IHlelo lokuThuthukisa iimBalo zeGreyidi R

Grade R Mathematics Improvement Programme

UmHlahlandlela womQondo
Concept Guide

IsiNdebele | English

IHlelo lokuThuthukisa iimBalo zeGreyidi R

Grade R Mathematics Improvement Programme

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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.

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IPhrojekthi yokuThuthukiswa kweemBalo namaLimi kwaGreyidi R imuzamo wom**Nyango wezeFundo weGauteng (Gauteng Department of Education)** nombambisani wayo oqakathekileko, i-**Gauteng Education Development Trust**.

Ukwenziwa nokukhiqizwa kweensetjenziswa zebandulo nezetlasi zePhrojekthi yokuThuthukiswa kweemBalo namaLimi kwaGreyidi R kukghonakele ngomusa wokusekelwa ngemali yephrojekthi ebuya ku-**United States Agency for International Development** kunye ne-**Zenex Foundation**.

IPhrojekthi yokuThuthukiswa kweemBalo namaLimi kwaGreyidi R ilawulwa yi-**JET Education Services** ne-**Schools Development Unit** ye-**UCT** kunye ne-**Wordworks** njengababambisani kezobuqharhaqharha.

I**Schools Development Unit** (SDU) ye-**University of Cape Town** (UCT) imbambisani kezobuqharhaqharha beembalo kuPhrojekthi yokuThuthukiswa kweemBalo namaLimi kwaGreyidi R. I-SDU iyiyunithi ngaphakathi kwe-School of Education ye-UCT eqalene nokuthuthukiswa kobukghwari babotitjhere beemBalo, iSayensi, ilwazi lokuTlola nokuFunda/iLimi namaKghono wePilo ukusukela kwaGreyidi R ukuya kwaGreyidi 12. I-SDU inikela abotitjhere iziqu zokufundisa neemfundo ze-UCT ezifitjhani eziphasisiweko, umsebenzi onzinze esikolweni, ukwenziwa kwemethiriyeli nerhubhululo ukusekela ukufundisa nokufunda kibo boke ubujamo beSewula Afrika.

Umhlobo lo wemethiriyeli yeembalo uzuze ekuhlanganyeleni ngokubambisana nabasebenzisani be-Wordworks begodu uthuthukiswe ngokulunganiswa nemethiriyeli yeHlelo lokuThuthukiswa kweLimi. Kwenziwe ngcono misebenzi yeenkhulu zePhikwana labaNqophisi bokuthuThukiswa kweFundo yabaNtwana nePhikwana labaNqophisi beKharikhyulamu yezeFundo esiSekelo (Ezingeni lesiYingi nesiFunda) womNyango wezeFundo weGauteng abanikele ngokubonakalako kokumumethwe yimethiriyeli begodu bazibandakanye ngokwakhako ukuqinisekisa ukukhambisana nemithethokambiso, imikghwa namagugu weemfunda.

AMAGAMA WOKUTHOKOZA

Ukuthokoza okukhethekileko:

- Iinkhulu zePhiko labaNqophisi leKharikhyulamu, iPhiko labaNqophisi laboTitjhere bezeFundo nePhiko labaNqophisi leFundo eKhethekileko yomNyango wezeFundo weGauteng, ekutjhugululweni kwemetheriyali yethu.
- Abasebenzisani be-Wordworks, ababambisani kezobuqharhaqharha belimi mayelana nePhrojekthi yokuThuthukiswa kweemBalo namaLimi kwaGreyidi R, ngokusebenzisana ekutlanyweni kwemethiriyeli.
- Abasebenzi nabotitjhere be-Western Cape Education Department (WCED) ngokufaka kwabo isandla epumelelweni yokusetjenziswa kwe-Grade R Mathematics Programme (*R-Maths*) eTjhingalanga Kapa phakathi komnyaka we-2016 nowe-2019.
- Isiqhema sokutlola se-*R-Maths*: iinkhulu zokuThuthukiswa kweFundo yabaNtwana abaNcani i-WCED, uCally Kuhne, Karen Kaimowitz, Bev Da Costa, Meryl Glaser, Sue Bailie, Sue Connolly, noSue Heese.

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Foreword from the Head of Department

GAUTENG
PROVINCIAL GOVERNMENT
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

Isethulo esibuya eHlokweni yoMnyango

Titjhere/Msebenzi othandekako

Wamukelekile ebandulweni labotitjhere/labasebenzi bakwaGreyidi R. UmNyango wezeFundo weGauteng (Gauteng Department of Education (GDE)) ubeke phambili ukuThuthukiswa kweFundo yabanTwana abasaThomako njengeQhinga lomNqopho woku-1. Lokhu kukuqinisekisa bonyana sendlala isisekelo esiqinileko nokudlulela kwabafundi kuGreyidi 1 ngokunganamthintela.

IPhrojekthi yokuThuthukiswa kweemBalo namaLimi kwaGreyidi R yenzelwe ukunikela abotitjhere/abasebenzi beGauteng bakwaGreyidi R *isekelo* elifuneka khulu elinzinze ngetlasini. Iphathelene neenkambiso zangetlasini namano athabisako nendlela yokufundisa efaneleke khulu kwaGreyidi R. Lokhu kuyipendulo yerhubhululo elibike bonyana abantwana abama-65% eSewula Afrika yokana abanamakghono atlhogekako ukuphumelela eemfundweni zokuFunda nokuTlola nelwazi leemBalo lokha nabangena kwaGreyidi 1. Iphrojekthi le inqophe ukusekela abotitjhere/abasebenzi bakwaGreyidi R ukuqalana neselele le.

Okulindelwe mNyango kukobana ukulungele ukufunda bese uba ngutitjhere/msebenzi wakwaGreyidi R ohlonyisweko. Ukuzibophelela kwakho ekambisweni yokubandulwa bese nawusuka lapho usebenzise *iimfundo* ozifundileko ngetlasini *yakho*, kuzakusiza ekuthuthukiseni ukulungela kwabafundi bakwaGreyidi R ukungena kwaGreyidi 1.

Sithemba bonyana ukungenelela lokhu kuzakuthuthukisa ikghono, ukusungula nobukghwari bakho lokha nawendlala isisekelo esiqakathekileko sokufunda sabantwana bethu. Iphrojekthi le ibingekhe ibe yipumelelo ngaphandle kwesekelo lababambisani bethu. I-GDE iyathokoza ngesekelo le-GEDT, i-Zenex Foundation ne-USAID ngokufaka isandla ehlelweni leli.

Ngiyathemba nizakufunda okunengi kilelihlelo lokubandulwa begodu nithuthukise ilemuko labantwana abancani enibatlhogomelako.

Ozithobako

Nom. Edward Mosuwe

UMphathi womNyango: UmNyango wezeFundo weGauteng

3 kuMgwengweni 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

IHlelo lokuThuthukisa iimBalo zeGreyidi R (*Grade R Maths*)

Isingeniso

I-*Grade R Maths* ilihlelo leGreyidi R leembalo zokuthoma elikhambisana nelinabisa okumumethweko kweemBalo zeGreyidi R ku-CAPS. Ihlelo le-*Grade R Maths*:

- litlanyelwe ukunikela iphahla lokufundisa nokufunda iimbalo kuGreyidi R
- lisekelwe mithethokambiso yokufundisa ekhuthaza ifundo eyipumelelo
- lihlathulula imiqondo eqakathekileko yokuthuthukisa iimbalo zabantwana abancani
- lilandelanisa okumumethwe ziimbalo zeGreyidi R belinikele imibono esebenzako yetlasi
- linikela abotitjhere umhlahlandlela wemininingwana ezeleko esekela ihlelo labo lokufundisa.

Igama 'iimbalo' lisetjenziswe ngeendlela ezihlukileko kilencwadi. Nakhu lapha litjengiswa bona lisebenza njani nokobana ithemu ngalinye litjho ukuthini:

- **iimbalo** zimumongo welwazi ofaka imiqondo, amakghono nokusebenzisa
- **IimBalo zeGreyidi R** yikharikhyulamu kuStatimende somThethomgomo weKharikhyulamu nokuHlola (i-CAPS)
- i-***Grade R Maths*** ligama lehlelo leli leembalo zokuthoma zeGreyidi R
- **iimbalo kwaGreyidi R** kulihlobo lokufunda iimbalo elenziwa kwaGreyidi R.

Kilomhlahlandlela, igama 'abantwana' lisetjenziswa nakukhulunywa ngabantwana ngaphambi kobana bangene kwaGreyidi R. Igama 'um/abafundi' lisetjenziswa nakukhulunywa ngabantwana abakuGreyidi R.

Amatshwayo wo*mHlahlandlela womQondo* afaka:

- ilwazi mayelana nokufundisa nokufunda iimbalo
- amabhokisi **'Kuyenziwa'** anikela iimbonelo zokobana imithethokambiso nemibono ekilencwadi ingasetjenziswa njani nabantwana nofana bantwana
- amabhokisi **wedlhosari** anikela ihlathululo yamagama angabamatjha nofana angazwisiseki lula
- irhelo ledlhosari yamagama woke amatjha asetjenziswe kilencwadi.

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.

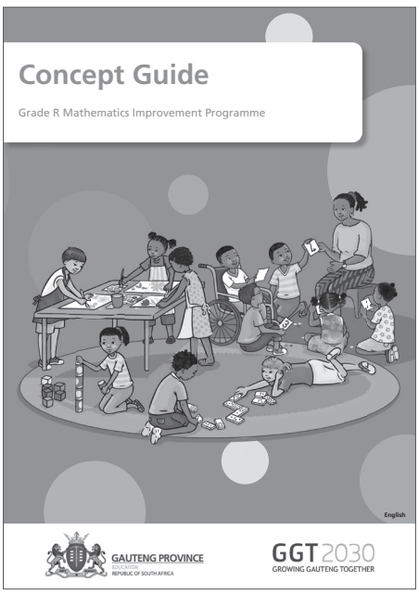


Figure 1 The *Concept Guide*

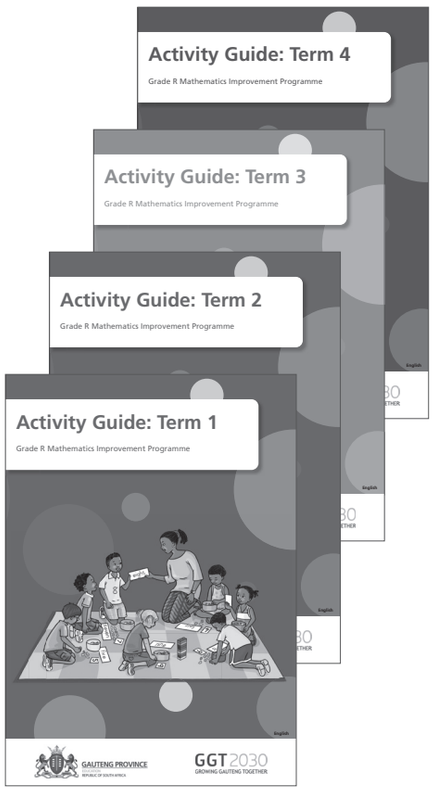


Figure 2 *Activity Guides* Term 1–4

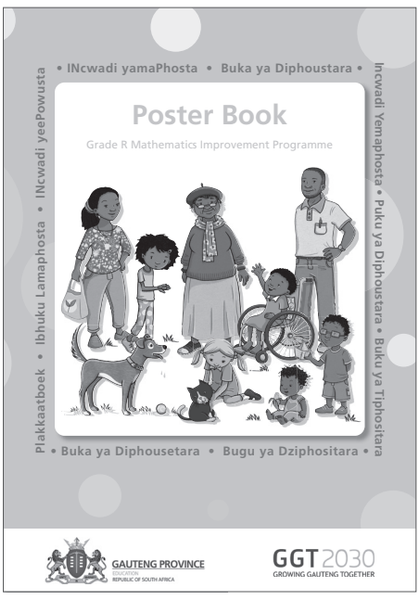


Figure 3 The *Poster Book*

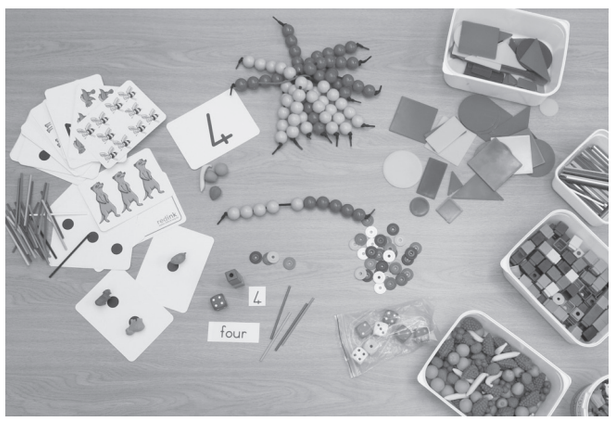


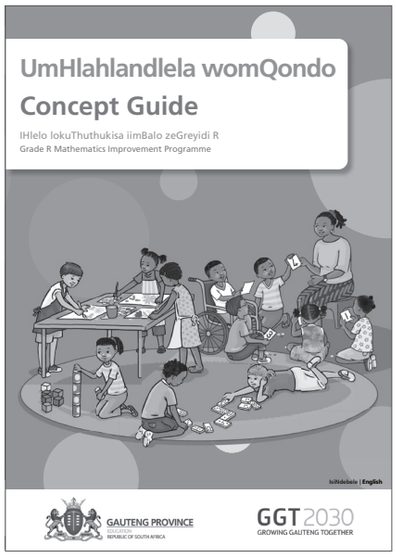
Figure 4 *Resource Kit*

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

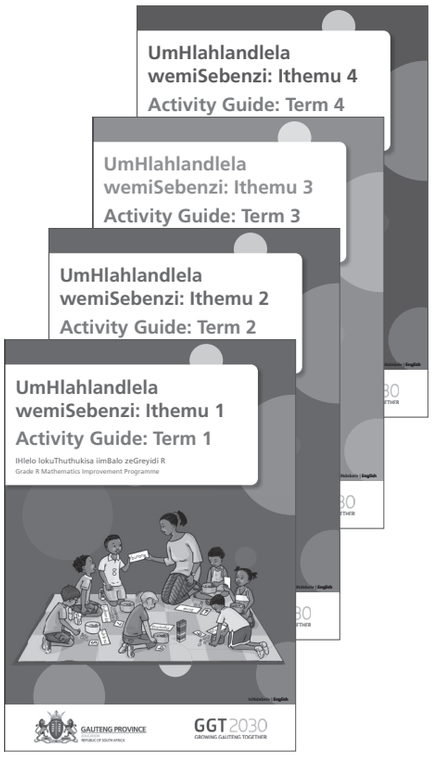
I-*Grade R Maths*

Kuneengcenye ezine ze-*Grade R Maths*:

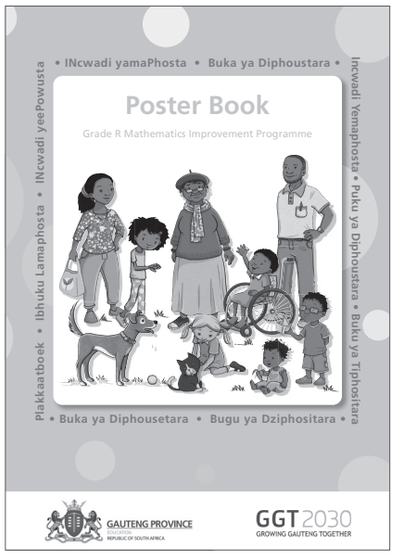
- *umHlahlandlela womQondo*
- *imiHlahlandlela yemiSebenzi* emine – munye ngethemu ngayinye yesikolo – enikela amatitjhere weGreyidi R imibono yeveke yokufundisa nokufunda iimbalo
- *iNcwadi yamaPhosta* enamaphosta alitjhumu nanye
- *iKhidi yeenSetjenziswa* zangetlasini eneensetjenziswa zeembalo zokufunda nokutlola zangamunye nezesiqhema esincani.



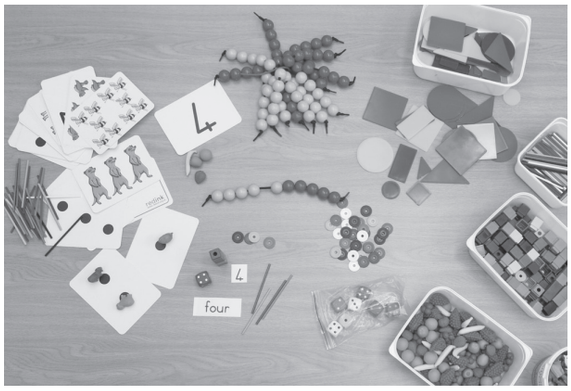
Umdwebo woku-I *UmHlahlandlela womQondo*



Umdwebo wesi-2 *ImiHlahlandlela yemiSebenzi* Ithemu I–4



Umdwebo wesi-3 *INcwadi yamaPhosta*



Umdwebo wesi-4 *IKhidi yeenSetjenziswa*

Ungathola ilwazi elingezelelweko ngesakhi ngasinye se-*Grade R Maths* kilo *mHlahlandlela womQondo*.

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.

THE EIGHT PRINCIPLES OF GRADE R MATHS

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

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

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

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

Figure 5 Principles of the Grade R Maths programme

Imithethokambiso ehlahla ukufundiswa kweembalo kuGreyidi R

I-*Grade R Maths* ikhuthaza indlela yokufundisa nokufunda ehlahlambisako nekhuthaza abafundi. Abafundi bazakukhula ngelwazi namakghono ebazakwakhela phezu kwawo emagreyidini alandelako. Irhubhululo lezefundo ematlasini litjengise **imithethokambiso** yokufundisa enemithelela emihle yepumelelo yokufunda. Ihlelo le-*Grade R Maths* lakhelwe phezu kweminane yalemithethokambiso.

IDLHOSARI

umthethokambiso
umthetho ojayelekileko omukeleka njengeqiniso

1. **Umthethokambiso wobujamo.** Ukufunda kwenzeka ebujameni obuzwisisekako nobufaneleko.

2. **Umthethokambiso womsebenzi.** Abafundi kufanele babandakanywe bunqopha ekambisweni yokufunda nokufundiswa.

3. **Umthethokambiso wokudlala.** Abantwana bafunda ngcono emisebenzini yokudlala ngokutjhaphuluka nokudlala okuhlahliweko.

4. **Umthethokambiso wezinga.** Abafundi badlula emazingeni ahlukileko wokuzwisisa nokukhula.

5. **Umthethokambiso wokukhulumisana.** Ukufunda kwenzeka lokha nakunokukhulumisana nokwabelana ngemibono.

6. **Umthethokambiso wokuhlahla.** Ukufunda kwenzeka lokha abotitjhere bahlahla abafundi bathuthuke elwazini elitjha.

7. **Umthethokambiso wokufaka koke.** Ukufunda kwenzeka endaweni lapho woke umuntu amukelekile, afakwe, aphathwe kuhle, ahlonitjhwe begodu akwazi ukuzibandakanya.

8. **Umthethokambiso wokujayeza.** Ukufunda kuhlanganiswa ngokuzijayeza amakghono nelwazi elitjha.

8
IMITHETHOKAMBISO EBUNANE 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.

Nanyana imithethokambiso yokufundisa ebunane le irheliswe ngokuhlukaniswa, yoke inetjhebiswano.

Ingcenye elandelako *yomHlahlandlela wemiQondo* ikuhlathululela ngemithethokambiso ebunane esisekelo se-*Grade R Maths*. Umthethokambiso ngamunye une:

- hlathululo
- bhokisi 'Kuyenziwa'
- lwazi elingezelelweko mayelana nomthethokambiso.

1. Umthethokambiso wobujamo

Ihlathululo

Ukufunda kwenzeka lokha ummongo (nofana ubujamo) uzwisiseka kumfundi. Ngokuvamileko, imiraro yeembalo emihle ifaka imibono yeembalo evela ebujameni bepilo yamambala. Abafundi bakuthola kulula ukurarulula imiraro yeembalo ebakghona ukuzihlobanisa nayo ngonobangela welemuko labo lepilo.

Kuyenziwa ...

Kunamathuba wokufunda iimbalo pheze kiyo yoke imisebenzi yetlasini neyekhaya yangamalanga. Isitjhijilo kibotitjhere nababelethi kukghona ukuyelela amathuba la bese bawasebenzisele ukwakha phezu kwalokho abafundi esele bakwazi.

Okunengi ngomthethokambiso wobujamo

Iimbalo zokuthoma ekhaya

Ilemuko labantwana abancani lekhaya nelemidlalo yangaphandle lendlala iinsekelo zokuzwisisa kwabo **imiqondo** yeembalo eqakathekileko.

IDLHOSARI

umqondo
umbono nofana umcabango. Ngamanye amagama, yinto engathintekiko. Imiqondo yeembalo ifaka inomboro, ukubala, isikhala, ukuhlanganisa nokukhupha.

Amasana, abantwana abasakhasako nabantwana abancani basebenzisa imizwa yabo ukufunda ngephasi elibabhodileko. Batjengisa ikareko kumabumbeko asisekelo, ukwakha amaphethini alula begodu bangafunda ukubala ngaphambi kobana baye esikolweni. Bafunda ngephasi lokha nabakhulumako, badla nofana badlala, bathola imiqondo yeembalo ngaso sona leso isikhathi. Isibonelo:

- Lokha nabazama ukufaka izinto ezikulu ngemilonyeni yabo, bakha ukuzwisisa kwabo ubukhulu.
- Lokha nabasebenzisa amabhokisi nerolo yengaphakathi lephepha lendlwaneni ukwakha iinkoloyi zokudlalisa, bathuthukisa ilwazi lamabumbeko.
- Lokha nabazama ukuguga into ebudisi khulu, bathoma ukuzwisisa umqondo wobungako.
- Lokha nababona ukufana nokuhluka phakathi kwezinto ezincani ezibuthelelweko, bayalinganisa, bahlele bebamadanise.

Abantwana abancani bathoma ukwakha imibono mayelana nemiqondo yeembalo kade ngaphambi kobana bafundiswe iimbalo esikolweni.

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 yabantwana yekhaya yangamalanga izele ngamathuba weembalo zokuthoma. Isibonelo:

- ngesikhathi seenkambiso zangamalanga, isib. isikhathi sokudla, sokuhlamba, ukwembatha nokubutha izinto
- nabasebenzisa izinto, isib. ukubeka iimvalo phezu kwezitja zeplastiki nokusika ngesikere
- nabadlalako, isib. lokha nababelana ngezinto, benza ngathi bayapheka nofana benze ngathi batjhayela itekisi
- nabadwebako bebafake nepende
- nabalingisa abantu abadala nababalako.

Imisebenzi le yakha ukuzithemba ebantwaneni. Ngaso leso sikhathi, bathuthukisa ilwazi labo nokuzwisisa iphasi elibabhodileko.

Umdwebo wesi-6 Ukusebenzisa imisebenzi yangamalanga ukuhlola imiqondo yeembalo

Ukuzwisisa kwabantwana abancani iimbalo kuthuthuka ngokukhamba kwesikhathi.

- Bafunda kobana iinomboro zinobungako nofana ubunengi obunanyathiselwe kizo obungatjhugulukiko, isib. lokha umntwana weminyaka emithathu aphakamisa imino emithathu ukutjengisa ubunengi 'thathu'.
- Bangaphindaphinda umlandelande weenomboro, isib. 'kunye, kubili, kuthathu, kuthandathu, litjhumi'. Lokha nabenza lokhu balingisa abantu abadala ngokusebenzisa amagama wokubala ngaphandle kobana babe nokuzwisisa kuhle bona atjho ukuthini.

Lokha abantwana bazidlalela babodwa nofana nabanye abantwana, nalokha ba**khulumisana** nabantu abadala abaseduze kwabo, bathoma ukuba nemibono ngemiqondo yenomboro, ibumbeko, isikhala nokumeda.

Imiqondo eyakheka ebantwaneni ngesikhathi semisebenzi yabo yangamalanga kwesinye isikhathi ibizwa ngokuthi 'lilwazi langamalanga'. Isibonelo salokhu kulokha abantwana bakhupha izitja ezaneleko zawo woke umuntu odlako bese bakhuphe isigobho basibeke esitjeni ngasinye. Lokha nabenza lokhu, bafunda ngokukhambelanisa kunye kokunye.

IDLHOSARI

ukukhulumisana
khulumisana 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

Iimbalo ebujameni besikolo

Abantu abanengi bacabanga bona iimbalo ziphathelene neenomboro nokuhlanganisa amanani kwaphela kodwana lokhu kuyingcenye eyodwa nje yeembalo, ebizwa ngokobana ziimbalo. Iimbalo ngokweqiniso zifaka imiqondo namakghono amanengi. Zifaka neendlela ezinengi zokusebenzisa imiqondo namakghono la. Lokhu kubizwa '**ukusebenzisa**'. Lokha nasikhuluma ngeembalo sitjho imiqondo, amakghono nokusebenzisa.

Abantwana basebenzisa imiqondo yeembalo ngamalanga nomanyana bona bangayicabangi njengokwenza iimbalo. Basebenzisa imiqondo yeembalo lokha nabazalisa ikomitji ngaphandle kobana iphalake, nabazi bona ngisiphi isiphathi ekufanele basisebenzise kobana kungene woke amabhlogo, nabayokuthenga esitolo nofana batjho bona sinokuthileko okungangani.

IDLHOSARI

ukusebenzisa
iindlela ezihlukileko zokusebenzisa imiqondo namakghono weembalo, isib. ukuhlola itjhentjhi yakho esitolo, ukubala imali yetekisi, nofana ukuhlukaniselana ipakana yamantongomani phakathi kwabangani abathathu

Umdwebo we-7 Soke sisebenzisa imiqondo yeembalo epilweni yethu yangamalanga – ukukhetha ibhokisi lobukhulu obufaneleko.

Esikolweni, abantwana bakhela phezu kwelwazi leli lokha, isibonelo, bahlela izinto ngokweenqhema bese bamadanisa isibalo sezinto esiqhemeni ngasinye. Bese bafunda ukubala ngokulandelanisa iinomboro ngefanelo begodu basebenzise kunye kokunye okukhambelanako ukuthola isamba sokubuthelelweko. Lokhu kubizwa ngokobana 'lilwazi lesikolweni'.

Ilwazi langamalanga
ukumadanisa, ukuhlela, ukhambelanisa, ukutjho amagama weenomboro, ukufunda ngokunengi/okuncani, khudlwana/ncazana, lula/budisi

Ilwazi lesikolweni
Amatshwayo namagama

- Iinomboro, ama-Opharetjhini noBudlelwana
- AmaPhethini, amaFanktjhini, ne-Aljibhra
- Isikhala neBumbeko (Ijiyomethri)
- Ukumeda
- Ukuphatha iDatha

Umdwebo wobu-8 Isihlanganisi phakathi kwelwazi langamalanga nelwazi lesikolweni

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.

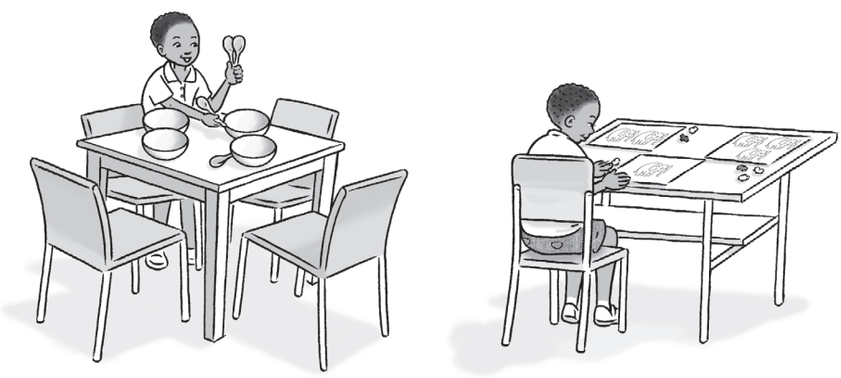


Figure 9 Counting and one-to-one matching at home and at school

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

Abantwana nabafika kwaGreyidi R, bafika nelemuko labo kunye nokuzwisisa nemibono yabo mayelana nephasi. Lokhu lilwazi labo langamalanga. Ilwazi langamalanga angekhe lifane kibo boke abantwana ngombana liya ngomndeni, umphakathi nesiko lomntwana. Ilwazi langamalanga kwesinye isikhathi libizwa ngokuthi **lilwazi langaphambili**, abotitjhere balisebenzisela ukwakhela phezu kwalokho abafundi esele bakwazi nabangakwenza.

IDLHOSARI

ilwazi langaphambili
lokho abantwana abakwaziko kusukela ngaphambili nabakghona ukukwenza

KwaGreyidi R, abafundi kufanele babe nethuba lokuhlola, ukuphenya nokulinga imibono emitjha. Kufanele bakhuthazwe godu ukukhuluma notitjhere wabo nabanye abantwana ngalokho abakwenzako nabakucabangako. Abafundi batlhoga indlela efaneleko yokufundisa ukubasiza:

- ukucabanga nokukhuluma ngelemuko labo ngokusebenzisa ilimi leembalo
- ukwakha ilwazi elitjha leembalo
- ukuqinisa ukuzwisisa kwabo iimbalo
- bakhe ummoya omuhle mayelana neembalo.

Badinga ukubandakanywa emisebenzini yekhaya neyesikolweni ebavumela bona bahlole imiqondo yeembalo, babone iimbalo zikarisa begodu zithabeleka.

Umdwebo we-9 Ukubala nokukhambelanisa kunye kokunye ekhaya nesikolweni

Ukwenza indawo yokufunda iimbalo

Abotitjhere kufanele benze ubujamo betlasi lapho abafundi:

- bazazizwa baphephile begodu bavikelekile
- bazithemba ngokwaneleko kobana bakghone ukuveza amazizo wabo
- bazibandakanye kiyo yoke imisebenzi.

Ubujamo bendawo yokufundela iimbalo kufanele bufake:

- iinsetjenziswa (njengemidlalo, imethiriyeli yokwakha namaphazili) ezihlelwe ngendlela yokobana abafundi babone okukhona bese bakhethe lokho abafuna ukukusebenzisa
- amathuba wokuhlola nokuphenya
- amathuba wabafundi wokusebenzisa imethiriyeli ukurarulula imiraro nokurekhoda iinsombululo zabo
- amathuba wabafundi wokusebenzisa ilimi leembalo, njengokuthi ‘kunengi’, ‘kukhulu kuna-’, ‘ikhona’ neenomboro

- 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.

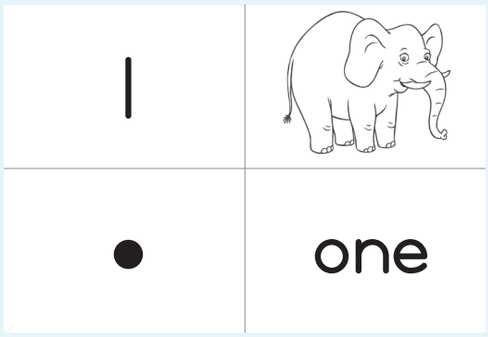


Figure 10 Number frieze

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 efaka **ukuqala**, **ukukhambelanisa**, **ukumadanisa**, **ukuhlela**, **nokulandelanisa**.

Kuyenziwa ...

- lungisa indawo enothe ngeembalo ngetlasini yakho. Sebenzisa itafula eseduze neboda ukuze amalebula, iinthombe nezinto kungakhangiswa bekucociswane ngazo.
- lungisa itjhadi lobujamo bezulu, ikhalenda, inamba layini (idrada yokweneka yeenomboro) nomhlobiso weenomboro kilendawo bese lokhu ukusebenzisela ukucocisana.
- Khangisa imisebenzi yabafundi endaweni le.
- Khuthaza abafundi beze nezinto abazakucocisana ngazo. Faka lokhu etafuleni yomkhangiso bese unikela abafundi abeze nezinto ithuba lokukhuluma ngazo.

I	
•	kunye

Umdwebo we-10 Umhlobiso weenomboro

Umdwebo we-11 Indawo yeembalo

2. Umthethokambiso womsebenzi

Ihlathululo

Umthethokambiso womsebenzi utjho ukufunda ngokwenza izinto ngokwakho. Abafundi kufanele bazibandakanye ekufundeni kwabo. Ukufunda iimbalo kwaGreyidi R kufanele kube nemisebenzi ethabisako neyokuzibambela efaka izinto zangamalanga nelemuko elinqophileko. Lapho kukghoneka khona, imisebenzi kufanele inikele abafundi amathuba wokusebenzisa imizimba yabo ngokupheleleko nemizwa, khulukhulu ukubona, ukuzwa nokuthinta.

IDLHOSARI

ukuqala
ukusebenzisa imizwa yethu ukuthola ngezinto, izehlakalo nommoya wokwenza izinto. Kufanele sibukele ukubuthelela ilwazi mayelana nephasi, isib. ukuqala nokulalelisisa kuhle lokho okwenzekako magega nathi.

ukukhambelanisa
ukubona amatshwayo afanako ezintweni ezimbili nofana ezinengi, isib. zoke izinto ezisarulani. Ukukhambelanisa likghono eliqakathekileko ukufunda ukukhambelanisa kunye kokunye.

ukumadanisa
ukufanisa ukufana nomehluko phakathi kwezinto ezimbili nofana ezinengi, isib. 'lezi ziimbandana zombili kodwana esinye sazo silihlaza kwesibhakabhaka esinye sibovu'. Ukumadanisa kuphathelene nokuthola ubudlelwano phakathi kwezinto ngokuya ngokwamatshwayo athileko. Ikghono leli lidosela ekghonweni lokwazi ukuhlukanisa izinto ngeengaba.

ukuhlela
ukuthola izinto ezifanako, nofana ngokufanako, bese zihlelwe ngeenqhema ngokwamatshwayo athileko. Kokuthoma zihlele ngokwetshwayo elilodwa, njengombala, isib. 'woke amabumbeko ahlaza satjani'. Bese uzihlela ngamatshwayo amabili njengombala nobukhulu, isib. 'woke amabumbeko amancani, ahlaza satjani'.

ukulandelanisa
ukurhemisa izinto ezintathu nofana ezinengi nofana izenzeko ngokulandelana, isib. imisebenzi yangetlasini yangamalanga, ikambiso yekuseni yabafundi ('ngemva kokuvuka ngiyaphuma embhedeni, ngihlambe ubuso, ngidle isidlo sami sekuseni …') nofana izenzeko ezisendabeni

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.

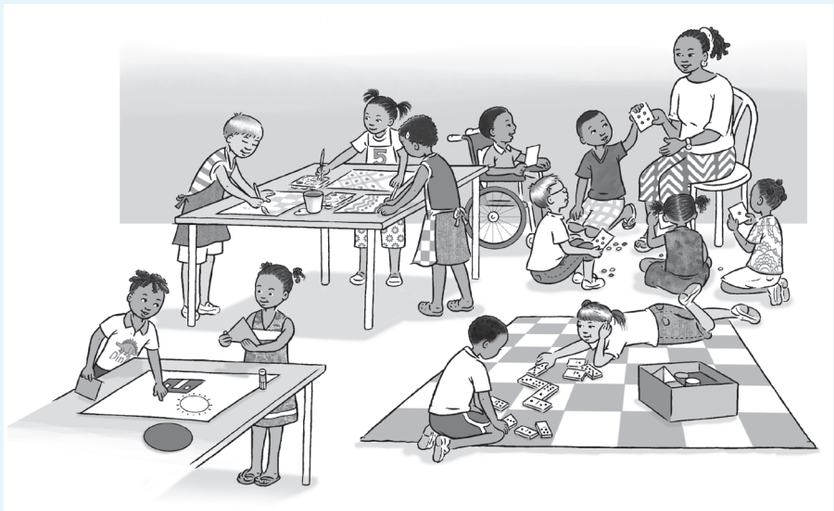


Figure 12 Children learn in hands-on activities.

Abafundi bakwaGreyidi R kufanele bafunde ukubala nokurhemisa iinomboro ngeengoma nemilolozelo, basebenzise nezenzo neminyakazo emikhulu, njengokuwahla, ukweqa nokugida ukujamiselela iinomboro lokha nababalako. Ukubala ngehloko, ukukopa iinomboro ebhodini nokutlola amatshwayo weenomboro phakathi kwamalayini ngepensela akusiyo indlela engcono yokufunda ngeenomboro.

Abafundi kufanele bazifunele bebapakulule ibuthelelo lezinto abangazibala bebazilebule ngenomboro magama namakarada wamatshwayo. Kufanele batlole amatshwayo weenomboro ehlabathini, bawabumbe ngokusebenzisa ipati, bawafake umbala, nofana bawagadangisele emihlana yabangani babo. Indlela le ikhambisana nokutlola okusathomako bese ihlanganisa ibumbeko letshwayo lenomboro negama lenomboro.

Lokha nawethula inomboro etja, kumbono omuhle ukuhlanganisa igama lenomboro, itshwayo, iminyakazo yomzimba nokubuthelelwa kwezinto ngendatjana. Lokhu kungenziwa ngokukhuthaza abafundi ukubala izinto esithombeni, nofana ukukhumbula inani lezinto ezithize ezisendatjaneni, nofana bangawahla, beqe nofana bakhombise imino yabo ukujamiselela inomboro esendatjaneni.

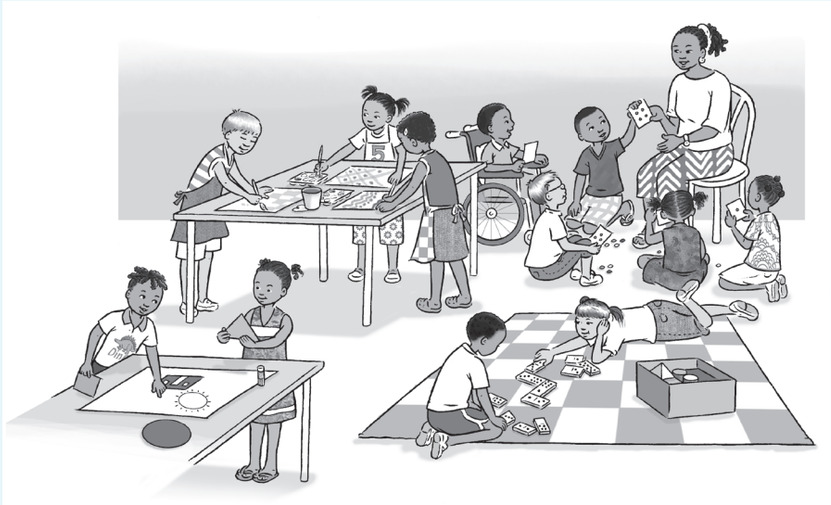
Kuyenziwa ...

Utitjhere wenza okulandelako:

- Uhlela imisebenzi yokuzenzela efanele iminyaka yobudala yabafundi, izinga lokukhula namakareko wabo.
- Uhlanganisa lokho abafundi esele bakwazi nabakghona ukukwenza, nemibono emitjha, ilimi, imiqondo begodu/nofana namakghono ekufanele afundwe.

Abafundi:

- batjhaphulukile ukulinga, ukuphenya nokubuza imibuzo
- ndawonye, babelana ngemibono babuza nemibuzo.



Umdwebo we-12 Abantwana bafunda ngemisebenzi yokuzenzela.

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. Umthethokambiso wokudlala

Ihlathululo

Ukudlala kunemisebenzi ethabisako begodu kukhuphula ukukhula netuthuko yomntwana. Ukudlala kuneemvuzo emihle yokuziphatha, yehlalakuhle, yomzimba, yomkhumbulo nemizwa. Ukudlala kuvumela abantwana bazibandakanye ngomdlandla ekufundeni nekuhloleni ibhoduluko labo. Ukufunda kwaGreyidi R kufanele kube nemisebenzi yokuzenzela ethabisako neyelemuko esebenzisa izinto ezinengi eziphathekako n**amatshwayo**.

IDLHOSARI

amatshwayo
izinto ezijamele into enye, njengetshwayo lenomboro, ilogo, nofana itshwayo lendlela

Ukufunda ngokudlala

Ebantwaneni, ukufunda nokudlala akusiyo imisebenzi ehlukileko. Ukudlala kungatjho izinto ezinengi, njengemidlalo yangaphandle yokusikinya umzimba; ukudlala ngehlabathi nofana amanzi; imidlalo yokuzenzisa nabangani nofana babodwa; ukudlala ngamabhlogo neendlalisi zokwakha; nofana ukudlala imidlalo yokulalela, imidlalo yokuqagela nofana imidlalo yamakarada. Nanyana eminye imisebenzi yokudlala idinga isikhathi esingezelelweko neensetjenziswa, abantwana bavame ukuthabela ukudlala ngezinto zangamalanga nangezinto ezilula ezenziwe ngemethiriyeli yekhaya. Ukudlala yindlela abantwana abafunda ngayo ekhaya nesikolweni. Akusiyo into abafundi abayenzako kwaphela 'ngesikhathi esitjhaphulukileko' nofana lokha utitjhere angekho.

Abantwana badinga amathuba amanengi woku:

- hlola ibhoduluko labo ngokusebenzisa imizwa yabo, isib. imisebenzi yokusikinya umzimba eyenziwa ngaphandle njengokukhwelela nokugijima, nofana imidlalo enemithetjhwana efanele ukulandelwa njengehopskotjhi nemidlalo yebholo
- ukuphenya nokurarulula imiraro, isib. ukusebenzisa imethiriyeli yokwakha ukwenza umbhotjhongo, nofana ukusebenzisa amanzi nofana ihlabathi ukuzalisa iimphathi
- ukuzijayeza ngalokho esele bakwazi nofana abakghona ukukwenza, isib. ukudlala imidlalo ehlelekileko njengomdlalo weenyoka namalere nofana amadomino.

Imihlobo emihlanu yokudlala

Abarhubhululi bathole imihlobo emihlanu yemidlalo etholakala kiwo woke amasiko esekela umzimba, ihlalakuhle, netuthuko yemizwa nemikhumbulo yomntwana.

- **Umdlalo wokusikinya umzimba** ufaka ukuzilula okumajadu, imidlalo esebenzisa imisipha emincani yezandla, nemidlalo elingisa ukulwa. Kuqakathekile bonyana imisipha emikhulu nemincani isebenzisane ekwakheni amandla nokukghodlhelela.
- **Ukudlala ngezinto** kufaka ukuhlola, ukuphenya nokulinga ngezinto ezihlukileko ephasini labo. Lokhu kuthuthukisa ukucabanga namakghono wabo wokurarulula imiraro.
- **Ukudlala okufanisako** kulokha abantwana basebenzisa iindlalisi, into, isithombe, umdwebo nofana okhunye kokumerega ukujamisela izinto zepilo yamambala.
- **Umdlalo wokuzenzisa nokulingisa** ufaka ukwembatha nokuba mlingisi womdlalo. Lokhu kukhuphula ituthuko yokucabanga nehlalakuhle begodu kusiza abantwana ukulawula ukuziphatha nemicabango yabo.
- **Imidlalo enemithetjhwana** ikhuthaza abantwana ukulandela imithetjhwana yomdlalo, ukufunda ukwabelana nokudlhegana kunye nokusizana.

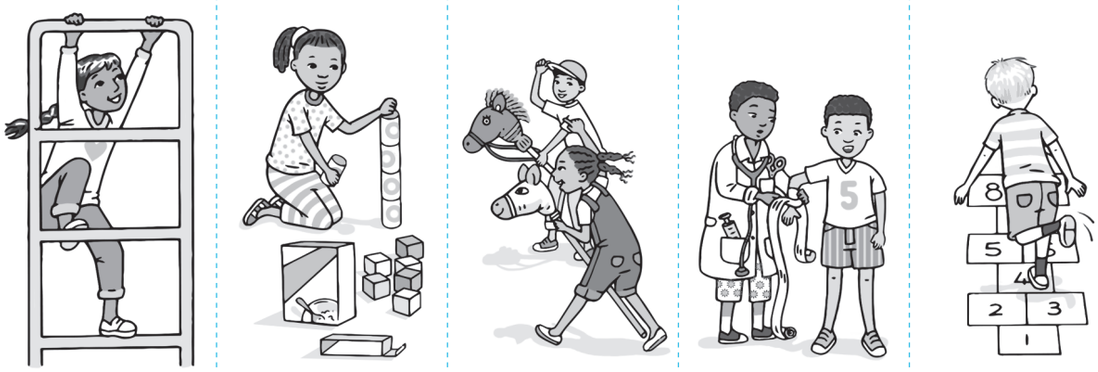


Figure 13 Types of play

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.

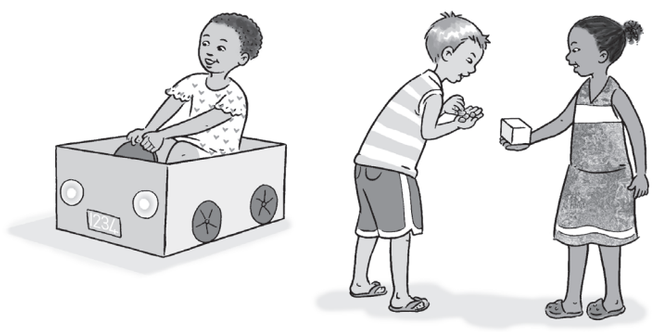


Figure 14 A cardboard box can represent a car, a wooden block can represent an apple and stones can represent money.

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 okusikinya umzimba

Ukudlala ngezinto

Ukudlala okufanisako

Umdlalo wokuzenzisa nokulingisa

Imidlalo enemithetjhwana

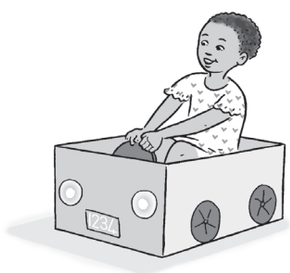
Umdwebo we-13 Imihlobo yemidlalo

Indlela enzinze ekudlaleni

Indlela enzinze ekudlaleni yokufundisa nokufunda iyelela bona kwesinye isikhathi abantwana bafunda ngcono ngemisebenzi yokudlala ngokutjhaphuluka ethonywe beyalawulwa mntwana ngaphandle kokungenwa mumuntu omdala. Kwezinye iinkhathi abafundi bafunda ngcono ngemisebenzi yomdlalo ehlahlwako elawulwa ngututjhere yetlasi loke nofana yeenqhema ezincani. Ihlelo lokufundisa nokufunda elihlelwe kuhle kufanele lifake yoke imisebenzi yemihlobo yemidlalo ehlukileko ngokulinganako.

Ukufunda imiqondo yeembalo ngokudlala

Ukudlala kuvame ukufaka abantwana bathatha iindima zabantu abadala. Isibonelo, bangalingisa umuntu omdala apheka ukudla, nofana umtjhayeli wesiphaphamtjhini aphapha ngesiphaphamtjhini, nofana utitjhere afundisa itlasi. Emidlalweni le, bavame ukusebenzisa izinto abazithola ebhodulukweni labo bese benze ngathi ngezinye izinto, isibonelo, amabhlogo wesigodo wokwakha 'aba' yibhodi yokusikela, esikela imirorho. Kilelihlobo lomdlalo, abantwana basebenzisa izinto 'zokujamiselela' nofana ezijamele ezinye.



Umdwebo we-14 Ibhokisi lekhadibhodi lingajamela ikoloyi, ibhlogo lesigodo lingajamela ihabhula nelitje lingajamela imali.

Abantwana nabadlalako nalokha badweba basebenzisa izinto neenthombe ukujamiselela izinto zepilo yamambala. Lokhu kuthoma kokufunda bonyana amatshwayo angajamela izinto zamambala. Bafunda:

- bonyana umdwebo wabantu ababili ungajamela abantu ababili bamambala.
- bonyana amatshwayo angajamela ezinye izinto, isibonelo, '2' ujamele izinto ezimbili, lokhu kungaba nofana khuyini okubili.

- 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 nemikhumbulo engaphathekiko nemibono, isib. ukugadangisa ngebhlogo nokukhuluma ngebumbeko eligadangisiweko kusiza abantwana ukutjheja amatshwayo wesikwere.
- izinto **zihlobana** njani, isib. ezinye iimphathi zingena ngaphakathi kwezinye, amanye amabhlogo angasekela amanye amabhlogo, iindlalisi zokwakha zineentokana ezihlanganako kodwana ingasizoke.

IDLHOSARI

ukuhlobana
indlela izinto nemibono zihlangana ngayo

Minengi eminye imisebenzi yokudlala ekhuphula ukufundwa kweembalo. Nanzi ezinye iimbonelo:

- Lokha abafundi basebenzisa iimphathi zobukhulu obuhlukileko, ihlabathi namanzi ukwakha izindlu zehlabathi, bahlola imiqondo yomthamo (-nengi/kungaphasi), ubukhulu (kukhulu/kuncani) nobungako (kunengi/kumbalwa).
- Imidlalo enjengehopskotjhi negqupsi ikhuthaza abantwana basebenzise ukubala bakwazi nokubona amaphethini.
- Abantwana bangahlola ibumbeko nobukhulu bento ngokufaka izinto (ezinjengamabhokisi neembholo) 'ngemgodlaneni wokuzwelela', ukukhetha into eyodwa nokuyihlathulula.

Kuyenziwa ...

Hlela imisebenzi ekara abafundi ibenze babe nerhuluphelo leembalo.

- Khuthaza imidlalo yeenthombengqondo ngokuthoma umdlalo, isib. rhemisa iintulo ukwenza isitimela. Bese ubawa umfundi abe ngaphambili njengomtjhayeli wesitimela nofana esitulweni sesibili nofana kesesithathu njengomkhweli. Ngalendlela, abafundi bayathaba begodu bafunda iminqopho enjengobujamo nokuhleleka kweenomboro.
- Joyina bese nabelana ngemisebenzi nabantwana lokha nabadlalako. Khombisa ukuthaba nokuhlanganyela ngokuphimisa nawucabangako bese ukhuluma ngalokho okwenzekako emdlalweni, isib. 'Ngizalise amakopi amathathu ngamanzi – kunye, kubili, kuthathu. Ngizalise elinye godu, qalani, sekamane. Qalani arhenyiswe kuhle kangangani!' Ukucocisana yindlela eqakatheke khulu yokufundisa abantwana ilimi leembalo.
- Yelela bonyana abafundi bakhuluma njani ngemibono yabo mayelana nokubala, ukuhlanganisa nokwabelana ngesikhathi badlala, buyelela lokho abakutholileko ukunqophise kibo, isib. 'Nibale iinthoro ezihlanu zomncamo obovu, godu nabala iinthoro ezihlanu zomncamo ohlaza samkayi. Akhe sibaleni bona zingaki iinthoro zomncamo eninazo. Kunjalo ziinthoro ezilitjhumi.'
- Siza abantwana bacabange ngamatshwayo ngesikhathi somdlalo weenthombengcondo. Tjhukumisa bona into enye ingayijamela enye, isib. 'Ungatjhugulula itafula iqale phasi bese uyisebenzisa njengesikepe sakho.'

4. Umthethokambiso wezinga

Ihlathululo

Amakghono nemiqondo kuyakhana. Lokhu kubizwa ngokobana **kuthuthuka okuragela phambili**. Abafundi bakhela ilwazi labo phezu kwalokho esele bakwazi nabakghona ukukwenza. Ukufundisa okuhle kuyame kutitjhere bona athome ngokuthola bonyana khuyini abafundi esele bayazi nabakuzwisisako, bese asebenzise imisebenzi nobujamo bangamalanga ukwakhela phezu kwakho ukubasiza ukufunda ilwazi namakghono amatjha.

IDLHOSARI

ukuthuthuka okuragela phambili
indlela amakghono nemiqondo kwakhela ngakho phezu kokhunye

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 ngetlasini yakho uzakuba nelemuko elihlukileko. Lokhu kutjho bonyana boke baseendaweni ezihlukileko zokuthoma kwaGreyidi R. Ilwazi langaphambili lomfundi ngamunye liyindawo yokuthoma yalokho azakufunda. Abafundi bangasebenzisa lokho esele bakwazi ukufunda imiqondo namakghono amatjha weembalo.

Kuyenziwa ...

- Hlela imidlalo nemisebenzi ezakukhombisa ilwazi langaphambili labafundi.
- Bukela bona abafundi benzani begodu bathini lokha nabadlalako, nokobana bayilawula njani imisebenzi ehlukileko.
- Rekhoda amandla neendingo zomfundi ngamunye.
- Hlela imisebenzi emitjha eyakhela phezu kwelwazi langaphambili nokuzwisisa kwamuva komfundi ngamunye.

Okhunye mayelana nomthethokambiso wezinga

Ukuhlukanisa

Abafundi betlasi yakwaGreyidi R boke bayalingana ngeminyaka, kodwana baneemilo ezihlukileko, iindingo, amakghono, amandla neentjhijilo. Bahluka ku:

- lemuko labo lekhaya
- sendlalelo sesiko labo
- sendlalelo sabo sehlalakuhle nezomnotho
- zinga lelimi labo
- makareko wabo
- lwazi langaphambili
- ukulungela kwabo ukufunda
- ibelo ekufanele bafunde ngalo
- isekelo abalidinga kumatitjhere nakabanye ukuze bafunde.

Abotitjhere kufanele bahlale baqala bebarekhode iragelophambili yomfundi ngamunye netuthuko yabo eembalweni. Ukuhlukanisa kutjho bona lokho okufundisako nendlela ofundisa ngayo kufanele uyelele ukuhluka kwamakghono namazinga wokuthuthuka kwabafundi bakho.

Ukusebenzisa indlela le, abotitjhere kufanele baqale umfundi ngamunye ngesikhathi semisebenzi bakghone ukubona lokho abakuzwisisako nabakghona ukukwenza ngepumelelo, bese basebenzisa ilwazi leli ukuhlela imisebenzi nesekelo labafundi. Abanye abafundi bangezwisisa umbono omutjha othulwe emsebenzini, ngesekelo elincani nje likatitjhere. Abanye abafundi bangadinga isikhathi esinengi, ukutjengiswa kanengi, iimbonelo ezinengi nokusekelwa ngutitjhere khulu ukwenzela ukuzwisisa okulingana nokwabanye.

Tjheja isibonelo sabafundi betlasi yakwaGreyidi R abafunda ngesihloko esifanako boke – ubujamo obusesikhaleni (phezulu/ngaphasi, phambi kwe-/ngemva kwe-).

- Abanye abafundi bazakuzwisisa umehluko phakathi kobujamo ubuhlukileko ngesikhathi esincani nehlathululo katitjhere. Msinyana bazabe balungele ukudlulela emqondweni olandelako – nobujamo obusesikhaleni obutholakala eenthombeni.

- 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 esinengi nehlathululo katitjhere lokha nabenza imisebenzi. Nabo bazakudlulela emqondweni olandelako kodwana kuzabathatha isikhathi esidanyana begodu bazakudinga ukusekelwa khudlwana.

Kuyenziwa ...

Ungasebenzisa ukuhlukanisa ekufundiseni kwakho ngoku:

- tjheja ukufana nokuhluka phakathi kwabafundi bakho
- hlela indlela engcono yokufundisa umntwana ngamunye ngokuya ngokwamandla wabo
- tjhugulula lokho okufundiswako ukuze kutjheje amakghono, **amakghono wokusebenzisa imizwa ngokuzwisisa**, ilwazi langaphambili, amakareko nesendlalelo sesiko labo boke abafundi
- linganisa, lapho kudingeka khona, lokho olindele bona umfundi ngamunye abe akufundile ekupheleni komsebenzi
- cabanga ngesimilo somfundi ngamunye kunye namakghono wabo lokha nawuthatha isiqunto sokubabeka ngeenqhema ukuze bakghone ukufunda nokusekelana ngamunye eenqhemeni zabo
- ukusebenzisa imisebenzi neensetjenziswa ezifaneleko
- ukufundisa abafundi abahlukileko ngebelo elihlukileko, isib. abanye abafundi bangafuna isikhathi esinengi ukuqeda imisebenzi nofana ukuphendula imibuzo kunabanye abafundi
- sebenzisa imisebenzi yesiqhema esincani ukuze uqalane nomfundi ngamunye bese ubanikela isekelo elibafaneleko nangabe bayalidinga
- hlelela abafundi labo abadinga eminye imisebenzi ebudisana.

IDLHOSARI

amakghono wokusebenzisa imizwa ngokuzwisisa
ukusebenzisa imizwa yakho ukubuthelela ilwazi mayelana nebhoduluko lakho, isibonelo: ukubona, ukuzwa, ukuthinta, ukunukelela nokunambitha

5. Umthethokambiso wokukhulumisana

Ihlathululo

Ukufunda kufaka ukukhulumisana nokwabelana ngemibono. Abafundi kufanele bakhuthazwe ukukhuluma notitjhere nabo bakhulumisane bodwa mayelana nalokho abakucabangako nabakwenzako. Ukwabelana ngemibono, ukubuza imibuzo nokuhlathulula lokho abakwenzako kubasiza ukuthuthukisa ukuzwisisa kwabo imiqondo. Godu kubasiza ukufunda ukusebenzisa ilimi leembalo ngokuzithemba.

Kuyenziwa ...

- Ummoya wetlasini kufanele kube ngotjhaphulukileko ukuze abafundi bazizwe batjhaphulukile ukubuza imibuzo nokwabelana ngemibono yabo lokha bamajadu bararulula imiraro.
- Abafundi abasesebancani kufanele bafundiswe ukusebenzisa amagama weembalo ngefanelo kobana bakwazi ukuwasebenzisa ukutjho imibono nemicabango yabo, isib. ukufunda ukutlhadlhula bona ibholo 'irondo' kunobana kuthiwe, 'indulungu'.

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 ...

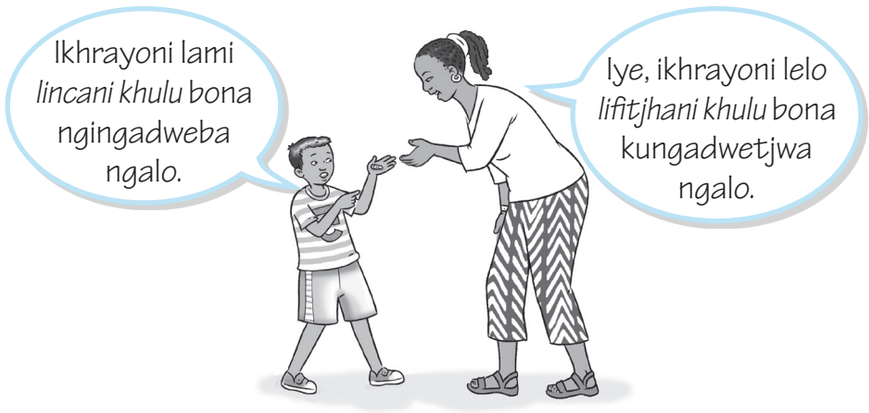
Help learners to develop good listening and speaking skills by providing opportunities for them to:

- 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 banomukghwa wokuthi '*kuncani khulu*'. Qinisa ilimi leembalo ngokubuyelela lokho umfundi akutjhwileko, kodwana sebenzisa '*kufitjhani khulu*' esikhundleni.

Umdwebo we-15 Abotitjhere bangahlahla abantwana ukusebenzisa ilimi leembalo.

Okunengi mayelana nomthethokambiso wokukhulumisana

Ukukhulumisana: Ukulalela nokukhuluma ngomdlandla

Sifunda ngcono nasenza okuthileko bese sikhulume nomunye umuntu, ngababili nofana ngeenqhema. Abafundi kufanele bathuthukise amakghono wokukhulumisana begodu kufanele bazi bona bangenza njani babe yingcenye yekulumo. Kufanele bafunde ukulalela ngomdlandla lokho abanye abantu abakutjhoko, bese baphendule ngefanelo. Lokhu kutjho bona kufanele ba:

- lalele lokho okutjhiwoko
- phendule ngendlela efaneleko
- dlhegane ngokukhuluma nokulalela.

Kuyenziwa ...

Siza abafundi ukuthuthukisa amakghono wokulalela nokukhuluma ngokubanikela amathuba wokobana ba:

- hlanganyele ekulumeni nofana ekulumiswaneni
- lalele kuhle ngendlela enomnqopho
- babelane nofana batjho imicabango nemibono yabo
- nikele iimpendulo nombiko obuyako
- buze imibuzo
- landele iinlayelo.

Lokha abotitjhere nabalalela abafundi ngomdlandla, abafundi:

- bayakhuthazeka ukwaba imibono, imibuzo, imiraro nemicabango yabo
- bazizwela bona utitjhere unekareko labo nokobana uyatjheja bona bayayizwisisa into
- bathuthukisa amakghono wabo wokulalela.

Ukuphendula ngendlela efaneleko entweni ethileko kuyingcenye eqakathekileko ekukhulumisaneni, ekufundiseni nekufundeni. Lokha abafundi nabathola ipendulo enembako emibuzweni yabo nofana emibonweni, bakholwa bonyana imibono yabo iqakathekile begodu inomrhula. Begodu ibakhombisa bona kuphendulwa njani ngokufaneleko.

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.

GLOSSARY

abstract
an idea, a thought or a feeling

exact
precise, accurate

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.

Figure 16 Maths language is exact.

Kuyenziwa ...

Ungaphendula abafundi bakho ngefanelo ngoku:

- ngabavumeli bazizwe ngathi babuza imibuzo yobudlhayela
- ngokubuyelela umbuzo abawubuzileko ngesinye isikhathi, kobana bazi bona balalelwe
- bakhuthaza bona babuze imibuzo ecacileko ngokubeka kuhle omunye wemibuzo yabo, nofana ubabawe bawubuyelele ngendlela ehlukileko
- zama ukuphendula imibuzo yabo ngeendlela ezizwakalako kibo, isib. ngokuthatha kilokho esele bakwazi, begodu/nofana ngokusebenzisa iimbonelo ngokwelemuko labo.

Umsebenzi welimi eembalweni

Soke sisebenzisa ilimi nasikhulumako. Silisebenzisela ukwaba imibono nelwazi, nokuhlathulula imibono e**ngaphathekiko**. Ilimi liqakathekile neembalweni. Kufanele sitlhadlhule, sizwisise, sibuze, sicabange, sinikele unobangela, sihlathulule begodu sijamele imiqondo yeembalo.

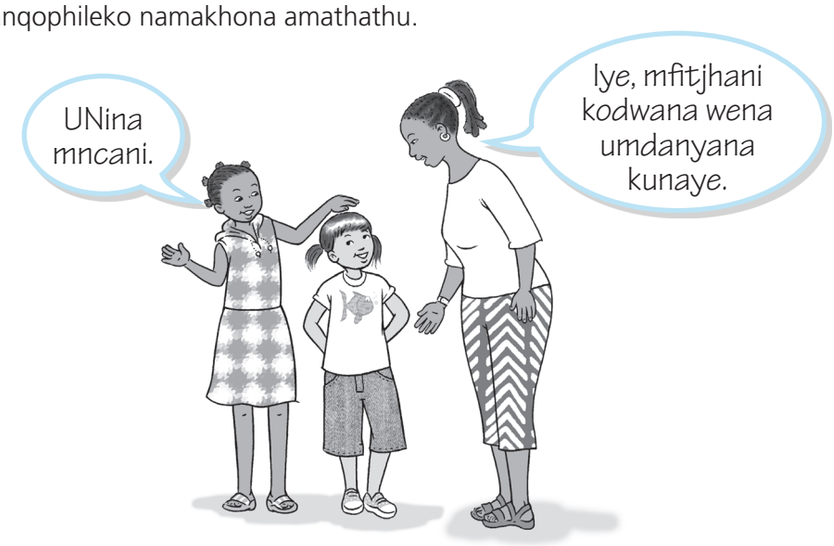
IDLHOSARI

ngaphathekiko
umbono, umcabango nofana amazizo

nemba
nqophako, nembako

Ilimi leembalo lifaka hlangana amagama namatshwayo esiwasebenzisela ukukhuluma nofana ukwaba imibono nofana imiqondo yeembalo. Kesinye isikhathi sisebenzisa ilimi langamalanga, kodwana ilimi leembalo liya**nemba** belinqophile. Ungafunda okunenqi mayelana nelwazi langamalanga nelwazi lesikolo ekhasini le-16–23. Nanzi iimbonelo ezintathu zalokhu.

- Elimini langamalanga igama 'hafu' lingasetjenziselwa ukutlhadlhula into eyabiwe ngeengcenye ezimbili ezifanako ngobukhulu. Kodwana eembalweni, 'hafu' kutjho iingcenye ezimbili zokupheleleko okuhlukaniswe ngokulinganako. Iingcenye ezimbili ezilingana patsi ngobukhulu nofana ngesibalo.
- Ngelimi langamalanga singathi, 'Utitjhere mkhulu'. Ngalokho, ngokweembalo sithi, 'Utitjhere mude', bese simeda ubude bakhe, ngokubala 'kunye, 'kubili', 'kuthathu', njalonjalo sirage silinganise.
- Ngelimi langamalanga singathi uncantathu ulibumbeko elineempente. Kodwana, eembalweni sithi uncantathu unamahlangothi amathathu anqophileko namakhona amathathu.



Umdwebo we-16 Ilimi leembalo liyanemba.

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 ilimi labantwana leembalo

Ingcenye yokufunda imiqondo emitjha ifaka ukufunda ilimi elitjha. Abotitjhere kufanele bahlahle abafundi lokha nabathoma ukuzwisisa kancanikancani bese basebenzisa ilimi leembalo esikolweni nepilweni yabo yangamalanga. Kufanele bahlanganise abafundi beGreyidi R nelwazimagama leembalo elifaneleko elizabavumela bona balandele iinlayelo, babuze imibuzo, bebaveze abakucanagako nekghono lokucabanga kwabo. Abafundi bathola ilimi elitjha neembalo ngesikhathi sinye. Lokha bafunda amagama amatjha bafunda imiqondo eminengi, ngalokho bafunda amagama amanengi nemiqondo eminengi, bese baphumelela ngaleyo indlela emisebenzini yabo yeembalo.

Kuyenziwa ...

Abafundi abazi ihlathululo yamagama 'rondo' no'spara' bangahlathulula amatshwayo weembalo ezintweni. Isibonelo, ngokudlala bayelela bona into erondo iyagedeka bese into enamahlangothi aspara iyatjhelela. Abafundi abangawaziko amathemu 'rondo' nofana 'spara' baba nelwazi elincani ngezinto abazihlolako – amabhokisi ayatjhelela bese iimbholo ziyagedeka. Abafundi laba kufanele bakhuthazwe ukufunda ilimi elifaneleko elitjha ukunabisa ukuzwisisa nelwazi labo lemiqondo.

Umdwebo we-17 Ukuthuthukisa ilimi leembalo ngokudlala

Khuthaza abafundi basebenzise ilimi labo lekhaya ngendlela abangakghona ngayo. Lokhu kusiza ukuthuthukisa ukwazi ilimi nekghono lokucabanga. ESewula Afrika, abafundi abanengi beGreyidi R bafunda ngokwelimi labo lesibili nofana lesithathu. Ukufundisa iimbalo kungasiza ukuthuthukisa ikghono labo lokusebenzisa ilimi nangabe banikelwa amathuba wokukhuluma ngalokho abakwenzako ngesikhathi semisebenzi yeembalo, babelane ngemibono yabo begodu bakhulumisana ngekghono labo lokucabanga.

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)

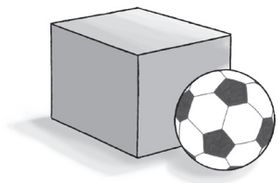


Figure 20

- shape (round, square)

Figure 21

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

Figure 22

- size (big, small)

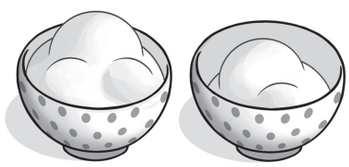


Figure 23

- 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.

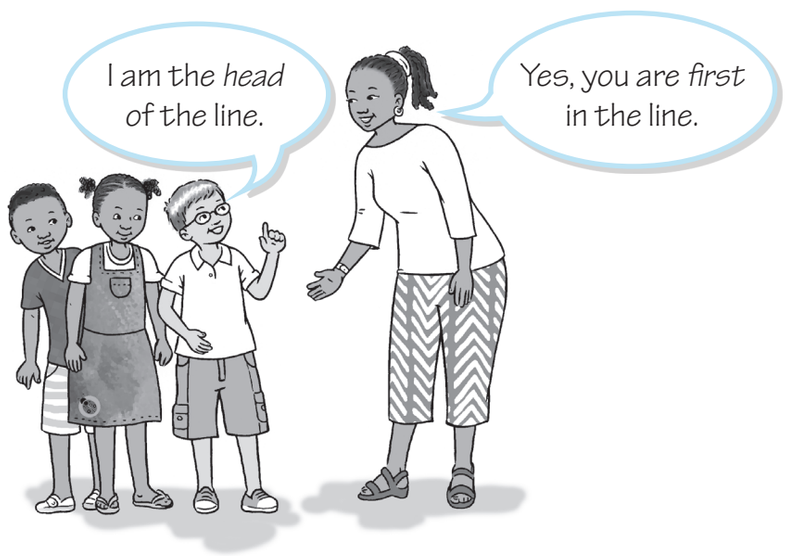


Figure 24 Encourage learners to use maths vocabulary.

Ukufunda ilwazimagama leembalo elifaneleko

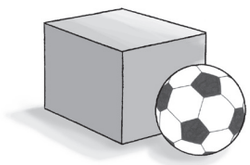
Abafundi badinga ilwazimagama ukukhuluma nokucabanga ngemiqondo yeembalo. Isibonelo, kufanele bazi amagama anjengalawa ukutlhadlhula:

Umdwebo we-18

- ubungako (okunengi, okungaphezulu, okumbadlwana)

Umdwebo we-19

- ukubala (hlanganisa, khupha)



Umdwebo woku-20

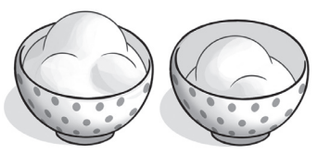
- ibumbeko (rondo, isikwere)

Umdwebo wama-21

- ubujamo (kokuthoma, kwesibili, kwesithathu, kokugcina, ngaphambili, emva, phakathi)

Umdwebo wama-22

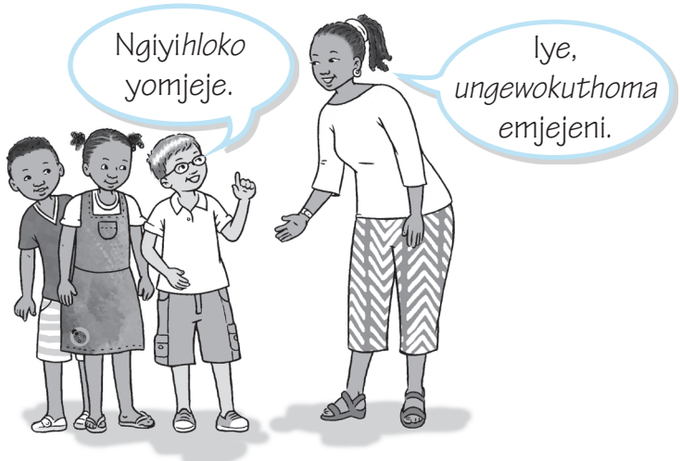
- ubukhulu (khulu, ncani)



Umdwebo wama-23

- ukumeda (nengi, ncani, -de, banzi, zeleko, budisi, phakamileko, fitjhani, ekuseni, ebusuku)

Khuthaza abafundi ukusebenzisa ilwazimagama leembalo ngokulisebenzisa ngokwakho nawukhuluma nabo ngemiqondo yeembalo, ngokubeka kuhle lokho abakutjhoko ngelimi leembalo. Ekupheleni kwesinye nesinye isiGaba sokuMumethweko kusiGaba 3 kunerhelo elizeleko lelwazimagama leembalo elinqophene nesiGaba sokuMumethweko.



Umdwebo wama-24 Khuthaza abafundi ukusebenzisa ilwazimagama leembalo.

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.

Iimbalo ziqalene nobuhlobo phakathi kwezinto. Abafundi badinga ilimi ukucabanga nokukhuluma ngobuhlobo lobu, okufaka hlangana:

- ukumadanisa phakathi kwebuthelelo lezinto (okunengi, okumbalwa, okungaphezulu, okumbadlwana)
- ukumadanisa ubukhulu nesimedo (-khulu/-ncani, -danyana/-fitjhazana, -disi/-lula)
- ukumadanisa amabumbeko (amahlangothi amathathu,amahlangothi amane, rondo nofana gobeneko)
- ubujamo esikhaleni (ngaphambi kwe-, ngemuva, ngaphasi, eduze kwe-, hlangana)
- ukulandelana kwezinto (kokuthoma, kokugcina, kwesibili, okulandelako, ngaphambili, ngemuva, hlangana)
- ukumadanisa phakathi kwenani lento ethileko (-nengi, -ncani, -fanako).

2

Umdwebo wama-25 Itshwayo lokujamisa netshwayo lenomboro '2' kokubili kumatshwayo.

Ukuzwisisa nokusebenzisa amatshwayo
Amatshwayo asibhodile. Iinkomba abantwana abazibonako ebhodulukweni langamalanga zivame ukuba namagama namatshwayo phezu kwazo. Abafundi bafunda bona amagama la namatshwayo anehlathululo. Isibonelo, amatshwayo akutjengisa bona ungayeqa nini indlela nofana into ibiza malini.

Abantwana abancani balinga ngamatshwayo atloliweko emidwebeni yabo nemizamo yangaphambili ukutlola. KwaGreyidi R, ukuzwisisa ilimi leembalo kwakha isisekelo sokusebenzisa amatshwayo weembalo ngefanelo.

Ikghono lokubonisana nokubonela phambili
Abafundi godu badinga ilimi uku:

- ukulandela nokubeka umbono mayelana **nekghono lokubonisana** lomunye umuntu
- ukuhlathulula imicabango yabo nokuyisebenzisa **ukubonela phambili** bona kuyokwenzeka ini okulandelako. Badinga ilimi ukuhlathulula iphethini nokutjho bona kulandela ini nangabe kuragelwa phambili nephethini.

IDLHOSARI

ikghono lokuhlathulula
umcabango nofana umbono ongemva kwesitatimende

ukubonela phambili
ukutjho nofana ukulinganisa lokho okuzakwenzeka esikhathini esizako

Umdwebo wama-26 Ukubonela phambili bona ngimaphi amabumbeko alandelako emlandelandeni.

Kuyenziwa ...

Ukukhuthaza ukuthuthukiswa kwelimi leembalo, abafundi badinga amathuba amanengi woku:

- dlala
- ba nesikhathi sokukhulumisana nabantu abadala nabanye abantwana
- khuluma ngemibono yabo neenhlathululo zabo.

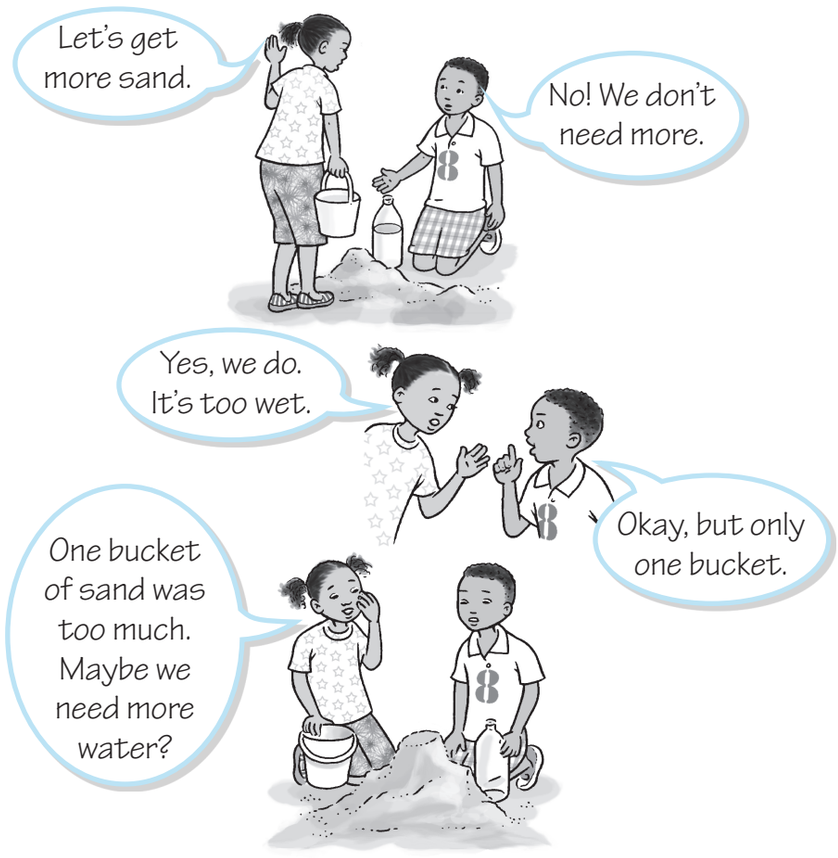


Figure 27 Play is an opportunity to use maths language.

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

Umdwebo wama-27 Ukudlala kulithuba lokusebenzisa ilimi leembalo.

Tjheja bona abafundi balisebenzisa njani ilimi leembalo lokha naba:

- khuluma ngalokho abakwenzako
- hlathulula ilemuko labo langaphandle kwesikolo, isib. ukulungisa itafula yokudlela, ukudlala umdlalo nofana ukuhlathulula bona basuke njani ekhaya baya esikolweni
- bazakhela amagama lokha nabangakabukwazi ilimi leembalo elifaneleko lento ethileko, isib. ukuhlathulula ikhona 'njengesiphetho esibukhali' nofana ngesiNgisi babize '*eleven*' njenge '*eleventeen*'
- bonela phambili lokho okuzakwenzeka, isib. 'Umbhotjhongo uzakuwa nangibeka amabhlogo amanengi phezulu.'

6. Umthethokambiso wokuhlahla

Ihlathululo

Abotitjhere bahlahla abafundi ekuzwisiseni ilwazi elitjha. Bahlela ubujamo bokufundisa nokufunda ukwakhela abafundi amathuba wokuqalana nemisebenzi nemetheriyeli enqophileko kobana abafundi bakghone ukuhlola imibono begodu babelana ngemicabango mayelana nemiraro yeembalo. Abotitjhere batjengisa bona kufanele kwenziwe ini bese babuza imibuzo ehlahlako ukusiza abafundi ukurarulula umraro. Lokhu kwesinye isikhathi kubizwa ngokuthi **kulamula**. Ngokulamula, abafundi bathola ilwazi, ukuziphatha namano amatjha, wokurarulula imiraro abangawasebenzisa kobunye ubujamo.

IDLHOSARI

ukulamula
umsebenzi wokuhlanganyela lapho umuntu owazi okunengi nofana onamakghono athuthuke khulu uhlahla abanye ekufundeni into etjha

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.

Kuyenziwa ...

Kusetjenziswa njani ukulamula ngetlasini

1. Thola bona ngimiphi imiqondo namakghono abafundi esele bawazi bese uhlela umsebenzi ofaneleko.
2. Nikela abafundi umsebenzi onqophene nomqondo nofana ikghono elitjha.
3. Khombisa abafundi bona umsebenzi wenziwa njani.
4. Nikela umbiko obuyako kubafundi mayelana nalokho abakwenzako.
5. Nikela iinluleko nofana umtlhala wokusiza abafundi, kodwana ungabanikeli iinsombululo.
6. Khuthaza abafundi ngokubabuza imibuzo mayelana nalokho abakwenzako.
7. Khuthaza abafundi babuze imibuzo ukuze benze iinhlanganisi nokuzitholela izinto ezitja ngokwabo.
8. Nikela abafundi omunye umsebenzi abazozenzela babodwa, basebenzise imiqondo nofana amakghono abawafundileko. Kilomsebenzi, kufanele bazijayeze ukusebenzisa amakghono nelwazi elitjha ngeendlela ezihlukileko. Bahlahle bese uyabasekela, kodwana ungangeneleli khulu.
9. Nikela abafundi imisebenzi eminye bese utsomula ukuhlahla nokusekela kwakho kabuthaka, ubavumele benze izinto ngokwabo.

Okunengi mayelana nomthethokambiso wokuhlahla

Iindlela zokufundisa

Ukufundisa kufaka ukusebenzisa iindlela ezihlukileko ngeenkhathi ezihlukileko:

- Umlayelo onqophileko ufaka ukukhulumisana okuncani. Abafundi bangabuza imibuzo, kodwana lokhu kumayelana nokulandela umlayelo. Umlayelo onqophileko kufanele ube yingcenye encani yokufundisa.
- Umlayelo ohlahlako ufaka ukusebenza ndawonye kwabotitjhere nabafundi ukurarulula umraro nofana ukufunda umqondo nofana ikghono elitjha. Utitjhere uyahlahla bese usekela abafundi bebakghone ukuzenzela umsebenzi ngokwabo. Ku-*Grade R Maths* lokhu kubizwa ngokuthi msebenzi ohlahlwa ngutirjhere.

Imisebenzi ehlelekileko

- Imisebenzi ehlelekileko misebenzi yokufundisa nokufunda, kanengi ehlahlwa ngutitjhere. Iqalana nomqondo nofana ikghono elithileko leembalo.
- Ehlelweni le-*Grade R Maths*, imisebenzi ehlelekileko ihlukaniseke nge:
  - misebenzi yetlasi yoke
  - misebenzi yeenqhema ezincani ehlahlwa ngutitjhere
  - misebenzi yeenqhema ezincani ezizijameleko
  - misebenzi yokuzikhethela ngokutjhaphulukileko.

Ukubuza imibuzo

Amano wemibuzo emihle aqakathekile ekufundiseni. I-*Grade R Maths* ikhuthaza abotitjhere basebenzise imibuzo evulekileko ehlahlambisa ukucabanga ngeembalo. Imihlobo le yemibuzo itholakala emirarweni nekuphenyeni. Imibuzo evulekileko isiza abotitjhere ukubuthelela ilwazi mayelana nezinga lokuzwisisa nelwazi labafundi.

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.

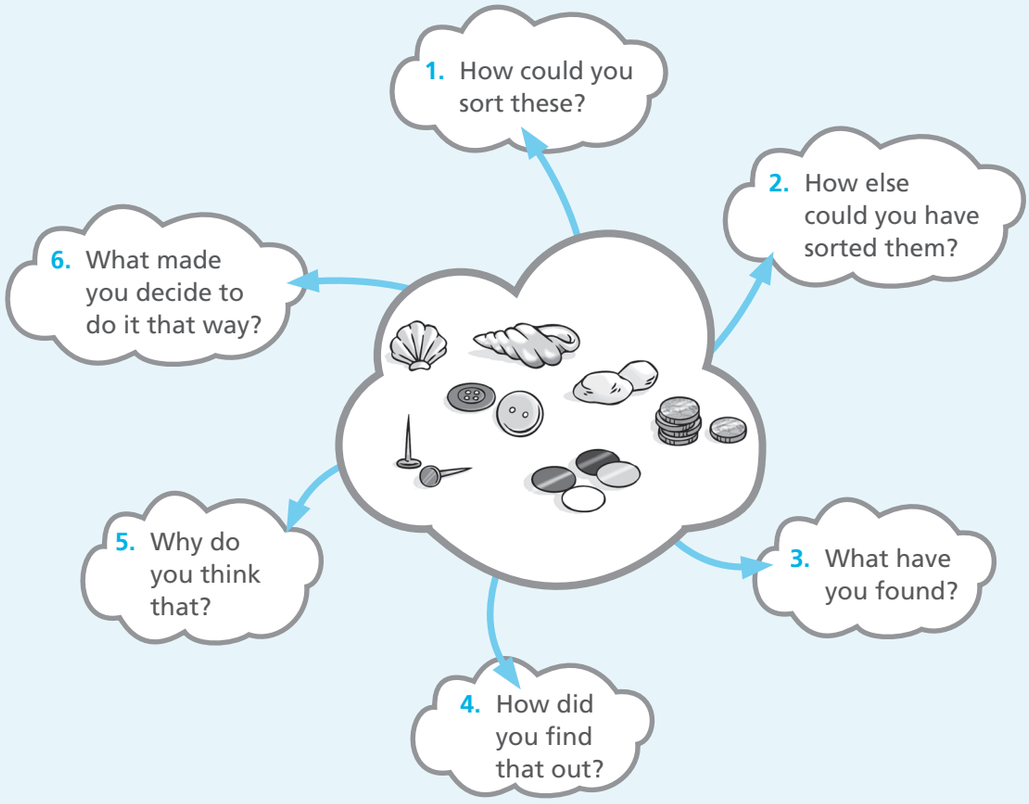


Figure 28 Open-ended questions

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 evalekileko (Imibuzo yezinga eliphasi)	Imibuzo evulekileko (Imibuzo yezinga eliphezulu)
Imibuzo enependulo enomkhawulo nofana u 'iye' nofana u 'awa'.	Imibuzo eneempendulo ezingaphezu kweyodwa ezamukelekako.
Isibonelo: Ingabe nguncantathu lo? Isibonelo: Ingabe nguncantathu nofana sikwere lesi?	Isibonelo: Ungangitjelani mayelana naboncantathu? Isibonelo: Uncantathu uhluke njani esikwereni?

Kuyenziwa ...

- Buza imibuzo evulekileko enikela abafundi amathuba wokuzicabangela ngokwabo bese bakhulume ngemicabango yabo. Ungasebenzisi imibuzo evalekileko eqalene nokukhumbula amaphuzu kwaphela, nofana enependulo ka 'iye'/'awa' kwaphela.
- Nikela abafundi isikhathi sokuzama ukuphendula imibuzo ukuze bakghone ukucabanga, bahlele imicabango yabo bese bayiveza ngamagama.

Umdwebo wama-28 Imibuzo evulekileko

Ukurarulula imiraro

Abafundi bahlangabezana nemiraro abangakghoni ukuyirarulula msinya. Abotitjhere beGreyidi R kufanele basekele abafundi ukuthuthukisa amakghono wokuqalana nemiraro le khulukhulu babodwa. Lokhu kufaka hlangana isikhathi sokukhuluma ngomraro, bazame imibono, bafunde emaphutheni wabo, badlale ngomraro begodu batjhugulule imibono yabo ngokuya ngephenyo.

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.

Kuyenziwa ...

- Abafundi ngibo abakhuluma khulu.
- Abafundi abakhuthazwe ukuzama imibono yabo bese benza amaphutha.
- Abafundi babelana ngemicabango yabo nabotitjhere nabanye abafundi.
- Abotitjhere balalela imibono yabafundi.
- Imibuzo yabotitjhere kuba ngevulekileko bese bahlahla imicabango yabafundi.

7. Umthethokambiso wokufaka koke

Ihlathululo

Ukuhlonipha **ukuhluka** nokufaka koke kumalungelo wabantwana. Aqakathekile nangabe sifuna boke abantwana bafunde bathuthukise ighono labo ngokuzeleko. Abotitjhere kufanele babe nelwazi ngomfundi ngamunye, iimfuneko namakareko wakhe.

Enye nenye itlasi yeSewula Afrika ihlukile. Kunabantwana abanengi abahlukileko omunye nomunye uza nobunjalo, isimilo, amakghono, amakareko nemvelaphi yakhe. **Ukufaka koke** yikambiso yokuqinisekisa bona boke abantwana, ngokungatjheji ukuhluka, bafakwa kiyo yoke imisebenzi yetlasini, khulukhulu abafundi labo abangabekelwa ngeqadi nofana badinywe amathuba. Ukukhubazeka *ngomunye* wabonobangela wokobana abantwana bavame ukubekelwa ngeqadi, kodwana okuqakathekileko, ngokokuhlalisana, ngokwemizwa, ngokomzimba nommoya wokwenza izinto nakho kuletha iinqabo ekufundeni. Abotitjhere abanengcondo yokubandakanya, bamukele ukuhluka phakathi kwabafundi babo.

Ifundo efaka boke abentwana itjho bona boke abantwana bangena isikolo ematlasini akhambisana neminyaka yabo. Bamukelekile, bayakhuthazwa ukuhlanganyela kizo zoke izinto zesikolo begodu bayasekelwa bona bafunde bese bathola amakghono wabo ngokupheleleko.

IDLHOSARI

ukuhluka
irherho labantu abanemihlobo yokuhluka, isibonelo, ubunjalo, isimilo, amakghono, amakareko nemvelaphi

ukufaka koke
ikambiso yokuqinisekisa bonyana boke abantwana, kungaqalwa ukuhluka kwabo, babandakanywa kiyo yoke imisebenzi yetlasi

Kuyenziwa ...

- Boke abafundi banelungelo lokuzizwa bakhethekile, bahlanganyele begodu babandakanywe emisebenzini neenkulumiswaneni zetlasi. Lokhu kufaka hlangana abantwana abanokukhubazeka, imiraro yokuziphatha nofana ezinye iinqabo zokufunda.
- Boke abafundi, ababelethi babo nabasebenzi besikolweni kufanele bamukelwe, babandakanywe, baphathwe kuhle begodu bahlonitjhwe kungaqalwa isiko, ubuzwe, ubuhlanga, ubulili, ubunjalo bobulili, ikghono lomzimba nofana lokuhlakanipha, ikolo nofana ubujamo bezokuhlalisana nezomnotho.

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.

Okunengi mayelana nomthethokambiso wokufaka koke

Iindlela ezihlukileko zokufunda

Ukuhluka akukaphathelani namatshwayo womzimba, iinkolelo, nofana ikolo kwaphela, kungafaka godu iindlela esifunda ngazo amakghono amatjha. Abantwana abafundi ngeendlela ezifanako boke. Kunerherho leendlela ezihlukileko zokufunda ezifanele umntwana ngamunye. Isibonelo, akusibo boke abantwana abangalandela iinlayelo zikatitjhere ngokulalela lokho utitjhere akutjhoko kwaphela. Abanye abantwana bangazuza ngokubona isithombe esijamele lokho abafanele bakwenze. Abanye bangatlhoga umsebenzi wokwenza nofana wokuzibambela ukuze bezwisise ngokuzeleko ilayelo nofana umqondo.

Kuyenziwa ...

Abotitjhere abaphumelelako bakghona ukubona iimfuneko zokufunda emntwaneni ngamunye ngematlasini wabo bese balungisa imisebenzi kobana ikhambelane ngcono neemfuneko zabafundi. Iindlela ezibunane ezilandelako ngezifaneleke ukufunda nokufundisa kwaGreyidi R:

- Okubonwako (Isikhala): Ukufunda ngokubonwako kufaka ukusetjenziswa kweenthombe nofana umdwebo ukukhumbula ilwazi. Abanye abafundi bakghona ukuzwisisa nokukhumbula ilwazi lula lokha nalithulwa njengesithombe nofana umdwebo.
- Okulalelwako (umVumo oLalelwako): Ukufunda ngokulalelwako kuya ngokulalela ilwazi ngokuzwisisa bese ulikhumbula ngokuzeleko. Abanye abafundi bafunda ngcono lokha nabalalela utitjhere, nofana ingoma nofana okurekhodiweko.
- Komlomo (kweLimi): Ukufunda ngokomlomo kufaka ukukhuluma nokutjhwela phezulu imibono, nokudweba nofana ukutlola ukuze uzwisise ngokuzeleko begodu ukhumbule ilwazi.
- Ngokomzimba (Ukufunda ngokwenza): Ukufunda ngokwenza kwenzeka lokha umfundi azibandakanya emsebenzini wokuzibambela ngokusikinya umzimba. Abafundi laba basebenzisa imizimba yabo nemizwa yokuthinta (okuphathekako) ukuzwisisa ilwazi.
- Kwengcondo (kweemBalo): Ukufunda ngokunengcondo kufaka ukucabangisisa nokunikela iinzathu ukwenza ilwazi lizwakale. Abafundi abafunda ngokunengcondo basebenzisa ingcondo bafune iinzathu lokha nabafunda ngezinto ezitja.
- Ukuhlalisana (Ukutjhebisana nabantu): Ukufunda ngendlela yokuhlalisana kufaka ukufunda nabanye. Abanye abafundi banyula ukufunda njengengcenye yesiqhema nofana nomngani.
- Ukuba wedwa (Okwenzeka ngengcondweni): Indlela yokufunda uwedwa ifaka ukuzifundela. Abanye abafundi baphazanyiswa ngabanye.
- Wezemvelo (Imvelo): Ukufunda ngokwezemvelo kwenzeka ngokwemvelo. Abanye abafundi bafunda begodu bezwisisa kangcono lokha nabakghona ukuhlola bebaphenye ngelemuko lezinto zangaphandle, njengokubukela iinlwana, isivande, ukutlhogomela umhlaba nokuhlola ibhoduluko.

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.

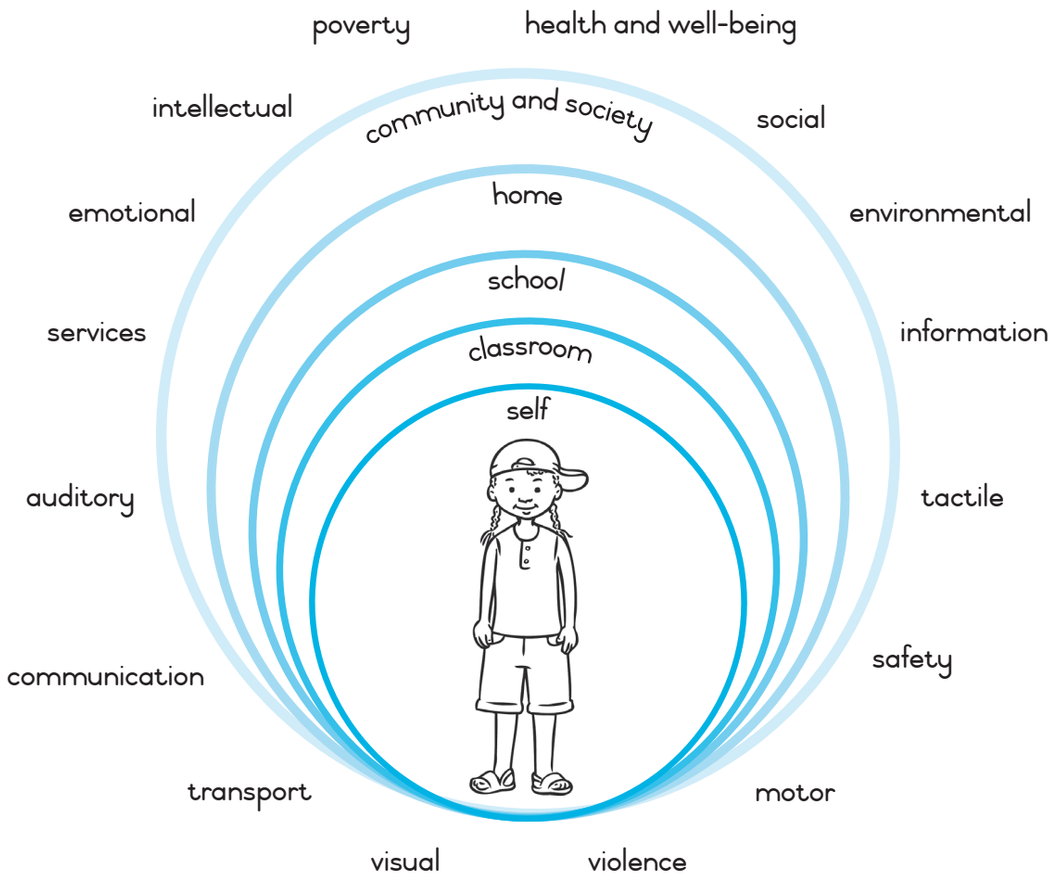


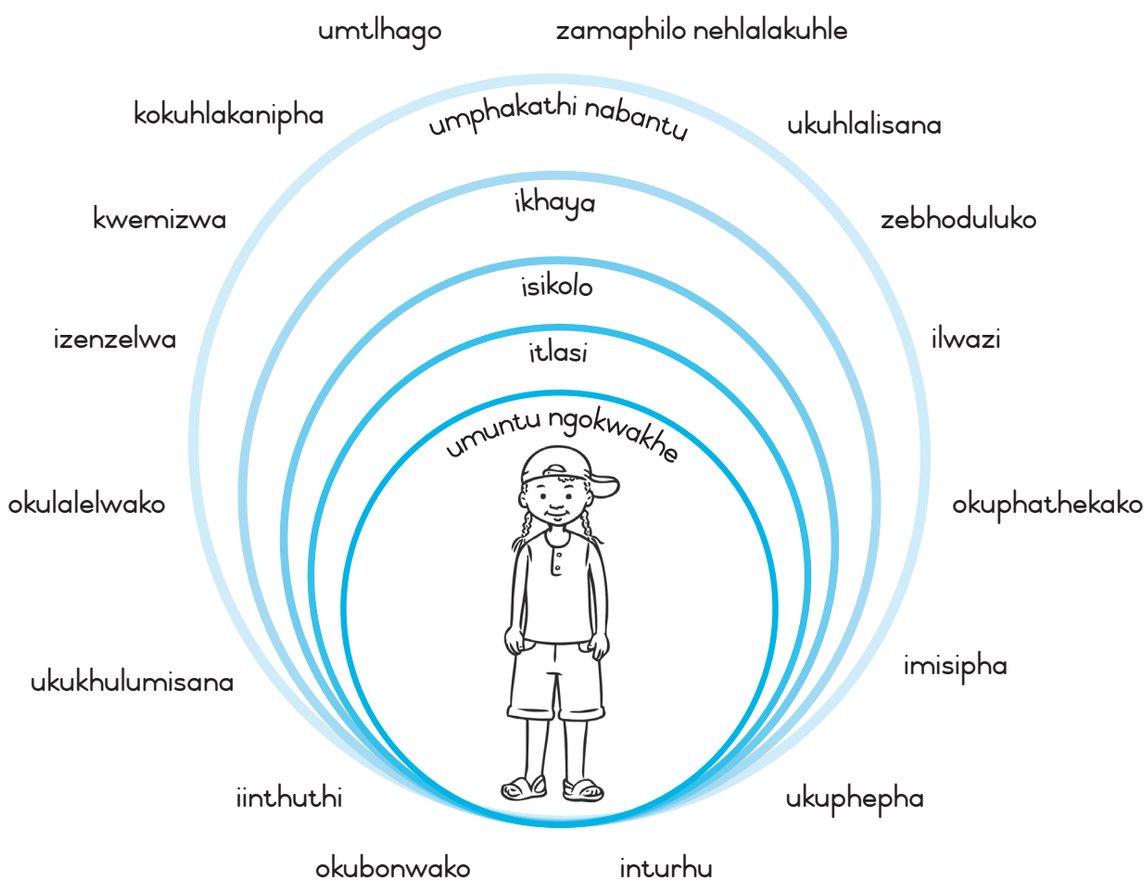
Figure 29 Barriers to learning

Iinqabo zokufunda iimbalo

Isiqabo sokufunda ngenye nenye into ekhandela umntwana kobana akghone ukufunda ngepumelelo. Iinqabo zingahlangana bunqopha nomntwana (ngaphakathi), isibonelo, ukulimala kwengcondo, isizi nofana umkhono ophukileko. Iinqabo zingaba ngaphandle komntwana (ngaphandle), isibonelo, umtlhago, ukungatjhejwa nofana itlasi ezele ngokudluleleko.

Ilimi lithulusi eliqakatheke khulu lokufunda. ESewula Afrika lokhu kuvame ukuvela njengesiqabo sokufunda sangaphakathi nesangaphandle, khulukhulu lapho ilimi lomntwana lekhaya lihlukile elimini lokufundisa nokufunda.

Abantwana abanengi bahlangabezana nesiqabo sinye nofana ezinengi zokufunda. Bangatlhoga ukuzijayeza nokusekelwa okukhulu kunabanye abafundi. Iinqabo zokufunda maphuzu enza kubebudisi kabanye abafundi ukufunda iimbalo. Iimbonelo zeenqabo zitjengiswe kudayagramu elandelako.



Umdwebo wama-29 Iinqabo zokufunda

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.

Kuyenziwa ...

Ezinye zeendlela ongazisebenzisa ukufaka boke abafundi bakho betlasi yeGreyidi R zifaka ezilandelako:

- Hlela iimfundo, imisebenzi nemetheriyali yakho uyenze ifanele iindingo zabafundi ngokuhluka kwabo, isib. umraro weembalo osuselwa esithombeni ungadinga ukufaka ukutlhadlhula ngokuzeleko ukuze kusizeke abafundi ukuqalana namaphuzu aqakathekileko esithombeni.
- Yenza imisebenzi eminengi eyenzekako ngezinto eziphathekako zamambala.
- Nikela abafundi isikhathi esinengi nesekelo ukuqeda imisebenzi, ukucabanga begodu/nofana ukuphendula imibuzo, nangabe kuyadingeka.
- Kungasiza ukukhulumisana, nabasebenzisani nofana isiqhema sesikolo sokusekela, ngezinga osebenza kilo nomfundi ukuqinisekisa bona umnikela isekelo elingcono ngendlela ekukghoneka ngayo. Kungatlhogeka nokuthi wenze ilandelela ebabelethini bomntwana nofana abatlhogomeli nesiqhema sesiyingi sokusekela ukunikela umfundi woke amathuba wokufunda nokuthuthuka atholakalako.

Iinkolo kufanele ziqinisekise bonyana amatlasi woke namatitjhere baneensetjenziswa ezaneleko nezifaneleko ukufaka boke abafundi, nofana baneenqabo zokufunda. Lokhu kufaka hlangana:

- abotitjhere ababandulelwe ukubona iinqabo zokufunda
- amano wokufundisa ahlukileko
- ukuhlelwa kwetlasi okwanelisako
- ubukhulu betlasi obulawulekako
- abasizi bangekumbeni yokufundela.

Kuyenziwa ...

- Hlolisisa boke abafundi lokha nabamukelwa kwaGreyidi R bese urekhoda imiphumela kuPhrofayili yomFundi ngokuya ngokomthethomgomo wenarha mayelana nokuHlolisisa, ukuFaniswa, ukuHlola nokuSekela (Screening, Identification, Assessment and Support (SIAS)) boke abafundi.
- Tlama iHlelo lokuSekela umfundi ngamuNye (Individual Support Plan (ISP)) lanofana ngimuphi umfundi ohlangabezana neenqabo zokufunda. Ilwazi leli kufanele labelwane nababelethi begodu/nofana nabatlhogomeli ukuze bazi nganofana ngiliphi ihlelo lomntwana leendingo nesekelo elingezelelweko.
- Bambisana nesiQhema sokuSekela esiNzinze esiKolweni ukunikela isekelo elidingekako. Umfundi udluliselwa kusiQhema sokuSekela esiNzinze esiYingini nangabe kudingeka isekelo elingezelelweko.

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.

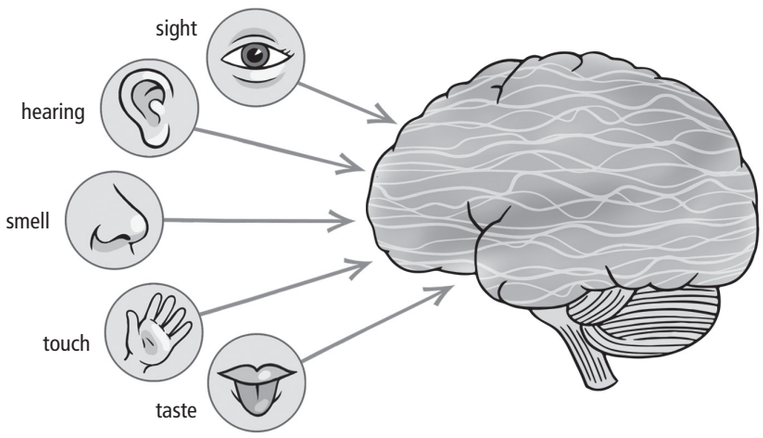


Figure 30 Our five senses

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?

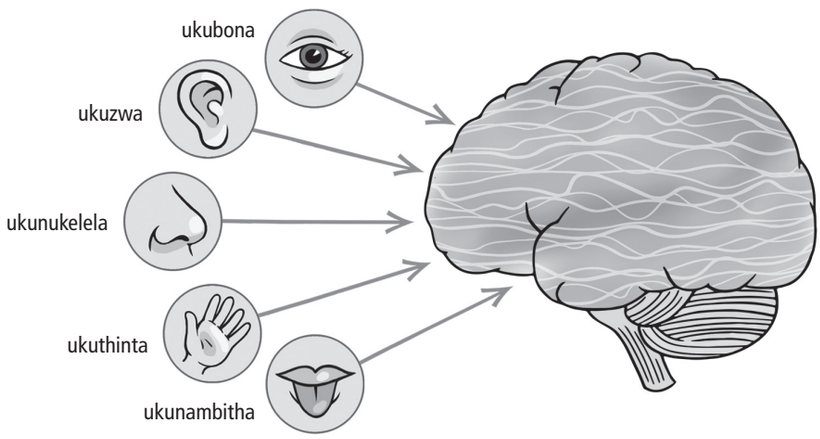
Ukuthuthukiswa kwamakghono wokuzwelela nokusebenza kwemisipha

Ukuthuthukiswa kwamakghono wokuzwelela nokusebenza kwemisipha ebafundini abancani kuqakatheke khulu ekwendlaleni isisekelo sekusasa lakho koke ukuthuthuka nokufunda iimbalo. Ikghono lokuzwelela litjho ukusebenzisa imizwa ukuthola ilwazi mayelana nebhoduluko. Amakghono wokuzwelela aqakathekile ekufundeni iimbalo ngombana asisiza ukuzwisisa:

- indlela izinto ezihlanganiswa ngayo
- ukufana nokuhluka
- ubukhulu, ibumbeko nephethini
- isikhala nesikhundla
- amatshwayo nehlathululo yawo.

Amakghono wokuzwelela asivumela sikghone ukuzwisisa iphasi elisibhodileko. Ilwazi lokuzwelela libuthelelwa mimizwa yethu yokuzwelela emihlanu, isibonelo, lokho amehlo wethu akubonako, iindlebe ziyezwa, isikhumba siyazwelela, ilimi liyanambitha nepumulo iyanukelela.

Ilwazi leli lithunyelwa ebuqhopheni bethu. Ubuqhopho bulungisa, buhlele bese bukhumbula ilwazi leli bonyana sikghone ukulisebenzisa ngemuva kwesikhathi emisebenzini, njengokufunda, ukudweba, ukutlola, ukusika, ukuqedelela iphazili, ukurarulula imiraro yeembalo, ukuthabela indatjana, ukwembatha, ukufuna amanyathelo wakho ngekhabetheni, ukuvuma namanye amakghono amanengi.



Umdwebo wama-30 Amakghono wethu wokuzwelela amahlanu

Kuyenziwa ...

Bukela abafundi nabadlala ngaphandle nangaphakathi ngeentlabagelo ezihlukileko.

Bayakghona uku:

- bona umehluko phakathi kwamatjhada ahlukileko, amagama ahlukileko?
- khomba umehluko phakathi kweenthombe ezimbili nofana kwesiqhema sezinto?
- kukhumbula lokho abakubonileko nabakuzwileko?
- buyelela irhelo lamagama nofana leenomboro bazilandelanise ngefanelo?
- waphendula amatjhada ahlukileko, amagama wabo, iinlayelo?
- zwa umehluko phakathi kokubutjhelelezi nokumakghwakghwa?
- nambitha umehluko phakathi kokunetjhukela nokubabako nabavalwe 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.

Amakghono wokunyakazisa imisipha zizenzo ezifaka ukusebenzisa imisipha yethu. Sisebenzisa imisipha emikhulu emizimbeni yethu ukwenza imisebenzi yemisipha emikhulu, isib. ukurarha ibholo, ukugijima nokweqa. Sisebenzisa imisipha emincani ukwenza imisebenzi yemisipha emincani, isib. ukusika, ukutlola nokudweba.

Ukuthuthukiswa kwamakghono wokusetjenziswa kweenzweleli kufaka okulandelako:

- ikghono lokuzwisisaa okubonwako
- ikghono lokuzwisisa okulalelwako
- ikghono lokuzwisisa okuphathekako
- ikghono lokuzwelela ngokusikinya umzimba.

I-*Grade R Maths* ilemuka ukuqakatheka kwamakghono la ekuthuthukiseni imiqondo yeembalo kubafundi bakwaGreyidi R.

Ikghono lokuzwisisa okubonwako
Ikghono lokuzwisisa okubonwako likghono lobuqhopho lokusebenzisa lokho amehlo akubonako nokurhumutjha ilwazi leli. Amakghono wokuzwisisa okubonwako aqakathekile ekuphatheni izinto, ekudwebeni, ekufundeni nekutloleni iimbalo.

Ukuhlukanisa okubonwako

Ukuhlukanisa okubonwako likghono lokubona okufanako nokuhlukileko phakathi kwezinto. Isibonelo, ukukhumbula bona khuyini okufanako nokuhlukileko phakathi kwamabumbeko we-2-D anjengesithombe esisikwere noncantathu.

Ukusebenzisana kwemisipha nokubonwako

Ukusebenzisana kwemisipha nokubonwako likghono lamehlo, ubuqhopho nemisipha yomzimba kobana isebenzisane ndawonye ukwenza iminyakazo. Eembalweni, kuqakathekile emisebenzini enjengokuphatha izinto, ukudweba nokutlola.

Imisebenzi esiza ukuthuthukisa ukusebenzisana kwemisipha nokubonwako ifaka:

- imidlalo yebholo neyemgodlana weembhontjisi
- ukusebenzisa amabhlogo wokwakha
- ukudlala ngezinto ezigedekako nezitjhelelako
- ukudweba amaphethini
- ukusika nokunamathisela
- ukuluka ngentambo.

Ukuqedelela okubonwako

Ukuqedelela okubonwako likghono lokuqedelela izinto, iinthombe nofana imidwebo engakapheli. Ngamanye amagama, umfundi ukghona ukukhumbula nofana ukubona into yoke nanyana isithombe singakapheleli soke. Abafundi abatlhagiswa kuqedelela okubonwako, isibonelo,bakuthola kunzima ukuqeda amaphazili. Bangaba nobunzima godu bokutlhadlhula bona khuyini okungekho esithombeni esitjengisa ihlangothi langesidleni kwaphela lobuso nofana lomzimba, nofana ukuqedelela 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.

Ukwakha okungatjhugulukiko nokwakha ukuzwisisa (ukukhumbula)

Ikghono lokwakha okungatjhugulukiko likghono lokubona umehluko phakathi kwemihlobo namatshwayo, nanyana ubukhulu nobujamo bungatjhuguluka. Ngamanye amagama, kutjho ukuthi kukghona ukukhumbula amatshwayo wento ahlala akhona. Isibonelo, indulungu yindulungu ngebumbeko layo. Ihlala iyindulungu nanyana ingabahlaza samkayi, ibesipiridzana, ibeyikulu nofana ibe yincani, ibe ngencwadini nofana idwetjwe ehlabathini. Ngaleyo indlela, itshwayo lenomboro '5' lihlala linjalo nofana lingatlolwa ngemibala ehlukileko nofana ngomtlolo omkhulu nofana omncani.

Ikghono lokubona isithombe kwesinye isithombe

Ikghono lokubona isithombe kwesinye isithombe likghono lokubona umehluko phakathi kwezinto ezingaphambili nalezo ezingemuva. Ungasiza abafundi ukuthuthukisa igkhono leli ngokubabawa bakhombe izinto ezithileko esithombeni nofana ebuthelelweni lezinto, isib. 'Thola umntazana ombethe ibhrugu elibovu esithombeni' nofana 'Thola ibhokisi lama-orentji esithombeni' nofana 'Thola amanyathelo wakho ewobhini lamanyathelo wethu'.

Ukulandelanisa okubonwako

Ukulandelanisa okubonwako likghono lokubeka izinto ngendlela efaneleko ngemuva kokuziqala nofana ukuzibukela. Siza abafundi bakhe igkhono leli ngokubabawa baqale iphethini yomncamo wemibala ehlukileko emutjeni bese babuyelela iphethini ngokwabo.

Ukuhlanganisa okubonwako nemisipha

Ukuhlanganisa okubonwako nemisipha likghono lokuzwisisa ilwazi lokubonwako bese ulisebenzisa keminye imisebenzi esebenzisa amakghono wemisipha. Abafundi basebenzisa ilwazi lokubonwako nemisipha emincani lokha, isibonelo, bakopa iinomboro nofana badweba izinto eziphambi kwabo.

Ukucabanga ngokubonwako

Ukucabanga ngokubonwako likghono lokwakha iinthombe engcondweni yakho (iinthombe zengcondo) ngokususelwa elemukweni, ukubukela nofana elinye ilwazi lokubonwako. Abafundi basebenzisa ikghono leli lokha, isibonelo, badweba iinthombe zento njengelawu lemakhaya wabo nofana zemindeni 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.

Ikghono lokuzwisisa okulalelwako
Ikghono lokuzwisisa okulalelwako likghono lobuqhopho lokusebenzisa lokho iindlebe ezikuzwako bese zirhumutjha ilwazi leli. Ukuzwisisa okulalelwako kuqakathekile ekuthuthukiseni amakghono welimi, ukulandela nokuzwisisa iinlayelo kunye nokwabelana nokukhulumisana ngemibono nelwazi.

Ukuhlukanisa okulalelwako

Ukuhlukanisa okulalelwako likghono lokukhumbula ukufana nokuhluka kwamatjhada, isib. ukghona ukuzwa umahluko phakathi kwetjhada 'uncamane' no 'ncantathu'.

Umkhumbulo wokulalelwako

Umkhumbulo wokulalelwako likghono lokubeka nokukhumbula into okhe wayizwa. Abafundi basebenzisa ikghono leli lokha nabalandela iinlayelo nofana nakubuyelelwa ngokufundela phezulu iinomboro ezilandelanako, isib. 4, 6, 8, 1.

Ikghono lokuzwa itjhada hlangana namatjhada

Ikghono lokuzwa itjhada hlangana namatjhada likghono lokuzwa nofana ukuhlukanisa itjhada elithileko hlangana namanye amatjhada. Kulikghono godu lokuqalana netjhada lento ethileko ngokuhlukileko kunetjhada elingemva kwalo. Ikghono leli livumela abafundi ukuqalana nalokho omunye wesiqhema sabo akutjhoko ngaphandle kokuphazanyiswa litjhada leenqhema ezinye ezikhulumako.

Ukulandelanisa okulalelwako

Ukulandelanisa okulalelwako likghono lokukhumbula izinto ngendlela efaneleko ngemuva kokuzwa irhelo. Isibonelo, irhelo leenomboro ukusuka kuku-1 ukuya e-10 nofana iinyanga zomnyaka. Ukubawa abafundi batlhadlhule izehlakalo ezimbalwa zelanga kubasiza ukuthuthukisa ikghono leli.

Ukuzwisisa ngokuzwelela nokusikinyeka komzimba
Ukuzwisisa ngokuzwelela nokusikinyeka komzimba likghono lokusebenzisa imizwa yokuthinta ukuhlola ibhoduluko lakho. Ukuzwisisa ngokusikinyeka komzimba kuyelela ukunyakaza komzimba nesikhundla esikhaleni. Ziyasebenzisana ukunikela ubuqhopho ilwazi. Umsebenzi osiza ukuthuthukisa okuphathekako nokuzwelela kubawa abafundi bavale amehlo, bezwelele bese batlhadlhule izinto ezimbalwa ezihlukileko ngemgodlaneni nofana ngemgodlaneni womsamelo. Isibonelo, bangathi inamakhona/irondo.

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. Umthethokambiso wokujayeza

Ihlathululo

Abafundi kufanele babenesikhathi esinengi sokuzijayeza amakghono nelwazi elitjha. Lokha abafundi bathola ithuba lokuzijayeza lokho esele bakufundile, babangcono bese baba nokuzithemba. Bayalithabela ibuyelelo nokuzijayeza. Utitjhere wakwaGreyidi R kufanele anikele amathuba aphindaphindiweko ukuze abafundi bazijayeze bathuthukise namakghono amatjha.

Kuyenziwa ...

- Ukubala nokurarulula umraro kwenziwa ngamalanga njengemisebenzi eyenziwa qho – nanyana umqopho ukeminye imiqondo enjengamabumbeko nofana ukumeda.
- Nikela imethiriyeli nemisebenzi ehlukileko ukuze abafundi bazijayeze amakghono amatjha abawafundileko ngeendlela ezihlukileko.
- Imiqondo yeembalo bangazijayeza yona kukharikhyulamu yoke, isibonelo, emisebenzini yeLimi leKhaya nakumaKghono wePilo anjengeendatjana, imidlalo, ukupenda neemfundweni ezimayelana neenqabo.

Okunengi mayelana nomthethokambiso wokujayeza

Ukusebenzisa imilolozelo, iingoma neendatajana

Ukuvuma iingoma nokubuyelela imilolozelo ndawonye, nokwabelana ngeendatjana kuyindlela yokufunda ethabisako, nenganaphaliswano. Abantwana bafunda imiqondo namakghono weembalo lokha nababuyelela imilolozelo neengoma, balalele kanengi. Bafunda begodu bazijayeze:

- amagama weenomboro (isib. 'Kwakunobudori obuthathu …')
- irhemo lamagama weenomboro
- ukubala uye phambili nemuva
- ukubala isiqhema sezinto
- ukubala okungakahleleki, isib. ukuhlanganisa nokukhupha
- ukulandelana kwezehlakalo.

Kuyenziwa ...

- Faka ukusikinyeka, igido, nomvumo eengomeni, imilolozelo neendatjana ukuzenza zithabise khulu. Ilemuko elisebenzisa yoke imizwa yethu lisiza abafundi ukukhumbula zinto lula.
- Khuthaza ababelethi nabanye abatlhogomeli bafunde iindatjana, iingoma nemilolozelo eniyisebenzisako ninabantwana. Ngale indlela, zibasihlanganiso esiqakathekileko sabantwana phakathi kwekhaya nemisebenzi yesikolo.

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.

Ukuhlanganiswa kweembalo ehlelweni loke lakwaGreyidi R langamalanga

Abotitjhere kufanele benze kube nokukhambelana phakathi kweembalo, imisebenzi yangamalanga nezinye iimfundo (isib. iLimi leKhaya namaKghono wePilo), kunye naphakathi kweembalo nepilo yabafundi yangamalanga. Abotitjhere kufanele basebenzise woke amathuba wokuzijayeza ngamakghono weembalo.

Kuyenziwa ...

Abafundi bangaba nekareko yokufunda iimbalo, begodu bathole kulula ukuyizwisisa, nabangabona bona iimbalo ziyazwisiseka begodu zinesizo kangangani eempilweni zabo. Abotitjhere bangasiza ngokwenza okulandelako:

- Ngokutjhejisisa bona iimbalo ziyingcenye engangani yobunjalo nepilo yebizelo labo.
- Ukukhombisa abafundi bona iimbalo zisetjenziswa njani epilweni yabo yangamalanga, isib. lokha nawusebenzisa imali ukuthenga into ethileko.
- Ukuhlanganisa imisebenzi yeembalo nelemuko lamatlasi amanye nelangaphandle, njengoku:
  - ngokusebenzisa iinomboro sikhundla 'wokuthoma', 'wesibili' no 'wesithathu' lokha abafundi nabarhemako
  - ukutjho isikhundla nenqopho lokha abafundi nabadlalako
  - ukukhuluma 'ngobunengi' 'nobuncani' lokha abafundi babelana ngesithelo, uburotho begodu/nofana isiselo.
- Ukuhlanganisa nemiqondo yeembalo njengobukhulu, ukumeda, isikhathi, isilinganiso, ukubala, ukumadanisa, ibumbeko begodu/nofana ibanga lokha nawufundela abafundi indatjana.

Fundisa imiqondo yeembalo ngesikhathi sokuqalana neemBalo zakwaGreyidi R bese uqala amanye amathuba wokuthuthukisa ilimi nemiqondo yeembalo ilanga loke. Lokhu:

- kusiza abafundi ukuthuthukisa ukuzwisisa bona amahlangothi ahlukileko welwazi atjhebisana njani
- kuqinisekisa khulu ilemuko lokufunda elipheleleko nofana elizeleko
- kunikela abafundi amathuba wokuzijayeza lokho abakufundileko.

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

IimBalo eHlelweni langamaLanga leGreyidi R

Isingeniso

Ihlelo le-*Grade R Maths* lenzelwe ukuqinisa nokusekela ikharikhyulamu yeemBalo zakwaGreyidi R. I-*Grade R Maths*:

- ifaka hlangana begodu inabisa ingaphakathi le-CAPS yeemBalo zeGreyidi R ehlathululwe ziinGaba zokuMumethweko ezihlanu
- ikhuthaza ukufunda okunzinze ekuphenyeni ngokutjhukumisa iindlela ezinabisa imvelo yabafundi yokurhuluphela ukuhlola okumagega nabo
- inikela imisebenzi ekhuthaza abafundi ukuphenya nokuhlola imiqondo yeembalo
- ikhuthaza abotitjhere ukukhuluma nabafundi ngalokho abakucabangako nokubasiza batjho imibono yabo
- itjhukumisa iindlela zabafundi zokuhlela, ukubukela nokubuthelela ilwazi, ukumadanisa, ukuhlela, ukuhlukanisa nokurhumutjha lokho ebakutholileko
- inikela imethiriyeli neensetjenziswa ezifaneleko.

IinGaba zokuMumethweko zeemBalo

IimBalo eFundweni esisiSekelo (ukufaka iGreyidi R) zifaka iinGaba ezihlanu zokuMumethweko. IsiGaba sokuMumethweko ngasinye sisiza umfundi athuthukise ilwazi namakghono weembalo. IinGaba zokuMumethweko ngilezi:

- Iinomboro, ama-Opharetjhini noBudlelwana
- AmaPhetheni, amaFanktjhini ne-Aljibhra
- IsiKhala neBumbeko (Ijiyomethri)
- Ukumeda
- Ukuphatha iDatha

Ungathola okunengi mayelana nesiGaba sokuMumethweko ngasinye ku-CAPS esiGabeni sesi-3 somhlahlandlela lo (ikhasi 111).

Ubungako beenGaba Zokumumethwe ziimBalo

I-CAPS itjhukumisa bonyana isikhathi sokufundisa iimBalo kwaGreyidi R kufanele sibe ma-iri ama-23 ngeveke. Kodwana i-CAPS ayinikeli ukwabiwa nofana ukuhlahlela isikhathi seGreyidi R ekufanele sisetjenziswe

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

esiGabeni sokuMumethweko ngasinye, ithemu ngayinye. Ukwabiwa kweenGaba zokuMumethwe ziimBalo kuhlose okubili okuqakathekileko:

- Kunikela umhlahlandlela mayelana nobungako besikhathi esidingekako ukuqalana nokumumethweko kwesiGaba sokuMumethweko ngasinye ngokwaneleko.
- Kunikela umhlahlandlela ngokwabiwa kweengcenye ezihlukileko zekharikhyulamu yeemBalo zakwaGreyidi R ngesikhathi sokuhlolwa.

Ihlelo le-*Grade R Maths* litjhukumisa isilinganiso sokwabiwa kweenGaba zokuMumethweko. Lokhu kusekelwe kokulandelako:

- Zoke iinGaba zokuMumethweko ziqakatheke ngokulinganako nanyana zingabelwa isikhathi ngokulingana.
- Ezinye iinGaba zokuMumethweko zidinga isikhathi esinengi sokuthuthukisa imiqondo, isib. Iinomboro, ama-Opharetjhini nobuDlelwana, nesiKhala neBumbeko (Ijiyomethri).

Ihlelo le-*Grade R Maths* liqalana nesiGaba sokuMumethweko esisodwa esinqophileko ngeveke yinye lokha naliqinisekisa ukuqina nokuhlangana kwelwazi elitjha. *UmHlahlandlela wemiSebenzi* wethemu ngayinye uhlela okumumethweko namanani weemveke ngokuya ngokwabiwa lokhu ukuqinisekisa bonyana iinhloko zeenGaba zokuMumethweko ze-CAPS nokuthuthukiswa kokuqakatheka komcabango kufakiwe. Ithebula engenzasi ikhombisa inani leemveke ezidingekako zokumumethweko okunqotjhiweko kwesiGaba sokuMumethweko ngasinye ngethemu ngayinye.

Ithebula 1 Inani leemveke ngokwesiGaba sokuMumethweko ngakhunye ngethemu ngayinye

Ubudisi bokuMumethweko kweemBalo zakwaGreyidi R

IsiGaba sokuMumethweko	**Isihloko**	**Ithemu 1 iimveke**	**Ithemu 2 iimveke**	**Ithemu 3 iimveke**	**Ithemu 4 iimveke**	**Inani leemveke qobe mnyaka**	**Inani lama-% wesikhathi**
Iinomboro, ama-Opharetjhini noBudlelwana	Ukubala Ukukhumbula iinomboro Ukuzwisisa iinomboro (ubudlelwana) Ukurarulula umraro Ukubala	3	4	5	5	17	42,5
AmaPhethini, amaFanktjhini ne-Aljibhra	Khomba, kopa, nabisa nokwakha amaphetheni wakho	1	1	1	1	4	10
IsiKhala neBumbeko (Ijiyomethri)	Ukujama, ubujamo nokuqaleka kwezinto Eziyi-3-D namabumbeko ayi-2-D Isimethri	4	3	2	2	11	27,5
Ukumeda	Isikhathi	1				4	10
	Ubude		1				
	Ubudisi			1			
	Umthamo/Ivolumu				1		
Ukuphatha iDatha	Ukubuthelela, ukuhlela, ukujamiselela nokuhlaziya izinto/ilwazi	1	1	1	1	4	10
Inani leemveke		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).

IimBalo nehlelo lakwaGreyidi R langamalanga

Ihlelo langamalanga

Ihlelo lakwaGreyidi R langamalanga lihlelo lesikhathi elinamatshwayo walo ahlukileko. Alifani nehlelo lesikhathi elisetjenziswa kamanye amagreyidi wesikolo. Linikela ngeendingo zabafundi zokuthuthuka lokha naliqalana neemfuneko zomThethomgomo we-CAPS.

Umdwebo wehlelo lakwaGreyidi R langamalanga (Umdwebo wama-31) ufaka hlangana ukuhlukaniswa kwesilinganiso sesikhathi njengomhlahlandlela wabotitjhere. Iinkhathi lezi kufanele zikwazi ukutjhuguluka kwaGreyidi R, kodwana kufanele kube:

- nama-iri ama-4 nemizuzu ema-36 ngelanga (nofana ama-iri ama-23 ngeveke) wesikhathi sokufunda nokufundisa.
- imisebenzi efaka iimfundo ezintathu: iLimi leKhaya (ama-iri ali-10 ngeveke), iimBalo (ama-iri ali-7 ngeveke) namaKghono wePilo (ama-iri asi-6 ngeveke).

Isifundo ngasinye sinesetjhini enqophileko yangamalanga begodu sihlanganiswe neminye imisebenzi yelanga loke. Ihlelo langamalanga kumdwebo wama-31 litjengisa isikhathi esiqalene neembalo kunye namathuba wokufunda iimbalo ungakanaki. Ukufunda iimbalo kwenzeka:

- ngesetjhini yetlasi yoke lapho abafundi bakhulumisana njengesiqhema esisodwa esikhulu notitjhere
- isetjhini yesiqhema esincani ehlahlwa ngutirjhere lapho abafundi abafika kwababunane basebenza notitjhere
- isetjhini yesiqhema esincani lapho abafundi abafika kwababunane bazisebenzela babodwa ematafuleni (eentetjhini zokusebenzela)
- isetjhini yokuzikhethela etjhaphulukileko lapho abafundi bazikhethela ngokwabo lokho abangathanda ukukwenza ekhethweni lemisebenzi ekhethwe ngutitjhere (ukuzikhethela).

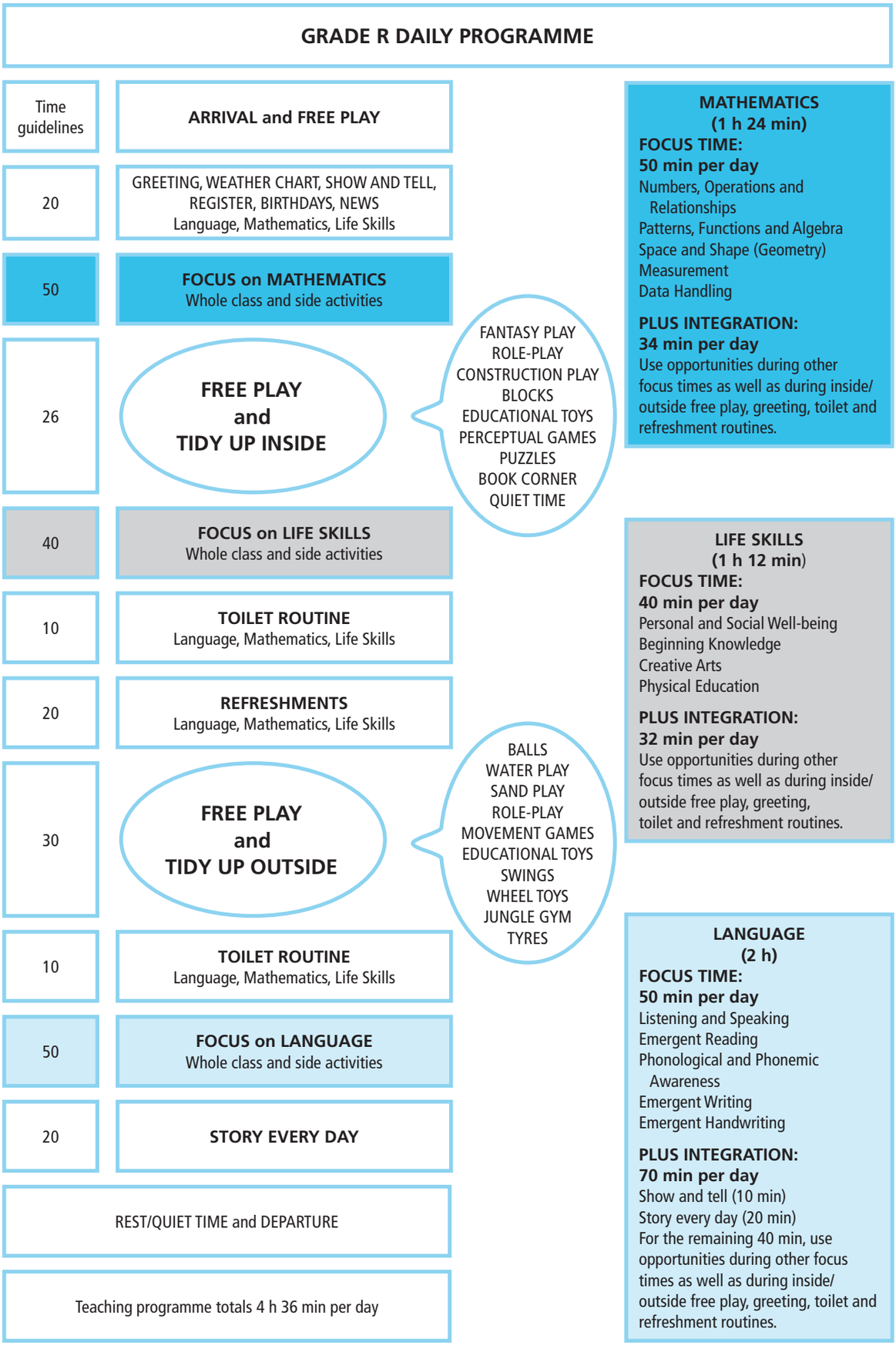


Figure 31 GDE exemplar Grade R Daily Programme

IHLELO LEGREYIDI R LANGAMALANGA

Umhla-hlandlela wesikhathi		
	UKUFIKA NOKUDLALA OKUTJHAPHULUKILEKO	
20	UKULOTJHISA, ITJHADI LOBUJAMO BEZULU, UKUKHOMBISA NOKUCOCA, IREJISTA, AMALANGA WOKUBELETHWA, IINDABA ILimi, iimBalo, amaKghono wePilo	
50	**UMQOPHO NEEMBALO** Imisebenzi yetlasi yoke neyangeqadi	
26	**UKUDLALA OKUTJHAPHULUKILEKO NOKUBUTHA NGAPHAKATHI**	UMDLALO WESITHOMBE-NGCONDO UMDLALO WOKULINGISA UMDLALO WOKWAKHA AMABHLOGO IINDLALISI EZIFUNDISAKO IMIDLALO YOMCABANGO AMAPHAZILI IKHONA YEENCWADI ISIKHATHI SOKUTHULA
40	**UKUNQOPHANA NAMAKGHONO WEPILO** Imisebenzi yetlasi yoke neyangeqadi	
10	**IKAMBISO YOKUYA ENDLWANENI** ILimi, iimBalo, amaKghono wePilo	
20	**UMBAMBANDLALA** ILimi, iimBalo, amaKghono wePilo	
30	**UKUDLALA OKUTJHAPHULUKILEKO NOKUBUTHA NGAPHANDLE**	IIMBHOLO UMDLALO WAMANZI UMDLALO WEHLABATHI UMDLALO WOKULINGISA IMIDLALO YOKUSIKINYA UMZIMBA IINDLALISI EZIFUNDISAKO IMIJINKO IINDLALISI ZAMAVILO IMIDLALO YEPHAGENI AMATAYERE
10	**IKAMBISO YOKUYA ENDLWANENI** ILimi, iimBalo, amaKghono wePilo	
50	**UKUNQOPHANA NELIMI** Imisebenzi yetlasi yoke neyangeqadi	
20	**INDATJANA YANGAMALANGA**	
UKUPHUMULA/ISIKHATHI SOKUTHULA NOKUKHAMBA		
Inani lama-iri wehlelo lokufundisa ma-iri ama-4 nemizuzu ema-36 ngelanga		

IIMBALO
(I-iri eli-1 nemizuzu ema-24)
ISIKHATHI SOKUNQOPHANA:
Imizuzu ema-50 ngelanga
Iinomboro, ama-Opharetjhini noBudlelwana
AmaPhethini, amaFanktjhini ne-Aljibhra
IsiKhala neBumbeko (Ijiyomethri)
Ukumeda
Ukuphatha iDatha

UKUHLANGANISA NGOKUNGEZELELA:
Imizuzu ema-34 ngelanga
Sebenzisa amathuba ngezinye iinkhathi zokunqophana nangeenkhathi zekambiso yokudlala ngokutjhaphuluka ngaphandle/ngaphakathi, ukulotjhisa, indlwana neyombambandlala.

AMAKGHONO WEPILO
(I-iri eli-1 nemizuzu eli-12)
ISIKHATHI SOKUNQOPHANA:
Imizuzu ema-40 ngelanga
IHlalakuhle yoMuntu nokuPhila emPhakathini
ILwazi lokuThoma
UbuKghwari bokuTlama
IFundo yokuSikinya umZimba

UKUHLANGANISA NGOKUNGEZELELA:
Imizuzu ema-32 ngelanga
Sebenzisa amathuba ngezinye iinkhathi zokunqophana nangeenkhathi zekambiso yokudlala ngokutjhaphuluka ngaphandle/ngaphakathi, ukulotjhisa, iindlwana neyombambandlala.

ILIMI
(Ama-iri ama-2)
ISIKHATHI SOKUNQOPHANA:
Imizuzu ema-50 ngelanga
UkuLalela nokuKhuluma
UkuFunda okusaThomako
UkuZwisisa imiDumo yamaGama neyamaLedere
UkuTlola okusaThomako
UkuTlola ngeSandla okusaThomako

UKUHLANGANISA NGOKUNGEZELELA:
Imizuzu ema-70 ngelanga
Khombisa bese uyacoca (imizuzu eli-10)
Indatjana yangamalanga (imizuzu ema-20)
Imizuzu ema-40 eseleko, sebenzisa amathuba ngesinye isikhathi sokunqophana kunye nangesikhathi sokudlala ngokutjhaphuluka ngaphandle/ngaphakathi, ukulotjhisa, iindlwana, nangekambiso yombambandlala.

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.

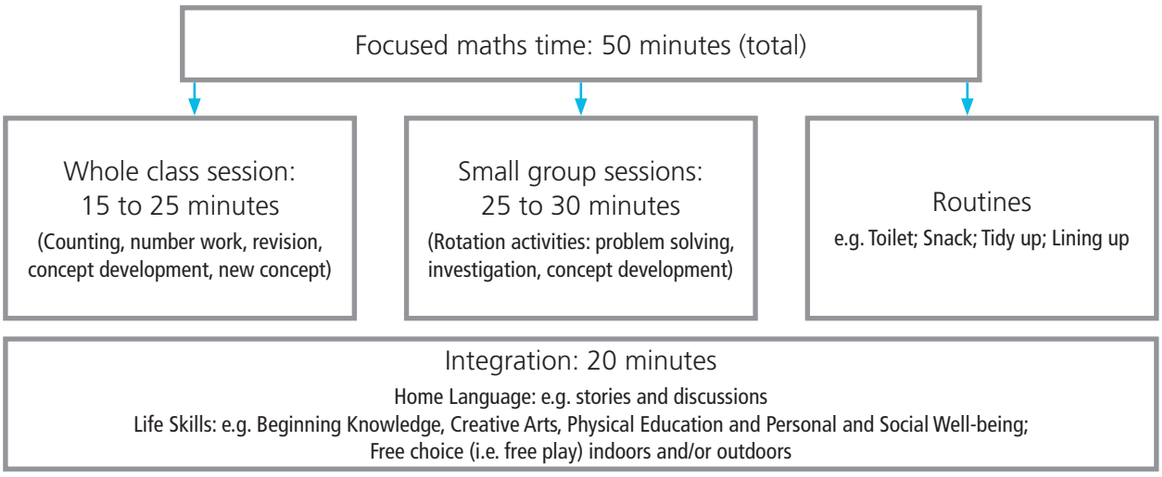


Figure 32 Suggested use of daily maths time

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

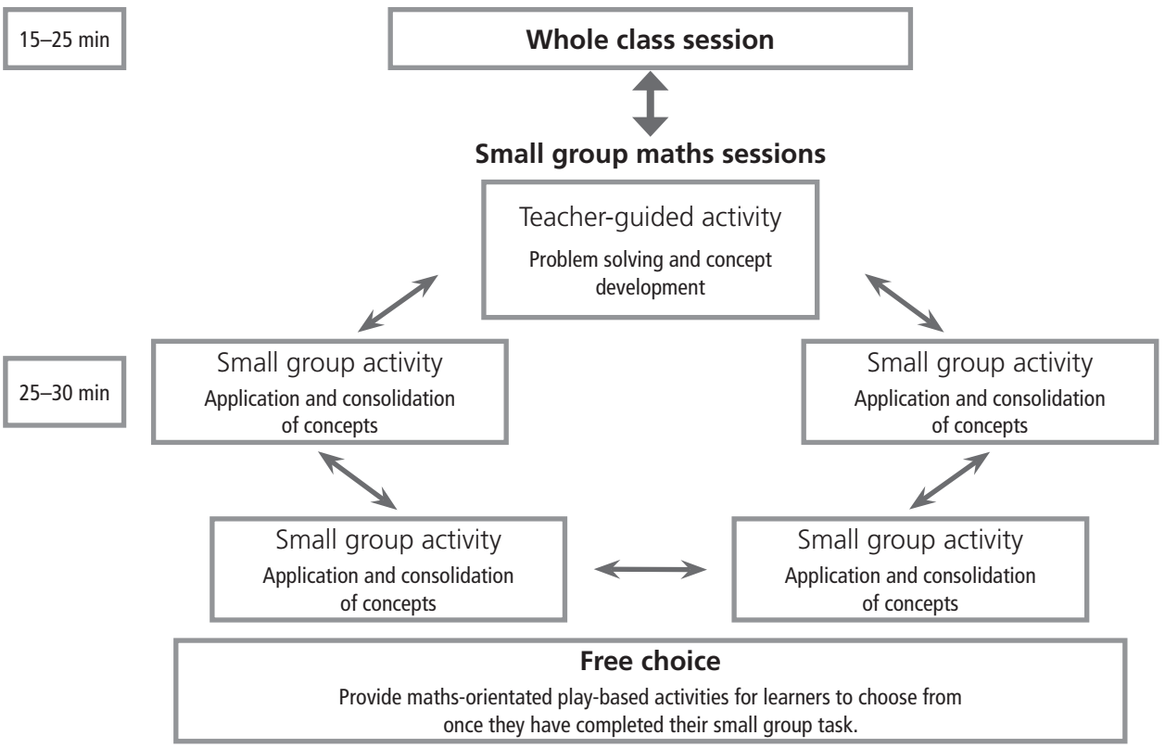


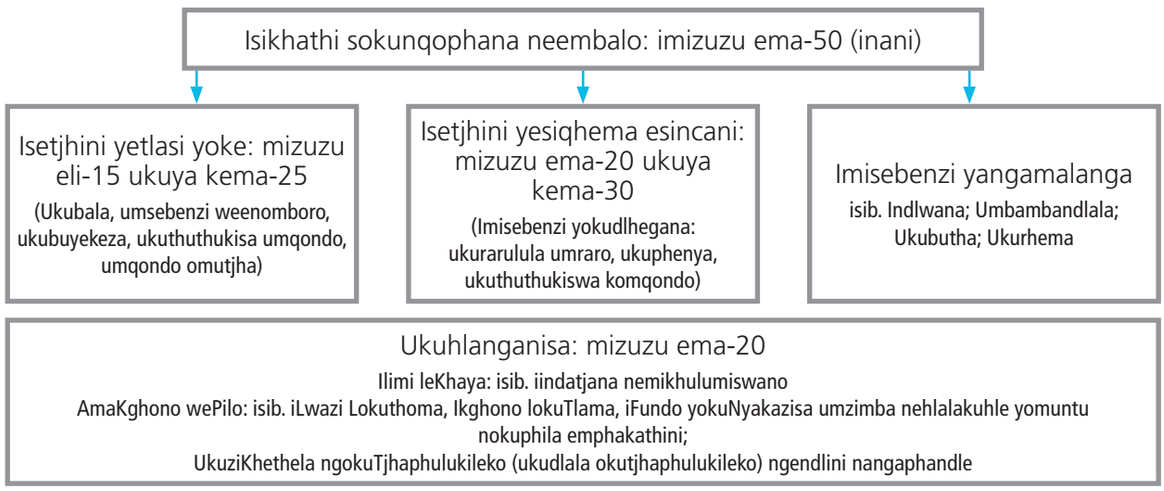
Figure 33 Daily maths focus time in Grade R Maths

Ukwabiwa kwesikhathi seemBalo zakwaGreyidi R

Isikhathi esabelwe iimBalo zakwaGreyidi R ma-iri alikhomba ngeveke bese i-iri eli-1 nemizuzu ema-24 (imizuzu ema-84) ngelanga. Ilanga ngalinye isikhathi lesi senziwa:

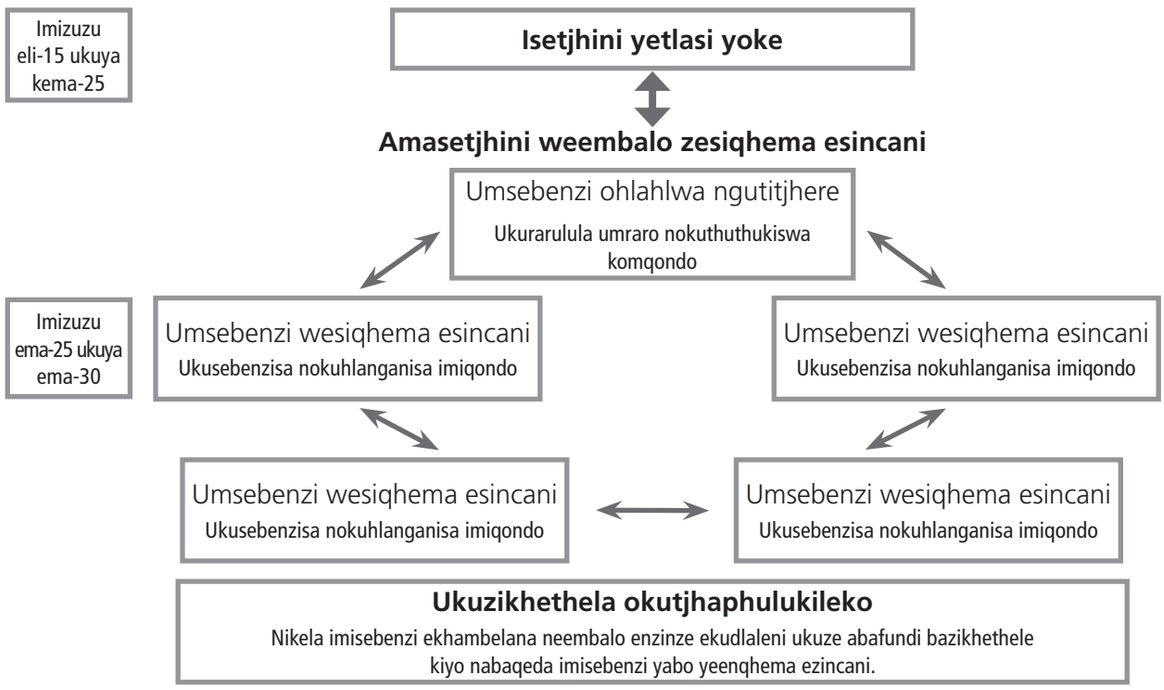
- mizuzu ema-50 enqophene nemisebenzi yokufunda nokufundiswa kweembalo
- mizuzu ema-34 yokufunda okuhlangeneko, imisebenzi ehlelekileko nemisebenzi yomfundi ozijameleko yangaphakathi neyangaphandle kwetlasi.

Umdwebo wama-32 ukhombisa isitjhukumiso sokobana ungasisebenzisa njani isabelo sesikhathi esili-iri eli-1 nemizuzu ema-24.



Umdwebo wama-32 Isikhathi esitjhukunyisiweko sokusetjenziselwa iimbalo ngamalanga

Umdwebo wama-33 ukhombisa bonyana isikhathi sokunqophana neembalo sihlelwe njani ku-*Grade R Maths* ilanga ngalinye.



Umdwebo wama-33 Isikhathi sokunqophana neembalo zangamalanga 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 engezelelweko enganikelwa abafundi ifaka:

- ukwakha iphazili
- imisebenzi yehlama yokudlalisa
- imisebenzi yokwakha
- imidlalo efundisako
- ikhona leencwadi – 'ukufunda'
- amaphepha neencwadi zokusebenzela ze-DBE.

Kungaphela isetjhini yokunqophana neembalo boke abafundi abazibandakanye ekubutheni bese kudlulelwa engcenyeni elandelako yehlelo langamalanga.

Ungayihlela njani itlasi yakho yesetjhini yeembalo yangamalanga

Landela nasi imihlahlandlela ukukusiza usebenzise ihlelo le-*Grade R Maths* ngetlasini yakho ngamalanga.

Isikhathi sokunqophana neemBalo zakwaGreyidi R kufanele sihleleke begodu sihlelelwe imisebenzi yetlasi yoke nemisebenzi yesiqhema esincani. Ubukhulu obuhlukileko beenqhema buphumelelisa ihloso yokufundisa nokufunda. Ukukhetha isiqhema esikhulu nofana esincani kuzakuya ngomsebenzi wokufundisa nofana wokuhlola utitjhere awuhlelileko. Ukuphatha itlasi ekulu kuyiselele, khulukhulu nangabe utitjhere uhlele ukuqalana nomfundi ngamunye ukufaka hlangana abafundi abaneenqabo zokufunda.

Amasetjhini weembalo zetlasi yoke

Amasetjhini weembalo zetlasi yoke avame ukuba phakathi kwemizuzu eli-15 ukuya ema-25 ubude begodu abafundi boke bahlala ndawonye notitjhere benze indulungu.

Imisebenzi yeembalo elandelako ingenziwa netlasi yoke ngamasetjhini weembalo:

- ukuhlanganisa nokuzijayeza imiqondo eyafundiswa ngaphambilini
- ukwethula umqondo omutjha
- ukunabisa umqondo ekungiwo oqalwe khulu weveke
- ukubala ngomlomo/ngehloko (imilolozelo, iingoma, ukulandelanisa iinomboro)
- iimbalo zehloko (ukuletha imiraro, imidlalo yomkhumbulo)
- ukunikela iinlayelo zemisebenzi ekufanele yenziwe ebujameni besiqhema esincani lokha nawumajadu ngomsebenzi ohlahlwa ngutitjhere.

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.

Umdwebo wama-34 Isetjhini yeembalo zetlasi yoke

Isetjhini yeembalo yesiqhema esincani

Kusetjhini yesiqhema esincani, itlasi ihlukaniswe ngeenqhema ezihlanu zabafundi. Ilanga ngalinye, isiqhema esisodwa sisebenza notitjhere (umsebenzi ohlahlwa ngutitjhere) lokha iinqhema ezinye ezine zisebenza zizodwa zenza umsebenzi weembalo utitjhere awuhlelileko.

Ubuhle bokuhlela imisebenzi yesiqhema esincani esihlahlwa ngutitjhere nemisebenzi abayenza babodwa kukobana:

- Kufuneka iinsetjenziswa ezimbalwa zesiqhema esincani kunetlasi yoke, isibonelo, iinkere, iimbalisi, amabhlogo, njll.
- Umntwana ngamunye unethuba lokusebenzisa imethiriyeli neensetjenziswa.
- Kukhuthaza amakghono wokutjhebisana, isibonelo, ukwabelana, ukudlhegana, ukukhuluma nokulalela.
- Abafundi bazinikela ekwenzeni umsebenzi wesiqhema, njengokubutha.
- Utitjhere angatjhwela phezulu iinlayelo nemibuzo elingene isiqhema.
- Utitjhere angatjheja umntwana ngamunye ukuqinisekisa amakghono wokuzijamela.

Ukusebenzisa iinqhema ezincani kunikela utitjhere ithuba lokuhlela abafundi ngeenqhema ngokokulingana kwamakghono. Ngamanye amagama, utitjhere ukghona ukuhlela abafundi ngeenqhema ngokuya ngokwesekelo abalidingako ukuze bafunde ngepumelelo.

Phezu kwamalanga amahlanu, iinqhema zenza umsebenzi ohlukileko ilanga ngalinye. Lokhu kutjho bonyana evekeni boke abafundi bathola ithuba lokwenza **umsebenzi wokunqophiweko ohlahlwe ngutitjhere** begodu benza neminye imisebenzi yeenqhema ezine ezincani (**inani lemisebenzi emihlanu ehlukileko yeembalo**). Imisebenzi emine yokuzijamela (**imisebenzi yangeqadi**) kufanele ihlelwe **eentetjhini zokusebenzela** ezine ngetlasini mazombe – kungaba seentafuleni lapho abafundi bahlezi nofana bajame khona, phezu komada, nofana ngaphandle. Abafundi bayadlhegana iveke yoke, ngokuya ngendlela utitjhere ahlele ngayo 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.

Kuyenziwa ...

Iindlela zokuhlukanisa abafundi ngokweenqhema ngesikhathi seembalo

Ukutjheja okuragela phambili kwabafundi ngesikhathi semisebenzi yangaphandle neyangaphakathi kuzakunikela abotitjhere ilemuko lokwazi amakghono namakareko wabafundi. Ilemuko leli lizakusiza ukuhlukanisa abafundi ngeenqhema ezihlukileko. Iinqhema zizakuhlukaniswa ngokwamakghono nofana ngokwepumelelo ekghonweni elitjha.

- Iinqhema ngokwamakghono: Kilesisiqhema, abafundi basezingeni elifanako lokuthuthuka. Kwesinye isikhathi kulula ukufundisa imiqondo emitjha yeembalo ngokusebenzisa iinqhema ezihlelwe ngokwamakghono ngombana abanye abafundi bazakudinga isikhathi esinengi ukuqeda umsebenzi lokha abanye bazakudinga umsebenzi oneselele ekudlwana. Kwesinye isikhathi ungafuna abafundi abaneenqabo basebenze kunye nawe ukuhlanganisa imiqondo enjengokunye kokunye okukhambelanako nokubala okubuthelelako, nofana ungafuna ukunabisa abafundi abathuthukako ngokubanikela imiraro yeembalo eziyiselele.
- Iinqhema ezinamakghono avangileko: Kileziinqhema, abafundi banamazinga ahlukileko wekghono nokuzwisisa umqondo. Lo umhlobo weenqhema usebenza kuhle ekwakheni, ukumeda, amaphetheni nekuhleleni imisebenzi, nemidlalo.

Nofana ngiyiphi indlela oyikhethako yokuhlukanisa iinqhema zabafundi, iinqhema akukafaneli zihlale zifana isikhathi eside begodu isiqhema ngasinye kufanele sibe netshwayo (isithombe nofana ibumbeko) negama laso.

Imisebenzi yesiqhema esincani ehlahlwa ngutitjhere

Emsebenzini ohlahlwa ngutitjhere, utitjhere usebenza nesiqhema sinye sabafundi lokha ezinye iinqhema zenza imisebenzi ehleliweko kwesinye seentetjhi ezine zokusebenzela.

Imisebenzi elandelako ifanele khulu ubujamo besiqhema esincani esihlahlwa ngutitjhere:

- ukuhlanganisa nokuzijayeza imiqondo efundiswe ngaphambili
- ukuqinisa ukuzwisisa imiqondo emitjha.

Kuyenziwa ...

Iinyeleliso zemisebenzi yeembalo zesiqhema esincani esihlahlwa ngutitjhere

- Yenza imisebenzi enqophene nemiqondo yeemBalo zakwaGreyidi R ehlelelwe iveke leyo.
- Sebenzela nabafundi phasi nofana etafuleni.
- Yenza esetjhini kube nokukhulumisana, wena nabafundi ngokuhlanganyela.
- Umnqopho kufanele ube sekusebenzeni kwabafundi ngomlomo nangokwenza.

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

Umdwebo wama-35 Ukukhambelanisa iimbalisi namakarada wamaqatjhazi

Imisebenzi yeenqhema ezincani

Imisebenzi elandelako ifanele khulu ubujamo besiqhema esincani lapho abafundi basebenza bodwa ngaphandle kukatitjhere:

- ukuhlanganisa nokuzijayeza imiqondo efundiswe ngaphambili
- ukuphenya umqondo omutjha onqophiweko iveke leyo
- ukuzijayeza ngomqondo onqophiweko iveke leyo.

Kuyenziwa ...

Iinyeleliso zokuhlela nokulawula imisebenzi yeemBalo yeenqhema ezincani ezizijameleko

- Abafundi abanemihlobo yamakghono ahlukileko kufanele bakghone ukwenza imisebenzi le.
- Imisebenzi le kufanele izwisiseke ebafundini.
- Imisebenzi kufanele icace begodu ibe lula ngendlela yokobana abafundi bayenze ngaphandle kobana babawe utitjhere abasize.
- Nangabe abafundi besebenza buthaka, hlola abonobangela. Tjintja nofana utjhugulule umsebenzi nangabe kuyadingeka.
- Abafundi kufanele bazibophelele ekuqedeni imisebenzi yabo begodu bangaphazamisi utitjhere ozabe amajadu ngomsebenzi ohlahlwa ngutitjhere.
- Fundisa abafundi imithetjhwana elula kobana kufanele benzeni nokobana baziphathe njani ngesikhathi semisebenzi yesiqhema esincani: ubuthwa/upakwa njani umsebenzi wabo nabawuqedako; kufanele baziphathe njani ngesikhathi sokudlulela komunye umsebenzi. Buyelela imithetjhwana ngamalanga abafundi babe bazi begodu bakghone ukuyilandela ngokuzenzakalelako. Lokhu kuthatha isikhathi! Phikelela. Balungise kuhle lokha nabanomraro ngemithetjhwana.

Imisebenzi yokuzikhethela ngokutjhaphulukileko

Imisebenzi yokungezelela kufanele inikelwe lokha abafundi nabaqeda umsebenzi wesiqhema ngasinye esincani ngaphambi kokuphela kwesetjhini. Imisebenzi le kufanele isebenze njengeyokuqinisa okumumethwe ziimbalo okufundisileko. Abafundi kufanele bakhethe

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.

umsebenzi kileyo ehlelwe ngutitjhere. Imisebenzi le kufanele inqophane neembalo, isibonelo, iphazili, amabhlogo apakwako, ukudweba, ukufaka umbala, ukubumba, ukuhlela amabumbeko nofana umdlalo wokulingisa.

Ukusuka komunye umsebenzi udlulele komunye (ukutjintjana)

Ukutjintjana sikhathi lapho abafundi basuka komunye umsebenzi baya komunye. Isibonelo, kungaphela isetjhini yetlasi yoke yeembalo ikumba yokufundela kufanele ibuthwe bese ilungiselelwa isetjhini elandelako. Isikhathi sokutjintjana kufanele sisetjenziselwe ukuzijayeza iimBalo, iLimi leKhaya namaKghono wePilo, isib. ukubala ngomlomo, amaphetheni wokuwahla izandla.

Abotitjhere abahlela bebalawule ukutjhintjana baba namatlasi athulileko nahlelekileko anabafundi abathabileko, abanebambiswano nabangakagandeleleki ngokwengcondo.

Kuyenziwa ...

Iinyeleliso zokugandelela iimbalo ngesikhathi sokudlulela komunye umsebenzi

- Nikela abafundi iiyeleliso ezaneleko ngaphambi kobana batjintje imisebenzi, isib. 'Emizuzwini emibili sizabe sesiyiqedile isetjhini.'
- Nikela imilayelo ecacileko, isib. 'Kokuthoma buthani lokho enikwenzako bese nirhema ngokuthula emnyango/nihlale nenze indulungu.'
- Sebenzisa, 'iindosi kulalela' ezinjengokubala inani lokuwahla, iingoma nemilolozelo yeenomboro, namatshwayo weenomboro (ukubala uyephasi/phezulu).

Ukuhlela nokulungiselela isifundo seembalo

Kuneemveke pheze ezima-40 ngomnyaka. Uzakudinga ukuhlela nokuzilungiselela ngokupheleleko iveke ngayinye.

Evekeni engaphambi kwesifundo

- Funda iingaba ezifaneleko *zomHlahlandlela wemiQondo* no*mHlahlandlela wemiSebenzi*. Lokhu kuhlathulula okumumethweko nemiqondo ezabe ifundiswa, nokunikela iintjhukumiso ezifanele imisebenzi nemikhulumiswano.
- Hlela begodu ulungise imisebenzi evekeni engaphambi kobana ifundiswe.
- Khombisa umnqopho wokuhlola. (Ungathola ilwazi elinengi mayelana nokuhlola ekhasini lama-99.)
- Lungisa iinsetjenziswa begodu uhlele netlasi lokufundela ieveke leyo.
- Ezinye zeensetjenziswa kufanele zibuthelelwe kuhle isikhathi sisekhona, isib. amabhokisi wamaqanda, irolo yephepha lendlwaneni, amakomitji weyogathi, amabhodlelo webisi nofana izinto zokuhlela.

Phakathi kweveke

- Qalana nokuzwisisa imiqondo yeembalo efundiswe iveke leyo.
- Funda isigaba esifaneleko kum*Hlahlandlela womQondo*.
- Qobe lilanga, hlola bona unazo zoke iinsetjenziswa ezidingekako zemisebenzi yelanga elilandelako.
- Zijayeze ngemisebenzi isikhathi sisekhona. Abotitjhere abakafaneli ukuzilungiselela lokha abantwana bahlezi balindele bona umsebenzi uthome.

The Grade R Maths programme resources

The Grade R Maths programme has four components.

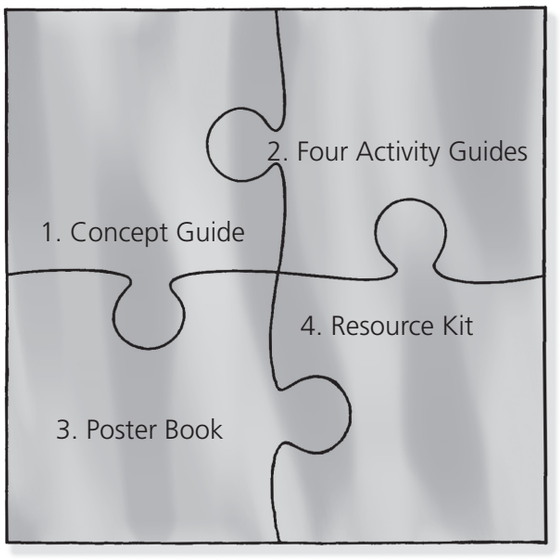


Figure 36 The components of the Grade R Maths programme

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.

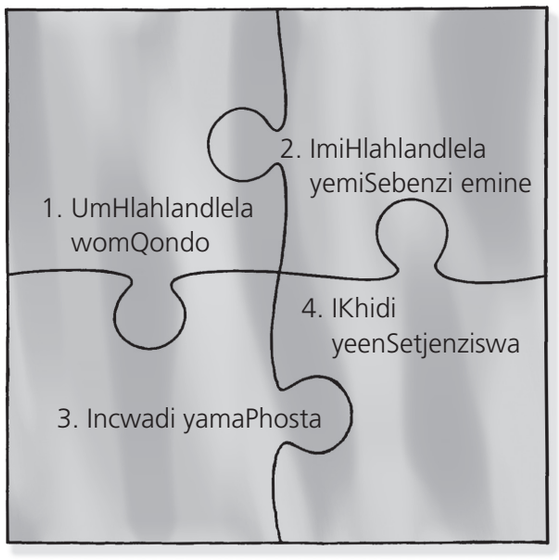
Activity Guides

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.

Iinsetjenziswa zehlelo le-*Grade R Maths*

Ihlelo le-*Grade R Maths* linezakhi ezine.



Umdwebo wama-36 Izakhi zehlelo le-*Grade R Maths*

UmHlahlandlela womQondo (incwadi le)

Incwadi le inikela:

- imithethokambiso yehlelo le-*Grade R Maths* yokufundisa abafundi abancani iimbalo
- umhlahlandlela wokobana ungayihlela njani itlasi yakho kobana ufundise bewulalelwe ngepumelelo
- iintjhukumiso zokobana iimbalo zifundiswa njani kwaGreyidi R
- iphahla lokumumethwe ziimbalo ekufanele kufundiswe ehlelweni le-*Grade R Maths*
- umhlahlandlela wokusebenzisa i-*Grade R Maths*
- idlhosari.

ImiHlahlandlela yemiSebenzi

Kune*miHlahlandlela yemiSebenzi* emine – yinye ithemu ngayinye.
UmHlahlandlela wemiSebenzi ngamunye ufaka:

- ihlathululo efitjhazana yalokho okuzakwenziwa ngethemu
- isihloko somqondo weembalo ekufanele uqalwe iveke ngayinye
- imisebenzi etjhukunyisiweko yeveke ngayinye: itlasi yoke, nemisebenzi yokuzijamela neyesiqhema esincani esihlahlwa ngutitjhere
- iinyeleliso zokuhlela nokulungiselela imisebenzi yeembalo
- ilwazimagama leembalo elifundwe ngemisebenzi iveke ngayinye
- ilwazi mayelana neensetjenziswa ezizakudingeka ngeveke
- iinsetjenziswa ezifana nemilolozelo, iingoma, iindatjana neemfuziselo.

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

INcwadi yamaPhosta

INcwadi yamaPhosta yincwadi ekulu emumethe amaphosta alitjhumi nanye. Amaphosta ngewokusetjenziswa emisebenzini yetlasi yoke nemisebenzini yesiqhema esincani esihlahlwa ngutitjhere. Asiza ukuhlanganisa iimbalo nepilo yangamalanga begodu angasetjenziswa ngeendlela ezihlukileko, isib. ukubala, ukukhulumisana ngesikhundla nemilayelo, isikhathi (ukulandelanisa izehlakalo) nokurarulula imiraro.

Ikhidi yeenSetjenziswa

Ikhidi yeenSetjenziswa imumethe imethiriyeli eqakathekileko yokufundisa nokufunda ezakusetjenziswa njalonjalo njengengcenye yemisebenzi ehlahlwa ngutitjhere. Ikhidi inikela iintlabagelo ezaneleko zesiqhema esincani sabafundi abangaba sithandathu ukuya kwababunane. Ikhidi ngayinye inalokhu okulandelako njengombana kukhonjiswe kumdwebo wesi-4 ekhasini le-13:

- imethiriyeli yokubala, isib. amadiski namalitjhana anemibala, iimbalisi zeenthelo neenlwana, namabhlogo we*Unifix* anhlanganisonengi
- idayisi elikhulu
- imitja yezakhiwo zomncamo ezilitjhumi
- amakarada weenomboro: amatshwayo weenomboro (0–10) iinomboro magama (ziro ukuya etjhumimi)
- amabhlogo wamatshwayo
- amakarada wamaqatjhazi.

Ezinye iinsetjenziswa

- imitlolo yomthethomgomo we-CAPS
- incwadi yokusebenzela ye-DBE nezinye iinsetjenziswa.

Ezinye iinsetjenziswa (ezingakanikelwa) ezidingekako zemisebenzi ye-*Grade R Maths* zifaka hlangana:

- 'ibhokisi lephitsa'
- itjhadi lokuphakama
- amakarada amakhulu wokudlala
- idayisi: elineenomboro namabumbeko
- isingamali: iinhlamvu namaphepha
- ikhalenda yomnyaka ophezulu
- iwatjhi ekulu yebodeni ye-analogo
- isikala sokudzimelela
- abonompopi/amaphaphethi
- amabhlogo wephetheni (amabhlogo wamatshwayo) namakarada
- ibhodi yamapheksi namapheksi
- imigodlana yeembhontjisi
- iimbholo ezikulu nezincani
- imincamo yokubala, ukuhlela, ukuphothela nokwenza amaphetheni (nemitja)
- amabhlogo wokwakha namabhodi
- ama-*Lego*: ubukhulu obuhlukileko namabumbeko
- iindlalisi zokwakha
- amaphazili: iinquntu ezibu-8, ezili-12, ezima-20, 36 nezima-48
- umdaka wokubumba/ihlama yokudlalisa
- iinsiki zamakuke

- 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 wamakhadibhodi wamabumbeko nobukhulu obuhlukileko
- amabhodlelo neemphathi zeplastiki ezihlukileko zokutlhadlhula nokumadanisa umthamo
- imidlalo yeembalo: i*Lotto*, i*Ludo*, iinyoka neenlere, amaphazili angenelanako, amadomino (ukufaka umbala, amabumbeko, iinomboro, ukulandelanisa, ukukhambelanisa, ukuhlukanisa nemidlalo yomkhumbulo)
- iintlabagelo zemidlalo yehlabathi namanzi
- amakomitjhi wokudlalisa wobukhulu obuhlukileko
- iintlabagelo zokukhwelela, ukudzimelela, ukujinka, nokweqayeqa
- isitolo sokudlala nezinto ekufanele zithengwe ngesingamali
- iimbalisisokuhlela ngamananeko
- amabhokisi wokubulungela: amalitha ama-40, amalitha ama-5 namalitha ama-2.

Ukuhlola kwaGreyidi R

KwaGreyidi R, ukuhlola kuyikambiso ehleliweko eragela phambili yokubuthelela, ukuhlaziya nokurhumutjha ilwazi mayelana nomfundi ngamunye. Kufanele kube **kuhlola okwakhako** nokungakahleleki. Ngamanye amagama, ilwazi elibuthelelweko mayelana neragelo phambili labafundi ngesikhathi sokuhlolwa kufanele likusize ukuhlela begodu nofana utjhugulule imisebenzi yokufunda. KwaGreyidi R, ukuhlolwa kusetjenziselwa ukuthatha iinqunto mayelana nendlela engcono yokusekela ituthuko yomntwana ngamunye.

IDLHOSARI

kuhlola okwakhako
ukuhlola okunikela ilwazi lokha ukufunda kuragela phambili bese kumeda iragelophambili labafundi

Ukuhlola kusihlanganiso phakathi kokumumethwe sifundo se-CAPS, imisebenzi yokufunda nokufundisa. Angeze wahlola lokho ongakakufundisi. Umnqopho wokuhlola ku:

- qinisekisa izinga lomfundi ngamunye
- ukuhlahla ukuhlela nokufundisa okunelwazi
- ukukhuthaza iragelophambili yokuthuthuka komfundi ngamunye
- kusiza ukutlama umbiko olisizo mayelana nepumelelo yomfundi.

Kuyenziwa ...

linyeleliso zokuhlola

- Ukuhlola akukafaneli kwenze abafundi bazizwe batshwenyekile nofana besaba.
- Imisebenzi yokuhlola kufanele ifaneleke begodu ilingane nezinga lokuzwisisa komfundi ngamunye.
- Lokha nawuqale isiqhema esincani sabafundi abathandathu ukuya kwababunane emsebenzini onqophene nokuhlahlwa ngutitjhere, abanye abafundi kufanele babemajadu basebenze babodwa benze imisebenzi yokuzijamela eenqhemeni zabo ezincani eentetjhini zokusebenzela ezihlukileko.
- Sebenza nesiqhema esisodwa sabafundi abathandathu ukuya kwababunane ilanga ngalinye nenze umsebenzi okhethekileko (kuyangenani labafundi abangetlasini). Lokha abafundi nabenza umsebenzi, qalisisa umfundi ngamunye esiqhemeni esincani bese ubuze nemibuzo ukuthola ilwazi ngokucabanga kwabo.
- Ilwazi ngalokho abafundi abakwaziko nabangakwenza (nofana 'ubufakazi') kufanele libuthelelwe ngokuragela phambili (ngamalanga) ngokukhamba kwesikhathi.
- Ilwazi mayelana nalokho okubonileko kufanele lirekhodwe ekupheleni kwelanga, ngemva 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.

Kungcono ukusebenzisa iindlela ezinengi zokuhlola abafundi. Nanzi ezinye zeembonelo:

- Bukela abafundi ngesikhathi semisebenzi yetlasi loke, yeenqhema ezincani ehlahlawa ngutitjhere nemidlalweni etjhaphulukileko yangaphakathi nangaphandle kwetlasi.
- Tlola phasi ukuzwisisa kwabafundi imiqondo enqophileko yeembalo ngesikhathi nangemuva kwemisebenzi ehlahlwa ngutitjhere.
- Imibuzo nokukhulumisana nabafundi ngamunye nofana isiqhema esincani sabafundi kungakusiza ukuzwisisa izinga nokutjhinga kokuzwisisa nokucabanga kwabafundi.
- Qalisisa ngokutjhejisisa izinto ezenziwa bafundi bese uyazirekhoda (sebenzisa iinthombe, imidwebo, izinto begodu/nofana 'ukutlola'). Lokhu kukukhombisa lokho abafundi abakuzwisisako nabaphumelele kikho.
- Ukulalela nokurekhoda iimpendulo zabafundi (okwenzekako, komlomo, okutloliweko) kukuvumela ukwenza ukuhlola okuragela phambili.

Udinga ukuhlola boke abafundi ngokuragela phambili:

- ilwazi leembalo
- ukuzwisisa iimbalo
- amakghono weembalo
- iimpendulo zokurarulula imiraro
- iindlela zokwenza izinto. (Abafundi basebenzisa iindlela zabo zokurarulula imiraro yeembalo. Lokhu kungahluka kweyakho indlela kodwana lokho akutjho bona iindlela zabo azamukeleki.)

Ukuhlola okuragela phambili kuqakatheke khulu ekusizeni abotitjhere bakwazi ukuhlela imisebenzi, ukuhlola iragelophambili yabafundi nokuhlela isekelo elingezelelweko labafundi abahlangabezana neenqabo zokufunda. (Ungathola ilwazi elingezelelweko mayelana neenqabo zokufunda ekhasini lama-58 nelama-61.)

Amathulusi wokuhlola

KwaGreyidi R umnqopho wokuhlola akusikho ukunikela amamaksi kodwana imininingwana enehlathululo ezwakalako nokukghona ukwenza ilandelela yeragelophambili yabafundi. Abotitjhere kufanele basebenzise amathulusi alandelako wokuhlola.

Incwadi yokutjhejiweko

KwaGreyidi R utitjhere kufanele aqale abafundi ngaphakathi nangaphandle kwetlasi, ngesikhathi sokudlala okutjhaphulukileko nangesikhathi semisebenzi ehlelekileko. Okutjhejiweko kuzakunikela abotitjhere ilwazi eliqakathekileko elizabasiza ekuhleleni nekukhetheni imisebenzi. Ngesikhathi sokunqophana neembalo, utitjhere uzakusebenza nesiqhema esincani esisodwa ilanga ngalinye. Utitjhere uzakuhlela umsebenzi onqophileko okhambelana nomqondo we-CAPS. Lokha abafundi bamajadu benza umsebenzi lo, utitjhere uzakutjheja umfundi ngamunye ngokuqalisisa nokubuza imibuzo ukuthola ilwazi ngalokho umfundi akucabangako nezinga lokuzwisisa.

Abafundi nasele baye emakhaya, utitjhere uzakurekhoda lokho akutholileko nokhunye okungezelelako akubonileko. Kuyasiza ukusebenzisa iincwadi izineenkomba ukuhlukanisa abafundi ngokuya ngeledere lokuthoma lamagama wabo.

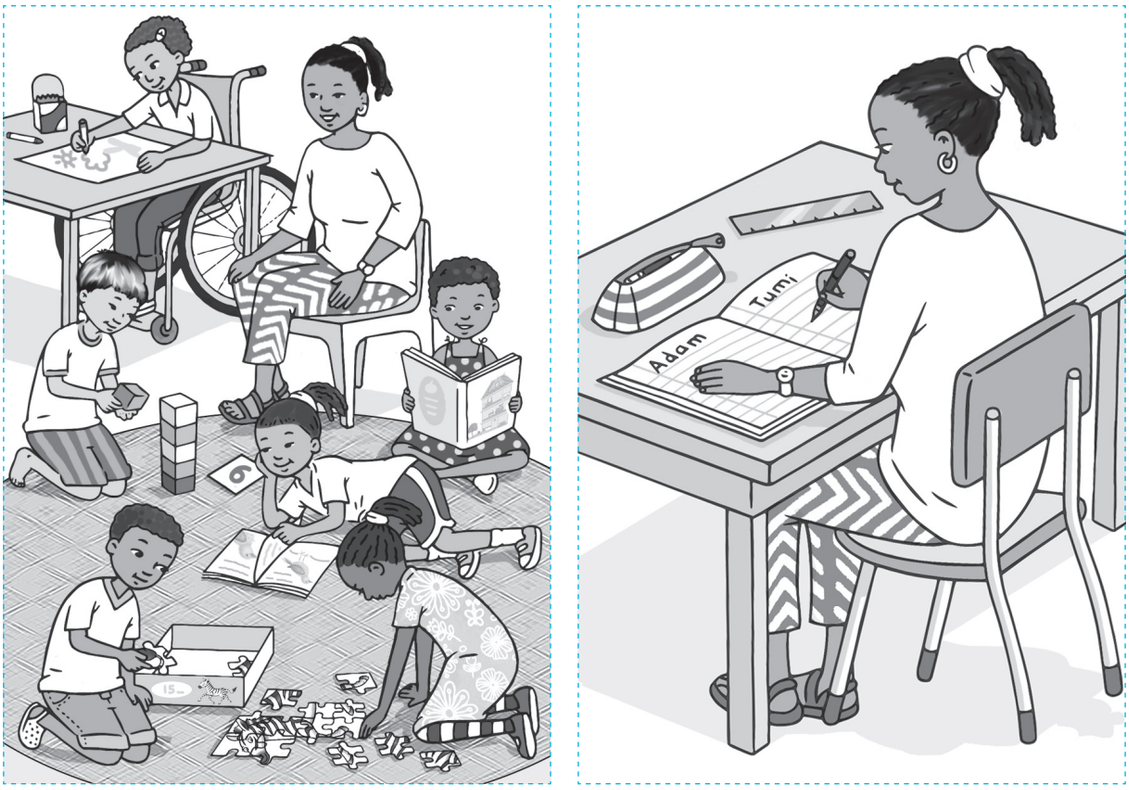


Figure 37 Observe learners then record your observations

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.

Umdwebo wama-37 Bukela abafundi bese urekhoda lokho okubonileko

Irhelo lokuhlola

Irhelo lokuhlola lirhelo lendlela yokuhlola elinikela isirhunyezo samakghono womfundi ngamunye esifundweni ngasinye. Ekupheleni kom*Hlahlandlela wemiSebenzi* ngamunye wehlelo le-*Grade R Maths* kunerhelo labo lokuhlolwa lethemu. Irhelo lokuhlola linikela isirhunyezo sokumumethweko okutjha okufundiswe ngethemu leyo. Utitjhere angasebenzisa amatshwayo ukukhombisa izinga lokuphumelela kwabafundi. Isibonelo, faka itshwayo nangabe ikghono liphunyelelwe, sebenzisa iqatjhaza ukutjengisa bonyana umfundi akakghoni ngokwaneleko, kodwana umatshwayo akhombisa bonyana usendleleni yokufikelela ikghono.

Umdwebo wama-38 unikela isibonelo sokobana okumumethweko utitjhere afanele ukukurekhoda, angakuhlela njani. Amagama wabafundi arekhodwa kukholomu yokuthoma kulandele ilanga lokuhlolwa. Itshwayo (✓ ✗ ●) kufanele lirekhodwe eduze negama lomfundi ngamunye ukukhambisana nomqondo nofana ikghono elifakwe kukholomu ngayinye. Ithulusi lokuhlola leli liyasiza nangabe utitjhere unelwazi elihle mayelana nomfundi ngamunye, ngokuya ngokutjheja kwabo okuragela phambili namanothi wabo encwadini yokurekhoda abakubonileko.

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 sokuRekhoda ukuHlola okuRagela phambili

Okuqakathe-kileko	IINOMBORO, AMA-OPHARETJHINI NOBUDLELWANA													AMAPHETHENI, AMAFANKTJHINI NE-ALJIBHRA					IMIBONO	
✓ = unekghono ● = upheze abe nekghono ✗ = ngakabi nekghono **Amagama wabafundi**	Ukubala uye phambili ukufika e-10	Ukulinganisa nokubala izinto 1–5	Ukubala uye emuva 5–1	Ukulemuka iinomboro ebujameni obujayelekileko	Ukuzwisisa iinomboro sikhundla, isib. ukurhema	Ukufanisa iqatjhaza/amakarada weenthombe 1–3	Ukufanisa amatshwayo weenomboro: 1	Ukufanisa amagama weenomboro: kunye	Ukuhlela iinomboro: 1–3	Ukuzwisisa kunye kokunye okukhambelanako	Ukuhlukanisa phakathi kokunengi nokumbalwa	Ukurarulula imiraro ngezinto eziphathekako	Ukurarulula imiraro ngokusebenzisa imino nofana iimbalisi	Ukufanisa amaphetheni ebhodulukweni	Ukulemuka 'ukubuyeleleka' kumaphetheni	Ukukopa amaphethini ngokusebenzisa iinyakazisi mzimba	Ukukopa, ukuqedelela nokwakha amaphetheni	Ukuhlathulula iphetheni yakhoakho (umthetjhwana wokubuyelela)		Ikhowudi yokugcina
Ilanga																				

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.

Amarubhrikhi

Irubhrikhi ngelinye ithulusi lokuhlola ipumelelo yabafundi. Inerhelo leenlinganiso elinehlathululo yezinga lokusebenza ekghonweni elithileko. Itlhadlhulo ngayinye ihlathulula lokho umfundi akwenzako nofana akuveze ngesikhathi somsebenzi wokuhlolwa kwaleso silinganiso. Irubhrikhi kufanele inikele Itlhadlhulo etlolwe kuhle namazinga womsebenzi ukuze lokhu kuzokumadaniswa kuhle nomsebenzi womfundi ngamunye. Irubhrikhi ivumela abotitjhere bona banqophe bangatjhuguluki ekuhloleni kwabo begodu kuhlahla ukuhlela kwabo imisebenzi njengombana lokhu kuhlathulula ukuqina neenkhala elwazini labafundi.

Umdwebo wama-39 unikela isibonelo serubhrikhi yokurarulula imiraro engezelelweko ukufika e-10 ngendlela ephathekako.

Isilinganiso	**Akakaphumeleli** [1]	**Uphumelele ngendlela ephasi** [2]	**Uphumelele ngokulingeneko** [3]	**Uphumelele ngokwanelisako** [4]	**Uphumelele kuhle khulu** [5]	**Uphumelele ngokubabaze-kako** [6]	**Uphumelele ngokudluleleko** [7]
Urarulula imiraro engezelelweko ngokwenze-kako ukufika e-10.	Akakwazi ukurarulula imiraro ngokwenzekako.	Ukghona ukurarulula imiraro ngokwenzekako, ngokusebenzisa iintlabagelo eziphathekako.	Ukghona ukurarulula imiraro ngokwenzekako, kodwana akakghoni ukuhlathulula indlela yesisombululo.	Ukghona ukurarulula imiraro ngokwenzekako begodu ukghona ukuhlathulula indlela yesisombululo lokha nakakhutha-zwako.	Ukghona ukurarulula imiraro ngokwenze-kako bese uhlathulula indlela yesisombululo ngokuzijamela.	Ukghona ukurarulula imiraro ngokwenze-kako.	Ukghona ukurarulula imiraro ngokwenze-kako begodu ukghona ukuhlathulula indlela yesisombululo begodu utjhukumisa iindlela ezihlukileko.

Umdwebo wama-39 Isibonelo serubhrikhi

Iintlhadlhuli zamazinga kurubhrikhi zingakhambelaniswa namakhowudi wesilinganiso. UmNyango wezeFundo esiSekelo (DBE) unikela ikhowudu yesilinganiso netlhadlhulo yekghono, bese uhlanganisa lokhu namaphesentheji (qala umdwebo wama-40). Ngeenhloso zokubika amakhowudu wesilinganiso neentlhadlhuli kungatjhugululelwa kumaphesentheji.

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 4.0 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.

Ikhowudi yesilinganiso	Itlhadlhulo yekghono	Iphesentheji
7	Uphumelele ngokudluleleko	80–100
6	Uphumelele kuhle khulu	70–79
5	Uphumelele ngokwanelisako	60–69
4	Uphumelele ngokwaneleko	50–59
3	Uphumelele ngokulingeneko	40–49
2	Uphumelele ngendlela ephasi	30–39
1	Akakaphumeleli	0–29

Umdwebo wama-40 Ikhowudi yokulinganisa

KwaGreyidi R umnqopho wokuhlola usekutlhadlhuleni umsebenzi kunokuhlaziya okuphikisana nephesentheji. Imibiko enikela ababelethi nabanye abotitjhere itlhadlhulo enothileko yokuziphatha nalokho abafundi abakuvezako, iqakatheke khulu ekuhlolweni komsebenzi kunamaphesende. Kungcono ukubalekela ukuhlola kokuhlaziya okuphikisako okwenza abafundi bangaphumeleli kusese nesikhathi ngokwehlelo. Ukuhlola kufanele kusetjenziselwe ukuzuza ilwazi ngezinga lobughoni labafundino ukuze kulungiswe ukuhlela nokufundisa ukwamukela nokukhuthaza umfundi ngamunye ngetlasini.

Uzakufanela ukurekhoda okutjhejileko mayelana nokuhlola nokhunye ‘ubufakazi’ kujenali, nephepheni lokutjhejisisa nofana erhelweni lokuhlola. Ngale indlela, phakathi komnyaka, isithombe esipheleleko somfundi ngamunye, nawowoke amandla nobuthakathaka babo, kuyakheka kabuthaka.

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:

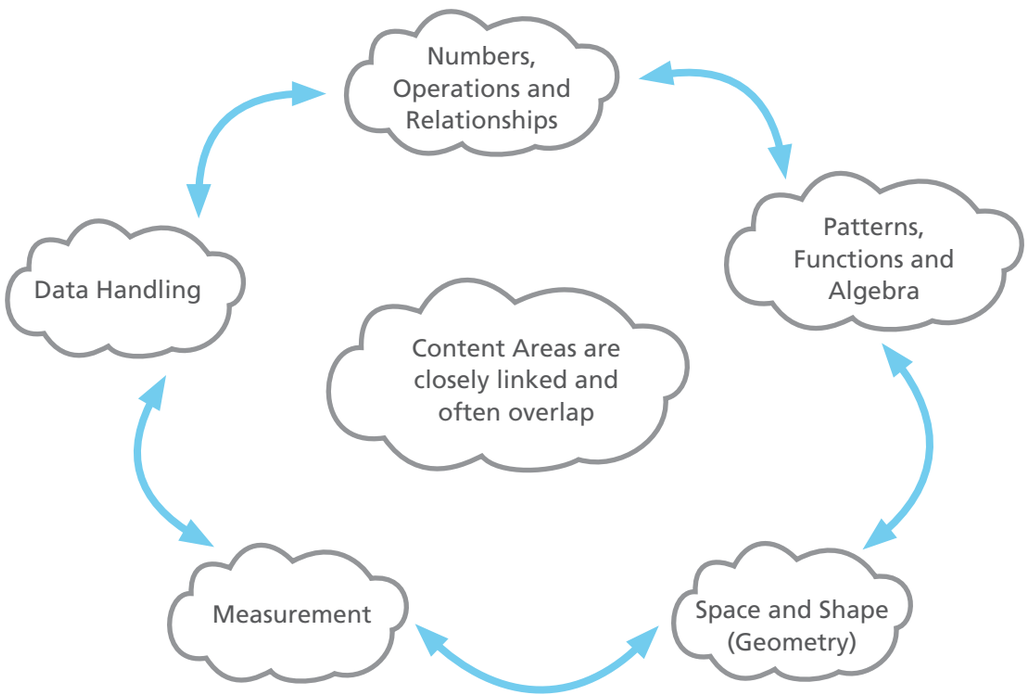


Figure 4.1 Grade R CAPS Mathematics Content Areas

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

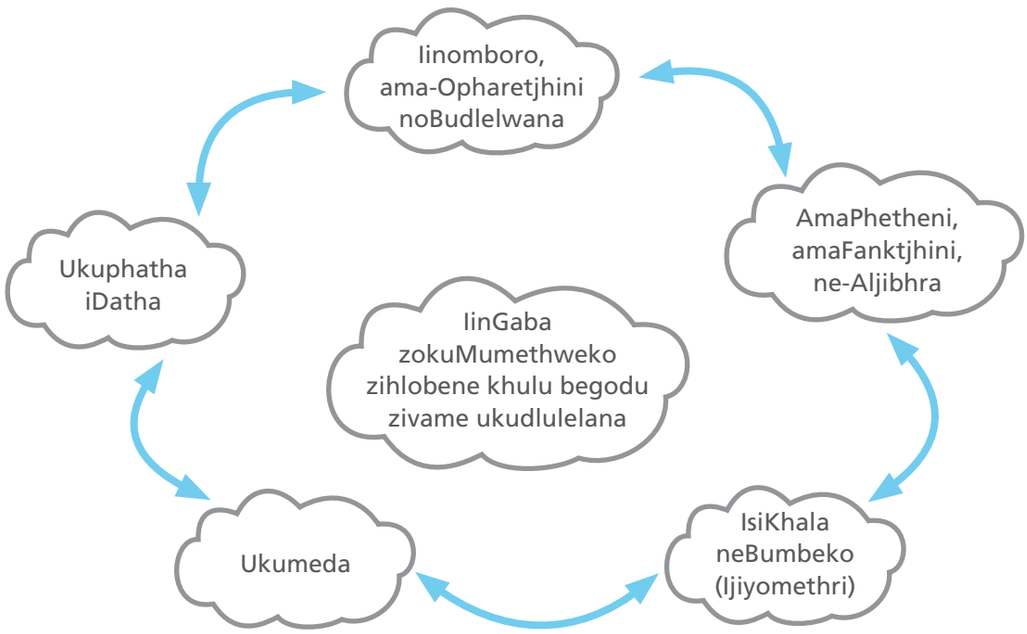
IimBalo kwaGreyidi R

Isingeniso

Isigaba lesi som*Hlahlandlela womQondo* sinikela ihlathululo efitjhazana mayelana neenGaba zokuMumethweko ze-CAPS yeemBalo zakwaGreyidi R begodu:

- sinikela imibono ephathekako engasetjenziswa ngetlasini
- sihlathulula imiqondo yeembalo nokumumethweko abotitjhere ekufanele bakuzwisise
- siveza ukuqakatheka kokuthuthukiswa kwelwazi leembalo kubafundi abancani.

Sinikela nokuhlahlelwa kweThemu 1–4 yokumumethweko kwaGreyidi R (amakhasi we-114–137). IinGaba zokuMumethweko ze-CAPS ezihlanu ngilezi:



Umdwebo wama-41 IinGaba zokuMumethweko zeemBalo ze-CAPS zakwaGreyidi R

IsiGaba sokuMumethweko ngasinye sihlukaniswe ngeenhloko.
Esihlokweni ngasinye, isigaba lesi som*Hlahlandlela womQondo* sinikela:

- ihlathululo yesihloko, efaka ukufanisa imiqondo namakghono athileko
- iintjhukumiso zokufundisa ngebhokisini 'Kuyenziwa'
- ihlathululo yamagama weembalo.

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.

Nanyana iinGaba zokuMumethweko zitjengisa imicu ethileko yokuthuthuka kweembalo, zoke zinokuhlobana okukhulu begodu ziyadlulelana ngesikhathi semisebenzi. Isibonelo, lokha abafundi nabanqophene nomsebenzi wokumeda, bazakuhlanganisa amakghono wesinye isiGaba sokuMumethweko, isibonelo, iiNomboro, ama-Opharetjhini noBudlelwana, begodu basebenzise ilwazi labo leenomboro, ukubala namakghono wokumadanisa. Abafundi banamathuba wokusebenzisa ilwazi namakghono wabo ebujameni obuhlukileko.

Kuyenziwa ...

Lokha abotitjhere nabanqophe khulukhulu kileziinGaba zokuMumethweko ngesikhathi seembalo, kufanele bakhumbule godu ukwenza okukhulu ngamanye amathuba ehlelweni langamalanga uku:

- sebenzise ilimi leembalo ukwethula nokuqinisa imiqondo
- bonisa ukusetjenziswa kwerherho elibanzi lelwazimagama elihlanganisa inomboro, ibumbeko, isikhala, isimedo nokuphatha idatha.

Nanzi iindlela ezinye ezisebenzako zokwenza lokhu:

- Nikela imethiriyeli ethengiweko, eyenziwe kabutjha neyemvelo kobana abafundi bayihlele ngamananeko, bayimadanise begodu bayilandelanise.
- Nikela iinsetjenziswa zokulingisa ukuthenga nokuthengisa, ukukala nokumeda.
- Yenza amasede weenthombe ukukhombisa ukulandelana kwezehlakalo phakathi kwemini nobujamo bezulu phakathi kweveke.
- Bukela begodu ukhulume ngamabumbeko namaphetheni aseendledlaneni, eembiyelweni neengadini zemirorho.
- Hlela imisebenzi nemidlalo lapho abafundi basebenzisa khona amakghono womzimba neweembalo ukulandela nokunikela iinkombatjhuba.
- Hlanganisa iindatjana nemidlalo yangaphandle neembalo.

Okumumethweko kweemBalo

Ihlathululo efitjhazana yokumumethweko elandelako inikela ithebula yokumumethweko kwe-*Grade R Maths* okufanele kufundiswe emnyakeni weGreyidi R. Itjengisa bona ngikuphi okumumethweko okufanele ukufundiswa ngethemu ngayinye.

- Umtlolo ohlaza-samkayi ngilokho okumumethweko kweemBalo okubuya ku-CAPS yakwaGreyidi R.
- Iinhlathululo zomtlolo nokumumethweko okutlolwe ngokunzima kufakelwe ukunabisa nokwakhela phezu kwe-CAPS.
- Iinhloko zilandelanisiwe ukukhombisa iragelophambili ethuthukako ukusuka kesinye isihloko ukuya kesinye.

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. IINOMBORO, AMA-OPHARETJHINI NOBUDLELWANA					
	ISIHLOKO	**ITHEMU 1**	**ITHEMU 2**	**ITHEMU 3**	**ITHEMU 4**
UKUBALA					
1.1	**Ukubala izinto (Linganisa begodu ubale izinto ukuthuthukisa umqondonomboro)**	**Irherho leenomboro: 1–5** Bala ngakunye: kunye-nakunye okukhambelanako: izitho zomzimba neensetjenziswa eziphathekako Thula Itjhadi Lomsizi Thula umqondo wokulinganisa (ukuqagela okuzwakalako) Amakarada wamaqatjhazi: - khomba amaqatjhazi weenomboro phezu kwamakarada, amadomino namadayisi (1–5) - khambelanisa izinto eenthombeni nemakaradeni wamaqatjhazi Bala bona (zingaki) ngokusebenzisa imino, amakarada wamaqatjhazi, izinto ezingaphakathi nangaphandle kwetlasi, iinthombe nezenzo, isib. ukubetha izandla, ukugida ngeenyawo phasi	**Irherho leenomboro: 1–7** Linganisa bese uyabala Bala ngakunye: kunye-nakunye okukhambelanako: izitho zomzimba neensetjenziswa eziphathekako Qinisa Itjhadi Lomsizi Amakarada wamaqatjhazi: - khomba isibalo samaqatjhazi phezu kwamakarada, amadomino namadayisi (1–6) - khambelanisa izinto eenthombeni nemakaradeni wamaqatjhazi Sebenzisa irherho lobujamo, izinto nezehlakalo ukubala bonyana 'kungaki'. Imino, amakarada wamaqatjhazi, itjhumi lomncamo ohlelekileko, ezinye izinto ngaphakathi nangaphandle kwetlasi, iinthombe nezenzo, isib. ukubetha izandla, ukugida ngeenyawo phasi Khombisa 'kunye okungaphezulu/kunye okungaphasi' Betha izandla ngokubuyelelwe kanengi/ ngokubuyelelwe kambadlwana	**Irherho leenomboro: 1–10** Linganisa bese uyabala Bala ngakunye: kunye-kokunye okukhambelanako; bala koke: - izitho zomzimba - iinsetjenziswa eziphathekako Qinisa Itjhadi Lomsizi Amakarada wamaqatjhazi: khumbula amabuthelelo wamaqatjhazi 1–5 nokufikela kama-3 ngaphezulu emakaradeni, amadayisi namadomino Thoma enomborweni enikelweko bese 'ubala' weqayeqa magega nomzila weenomboro, ngokusebenzisa itjhumi lomncamo ohlelekileko, amakarada weenthombe, inamba layini Khombisa 'kunye okungaphezulu/ kunye okungaphasi; ngaphezulu ngakubili/ ngaphasi ngakuthathu' Wahla kanengi/ kambadlwana: - ngimaphi amawahlo amanengi/amancani, amanengi khulu/ amancani khulu	**Irherho leenomboro: 0–10 nangaphezulu** Linganisa bese uyabala Bala ngakunye: kunye-kokunye okukhambelanako; bala koke: - izitho zomzimba - iinsetjenziswa eziphathekako Qinisa Itjhadi Lomsizi Amakarada wamaqatjhazi: khumbula amabuthelelo wamaqatjhazi 1–5 nokufikela kama-5 phezu kwamadayisi (1–6) namadomino Thoma enomborweni enikelweko bese 'ubala' weqayeqa magega nomzila weenomboro, ngokusebenzisa itjhumi lomncamo ohlelekileko, amakarada weenomboro, inamba layini Khombisa 'kunye okungaphezulu/ kunye okungaphasi; ngaphezulu ngakubili/ ngaphasi ngakuthathu' Wahla kanengi/ kambadlwana: - ngimaphi amawahlo amanengi/amancani, amanengi khulu/ amancani khulu Ihlathululo kaziro (nodi) '0'
1.2	**Ukubala uye phambili nemuva** **Ukubala ngomlomo nofana ngehloko (ngegido)**	**Ukubala uye phambili: 1–10** **Ukubala uye emuva: 5–1** Ukubala ungakanaki ngokusebenzisa imidunduzelo (imilolozelo) neengoma, ikambiso yemisebenzi yangamalanga, imisikinyeko yomzimba, njll. Ukubala ngakunye Irherho leenomboro: 1	**Ukubala uye phambili: 1–15** **Ukubala uye emuva: 7–1** Ukubala ungakanaki ngokusenenzisa imidunduzelo (imilolozelo) neengoma, ikambiso yemisebenzi yangamalanga, imisikinyeko yomzimba, njll. Ukubala ngakunye Irherho leenomboro: 1–4	**Ukubala uye phambili: 1–20** **Ukubala uye emuva: 10–1** Ukubala ungakanaki ngokusenenzisa imidunduzelo (imilolozelo) neengoma, ikambiso yemisebenzi yangamalanga, imisikinyeko yomzimba, njll. Ukubala ngakunye Irherho leenomboro: 1–7	**Ukubala uye phambili: 0–20 nangaphezulu** **Ukubala uye emuva: 10–0** Ukubala ungakanaki ngokusenenzisa imidunduzelo (imilolozelo) neengoma, ikambiso yemisebenzi yangamalanga, imisikinyeko yomzimba, njll. Ukubala: ngakunye, ngakubili Irherho leenomboro: 0–10

	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	**Amatshwayo weenomboro namagama weenomboro** **Ukulemuka nokubona amatshwayo weenomboro namabizo weenomboro**	**Amatshwayo weenomboro: 1, 2, 3** **Amabizo weenomboro: kunye, kubili, kuthathu** Jamiselela iinomboro ngokusebenzisa: - umzimba (tjengisa ngomzimba) - izinto (okuphathekako) - iinthombe, amagwalo (okupheze kuphatheke) - amakarada wamaqatjhazi (okupheze kuphatheke) Madanisa netshwayo lenomboro (okungaphathekiko) nebizo lenomboro Itshwayo lenomboro: 1 Ibizo lenomboro: kunye	**Amatshwayo weenomboro: 4 naku-5** **Amabizo weenomboro: kune, kuhlanu** Jamiselela iinomboro ngokusebenzisa: - umzimba (tjengisa ngomzimba) - izinto (okuphathekako) - iinthombe, amagwalo (okupheze kuphatheke) - amakarada wamaqatjhazi (okupheze kuphatheke) Madanisa netshwayo lenomboro (okungaphathekiko) nebizo lenomboro Qinisa: 1, 2, 3 Qinisa: kunye, kubili, kuthathu Itshwayo lenomboro: 2, 3, 4 Ibizo lenomboro: kubili, kuthathu, kune	**Amatshwayo weenomboro: 6, 7, 8** **Amabizo weenomboro: sithandathu, kukhomba, bunane** Jamiselela iinomboro ngokusebenzisa: - umzimba (tjengisa ngomzimba) - izinto (okuphathekako) - iinthombe, amagwalo (okupheze kuphatheke) - amakarada wamaqatjhazi (okupheze kuphatheke) Madanisa netshwayo lenomboro (okungaphathekiko) nebizo lenomboro Qinisa: 1, 2, 3, 4, 5 Qinisa: kunye, kubili, kuthathu, kune, kuhlanu Itshwayo lenomboro: 5, 6, 7 Ibizo lenomboro: kuhlanu, sithandathu, kukhomba	Amatshwayo weenomboro: 0 ukufika e-10 Amabizo weenomboro: ziro (nodi), bunane, lithoba, litjhumi Jamiselela iinomboro ngokusebenzisa: - umzimba (tjengisa ngomzimba) - izinto (okuphathekako) - iinthombe, amagwalo (okupheze kuphatheke) - amakarada wamaqatjhazi (okupheze kuphatheke) Madanisa netshwayo lenomboro (okungaphathekiko) nebizo lenomboro Qinisa zoke iinomboro
UKUKHUMBULA IINOMBORO					
1.4	**Ukusebenzisa iinomboro ebujameni obujayelekileko**	Sebenzisa iinomboro ebujameni obujayelekileko: - ubudala - iinomboro eziseenthombeni namakarada wamaqatjhazi - imidlalo yamakarada weenomboro - irejista yokubakhona	Sebenzisa iinomboro ebujameni obujayelekileko: - inomboro yendlu - iinomboro eziseenthombeni namakarada wamaqatjhazi - imidlalo yamakarada weenomboro - iinomboro ezisemikhangisweni/ kumaflaya/ kumakarada wamalanga wamabeletho - irejista yokubakhona	Sebenzisa iinomboro ebujameni obujayelekileko: - inomboro yendlu, iinomboro zokuthintana - ilanga lamabeletho - iinomboro eziseenthombeni namakarada wamaqatjhazi - imidlalo yamakarada weenomboro - iinomboro ezisemikhangisweni/ kumaflaya/ kumakarada wamalanga wamabeletho - irejista yokubakhona	Sebenzisa iinomboro ebujameni obujayelekileko: - inomboro yendlu, iinomboro zokuthintana - iinomboro eziseenthombeni nakumakarada wamaqatjhazi - imidlalo yamakarada weenomboro - iinomboro ezisemikhangisweni/ kumaflaya/ kumakarada wamalanga wamabeletho - irejista yokubakhona
UKULEMUKA INOMBORO (UBUDLELWANA) **Ukuhlathulula, ukumadanisa nokuhlela iinomboro**					
1.4	**Ukubona nokuhlathulula iinomboro ezizeleko**	**Irherho leenomboro: 1–3** Khomba bese uhlathulula iinomboro ezizeleko (eziphelelekо) ukufikela ku-1, 2, 3 ngokusebenzisa amabuthelelo namatshwayo (kunye ngaphezulu, kuncani ngakunye; ngaphambili, ngemva, hlangana) Irherho lenomboro: 1	**Irherho leenomboro: 1–5** Khomba bese uhlathulula iinomboro eziphelelekо 4, 5 ngokusebenzisa amabuthelelo namatshwayo Qinisa iinomboro 1–3	**Irherho leenomboro: 1–8** Khomba bese uhlathulula iinomboro eziphelelekо 6, 7, 8 ngokusebenzisa amabuthelelo namatshwayo Qinisa iinomboro 1–5 Irherho leenomboro: 1–7	**Irherho leenomboro: 0–10** Khomba bese uhlathulula iinomboro eziphelelekо 0, 9, 10 Qinisa iinomboro 1–8

	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
	Ukumadanisa iinomboro	Madanisa bonyana ngiliphi ibuthelelo lezinto kamabili anikelweko eli: - khulu, ncani - khudlwana, ncazana - khulukhulu, ncani khulu Kelikhulukhulu nokusekela kelikhulukhulu ukuya kelincani khulu Okunengi nokumbalwa, isib. ukuwahla ungakanaki, isikhathi sombambandlala, ukwabelana iinsetjenziswa	Madanisa bonyana ngiliphi ibuthelelo lezinto kamabili anikelweko eli: - khulu, ncani - khudlwana, ncazana - khulukhulu, ncani khulu Ngaphezulu kuna-, ncani kuna-, kulingana na- Nengi nambadlwana, isib. ukubetha izandla okungakahleleki	Ngaphezulu kuna-, ncani kuna-, kulingana na- Nengi nambadlwana Buza imizuzo: 'Ngiliphi egade lidlulele/lilincani khulu?'	Ngaphezulu kuna-, ncani kuna-, kulingana na- Nengi nambadlwana Buza imizuzo: 'Ngiliphi egade lidlulele/lilincani khulu?'
			Yenza iinqhema (amasede) zezinto ezilinganako, isib. abantwana nofana izinto ezingetlasini	Sebenzisa izinto ukwenza iinqhema (amasede) ezilinganako	Sebenzisa izinto ukwenza iinqhema (amasede) ezilinganako
		Ukuhlukanisa nokwakha amabuthelelo wangaku-2 nangaku-3, isib. ku-3 kungaba: ku-1 naku-1 naku-1 NOFANA ku-2 naku-1 NOFANA ku-1 naku-2 NOFANA ilize (ziro) naku-3	Ukuhlukanisa nokwakha amabuthelelo wangaku-4 naku-5, isib. ku-4 kungaba: ku-1 naku-1 naku-1 naku-1 naku-1 NOFANA ku-3 naku-1 NOFANA ku-2 naku-2 NOFANA ilize (ziro) naku-4	Sebenzisa izinto eziphathekako ukuphenya nokutlama amano wokuhlukanisa nokwakha amabuthelelo afika kabu-8	Sebenzisa izinto eziphathekako ukuphenya nokutlama amano wokuhlukanisa nokwakha amabuthelelo afika e-10
	Ukuhlela (landelanisa) iinomboro	Hlela amabuthelelo anikelweko anga-phezulu kwamabili ukusukela kelincani khulu ukuya kelikhulu-khulu nokusekela kelikhulukhulu ukuya kelincani khulu	Hlela amabuthelelo anikelweko anga-phezulu kwamabili ukusukela kelincani khulu ukuya kelikhulu-khulu nokusekela kelikhulukhulu ukuya kelincani khulu	Hlela amabuthelelo wezinto ukusuka kamancani khulu ukuya kamakhulukhulu nokusuka kamakhulukhlu ukuya kamancani khulu	Hlela amabuthelelo wezinto ukusuka kamancani khulu ukuya kamakhulukhulu nokusuka kamakhulukhlu ukuya kamancani khulu Khambelanisa amakarada wamatshwayo weenomboro namabuthelelo
		Ukuhlela iinomboro ungakanaki 'Khuyini okulandelako, ngemuva, hlangana': - inambalayini - umzila weenomboro nofana ilere - amakarada weenomboro	Beka amatshwayo weenomboro ngerhemo elifaneleko lokubala 'Khuyini okulandelako, ngemva, hlangana': - inambalayini - umzila weenomboro nofana ilere - amakarada weenomboro	Beka amatshwayo weenomboro ngerhemo elifaneleko lokubala 'Khuyini okulandelako, ngemva, hlangana': - inambalayini - umzila weenomboro nofana ilere - amakarada weenomboro	Ngokungakahleleki: Irherho leenomboro: 0–10 Beka amatshwayo wenomboro ngerhemo elifaneleko lokubala 'Khuyini okulandelako, ngemuva, hlangana': - inambalayini - umzila weenomboro nofana ilere - amakarada weenomboro

	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
	Iinomboro sikhundla	Thuthukisa ngokungakanakeki ilemuko kokuthoma, kwesibili, kwesithathu … kokugcina, okulandelako Thula ngesikhathi: - isikhathi sombambandlala nekambiso yokuya endlwaneni ngamalanga - ebujameni bangamalanga, eemfundweni zoke, ukurhema, isib. 'Ngubani obekangewokuthoma/ wokugcina/wesibili ukungena ngomnyango'	Thuthukisa ngokungakanakeki ilemuko kokuthoma, kwesibili, kwesithathu, kwesine, kokugcina, okulandelako Ebujameni bangamalanga: ikambiso yemisebenzi yangamalanga – ukurhema, isikhathi sombambandlala, ikambiso yokuya endlwaneni ngamalanga Hlanganisa: amaKghono wePilo, ukuthuthukiswa komzimba nemisebenzi yobukghwari (lapho kufanele khona) imisebenzi yangaphandle, isib. ukureyisisa Rhemisa iinomboro nofana okuphathekako bese kukhulunywa ngesikhundla	Thuthukisa ngokungakanakeki ilemuko kokuthoma, kwesibili, kwesithathu, kwesine, kwesihlanu, kwesithandathu, okulandelako Qinisa iinomboro sikhundla emisebenzini yangamalanga bese uhlanganisa nemisebenzi yaphakathi kwemini neyangaphandle, isib. ukureyisisa Beka abafundi nezinto ngokubarhemisa bese ukhomba inomboro sikhundla ngelayelo elilodwa, isib. ngesinceleni ukuya esidleni	Thuthukisa ngokungakanakeki ilemuko kokuthoma, kwesibili, kwesithathu, kwesine, kwesihlanu, kwesithandathu, okulandelako Qinisa iinomboro sikhundla emisebenzini yangamalanga bese uhlanganisa nemisebenzi yaphakathi kwemini neyangaphandle, isib. ukureyisisa Beka abafundi nezinto ngokubarhemisa bese ukhomba inomboro sikhundla kumalayelo womabili, isib. ngesinceleni ukuya esidleni nangesidleni ukuya ngesinceleni
1.5	**Ubukhulu bedijithi**	Akukho okumumethweko kwe-CAPS kwaGreyidi R (nqophana nomqondo weenomboro 1–9 noziro, 1.1 na-1.4)			
URARULULA IMIRARO NGOKOBUJAMO					
1.6	**Amathekiniki (amano) wokurarulula imiraro**	**Irherho leenomboro: 1–3** Rarulula imiraro ebujameni bangamalanga Sebenzisa amano alandelako: - iinsetjenziswa eziphathekako, isib. iimbalisi - ukubala koke ngakunye	**Irherho leenomboro: 1–5** Rarulula imiraro ebujameni bangamalanga Sebenzisa amano alandelako: - iinsetjenziswa eziphathekako, isib. iimbalisi - ilere ephathekako yeenomboro - imincamo elitjhumi ehlelekileko - ukubala koke ngakunye Irherho leenomboro: 1–4	**Irherho leenomboro: 1–8** Rarulula imiraro ebujameni bangamalanga Sebenzisa amano alandelako: - iinsetjenziswa eziphathekako, isib. iimbalisi - ilere ephathekako yeenomboro - imincamo elitjhumi ehlelekileko - ukubala koke ngakunye - ukubala uqhubeke Irherho leenomboro: 1–7	**Irherho leenomboro: 0–10** Rarulula imiraro ebujameni bangamalanga Sebenzisa amano alandelako: - iinsetjenziswa eziphathekako, isib. iimbalisi - ilere ephathekako yeenomboro - imincamo elitjhumi ehlelekileko - ukubala koke ngakunye - ukubala uqhubeke Irherho leenomboro: 0–10
1.7	**Ukuhlanganisa nokukhupha** Rarulula imiraro yamagama ngomlomo (iindatjana zeembalo) begodu bahlathulule iinsombululo zabo zemiraro ebandakanya ukuhlanganisa nokukhupha ngeempendulo ezifika e-10	Phenya ngokuhlanganisa nokukhupha emisebenzini yangamalanga ngokusebenzisa okuphathekako neendatjana Rarulula ngomlomo imiraro ebandakanya iinomboro 1–3 ngokusebenzisa iimbalisi, iindatjana, neenthombe	Rarulula ngomlomo imiraro ebandakanya iinomboro 1–5 ngokusebenzisa izinto, iindatjana, neenthombe Sebenzisa iimbalisi bese urarulula ngomlomo imiraro ebandakanya iinomboro 2, 3 naku-4 Qinisa ukurarululwa kwemiraro ebandakanya iinomboro 1 ukuya ku-4	Rarulula ngomlomo imiraro ebandakanya iinomboro 1–8 ngokusebenzisa izinto, iindatjana, iinthombe Thula itheminoloji (hlanganisa na-, susa/khupha) Sebenzisa iimbalisi bese urarulula ngomlomo imiraro ebandakanya iinomboro 5, 6 naku-7 Qinisa ukurarululwa kwemiraro ebandakanya iinomboro 1 ukuya ku-7	Rarulula ngomlomo imiraro ebandakanya iinomboro 0–10 ngokusebenzisa izinto, iindatjana neenthombe Sebenzisa itheminoloji (ukuhlanganisa nokukhupha) Sebenzisa iimbalisi bese urarulula ngomlomo imiraro ebandakanya iinomboro 8, 9 ne-10 Qinisa ukurarululwa kwemiraro ebandakanya iinomboro 1 ukuya ku-10
1.8	**Ukuhlanganisa okubuyelelako okudosela ekuphindaphindeni**	Akukho okumumethweko kwe-CAPS kweGreyidi 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	Ukubuthelela nokwabelana okurholela ekuhlukaniseni (ukwaba ngokulinganako nokubuthelela iinomboro ezipheleleko ukufika e-10 neempendulo ezifaka iinsalela)	Thula umqondo wokwaba ngokulinganako: - ngesikhathi semisebenzi yangamalanga - iindatjana neenthombe - ukwabelana kunye kokunye	Ukwabelana ngokulinganako: - ngesikhathi semisebenzi yangamalanga - iindatjana neenthombe - ukwabelana kunye kokunye	Ukwabelana ngokulinganako: - ukuhlela ngeenqhema - isiquntu - ukusebenzisa izinto eziphathekako	Ukwabelana ngokulinganako: - ukuhlela ngeenqhema - isiquntu nokubuyelela - ukusebenzisa izinto eziphathekako
1.10	Ukwaba okurholela kumafraktjhini	Akukho okumumethweko kwe-CAPS kwaGreyidi R (nqophana nokurarulula imiraro eneensalela ezingabelwana, 1.9)			
1.11	Imali		Ukuthuthukisa ilemuko lemali yesimbi yeSewula Afrika: 10c, 20c, 50c, R1, R2, R5 Khomba imibala neenlwana Khomba ukufana nomehluko Hlela imali yokudlala ngokuya ngombala nobukhulu Nikela ngemali yokudlala ekhoneni lendlu	Ukuthuthukisa ilemuko lemali yesimbi yeSewula Afrika yephepha: R10, R20, R50, R100, R200 Khomba ukufana nomehluko Hlela imali yokudlala ngokuya ngombala nobukhulu Nikela ngemali yokudla ekhoneni lendlu	Nikela ngemali yokudlalisa ekhoneni lendlu
UKUBALA OKUNGANABUJAMO: AMA-OPHARETJHINI					
1.12	Amathekhiniki	Akukho okumumethweko kwe-CAPS kwaGreyidi R (nqophana nokubala zoke nokubalela phezu, 1.1 naku-1.6)			
1.13	Ukuhlanganisa nokukhupha: ukurarulula imiraro yokuhlanganisa nokukhupha okutjhiwo ngomlomo		Irherho leenomboro: 1–5 Rarulula ngomlomo imiraro yokuhlanganisa nokukhupha ngeensombululo ukufika ku-5 Irherho leenomboro: 1–4	Irherho leenomboro: 1–8 Rarulula ngomlomo imiraro yokuhlanganisa nokukhupha ngeensombululo ukufika ku-8 Irherho leenomboro: 1–7	Irherho leenomboro: 1–10 Rarulula ngomlomo imiraro yokuhlanganisa nokukhupha ngeensombululo ukufika ku-10 Irherho leenomboro: 1–10
1.14	Ukubala okubuyelelako okurholela ekuphindaphindeni	Akukho okumumethweko kwe-CAPS kweGreyidi R			
1.15	Ukuhlukanisa	Akukho okumumethweko kwe-CAPS kweGreyidi R (nqophana nokwabelana ngokulinganako, 1.9)			
1.16	Iimbalo zehloko	Thoma itlasi ngayinye nomsebenzi ohlahlwa ngutitjhere ngeembalo zehloko bese nenza iimbalo zehloko lapho amathuba wokufunda okungakahleleki avuka khona Ukubala izinto zangamalanga Ukubala uye phambili nemuva Ukubala iinomborosikhundla Ukulinganisa Ukurarulula imiraro Imidlalo yomkhumbulo			
1.17	Amacezu	Akukho okumumethweko kwe-CAPS kwaGreyidi R (nqophana nokwabelana ngokulinganako, 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. AMAPHETHENI, AMAFANKTJHINI NE-ALJIBHRA					
	ISIHLOKO	**ITHEMU 1**	**ITHEMU 2**	**ITHEMU 3**	**ITHEMU 4**
2.1 AMAPHETHENI WEJIYOMETHRI					
Ukubona amaphetheni		Bona amaphetheni ebhodulukweni langamalanga elijayelekileko, isib. izambatho, izinto nebhoduluko Khumbula 'ukubuyelela' kumaphetheni			
Kopa begodu ungezelele amaphetheni alula abuyelelako ngokusebenzisa izinto eziphathekako nemigwalo		Kopa begodu uqedelele amaphetheni Kopa amaphetheni usebenzisa ukusikinyeka komzimba Kopa, qedelela begodu utlame wakho amaphetheni Thula ilimi: Khuyini okulandelako? Khuyini okuza ngaphambili? Kufana njani? Kuhluke njani?	Kopa begodu ungezelele amaphetheni ngeenthombe Kopa iphetheni onikelwe yona ngokusebenzisa imali yesimbi (ihlamvu) Hlathulula ukubuyelela kumaphetheni Kopa iphetheni enikelweko ngokusebenzisa izinto ze-3-D eziphathekako namabumbeko we-2-D, amakhowuni, imincamo, njll.	Kopa begodu ungezelel iphetheni ngeenthombe Kopa amaphetheni avundlileko najame poro ngokusebenzisa izinto eziphathekako Ngezelela amaphetheni alula abuyelelako	Kopa bese ungezelela amaphetheni wakho neenthombe Kopa iphetheni yetjhada (itjhada/okuzwakalako) iphetheni Sebenzisa izinto eziphathekako bese udweba amaphetheni
Yakha amaphetheni wakho abuyelelako		Yakha iphetheni yakho ngokusebenzisa izinto eziphathekako, amagwalo, amaphetheni wejiyomathri Hlathulula iphetheni yakho (ukubuyelela imithetjhwana): - umbala owodwa, amabumbeko amabili - ibumbeko elilodwa, imibala emibili	Yakha iphetheni yakho ngeenthombe Hlathulula iphetheni yakho (ukubuyelela imithetjhwana): - imibala emibili, amabumbeko amabili - amabumbeko, imibala emibili	Yakha iphetheni yakho ngeenthombe Hlathulula iphetheni yakho (ukubuyelela imithetjhwana): - imibala emithathu/ emine, amabumbeko ahlukileko, njll.	Yakha iphetheni yakho Hlathulula iphetheni yakho (ukubuyelela imithetjhwana): - imibala emithathu/ emine, amabumbeko ahlukileko, njll.
2.1	**Amaphetheni weenomboro**	Akukho okumumethweko kwe-CAPS kweGreyidi R (nqophana nokubala: ukurhemisa iinomboro ngakunye nangakubili, 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. ISIKHALA NEBUMBEKO (IJIYOMETHRI)					
	ISIHLOKO	**ITHEMU 1**	**ITHEMU 2**	**ITHEMU 3**	**ITHEMU 4**
3.1	**Isikhundla, ubujamo nokubukela** Hlathulula into ye-3-D mayelana nobujamo bayo kenye (isib. ngaphambili nangemuva)	Ubudlelwana bendawo Isikhundla somntwana mayelana nebhoduluko lakhe Isikhundla sezinto ezimbili nofana ezingaphezulu mayelana nomfundi: - ngaphambili kwa-nangemuva kwa- - phezulu, ngaphezulu, ngaphasi, ngenzasi - ngaphakathi nangaphandle, ngaphakathi kwe-nangaphandle kwe- - phezulu naphasi - eduze kwe-naphakathi kwe-	Ubudlelwana bendawo Isikhundla somntwana mayelana nebhoduluko lakhe Isikhundla sezinto ezimbili nofana ngaphezulu mayelana nomfundi: - phezulu nangaphasi - phezu kwe-nangaphasi kwe- - ngaphambi kwe-nangemuva kwe-	Ubudlelwana bendawo Isikhundla sezinto ezimbili nofana ngaphezulu mayelana nenye kwenye begodu nenye kwezinye: - ngaphambili kwa-nangemuva kwa- - phezulu, ngaphezulu, ngaphasi, ngenzasi - eduze kwe- - hlangana - ngesinceleni nangesidleni - umsebenzi wephegibhodi Hlathulula izinto ngokombono ohlukileko, isib. indlwana kanompopi ukusuka ngapbambili, ngemuva, ngehlangothini ngokuya ngokobana ujame kuphi	Ubudlelwana bendawo Isikhundla sezinto ezimbili nofana ngaphezulu mayelana nenye kwenye begodu nenye kwezinye: - ngaphambili kwa-nangemva - ngaphezulu kwa, ngaphasi, phezulu, ngenzasi - ngaphezulu, ngaphasi - eduze kwe-, phakathi nahlangana - ngesinceleni nangesidleni Ubujamo bezinto ezimbilinofana ngaphezulu nokuhlobana kwenye kenye
	Landela iinkombatjhuba (wedwa begodu/ nofana njengelunga lesiqhema) ukusuka/ ukuzibeka esikhaleni esiqakathekileko (ngokunqophileko)	Iinkombatjhuba – phambili nemuva Phezulu naphasi Imidlalo efana nokulandela umzila wesitimela Umdlalosiqabo – ukulandela iinkomba Isifundo sukuzithabulula nomvumo	Iinkombatjhuba – phambili nemuva Umdlalosiqabo – ukulandela ilayelo Imisebenzi yangaphandle Ngokungakahleleki: isincele nesidla	Phambili nemuva Itjhadi yabotjhobi Isincele nesidla	Phambili nemuva Phezulu naphasi Ukuya phezulu nokuya phasi Isincele nesidla Livela kuphi itjhada?
3.2	**Izinto ze-3D**				
	Ukukhumbula, ukubona nokutjho izinto ezinamahlangothi amathathu ngetlasini	Thula bese uyahlola Madanisa begodu uhlele: - iimbholo - amabhokisi anobuso (amahlangothi) obuziinkwere nabunguncamane			

	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
	Ukuhlathulula, ukuhlela ngamananeko nokumadanisa izinto ezima-3-D	Thula itjhadi lokubutha (hlela iindlalisi) Hlela izinto ezima-3-D ngokuya ngokwe- (i-athributhi eyodwa): - ubukhulu (khulu/ncani) - umbala - ibumbeko Khomba bese uhlola izinto ezima-3-D: ibumbeko elispara, rondo, isikwere, nofana elincamane Izinto ezigedekako Izinto ezitjhelelako	Hlela izinto ezima-3-D ukuya ngokufana nangomehluko: - ubukhulu (khulu/ncani) - umbala - ibumbeko	Hlela izinto ezima-3-D ukuya ngokufana nangomehluko (ama-athributhi amabili): - ubukhulu (khulu/ncani) - umbala - ibumbeko Hlola izinto ze-3-D: spara, rondo, isikwere nofana ibumbeko elincamane	Hlela izinto ezima-3-D ukuya (ama-athributhi amabili nofana ngaphezulu): - ubukhulu (khulu/ncani) - umbala - ibumbeko Hlola izinto ze-3-D: spara, rondo, isikwere nofana ibumbeko elincamane
	Yakha izinto ze-3-D	**Okuragela phambili** Nikela amabhlogo wokwakha nemetheriyeli yokwakha ngesikhathi sokudlala okutjhaphulukileko ngaphakathi ngamalanga Hlola amabhlogo wokwakha	**Okuragela phambili** Nikela amabhlogo wokwakha nemetheriyali yokwakha ngesikhathi sokudlala ngokutjhaphuluka ngaphakathi ngamalanga Hlola amabhlogo wokwakha Sebenzisa amabhlogo wokwakha nemetheriyeli eyenziwe kabutjha ukwakha umakhiwo wakho	**Okuragela phambili** Nikela amabhlogo wokwakha nemetheriyali yokwakha ngesikhathi sokudlala ngokutjhaphuluka ngaphakathi ngamalanga Yakha wakho umakhiwo ngokukopa esibonelweni esinikelweko somakhiwo Kopa umakhiwo ofanako kumtlamo nofana ekaradeni lesithombe	**Okuragela phambili** Nikela amabhlogo wokwakha nemetheriyali yokwakha ngesikhathi sokudlala ngokutjhaphuluka ngaphakathi ngamalanga Kuragela phambili ngesikhathi sokudlala ngokutjhaphuluka ngaphakathi
3.3	**Amabumbeko we-2-D**				
	Ukukhumbula, ukubona nokutjho amabumbeko amahlangothi amabili ngetlasini	Thula itjhadi lokuButha/loMsizi Khumbula itswayo lomfundi nebizo Thula amabumbeko wama-2-D: indulungu, isikwere, uncantathu, uncamane Amaphazili (iinquntu ezisi-6 ubuncani)	Khumbula itshwayo lomfundi nebizo Khumbula, khomba bese utjho amabumbeko we-2-D: indulungu, isikwere noncantathu Amaphazili (iinquntu ezili-12 ubuncani)	Khumbula begodu utjengise ibizo lomfundi Qinisa: indulungu, isikwere, uncantathu Madanisa aboncamane neenkwere Amaphazili (iinquntu ezili-18 ubuncani)	Tjengisa ibizo lomfundi Qinisa: uncamane Khumbula, khomba bese utjho amabumbeko we-2-D: indulungu, isikwere uncantathu, uncamane Amaphazili (iinquntu ezima-24 ubuncani)
	Hlathulula, hlela, begodu umadanise amabumbeko we-2-D	Hlela amabumbeko we-2-D ngokuya: - umbala - ibumbeko Indulungu: umuda ogobekileko Isikwere: amahlangothi amane, imida enqophileko, amakhona Uncanthathu: amahlangothi amathathu, imida enqophileko, amakhona	Hlela amabumbeko we-2-D ngokuya ngokufana nomehluko: - ibumbeko Qinisa uncantathu Qinisa indulungu nesikwere	Hlela amabumbeko we-2-D ngokuya: - umbala - ibumbeko (umuda ogobekileko, imida emithathu nofana mine) Qinisa indulungu, isikwere noncantathu	Hlela amabumbeko we-2-D ngokuya: - ubukhulu - umbala - ibumbeko

	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 isithombe kwesinye isithombe **Amabumbeko wejiyomethri**	Thula imisebenzi yokubona isithombe kwesinye isithombe (khomba izinto namabumbeko – 'Ngiyabona ngelihlo lami elincani') Thula indulungu, isikwere noncantathu	Qinisa ukubona isithombe kwesinye isithombe ngokuhlela, ukukhambelanisa nokubuthelela imisebenzi ngeenqhema nokubutha kwangamalanga Qinisa uncantathu Ukubulungeka kwebumbeko (ubujamo bakancantathu obungatjhugulukiko)	Qinisa ukubona isithombe kwesinye isithombe ngokuhlela, ukukhambelanisa nokubuthelela imisebenzi ngeenqhema nokubutha kwangamalanga Qinisa isikwere Ukubulungwa kobujamo (ubujamo bamabumbeko obungatjhugulukiko afundiweko bakube nje)	Qinisa ukubona isithombe kwesinye isithombe ngokuhlela ngamananeko, ukukhambelanisa nokubuthelela imisebenzi ngeenqhema nokubutha kwangamalanga Qinisa indulungu, uncantathu, isikwere noncamane Ukubulungwa kobujamo (ubujamo bamabumbeko obungatjhugulukiko afundiweko bekube nje)
3.4	**Isimethri** **(Ukubona umuda wesimethri kuye, nebhodulukweni lakhe)**	Lemuka izitho zomzimba Ilemuko lomzimba ngokuya ngokobana: - umzimba womuntu unamahlangothi amabili - ihlangothi elilodwa, ihlangothi elinye, lidosela ngesinceleni nangesidleni - ngaphezulu/ngaphasi - ngemuva/ngaphambili - ukuvundla umuda ophakathi (imisebenzi yokuthabulula umzimba) Imisebenzi ekufanele yenziwe ngesikhathi sokuthuthukiswa komzimba – ukusebenzisa imilolozelo neengoma, ngesikhathi sobuKghwari bokuTlama	Umuda oqunta phakathi – ukwenza izenzo Ukusebenzisa umuda obanda phakathi ngesikhathi samaKghono wePilo (ukuthuthukiswa komzimba) – ukusebenzisa imilolozelo neengoma nangesikhathi sobuKghwari bokuTlama	Umuda oqunta phakathi (imisebenzi yebhodini) Ukusebenzisa umuda obanda phakathi ngesikhathi samaKghono wePilo (ukuthuthukiswa komzimba)	Ukuthuthukiswa kwelemuko lokobana kunesimethri ezintweni Ukusebenzisa umuda obanda phakathi ngesikhathi samaKghono wePilo (ukuthuthukiswa komzimba)

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. UKUMEDA					
	ISIHLOKO	**ITHEMU 1**	**ITHEMU 2**	**ITHEMU 3**	**ITHEMU 4**
4.1	**Isikhathi**	Thula imiqondo yomibili emini/ ebusuku, umkhanyo/ umnyama, ekuseni/ ngemva kwamadina/ ubusuku (ubusuku banamhlanjesi) Thula **ihlelo langamalanga** neenthombe ezikhangisiweko ukusuka ngesinceleni ukuya ngesidleni nesikhombiso esisasungulo ukutjengisa imisebenzi lokha ilanga naliragela phambili Thula **itjhadi lobujamo bezulu** (ngamalanga) elinebizo lemalanga, ilanga nenyanga nelinengoma nomlolozelo, amafletjhikarada akhangisa amalebula namatshwayo neenthombe phezu kwekhalenda ejamele iveke **Amalanga weveke** (ngamalanga) ukulandelana okufundwe ngengoma nofana umlolozelo Tjengisa amalanga wamabeletho, ukuphuma, amalanga akhethekileko, amaholideyi waphakathi kweveke Landelanisa iinyanga zomnyaka ngengoma Thuthukisa ilemuko lomqondo wesikhathi Thula **itjhadi leenkhathi zomnyaka** ihlobo, isiruthwana, ubusika, isilimela Thula **itjhadi lamalanga wamabeletho** neminyaka yakho, ilanga, lamabeletho (ilanga nenyanga) Thuthukisa ilemuko lokobana nasifundako sisuka kuphi siye kuphi	**Ihlelo langamalanga** (okuragako) Qinisa ukulandelanisa izehlakalo ezibuyelelako ngelanga elilodwa **Itjhadi lobujamo bezulu** (ngamalanga) nelanga, ilanga nenyanga yengoma nomlolozelo, amafletjhikarada namalebula wokukhangisa, amatshwayo neenthombe phezu kwekhalenda yaqobe yiveke **Amalanga weveke** (okuragako) kubuyelelwa ingoma nofana umlolozelo ngamalanga Kuthuthukiswa ilemuko lalokho abafundi abakwenzako ukusukela ngesikhathi avuka ngaso ukufikela lokha naya esikolweni Kuthuthukiswa ilemuko lalokho okwenzeka phakathi kwesikhathi sesidlo sebusuku nesikhathi sokulala **Itjhadi lamalanga wamabeletho** liragela phambili lokha kulilanga lomntwana lamabeletho **Itjhadi leenkhathi zomnyaka** ihlobo, isiruthwana, ubusika, isilimela	**Ihlelo langamalanga** (okuragako) Qinisa ukulandelanisa izehlakalo ezibuyelelako ngelanga elilodwa **Itjhadi lobujamo bezulu** (ngamalanga) nelanga, ilanga nenyanga yengoma nomlolozelo, amafletjhikarada namalebula wokukhangisa, amatshwayo neenthombe phezu kwekhalenda yaqobe yiveke **Amalanga weveke** (okuragako) **Itjhadi leenkhathi zomnyaka** (okuragako) **Itjhadi lamalanga wamabeletho** liragela phambili lokha umntwana nakanelanga lamabeletho	**Ihlelo langamalanga** (okuragako) Qinisa ukulandelanisa izehlakalo ezibuyelelako ngelanga elilodwa **Itjhadi lobujamo bezulu** (ngamalanga) nelanga, ilanga nenyanga yengoma nomlolozelo, amafletjhikarada namalebula wokukhangisa, amatshwayo neenthombe phezu kwekhalenda yaqobe yiveke **Amalanga weveke** (okuragako) **Itjhadi leenkhathi zomnyaka** (okuragako) **Itjhadi lamalanga wamabeletho** liragela phambili lokha umntwana nakanelanga lamabeletho

	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** Madanisa ngokuphathekako begodu uhlele izinto ngokusebenzisa ilwazimagama elifaneleko ukuhlathulula ubude	Ngesikhathi semisebenzi yangamalanga thula umqondo wobude: ubude nobufitjhani, ubudanyana nobude khulu Thula itjhadi lobude Abafundi bangamadanisa ubude babo nento ethileko ngetlasini, isib. ikhabethe: - meda ngezandla (ngokuqala nangokungakahleleki) - meda ngomtlhala weenyawo/ ngeenyawo	Ngesikhathi semisebenzi yangamalanga hlola umqondo wobude: ubude nobufitjhani, ubudanyana nobude khulu Madanisa begodu uhlele izinto ezimbili nofana ezingaphezulu ngokuzibeka emaduzelana Sebenzisa ilwazimagama elifaneleko ukuhlathulula ubude: -ede khulu nefitjhani khulu Itjhadi lokumadanisa ukuphakama: abafundi bathola bona bakhulile ukusukela ngethemu edlulileko	Linganisa ubude bezinto ezihlukileko Linganisa bese umeda ubude bezinto ezihlukileko ngokusebenzisa iinyawo, izandla, isigojwana Itjhadi lokumadanisa ukuphakama: abafundi bathola bona bakhulile ukusukela ngethemu edlulileko	Meda ukuphakama kwabafundi ngetheyiphu yokumeda Itjhadi lokumadanisa ukuphakama: abafundi bathola bona bakhulile ukusukela ngethemu edlulileko
4.3	**Ubungako/Ubudisi** Ukusebenza ngokumadanisa okuphathekako nokurhemisa izinto ngokusebenzisa ilwazimagama elifaneleko	Ukufunda okungakahleleki ngetlasini nangaphandle Kuragela phambili ngesikhathi somdlalo wamanzi nowehlabathi	Ukufunda okungakahleleki ngetlasini nangaphandle Kuragela phambili ngesikhathi somdlalo wamanzi nowehlabathi	Ukuthula umqondo wobungako ngokumadanisa ubungako bezinto ezihlukileko: - lula/budisi - ludlana/budisana - lula khulu/budisi khulu	Qinisa ilimi lobungako ngesikhathi semisebenzi yangetlasini neyangaphandle
4.4	**Umthamo/Ivolumu** Ukusebenza ngokumadanisa okuphathekako nokuhlela ngemihlobo izinto ngokusebenzisa ilwazimagama elifaneleko	Ukufunda okungakahleleki ngetlasini nangaphandle: nganalitho/kuzele, ngaphezulu kuna-, kuncani kuna- Kuragela phambili ngesikhathi somdlalo wamanzi nehlabathi	Ukufunda okungakahleleki imisebenzi yangetlasini neyangaphandle Umdlalo wamanzi/ wehlabathi Sebenzisa iimphathi ukumadanisa ubungako ngokusebenzisa iimphathi ezijayelekileko	Thula umqondo wokumeda umthamo ngokumadanisa kobana iimphathi ziphatha kangangani: - nganalitho/kuzele - kungaphezulu kuna-/ kuncani kuna	Kuragela phambili ngesikhathi somdlalo wamanzi nehlabathi Qinisa ilimi lomthamo/ ivolumu ngesikhathi semisebenzi yangaphakathi neyangaphandle
4.5	**Ipherimitha nobungako bendawo**	Akukho okumumethweko kwe-CAPS kwaGreyidi 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. UKUPHATHA IDATHA					
	ISIHLOKO	**ITHEMU 1**	**ITHEMU 2**	**ITHEMU 3**	**ITHEMU 4**
5.1	**Ukubuthelela nokuhlela izinto ngamananeko** Buthelela izinto eziphathekako ngokwe-athributhi eyodwa, isib. ubukhulu bekari lomuthi	Thula umqondo wokuphatha idatha: - buthelela bese uhlela idatha ngamananeko, isib. Bangaki abesana/abantazana ngetlasini? - hlela idatha ngamananeko ngokuvumela abafundi bajame erhemeni labesana/ labentazana	Buthelela izinto (amagatja (amaqobetjhwana) wobukhulu/ubude obuhlukileko) Hlela izinto ngamananeko (amaqobetjhana)	Buza umbuzo: 'Ingabe amabizo anamaledere amathandathu anedumo khulu?' Buthelela idarha ukuphendula umbuzo ngokusebenzisa amakarada wamabizo wabafundi Hlela amakarada wamabizo ngokuya ngokweenomboro yeledere ebizweni ngalinye	Buthelela idatha: Bobani amalanga wabo wamabeletho angayiphi inyanga? Hlela idatha ngokuya ngokwenyanga efaneleko yamabeletho womfundi ngamunye Buthelela idatha: isib. Ngiwuphi umbala owuthandako wehlama yokudlala? Khetha ibhlogo linye elijamele umbala wehlama yokudlala ayikhethileko yeveke Buthelela idatha: Ngimuphi umhlobo wesithuthi abafundi abawusebenzisako nabeza esikolweni? Hlela ngamananeko idatha ebuthelelweko (abafundi abakhamba ngeenyawo, ngekoloyi yababelethi, ngetekisi nofana ibhesi)
5.2	**Ukujamiselela amabuthelelo ahlelekileko wezinto**	Jamiselela igrafu ngokusebenzisa izinto eziphathekako Yenza igrafu ejamiselela idatha ngokusebenzisa amabhlogo nofana amabumbeko Yenza igrafu yeenthombe	Gwala igrafu ukukhangisa idatha (amaqobetjhana) Dweba isithombe njengerekhodi yezinto ezibuthelelweko	Gwala igrafu ngokunamathisela lelo nalelo karada lebizo ngaphasi kwekholomu elifaneleko Yenza igrafu yeenthombe	Gwala igrafu ejamiselela amalanga wamabeletho enyangeni ngayinye Sebenzisa izinto zamambala ukwenza igrafu, njengamabhlogo ukujamiselela umbala wehlama yokudlalisa ohlele ukuyenza, isib. hlaza kwesibhakabhaka, sarulani, hlaza-satjani Dweba igrafu yeenthombe ukujamiselela abafundi abakhamba ngeenyawo nabeza ngetekisi, ngekoloyi, ngebhesi
5.3	**Coca bewubike ngokuhlelwa kwezinto ezibuthelelweko**	Ukufunda nokuhlathulula idatha ngokusebenzisa ibumba lokudlala ukwenza isijamiselo senani labentazana nabesana bangetlasini Pendula imibuzo mayelana nokuhlela kwakho izinto Mangakhi amakari amakhulu owadwebileko? Ngimaphi amanengi: makari amakhulu nofana makari amancani? Mangakhi/amanengi/ angaphasi/alingana na?	Ukufunda nokuhlathulula amagrafu ngokusebenzisa imibuzo Phendula imibuzo esekelwe esithombeni sakho nofana izinto zakho ezihlelwe ngamananeko	Ukufunda nokuhlathulula idatha ngokubala inani lamakarada ngakukholomu ngayinye bese uthatha isiqunto	Funda begodu uhlathulule amagrafu ngokusebenzisa imibuzo ukuthola bona ngiyiphi inyanga enamalanga wamabeletho amanengi Ngokuya ngokukhetha kwabafundi, umbala wehlama yokudlalisa yeveke kuzakuba, isibonelo, yisarulani Funda bese uhlathulula amagrafu (Bangaki abakhamba ngeenyawo, abeza ngetekisi, ibhesi, njll.?)

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

Iinomboro, ama-Opharetjhini noBudlelwana

Ukuzwisisa inomboro

Abantwana bakha ukuzwisisa kwabo inomboro nokubala ngokwelemuko labo langamalanga. Basebenzisa lokhu ukuthoma ukwenza itjhebiswano phakathi kweenhlathululo ezihlukileko zenomboro. Bathola ukuthi iinomboro zingasetjenziswa ebujameni obuhlukileko. Isibonelo, 'kuhlanu' kungasetjenziswa:

- ukutjho inani ('ubungako'): 'Nginamaswidi amahlanu.'
- ukutjho ukulandelana kwezinto: 'Umumuntu wesihlanu emjejeni.'
- njengesimedo: 'Uneminyaka emihlanu ubudala.'
- njengelebula: 'Sihlala enomborweni yesihlanu.'
- nakubalwako: '2 + 3 = 5'

Iinomboro zimibono nofana imiqondo yobungako (kungangani). Abafundi bathoma ukuzwisisa bonyana 'kuhlanu' kutjho bonyana kunezinto ezihlanu, nokobana kuhlanu kungatjho isikhundla sesihlanu emudeni, nofana 'kuhlanu' kungasitjela bona zingaki izinto ezikhona. Iinomboro zikhuluma bunqopha, ilwazi elizeleko mayelana namabuthelelo nofana ubungako bezinto, izehlakalo nofana izenzo.

Umdwebo wama-42 Iinhlathululo ezihlukileko ze 'sihlanu'

Iinomboro miqondo engaphathekiko. Azisi zizinto ngokwazo. Zihlathulula okuthileko mayelana nezinye izinto. Isibonelo, njengegama 'hlaza-satjani' lingasetjenziswa ukuhlathulula umbala wehabhula, inomboro 'sithandathu' ingasetjenziselwa ukuhlathulula isibalo samahabhula ebuthelelweni. Nange umuntu akubawa kobana umnikele isitja ungamnikela into ephathekako, kodwana nangabe umuntu ukubawa bonyana umnikele 'isihlanu' angeze wakwazi ukusidobha bese umnikela sona. Ungacabanga ukumnikela

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.

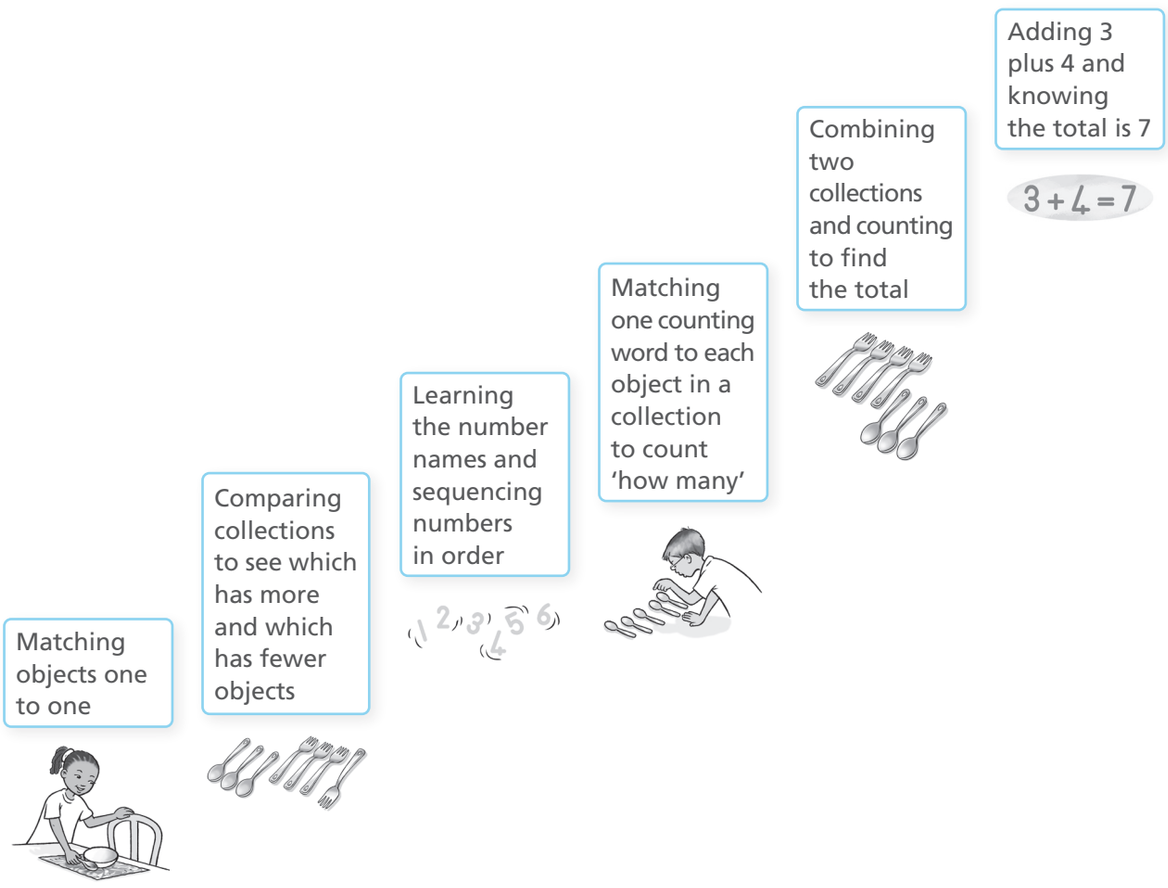


Figure 43 Progression

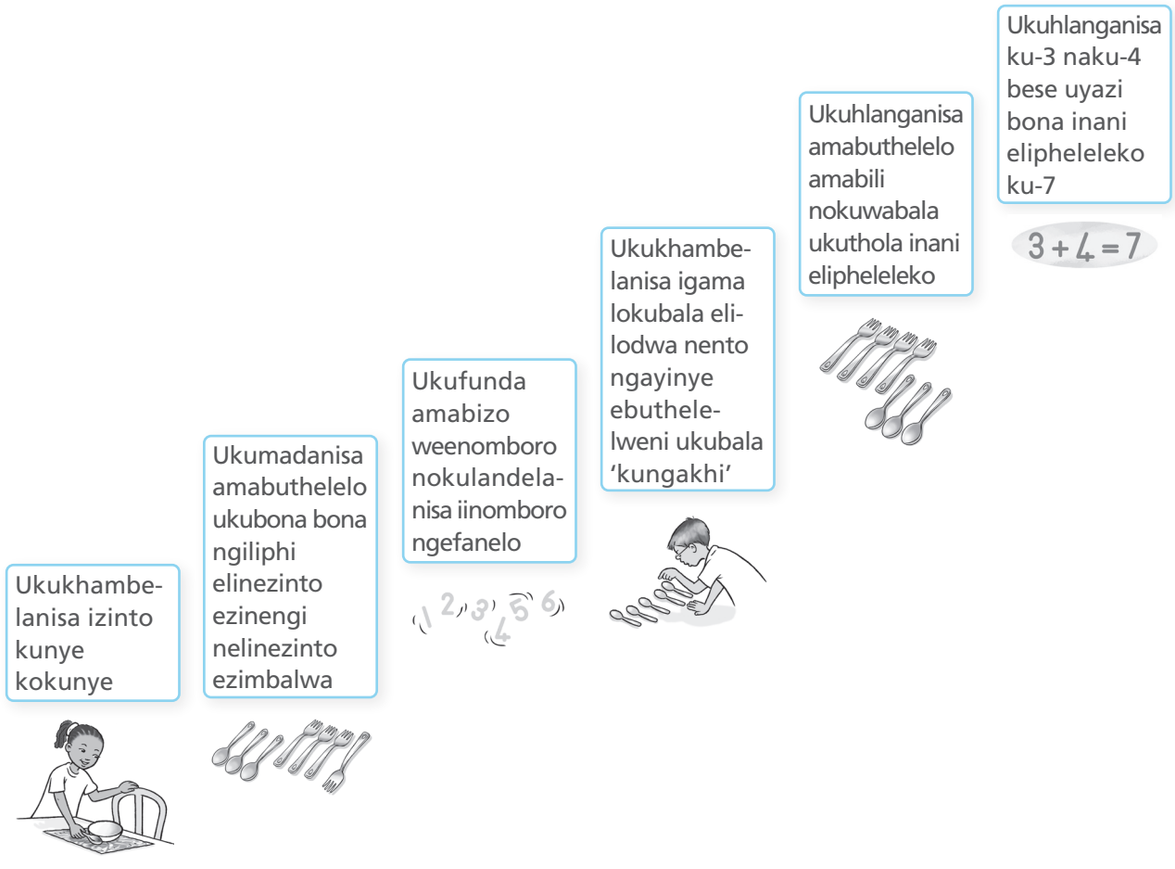
itshwayo lenomboro ‘5’ elitlolwe ekaradeni nofana ungamnikela iingojwana ezihlanu, nofana umtjengise imino emihlanu. Akukghonakali ukukhombisa inomboro ngokwayo ngombana imbono ingeenhlokweni zethu, manje-ke, sithola iindlela zokukhombisa nofana ezijamela inomboro, njengokusebenzisa ibuthelelo lezinto, isithombe nofana isitjengiso esinjengetshwayo lenomboro nofana igama.

Kuyenziwa ...

Siza abafundi ukwakha ilwazi nemiqondo yeembalo emitjha esekelwe lilemuko labo langamalanga:

- Sebenzisa ilwazi labafundi langaphambili lokha nawethula imiqondo yeembalo emitjha.
- Sebenzisa ubujamo obuphathekako ukukhombisa imiqondo yeembalo emitjha.
- Yakha itjhebiswano phakathi kwemisebenzi yangamalanga nemiqondo.
- Hlela imisebenzi eyakhela neqinisa ukuzwisisa kwabafundi imiqondo yeembalo.

Umdwebo wama-43 utjengisa iragelo phambili elilula ukusuka emisebenzini yangamalanga ukuya emiqondweni ehlangahlangeneko yeembalo zakwaGreyidi R. Ithoma ngemisebenzi yangamalanga enetjhebiswano neenomboro nemiqondo yokuthoma yenomboro bese ithuthukela emiqondweni yenomboro ehlangahlangene khudlwana.



Umdwebo wama-43 Iragelo phambili

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.

Ukujamiselela inomboro

Ngesikhathi seGreyidi R, abafundi basebenzisa amatshwayo **ukujamiselela** amagama, imifanekiso nemibono. Abantwana bathoma ukufunda ukujamiselela umbono nofana izenzo ngokomdlalo weenthombengcondo, isibonelo, imikhono yomfundi maphiko wesiphaphamtjhini lokha nakagijima ngegumbini, nofana umfundi angasebenzisa isivalo seplastiki njengevilo lokutjhayela ikoloyi.

IDLHOSARI

jamiselela
ukusebenzisa izinto, amatshwayo nofana izenzo ukujamela umbono nofana umqondo

Abafundi bathoma ukujamisela iinomboro ngokusebenzisa imino yabo bese kancani kancani bathoma ukusebenzisa ezinye iindlela, njengezinto, imidwebo, iinthombe nofana amatshwayo. Abafundi bathuthuka:

- ukususka ekusebenziseni izinto zamambala ukujamiselela iinomboro, isib. amalamune, amaswidi, iimpensela, amakari
- ukuya ekusebenziseni iinthombe nofana imidwebo ukujamiselela izinto, isib. umdwebo welamune, womuntu, wekoloyi
- ukuya ekusebenziseni iimbalisi ukujamiselela izinto nofana iinthombe, isib. amadiski weplastiki ukukhombisa isibalo samalamune
- ukuya ekusebenziseni iimerego ukujamiselela izinto ezibonakalako neenthombe, isib. iindulungu, amaqatjhazi, amatshwayo wamathali
- ukuya ekusebenziseni amatshwayo weenomboro neenomboro magama, isib. '2' nofana 'kubili'.

Nanzi ezinye iindlela ezihlukileko zokujamiselela 'isihlanu'.

Umdwebo wama-44 Iindlela ezihlukileko zokujamiselela 'isihlanu'

Imihlobo ehlukileko yeenomboro

Kunemihlobo ehlukileko yenomboro erherhweni leenomboro.
KwaGreyidi R sinqophana nokuzwisisa nokusebenzisa iinomboro ezipheleleko kwaphela (iinomboro zokubala).

Kumagreyidi aphezulu, abafundi bazakufunda bonyana:

- **ama-intheja** afaka iinomboro ezipheleleko neenomboro ezibuncele
- **iinomboro ezitloleka ngamacezu** zifaka iinomboro ezipheleleko, ezingaphasi kukaziro, amadesimali namafraktjhini.

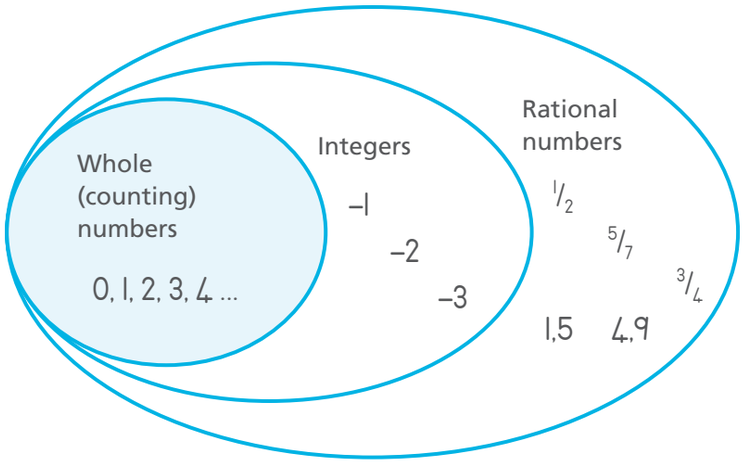


Figure 4.5 In Grade R the focus is on whole numbers.

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.

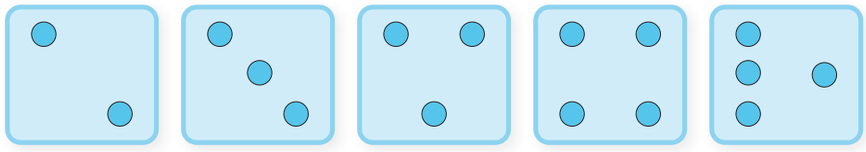
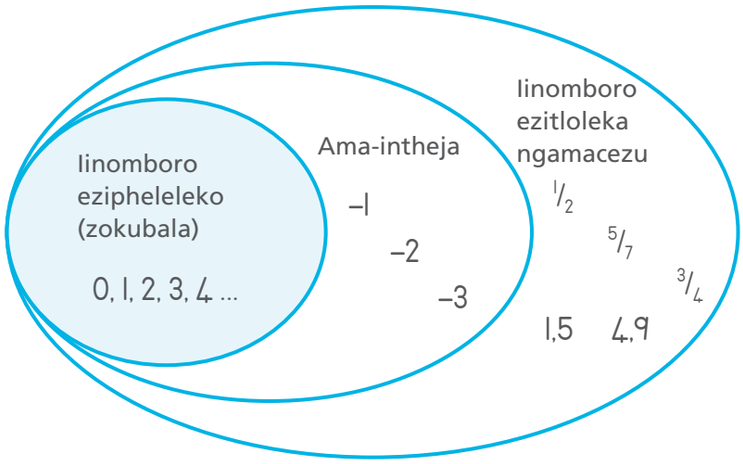


Figure 4.6 Dot arrangements for two, three and four

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.



Umdwebo wama-45 KwaGreyidi R umnqopho useenomborweni ezipheleleko.

Ukusabithayiza

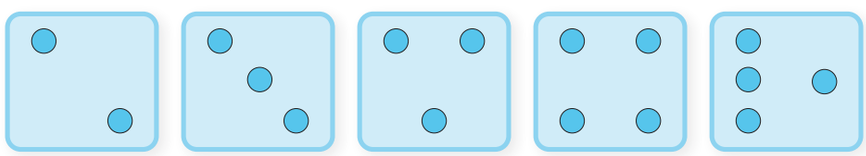
Ukusabithayiza kubandakanya ukwazi, ngaphandle kokubala, isibalo sezinto emabuthelelweni amancani. Ukusabithayiza likghono lokuthoma elibakhona ngaphambi kokufunda amabizo weenomboro namatshwayo nofana ukufunda ukubala. Ukusabithayiza kwakha isisekelo esiqinileko sokubala amabuthelelo wezinto nokubala kokuthoma.

IDLHOSARI

ukusabithayiza
ikghono lomkhumbulo lokwazi msinyana inani elipheleleko lezinto ebuthelelweni ngaphandle kokubala

Ukuzwisisa ngokusabithayiza

Ukuzwisisa ngokusabithayiza likghono lokulemuka msinya isibalo sezinto ebuthelelweni elincani. Abantwana abancani bakghona ukubona nofana ukukhumbula umehluko phakathi kwesibalo sezinto ebuthelelweni ngaphandle kokuzibala, begodu bangatjho bona ngiziphi ezinengi nofana ezimbalwa ngaphandle kokwazi amabizo weenomboro nofana amatshwayo. Ngokuvamileko, bayakghona ukusebenzisa imino yabo ukukhambelanisa nokukhombisa isibalo esifanako sezinto. Kancani kancani bafunda ukukhambelanisa amabizo weenomboro nebuthelelo begodu bakghone ukutjho, ngaphandle kokubala, bonyana kunakunye, kuthathu, kubili, kuhlanu yezinto ebuthelelweni. Lelihlobo lokusabithayiza likghonakala ngenani elincani lezinto begodu abantwana abanengi nabantu abadala lokhu bangakwenza ngokunemba ukufikela kuhlanu.



Umdwebo wama-46 Ihlelo lamaqatjhazi amabili, amathathu namane

Ukuzwisisa ngokusabithayiza

KwaGreyidi R ikghono labafundi lokulemuka bonyana ‘zingakhi’ izinto ebuthelelweni liyangezeleleka. Lingafikelela emananini amakhulu kunesihlanu ngokusebenzisa iinthombe zeenomboro njengokuhlelwa kwamaqatjhazi edayisini, amadomino namafremu alitjhumi.

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

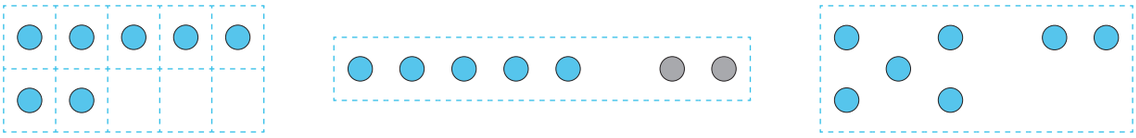


Figure 47 Dot arrangements for seven

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.

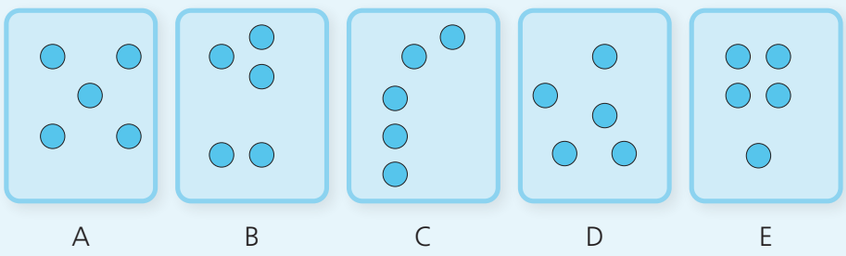


Figure 48 Dot cards

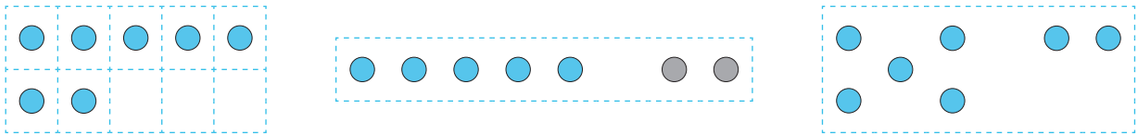
Activities such as dominoes and dice games provide fun opportunities to practise subitising skills.

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'.

Eembonelweni ezingenzasi, ngokusebenzisa ukuzwisisa ngokusabithayiza abafundi bangakghona ukulemuka msinyana bonyana amakarada la akhombisa izinto ezilikhomba ngalinye.



Umdwebo wama-47 Ukuhleleka kwamaqatjhazi alikhomba

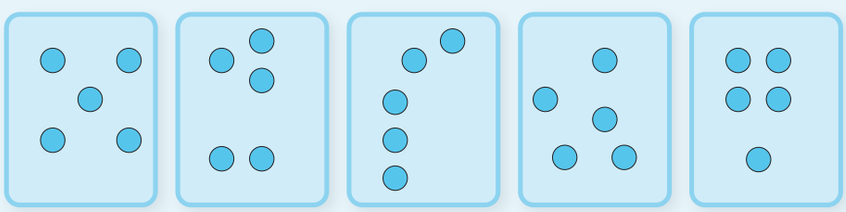
Umhlobo onabisiweko wokusabithayiza lo ubizwa ngokobana kuzwisisa ngokusabithayiza. Usekelwe phezu kwelwazi lengcenye nokupheleleko begodu ukghonakalisa abafundi bona bafanise msinyana iinomboro ezingaphezulu kwesihlanu.

Kuyenziwa ...

Abafundi bathabela ukudlala imidlalo ebandakanya ukukhombisa isibalo esincani sezinto msinyana ngaphambi kobana bazifihle, bese babuza bona beziingaki. Imidlalo yokukhambelanisa neyokubala izakuhlanganisa ukusabithayiza, isibonelo, ukulemuka isibalo sezinto ngaphandle kokuzibala. Lokhu kuzakusiza abafundi ukubamba ngehloko iinomboro ezihlanganisiweko ukufika etjhumini nokubala kokuthoma (ukuhlanganisa nokukhupha).

Amakarada wamaqatjhazi angasetjenziselwa uku:

- thula ukuhleleka okuhlukileko kwenomboro ukusukela kunye ukufikela kuhlanu
- sekela ukuthuthuka kokubona iinomboro ezincani
- khambelanisa amabizo weenomboro namabuthelelo amancani
- khambelanisa iimbalisi namaqatjhazi.



Umdwebo wama-48 Amakarada wamaqatjhazi

Imisebenzi efana nemidlalo yamadomino namadayisi inikela amathuba amnandi wokuzijayeza amakghono wokusabithayiza.

Ukubala

Ukubala likghono elihlangahlangeneko elifuna ukuzijayeza okunengi. Abafundi balakha lokha nabazijayeza ukubala izinto zamambala. Bavame ukuthoma ngokulingisela ukubala kwabafundi abadadlana nabantu abakhulu.

Mibili imisebenzi efaka ukubala. Wokuthoma kubala ngomlomo nofana ngehloko okufaka ukubamba ngehloko amabizo nerhemo leenomboro zokubala, okuvamise ukuba ngomlolozelo nofana ingoma. Wesibili kubala izinto ngayinye ukuthola bona 'zingaki'.

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

KwaGreyidi R, abafundi bafunda irhemo lamabizo weenomboro elifaneleko bese babuyelela ilandelano ngamalanga, babalela phezulu. Lo umhlobo **wokubala ngomlomo** ubizwa ngokobana **kubala ngehloko** nofana **ngegido**. Umnqopho wokubalela phezulu kusiza abafundi ukuzwisisa bonyana lokha nasibalako kunerhemo elihlelekileko lamabizo weenomboro, kuthoma kunye, bese kulandele kubili, kuthathu, kune. Ekuthomeni, abafundi abezwisisi kuhle ihlathululo yamabizo weenomboro begodu bangeqa ezinye iinomboro elandelwaneni lokubala.

Ukutjhwela phezulu umlolozelo nofana ilandelano leenomboro ngomlomo kutjho ukubuyelela iinomboro ngokuzikhumbula. Nanyana abafundi bangabala ngakubili, ngakuhlanu nangetjhumi basebenzisa ilwazi labo lerhemo leenomboro lezi. Ukufunda amabizo weenomboro nokuwabuyelela ngerhemo elifaneleko akutjho bona abafundi bayakwazi ukubala. Lokhu kuhlukile kunokubala ufuna ukuthola bona 'kungaki'.

IDLHOSARI

ukubala ngomlomo/ ukubala ngehloko/ ukubala ngegido
ukubalela phezulu, ukutjho iinomboro ngerhemo elifaneleko

ukubala ngokuzwisisa/ ukubala okunemiphumela
ukubala izinto ukuthola bona 'kungaki'

Ukubala izinto

Ukubala izinto kubizwa ngokuthi **kubala ngokuzwisisa** nofana **ukubala okunemiphumela**. Lokhu kutjho ukuthi izinto nofana izehlakalo zikhambelaniswa nebizo lenomboro. Ukubala 'kungaki', abafundi badinga ukuyelela bona into ngayinye ebuthelelweni ithola ibizo lenomboro ('kunye, kubili, kuthathu, kune …') nokobana ubala into ngayinye kanye kwaphela.

Ngemisebenzi eminengi yokuzibambela nokuhlahlwa ngutitjhere, abafundi bathoma ukuzwisisa nokusebenzisa imithethokambiso elandelako yokubala:

1. **Umthethokambiso wokukhambelanisa kunye kokunye:** Ukukhambelanisa linye, begodu linye kwaphela, igama lokubala nento ngayinye ebuthelelweni elibaliwako. Ekuthomeni abafundi bangabala into yinye kabili, beqe into nofana bakhohlwe bonyana ngiziphi izinto ezibaliweko. Kuyasiza bonyana abafundi bathinte begodu batjhidise izinto lokha nababalako.
2. **Umthethokambiso werhemo elinzinzileko:** Amabizo weenomboro ahlala ahlelwe ngerhemo elifanako elingatjhugulukiko, isib. kunye kulandelwa kubili, kubili kulandelwa kuthathu, kuthathu kulandelwa kune, njll.
3. **Umthethokambiso wekhadinali:** Ibizo lenomboro elitjhiwo ekugcineni lokha nakubalwa ibuthelelo lijamela inomboro yenani elipheleleko ebuthelelweni.
4. **Umthethokambiso wokuhlukanisa:** Abafundi bayazwisisa bonyana nanyana iinqhema ezinenani elifanako lezinto zibonakala zihluke khulu, (isib. amadribe amahlanu, abantu abahlanu, izindlu ezihlanu) zinenomboro efanako, okubu 'hlanu'. Bayelela bonyana ukubala kungasetjenziswa ezintweni, eenthombeni, emibaleni, kumabumbeko, nofana ezenzweni nematjhadeni.
5. **Umthethomkambiso ongakaphathelani nerhemo:** Irhemo lokubala izinto ebuthelelweni alitshwenyi. Abafundi kudingeka bezwisise bonyana nanyana sizihlela bunjani izinto, inani elipheleleko lezinto ezisebuthelelweni 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.

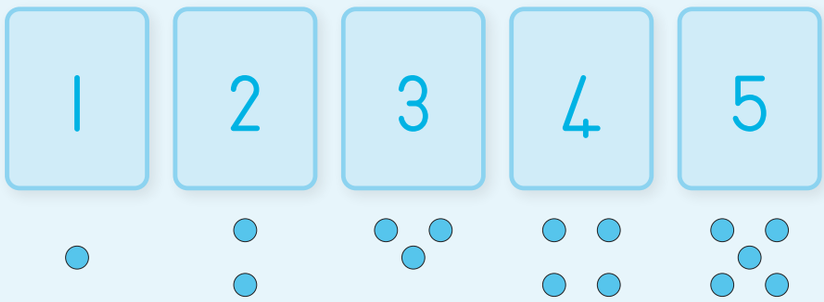


Figure 50 Counters represent number quantities in order.

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.

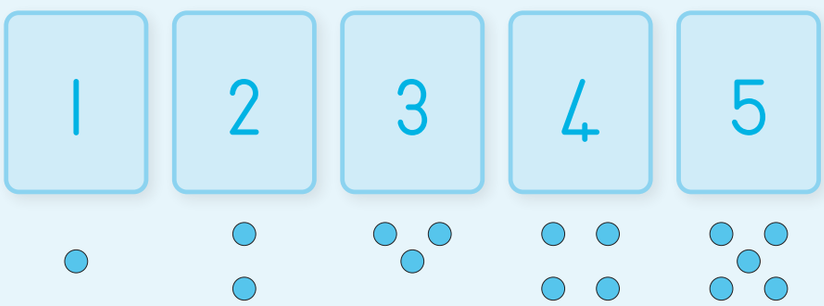
Umdwebo wama-49 Isibonelo somthethokambiso wokuhlukanisa

Abafundi nasele bezwisisa begodu bakwazi ukuyisebenzisa yomihlanu imithethokambiso yokubala le, singatjho ngokuzithemba sithi bayakwazi ukubala.

Kuyenziwa ...

Ngokuzijayeza, abafundi bezwisisa bonyana ukubala kungasetjenziselwa ukumadanisa ibuthelelo lezinto. Nasele abafundi bazi ilandelano lokubala nofana irhemo leenomboro zokubala ba:

- thoma ukuzwisisa bonyana inomboro ngayinye elandelwaneni lokubala yikulu ngakunye kunenomboro engaphambili begodu yincani ngakunye kunenomboro elandelako.
- kghona ukumadanisa iinomboro ngehloko babone bonyana kubili kukhulu ngakunye kokukodwa, nokobana kuthathu kukhulu ngakunye kokubili.
- yelela bonyana iinomboro zikhula ngakunye ngaso soke isikhathi nokobana nofana ngiyiphi inomboro elandelwaneni lokubala iyikulu ngakunye patsi kunenomboro engemuva kwayo.



Umdwebo wama-50 Iimbalisi zijamela ubungako beenomboro ngokulandelana.

Isilinganiso

Nanyana ukubala kuphathelene nokuthola isibalo sezinto esinembako ebuthelelweni, abafundi kufanele godu bakhe ikghono lokulinganisa bakghone ukutjho bonyana 'pheze' zizinto ezingaki ezikhona ebuthelelweni. Kufanele bakwazi ukusebenzisa amagama afana nokuthi 'okunengi', 'mbalwa', 'ngaphezulu', 'kunengi khulu', nofana 'kuyafana'. Ukulinganisa kumayelana nokobana abafundi basebenzise ukuzwisisa kwabo inomboro ukuqagela ngokunembako ubungako nenani kodwana bayelele bonyana ukulinganisa akudingeki bona kunembe poro. Abafundi bavame ukungabaza ukuqagela nangabe akunembi.

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.

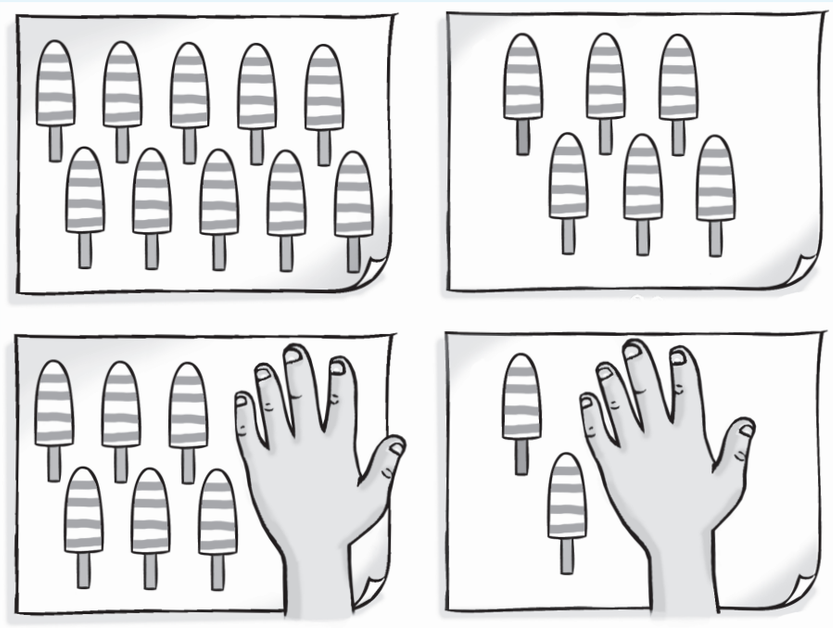


Figure 51 Estimating based on the visual image that is seen

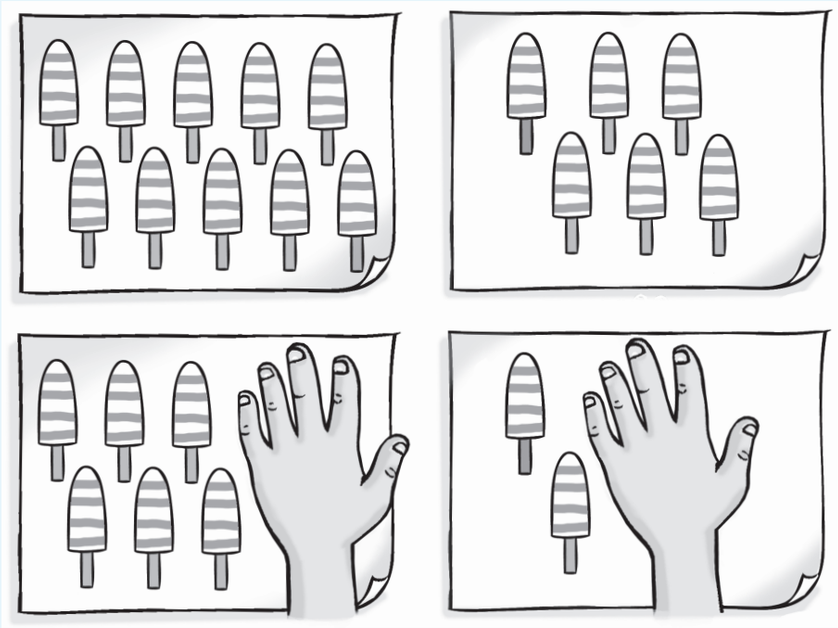
Ordinal numbers

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'.

Kuyenziwa ...

Nanyana abafundi bangakarhabi ukukwazi ukubala isibalo sezinto ngokunembako, bangayithola ipendulo ngokulinganisa.

- Ngokuya ngesithombe esibonakalako abafundi bangabona bonyana kunezinto ezinengi nofana ama-ayithemu esithombeni. Bangatjho bonyana ngisiphi esinokunengi nofana okumbalwa.
- Abafundi bangathola ipendulo ngokusebenzisa ukukhambelanisa kunye kokunye kwezinto ezisemabuthelelweni amabili ukumadanisa bona ngiliphi ibuthelelo elinokunengi nokobana ngiliphi elinokuncani.
- Abafundi bangamadanisa isibalo sama-ayithemu eenthombeni ezimbili ngokudweba umuda magega nesibalo esifanako sama-ayithemu esithombeni ngasinye.
- Abafundi bangasebenzisa izandla zabo godu ukuvala isibalo sama-ayithemu, isibonelo, ama-ayisikhrimu amane esithombeni ngasinye. Kuzakubonakala bonyana kunama-ayisikhrimu amanengi angakavalwa esithombeni sokuthoma.



Umdwebo wama-51 Ukulinganisa okususelwa esithombeni esibonakalako

Iinomborosikhundla

Iinomborosikhundla zisetjenziselwa ukuhlathulula indawo nofana isikhundla somuntu nofana into, isib. emudeni nofana emjejeni. Abafundi bayazwisisa bonyana nabagijima umjarho akabi ngu ‘ntathu’ kodwana uba ‘ngewesithathu’. Ngaleyo indlela, bayazi bonyana akajami abe ‘kunye’ emjejeni kodwana uba ‘ngewokuthoma’.

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).

Umdwebo wama-52 Isikhundla sokuthoma, sesibili nesesithathu

Ukubala

Ukuzwisisa kuhle inomboro nokubala kuqakathekile ekufundeni bona kubalwa njani. Abafundi kufanele bathome ngokuzwisisa ubudlelwana phakathi kweenomboro: ukumadanisa, ukulandelanisa nokuhlukanisa iinomboro (ukuphula nokwakha) ukuze bafunde ama-opharetjhini weenomboro, njengokuhlanganisa, ukukhupha, ukuphindaphinda nokuhlukanisa.

Imisebenzi nelemuko elifaka ukuphula nokwakha iinomboro, ukuhlanganisa nokumadanisa amabuthelelo kukuthoma komqondo wokuhlanganisa nokuhlukanisa (ukukhupha). Abafundi bakwaGreyidi R nabo bahlangabezana nokuhlanganisa nokukhupha ngesikhathi sabo semidlalo nemisebenzi yangamalanga, isib. lokha nabadlala 'isitolo' ndawonye nofana babelana ngeendlalisi. Ekukhupheni, abafundi kudingeka bazibandakanye emisebenzini yokwenza efaka 'ukususa', ngamanye amagama, ukuthola bona kusele kungaki ebuthelelweni lezinto lokha ezinye nazisusiweko. Ekuthomeni abafundi bazakusebenzisa amano wokubala ukurarulula umraro ofaka ukuhlanganisa nofana ukukhupha, isib. ukubala zoke izinto emabuthelelweni amabili ukuthola inani elipheleleko lokha amabuthelelo amabili nakahlanganisiweko, nofana ukubala bona zingaki iinhlamvu zemali eziseleko lokha ezinye kuphiswene ngazo.

Ukuphindaphinda, ukuhlukanisa namafraktjhini akufundiswa ngokuhlelekileko kwaGreyidi R, kodwana abafundi basebenzisa imiqondo le lokha nabararulula imiraro ebandakanya ukwenza iinqhema zezinto lokha nababelana into ethileko ngokulinganako. Imisebenzi ebandakanya ukuhlanganisa okubuyelelako nokukhupha okubuyelelako kwendlala isisekelo somqondo wokuphindaphinda nokuhlukanisa. Imisebenzi le isiza nangokwakha ubudlelwana phakathi kokuhlanganisa nokuphindaphinda, ukukhupha nokuhlukanisa, okufanele kuzwisiseke esikolweni esikhathini esizako.

Kuyenziwa ...

Nikela abafundi imiraro ehlola ukwenza iinqhema ezilinganako nokwabelana ngokulinganako, isibonelo:

- Bawa abafundi abathathu bona bathathe iimbalisi ezimbili ngamunye. Balani ninoke isamba seembalisi, isib. kubili nakubili kune, nakubili godu kusithandathu (ukuhlanganisa okubuyelelweko).

- 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.

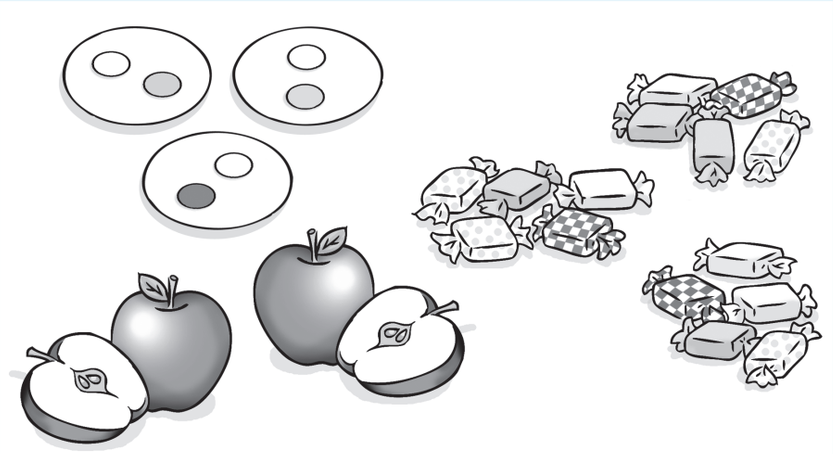
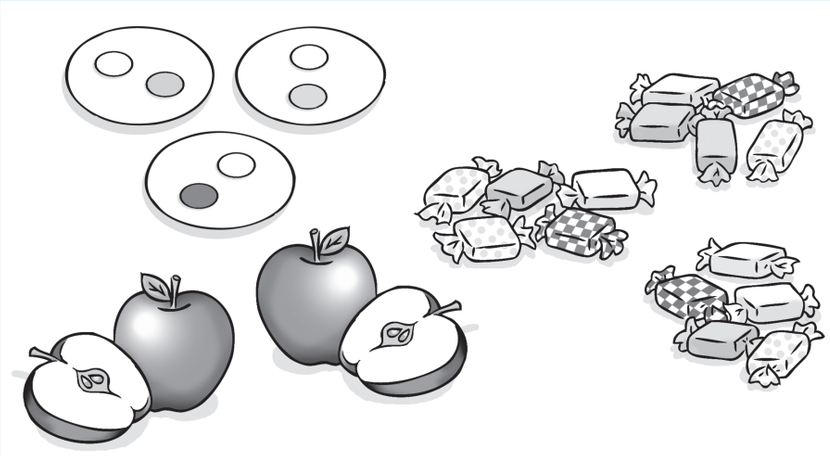


Figure 53 Using objects for calculations

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 iimbalisi ezisithandathu emadeni. Susa ezimbili lokha nawuthi, ‘kuthandathu nawususa kubili kusala kune, susa kubili kusala kubili bese ususa kubili akusali litho’ (ukukhupha okubuyelelwako).
- Nikela abafundi iindulungu ezisikiweko. Babawe benze iinqhema ezilinganako endulungwini ngayinye ngokusebenzisa iimbalisi, isib. ezimbili endulungwini ngayinye.
- Bawa abafundi babelane izinto ngokulinganako phakathi kwabo, isib. ababelane iimbalisi ezili-15 phakathi kwabafundi abathathu.
- Bawa abafundi babelane izinto lapho isalela kufanele yabelwane, isib. ababelane amahabhula amabili ngokulinganako phakathi kwabafundi abathathu.



Umdwebo wama-53 Ukusebenzisa izinto ukubalisisa

Imibuzo engabuzwa mayelana neeNomboro, ama-Opharetjhini noBudlelwana

- Ungakuhlela lokhu ngendlela ehlukileko?
- Mangaki/zingaki ezikhona?
- Mangaki/zingaki ongazibala?
- Ngubani onokungaphezulu/onokumbadlwana?
- Ngiyiphi inomboro ezangaphambili kuka …? Ngiyiphi inomboro eza ngemuva kuka …? Ngiyiphi inomboro ehlangana no … no …?
- Zingaki ezingaphezulu kilesi isiqhema?
- Nasabelana lokhu ngokulinganako phakathi kwethu, sizokuthola zingaki ngamunye?
- Nangivala okhunye kwalokhu, kungaki okufihliweko?
- Ngiyiphi inomboro le? (khombisa ikarada lenomboro nofana itshwayo lenomboro elitloliweko)
- Ningawabeka amakarada weenomboro ngokulandelana?
- Ngubani ojame ekuthomeni, kwesibili, …?
- Nangabe unakubili kwalokhu bese ngikunikela kubili ngaphezulu, uzakuba nakungaki?
- Nangabe nginakuthathu kwalokhu bese ngikunikela kunye, ngizakuba nakungaki?

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

Ilwazimagama leeNomboro, ama-Opharetjhini noBudlelwana

Bala begodu ulemuke iinomboro

- khambelanisa, hlela ngamananeko, madanisa
- inomboro
- kunye, kubili, kuthathu … amatjhumi amabili nangaphezulu
- akukho, ilize, nganalitho, unodo, uziro
- kungaki …?
- bala (ukufikela) ku
- bala ukuya phambili (ukusuka ku, ukuya ku)
- bala ukuya emuva (ukusuka ku, ukuya ku)
- bala ngakunye, ngakubili … ngamatjhumi …
- ngaphezulu, -nengi, mbalwa, mbadlwana
- mbadlwana kuna-, khulu kuna-, ngokudluleleko, -ncani khulu
- nengi khulu, mbalwa khulu, aneleko, ngakaneli
- koke okhunye
- isiqhema, ibuthelelo
- pheze, eduze ne, pheze kufane ne
- kungaki okuseleko, seleko
- ngaphezudlwana nje, ngaphasanyana nje

Madanisa begodu ulandelanise iinomboro

- khambelanisa, hlela ngamananeko, madanisa, landelanisa
- inomboro efana ne, kunengi njenge
- kunye ngaphezulu, kubili ngaphezulu, …
- kuncani ngakunye, kuncani ngakubili, …
- ngaphambi kwe, ngemuva, landelako, duze ne, hlangana
- kokuthoma, kwesibili, kwesithathu … kwetjhumi
- kokugcina, ngaphambili, ngemuva

Kwezinto/kwamanani **amabili**: khulu, ngaphezulu, banzana, khudlwana, ncani kuna-, mbadlwana, ncazana

Kwezinto/kwamanani **amathathu**: khulukhulu, ngobunengi, khulukazi, banzikazi, ncazana, mbalwa khulu, ncancani

Ama-opharetjhini weenomboro

Ukuhlanganisa nokukhupha

- khambelanisa, madanisa
- hlanganisa, ngaphezulu, no/ne-
- ndawonye, ngokupheleleko
- kabili/isiquntu
- kunye ngaphezulu, kubili ngaphezulu, …
- kungaki okusafunele kwenziwe …?
- kungaki okungaphezulu ku … kuna …?
- susa, khupha
- ncani ngakunye, ncani ngakubili, …
- kungaki okuseleko?
- umehluko phakathi-

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

- iinyanda, iinqhema zangakubili, kuthathu, ...
- aba ngokwanelisako/ngokulinganako
- aba, aba hlangana na-/phakathi kwa-
- aba kunye/okungaphezulu kunakunye ngesikhathi
- fana noku-, hlukile kuna-
- kungaki okuseleko, isalela

Ukulingana

- khambelanisa, madanisa
- fana patsi
- fana noku-, hlukile kuna-
- kwenza
- lingana no-
- iinqhema ezilinganako

Linganisa

- khambelanisa, madanisa
- qagela kungaki; linganisa
- pheze, eduze ne
- pheze kufane
- ngaphasanyana nje, ngaphezudlwana nje
- kunengi khulu, kumbalwa khulu, aneleko, akukaneli

AmaPhetheni, amaFanktjhini ne-Aljibhra

Iphetheni ikoke mazombe nathi. Abantwana bahlangabezana namaphetheni **nokulandelana** ekuziphatheni kwabantu, ekambisweni yangamalanga, emalangeni weveke, eenyangeni zomnyaka, emizombeni yobujamo bezulu, umbhino nobukghwari, nebhodulukweni labo elakhiweko. Isibonelo:

- izambatho

Umdwebo wama-54 Amaphetheni ezambathweni

IDLHOSARI

iphetheni
ilandelano
elihlelekileko
lezinto, leminyakazo
nofana lezehlakalo
ezibuyeleleka
ngendlela
engabonelwa
ngaphambili

ilandelano
ihlelo elithileko lapho
izinto, iminyakazo
nofana izehlakalo
zilandelana ngalo

- buildings

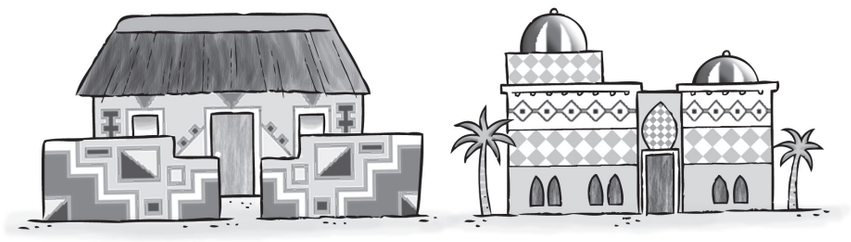


Figure 55 Patterns in buildings

- nature

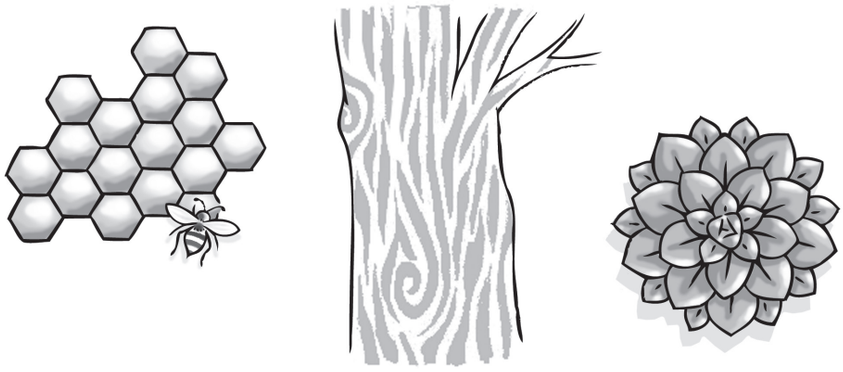


Figure 56 Patterns in nature

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.

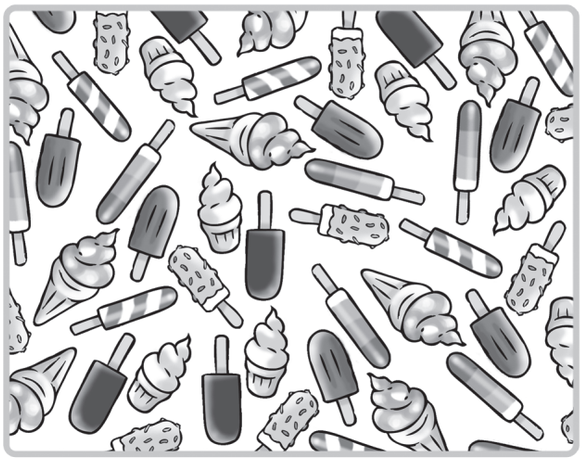
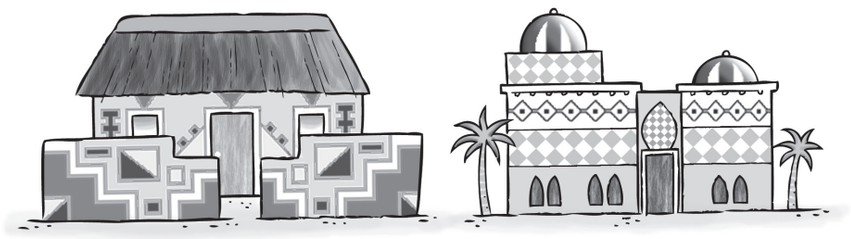


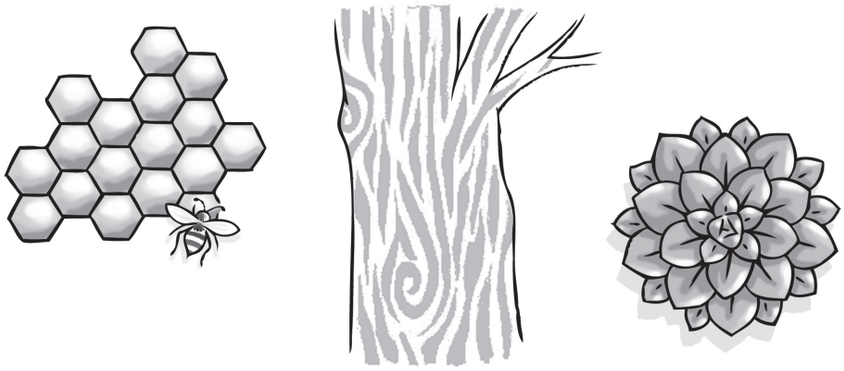
Figure 57 Irregular patterns

- imakhiwo



Umdwebo wama-55 Amaphetheni emakhiweni

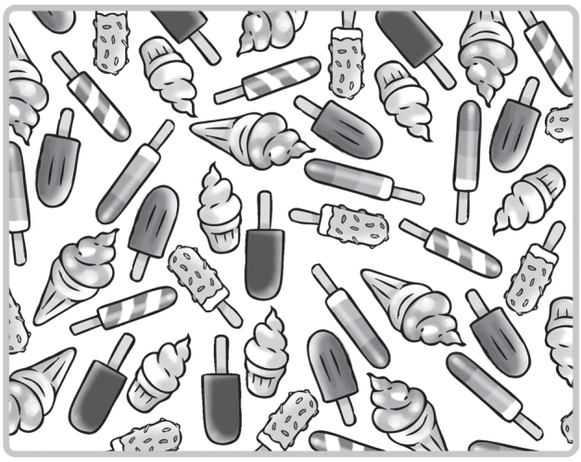
- imvelo



Umdwebo wama-56 Amaphetheni emvelweni

Ukulemuka amaphetheni

Abantwana abancani bavame ukutjhejana nombala nezinto ezidosako zesithombe, isib. isiquntu sephepha lokuphuthela, bese bathi line 'phetheni ehle'. Amaphetheni lawa amanengi wawo **maphetheni angakahleleki**. Siyabona bonyana kunokubuyeleleka kwezinto, imibala namabumbeko kodwana angekhe satjho bonyana ukubuyeleleka lokhu kusebenza njani.



Umdwebo wama-57 Amaphetheni angakahleleki

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

Abotitjhere kufanele badosele ukutjheja kwabafundi kumaphetheni angaphakathi nangaphandle kwetlasi. Isibonelo, bakhombe bona iintina zihlelwe njani ebodeni, amathayili wepheyivu endledlaneni nofana iimerego eenlwaneni.

Umdwebo wama-58 Amaphetheni asizombileko

Ephethenini ehlelekileko singabona bonyana **amalunga** kuphethini abuyeleleke njani begodu singabonela phambili ihlelo nofana ilandelano elizokulandelwa yiphetheni, isib. kuphetheni engenzasi siyabona bonyana indulungu nesikwere zibuyelelwe begodu singabonela phambili bonyana ibumbeko elandelwaneni lizakuba yindulungu, ilandelwe sikwere, njll.

IDLHOSARI

amalunga
izinto, iminyakazo nofana izehlakalo ephethenini

Umdwebo wama-59 Iphetheni yendulungu, isikwere

KwaGreyidi R, abafundi bangakwazi ukukhumbula iphetheni kodwana angekhe bakwazi ukukhomba nofana ukuhlathulula 'lokho okwakha iphetheni'. Abotitjhere bangasiza abafundi ukukhomba amaphetheni ngokubabuza bona khuyini okwakha iphetheni ethileko nokobana amalunga alandelaniswa njani. Isibonelo sephetheni engehla: 'Ngiliphi ibumbeko lokuthoma? Ngiliphi ibumbeko elilandelako? Ngiliphi ibumbeko ocabanga bona lizakulandela?'

Imihlobo ehlukileko yamaphetheni

Amaphetheni wejiyomethri

Iphetheni yejiyomethri yiphetheni eyakhiwe ngemida namabumbeko wejiyomethri ahlelwe ngendlela ebuyelelako, isibonelo, Irombhasi, uncamane, isikwere nofana iphenthagoni. Amaphetheni wejiyomethri atholakala koke mazombe nathi, isib. amathayela waphasi namaphepha wokuphuthela.

Umdwebo wama-60 Amaphetheni wejiyomethri

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.

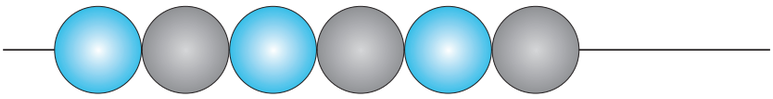


Figure 61 AB pattern

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

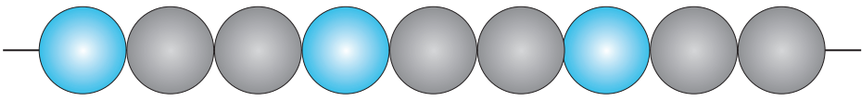


Figure 62 ABB pattern

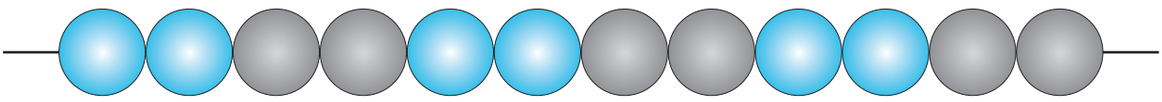


Figure 63 AABB pattern

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

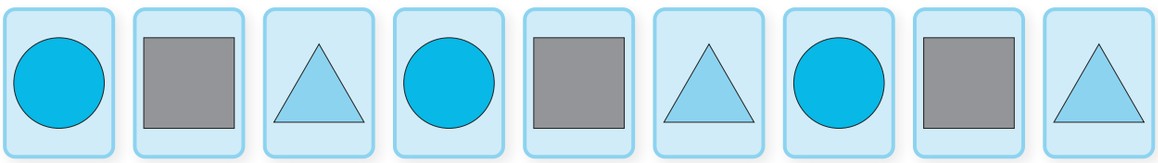


Figure 64 ABC pattern

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.

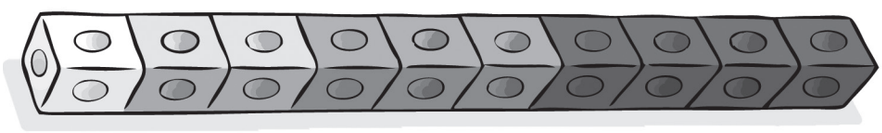
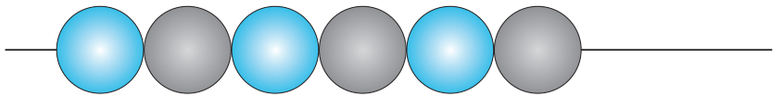


Figure 65 Growing pattern

Amaphetheni abuyelelako

Amaphetheni abuyelelako enziwe ngelandelano elibuyelelwako lamalunga, isibonelo, amabumbeko, imibala, iminyakazo nofana izehlakalo. Kuphetheni ebuyelelako, amalunga afanako abuyelelwa njalo njalo.



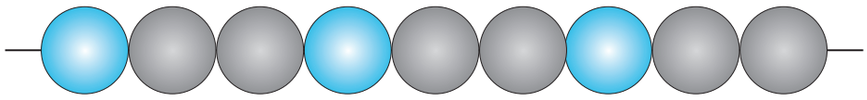
Umdwebo wama-61 Iphetheni ka-AB

Thoma ngokwazisa abafundi amaphetheni **ane-athributhi** eyodwa kwaphela elihlukileko, isib. umbala nofana ibumbeko, bese unikela ilandelano elide ngokwaneleko ukuze abafundi bazwisise iphetheni.

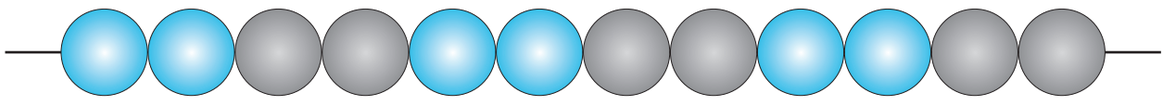
Abafundi bangakghona ukubona amaphetheni abudisana, anjengamaphetheni ka-ABB nofana ka-AABB.

IDLHOSARI

i-athributhi
ubujamo nofana imikghwa yento, isibonelo, umbala nofana ibumbeko

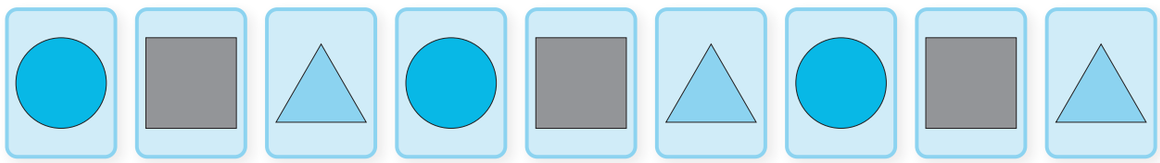


Umdwebo wama-62 Iphetheni ka-ABB



Umdwebo wama-63 Iphetheni ka-AABB

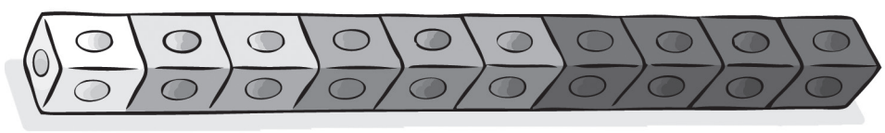
Thoma abafundi kancanikancani ngamaphetheni anama-athributhi amabili nofana ngaphezulu, njengombala nebumbeko.



Umdwebo wama-64 Iphetheni ka-ABC

Amaphetheni akhulako

Amaphetheni akhulako ahlukile kunamaphetheni abuyelelako ngokuthi amaphetheni ayangezeleleka nofana ayancipha ngobukhulu elandelwaneni ngalinye. Kuphetheni ekumdwebo wama-65, isibalo samabhlogo wemibala singezeleleka ngakunye elandelwaneni lamabhlogo ngalinye.



Umdwebo wama-65 Iphetheni ekhulako

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

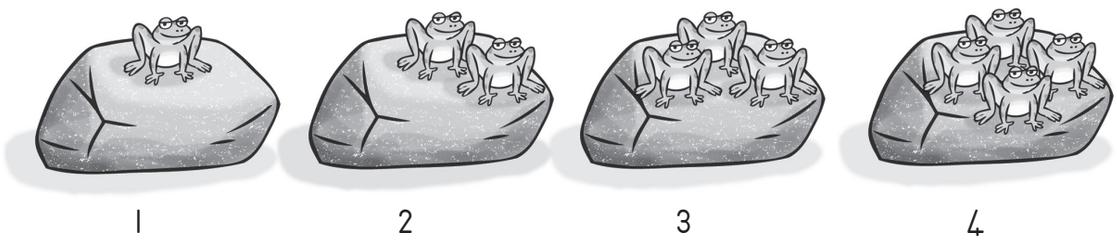


Figure 66 Growing pattern

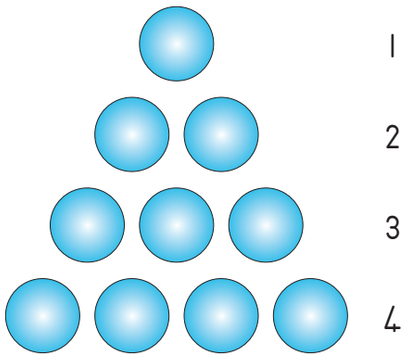


Figure 67 Growing pattern

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

Figure 68 Growing pattern

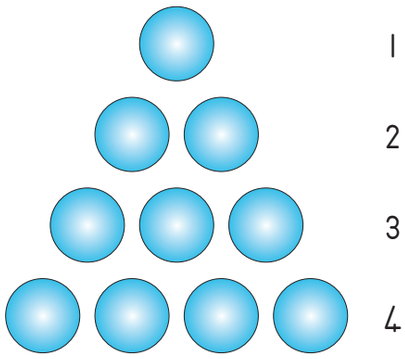
Patterning skills – what learners need to know

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

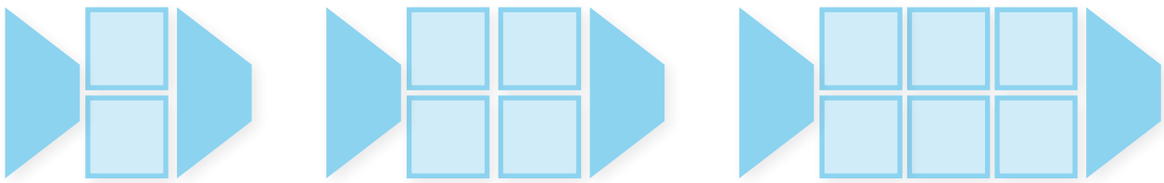
Abafundi bangahlanganisa iphetheni ngokulandelana kweenomboro bese bayalemuka bonyana isibalo singezeleleka ngakunye ngaso soke isikhathi.

Umdwebo wama-66 Iphetheni ekhulako



Umdwebo wama-67 Iphetheni ekhulako

Kuphetheni engenzasi, ilandelano lingezeleleka ngakubili ngaso soke isikhathi.



Umdwebo wama-68 Iphetheni ekhulako

Amakghono wokwenza amaphetheni – okufanele kwaziwe bafundi

Amakghono wabafundi azakuhluka kodwana ngokuvamileko abafundi bakwaGreyidi R bazakusebenzela bona bakghone uku:

- khambelanisa nokuhlela izinto nge-athributhi eyodwa nofana mabili, isib. ibumbeko, umbala, itjhada
- madanisa ukufana nokuhluka kwezinto ezimbili nofana ezingaphezulu
- khuluma ngamaphetheni avela elemukweni langamalanga
- bona amaphetheni ebhodulukweni labo, isib. amapala wokubiyela, iintina, ipheyivu
- khomba amaphetheni
- khopha amaphetheni enziwe ngabanye
- ngezelela amaphetheni athonywe ngabanye

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

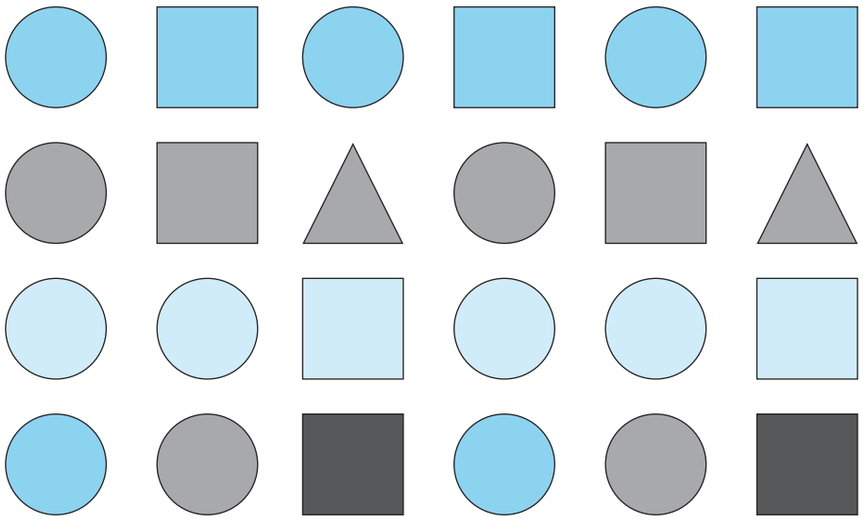


Figure 69 Creating patterns

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

In practice ...

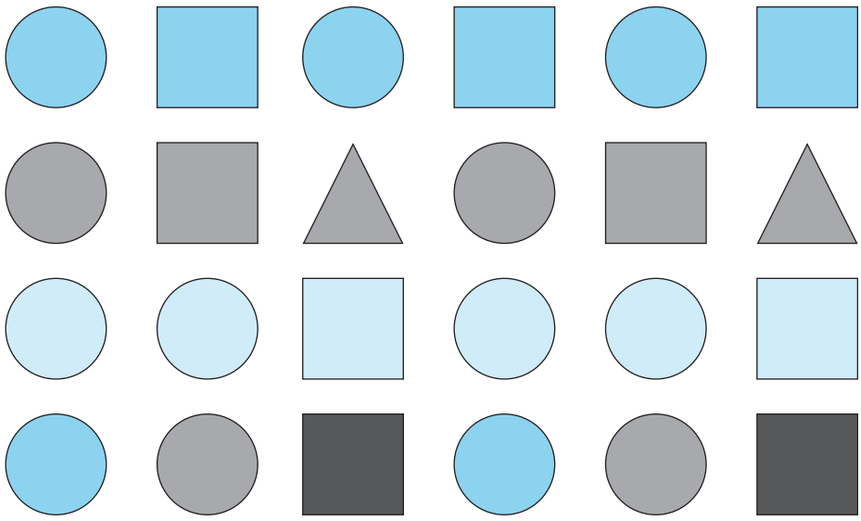
Teachers should guide learners to recognise and make patterns and provide opportunities for them to observe, describe and discuss patterns, focusing on activities that involve:

- 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?

- ukwakha amaphetheni wabo emazingeni ahlukileko wobudisi njengokuthi:



Umdwebo wama-69 Ukwakha amaphetheni

- ukutjho lokho okutlhayelako nangabe ingcenye yephetheni ifihlekile.

Kuyenziwa ...

Abotitjhere kufanele bahlahle abafundi ukulemuka nokwenza amaphetheni begodu babanikele namathuba wokobana babukele, bahlathulule begodu bakhulumisane ngamaphetheni, ngokutjheja imisebenzi efaka:

- ukukhulumisana ngalokho 'okwakha iphetheni'
- ukuhlola amaphetheni ngokusebenzisa izinto, iinthombe namagido, njengokuwahla izandla, ngesikhathi sokunqophana neembalo nangesikhathi sobukghwari bokutlama, umvumo nemisebenzi yangaphandle yomzimba
- ukwenza amaphetheni wabo nokukhuluma ngokobana amalunga bawalandelanise njani nokobana kubayini bawalandelanise ngendlela ethileko
- ukudweba amaphetheni nokusebenzisa imibala namabumbeko ahlukileko, nokukhulumisana ngendlela iphetheni ebuyelelwe ngayo.

Imibuzo engabuzwa mayelana namaPhetheni, amaFanktjhini ne-Aljibhra

- Niyayibona iphetheni? Ngicocelani ngayo.
- Khuyini okuza kokuthoma, kokugcina, okulandelako, ngemuva, ngaphambili?
- Amaphetheni amabili la ayafana? Khuyini ukuhlukileko? Ungawenza njani bona afane?
- Ungayikhopha iphetheni le? Khuyini okuzakulandela ephethenini?
- Kufanele ngenze ini ukungezelela iphetheni le?
- Ungangitjela bonyana khuyini iphetheni yakho? Ungayenza iphetheni ehlukileko? Khuyini okungekho ephethenini le?

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

Ilwazimagama lamaPhethini, amaFanktjhini ne-Aljibhra

- khambelanisa, madanisa, hlela, landelanisa
- ukusungula, ekuthomeni
- kokuthoma, phakathi, kokugcina
- ngaphambili, ngemuva, ekugcineni
- ngiyiphi elandelako …?
- ubukhulu
- khulu, khudlwana, khulukhulu
- ncani, ncazana, ncani khulu
- fanako, hlukileko, umehluko
- amabizo wemibala
- yakha iphetheni
- lemuka/bona
- khombisa, fanisa
- ragela phambili, -ya phambili, ngezelela
- khopha
- buyelela, godu
- hlathulula
- khuyini okuza ngaphambili/ngemuva?
- landela, phakathi/hlangana
- emudeni, emjejeni
- isikhala, hlukanisiwe

IsiKhala neBumbeko (Ijiyomethri)

Abantwana abancani bahlola ibumbeko nesikhala ngesikhathi semisebenzi yabo yangamalanga lokha nabazama ukuzwisisa imihlobo namabumbeko abazombileko, njengobuso bukamma wakhe, izinto ezitjhidako nemizimba yabo. Bahlola imiqondo yesikhala ekhambisana nebumbeko lokha nabadlala ngeembholo nofana nabangena baphuma emabhokisini begodu nabakhwela phezulu bangena nangaphasi kwezinto. Babona amabumbeko ahlukileko ezintweni zangekhaya nangaphandle, njengamafu, imakhiwo, amakari neenkoloyi.

Abantwana abanengi bafika kwaGreyidi R banelwazi elithileko lamabumbeko ahlukileko begodu bangakghona ukufanisa nokudweba amabumbeko anjengeendulungu naboncantathu. Kungenzeka khebadlala ngamabhlogo, iindlalisi zokwakha namaphazili. KwaGreyidi R, abafundi bakhela phezu kwelemuko leli lokha nabafunda ngesikhala, ibumbeko, isikhundla, **ubujamo**, imibono nelayelo. Badinga amathuba amanengi wokuphenya nokuhlola izinto ezihlukileko zangamalanga. Ilemuko lesikhala nelebumbeko leli lisiza ukwendlala isisekelo esiqinileko sokuzwisisa **ijiyomethri** emagreyidini ezako.

IDLHOSARI

ubujamo
indlela izinto ezihlaliswe ngayo ngokuhlobana kwenye kenye

ijiyomethri
ingcenye yeembalo eqalana namatshwayo, isilinganiso nobudlelwana bamatlobo, imida nama-engele wamabumbeko esikhaleni

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.

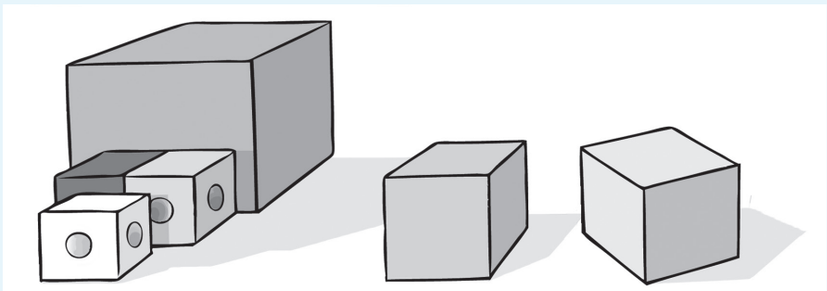


Figure 70 Exploring position

Isikhala

Abantwana bazijamisa ngokwabo esikhaleni ngokusebenzisa imizimba yabo. Kokuthoma bahlola ubudlelwana phakathi kwabo, abanye abantu nezinto. Abantwana abancani balalamela bebabambe izinto eziseduze kwawo, bese kancani kancani bathoma ukutjhida begodu bahlole ibhoduluko ngokusebenzisa imizwa yabo. Bahlola bona kwenzeka ini lokha nabasunduzako, badosa, bageda nofana baphendula izinto ezihlukileko nabadlala ngazo, begodu lokha nabenza lokhu bathola ukuzizwisisa mayelana nezinto. Godu bafunda nemikhawulo yemisikinyeko yemizimba yabo lokha nabakhwela phezulu bangena nangaphasi kweentulo, ngaphakathi kwamabhokisi, babhaca ngemuva kwemithi nofana baqale phasi nabaphezulu emastepisini.

Isikhundla

Isikhundla kwaGreyidi R sithoma ngeenkhundla zezinto ngokuhlobana kwazo nomfundi, bese kuragele phambili kube sikhundla sezinto nokuhlobana kwazo nezinye izinto. Ilwazimagama lesikhundla lifaka ngaphakathi, phezulu, ngehla, ngaphambi kwe, ngemuva, hlangana, eduze kwe-, njalonjalo.

Ngesizo labantu abadala ekhaya nabotitjhere esikolweni, abafundi bakwaGreyidi R bangathola ilwazimagama lokuhlathulula isikhala, isikhundla nendlela lokha nabadlalako, bafuna izinto nofana bangena ngezintweni nalokha nabakhwelela phezu kwezinto.

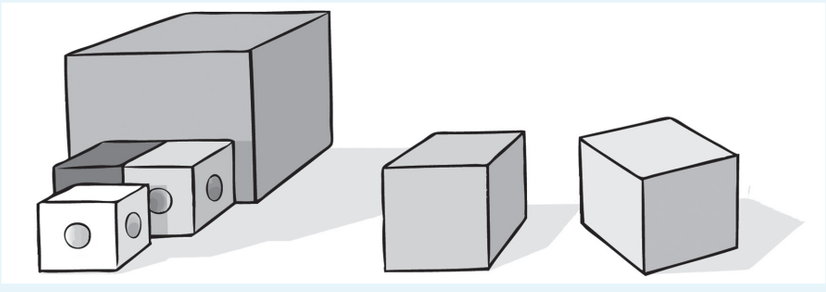
Kuyenziwa ...

Manengi amathuba emini wokobana abafundi bacabange ngokunabileko nokusebenzisa ilwazimagama lesikhundla:

- emidlalweni
- lokha nakususwa izinto ngesikhathi sokubutha
- lokha nabarhemako
- lokha nakukhulunywa ngokobana izinto zikuphi eenthombeni neendatjaneni.

Ukuvumela abafundi bahlole imisikinyeko yabo:

- yakha isiqabomdlalo ngaphakathi nofana ngaphandle ngokusebenzisa iintulo, amatayere, amabhokisi begodu/nofana amaplanka
- lungisa iindatjana ezisebenzisa ilwazimagama leembalo mayelana nesikhundla, isib. ngaphezulu nangaphasi, phezulu naphasi, eduze nakude, ngeqadi nahlangana
- beka izinto eenkhundleni nebujameni obuhlukileko
- bawa abafundi baqale izinto baseenkhundleni ezihlukileko (umbono) bese batjho lokho abakubonako.



Umdwebo wama-70 Ukuhlola isikhundla

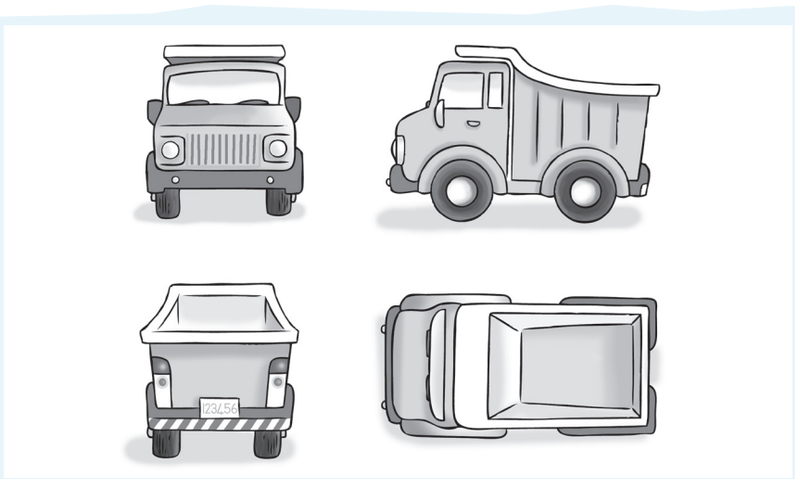


Figure 71 Different orientations

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

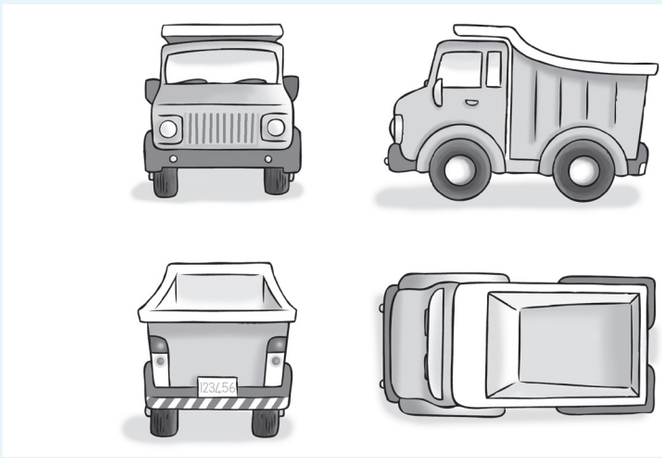
In Grade R, as learners' gain an increased understanding that when things are far away they look smaller, their concept of **perspective** develops.

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.



Umdwebo wama-71 Ubujamo obuhlukileko

Ikombatjhuba

Abafundi bakwaGreyidi R ekuthomeni batjengisa ikombatjhuba ngokukhomba, begodu basebenzisa imitjhwana elula njengokuthi ‘laphaya’. Umqondo wekombatjhuba uthuthuka ngokusuka ekubeni ngesikhundla lapho abantwana bakhona ube ngesikhundla lapha bakhona ngokuhlobana nezinye izinto, isib. khamba unqophe, jika, njalonjalo.

Kuyenziwa ...

Sebenzisa ilwazimagama lekombatjhuba:

- ngesikhathi sokudla nesokubutha
- lokha nawunikela iinlayelo bonyana izinto zibekwa kuphi nokobana usuka njani kenye indawo uye kenye
- lokha naninekhambo lokuphuma.

Umbono

KwaGreyidi R, njengombana abafundi bathola ukuzwisisa ngcono bonyana izinto nazikude khulu zibonakala zizincani, umqondo wabo **wombono** uyakheka.

IDLHOSARI

umbono
umphumela webanga nofana wokutjhinga kokubonakala kwezinto

Kuyenziwa ...

- Bukelani abantu nezinto ngaphandle kwetlasi bese nikhuluma ngokobana kubayini babonakala babancazana.
- Vala ilihlo elilodwa bese uyameda bonyana umuntu mkhulu kangangani nofana into ibonakala iyikulu kangangani bese nikhuluma ngokobana zincani kangako na.
- Qalisisani izinto eziseenthombeni ezibonakala zizincani bese nikhuluma ngokobana kubayini kubenjalo.

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

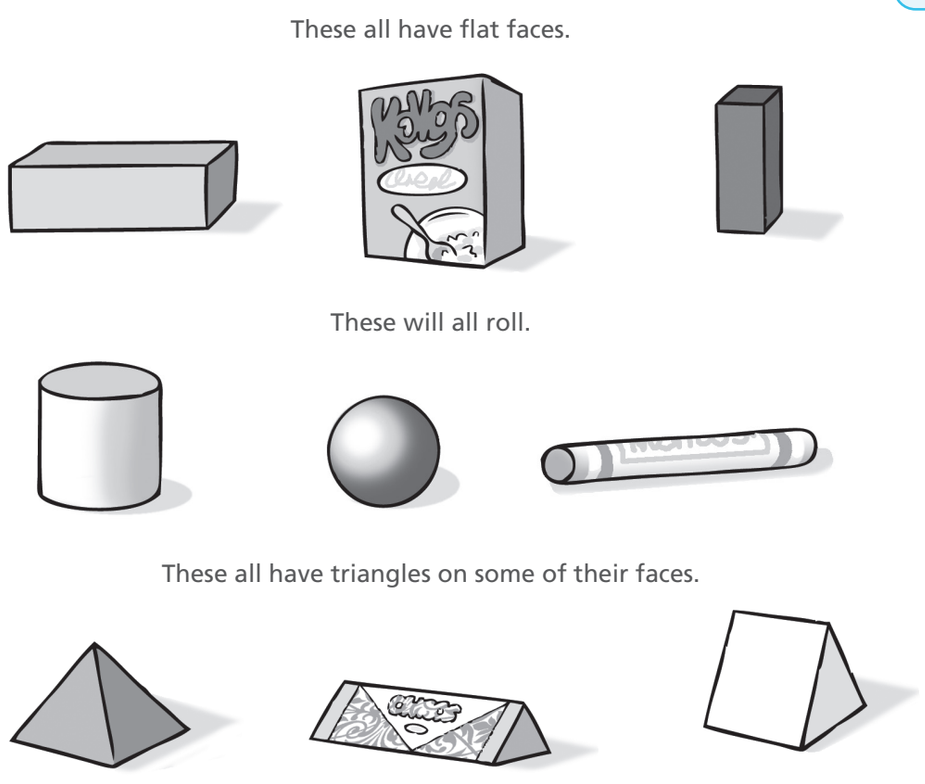


Figure 72 3-D objects

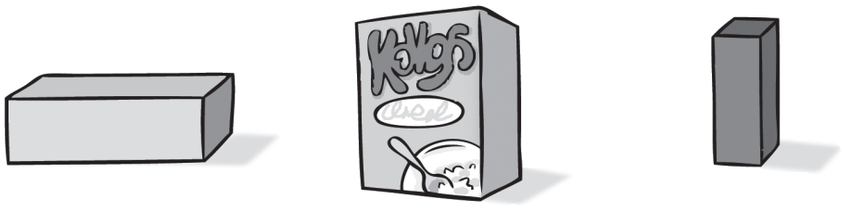
Ibumbeko

KwaGreyidi R, abafundi banqophana nokulemuka, ukufanisa nokuthiya **izinto ezibobusontathu (3-D) namabumbeko abobusombili (2-D)**. Elimini langamalanga, abafundi bazakutjho bonyana bayakwazi ukubona into amahlangothi woke, ngaphezulu nangaphasi. Ngokweembalo sihlathulula **amatshwayo** wezinto eziyi-3-D ngobude, ububanzi nokuphakama. Elimini langamalanga, abafundi bazakukhuluma ngamabumbeko we-2-D njengeenthombe, kodwana ngokweembalo sikhuluma ngamabumbeko anobude nobubanzi ukuhlathulula amabumbeko anobuso obubili.

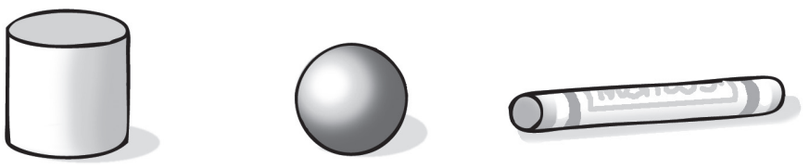
Izinto ezibobusontathu (3-D)

KwaGreyidi R, abafundi bahlola amatshwayo wezinto eziyi-3-D ngamalanga. Bakha imakhiwo ngokusebenzisa imethiriyeli yekhaya, njengamabhokisi, amabhlege, izitja, irolo yengaphakathi lephepha leendlwana neembholo. Bayaphenya begodu bahlathulule izinto ezibumbeke sabhokisi neziyibholo. Bayamadanisa begodu bahlele izinto ngamananeko, begodu bakhulume ngokufana nokuhluka kwazo.

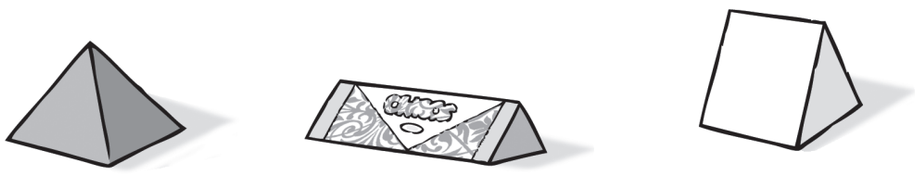
Koke lokhu kunobuso obusipara.



Lezi zizokugedeka zoke.



Lezi zoke zinaboncantathu kobunye ubuso bazo.



IDLHOSARI

amabumbeko abobusombili (2-D)
ibumbeko elinobuso obubili: ubude nobubanzi

izinto ezibobusontathu (3-D)
into enobuso obuthathu: ubude, ububanzi nokuphakama

itshwayo
izakhi zebumbeko eliyi-2-D nofana into eyi-3-D, isib. ubude, ububanzi, ukuphakama, amahlangothi (ubuso), imiphetho, 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.

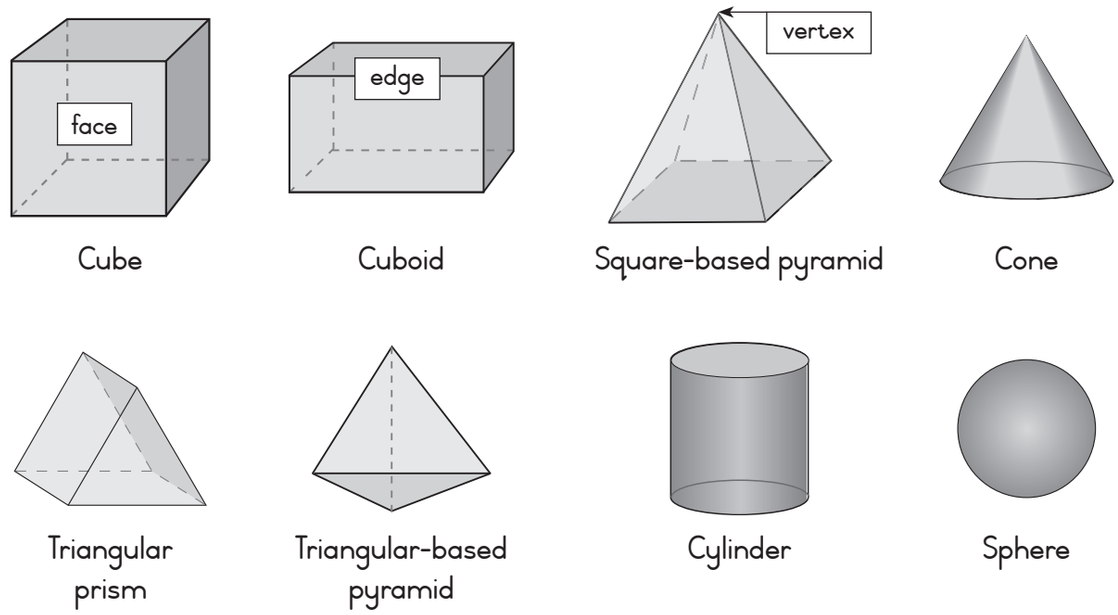


Figure 73 3-D solids

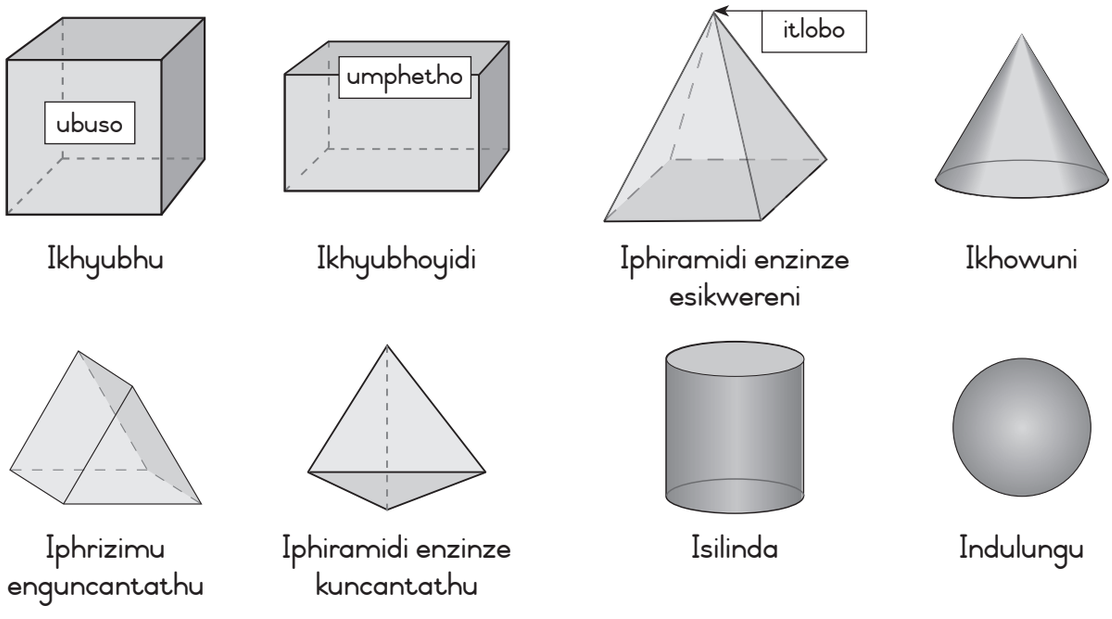
Kuyenziwa ...

Abafundi banga:

- Dlala ngebuthelelo lezinto ezima-3-D ukufaka hlangana amabhlogo, amabhlege, amabhokisi neembholo.
- Hlathulula izinto: Bangakhetha into yinye ngesikhathi esithileko. Ungakhuthaza ukucabanga kwabo ngokubuza imibuzo nokubazisa amabizo namatshwayo afaneleko wento ngayinye.
- Hlela ngamananeko izinto ze-3-D ngokuya ngokwetshwayo ngalinye, njengemiphetho enqophileko nofana ezingagedeka. Lokhu kuzakuvumela abafundi bajayele, begodu bahlole amatshwayo wezinto.
- Hlathulula izinto lezi ngokusebenzisa ilimi langamalanga njengokuthi kurondo, kubutjhelelezi, yipente. Lokha abafundi nabayelela amatshwayo amanengi bafunda amagama afaneleko, isib. umphetho, ikhona, ingaphezulu nofana ingaphasi, ubuso. Ukuhlela ngamananeko imisebenzi neenkulumiswano mayelana nezinto kuqakathekile ngombana kusiza abafundi ukuzwisisa, isibonelo, ukobana nanyana itjhubhu lekhadibhodi lilide begodu limatsikana ibhlege lesiselo lona lilifitjhazana, kokubili kuyisilinda.

Abafundi kufanele bahlahlwe ukukhumbula bonyana sitjheja itshwayo lento, njengobude, ububanzi nofana ukuphakama, lokha nasihlela ngamananeko ingasiwo umbala, ubukhulu nofana amanye amatshwayo.

Abafundi bakwaGreyidi R bangabuza bona yini ibizo lento, isib. ikhyubhu, isilinda nofana ikhowuni. Kumagreyidi aphakemeko abafundi bafunda ngezinto ezima-3-D ezikhonjiswe kumdwebo wama-73.



Ikhyubhu | Ikhyubhoyidi | Iphiramidi enzinze esikwereni | Ikhowuni

Iphrizimu enguncantathu | Iphiramidi enzinze kuncantathu | Isilinda | Indulungu

Umdwebo wama-73 Izinto ezima-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.

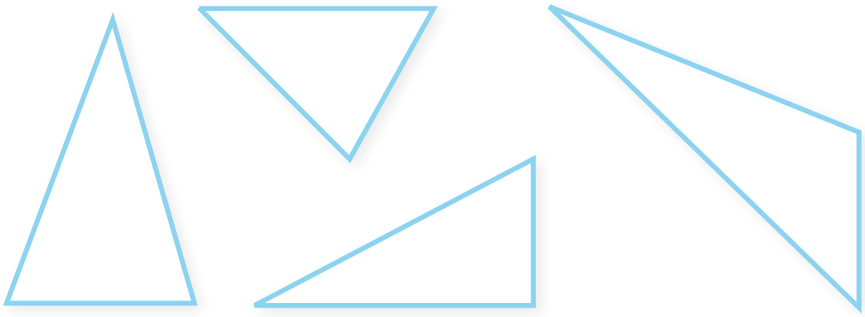


Figure 74 Shapes with three sides

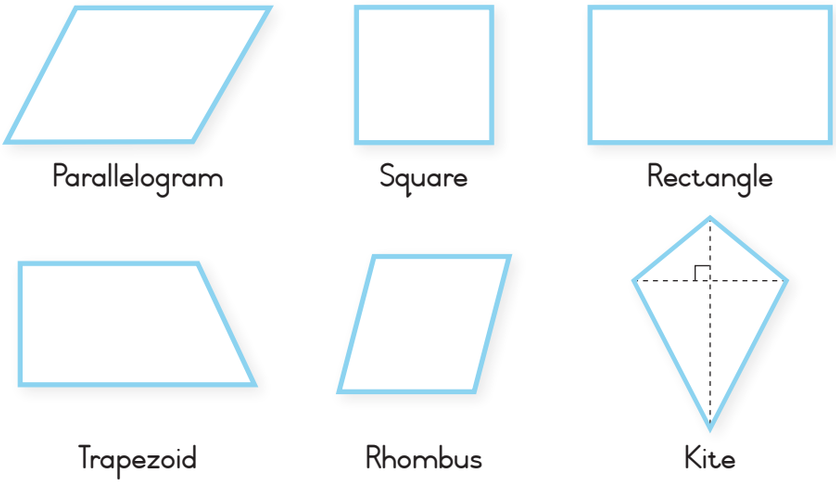


Figure 75 Shapes with four sides

Amabumbeko abobusombili (2-D)

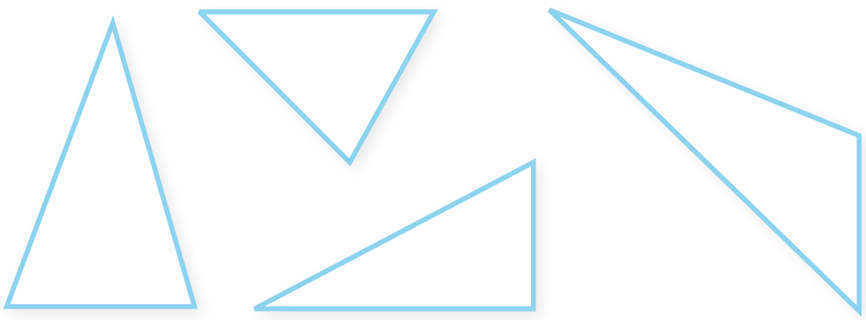
KwaGreyidi R, abafundi bakhumbula, bafanise bebatjho amabumbeko we-2D: iindulungu, aboncantathu, iinkwere naboncamane. Ngaphakathi nangaphandle kwetlasi babona amabumbeko begodu bangahlola amatshwayo wamabumbeko la eenthombeni bese baqala izinto 'ezipheze zifane' namabumbeko, isib. itshwayo lendlela lingafana nendulungu, irhalasi lefesdere lifana nesikwere, umnyango ufana noncamane.

Kuyenziwa ...

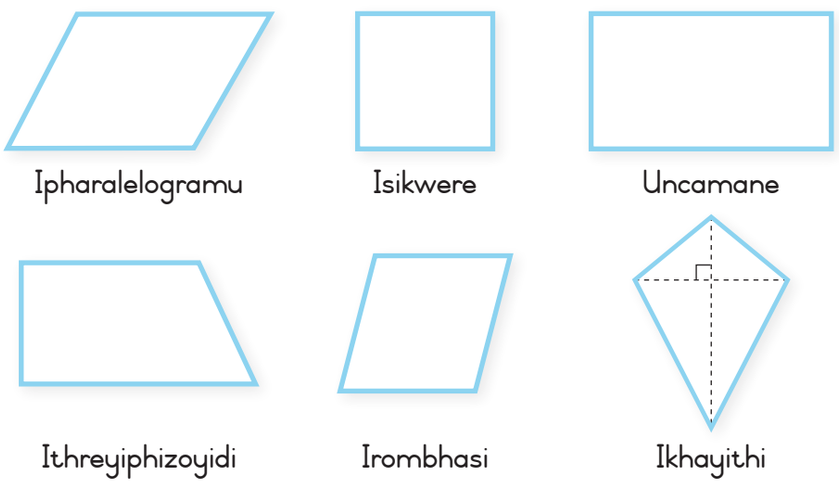
Abafundi banga:

- Hlola amatshwayo wamabumbeko we-2-D ngaphakathi nangaphandle kwetlasi, njengeendulungu, iinkwere, aboncamane naboncantathu.
- Qala izinto ezinebumbeko 'lesikwere', ngokuqalisa ehlangothini nofana ebusweni bebhokisi, nofana ibumbeko 'eliyindulungu' ngokuqalisa etshwayweni lendlela nofana ingaphasi nofana umphetho wekomitjhi.
- Hlathulula amabumbeko we-2-D wobukhulu nobujamo obuhlukileko eenthombeni.

Abafundi badinga ukubona amabumbeko ahlukileko we-2-D, isib. aboncantathu abahlukileko (ingasilezo zamahlangothi alinganako), aboncamane bobukhulu obuhlukileko. Lokhu kusiza bayelele bona ngiwaphi amabumbeko anokufanako, isibonelo, bonyana boke aboncantathu banamahlangothi amathathu namakhona amathathu nanyana babonakala bangafani, nokobana aboncamane banamhlangothi amane nanyana kungibuphi ubujamo.



Umdwebo wama-74 Amabumbeko anamahlangothi amathathu



Umdwebo wama-75 Amabumbeko anamahlangothi 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.

Nikela abafundi amathuba wokuhlola amabumbeko we-2-D ngesikhathi semisebenzi yokudlala ngokuzijamela. Yenza kubekhona imethiriyeli ehlukileko – amabumbeko weplastiki (amabhlogo wama-athributhi) namabumbeko wekhadibhodi yemibala nobukhulu obuhlukileko – bese ukhuthaza abafundi ukuwasebenzisa ukwakha amaphetheni, iinthombe nokujamiselela okulula. Ngesikhathi semidlalo le, abotitjhere bangakhulumisana nabafundi ngalokho abakwenzako begodu babuze nemibuzo ekhuthazako njengokuthi: 'Ngicocela ngephetheni oyenzako.' 'Yindlu ehle leyo, uyenze njani? Hlathululela umlingani wakho ngamagadango wakho.'

Lokha abafundi bakwaGreyidi R nabathoma ukuphenya nokuhlathulula ngamabumbeko nezinto, bavame ukusebenzisa ilimi langamalanga afana nospara, tjhelela, pente. Abotitjhere bangasiza abafundi kancanikancani ukufunda ukutjheja imida yamabumbeko nofana yezinto begodu basebenzise amagama weembalo ukujamiselela wangamalanga – amahlangothi, gobeneko, nqophileko, ikhona.

Ukuzwisisa kwabafundi amatshwayo wamabumbeko kuyakheka lokha nabakghona ukukhumbula **umehluko nokufana** phakathi kwamabumbeko. Lokhu kungenziwa ngokuhlela ngamananeko nokuhlukanisa imisebenzi begodu nangokukhambelanisa imisebenzi njengokuthatha isiqunto sokobana ibumbeko lizakulingana kuphazili nofana emakhiweni, nofana ukudlala ilotto yamabumbeko.

Umdwebo wama-76 Umehluko nokufanako kwamabumbeko

Kuyenziwa ...

Khamba usuke ku-3-D uye ku-2-D

Dweba ngemaqadi kwabafundi nakwezinye izinto ngetlasini ukubona nokukhuluma 'ngesithombe' esakhekako. Abafundi bangacwilisa izinto ngependeni bese bazigandelela ephepheni ukwenza imigadangiso. Bangadweba magega nomphetho wento bese bakhuluma ngomuda nebumbeko ebalakhako. Iinkotlelo, amabhlogo wokwakha, amarolo wengaphakathi lephepha lendlwaneni, nanofana ngiyiphi imethiriyeli ingasetjenziswa ukwakha iinthombe zebumbeko ngendlela yona le.

Imidlalo yebumbeko

Abafundi badlala ngababili. Omunye umfundi ufihla ibumbeko nofana into ngemuva kwakhe bese omunye umfundi abuze imibuzo ngayo bekufike lapho aqagela khona bonyana khuyini. 'Ispara? Inamahlangothi amathathu?'

Abotitjhere banganikela abafundi iselele bona benze amabumbeko amanengi ahlukileko ngendlela bakghona ngayo 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?'

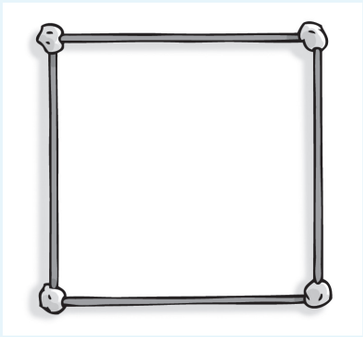


Figure 77 Building shapes

Construct shape pictures

Learners can use attribute blocks to create a picture.

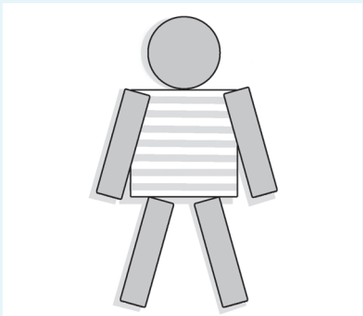


Figure 78 A shape picture

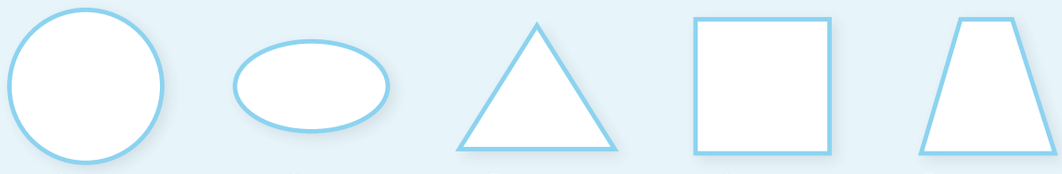
They can glue cut-out shapes onto paper to form other shapes or pictures.

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.

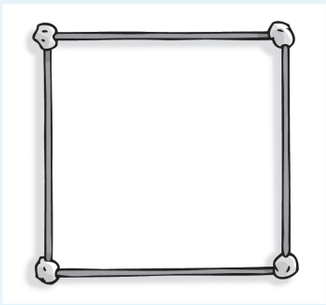
In higher grades learners will learn about a range of 2-D shapes. Learners in Grade R will often ask teachers and adults what a shape is called and the diagrams below provide a reference for these instances.



Ukwakha nokuhlukanisa amabumbeko

Abafundi nabangakwazi ukufanisa amabumbeko we-2-D (isikwere, indulungu, uncantathu, uncamane) nezinto ze-3-D (amabhokisi neembholo), sebakulungele ukwakha nokuhlukanisa amabumbeko:

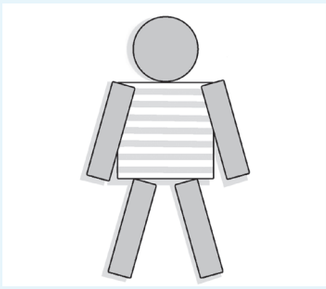
- Imicu, iingojwana nenye imethiriyeli efanako ingasetjenziswa nehlama yokudlalisa ukwenza amabumbeko.
- Bawa abafundi benze amabumbeko nikhulumisane ngawo. 'Leso sikwere. Ungasitjhugulula sibe nguncantathu?'



Umdwebo wama-77 Ukwakha amabumbeko

Yakha iinthombe zamabumbeko

Abafundi bangasebenzisa amabhlogo wama-athributhi ukwakha isithombe.



Umdwebo wama-78 Isithombe samabumbeko

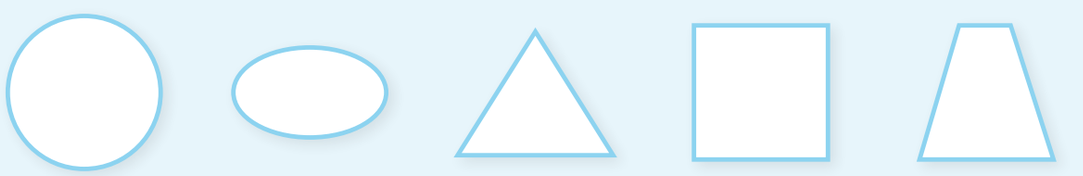
Banganamathisela amabumbeko asikiweko phezu kwephepha ukwakha amanye amabumbeko nofana iinthombe.

Bangageda, baminyezele bebagandelele ihlama yokudlalisa ukwenza amabumbeko begodu bawahlanganise ukwenza amabumbeko amatjha.

Amatjhuguluko

Abafundi basunduza, baphekghule bebaphendule amabumbeko lokha nabararulula umraro obandakanya amabumbeko, njengokukhambelanisa amabumbeko esithombeni, nokukhopha amaphetheni wamabumbeko ngokusebenzisa amabhlogo wama-athributhi.

Kumagreyidi aphakemeko abafundi bazakufunda ngerherho lamabumbeko we-2-D. Abafundi bakwaGreyidi R bazakunande babuza utitjhere nabantu abadala bonyana ibumbeko libizwani, amadayagramu angenzasi atjengisa iimbonelo zalokhu.



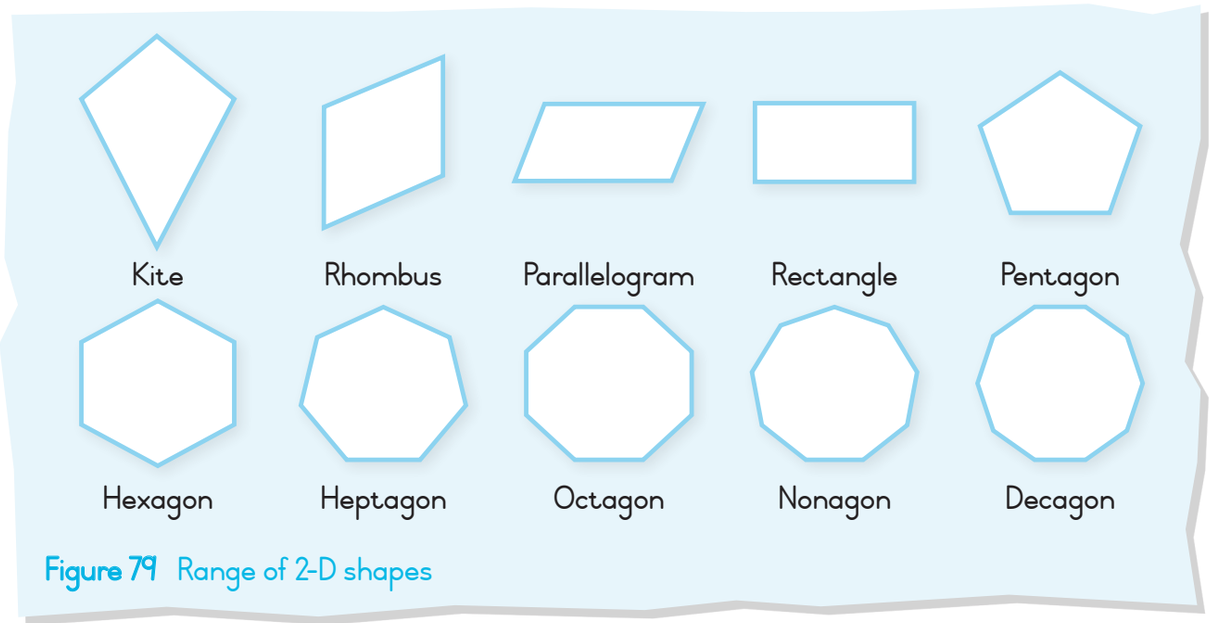


Figure 79 Range of 2-D shapes

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.

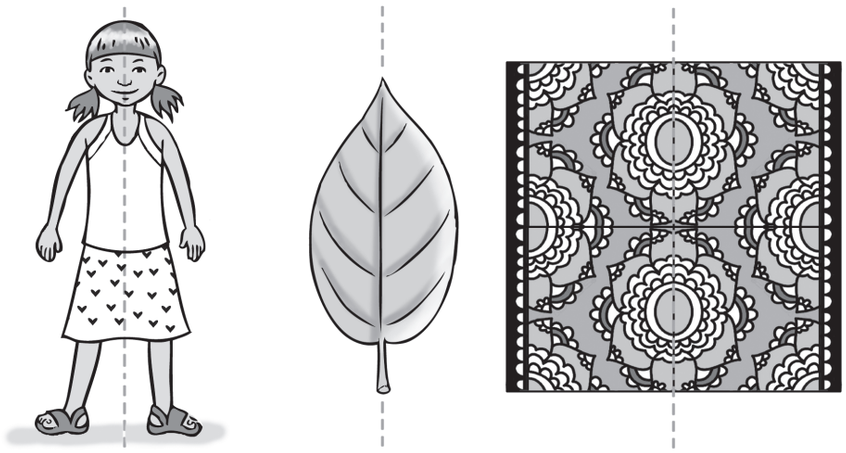
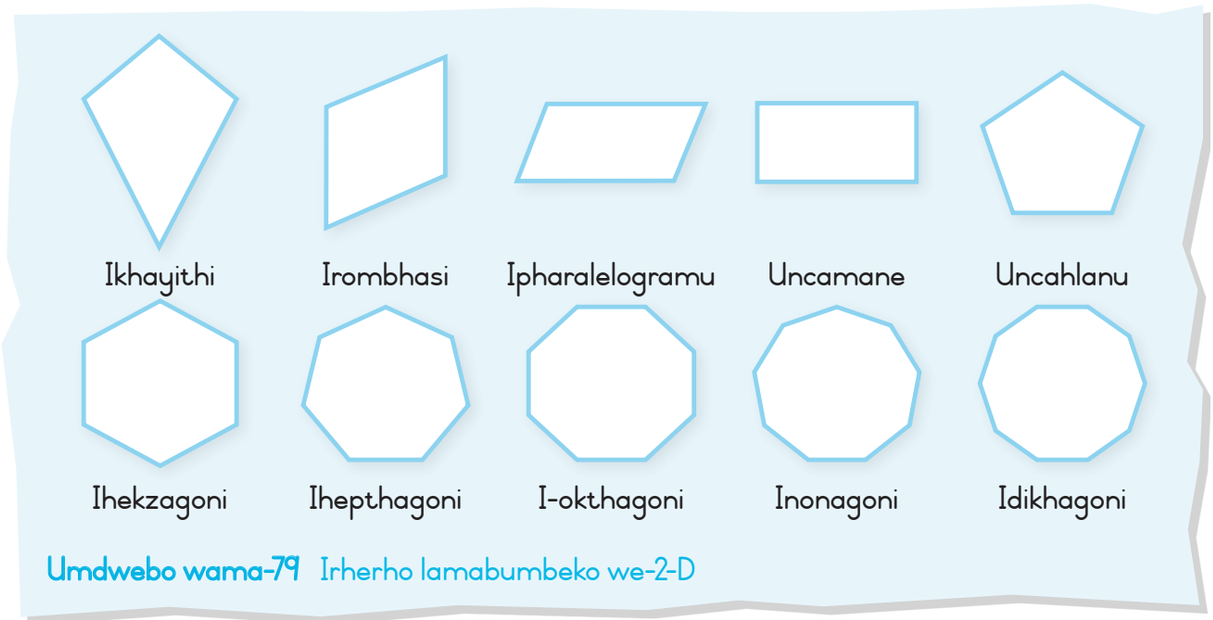


Figure 80 Line symmetry divides the shape into two identical parts.

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.



Umdwebo wama-79 Irherho lamabumbeko we-2-D

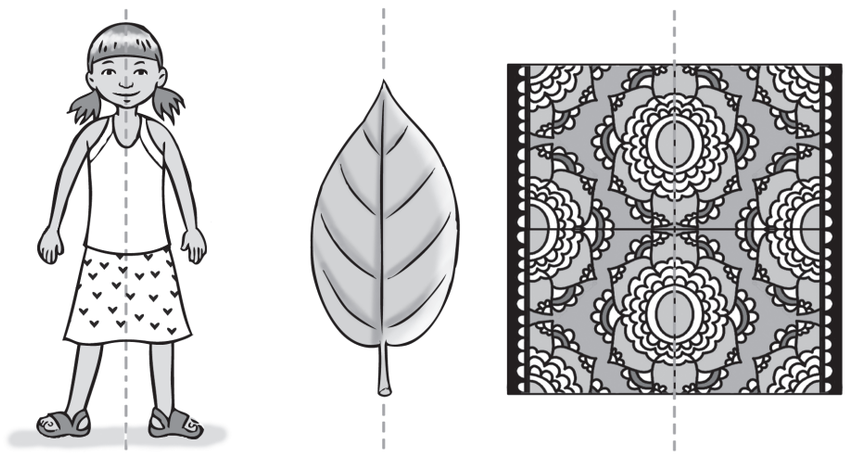
Isimethri

Abafundi bakghona ukubona amaphetheni wesimethri koke mazombe nabo, ngokwemvelo, emakhiweni, emagwaleni nezintweni. Eminyakeni yangaphambili, **isimethri** beyizwisiseka lula njengo- 'mkhanyo obuyako' nofana 'ukulingisela'. Abafundi bangahlola umqondo lo ngokubhinca nokusika amabumbeko neenthombe zibeziinquntu, nofana ngokudweba isithombe kesinye isiquntu sephepha basebenzisa amakhrayoni wamafutha, bese babhinca iphepha bahlikihle ngemuva komdwebo bese babone ikhophi lalokho abakudwebileko kubuyeleleke kesinye isiquntu sephepha.

Amaphetheni wesimethri angatholakala emizimbeni yethu, emvelweni, ebhodulukweni elakhiweko neenthombeni. Isimethri yomuda ihlukanisa ibumbeko libe ziingcenye ezimbili ezifanako. Umuda ungavundla nofana ujame rwe.

IDLHOSARI

isimethri
lokha ibumbeko nofana into ingahlukaniswa ibe ziinquntu ezimbili ezilinganako emudeni ophakathi naphakathi



Umdwebo wama-80 Isimethri yomuda ihlukanisa ibumbeko libe ziingcenye ezimbili ezifanako.

KwaGreyidi R, abafundi bahlola isimethri ngokumadanisa izinto neenthombe. Bafunda bonyana isimethri ayikaphathelani 'nokufana' kodwana iphathelene nokufana poro, isibonelo, iviyaviyani linesimethri kodwana isandla asinayo.

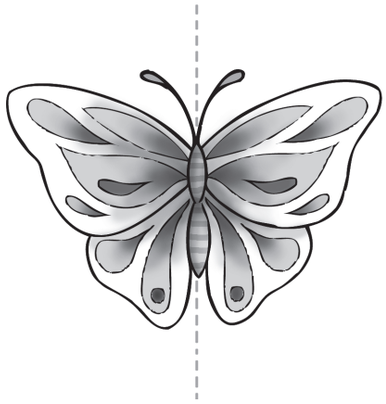


Figure 81 Symmetrical

Figure 82 Not symmetrical

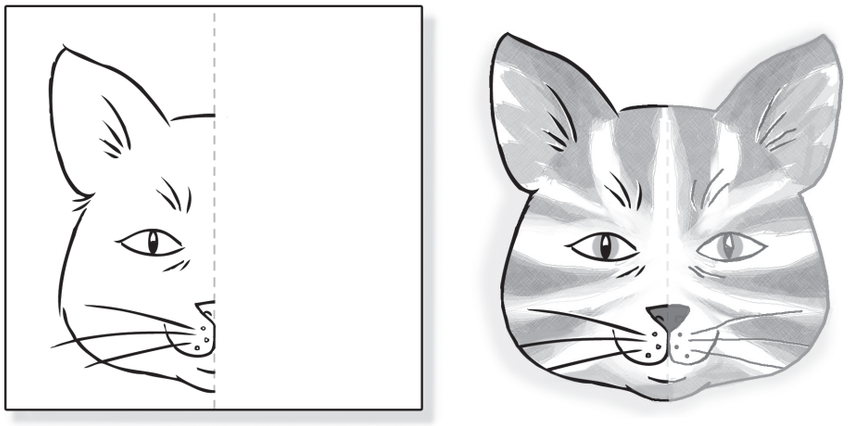
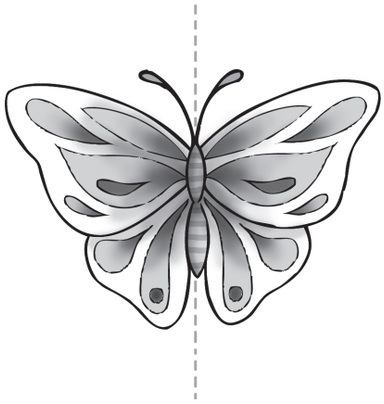


Figure 83 Folded piece of paper with image cut out and copied opposite to show symmetry.

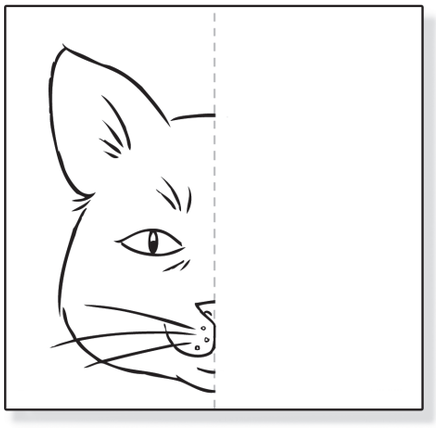
Questions to ask for Space and Shape (Geometry)

- 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?



Umdwebo wama-81 Okunesimethri

Umdwebo wama-82 Okunganayo isimethri



Umdwebo wama-83 Isiquntu sephepha esibhinciweko esinesithombe esisikiweko sakhophiwa ngehlangothini elinye ukukhombisa isimethri.

Imibuzo engabuzwa yesiKhala neBumbeko (Ijiyomethri)

- Ujame kuphi?
- Khuyini okungaphambili/ngemuva kwakho?
- Ungangitjela bona ngisuka njani e… ukuya e…?
- Ungangikhombisa bona ngikhamba njani magega nebhokisi, ngaphezulu kwesutulo nangaphasi kwetafula?
- Mhlobo bani webumbeko lo?
- Wazi njani bonyana nguncantathu/sikwere/nguncamane/yindulungu?
- Linamahlangothi amangaki ibumbeko leli?
- Linamakhona/iimpente ezingaki ibumbeko leli?
- Khuyini ongangitjela khona mayelana namahlangothi webumbeko leli?
- Khuyini ongangitjela khona mayelana nomuda?
- Khuyini okufanako/okuhlukileko mayelana namabumbeko amabili la?
- Kubayini afanele abendawonye?

- 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

- Kukhona into oyibonako ngetlasini lapha ebonakala ifana nebumbeko leli?
- Kuzakwenzekani nange ngingaphekghula ibumbeko leli? Kuzakwenzekani nange ngingaphendula ibumbeko leli?
- Ungawasebenzisa amabumbeko la ukwenza umfanekiso wesithombe lesiya?
- Ngiziphi izinto kilezi ezingagedeka/ezingatjhelela?
- Ungakwazi ukubeka izinto lezi zilakanyane?
- Amabumbeko la ayakghona ukuhlangana?
- Ungayithola into enamahlangothi asipara?
- Ungayithola into enamahlangothi agobekileko?
- Ibhokisi leli linemiphetho/amakhona//iimpente ezingakhi?
- Khuyini okufanako/okuhlukileko mayelana namabhokisi amabili la?

Ilwazimagama lesiKhala neBumbeko (Ijiyomethri)

Isikhundla nelayelo

- ngaphakathi, phezulu, kude, phezulu kwe-, ngale, ngaphasi, ngaphandle, ngaphakathi kwe-, ngaphandle kwe-, ngaphezulu, ingaphasi, ngehla, ngenzasi, hlangana, ngaphambi kwe-, ngemuva, eduze ne-, qale enzasi
- eduze, kude, eqadi kwe-, ihlangothi, ngaphakathi kwe-, ngaphandle kwe-
- seduze, seduzanyana
- kude, kudanyana
- eduze
- bunqopha, jika/phenduka
- mazombe, magegana-, ukusuka kokhunye
- kuya, kusuka, ngaku-, ukusuka ku-
- malungana
- phambili, emuva, emaqadi
- isincele, isidla

Amabumbeko we-2-D

- indulungu, sikwere, uncamane, uncantathu
- umuda, ihlangothi, umphetho, ikhona, ipente, bukhali
- gobeneko, -nqophileko

Izinto eziyi-3-D

- ibhlogo, ibhokisi, ngaphasi, ngaphezulu, amahlangothi, ispara
- imida, -nqophileko, umphetho
- ikhona, bukhali, ipente
- ibholo, rondo, gobeneko

Isimethri

- kufana noku-
- isincele, isidla
- ilingaphezulu, ilingaphasi

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.

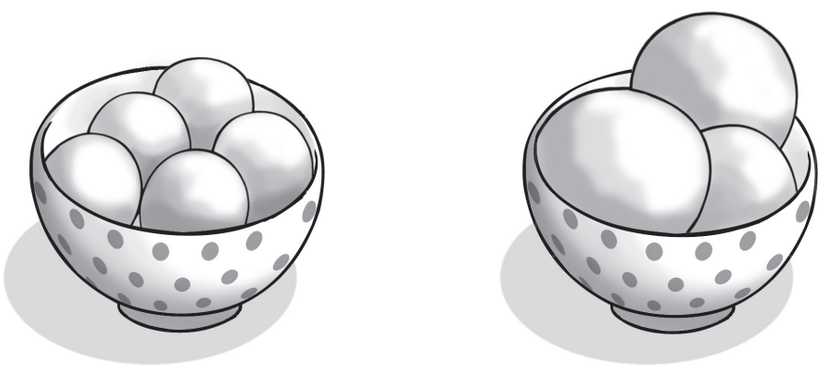


Figure 84 Estimating the amount of ice cream

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.

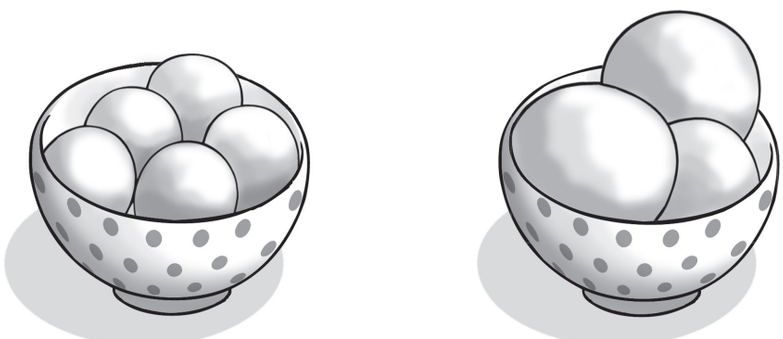
Ukumeda

Abantwana bazibandakanya **nokumeda** lokha nabadlalako begodu bahlola nepilo yabo yangamalanga. Bafika kwaGreyidi R banemibono yabo yokumeda, isibonelo, ukobana umuntu omdala ‘mkhulu’, ukobana into iphezulu khulu ayifinyeleleki, ukobana badinga izinto ezinengi zokuzalisa ibhokisi, ukobana kuthatha isikhathi eside ukukhamba uye esitolo. Bazakumadanisa amaswidi amabili ukubona elikhulu, amabhlogo wombhotjhongo ukubona elide khulu nofana amabhokisi amabili ukubona elibudisi khulu. Ukuzwisisa okuphathelene nemihlobo yokumeda kwakheka kancanikancani begodu kukhuliswa nalilemuko labantwana langamalanga neenkulumiswano ababanazo nabantu abadala nabangani, isibonelo, bangathatha isiquntu esikhulukhulu soburotho nofana bamadanise ukuphakama nofana bathole bonyana ngubani onenyawo elincancani nofana ngubani owenze umbhotjhongo omude khulu. Bathatha iinquntо mayelana nokobana ngisiphi isidlalisi sekoloyi esizakulingana ngegaratjhi nokobana bazakudinga amabhlogo amangaki ukwenza igaratjhi ibeyikudlwana nofana ibe yincazana. Bangameda iinthako zokupheka, ukuthela amanzi nofana ihlabathi ngejegeni ukubona bonyana mangaki amakomitji angayizalisa, nofana ukumadanisa bona umgodla wetjhukela nebhokisi lama-orentji zibudisi kangangani.

IDLHOSARI

ukumeda
‘ubungako’ bento, isib. ukuphakama, ubude, ubunengi, ivolumu, umthamo

Isimedo namayunithi esiwasebenzisela ukumeda kumayelana nokuthola ‘ubungako’ obukhona bento. Ukumeda kuhlangana nezinye iingaba zeembalo, njengeenomboro, amaphetheni, amabumbeko nedatha. Abafundi babala bonyana mangakhi amayunithi afunekako ukumeda ubungako obuphathekako, njengokuphakama, umthamo, ivolumu, ubude, ubudisi, nofana ubungako obungaphathekiko, njengesikhathi, imali nofana izinga lokutjhisa. Bangalinganisa bonyana ngikuphi kwento ‘okudluleleko’ nofana ‘okungaphasi’, isibonelo, iingobho ze-ayisikhrimu ngesikotleleni. Bazakusekela isilinganiso sabo ngobungako besikhala esithathwa yi-ayisikhrimu, ingasi ubudisi besikotlelo nofana beengobho.



Umdwebo wama-84 Ukulinganisa ubunengi be-ayisikhrimu

KwaGreyidi R, ukumeda kuyinto eyenziwako begodu abafundi kufanele benze imisebenzi eminengi yokuzibambela ezwisiseka kibo. Ukuzwisisa umqondo wokumeda, isibonelo, into ‘ibudisi’ kangangani, abafundi kufanele badobhe izinto bese bamadanisa ubudisi bazo. Ukumeda kuphathelene nokuthola ubukhulu nofana ubungako bento yinye ngokuyimadanisa neyunithi engakavami, njengezandla, iinyawo, ipensela nofana isiquntu sentambo, nofana iyunithi yokumeda evamileko, njengesenthimitha nofana ilitha.

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.

Abotitjhere kufanele babukele abafundi ngesikhathi semisebeni begodu bakhulumisane nabo mayelana nemibono yabo. Abotitjhere bangathula ilwazimagama elitjha lokha abafundi nabamadanisako, isibonelo, izinto zide kangangani. Lokha abafundi nabakhuluma 'ngobukhulu' nofana 'ubuncani' bento, utitjhere angatjengisa ukusebenza kwelwazimagama elifaneleko ngokuhlalisa kuhle amagama wabo. Isibonelo, lokha umfundi nakathi umuntu othileko mkhulu nofana mncani, utitjhere kufanele abakhuthaze ukutjho bona khuyini okumayelana nomuntu okumenza abemkhulu nofana abemncani. Kungaba kuphakama nofana ububanzi nofana ubudisi bomuntu?

Umdwebo wama-85 Ukusebenzisa ilwazimagama leembalo

Abafundi nasele bathethe isiqunto mayelana nalokho abafuna ukukumeda (i-athributhi) kufanele bathathe isiqunto sokobana bazolimeda njani i-athributhi ethileko, njengokuphakama.

Umdwebo wama-86 Ukusebenzisa izandla ukumeda ukuphakama

Ngendlela le, abafundi bazakuthoma ukuzwisisa kobana izinto 'ezikulu' akusizo izinto ezibanzi kwaphela, nokobana bangaziqala ngobude, ukuphakama nofana ubudisi.

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.

Kuyenziwa ...

Abafundi bayahlanganisa nofana bayakhupha lokha nabararulula imiraro yokumeda ebandakanya iinomboro, isibonelo, lokha naba:

- madanisa ubunengi lokha nabathela amanzi nofana ihlabathi ngeemphathini ezihlukileko, bazakuyelela bona badinga amakomotji ama-2 ukuzalisa ijege
- thola bona zingaki izinto abangazibeka ngemahlangothini wesikala sokudzimelela ukwenza amahlangothi anzinze, bazakuyelela bonyana badinga ukungezelela ngakhunye nofana okumbadlwana bese babala inani elipheleleko
- kha imibhotjhongo yamabhlogo begodu bahlanganisa, bakhuphe begodu babale inani lamabhlogo wokwenza umbhotjhongo omudanyana nofana omfitjhazana.

Ukwakha umqondo wokumeda

Abafundi kufanele babe namathuba amanengi wokurarulula imiraro ebandakanya ukumeda begodu kufanele babe nerherho elifaneleko leemphathi abangazisebenzisa emisebenzini engakahleleki ukuphenya nokuzitholela iinsombululo ngokwabo. Abafundi badinga imisebenzi yokuzibambela ebandakanya ukumadanisa ngokudobha, ukuthela, ukuthinta nokukhuluma ngelemuko labo.

Umdwebo wama-87 Iimphathi zemisebenzi yokumeda

Iindlela ezihlukileko zokumeda

Ukumadanisa bunqopha

Umnqopho wokumeda usekumadaniseni i-athributhi yento 'bunqopha'. Isibonelo, ukumeda ubude bepensela ngokumadanisa nenye ipensela nofana ukumadanisa ukuphakama kwabafundi ababili abajame bafulathelana.

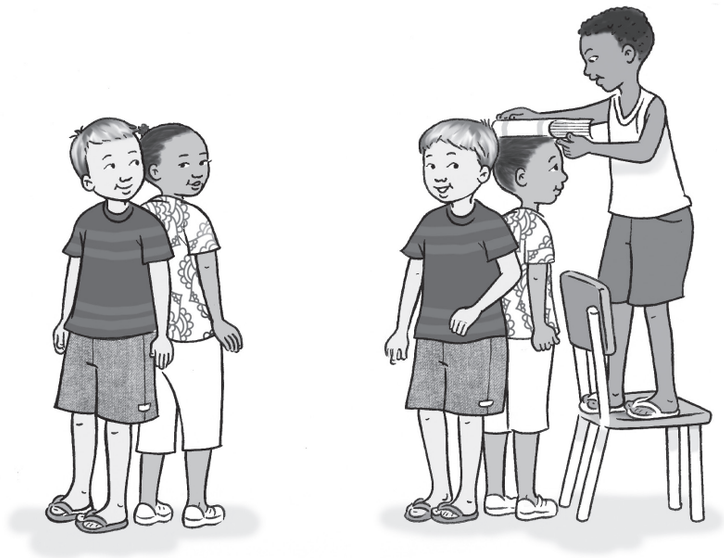


Figure 88 Comparing the height of two learners

'Max is taller than Lola.'
'How much taller is he?'

Comparisons can also involve ordering:
'Max is taller than Lola, but shorter than Elton.'

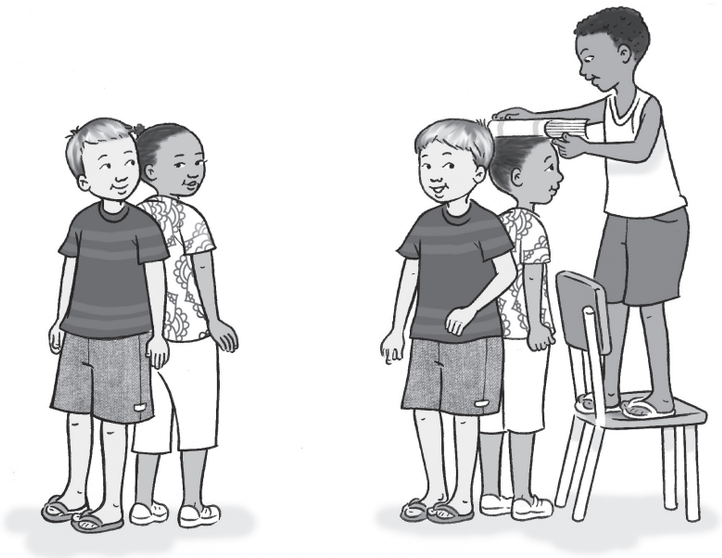
Figure 89 Tallest to shortest

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



Umdwebo wama-88 Ukumadanisa ukuphakama kwabafundi ababili

'UMax mude kunoLola.'
'Mude kangangani?'

Ukumadanisa kungabandakanya ukurhemisa:
'UMax mudanyana kunoLola kodwana mfitjhazana kuno-Elton.'

Umdwebo wama-89 Okude khulu ukuya kokufitjhani khulu

Ukumeda okungakahleleki

Simeda ngokungakahleleki, ngokusebenzisa **amayunithi angakavami** wokumeda, isibonelo, lokha nasisebenzisa ubude bomkhono ukumeda isiquntu sentambo, nofana ukusebenzisa iinyawo zethu ukumeda ubukhulu bomada.

IDLHOSARI

iyunithi engakavami
iyunithi yokumeda esebenzisa into enjengenyathelo, itlipu yephepha nofana ikhyubhu; ingaba yinto engakahleleki njengesandla, inyawo nofana 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.

Iyunithi yokumeda evamileko

Sisebenzisa amayunithi wokumeda avamileko afana namamililitha, amalitha, amasenthimitha, amamitha, amagremu, amakhilogremu, imizuzu nama-iri ukumadanisa ubude bento, bonyana into ibudisi kangangani nofana kuthatha isikhathi eside kangangani ukwenza into ethileko. Sisebenzisa amayunithi avamileko ukumeda ngokunembako.

Ukulinganisa

Abafundi badinga ukuthuthukisa amakghono wabo wokulinganisa ngesikhathi sabo semisebenzi yokumeda okungakahleleki, isibonelo, kufanele balinganise bonyana bacabanga bona into ibudisi kangangani ngaphambi kobana bamede, nofana into yide kangangani ngokuya ngenani lamabhlogo abacabanga bona bazawadinga ukuyimeda, nofana bacabanga bona kuzakuthatha isikhathi esingangani ukuqeda ukubutha itlasi. Bese basebenzisa iimedo ukuthola bona isilinganiso sinemba kangangani.

Kuyenziwa ...

Abafundi bathoma ukuzwisisa bonyana khuyini ukumeda nokobana kubayini kufanele bamede. Bezwisisa bonyana:

- Ukumeda kubandakanya ukumadanisa bunqopha nokusetjenziswa kwamayunithi angakavami, njengezandla neenyawo, nezinye iinlinganiso ezinobukhulu obulingana poro nofana ubude obunjengobamabhlogo, intambo, nemicu yokubala.
- Iyunithi ngayinye inobukhulu obuhlukileko; bayayelela bonyana isimedo ngasinye sikhipha imiphumela ehlukileko.
- Sisebenzisa iyunithi yokumeda evamileko eyodwa kobana soke sizokuba nomphumela ofanako lokha nasimadanisa i-athributhi.

Abafundi badinga amathuba amanengi wokuzithathela iinqunto ngokwabo mayelana nokobana kumedwa ini nokobana kumedwa njani. Kufanele bamadanise imiphumela yeemedo zabo begodu basebenzise amayunithi ahlukileko ukumeda zona izinto lezo.

Emagreyidini aphakemeko, abafundi nasele bafumene amakghono wokumadanisa nokulinganisa, bathoma ukusebenzisa amayunithi avamileko. Abanye abafundi bakwaGreyidi R bangahlangabezana namathuluso wokumeda ekhaya begodu lokhu kungakhulunyiswana ngakho esikolweni ngokungakahleleki, isibonelo:

- iinjege zokumeda, iingobho zokumeda – ukumeda amamililitha, amalitha
- amarula, iintheyibhu zokumeda – ukumeda amasenthimitha, amamitha
- iinkala – ukumeda amagremu, amakhilogremu
- amawatjhi neentlogo – ukumeda imizuzu, ama-iri.

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.

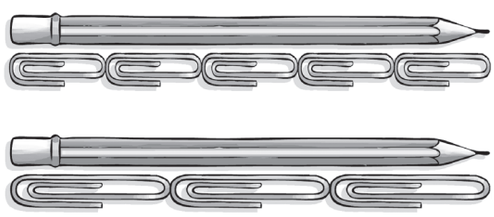


Figure 90 Measuring length with two different units of measurement

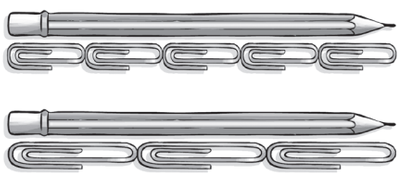
Isikhathi

Ihlangothi lokumeda eliphathelene nokuphathekako – ibanga, umthamo, ubudisi – lingathulwa kubafundi ngokwemisebenzi nezehlakalo ezijayelekileko, kodwana isikhathi mqondo ongaphathekiko olikhuni kobana abafundi bangawuzwisisa. Lokhu kancani kubangelwa kukobana abantu abadala abasebenzisi ilimi lesikhathi elinembako, basebenzisa izitjho zangamalanga njengokuthi, 'Ngizakuba lapho ngomzuzu,' kodwana bathatha isikhatjhana kunalokho. Godu, abantwana abancani bavame ukuphila 'emzuzwini loyo' ngalokho-ke ukukhumbula izehlakalo ezidlulileko ngokulandelana nofana ukutjhwela phambili izehlakalo ezizako kubudisi khulu kibo. Abafundi kufanele bezwisise bona isikhathi sidlula njani epilweni yabo, ngalokho abotitjhere kufanele bahlobanise isikhathi nelemuko labafundi langamalanga nezehlakalo ezijayelekileko kibo.

- Ukulandelanisa izehlakalo: Abafundi kufanele bezwisise ilimi lesikhathi ukuze bazokukhuluma ngendlela ukulandelana kwezehlakalo kwenzeka ngayo. Sebenzisa ikambiso yangamalanga neendatjana ukukhuluma ngehlelo lezehlakalo ngesikhathi semini nokulandelana kwamagadango ukuqedelela umsebenzi – 'khuyini okulandelako/ okungaphambili/okungemuva'.
- Amayunithi wesikhathi: Madanisa amayunithi ahlukileko wesikhathi: isikhathi sesikolo sisekuseni, isikhathi sekhaya singemva kwedina, isikhathi sokulala sisebusuku, 'ulala' kabili kufike ilanga lakho lamabeletho. Yenza itjhadi lobujamo bezulu, beka ikhalenda yenganya enye nenye urekhode izehlakalo eziqakathekileko ehlelweni lesikhathi leenthombe. Khulumani 'ngezolo, namhlanje, kusasa'. Kancani kancani abafundi bathoma ukuzwisisa bona isikhathi sakheka njani sibe malanga weveke, iinyanga zomnyaka neenkhathi zomnyaka.
- Iinlinganiso zebelo: Gijimani nireyisise ngaphandle. Sibenzisani amagadasi weplastiki ukwenza umzila wokugeda abomabula nombundu wokusunduzela iinkoloyana phasi naphezulu. Gidelani umvumo obuthaka nomsinya. Buza abafundi bonyana kubathatha isikhathi esingangani ukubhratjha amazinyo wabo nofana ukukhamba bazombe isikolo. Khulumani ngemisikinyeko nemisebenzi emsinya, erhabako nebuthaka.

Ubude

KwaGreyidi R, umnqopho umayelana nokulinganisa, ukumeda, ukumadanisa nokuhlela ubude nebanga. Abafundi kufanele bezwisise bonyana ukuze bathole ubude bento kufanele bayimede ukusuka emphethweni ukuya komunye umphetho. Isibonelo, bangameda bebamadanise ubude bepensela ngokusebenzisa amatlipu wephepha njengamayunithi angakavami. Isithombe esingenzasi sikhombisa bona ipensela yona leyo ingamedwa njani ngokusebenzisa amayunithi wokumeda ahlukileko. Esithombeni sokuthoma kunamatlipu wamaphepha amahlanu bese esithombeni sesibili kunamatlipu wamaphepha amathathu amakhudlwana.



Umdwebo wama-90 Ukumeda ubude ngamayunithi amabili wokumeda ahlukileko

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 bangameda ukusuka phezulu ukuya phasi ukuthola ubude bento, isib. ukuthola bona abafundi bangetlasini bade kangangani. Begodu ungabahlela ngefanelo ukusuka komude khulu ukuya komfitjhani khulu.

- Ukumadanisa bunqopha: Thola izinto ezide kune-/ezifitjhani kune- … Hlela izinto ngamananeko ngokuya ngobude nokuphakama. Khulumani benihlathulule bonyana kubayini izinto zihlelwa ngamananeko athileko.
- Ama-athributhi: Khulumani ngobude, ukuphakama nofana ububanzi obufanele ukumedwa.
- Amayunithi angakavami: Sebenzisa izandla, amakari, iimpensela ukumeda nokumadanisa izinto.
- Amayunithi angakavami afanako: Sebenzisa iyunithi yobukhulu obufanako, isibonelo, amabhlogo. Beka amabhlogo magega nobude boke bento emedwako. Ngemuva kwesikhathi sebenzisa ibhlogo elilodwa ulikhambise ngokugega, ubale inani lokutjhida.

Ubudisi/Imasi

KwaGreyidi R umnqopho usekulinganiseni, ukukala, ukumadanisa nokuhlela izinto ngokuya ngokobana zibudisi nofana zibulula kangangani. Kuthatha isikhathi bonyana abafundi bezwisise umqondo wokobana ubukhulu nobungako (nofana ubudisi) kuhlukile. Abafundi kufanele bahlole izinto ezincani ezibudisi, izinto ezincani ezilula bese bayazimadanisa. Abotitjhere kufanele basize abafundi baqalane nokobana into ibudisi kangangani, bangaqali ubukhulu.

- Ukumadanisa bunqopha: Bamba into bese ulinganisa **ubudisi** bayo. Thola izinto ezibudisana nofana eziludlana kunezinye izinto.
- Ama-athributhi: Khulumani ngebumbeko, ubukhulu nobungako bento emedwako.
- Amayunithi angakavami: Sebenzisa isikala sokudzimelela ukumadanisa ubudisi bezinto. Beka into ekufanele ikalwe ngehlangothini elilodwa lesikala. Ngezelela ngenye (nofana ngaphezu kweyodwa) into ngakelinye ihlangothi lesikala ukwenza kulingane.
- Amayunithi angakavami afanako: Sebenzisa iyunithi yobukhulu obufanako, isibonelo, ibhlogo elikhulu nofana incwadi ukumadanisa ubudisi bezinto ngokusebenzisa isikala sokudzimelela.

IDLHOSARI

ubudisi/imasi
into ibudisi kangangani

Umthamo

Umthamo wento kukobana ingaphatha kangangani, isibonelo, ilitha elilodwa lebhodlelo lebisi lingaphatha ilitha elilodwa letlelezi. KwaGreyidi R, umnqopho usekulinganiseni, ukumeda, ukumadanisa nokuhlela iimphathi ngokobana zingaphatha kangangani. Abotitjhere kufanele banikele abafundi amathuba amanengi wokusebenzisa umqondo welize nokuzala, isib. lokha nabazalisa nofana bathululula amanzi nofana ihlabathi engeemphathini ngesikhathi sombambandlala. Abafundi bangazalisa iimphathi lezo ngezinto ezihlukileko bese bakhuluma ngomthamo wazo: 'Mangaki amakomitji wamanzi esiwafunako ukuzalisa ijege le? Kubayini sifuna amabhodlelo ambadlwana webisi anamanzi ukuzalisa ijege?'

IDLHOSARI

umthamo
inani elikhulu nofana elipheleleko elingabanjwa/ mumathwa ngokuthileko (okufana nethunga nofana ibhokisi, nofana isitediyamu)

- 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

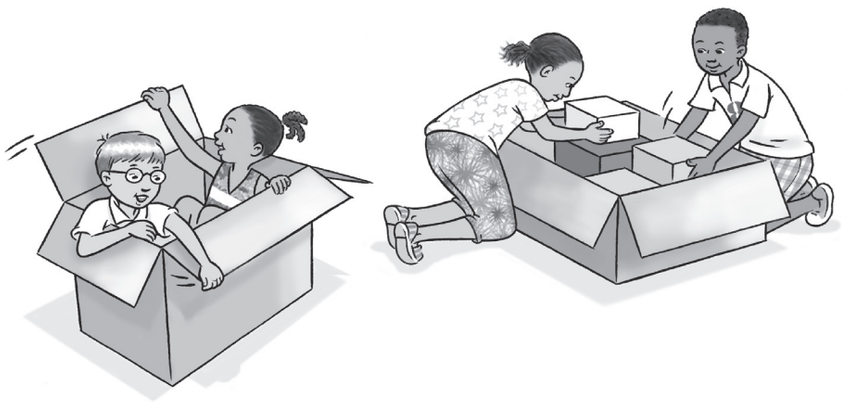


Figure 91 Exploring capacity and volume

- 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?'

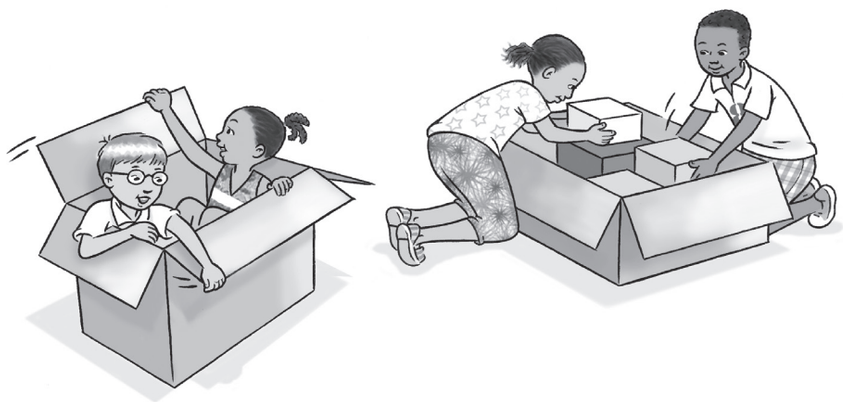
- Ukumadanisa bunqopha: Zalisa, thulula begodu uthele phakathi kweemphathi ezifanako ngokusebenzisa amanzi nofana ihlabathi ukuthola bonyana ziphatha umthamo ofanako na. Ekuthomeni, abafundi bangalinganisa bonyana isiphathi eside kezimbili sizakuphatha amanzi amanengi.
- Amayunithi angakavami: Yenza isitjengiso-mbono ngokobana iimphathi ezihlukileko zingaphatha amanzi nofana ihlabathi engangani. Madanisa bonyana ngisiphi esiphatha 'okunengi' nofana 'okuncani'. Zalisa isiphathi esisodwa bese uthela amanzi nofana ihlabathi leyo ngakesinye ukubona bonyana siyathuluka nofana kunesikhala esiseleko sokungezelela ngokhunye. Zalisa iimphathi ezide nezibanzi bese uyazihlela ukusukela kileso esiphethe okunengi khulu ukuya kileso esiphethe okuncani khulu.
- Amayunithi angakavami afanako: Bala inani leengobho nofana lamakomitji azalise iimphathi zobukhulu obufanako nobuhlukileko.

Ivolumu

Ivolumu iphathelene nobungako bokuthileko obuphethwe yinto, njengamanzi, ihlabathi, ireyisi nofana itjhukela. KwaGreyidi R, umnqopho wokumeda kufanele ube phezu kobungako obungaphathwa siphathi (umthamo) kunobungako besikhala esithathwa siphathi (ivolumu). Ivolumu ingatjhuguluka ngokuya ngobungako bokumumethweko nofana ngisiphi isikhathi, kodwana umthamo uhlala ufana, isibonelo, umthamo wejege lilitha li-1 nofana ingaphatha kangangani ngesikhathi leso. Lo mqondo olikhuni ebafundini bakwaGreyidi R kobana bawuzwisise.

IDLHOSARI

ivolumu
ubungako obumumethwe ngokuthileko nofana isikhala esithathwa ngokumumethweko



Umdwebo wama-91 Ukuhlola umthamo nevolumu

- Ukumadanisa bunqopha: Abafundi benza isitjengiso-mbono ngeemphathi ezibumbeke ngokuhlukileko ukuthola bonyana isiphathi sikhulu kangangani nokobana bacabanga bona singaphatha kangangani.
- Amayunithi angakavami: Thayisani ngemanzini iimphathi ezifana neemphathikudla zeplastiki, umjekana weplastiki webhodoro yamantongomani, iinjege zebisi. Zizaliseni ngeembalisi nofana ihlabathi bese nikhuluma ngokobana kwenzekani. Buza imibuzo njengokuthi: 'Zisathaya? Kwenzekani ngamanzi angebhakedeni? Ayaphalaka?'

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 mayelana Nokumeda

- Khuyini okwenzileko lokha nawuvukako?
- Khuyini okwenzileko ngemuva kwalokho?
- Kwenzekeni ngemuva kwalokho?
- Senzeni ngaphambi kwalokho …?
- Sizakwenzani ngemuva …?
- Ngiyiphi ekhamba msinya khulu/kancani khulu?
- Ngelesingaki na …? Kuzakuba ngiliphi ilanga …?
- Ngiyiphi edanyana/efitjhazana?
- Ngiyiphi ebudisana/eludlana?
- Mangaki amakomitji/iingobho/amabhodlelo aphathwa yi …?
- Ngisiphi isiphathi esingamumatha ukudlula lesi isiphathi?
- Ngesikabani isiphathi esinomthamo omkhulu? Wazi njani?
- Ngome kwamambala. Ngiliphi ikomitji ekufanele ngilisebenzise? Kubayini?

Ilwazimagama Lokumeda

- khambelanisa, hlela ngamananeko, madanisa, landelanisa
- meda, -fana ne

Isikhathi

- ngaphambili, ngemuva, -landelako, gadesi, ngaleso sikhathi
- masinyazana/ngokurhaba, kabuthaka
- imini, ubusuku, ikuseni, imva kwedina
- namhlanje, izolo, kusasa
- iveke, amalanga weveke
- inyanga, iinyanga zomnyaka
- ikhalenda
- umnyaka, ilanga
- isiruthwana, ubusika, itwasahlobo, ihlobo, iinkhathi zomnyaka

Ubude

- -de kangangani, -fitjhani, -banzi, -de
- -danyana, -de khulu, fitjhazana, -banzana
- fitjhani khulu ukuya kokude khulu, -de khulu ukuya kokufitjhani khulu

Ubudisi/Imasi

- -budisi, -budisana, -budisi khulu
- -lula, -ludlana, -lula khulu

Umthamo

- ngaphezulu/dluleleko, ncani kuna-/ngaphasi kwa-, -nganalitho/-ze, -zele

Ivolumu

- khulu, -ncani, -banzi, mbijana/-ncani, ncancani

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.

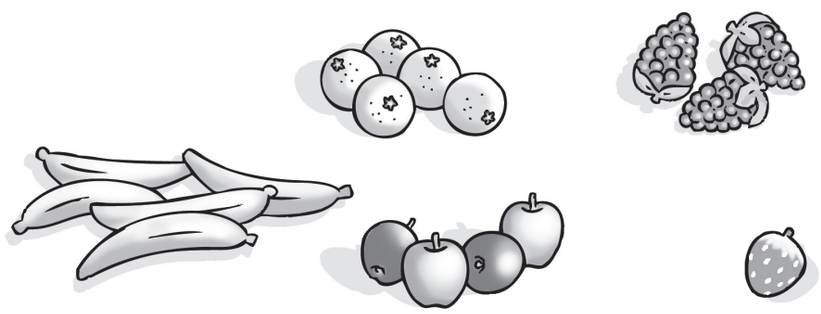


Figure 92 Collecting, sorting and organising into groups

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.

Ukuphatha iDatha

Abantwana abancani babuza imibuzo lokha nabazama ukuzwisisa iphasi abaphila kilo. Abotitjhere kufanele bakhuthaze abafundi bakwaGreyidi R bona babuze imibuzo bafune nehlathululo. Imibuzo le ingasetjenziswa njengesisekelo sokubuthelela ilwazi (idatha) nokuthola ngezinto nezehlakalo.

Ukuhlela ngamananeko nokuhlukanisa ngeengaba

Abafundi bahlala bahlela ngamananeko begodu **bahlukanise ngeengaba** izinto ezibabhodileko ngeendlela ezihlukileko. Babeka izinto ngeenqhema zemibala nobukhulu obuhlukileko, bayapaka babuye bapakulule izinto ekhaya nesikolweni, bazihlele ngamawobhu wamabumbeko ahlukileko bese basebenzisa, isibonelo:

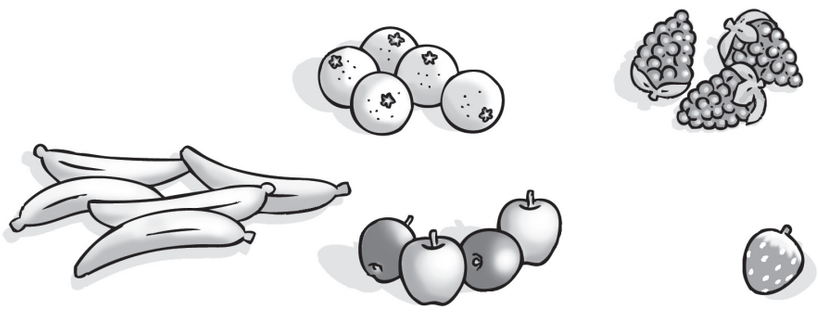
- ukuhlela ngamananeko nokukhambelanisa iinqhema zezinto: amakowusu, amanyathelo, amapuleyidi, amakopi
- ukupaka izinto: amabhlege, amabhokisi, amabhodlelo, iimbalisi
- ukuhlela ngamananeko iimbalisi nofana iindlalisi ngokwama-athributhi: umbala, ubukhulu, umhlobo
- isikhathi sokubutha: iincwadi, amabhlogo, amaphazili, imidlalo, amakhrayoni.

IDLHOSARI

hlukanisa ngeengaba
ikambiso yokubuthelela izinto ezifanako ngendlela yerherho elihlelekileko, isib. ukuhlukanisa izambatho ngokobusika nehlobo

Izinto zingahlelwa ngamananeko begodu zihlukaniswe ngokuya ngokufanako, njengombala. Lokha abafundi nabazi khulu ngamatshwayo wezinto ezinjengeentjalo neenlwana, nokufana nokuhluka kwazo, bayakhula ekukghoneni ukuzihlukanisa ngeenqhema ezihlukileko.

Ukuphatha iDatha kubandakanya ukubuthelela, ukuhlela ngamananeko nokuhlela, ukujamiselela nokurhumutjha ilwazi ukuze kurarululwe umraro nofana ukuphendula umbuzo, isib. 'Bangaki abafundi abathanda ukudla amahabhula?' Ukuze kuphendulwe umbuzo lo, abafundi kufanele babuthelele ilwazi, balihlele ngamananeko bese balijamiselele ngendlela ezakwenza kube lula bona balirhumutjhe ukuze kuphenduleke umbuzo.



Umdwebo wama-92 Ukubuthelela, ukuhlela ngamananeko nokuhlela ngokweenqhema

Ukuphatha iDatha kungahlanganiswa nezinye iingaba zokufunda, isibonelo, ukuthola mayelana:

- nephasi elisibhodileko, ngokubukela nokurekhoda ubujamo bezulu ngamalanga nofana ukubuthelela imihlobo ehlukileko yamakari
- izinto ezithandwa mumuntu ngokwakhe, njengemibala ayithandako
- ukudla okunepilo, njengeenthelo nemirorho.

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.

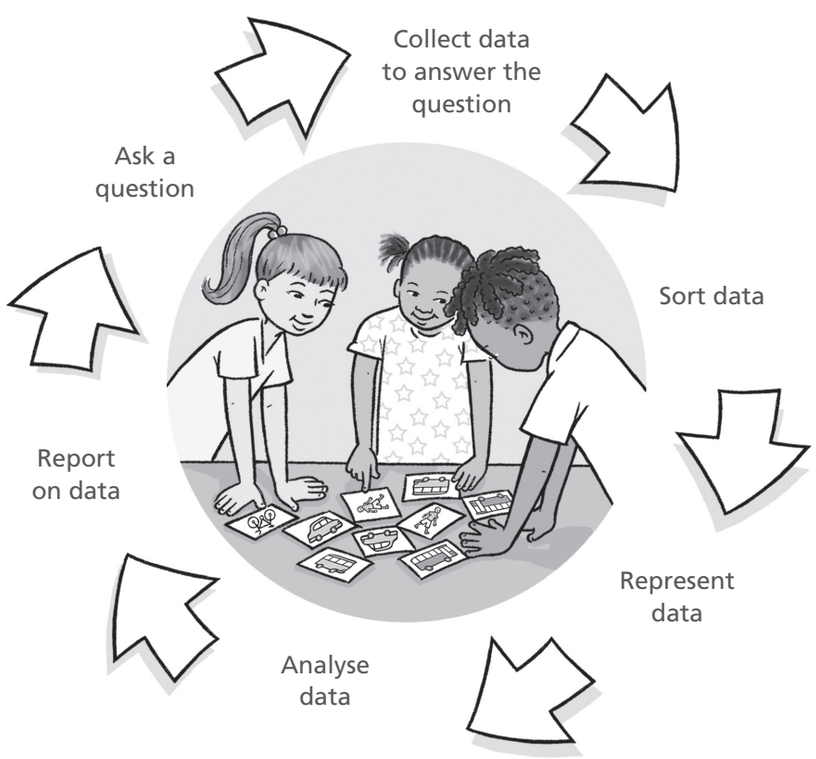


Figure 93 The Data Handling cycle

Ukufanisa ama-athributhi

Ekuthomeni, abafundi bahlela ngamananeko begodu bahlukanise izinto ngokuya nge-athributhi eyodwa, njengombala, ubukhulu nofana ukubumbeka. Kancani kancani banganikela abonobangela bokobana kubayini babuthelele izinto ngendlela ethileko. Godu bangacabanga ezinye iindlela zokuhlela zona izinto lezo ngokweenqhema, ngokuya ngama-athributhi ahlukileko. Abafundi nabahlola begodu bakhulume ngokobana babuthelela njani, bahlele bebahlukanise 'izinto' ezibabhodileko, bathoma ukuhlela izinto ngokweenqhema ngokuya ngama-athributhi angaphezulu kweyodwa, njengombala nokubumbeka kwezinto.

Kuyenziwa ...

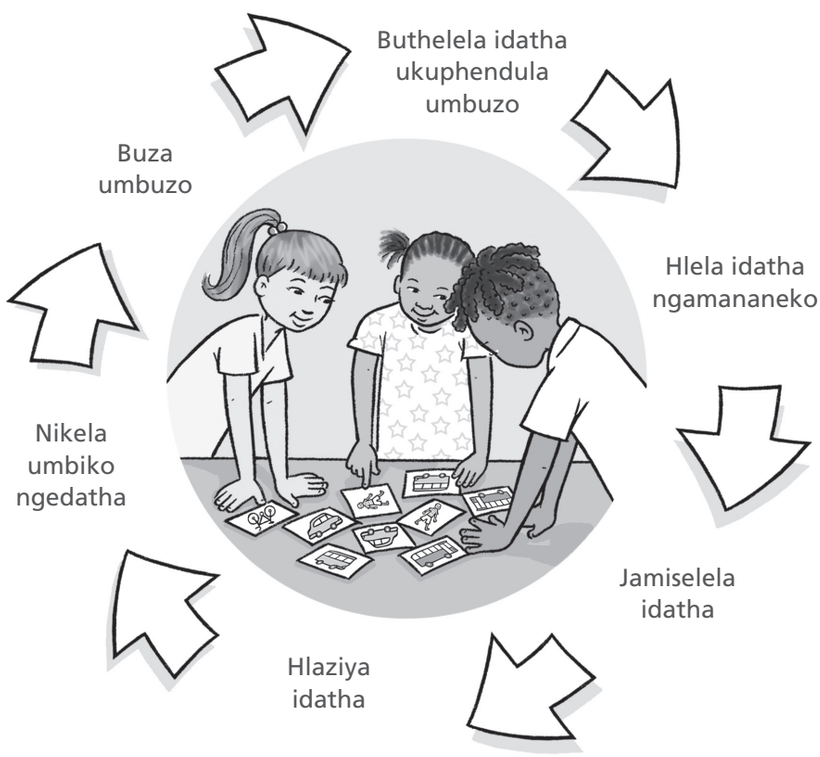
Utitjhere angabawa abafundi bahlele ngamananeko ibuthelelo lamabumbeko wemibala ahlukileko:

- Thola woke amabumbeko ahlaza satjani.
- Thola zoke iinkwere.
- Thola zoke iinkwere ezihlaza satjani.

Ukuhlela ngokuya ngama-athributhi amabili kuyiselele ebafundini ngombana kufanele bezwisise ngokomqondo umehluko phakathi kweenqhema ezintathu. Iinqhema ezimbili kezintathu zine-athributhi eyodwa lokha isiqhema sesithahu sinama-athributhi asenza sikghone ukungena kizo zombili iinqhema.

Umzombe wokuPhatha iDatha

Abantu bavame ukuthi ikambiso yokuPhatha iDatha kweDatha mzombe ngombana izehlakalo nofana imisebenzi ebandakanyekako ibuyelelwa ngelandelano elifanako embuzweni ngamunye ophendulwako.



Umdwebo wama-93 Umzombe wokuPhatha iDatha

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

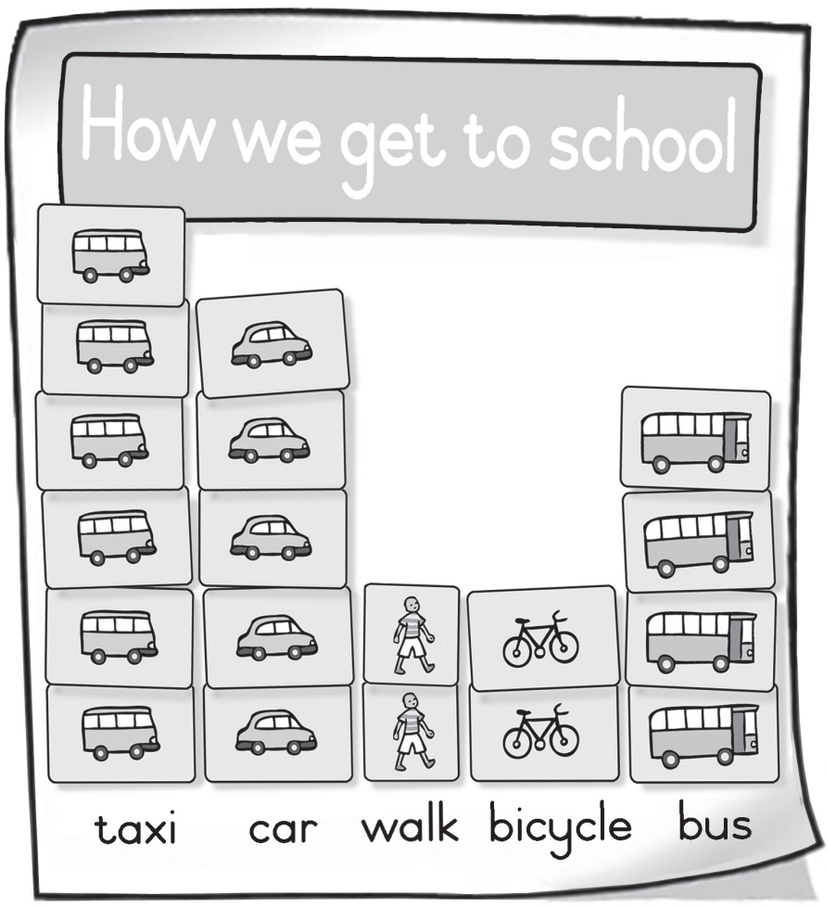


Figure 94 A pictograph

1. **Buza umbuzo:** Abafundi bathatha isiqunto sokobana bafuna ukuthola ilwazi ngani, isib. 'Ngiyazibuza bangaki abafundi abeza esikolweni ngebhesi nokobana bangaki abeza ngekoloyi?' Irhara ehlanganisa idatha ndawonye isizathu sokubuthelela idatha nofana ilwazi elithileko. Lokhu kutjho bonyana idatha ebuthelelweko nofana iinqhema ezakhiwe ngokuyihlelangamananeko kufanele zisize ukuphendula umbuzo abafundi abathethe isiqunto sokobana bafuna ipendulo yawo.
2. **Ukubuthelela idatha:** Abafundi bathatha isiqunto sokobana bafuna ukuyibuthelela njani idatha ngokuya ngokombuzo nofana umraro, isib. ngokubuza abanye abafundi bona beza njani esikolweni bese badweba isithombe somfundi ngamunye.
3. **Hlela idatha ngamananeko:** Abafundi bayahlela bese bahlukanise idatha ngokweenqhema ngokuya ngama-athributhi wayo. Ukuze kuphendulwe imibuzo bese kuthathwe isiqunto sokobana izokujanyiselelwa njani idatha ebuthelelweko, iinqunto kufanele zithathwe mayelana nokobana izinto zingahlelwa njani ngamananeko.
4. **Jamiselela idatha:** Abafundi bahlola iindlela ezihlukileko zokukhombisa nofana ukukhangisa ilwazi abalibutheleleko, isib. ngokubeka izinto zamambala phezu komada nofana ngokwakha **igrafu yeenthombe**.
5. **Hlaziya idatha:** Abafundi bahlathulula bebamadanise idatha ejanyiselelweko, isib. ngiyiphi indlela esetjenziswe khulu nofana kancazana ukuya esikolweni.

IDLHOSARI

igrafu yeenthombe
indlela yokujamiselela idatha ngokusebenzisa iinthombe

Umdwebo wama-94 Igrafu yeenthombe

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. **Umbiko mayelana nedatha:** Abafundi baphendula imibuzo ebeyibuzwe ngaphambilini, 'Ngiyazibuza bangaki abafundi abeza esikolweni ngebhesi nokobana bangaki abeza ngekoloyi?' Bangabona lula bonyana bafundi abane abeza esikolweni ngebhesi nokobana bahlanu abeza ngekoloyi. Bangakwazi nokumadanisa elinye ilwazi njengokuthi bangaki abafundi abeza esikolweni ngezinye iindlela nokobana ngimuphi umhlobo wesithuthi osetjenziswa khulukhulu nofana kancazana.

Imibuzo ebuzwako mayelana nokuPhatha iDatha

- Ngisiphi isiqhema esinokunengi khulu/okuncani khulu? Ungakutjho ngaphandle kokubala?
- Ngisiphi isiqhema esinakunengi/okumbadlwana?
- Ucabanga bona ipendulo kungaba yini?
- Sizokuthola njani?
- Kubayini ubeke iziinto lezi ndawonye?
- Ungakuhlela ngenye indlela lokhu?
- Ingabe lokhu ngekwalapha?
- Ingabe ama-orentji nofana amabhanana aziinthelo ezaziwa khulu?
- Mangaki amalanga agade: atjhisa, anommoya, anezulu, …?
- Kuzakwenzeka ini nange …?

Ilwazimagama lokuPhatha iDatha

- khambelanisa, hlela ngamananeko, madanisa
- kuyafana, kuyahluka, -ba nendawo efaneleko, -ngabi nendawo efaneleko
- -ngaphezu kwe-/nengi kuna-, -mbadlwana kuna-, -fana na-
- ngeenkhathi zoke/qobe, ngezinye iinkhathi, khange/ngekhe
- irhemo/umuda, ikholomu
- mhlambe, -nokwenzeka, -mbala

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

Idlhosari

amabumbeko abobusombili (2-D) ibumbeko elinobuso obubili: ubude nobubanzi

amakghono wokusebenzisa imizwa ngokuzwisisa ukusebenzisa imizwa yakho ukubuthelela ilwazi mayelana nebhoduluko lakho, isibonelo: ukubona, ukuzwa, ukuthinta, ukunukelela nokunambitha

amalunga izinto, iminyakazo nofana izehlakalo ephethenini

amatshwayo izinto ezijamele into enye, njengetshwayo lenomboro, ilogo, nofana itshwayo lendlela

(i-)athributhi ubujamo nofana imikghwa yento, isibonelo, umbala nofana ibumbeko

hlukanisa ngeengaba ikambiso yokubuthelela izinto ezifanako ngendlela yerherho elihlelekileko, isib. ukuhlukanisa izambatho ngokobusika nehlobo

igrafu yeenthombe indlela yokujamiselela idatha ngokusebenzisa iinthombe

ijiyomethri ingcenye yeembalo eqalana namatshwayo, isilinganiso nobudlelwana bamatlobo, imida nama-engele wamabumbeko esikhaleni

ikghono lokuhlathulula umcabango nofana umbono ongemva kwesitatimende

ilandelano ihlelo elithileko lapho izinto, iminyakazo nofana izehlakalo zilandelana ngalo

ilwazi langaphambili lokho abantwana abakwaziko kusukela ngaphambili nabakghona ukukwenza

imasi into ibudisi kangangani

iphetheni ilandelano elihlelekileko lezinto, leminyakazo nofana lezehlakalo ezibuyeleleka ngendlela engabonelwa ngaphambili

isimethri lokha ibumbeko nofana into ingahlukaniswa ibe ziinquntu ezimbili ezilinganako emudeni ophakathi naphakathi

itshwayo izakhi zebumbeko eliyi-2-D nofana into eyi-3-D, isib. ubude, ububanzi, ukuphakama, amahlangothi (ubuso), imiphetho, amakhona

ivolumu ubungako obumumethwe ngokuthileko nofana isikhala esithathwa ngokumumethweko

iyunithi engakavami iyunithi yokumeda esebenzisa into enjengenyathelo, itlipu yephepha nofana ikhyubhu; ingaba yinto engakahleleki njengesandla, inyawo nofana ubude bomzimba

izinto ezibobusontathu (3-D) into enobuso obuthathu: ubude, ububanzi nokuphakama

jamiselela ukusebenzisa izinto, amatshwayo nofana izenzo ukujamela umbono nofana umqondo

kuhlola okwakhako ukuhlola okunikela ilwazi lokha ukufunda kuragela phambili bese kumeda iragelophambili labafundi

nemba nqophako, nembako

ngaphathekiko umbono, umcabango nofana amazizo

ubudisi into ibudisi kangangani

ubujamo indlela izinto ezihlaliswe ngayo ngokuhlobana kwenye kenye

ukubala ngegido ukubalela phezulu, ukutjho iinomboro ngerhemo elifaneleko (okwaziwa godu ngokubala ngehloko nofana ukubala ngomlomo)

ukubala ngehloko ukubalela phezulu, ukutjho iinomboro ngerhemo elifaneleko (okwaziwa godu ngokubala ngegido nofana ukubala ngomlomo)

ukubala ngokuzwisisa ukubala izinto ukuthola bona 'kungaki' (okwaziwa godu ngokubala okunemiphumela)

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

ukubala ngomlomo ukubalela phezulu, ukutjho iinomboro ngerhemo elifaneleko (okwaziwa godu ngokubala ngegido nofana ukubala ngehloko)

ukubala okunemiphumela ukubala izinto ukuthola bona 'kungaki' (okwaziwa godu ngokubala ngokuzwisisa)

ukubonela phambili ukutjho nofana ukulinganisa lokho okuzakwenzeka esikhathini esizako

ukufaka koke ikambiso yokuqinisekisa bonyana boke abantwana, kungaqalwa ukuhluka kwabo, babandakanywa kiyo yoke imisebenzi yetlasi

ukuhlela ukuthola izinto ezifanako, nofana ngokufanako, bese zihlelwe ngeenqhema ngokwamatshwayo athileko. Kokuthoma zihlele ngokwetshwayo elilodwa, njengombala, isib. 'woke amabumbeko ahlaza satjani'. Bese uzihlela ngamatshwayo amabili njengombala nobukhulu, isib. 'woke amabumbeko amancani, ahlaza satjani'.

ukuhlobana indlela izinto nemibono zihlangana ngayo

ukuhluka irherho labantu abanemihlobo yokuhluka, isibonelo, ubunjalo, isimilo, amakghono, amakareko nemvelaphi

ukukhambelanisa ukubona ama-athributhi afanako ezintweni ezimbili nofana ezinengi, isib. zoke izinto ezisarulani. Ukukhambelanisa likghono eliqakathekileko ukufunda ukukhambelanisa kunye kokunye.

ukukhulumisana khulumisana nabanye abantu; yenza imisebenzi nabanye abantu

ukulamula umsebenzi wokuhlanganyela lapho umuntu owazi okunengi nofana onamakghono athuthuke khulu uhlahla abanye ekufundeni into etjha

ukulandelanisa ukurhemisa izinto ezintathu nofana ezinengi nofana izenzeko ngokulandelana, isib. imisebenzi yangetlasini yangamalanga, ikambiso yekuseni yabafundi ('ngemva kokuvuka ngiyaphuma embhedeni, ngihlambe ubuso, ngidle isidlo sami sekuseni …') nofana izenzeko esisendabeni

ukumadanisa ukufanisa ukufana nomehluko phakathi kwezinto ezimbili nofana ezinengi, isib. 'lezi ziimbandana zombili kodwana esinye sazo silihlaza kwesibhakabhaka esinye sibovu'. Ukumadanisa kuphathelene nokuthola ubudlelwano phakathi kwezinto ngokuya ngokwamatshwayo athileko. Ikghono leli lidosela ekghonweni lokwazi ukuhlukanisa izinto ngeengaba.

ukumeda 'ubungako' bento, isib. ukuphakama, ubude, ubunengi, ivolumu, umthamo

ukuqala ukusebenzisa imizwa yethu ukuthola ngezinto, izehlakalo nommoya wokwenza izinto. Kufanele sibukele ukubuthelela ilwazi mayelana nephasi, isib. ukuqala nokulalelisisa kuhle lokho okwenzekako magega nathi.

ukusabithayiza ikghono lomkhumbulo lokwazi msinyana inani eliphelelekо lezinto ebuthelelweni ngaphandle kokubala

ukusebenzisa iindlela ezihlukileko zokusebenzisa imiqondo namakghono weembalo, isib. ukuhlola itjhentjhi yakho esitolo, ukubala imali yetekisi, nofana ukuhlukaniselana ipakana yamantongomani phakathi kwabangani abathathu

ukuthuthuka okuragela phambili indlela amakghono nemiqondo kwakhela ngakho phezu kokhunye

umbono umphumela webanga nofana wokutjhinga kokubonakala kwezinto

umqondo umbono nofana umcabango. Ngamanye amagama, yinto engathintekiko. Imiqondo yeembalo ifaka inomboro, ukubala, isikhala, ukuhlanganisa nokukhupha.

umthamo inani elikhulu nofana eliphelelekо elingabanjwa/mumathwa ngokuthileko (okufana nethunga nofana ibhokisi, nofana isitediyamu)

umthethokambiso umthetho ojayelekileko omukeleka njengeqiniso

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