kubafundi nezifundo zempilo zabo zansukuzonke nezigameko ezijwayelekile kubona.

- Ukulandelanisa izigameko: Abafundi badinga ukuqonda ulimi lwesikhathi ukuze bakwazi ukukhuluma ngendlela yokuhleleka lapho ukulandelana kwezigameko kwenzeka. Sebenzisa inqubo yansukuzonke kanye nezindaba ukukhuluma ngokuhleleka kwezigameko osukwini nokulandelana kokwenzekile ukuqeda umsebenzi – 'yini eyalandela/ngaphambi/ngemuva'.
- Amayunithi esikhathi: Qhathanisa amayunithi ezikhathi ezehlukahlukene: isikhathi sesikole sisekuseni, isikhathi sokuya ekhaya sintambama, isikhathi sokulala sisebusuku, 'ukulala' kabili bese kuba usuku lwakho lokuzalwa. Yenza ishadi lesimo sezulu, beka ikhalenda lenyanga bese uqopha imicimbi esemqoka ethebulini lesikhathi elakhiwe ngezithombe. Khuluma ngokuthi 'izolo, namhlanje, kusasa'. Kancane kancane abafundi baqala ukuqonda ukuthi isikhathi sakheka kanjani ukuba yizinsuku zesonto, izinyanga zonyaka kanye nezikhathi zonyaka.
- Inani lesivinini: Gijima uncintisane ngaphandle. Sebenzisa imisele yepulasitiki ukwenza umzila wokugingqa omabuli nemigonqo yokududula izimoto zehla zenyuka. Dansela umculo onensayo nosheshayo. Buza abafundi ukuthi kubathatha isikhathi esingakanani ukuxubha amazinyo abo noma ukuhamba bazungeze isikole. Khuluma ngeminyakazo nemisebenzi esheshayo kanye nehamba kancane.

Ubude

Ebangeni R, kugxilwa ekuqageleni, ekulinganiseni, ekuqhathaniseni nasekuhleleni ubude nebanga. Abafundi badinga ukuqonda ukuthi ukuze bathole ubude bento kumele bayilinganise kusukela ohlangothini olulodwa kuya kulolu olunye. Isibonelo, bangalinganisa baqhathanise ubude bepensela besebenzisa ikiliphu yephepha njengesikali esingekho emthethweni. Umfanekiso ongezansi ukhombisa ukuthi lona lelo pensela lingalinganiswa kanjani kusetshenziswa amayunithi okulinganisa ehlukene. Esithombeni sokuqala kunamakiliphu ephepha ayisihlanu kanti kwesesibili kukhona amakliphu ephepha amakhulu amathathu.



Umfanekiso 90 Ukulinganisa ubude ngamayunithi esilinganiso amabili ehlukene

Learners can also measure from top to bottom to find the length of something, for example, to find out how tall the learners in the class are. Then you can arrange them in order from the tallest to the shortest.

- Direct comparison: Find things that are longer than/shorter than … Sort objects according to length and height. Talk about and describe why the objects are sorted in a particular way.
- Attributes: Talk about the length, height or width that is to be measured.
- Non-standard units: Use hands, leaves, pencils to measure and compare objects.
- Uniform non-standard units: Use the same size unit, for example, blocks. Place these along the whole length of the object being measured. Later use one block and move it along, counting the number of moves.

Mass

In Grade R the focus is on estimating, weighing, comparing and ordering objects according to how heavy or light they are. It takes time for learners to understand the concept that size and mass (or weight) are different. Learners need to explore small heavy objects, small light objects, big heavy objects and big light objects and make comparisons between them. Teachers should help learners focus on how heavy the object is, not on its size.

- Direct comparison: Hold an object and estimate its **mass**. Find things that are heavier or lighter than the object.
- Attributes: Talk about the shape, size and mass of the object being measured.
- Non-standard units: Use a balance scale to compare the mass of objects. Place an object to be weighed on one side of the scale. Add another (or more than one) object on the other side of the scale to make it level.
- Uniform non-standard units: Use the same size unit, for example, a large block or a book to compare the mass of objects using the balance scale.

GLOSSARY

mass
how heavy something is

Capacity

The **capacity** of an object is how much it can hold, for example, a one-litre milk bottle can hold one litre of liquid. In Grade R, the focus is on estimating, measuring, comparing and ordering containers according to how much they can hold. Teachers need to provide many opportunities for learners to use the concepts of empty and full, for example, when they are filling or emptying containers with water or sand and during snack time. Learners can fill containers with different substances and talk about their capacity: 'How many cups of water do we need to fill this jug? Why do we need fewer milk bottles of water to fill the jug?'

GLOSSARY

capacity
the maximum or greatest amount that something (such as a bucket or a box, or a stadium) can hold

Abafundi bangalinganisa kusukela phezulu kuya phansi ukuze bathole ubude bento ethile, isib. ukuthola ukuthi abafundi bade kangakanani ekilasini. Usungabahlela ngokulandelana kusuka komude kakhulu kuya komfishane kakhulu.

- Ukuqhathanisa ngqo: Thola izinto ezinjana kune/ezimfishanyana kune … Hlela lezi zinto ngobude nangokuphakama. Khuluma futhi uchaze ukuthi kungani lezo izinto zihleleke ngendlela ethize.
- Izimpawu (ama-athribhuthi): Khuluma ngobude, ukuphakama noma ububanzi lobo obuzolinganiswa.
- Izikali ezingekho emthethweni: Sebenzisa izandla, amaqabunga, amapensela ukulinganisa kanye nokuqhathanisa izinto.
- Izikali ezingekho emthethweni ezifanayo: Sebenzisa iyunithi enobungako obufanayo, isibonelo, amabhulokhi. Zibeke zihambisane nobude obuphelele bento ezolinganiswa. Kamuva sebenzisa ibhulokhi elilolodwa ulihambise, ubale inani leminyakazo.

Isisindo

Ebangeni R, kugxilwe ekuqageleni, esisindweni, ekuqhathaniseni kanye nasekuhleleni izinto ngokuthi zisinda kangakanani noma zilula kangakanani. Kuthatha isikhathi ukuba abafundi baqonde ulwazi lokuthi ubungako kanye nesisindo kuhlukene. Abafundi badinga ukuzitholela izinto ezincane ezisindayo, izinto ezincane ezilula, izinto ezinkulu ezisindayo kanye nezinto ezinkulu ezilula bese beziqhathanisa. Othisha kumele balekelele abafundi ukuthi bagxile ekuboneni ukuthi into isinda kanjani, hhayi ubungako bayo.

- Ukuqhathanisa ngqo: Bamba into bese uqagela **isisindo** sayo. Thola izinto ezisinda kakhudlwana noma ezilulana kunaleyo.
- Izimpawu (ama-athribhuthi): Khuluma ngesimo, ubungako kanye nesisindo saleyo nto elinganiswayo.
- Izikali ezingekho emthethweni: Sebenzisa isikali sokulinganisa ukuqhathanisa isisindo sezinto. Beka into ezokalwa eceleni elilodwa kwesikali. Faka enye (noma engaphezu kweyodwa) into kwelinye icala lesikali ukwenza kube yileveli.
- Izikali ezingekho emthethweni ezifanayo: Sebenzisa ubungako beyunithi obufanayo, isibonelo, ibhulokhi elikhulu noma incwadi ukuqhathanisa isisindo usebenzisa isikali sokulinganisa.

IGLOSARI

isisindo
isinda kangakanani into

Umthamo

Umthamo wento ukuthi ingamumatha okungakanani, isibonelo, ilitha lebhodlela lobisi lingamumatha ilitha elilodwa lokusaketshezi. Ebangeni R, kugxilwe kakhulu ekuqageleni, ekulinganiseni, ekuqhathaniseni kanye nasekuhleleni kwezitsha ngokuthi zingafaka okungakanani. Othisha badinga ukunika abafundi amathuba amaningi okusebenzisa ulwazi lokugcwele nokungagcwele, isib. uma begcwalisa noma bethulula izitsha ezinamanzi noma nesihlabathi ngesikhathi sokudla okuncane. Abafundi bangagcwalisa izitsha ngezinto ezihlukahlukene bese bekhuluma ngomthamo wazo: 'Sidinga izinkomishi ezingaki zamanzi ukugcwalisa ujeke? Kungani sidinga amabhodlela obisi ambalwa ukugcwalisa ujeke?'

IGLOSARI

umthamo
inani lokugcina noma elikhulu into (njengebhakede noma ibhokisi, noma inkundla yezemidlalo) engayimumatha

- Direct comparison: Fill, empty and pour between similar containers using water or sand to find out if they hold the same amount. Initially, learners are likely to estimate that the taller of two containers will hold more water.
- Non-standard units: Experiment with how much water or sand different containers can hold. Compare which holds 'more' or 'less'. Fill one container and then pour the water or sand into another to see if it overflows or if there is room left for more to be added. Fill tall and wide containers and put them in order from the one that holds the most to the one that holds the least.
- Uniform non-standard units: Count the number of spoons or cups that fill containers of the same and different sizes.

Volume

Volume is about how much of something an object is holding, such as water, sand, rice or sugar. In Grade R, the focus of measuring should be on how much a container can hold (capacity) rather than the amount of space a container takes up (volume). Volume can change according to the amount of contents at any given time, but capacity is always the same, for example, the capacity of the jug is 1 litre regardless of how much it contains at the moment. This is a difficult concept for learners in Grade R to grasp.

GLOSSARY

volume
the amount something is holding or the space the contents take up

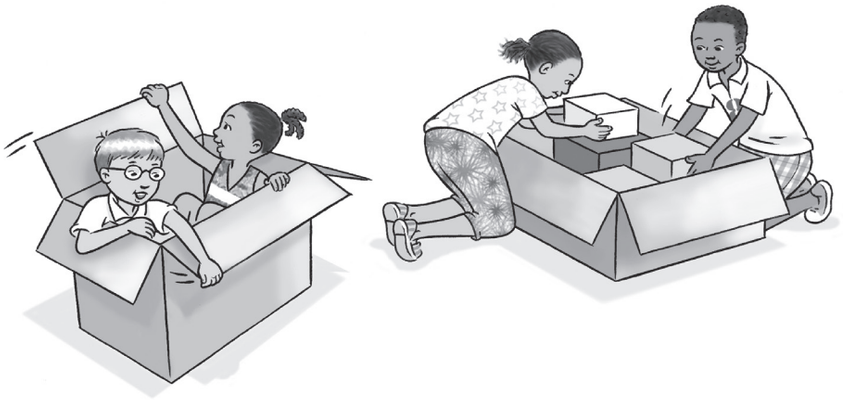


Figure 91 Exploring capacity and volume

- Direct comparison: Learners experiment with different-shaped containers to find out how big the container is and how much they think it could hold.
- Non-standard units: Float containers like plastic lunchboxes, plastic peanut butter jars, milk jugs in water. Fill them with counters or sand and discuss what happens. Ask questions such as: 'Do they still float? What happens to the water in the bucket? Does it spill over?'

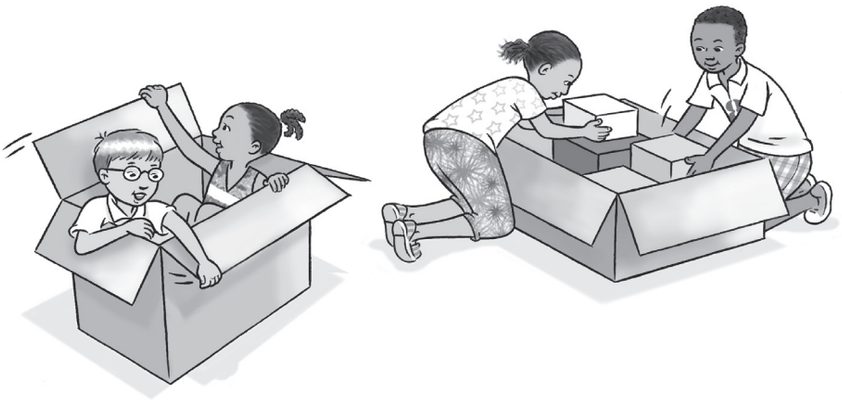
- Ukuqhathanisa ngqo: Gcwalisa, thulula bese uthela ezitsheni ezifanayo usebenzisa amanzi noma isihlabathi ukuthola ukuthi zimumutha inani elilinganayo. Okokuqala, abafundi kungenzeka baqagele ukuthi isitsha eside kunazo zonke sizomumatha amanzi amaningi.
- Izikali ezingekho emthethweni: Zitholele ukuthi amanzi angakanani noma isihlabathi esingakanani esingamumathwa izitsha ezehlukene. Qhathanisa ukuthi isiphi esimumatha 'okuningi' noma 'okuncane'. Gcwalisa isitsha esisodwa bese uthela amanzi noma isihlabathi kwesinye ukuze ubone ukuthi iyachichima noma sisekhona isikhala esisele sokufaka okunye. Gcwalisa izitsha ezinde kanye nezibanzi uzibeke uzihlele kusukela kuleso esimumethe kakhulu kuya kwesimumethe kancane.
- Izikali ezingekho emthethweni ezifanayo: Bala ukuthi zingaki izipuni noma izinkomishi ezigcwalisa izitsha ezifananayo kanye nezinobungako obehlukile.

Ivolumu

Ivolumu imayelana nokuthi kungakanani okumumathwa into, njengamanzi, isihlabathi, ilayisi noma ushukela. Ebangeni R, ukulinganisa kumele kugxilwe enanini elingamumathwa isitsha (umthamo) kunokubheka inani lendawo ethathwa isitsha (ivolumu). Ivolumu ingashintsha kuye ngenani lokufakiwe noma ingasiphi isikhathi, kodwa umthamo uhlale ufana, isibonelo, umthamo kajeke uyilitha noma ngabe ufake okungakanani ngaleso sikhathi. Lolu ulwazi olunzima ukuba lungabanjwa abafundi beBanga R.

IGLOSARI

ivolumu
umthamo omumethwe into noma indawo ethathwa yilokho okutheliwe



Umfanekiso 91 Ukuhlola umthamo nevolumu

- Ukuqhathanisa ngqo: Abafundi balinga ngezitsha ezinezimo ezihlukene ukuthola ukuthi isitsha sikhulu kangakanani kanye nokuthi singamumatha umthamo ongakanani.
- Izikali ezingekho emthethweni: Ntantisa emanzini izitsha ezinjengezikhafuthini zamapulasitiki, ojeke bepulasitiki bebhotela lamakinati nojeke bobisi emanzini. Gcwalisa ngezinto zokubala noma isihlabathi bese nixoxa ukuthi kwenzekani. Buza imibuzo enjengokuthi: 'Ngabe zisantanta? Kwenzekeni emanzini asebhakedeni? Ngabe ayachitheka?'

Questions to ask for Measurement

- What did you do when you woke up?
- What did you do next?
- What happened after that?
- What did we do before …?
- What will we do after …?
- Which moves the fastest/slowest?
- What day is …? What day will be …?
- Which one is longer/shorter?
- Which one is heavier/lighter?
- How many cups/spoons/bottles does … hold?
- Which container can hold more than this container?
- Whose container has the most capacity? How do you know?
- I am really thirsty. Which cup should I use? Why?

Vocabulary for Measurement

- match, sort, compare, order
- measure, same as

Time

- before, after, next, now, then
- quickly, slowly
- day, night, morning, afternoon
- today, yesterday, tomorrow
- week, days of the week
- month, months of the year
- calendar
- year, date
- autumn, winter, spring, summer, seasons

Length

- how long, short, wide, tall
- taller, longer, shorter, wider
- shortest to longest, longest to shortest

Mass

- heavy, heavier, heaviest
- light, lighter, lightest

Capacity

- more, less, empty, full

Volume

- big, little, large, small, tiny

Imibuzo engabuzwa ngeSilinganiso

- Wenzeni ngesikhathi uvuka?
- Wenzeni emuva kwalokho?
- Kwenzekeni emva kwalokho?
- Senzeni ngaphambi kwalokhu …?
- Sizokwenzani emva kwalokho …?
- Iyiphi enyakaza ngejubane elikhulu/elincane?
- Ulwesingaki …? Kuyobe kuwulwesingaki …?
- Iyiphi enjana/emfushanyana?
- Iyiphi esinda kakhudlwana/eludlana?
- Zingaki izinkomishi/izipuni/amabhodlela ezingamumathwa i-…?
- Isiphi isitsha esikwazi ukumumatha kakhulu kunalesi sitsha?
- Esikabani isitsha esinomthamo omningi? Wazi kanjani?
- Ngome kakhulu. Iyiphi inkomishi engingayisebenzisa? Ngobani?

Ulwazimagama Lwesilinganiso

- qondanisa, hlunga, qhathanisa, hlela
- linganisa, kufana ne-

Isikhathi

- ngaphambi, ngemuva, elandelayo, manje, bese
- ngokushesha, kancane
- emini, ebusuku, ekuseni, ntambama
- namhlanje, izolo, kusasa
- isonto, izinsuku zesonto
- inyanga, izinyanga zonyaka
- ikhalenda
- unyaka, usuku
- ikwindla, ubusika, intwasahlobo, ihlobo, izikhathi zonyaka

Ubude

- yinde kangakanani, imfushane, ibanzi, inde
- injana, injanyana, imfushanyana, ibanzana
- emfishane kakhulu kuya kwende kakhulu, ende kakhulu kuya kwemfishane kakhulu

Isisindo

- iyasinda, isinda kakhudlwana, isinda kakhulu
- ilula, iludlana, ilula kakhulu

Umthamo

- okuningi, okuncane, akunalutho, kugcwele

Ivolumu

- kukhulu, kuncane, kukhulu, kuncane, kakhulu

Data Handling

Young children ask questions as they try to make meaning of the world they live in. Teachers need to encourage learners in Grade R to ask questions and seek explanations. These questions can be used as the basis for collecting information (data) and finding out about things and events.

Sorting and classifying

Learners constantly sort and **classify** objects around them in different ways. They put objects into groups of different colours and sizes, they pack and unpack items at home and at school, sorting them into piles of different shapes and uses, for example:

- sorting and matching groups of objects: socks, shoes, plates, cups
- packing objects: cans, boxes, bottles, counters
- sorting counters or toys by attribute: colour, size, type
- tidy-up time: books, blocks, puzzles, games, crayons.

GLOSSARY

classify
the process of grouping similar things in a systematic way, e.g. separating clothes by winter and summer

Objects can be sorted and classified according to their similarities, such as colour. The more learners know about the properties of objects, such as plants and animals, and their similarities and differences, the more they are able to classify them into different groups.

Data Handling involves collecting, sorting and organising, representing and interpreting information in order to solve a problem or answer a question, for example, 'How many learners like eating apples?' In order to answer this question, learners would need to collect information, sort it and represent it in a way that would make it easy for them to interpret the information in order to answer the question.

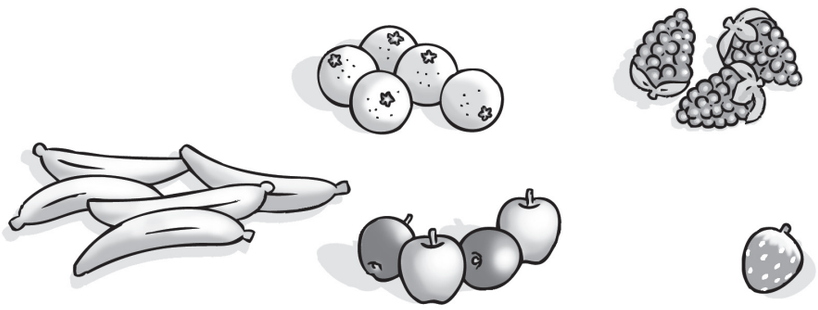


Figure 92 Collecting, sorting and organising into groups

Data Handling can link to other areas of learning, for example, finding out about:

- the world around us, by observing and recording the daily weather or collecting different kinds of leaves
- personal preferences, like favourite colours
- healthy foods, like fruit and vegetables.

Ukusetshenziswa Kolwazi

Abantwana abancane babuza imibuzo njengoba bezama ukwakha umqondo ngomhlaba abaphila kuwo. Othisha badinga ukugqugquzela abafundi abaseBangeni R ukuthi babuze imibuzo futhi bafune izincazelo. Le mibuzo ingasetshenziswa njengesisekelo sokuqokelela ulwazi (datha) nokuthola kabanzi ngezinto kanye nezigameko.

Ukuhlela nokuhlukanisa

Sonke isikhathi abafundi bakwazi ukuhlela futhi **bahlukanise** izinto ezibazungezile ngezindlela ezehlukene. Babeka izinto zibe amaqoqo emibala ehlukene kanye nobungako, bapakisha bakhiphe izinto ekhaya kanye nasesikoleni, bezihlela zibe izitaki zezimo ezehlukene kanye nokusetshenziswa kwazo, isibonelo:

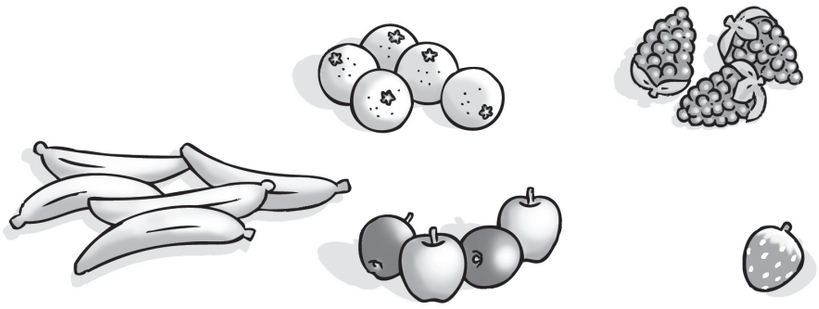
- ukuhlela kanye nokuqondanisa amaqoqo ezinto: amasokisi, izicathulo, amapuleti, izinkomishi
- ukupakisha izinto: amakani, amabhokisi, amabhodlela, izinto zokubala
- ukuhlela izinto zokubala noma amathoyizi ngokophawu (kwe-athribhuthi): umbala, ubungako, nangohlobo
- isikhathi sokuqoqa: izincwadi, amabhulokhi, amaphazile, imidlalo, amakhilayoni.

IGLOSARI

ukuhlukanisa
inqubo yokuqoqela ndawonye izinto ezifanayo ngendlela ehlelekile, isib. ukwehlukanisa izingubo ngobusika kanye nehlobo

Izinto zingahlelwa futhi zihlukaniswe ngokufana kwazo, njengemibala. Uma abafundi sebazi kangcono ngezimpawu (ama-athribhuthi) zento njengezitshalo kanye nezilwane, nokufanayo kuzo kanye nokwehlukile, kuyanezeleleka ukuba bakwazi ukuzihlela zibe semaqoqweni ahlukene.

Ukuqokelelwa Kolwazi kumbandakanya ukuqoqa, ukuhlela kanye nokuhlanganisa, ukumela kanye nokuhumusha ulwazi ukuze kuxazululwe izinkinga noma kuphendulwe umbuzo, isib. 'Bangaki abafundi abathanda ukudla ama-apula?' Ukuze bakwazi ukuphendula lo mbuzo, abafundi kuyodingeka ukuba baqoqe ulwazi, baluhlele bese belumisa ngendlela eyokwenza kube lula kubona ukuhumusha ulwazi ukuze bakwazi ukuphendula umbuzo.



Umfanekiso 92 Ukuqokelela, ukuhlela kanye nokuhlanganisa ngamaqoqo

Ukuqokelela uLwazi lwezibalo kungaxhumana nezinye izingxenye zokufunda, isibonelo, ukuthola:

- ngomhlaba osizungezile, ngokuba siqaphe sibuye siqophe isimo sezulu sansukuzonke noma siqoqe izinhlobo ezehlukene zamaqabunga
- ngezinto umuntu azithandayo, njengemibala ayithandayo
- ngokudla okunempilo, njengezithelo nemifino.

Identifying attributes

Initially, learners sort and classify objects according to one attribute, such as colour, size or shape. Gradually they can give reasons for why they have grouped objects in a certain way. They can also think of other ways of grouping the same objects, based on a different attribute. As learners explore and talk about how they are gathering, organising and sorting 'things' around them, they begin to organise objects into groups based on more than one attribute, such as the colour and shape of objects.

In practice ...

A teacher could ask learners to sort a collection of different coloured shapes:

- Find all the green shapes.
- Find all the squares.
- Find the green squares.

Sorting by two attributes is challenging for learners because they have to understand conceptually the difference between the three groups. Two of the groups have only one attribute while the third group has attributes that make it fit into both groups.

The Data Handling cycle

People often refer to the process of Data Handling as a cycle because the events or activities that are involved are repeated in the same sequence for each new question that is answered.

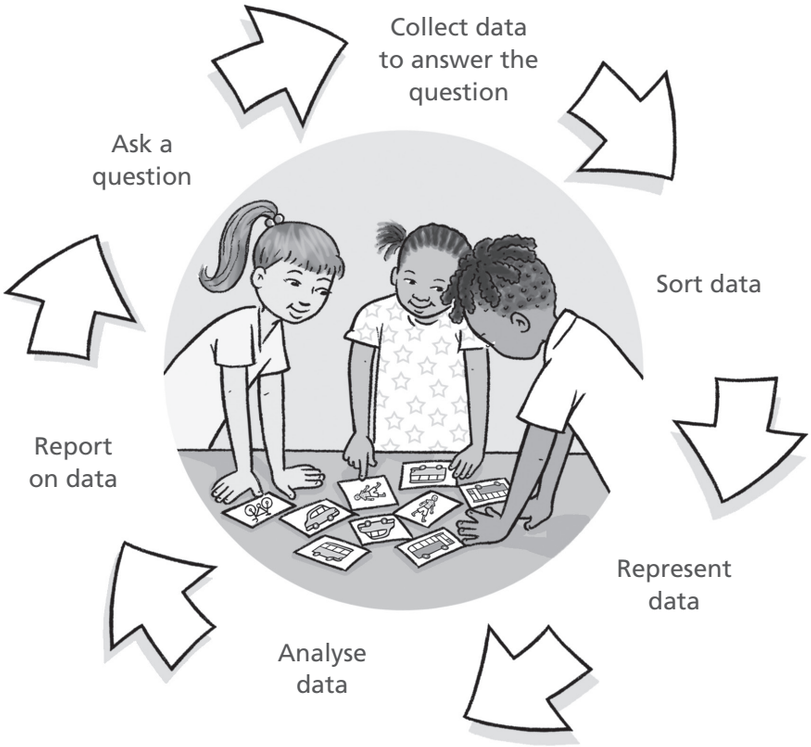


Figure 93 The Data Handling cycle

Ukukhomba izimpawu (ama-athribhuthi)

Ekuqaleni abafundi bahlela bese behlukanisa izinto ngokophawu (ngokwe-athribhuthi) olulodwa, njengombala, ubungako noma isimo. Kancane kancane sebenganika izizathu zokuthi kungani benze amaqoqo ezinto ngendlela ethile. Bangabuye bacabange ngezinye izindlela zokwenza amaqoqo ezinto ezifanayo, zisekwe ophawini (i-athribhuthi) olwehlukile. Ngesikhathi abafundi behlola futhi bekhuluma ngokuthi baqoqa kanjani, behlanganisa futhi behlela 'izinto' eziseduze kwabo, baqala ukuhlela izinto ngamaqoqo asekelwe ophawini (i-athribhuthi) olungaphezu kolulodwa, njengombala nesimo sezinto.

Uma sekwenziwa ...

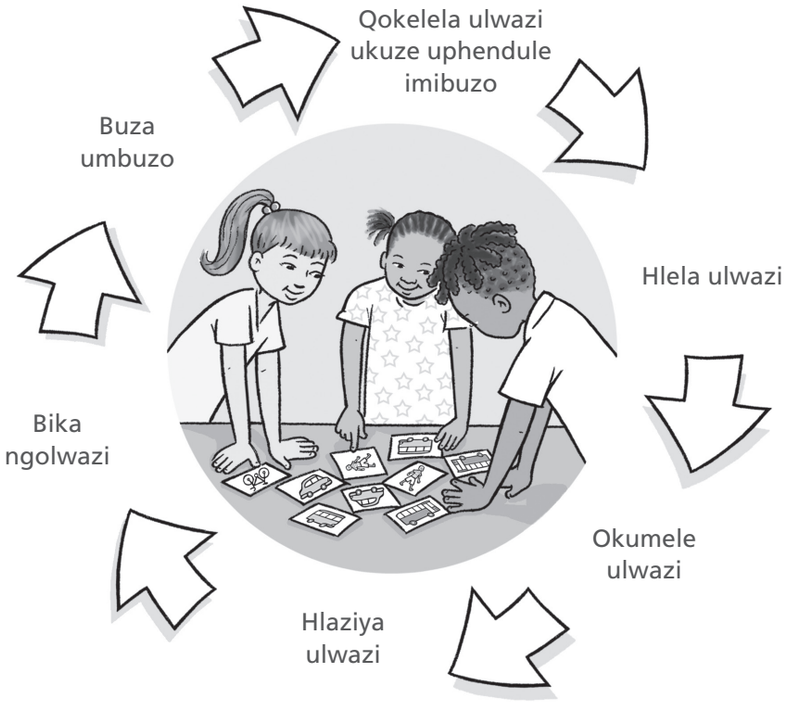
Uthisha angacela abafundi ukuba bahlunge izimo ezinemibala ehlukene eziqoqiwe:

- Bathole zonke izimo eziluhlaza okotshani.
- Bathole zonke izikwele.
- Bathole zonke izikwele eziluhlaza okotshani.

Ukuhlela ngezimpawu (ama-athribhuthi) ezimbili kuba nenselele kubafundi ngoba kusamele baqonde kahle umehluko phakathi kwamaqoqo amathathu. Amaqoqo amabili anophawu (i-athribhuthi) olulodwa kodwa iqoqo lesithathu linezimpawu (i-athribhuthi) ezenza ukuba lingene kuwo womabili amaqoqo.

Umjikelezo Wokuqokelela Ulwazi

Abantu bavame ukuchaza inqubo Yokuqokelela uLwazi njengomjikelezo ngoba izigameko noma imisebenzi embandakanyekayo iphindwaphindwa ngokulandelana okufanayo embuzweni ngamunye omusha ophenduliwe.



Umfanekiso 93 Umjikelezo Wokuqokelelwa Kolwazi

1. **Ask a question:** Learners decide what they want to find out about, e.g. 'I wonder how many learners come to school by bus and how many come by car?' The thread that holds data together is the reason for collecting specific data or information. This means that the data collected or groups generated through sorting should feed into answering a question that the learners have decided they want to find answers to.
2. **Collect data:** Learners decide how they want to collect data based on the question or problem, e.g. by asking other learners how they come to school and drawing a picture for each.
3. **Sort data:** Learners organise and sort the data into groups according to the attribute. In order to answer questions and decide how to represent data they have collected, decisions need to be made about how things could be sorted.
4. **Represent data:** Learners explore different ways of showing or displaying the information they have collected, e.g. by placing real objects on the mat or constructing **pictographs**.
5. **Analyse data:** Learners describe and compare the data that is represented, e.g. which is the most or least used form of getting to school.

GLOSSARY

pictograph
a way of representing data using pictures

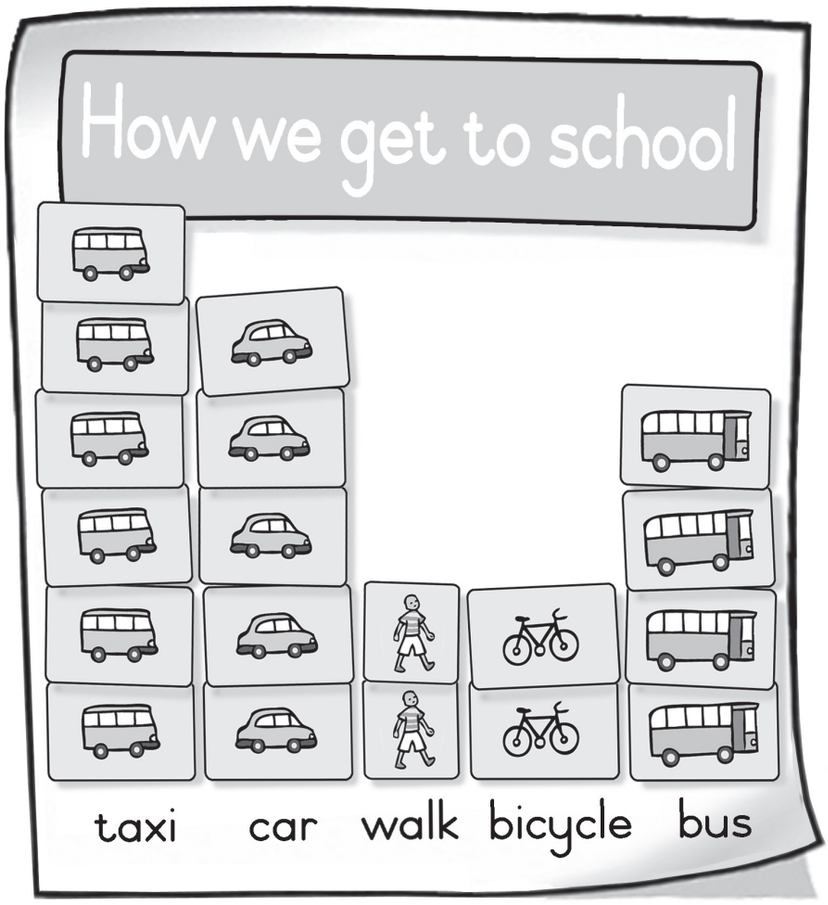


Figure 94 A pictograph

1. **Buza umbuzo:** Abafundi bayazikhethela ukuthi yini abafuna ukuyithola, isib. 'Ingabe bangaki abafundi abafika esikoleni ngebhasi nokuthi bangaki abafika ngemoto?' Intambo ebamba ulwazi ndawonye iyisizathu sokuba kuqoqwe ulwazi oluthile. Lokhu kusho ukuthi ulwazi oluqoqiwe noma amaqoqo akhiwe ngokuhlela kumele asize ekuphenduleni umbuzo oqokwe abafundi ukuthi bafuna ukuthola izimpendulo zawo.
2. **Qoqa ulwazi:** Abafundi bayazikhethela ukuthi bafuna ukuluqoqa kanjani ulwazi olesekwe embuzweni noma enkingeni, isib. ngokubuza abanye abafundi ukuthi bafika kanjani esikoleni bese bedweba isithombe salokho ngakunye.
3. **Hlela ulwazi:** Abafundi balungisa bese behlela ulwazi ngamaqoqo ngokophawu (kwe-athribhuthi). Ukuze bakwazi ukuphendula imibuzo futhi bakhethe ukuthi ulwazi abaluqoqile balumela kanjani, izinqumo kumele zenziwe zokuthi izinto zingahlelwa kanjani.
4. **Ukumela ulwazi:** Abafundi bahlela izindlela ezehlukene zokukhombisa noma zokuveza ulwazi abaluqoqile, isib. ngokubeka izinto zangempela kumata noma bakhe **amagrafu ezithombe**.
5. **Ukuhlaziya ulwazi:** Abafundi bachaza, bese beqhathanisa ulwazi olumelwe, isib. iyiphi indlela esetshenziswa kakhulu noma kancane ukufika esikoleni.

IGLOSARI

igrafu yezithombe
indlela yokumela ulwazi usebenzisa izithombe

Umfanekiso 94 Igrafu yezithombe

6. **Report on data:** Learners answer the question that was initially asked, 'I wonder how many learners come to school by bus and how many come by car?' They can easily see that four learners come to school by bus and five learners come to school by car. They can also compare other information, such as how many learners come to school in other ways and which mode of transport is used the most or least.

Questions to ask for Data Handling

- Which group has the most/least? Can you tell without counting?
- Which group has more/fewer?
- What do you think the answer will be?
- How should we find out?
- Why did you put these things together?
- Could you organise these another way?
- Do these belong here?
- Are oranges or bananas the most popular fruit?
- How many days were: sunny, windy, rainy, …?
- What would happen if …?

Vocabulary for Data Handling

- match, sort, compare
- same, different, belongs, does not belong
- more than, fewer than, same as
- always, sometimes, never
- row, column
- maybe, possible, sure

6. **Ukubika ngolwazi:** Abafundi baphendula umbuzo obubuzwe ekuqaleni, 'Ingabe bangaki abafundi abeza esikoleni ngebhasi nokuthi bangaki abafika ngemoto?' Bangabona kalula ukuthi abafundi abane beza esikoleni ngebhasi bese abafundi abayisihlanu beza esikoleni ngemoto. Bangakwazi ukuqhathanisa olunye ulwazi njengokuthi bangaki abafundi abeza esikoleni ngezinye izindlela nokuthi iyiphi indlela yokuthutha esetshenziswa kakhulu noma kancane.

Imibuzo yokubuzwa Ngokusetshenziswa Kolwazi

- Iliphi iqoqo elinokuningi/elinokuncane? Ungasho ngaphandle kokubala?
- Iliphi iqoqo elinokuningi/okumbalwa?
- Ucabanga ukuthi izothini impendulo?
- Singakuthola kanjani?
- Uzibekeleni lezi zinto ndawonye?
- Ungazihlela lezi ngenye indlela?
- Ngabe lezi ezalapha?
- Ngabe amawolintshi noma obhanana bayizithelo ezithandwayo?
- Zingaki izinsuku: ebezinelanga, ebezinomoya, ebezinemvula, …?
- Kungenzekani uma …?

Ulwazimagama Lokusetshenziswa Kolwazi

- qondanisa, hlela, qhathanisa
- kuyefana, kwehlukile, kungokuka-, akukona okuka-
- kuningi kuna-, kumbalwa kuna-, kuyefana
- njalo, kuyenzeka, akwenzeki
- umugqa, ikhalamu
- mhlawumbe, kungenzeka, qinisekile

Glossary

abstract an idea, a thought or a feeling

acoustic counting counting out loud, saying the numbers in the correct order (also known as oral or rote counting)

applications different ways of using maths concepts and skills, e.g. checking your change in a shop, counting out your taxi fare, or dividing a packet of peanuts between three friends

attribute a feature or characteristic of something, for example, colour or shape

capacity the maximum or greatest amount that something (such as a bucket or a box, or a stadium) can hold

classify the process of grouping similar things in a systematic way, e.g. separating clothes by winter and summer

comparing looking for similarities and differences between two or more objects, e.g. 'these are both animals, but one of them is blue and the other one is red'. Comparing is about finding the relationship between objects based on specific features. This skill leads to the ability to classify objects.

concept an idea or thought. In other words, it cannot be touched. Maths concepts include number, counting, space, addition and subtraction.

developmental progression order in which skills and concepts build on one another

diversity a range of people with a variety of differences of, for example, identity, personality, capabilities, interests and background

elements the objects, movements or events in a pattern

exact precise, accurate

formative assessment assessment that provides information while learning is taking place and measures learners' progress

geometry an aspect of mathematics that deals with properties, measurement and relationships of points, lines and angles of shapes in space

inclusivity the practice of ensuring that all children, regardless of their differences, are included in all classroom activities

interact communicate with other people; do activities with other people

mass how heavy something is

matching identifying the same attribute in two or more objects, e.g. all the yellow objects. Matching is an important skill for learning one-to-one correspondence.

measurement 'how much' of something, e.g. height, length, mass, volume, capacity

mediation a joint activity where a person who knows more or has more highly developed skills guides others to learn something new

non-standard unit a unit of measurement that uses an object, such as a shoe, paper clip or cube; it can also be an informal item, such as a hand span, foot or body length

Iglosari

amakhono okuqonda izinzwa ukusebenzisa izinzwa ukuqoqa ulwazi ngendawo yakho, isibonelo: ukubona, ukuzwa, ukuthinta, ukunuka nokunambitha

hlobanisa ukuthi izinto nemibono kuhlangana kanjani

igrafu yezithombe indlela yokumela ulwazi usebenzisa izithombe

ijiyomethri okunye kwezibalo okusebenzelana nezimpawu, isilinganiso kanye nobudlelwane bamachashaza, imigqa nama-engeli ezimo endaweni

indlela yokubuka into umphumela owenziwa ibanga noma ukujula ekubukekeni kwezinto

iphethini ukulandelana okujwayelekile kwezinto, ukunyakaza noma izigameko eziphindwa ngendlela eqagelekayo

i-rote ukubala kakhulu kuzwakale, esho izinombolo ngokulandelana kwazo (okuphinde kwaziwe ngokubala ngesigqi noma ukubala ngomlomo)

isikali esingekho emthethweni iyunithi yokulinganisa esebenzisa izinto ezinjengezicathulo, ikiliphu yokubamba amaphepha noma ikhiyubhu; kungaba futhi into engahlelekile njengobude besandla, unyawo noma ubude bomzimba

isilinganiso 'kungakanani' into, isib. ukuphakama, ubude, isisindo, ivolumu, umthamo

isisindo isinda kangakanani into

ivolumu umthamo omumethwe into noma indawo ethathwa yilokho okutheliwe

izimo ezinhlangothi mbili (2-D) isimo sinezinhlangothi ezimbili: ubude kanye nobubanzi

izimpawu ubunjalo besimo esiwunhlangothi mbili (2-D) noma into engunhlangothi ntathu (3-D), isib. ubude, ububanzi, ukuphakama, amacala (ubuso), unqenqema, amakhona

izinto ezinhlangothi ntathu (3-D) into inezinhlangothi ezintathu: ubude, ububanzi kanye nokuphakama

izinto ezisephethinini izinto, ukunyakaza noma izigameko ephethinini

nezimpawu izinto ezimele enye into, njengophawu lwenombolo, ilogo, uphawu lomgwaqo

ngomcabango umcabango ngombono othile noma isitatimende

okusebenzisa ukucabanga umbono, umcabango noma umuzwa

shaya emhlolweni ngqo, okunembayo

ukubala ngesigqi ukubala kakhulu kuzwakale, esho izinombolo ngokulandelana kwazo (okuphinde kwaziwe ngokubala ngomlomo noma i-rote)

ukubala ngomlomo ukubala kakhulu kuzwakale, esho izinombolo ngokulandelana kwazo (okuphinde kwaziwe ngokubala ngesigqi noma i-rote)

ukubala okunomphumela ukubala izinto ukuze uthole ukuthi 'zingaki'

ukubona isamba ungabalanga ikhono lokukwazi ukuthi usheshe ubone inani lezinto emaqoqweni ngaphandle kokubala

ukuhleleka ukumisa izinto ezintathu noma eziningi noma izigameko ngokulandelana, isib. inqubo yansukuzonke yekilasi, inqubo yasekuseni yabafundi ('uma sengivukile ngiyehla embhedeni, ngigeze ubuso, ngidle ibhulakufesi …') noma izigameko endabeni

ukuhlola okwakhayo ukuhlola okunikeza ulwazi ngesikhathi kufundwa kanye nokubona inqubekela phambili yomfundi

observing using our senses to find out about objects, events and attitudes. We need to observe to gather information about the world, e.g. looking and listening carefully to what is happening around us.

oral counting counting out loud, saying the numbers in the correct order (also known as acoustic or rote counting)

ordering lining up three or more objects or events in a sequence, e.g. the daily classroom routine, the learners' morning routine ('after I wake up I get out of bed, wash my face, eat my breakfast …') or the events in a story

orientation how objects are placed in relation to each other

pattern the regular sequence of objects, movements or events that are repeated in a predictable way

perspective the effect of distance or depth on the appearance of objects

pictograph a way of representing data using pictures

predict to say or estimate what will happen in the future

principle a general rule that is accepted to be true

prior knowledge what learners know from before and can already do

property the characteristics of a 2-D shape or 3-D object, e.g. length, width, height, sides (faces), edges, corners

rational counting counting objects to find out 'how many' (also known as resultative counting)

reasoning the thinking behind an idea or statement

relate how objects and ideas are connected to each other

represent to use objects, symbols or actions to stand for an idea or concept

resultative counting counting objects to find out 'how many' (also known as rational counting)

rote counting counting out loud, saying the numbers in the correct order (also known as acoustic or oral counting)

sensory perceptual skills using your senses to gather information about your environment, for example: seeing, hearing, touching, smelling and tasting

sequence the particular order in which objects, movements or events follow each other

sorting finding things that are the same, or alike, and grouping them by specific features. First sort by one feature, such as colour, e.g. 'all the green shapes'. Then sort by two features, such as colour and size, e.g. 'all the small, green shapes'.

subitising the cognitive ability to immediately recognise the total number of objects in a collection without counting

symbols things that represent or stands for something else, such as a number symbol, logo or road sign

symmetry when a shape or object can be divided into two equal halves along a central line

3-dimensional (3-D) an object has three dimensions: length, breadth (width) and height

2-dimensional (2-D) a shape has two dimensions: length and breadth (width)

volume the amount something is holding or the space the contents take up

ukuhlukanisa inqubo yokuqoqela ndawonye izinto ezifanayo ngendlela ehlelekile, isib. ukwehlukanisa izingubo ngobusika kanye nehlobo

ukuhlukanisa izingxenye ezifana nse uma isimo noma into ingahlukaniseka ibe ohhafu ababili abalinganayo maqondana nomugqa ophakathi nendawo

ukuhlunga ukuthola izinto ezifanayo noma ezinokufana uziqoqela ndawonye ngezici ezithile. Kuqala hlunga ngesici esisodwa njengombala, isib. 'zonke izimo eziluhlaza'. Bese uhlunga ngezici ezimbili njengombala nobukhulu, isib. 'zonke izimo ezimnyama eziluhlaza'.

ukulamula umsebenzi wokuhlanganyelwa lapho kukhona umuntu owazi okuningi noma onamakhono athuthukile akwazi ukufundisa abanye into entsha

ukulandelanisa ukuhleleka okuthile lapho izinto, ukunyakaza noma izigameko zilandelana

ukuma izinto zibekwe kanjani ngokuphathelene nayinye kuzo

ukumbandakanya umkhuba wokuqinisekisa ukuthi bonke abantwana, ngaphandle kokuhluka kwabo, babe ingxenye yomsebenzi wonke wasekilasini

ukumela ukusebenzisa izinto, izimpawu noma izenzo ukumela umbono noma ulwazi

ukuqagela ukusho noma ukucabangela okuzokwenzeka ngomuso

ukuqaphela ukusebenzisa izinzwa ukuthola ngezinto, izigameko, nesimo sengqondo. Kudinga siqaphele ukuqoqa ulwazi mayelana nomhlaba, isib. ukubuka nokulalela kahle ukuthi kwenzekani kokusizungezile.

ukuqhathanisa ukubheka okufanayo nomehluko phakathi kwezinto ezimbili noma eziningi, isib. 'lezi izilwane zombili kodwa esisodwa sazo siluhlaza okwesibhakabhaka kanti esinye sibomvu'. Ukuqhathanisa kumayelana nokuthola ubudlelwane phakathi kwezinto kubhekwe izici ezithile. Leli khono liholela ekukwazini ukuhlukanisa izinto.

ukuqondanisa ukukhomba izimpawu (ama-athribhuthi) ezifanayo ezintweni ezimbili nangaphezulu, isib. zonke izinto eziphuzi. Ukuqondanisa kuyikhono elibalulekile lokufunda ukubheka okukodwa kokukodwa okuhambisanayo.

ukusebenzisa izindlela ezihlukene zokusebenzisa ulwazi lwezibalo namakhono, isib. ukubheka ushintshi wakho esitolo, ukubala imali yakho yokugibela itekisi noma ukuhlukanisa iphakethe lamakinati phakathi kwabangani abathathu

ukuthuthuka okuqhubekayo ukuhleleka lapho amakhono nolwazi kwakhela phezu kokunye

ukuxhumana xhumana nabanye abantu; yenza imisebenzi nabanye abantu

ukwahlukahlukana abantu abaningi abanokwahlukana okuningana, isibonelo: ububona, ukuziphatha, amakhono, abakuthandayo

ulwazi lwaphambilini okwaziwa ngabafundi phambilini futhi asebekwazi ukukwenza

ulwazi umbono noma umcabango. Ngamanye amagama, ayithinteki. Ulwazi lwezibalo luhlanganisa izinombolo, ukubala, indawo, ukuhlanganisa nokususa.

umgomo umthetho ojwayelekile owamukelwa njengoyiqiniso

umthamo inani lokugcina noma elikhulu into (njengebhakede noma ibhokisi, noma inkundla yezemidlalo) engayimumatha

uphawu (i-athribhuthi) isimo noma isici sento njengombala noma isimo

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