

Mbekanyamushumo ya u Khwinifhadza Mbalo dza Gireidi ya T

Grade R Mathematics Improvement Programme

Nyendedzi ya Divhaipfi Concept Guide



Tshivenda | English

**Mbekanyamushumo ya u Khwinifhadza
Mbalo dza Gireidi ya T**

**Grade R Mathematics
Improvement Programme**

**Nyendedzi ya Divhaipfi
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.

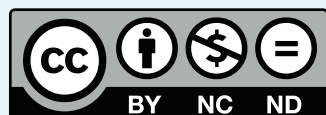
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- ★ The *R-Maths* writing team: WCED Early Childhood Development officials, Cally Kuhne, Karen Kaimowitz, Bev Da Costa, Meryl Glaser, Sue Bailie, Sue Connolly, Sue Heese.

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Mbalo dza Gireidi ya Ṭ na Thandela ya u Khwinisa Dzinyambo ndi vhurangeli ha **Gauteng Department of Education** na vhafarakani navho vha ndeme vha, **Gauteng Education Development Trust**.

Mveledziso na vhubvedzi ha vhubfumbudzi na zwishumiswa zwa ḳlasirumu ya Mbalo dza Gireidi ya Ṭ na Thandela ya u Khwinisa Dzinyambo zwo konadzea nga ndamedzo ya thandela u bva kha vha **United States Agency for International Development** na vha **Zenex Foundation**.

Mbalo dza Gireidi ya Ṭ na Thandela ya u Khwinisa Dzinyambo i langulwa nga vha **JET Education Services** na **Schools Development Unit** ya **UCT** na **Wordworks** sa vhafarakani vha thekhnikhala.

Schools Development Unit (SDU) ngei **University of Cape Town (UCT)** ndi mufarakani wa thekhnikhala wa mbalo kha Mbalo dza Gireidi ya Ṭ na Thandela ya u Khwinisa Dzinyambo. SDU ndi yuniti ngomu ha School of Education tsha UCT ine ya sedzesa kha mveledziso ya phurofeshinala ya vhagudisi kha Mbalo, Saints, Litheresi/Dzinyambo na Zwikili zwa Vhutshilo u bva kha Gireidi ya Ṭ u ya kha Gireidi ya 12. SDU i n̄tshedza ndalukanyo dza mugudisi na khoso pfufhi dzo themendelwaho dza UCT, mushumo wo q̄isendekaho nga tshikolo, mveledziso ya matheriala na t̄hoq̄isiso zwa u tikedza u gudisa na u guda nga nyambo dzo t̄he dza Afrika Tshipembe.

Nzudzanyo iyi ya matheriala a mbalo yo vhuvelwa nga ndangano ya vhuq̄ifhinduleli ya vhashumisani vha Wordworks nahone yo khwinifhadzwa nga mulivhanyo wavho na matheriala a Mbekanyamushumo ya u Khwinifhadza Dzinyambo. Yo pfumiswa nga mushumo wa vhaofisiri vha Gauteng Department of Education wa Mveledziso ya Vhana Vhatuku na Khethekanyo T̄hukhu ya Kharikhulamu ya L̄iga la Mutheo kha maimo a Dzingu na Vundu vhe vha shela mulenzhe zwihulu kha magudiswa a matheriala na ndangano i fhat̄aho u itela u livhanya na mbekanyamaitale dza mavundu, n̄dowelo na mikhwa.

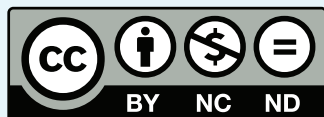
NDIVHUHO

Ndivhuho dzo khetheaho kha:

- ★ Vhaofisiri vha Khethekanyo ya Kharikhulamu, Pfunzo ya Vhagudisi na Pfunzo yo Khetheaho ya Gauteng Department of Education, kha u shela havho mulenzhe kha u shandulela matheriala ashu.
- ★ Vhashumisani u bva kha Wordworks, vhafarakani vha thekhnikhala vha luambo kha Mbalo dza Gireidi ya Ṭ na Thandela ya u Khwinisa Dzinyambo, kha u shumisana kha mveledziso ya matheriala.
- ★ Vhaofisiri na vhagudisi vha Western Cape Education Department (WCED) kha u shela havho mulenzhe kha u khunyeledza u thomiwa ha Grade R Mathematics Programme (*R-Maths*) kha la Western Cape vhukati ha 2016 na 2019.
- ★ Tshigwada tsha vhañwali vha *R-Maths*: vhaofisiri vha Mveledziso ya Vhana Vhatuku vha WCED, Vho Cally Kuhne, Vho Karen Kaimowitz, Vho Bev Da Costa, Vho Meryl Glaser, Vho Sue Bailie, Vho Sue Connolly, Vho Sue Heese.

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Mushumo wa mathomo a wo ngo fanela u shandukiswa nga n̄gila ifhio na ifhio kana wa shumiswa kha zwa mbambadzo. Vha nga fothokhopho vho vhofoholowa, u ganq̄isa na u phaḡaladza matheriala a ḳlasirumu. Vha nga dawuniḡoudela kha tshishumiswa tshin̄we na tshin̄we tsha eḡek̄ithroniki, u phaḡaladza nga imeḡili, na u bvisela kha webusaithi yavho hu si na mbadelo. Musi vha tshi kopa kana u kovhana bugu iyi vha fanela u n̄tshedza ndivhuho i re khagala ya tshiko.

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Foreword from the Head of Department

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.

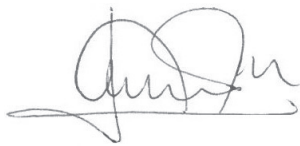
The Grade R Mathematics and Language Improvement Project has been developed to provide the much-needed classroom-based *support* for the Grade R teachers/practitioners in Gauteng. It is about classroom practices with exciting techniques and methodology most appropriate for Grade R teaching and learning. 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



GGT 2030
GROWING GAUTENG TOGETHER

Maswikisi u bva kha Ṭho ho ya Muhasho

Kha Mugudisi

Vho ṭanganedzwa kha vhpufumbudzi ha vhagudisi vha Gireidi ya Ṭ. Gauteng Department of Education (GDE) wo ita uri Mveledziso ya Vhana Vhaṭuku i vhe ya ndeme sa Tshipikwa tsha Maano a 1 awo. Izwi ndi u itela uri ri nga tea mutheo wo kwhaṭhaho na muratho wo leluwaho wa vhagudi u ya kha Gireidi ya 1.


Mbalo dza Gireidi ya Ṭ na Thandela ya u Khwinisa Dzinyambo zwo bveledzwa u itela u netshedza *thikhedzo* ya kilasini i ṭodeaho zwi hulu kha vhagudisi vha Gireidi ya Ṭ kha la Gauteng. Ndi nga ha zwine zwa fanela u itwa kilasini zwi re na thekiniki dzi nyanyulaho na ngona dzo teaho u funza na u guda kha Gireidi ya Ṭ. Izwi ndi nga murahu ha vhugudisi he ha vhiga uri 65% ya vhana u mona na Afrika Tshipembe a vha athu swikelela zwikili zwi ṭodeaho uri vha kone u shuma zwavhuḍi kha Litheresi na Nyumeresi musi vha tshi swika kha Gireidi ya 1. Thandela iyi yo itelwa u tikedza vhagudisi vha Gireidi ya Ṭ u tandulula khaedu iyi.

Ndavhelelo ya Muhasho ndi uri vho lugela u guda na u vha mugudisi wa Gireidi ya Ṭ o maanḍafhadzwaho. Vhuḍikumedzeli havho kha maitele a vhpufumbudzi na u thoma *ngudo* dze vha guda kilasirumuni *yavho* nga murahu, zwi ḍo shela mulenzhe kha khwiniso ya vhagudi vha Gireidi ya Ṭ u lugela u ya kha Gireidi ya 1.

Ri a fulufhela uri u phalala uhu hu ḍo thusa u kwhaṭhisa khonadzeo yavho, vhutumbuli na vhusiki zwenezwi vha tshi khou tea mutheo wa ndeme u itela u guda ha vhana vhashu. Thandela iyi yo vha i sa ḍo konadzea nga nḍa ha thikhedzo ya vhafarakani vhashu. GDE i khou ṭanganedza thikhedzo ya GEDT, Zenex Foundation na USAID vhe vha shela mulenzhe kha vhurangeli uvhu.

Ndi a fulufhela uri vha ḍo guda zwinzhi u bva kha mbekanyamushumo ya vhpufumbudzi iyi nahone vha ḍo khwinisa tshenzhemo ya u guda ya vhana vhaṭuku fhasi ha ndondolo yavho.

Wavho a fulufhedzeaho



Vho Edward Mosuwe

Ṭho ho ya Muhasho: Gauteng Department of Education

3 Fulwi 2020



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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.

KHETHEKANYO YA 1

Mbekanyamushumo ya u Khwinifhadza Mbalo dza Gireidi ya T (Grade R Maths)

Marangaphanda

Grade R Maths ndi mbekanyamushumo thangeli ya mbalo dza Gireidi ya T ine yo livhanywa na nahone i tshiphokhali magudiswa a Mbalo dza Gireidi ya T ya TSHIPHOKHALI. Mbekanyamushumo ya *Grade R Maths*:

- ★ yo sikelwa u nea muhanga wa u funza na u guda mbalo kha Gireidi ya T
- ★ yo tewa kha sethe dza milayo ya u funza ine ya tshiphokhali magudele a bveledzaho
- ★ i tshiphokhali divhaipfi ine ya vha ya ndeme kha mveledziso ya mbalo dza vhana vha tshiphokhali
- ★ i tevhekanya magudiswa a mbalo dza Gireidi ya T na u nea kishirumu mihumbulo ya u ita
- ★ i nea vhagudisi nyendedzi dzo dodombedzwaho dzine dza tikedza kupulanele kwa ngudo dzavho.

Ipfi 'mbalo' li shumiswa nga ndila dzo fhambanaho buguni iyi. Heyi ndi ndila ine la shumiswa ngayo na zwine thomo liwe na liwe la amba zwone:

- **mbalo** ndi tshiphokhali tsha ndivho tshine tsha katela divhaipfi, zwickili na mashumisele
- **Mbalo dza Gireidi ya T** ndi kharikhulamu kha Tshitatamennde tsha Kharikhulamu na Pholisi ya u Linga (TSHIPHOKHALI)
- **Grade R Maths** ndi dzina la heyi mbekanyamushumo thangeli ya mbalo dza Gireidi ya T
- **mbalo kha Gireidi ya T** ndi lushaka lwa u guda mbalo lune lwa itea kha Gireidi ya T.

Kha nyendedzi iyi, ipfi 'vhana' li shumiswa u amba nga ha vhana phanda ha musi vha tshi thoma Gireidi ya T. Ipfi 'vha/mugudi' li shumiswa u amba nga ha vhana vha re kha Gireidi ya T.

Mbonalo dza *Nyendedzi ya Divhaipfi* dzi katela:

- ★ mafhungo nga ha u funza na u guda mbalo
- ★ '**Ndowedzo**' mabogisi ane a nea tsumbo dza uri milayo na mihumbulo buguni iyi zwi nga shumiswa hani na vhagudi kana nga vhagudi
- ★ **guosari** mabogisi ane a nea tshiphokhali ya maipfi ane a nga vha maswa kana a kongdaho u pfesesa
- ★ mutevhe wa guosari ya maipfi othe maswa o shumiswaho buguni iyi.

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.

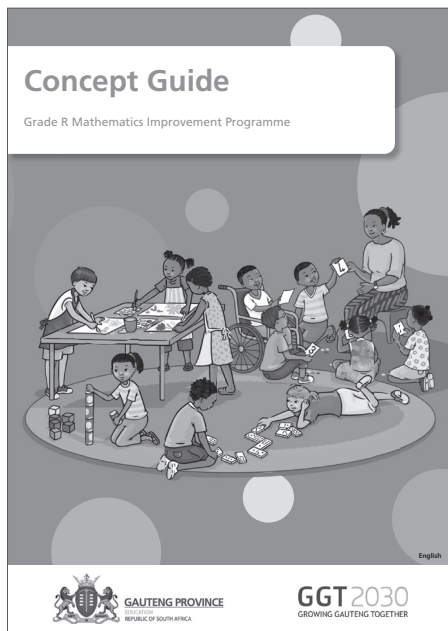


Figure 1 The *Concept Guide*

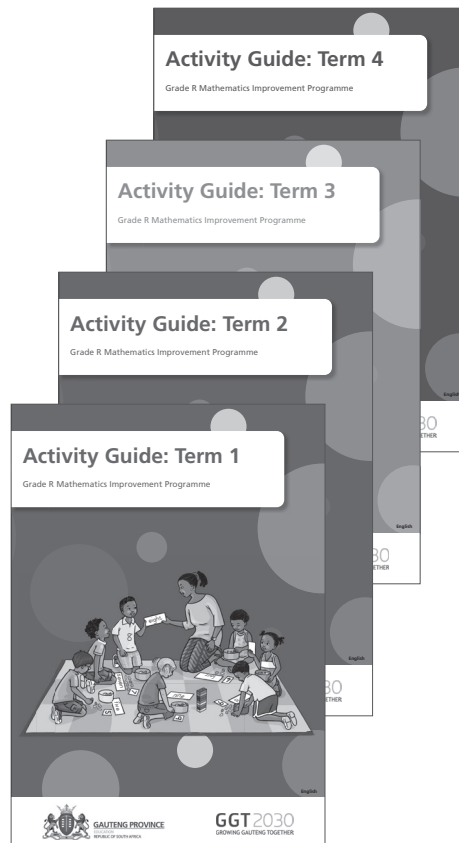


Figure 2 *Activity Guides* Term 1–4

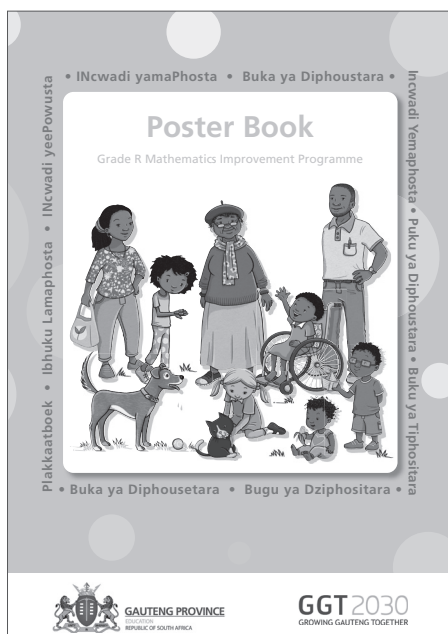


Figure 3 The *Poster Book*

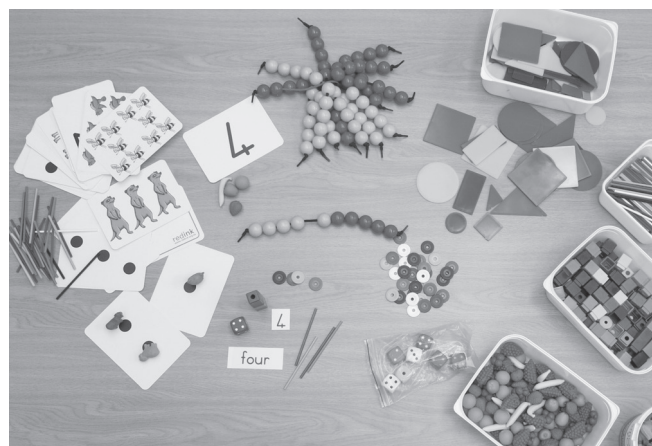


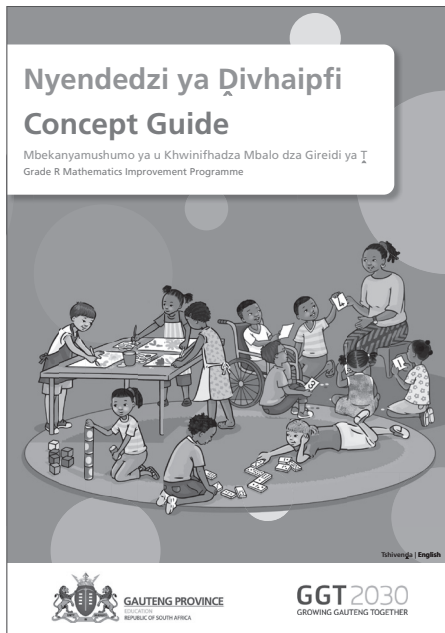
Figure 4 *Resource Kit*

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

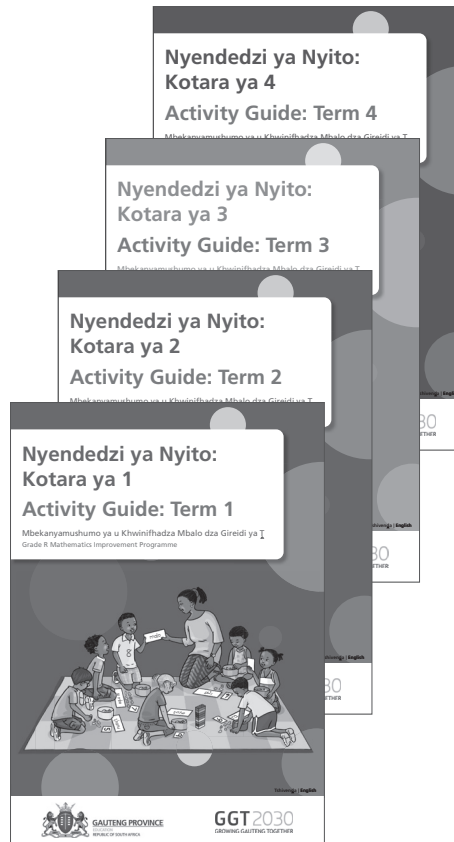
Grade R Maths

Hu na zwiḽiḽa zwiḽa zwa *Grade R Maths*:

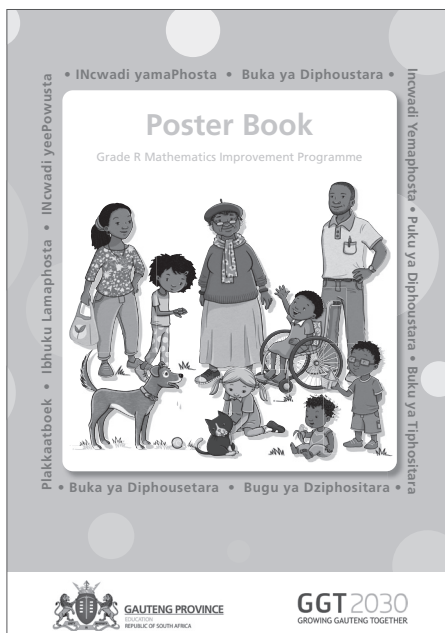
- ★ *Nyendedzi ya Divhaipfi*
- ★ *Nyendedzi dza Nyito* nḽa – nthihi ya kotara ya tshikolo iḽwe na iḽwe – ine ya ḽetshedza vhagudisi vha Gireidi ya T mahumbulwa a vhege a u funza na u guda mbalo
- ★ *Bugu ya Dziphositara* i re na phositara dza fumithihi
- ★ *Khithi ya Zwishumiswa* ya kḽasirumu i re na zwishumiswa zwa mbalo zwa mugudi nga muthihi na zwiḽwada zwiḽuku zwa u guda na u funza.



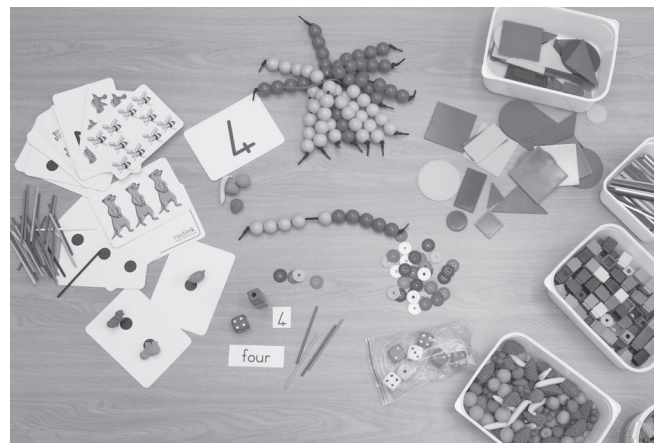
Figara ya 1 *Nyendedzi ya Divhaipfi*



Figara ya 2 *Nyendedzi dza Nyito Kotara ya 1–4*



Figara ya 3 *Bugu ya Dziphositara*



Figara ya 4 *Khithi ya Zwishumiswa*

Vha nga wana mafhungo manzhi nga ha tshiḽwe na tshiḽwe tsha zwiḽiḽa zwa *Grade R Maths* kha iyi *Nyendedzi ya Divhaipfi*.

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

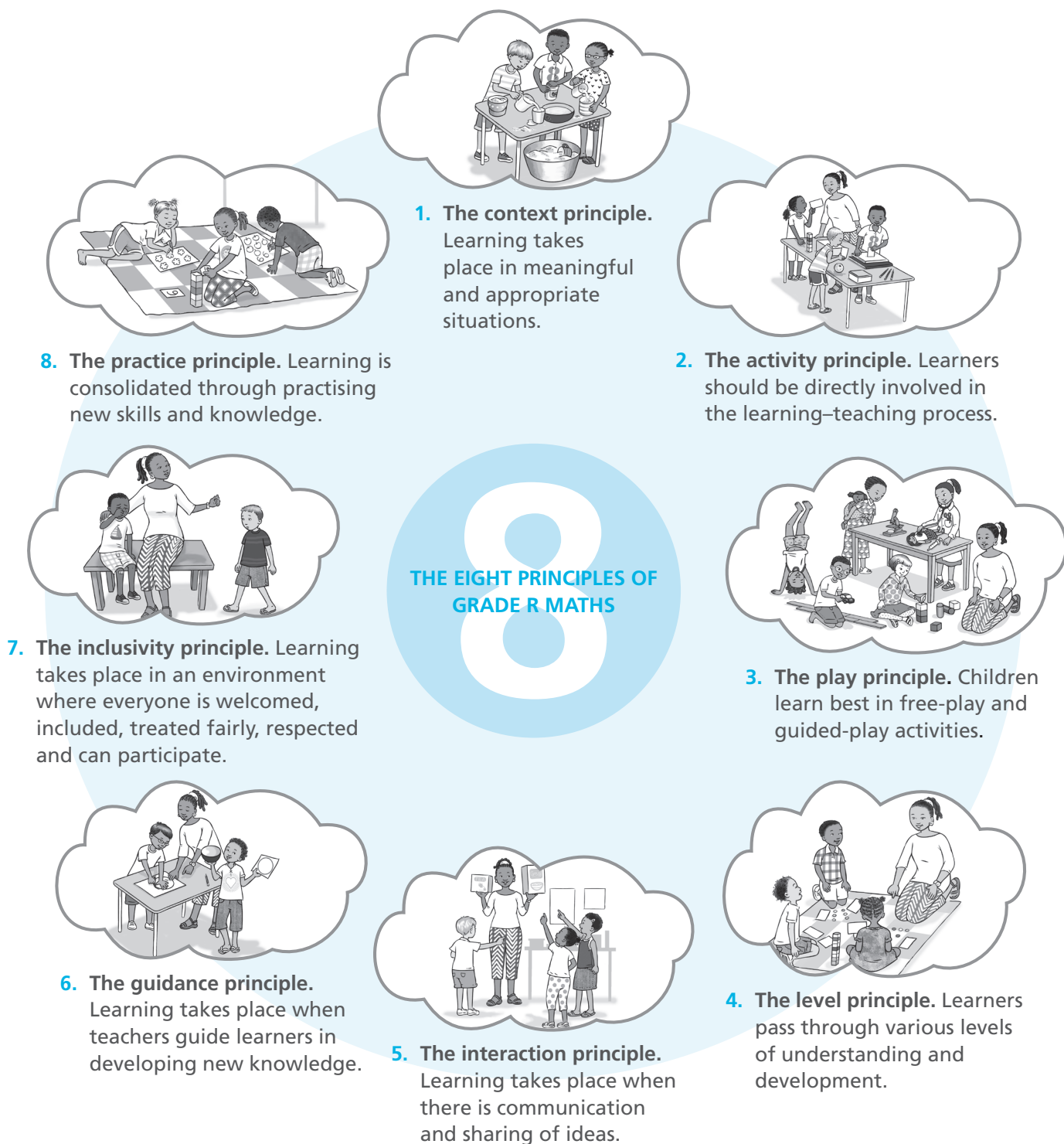


Figure 5 Principles of the Grade R Maths programme

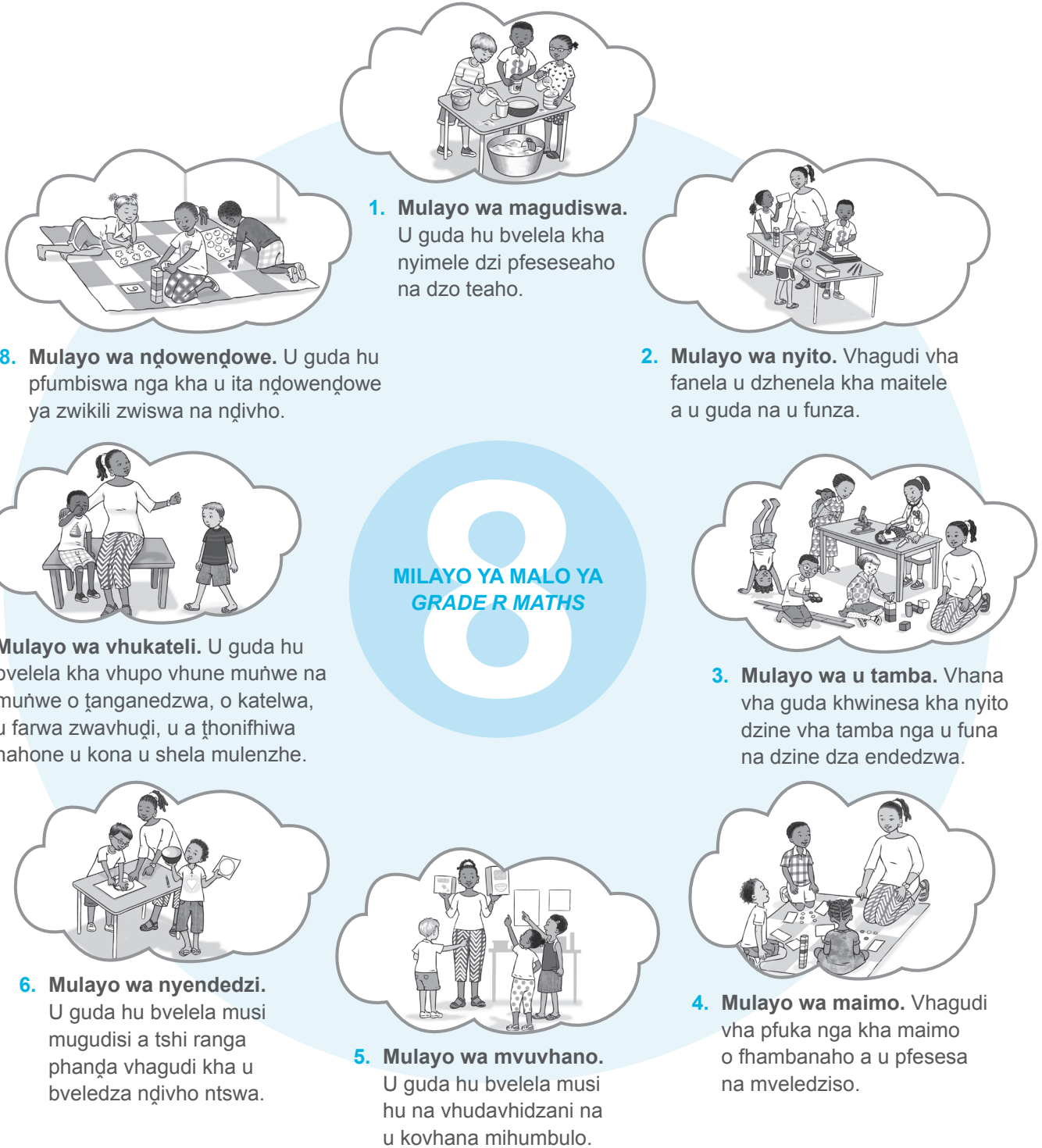
Milayo ya nyandedzi dza u funza mbalo kha Gireidi ya T

Grade R Maths i tũtũwedza maitete a u funza na u guda a karusaho na u tũtũwedza vhagudi. Vhagudi vha do bveledza ndivho na zwikili zwine vha do fhaṭa khazwo kha gireidi dza phanḁa. Tũhoḁisiso ya pfunzo ngomu kũlasirumuni yo bvisela khagala sethe ya **milayo** ya u funza, ine ya shela mulenzhe kha u guda hu bveledzaho. Mbekanyamushumo ya *Grade R Maths* yo fhaṭwa nga milayo iyi ya malo.

GUḶOSARI

milayo

milayo nga u angaredza ine ya tendiwa sa yone ya ngoho



Figara ya 5 Milayo ya mbekanyamushumo ya *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.

Naho milayo iyi ya malo ya u funza yo itwa nga mutevhe wo khethekanywaho, i kha di vha yo tumana yothe.

Tshipiḁa tshi tevhelaho tsha *Nyendedzi ya Divhaipfi* tshi vha tswela nga ha milayo ya malo ine *Grade R Maths* yo disendeka khayi. Mulayo muḁwe na muḁwe u na:

- ★ thalutshedzo
- ★ tshibogisi tsha 'ḁdowendowe'
- ★ mafhungo manzhi nga ha mulayo.

1. Mulayo wa magudiswa

Thalutshedzo

U guda hu bvelela musi nyimele (kana magudiswa) i tshi pfesesea kha mugudi. Tshifhinga tshinzhi, tshakha dza khwinesa dza thaidzo dza mbalo dzi katela mihumbulo ya mbalo ine ya bva kha nyimele dza vhutshilo ha vhukuma. Vhagudi vha wana zwo leluwa u tandula thandululo dza thaidzo dzine vha kona u dzi divha nga nthani ha tshenzhemo ya vhutshilo havho.



ḁdowedzo ...



Hu na zwikhala zwa u guda mbalo kha nyito dzothe dza divha liḁwe na liḁwe dza kijasini na hayani. Khaedu kha vhagudisi na vhabebi ndi uri vha tshenzhele zwikhala izwi na uri vha zwi shumise u fhaḁa kha zwine vhagudi vha vho zwi divha.

Zwizhi nga ha mulayo wa magudiswa

Mbalo hayani

Tshenzhemo ya vhana vhaḁuku hayani na fhethu ha u tambela nḁa zwi vha mutheo wa u pfesesa havho **divhaipfi** ya ndeme ya mbalo.

Vhutshetshe, vhushie na vhana vhaḁuku vha shumisa zwipfi zwavho u guda nga ha lifhasi u mona navho. Vha sumbedza dzangalelo la zwivhumbeo zwa mutheo, vha sika phetheni dzo leluwaho na u guda u vhaleda phanda ha musi vha tshi ya tshikoloni. Vha guda nga ha lifhasi zwenezwi vha tshi amba, u la na u tamba, na u wana divhaipfi ya mbalo nga tshifhinga tshenetsho tshithihi. Sa tsumbo:

- ★ Musi vha tshi edzisa u panga zwithu milomoni yavho zwine zwa vha zwihulu, vha khou bveledza u pfesesa muelo.
- ★ Musi vha tshi shumisa mabogisi na bammbiri la ngomu ha rolo ya bungani u fhaḁa goloi khumbulelwa, vha khou bveledza zwipfi zwa tshivhumbeo.
- ★ Musi vha tshi lingedza u takula tshithu tshi lemela u hwala, vha khou thoma u pfesesa divhaipfi ya tshileme.
- ★ Musi vha tshi vha zwi fanaho na zwo fhambanaho vhukati ha khuvhanganyo ya zwithu zwituku, vha khou fanyisa, u vhekanya na u vhambedza.

Vhana vhaḁuku vha thoma u vhumbe mihumbulo nga ha divhaipfi ya mbalo phanda ha musi vha tshi funziwa mbalo tshikoloni.

GUḁOSARI

divhaipfi

muhumbulo. Nga maḁwe maipfi, a u kwamei. Divhaipfi ya mbalo i katela nomboro, u vhaleda, tshikhala, u tanganya na u tusa.

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

Nyito dza vhana hayani dza ḡuvha liḡwe na liḡwe dzo ḡala zwikhala zwa mbalo dza hayani. Sa tsumbo:

- ★ tshifhinga tsha ḡowelo dza ḡuvha liḡwe na liḡwe, tsumbo, tshifhinga tsha zwiliwa, u ḡamba, u ambara na u puta zwithu wa vhea kule
- ★ musi vha tshi shumisa zwithu, tsumbo, u vala zwitibo zwa bakete dza puḡasiḡiki na u gera nga zwigero
- ★ zwenezwi vha tshi khou tamba, tsumbo, musi vha tshi kovhana zwithu, u bika ha khole kana u reila thekhisi ha khole
- ★ musi vha tshi ola na u pennda
- ★ musi vha tshi edzisa vhaaluwa u vhalela.

Nyito idzi dzi fhaḡa vhuḡifulufheli kha vhana. Nga tshifhinga tshenetsho tshithihi, vha bvedza ḡivho yavho na u pfesesa liḡhasi u mona navho.



Figara ya 6 U shumisa nyito dza ḡuvha liḡwe na liḡwe u tandula ḡivhaipfi ya mbalo

Kupfesesele kwa vhana vhaḡuku kwa mbalo ku aluwa na tshifhinga.

- ★ Vha guda uri nomboro dzi na tshivhalo kana vhunzhi hu kwamanaho nadzo hu sa shanduki, tsumbo, musi vhana vha miḡwaha miraru vha tshi imisa minwe miraru u sumbedza vhunzhi 'raru'.
- ★ Vha nga dovholola tsielano ya nomboro, tsumbo, 'thihi, mbili, raru, rathi, fumi'. Musi vha tshi ita izwi vha vha vha tshi khou edzisela kha vhaaluwa nga u shumisa maipfi a u vhalela vha si na kupfesesele kwo khwaḡhaho kwa zwine zwa amba zwone.

Zwenezwi vhana vha tshi tamba nga vhoḡhe na musi vha tshi tamba na vhaḡwe vhana, na zwenezwi vha tshi **davhidzana** na vhaaluwa tsini havho, vha thoma u bvedza mihumbulo nga ha ḡivhaipfi ya nomboro, tshivhumbeo, tshikhala na muelo.

Ḋivhaipfi ine vhana vha bvedza hayani nga tshifhinga tsha nyito dzavho dza ḡuvha liḡwe na liḡwe tshiḡwe tshifhinga i vhidzwa upfi 'ḡivho ya ḡuvha liḡwe na liḡwe'. Tsumbo ya izwi ndi musi vhana vha tshi vhea zwidongo zwo eḡanaho vhathu vhane vha khou ḡa zwiliwa nahone vha dovha vha vhea lebula nthihi nga tshidongo. Zwenezwi vha tshi ita izwi, vha khou guda nga ha u fanyisa tshithu nga tshithu.

GUḲOSARI

u davhidzana

ndi u amba na vhaḡwe vhathu; u ita nyito na vhaḡwe vhathu

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

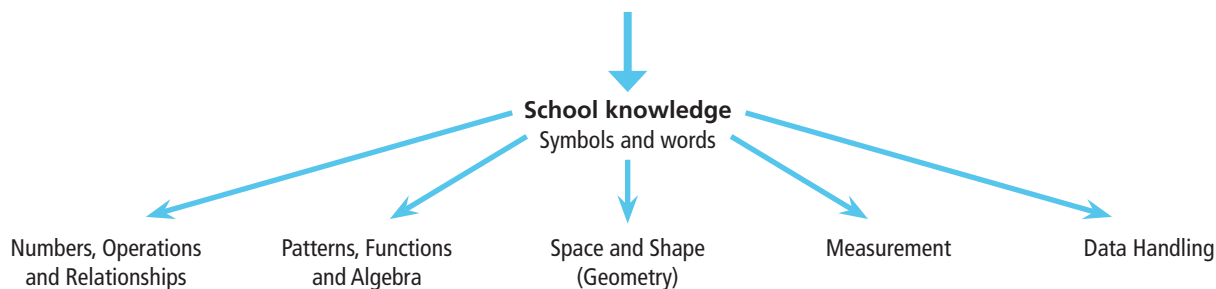


Figure 8 The link between everyday knowledge and school knowledge

Mbalo kha magudiswa a tshikoloni

Vhathu vhanzhi vha humbula uri mbalo ndi nga ha nomboro na u ita murekanyo, fhedzi izwi zwi tou vha tshipiḡa tshithihi zwatsho tsha mbalo, zwi vhidzwa upfi ḡivhambalo. Mbalo dzi katela ḡivhaipfi nnzhi dzo fhambanaho na zwikili. Dzi katela hafhu nḡila dzo fhambanaho dza u shumisa ḡivhaipfi iyi na zwikili. Izwi zwi vhidzwa upfi ‘**mashumisele**’. Zwenezwo, musiri tshi amba nga ha mbalo ri khou amba ḡivhaipfi ya mbalo, zwikili na mashumisele.

Vhana vha shumisa ḡivhaipfi ya mbalo ḡuvha liḡwe na liḡwe na musiri vha sa zwi humbuli sa u ita mbalo. Vha shumisa ḡivhaipfi ya mbalo musiri vha tshi ḡadza khaphu ya si tevhuwe, u ḡivha mudzio une vha fanela u u shumisa u panga zwiḡuloḡo zwoḡhe, u ya mavhengeleni kana u amba uri zwine ra vha nazwo ndi zwingana.

GUḲOSARI

mashumisele

nḡila dzo fhambanaho dza u shumisa ḡivhaipfi ya mbalo na zwikili, sa tsumbo, u sedza tshintshi vhengeleni, u vhalela tshelede ya u badela thekhisi, kana u kovha phakhethe ya nḡuhu vhekati ha khonani tharu

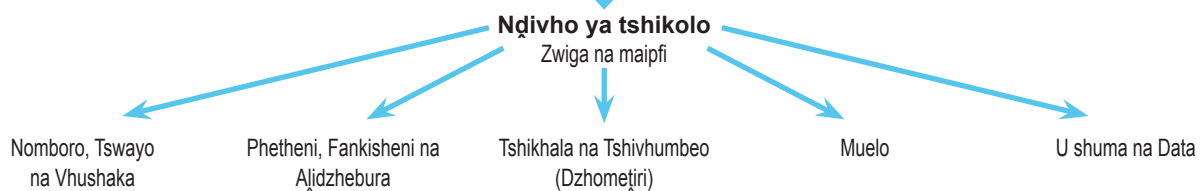


Figara ya 7 Roḡhe ri shumisa ḡivhaipfi ya mbalo vhutshiloni hashu ha ḡuvha liḡwe na liḡwe – u nanga bogisi ḡa muelo wo teaho.

Tshikoloni, vhana vha fhaḡa kha nḡivho iyi musiri, sa tsumbo, vha tshi vhekanya zwithu nga zwigwada vha kona u vhambedza nomboro ya zwithu kha tshigwada tshiḡwe na tshiḡwe. Vha kona ha u guda u vhalela vha tshi shumisa kutevhekanele kwo teaho kwa nomboro na u shumisa u livhanyisa tshithu nga tshithu u itela u wana ḡhanganyelo ya nomboro kha khuvhanganyo. Izwi zwi vhidzwa upfi ‘nḡivho ya tshikolo’.

Nḡivho ya ḡuvha liḡwe na liḡwe

u vhambedza, u vhekanya, u fanyisa, u bula madzina a nomboro, u guda nga ha zwinzhi/zwiḡuku, tshihulwanesa/tshiḡukusa, leluwa/lemela



Figara ya 8 Vhuḡamani vhekati ha nḡivho ya ḡuvha liḡwe na liḡwe na nḡivho ya tshikolo

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.

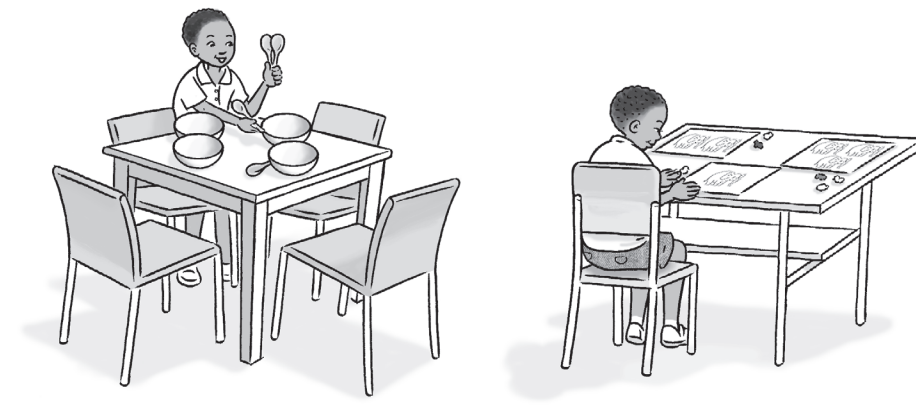


Figure 9 Counting and one-to-one matching at home and at school

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

Musi vhana vha tshi swika kha Gireidi ya T, vha ḁa na tshenzhemo yavho khathihi na kupfesesele na mihumbulo nga ha ḁifhasi. Izwi ndi ḁivho ya ḁuvha ḁinwe na ḁinwe. ḁivho ya ḁuvha ḁinwe na ḁinwe a i nga fani kha vhana vhoṁhe zwi tshi ya nga muṁa wa ḁwana, tshitshavha na mvelele. ḁivho ya ḁuvha ḁinwe na ḁinwe tshiḁwe tshifhinga i vhidzwa u pfi **ḁivho thangeli** nahone vhagudisi vha i shumisa u fhaṁa kha zwine vhagudi vha vho zwi ḁivha na zwine vha nga kona u ita.

GUḁOSARI

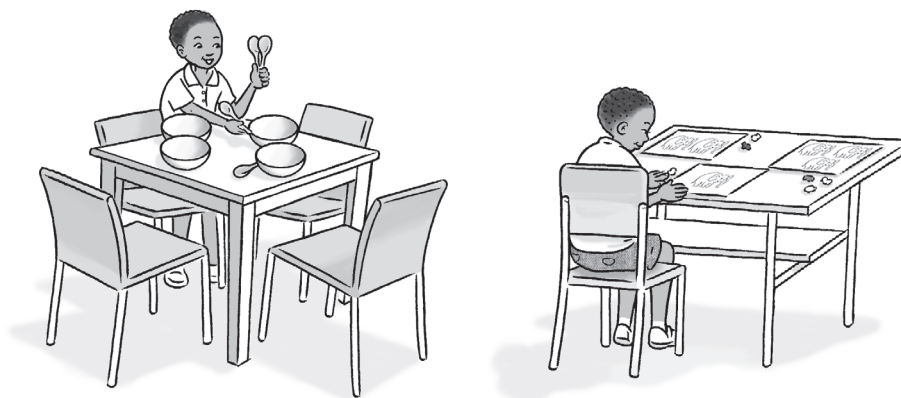
ḁivho thangeli

zwine vhagudi vha ḁa vha tshi zwi ḁivha na zwine vha vho kona u zwi ita

Kha Gireidi ya T, vhagudi vha fanela u vha na tshifhinga tsha u tandula, u sengulusa na u ita maedza nga mihumbulo miswa. Vha fanela hafhu u ṁuṁuwedzwa u amba na vhagudisi vhavho na vhaḁwe vhagudi ngavho nga ha zwine vha khou ita na u humbula. Vhagudi vha ṁoḁa lushaka lwa mafunzele o teaho u vha thusa:

- ★ u humbula na u amba nga ha tshenzhemo dzavho vha tshi shumisa luambo lwa mbalo
- ★ u fhaṁa ḁivho ntswa ya mbalo
- ★ u khwaṁhisedza kupfesesele kwavho kwa mbalo
- ★ u bvedza kuhumbulele ku fhaṁaho kha mbalo.

Vha fanela u dzhenela kha nyito dza hayani na tshikoloni dzine dza vha tendela u tandula ḁivhaipfi ya mbalo, na u vhona mbalo sa dzi takadzaho nahone dzi mvumvusaho.



Figara ya 9 U vhaḁela na u fanyisa tshithu nga tshithu hayani na tshikoloni

U sika vhupo ha u guda mbalo

Vhagudisi vha fanela u sika vhupo ha ḁilasirumu vhune vhagudi:

- ★ vha pfa vho tsiredzea na u vhulungea
- ★ vha na fulufhelo ḁo fhelelaho ḁa u amba vhone vhaḁe
- ★ vha tshi shela mulenzhe kha nyito dzoṁhe.

Vhupo ha u guda mbalo vhu fanela u katela:

- ★ zwishumiswa (u fana na mitambo, matheriala a u fhaṁa na dziphazili) zwo dzudzanywaho u itela uri vhagudi vha kone u vhona zwi re hone na u nanga zwine vha ṁoḁa u zwi shumisa
- ★ zwikhala zwa u tandula na u sengulusa
- ★ zwikhala zwa vhagudi zwa u shumisa matheriala u tandulula thaidzo na u rekhoda thandululo dzavho
- ★ zwikhala zwa vhagudi zwa u shumisa luambo lwa mbalo, u fana na 'zwinzhi', 'khulwane kha', 'khuḁa' na dzinomboro

- ★ 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.

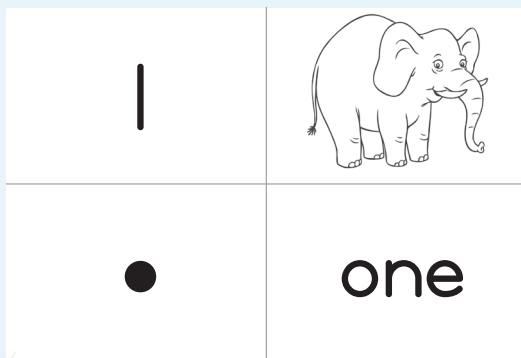


Figure 10 Number frieze



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

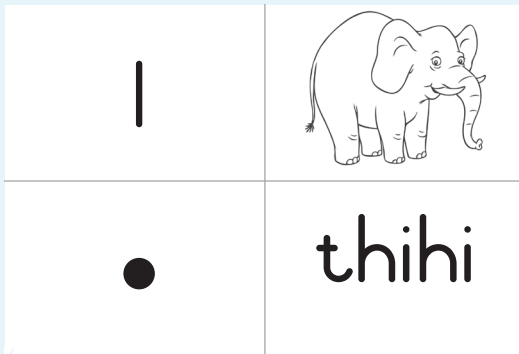
- ★ nyito dzine dza katela **u lavhelesa, u fanyisa, u vhambedza, u vhekanya** na **u tevhekanya**.



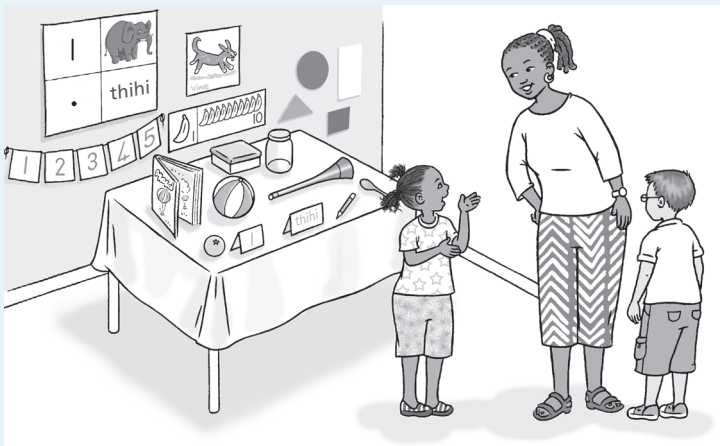
Nḡowedzo ...



- ✎ Kha vha dzudzanye fhethu ho pfumaho nga mbalo ngomu kīlasini yavho. Kha vha shumise ṭafula vho i vhea luvhondoni u itela uri dziḡebuḡu, zwifanyiso na zwithu zwi kone u ṭanea na u rerisana nga hazwo.
- ✎ Kha vha dzudzanye tshathi ya mutsho, khaḡenda, mutalombalo (muthambi wa u anea nomboro) na tshathi ya luvhondoni ya mbalo afho vhuḡoni uho vha zwi shumise kha therisano dza ḡuvha ḡiḡwe na ḡiḡwe.
- ✎ Kha vha ṭane mishumo ya vhagudi vhuḡoni uhu.
- ✎ Kha vha ṭuṭuwedze vhagudi u ḡa na zwithu u bva hayani u itela therisano. Kha vha zwi vhee kha ṭafula ya u ṭana nahone vha ḡee vhagudi vho ḡaho nazwo tshikhala tsha u amba nga hazwo.



Figara ya 10 Tshathi ya luvhondoni ya mbalo



Figara ya 11 Fhethu ha mbalo

2. Mulayo wa nyito

Ṭhalutshedzo

Mulayo wa nyito zwi amba u guda nga u ita zwithu nga iwe muḡe. Vhagudi vha fanela u ḡidzhenisa kha u guda havho. U guda mbalo kha Gireidi ya Ṭ zwi fanela u katela u ḡiphiḡa, nyito dza u ḡiitela dzine dzi katela zwithu zwa ḡuvha ḡiḡwe na ḡiḡwe na tshenzhemo i pfesesesaho. Hune zwa konadzea nyito dzi fanela u ḡetshedza vhagudi zwikhala zwa u shumisa mivhili yavho yoḡhe na zwipfi zwavho, nga maandḡa u vhona, u pfa na u kwama.

GUḲOSARI

u lavhelesa

ri tshi shumisa zwipfi zwashu u wanisisa nga ha zwithu, mitambo na mahumbulele. Ri fanela u lavhelesa u itela u wana mafhungo nga ha ḡifhasi, sa tsumbo, u sedza na u thetshesha nga vhuronwane kha zwine zwa khou itea u mona na riḡe.

u fanyisa

u topola vhunzani hu fanaho kha zwithu zwivhili kana zwinzhi, sa tsumbo, zwithu zwoḡhe zwa muvhala wa ṭaḡa. U fanyisa ndi tshikili tsha ndeme tsha u guda u livhanyisa tshithu nga tshithu.

u vhambedza

u ṭoḡa zwi fanaho na zwo fhambanaho vhuḡati ha zwithu zwivhili kana zwinzhi, sa tsumbo, 'idzi dzoḡhe ndi phukha fhedzi nthihi yadzo ndi ya muvhala wa lutombo ngeno iḡwe i ya muvhala mutswuku'. U vhambedza ndi nga ha u wana vhuḡhaka vhuḡati ha zwithu zwo ḡisendekaho nga zwidombedzwa tiwa. Tshikili itshi tshi ri livhisa kha vhuḡoni ha u khethekanya zwithu.

u vhekanya

u wana zwithu zwi fanaho, na u zwi vhea nga zwigwada hu tshi tevhelwa zwidombedzwa tiwa. Mathomoni kha vha vhekanye nga tshiḡwe tsha zwidombedzwa, u fana na muvhala, sa tsumbo, 'zwivhumbeo zwoḡhe zwidala'. Vha kone ha u vhekanya nga zwivhili zwa zwidombedzwa u fana na muvhala na muelo, sa tsumbo, 'zwivhumbeo zwoḡhe zwiṭuku, zwidala'.

u tevhekanya

u dubekanya zwithu zwiraru kana zwinzhi kana mitambo nga u tevhekana, sa tsumbo, nḡowelo ya kīlasini ya ḡuvha ḡiḡwe na ḡiḡwe, nḡowelo ya matsheloni ya vhagudi ('musi ndi tshi karuwa ndi bva mmbeteni, nda ṭamba khofheni, nda ḡa vhuragane ...') kana zwiwo kha tshiṭori

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.

Vhagudi vha Gireidi ya T vha fanela u guda u vhalela na u tevhekanya nomboro nga nyimbo na zwidade, vha tshi shumisa misumbedzo na misudzuluwo mihulu, u fana na u vhanda zwanḁa, u fhufha na u sudzuluwa u sumbedza nomboro zwenezwi vha tshi khou vhalela. U vhalela nga tshoho, u kopa nomboro u bva kha bodo na u ṅwala zwiḁa zwa nomboro vhukati ha mitaladzi nga penisela a si ṅdila ya khwine ya u guda nga ha nomboro.

Vhagudi vha fanela u tḁa na u paka khuvhanganyo ya zwithu zwine vha nga kona u vhalela na u lebuḁa nga ipfinomboro na garaḁa dza zwiḁa. Vha fanela u ṅwala zwiḁa zwa nomboro muḁavhani, u zwi vhumba vha tshi shumisa vumba, u zwi pennda, kana u zwi oledzela muḁanani wa khonani dzavho. Maele aya a livhana na u bveledzisa u ṅwala nahone a tḁanya u vhumbiwa ha zwiḁa zwa nomboro na dzina ḁa nomboro.



Musi hu tshi ḁivhadzwa nomboro ntswa, ndi muhumbulo wavhuḁi u tḁanya dzina ḁa nomboro, tshiga, misumbedzo na khuvhanganyo ya zwithu nga tshiḁori. Izwi zwi nga itwa nga u tuḁuwedza vhagudi u vhalela zwithu kha tshifanyiso, kana u humbula nomboro ya zwithu tshiḁorini, kana vha vhanda zwanḁa, u fhufha kana u sumbedza minwe yavho u itela u imela nomboro ya tshiḁorini.





Nḁowedzo ...

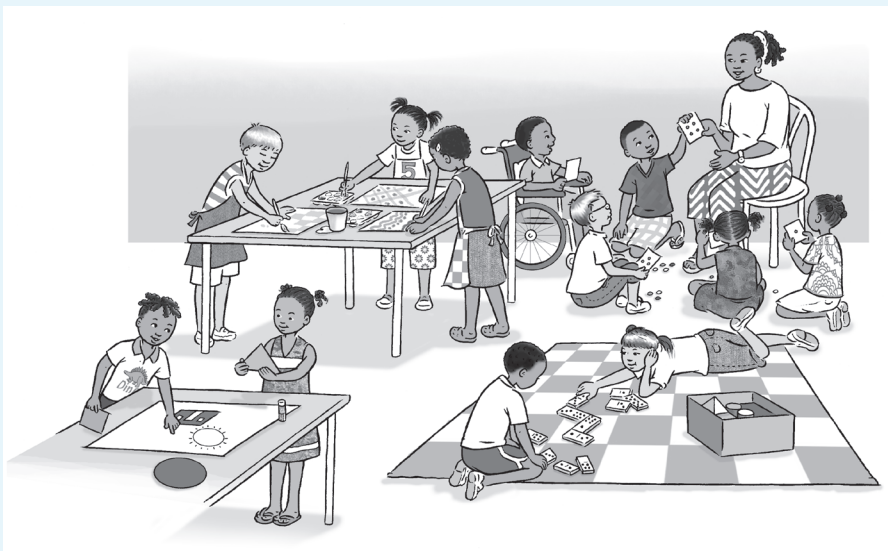


Mugudisi u ita zwi tevhelaho:

-  U pulana nyito dza u ḁiitela dzo teaho miṅwaha ya vhagudi, maimo a mveledziso na dzangalelo ḁavho.
-  U ita vhuḁamani vhukati ha zwine vhagudi vha vho zwi ḁivha na zwine vha nga ita, na mihumbulo miswa, ḁivhaipfi na/kana zwikili zwine zwa ḁo gudwa.

Vhagudi:

-  vho vhofoholwa u ita maedza, u sedzulusa na u vhudzisa mbudziso
-  vhoḁhe, vha kovhana mihumbulo na u vhudzisa mbudziso.



Figara ya 12 Vhana vha guda nga nyito dza u ḁiitela.

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**.

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 objects 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.

GLOSSARY

symbols

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

3. Mulayo wa u tamba

Ṭhalutshedzo

U tamba ho vhumbwa nga nyito dzine dza takadza na dzine dza ṭutuwedza nyaluwo ya n̄wana na mveledziso. U tamba hu na mikhwa, matshilisano, mbumbo, muhumbulo na pfufho dza nyanyuwo. U tamba hu tendela vhagudi u ḍidzhenisa kha u guda havho na u tandula vhupo havho. U guda kha Gireidi ya Ṭ hu fanela u takadza, nyito dza u ḍiitela na tshenzhemo dzine dza shumisa vhunzhi ha zwithu zwi fareaho na **zwiga**.

U guda nga u tamba

Kha vhana, u guda na u tamba a si nyito dzo fhambanaho. U tamba zwi nga amba zwithu zwinzhi, u fana na nyito dza muvhili dza n̄nda; u tamba nga muṭavha kana maḍi; vha edzisa u tamba na khonani kana vhe vhoṭhe; u tamba nga zwibuḷoko na zwitambiswa zwa u fhaṭa; kana u tamba mitambo ya u thetshesela, mitambo ya u humbulela kana mitambo ya garaṭa. Na musi ḍziṅwe dza nyito dza u tamba dzi tshi ṭoda tshifhinga tsho engedzwaho na zwishumiswa, vhana tshifhinga tshinzhi vha ḍiphina nga u tamba nga zwithu zwa ḍuvha liṅwe na liṅwe na matheriala o leluwaho o itwaho hayani. U tamba ndi n̄dila ine vhana vha guda hayani na tshikoloni. A si zwithu zwine vhagudi vha ita fhedzi nga 'tshifhinga tsha u awela' tshavho kana musi mugudisi a siho k̄lasini.

Vhagudi vha ṭoda zwikhala zwinzhi u:

- ★ tandula vhupo havho vha tshi shumisa zwipfi zwavho, sa tsumbo, nyito dza muvhili dzi itwaho n̄nda u fana na u gonya na u gidima, kana mitambo i re na milayo ine ya fanela u tevhelwa u fana na tseretsere na mitambo ya bola
- ★ sedzulusa na u tandulula thaidzo, sa tsumbo, u shumisa matheriala a u fhaṭa thawara, kana u shumisa maḍi kana muṭavha u d̄adza midzio
- ★ ita n̄dowendowe ya zwine vha vho zwi d̄ivha kana vha nga kona u ita, sa tsumbo, u tamba mitambo i re na sethe ya milayo kana ndaela u fana na n̄owa na l̄eri kana domino.

Tshakha ṭhanu dza u tamba

Vhaṭodisisi vho topola tshakha ṭhanu dza u tamba dzine dzi nga vhoneiwa kha mvelele dzoṭhe nahone dzine dza tikedza mveledziso ya muvhili, matshilisano, nyanyuwo na muhumbulo wa n̄wana.

- ★ **Mitambo ya muvhili** i katela nyonyoloso, n̄dowendowe ya misipha ya minwe na mitambo ya u namelana, u vhumbuluwa na u lwa ha khole. Ndi ya ndeme kha nyandanyo ya misipha mihulwane ya milenzhe na miṭuku ya zwanḍani na u fhaṭa u khwaṭha ha muvhili na u konḍelela.
- ★ **Mitambo nga zwithu** zwi katela u tandula, u sengulusa na u ita maedza nga zwithu zwo fhambanaho liḥhasini l̄avho. Izwi zwi bvedza zwikili zwa u humbula na u tandulula thaidzo.
- ★ **Mitambo nga zwiga** ndi musi vhana vha tshi shumisa tshitambiswa, tshithu, tshifanyiso, nyolo kana u ita luswayo u imela zwithu zwa vhutshilo ha vhukuma.
- ★ **Mitambo ya muhoyo na matambwa tshitshavhani** i katela u ambara na u edzisela. Izwi zwi ṭutuwedza mveledziso ya muhumbulo na matshilisano na u thusa vhana u laula mikhwa yavho na mahumbulele.
- ★ **Mitambo i re na milayo** i ṭutuwedza vhana u tevhela milayo ya mutambo, na u guda u kovhana na u sielisana khathihi na u thusana.

GUḶOSARI

zwiga

zwithu zwine zwa sumbedza kana u imela zwiṅwe zwithu, u fana na zwiga zwa nomboro, logo kana tswayo dza badani

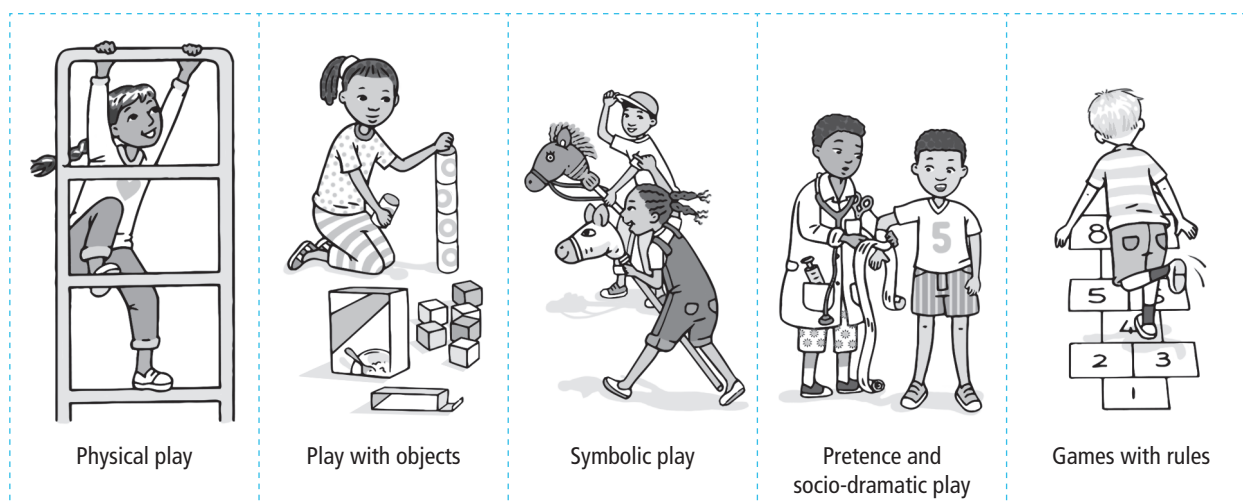


Figure 13 Types of play

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.

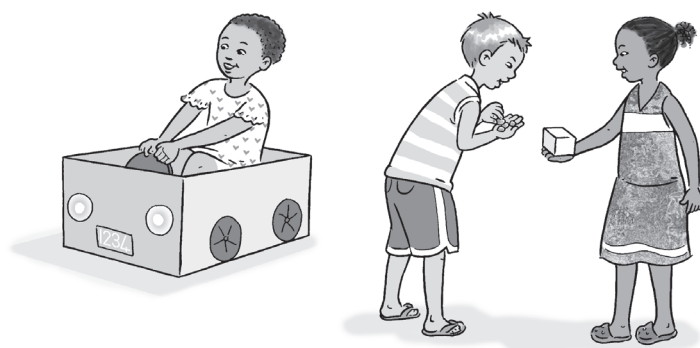
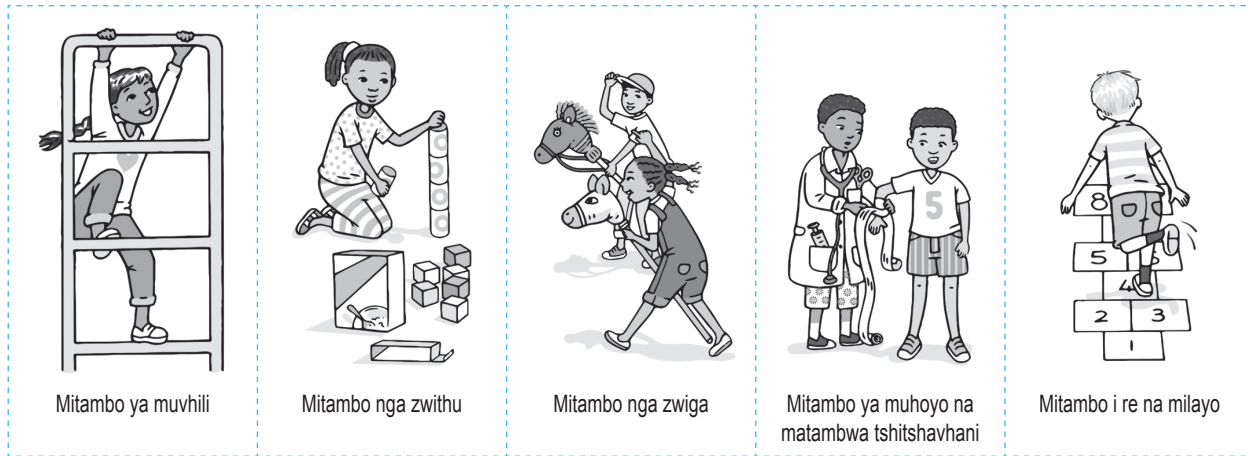


Figure 14 A cardboard box can represent a car, a wooden block can represent an apple and stones can represent money.

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.



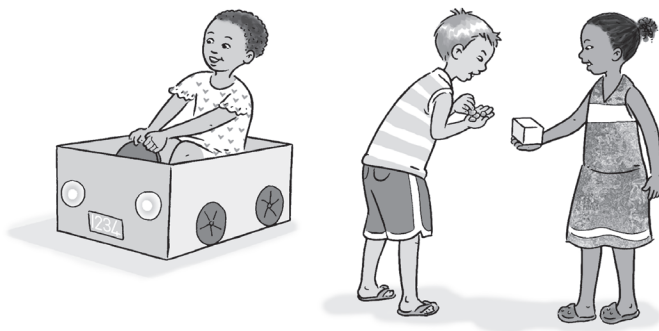
Figara ya 13 Tshakha dza mitambo

Maele o ñisendekaho kha mutambo

Maele o ñisendekaho kha mutambo u itela u funza na u guda a tenda uri tshiñwe tshifhinga vhana vha guda khwine nga nyito dza u tamba nga u funa dzine dzi thomiwa na u langwa nga vhana hu si na u dzhenelela ha vhaaluwa. Nga zwiñwe zwifhinga vhagudi vha guda khwine u bva kha nyito dza mitambo dzo rangwaho phanḁa dzine dza langwa nga mugudisi a tshi itela kiḁasi yoṱhe kana zwigwada zwiṱuku. Mbekanyamushumo yo pulanwaho zwavhuḁi ya u funza na guda i fanela u katela ndinganyo ya tshakha dzoṱhe dzo fhambanaho dza nyito dza u tamba.

U guda ñivhaipfi ya mbalo nga mutambo

U tamba tshifhinga tshinzhi zwi katela vhana vha tshi dzhia mishumo ya vhaaluwa. Sa tsumbo, vha nga edzisela vhaaluwa vha tshi khou lugisa zwiḁiwa, kana mureili wa bufho a tshi khou fhufhisa bufho, kana mugudisi a tshi khou gudisa kiḁasi. Kha mitambo iyi, vha anzela u shumisa zwithu zwi re vhuṱoni havho na u hoyu uri ndi zwiñwe zwithu, sa tsumbo, zwiḁuloḁo zwa mabulannga zwa u fhaṱa 'zwi vha' bodo ya u khavhelela khayoy miroho. Kha ulu lushaka lwa mitambo, vhana vha shumisa tshithu tshithihi u 'imela' kana u imelana na tshiñwe.



Figara ya 14 Khadibogisi ḁi nga imela goḁoi, buḁoḁo ya bulannga i nga imela apula ngeno matombo a tshi nga imela tshelede.

Musi vhana vha tshi tamba na u ola vha shumisa zwithu na zwifanyiso u imela zwithu zwa vhutshiloni ha vhukuma. Izwi ndi one mathomo a u guda uri zwiga zwi nga imela zwithu zwa vhukuma. Vha guda:

- ★ uri nyolo ya vathu vhavhili i nga imela vathu vhavhili vha vhukuma.
- ★ uri zwiga zwi nga imela zwiñwe zwithu, sa tsumbo, '2' yo imela zwithu zwivhili nahone izwi hu nga vha zwiñwe na zwiñwe zwivhili.

- ✦ 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.

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.

GLOSSARY

relate

how objects and ideas are connected to each other



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

- * nga ha u humbulela na mihumbulo, sa tsumbo, u gandisa nga buḽoko na u amba nga ha tshivhumbeo tsho gandiswaho zwi thusa vhana u ḽivha vhunzani ha tshikwea.
- * uri zwithu zwi na **vhushaka** ḽe, sa tsumbo, miñwe midzio i kona u dzhena kha miñwe, zwiñwe zwibuḽoko zwi nga kona u tikedza zwiñwe ngazwo, zwitambiswa zwa u fhaḽa zwi na zwiñwe zwipiḽa zwine zwa kona u dzhena kha zwiñwe fhedzi a si zwoḽhe zwi itaho ngauralo.

GUḽOSARI

vhushaka

uri zwithu kana mihumbulo zwo ḽumana hani

Hu na dziñwe nyito nnzhi dza u tamba dzine dza ḽuḽuwedza u guda mbalo. Dziñwe dza tsumbo asidzi.

- * Musi vhagudi vha tshi shumisa midzio ya mielo yo fhambanaho, muḽavha na maḽi u fhaḽa khaseḽe dza muḽavhani, vha tandula ḽivhaipfi ya vhungomu (zwinzhi/zwiḽuku), muelo (zwhulwane/zwiḽuku) na vhunzhi (zwinzhi/zwi si gathi).
- * Mitambo i fanaho na tseretsere na khadi i ḽuḽuwedza vhana u shumisa u vhalela na u ḽivha phetheni.
- * Vhana vha nga tandula tshivhumbeo na muelo zwa zwithu nga u vhea zwithu (zwi fanaho na mabogisi na dzibola) ngomu ha 'tshisagana tsha u phuphuledza', vha nanga tshithu tshithihi vha tshi ḽalusa.



Nḽowedzo ...



Kha vha pulane nyito dzine dza nyanyula dzangalelo ḽa vhagudi vha ite uri vhagudi vha ḽoḽe u ḽivha nga ha mbalo.

- Kha vha ḽuḽuwedze mutambo khumbulelwa nga u thoma mutambo, sa tsumbo, kha vha vhee zwidulo nga muduba u ita tshidimela. Kha vha humbele mugudi uri a vhe phanḽa sa mureili wa tshidimela kana kha tshidulo tsha vhuvhili kana tsha vhuraru sa munameli. Nga nḽila iyi, vhagudi vha vha na dakalo fhedzi hafhu vha guda ḽivhaipfi i fanaho na vhuimo na kutevhekanele kwa nomboro.
- Kha vha vhe tshipiḽa vha kovhane nyito na vhagudi zwenezwi vha tshi khou tamba. Kha vha sumbedze u ḽiphiḽa na u dzhenela nga u ḽahisa mihumbulo na u amba nga ha zwine zwa khou bvelela kha nyito iyi, sa tsumbo, 'Ndo ḽadza khaphu tharu nga maḽi – thihi, mbili, raru. Zwino, ndo ḽadza iñwe hafhu, lavhelesani, hu na khaphu nḽa. Lavhelesani uri dzo tevhekana zwavhuḽi hani!' Therisano ndi nḽila ya ndeme ya u funza luambo lwa mbalo kha vhana.
- Kha vha dzhieḽe nzhele uri vhagudi vha amba hani nga ha mihumbulo yavho nga ha u vhalela, u ḽanganya na u kovhana nga tshifhinga tsha mutambo wavho, nahone vha vha dovhoololele mawanwa avho, sa tsumbo, 'Vho vhalela nḽha vhuḽungu vhuḽanu vhuḽswuku vha vhalela hafhu nḽha vhuḽungu vhuḽanu ha lutombo. Kha ri vhalele uri ri na vhuḽungu vhungana. Ndi zwone, ndi vhuḽungu ha fumi.'
- Kha vha thuse vhana u humbula nga ha zwiga nga tshifhinga tsha mutambo khumbulelwa. Kha vha dzinginye uri tshithu tshithihi tshi nga imela hani tshinwe, sa tsumbo, 'Vha nga rembulusa ḽafula ya isa milenzhe nḽha vha i shumisa sa ngalavha.'

4. Mulayo wa maimo

ḽhalutshedzo

Zwikili na ḽivhaipfi zwi a fhaḽana. Izwi zwi vhidzwa upfi **mvelaphanḽa ya mveledziso**. Vhagudi vha fhaḽa nḽivho yavho kha zwine vha vho zwi ḽivha na zwine vha vho kona u ita. U funza ha khwine hu bva kha mugudisi a tshi thoma u wanulusa zwine vhagudi vha vho zwi ḽivha na u zwi pfesesa, a kona ha u shumisa nyito na nyimele ya ḽuvha ḽiñwe na ḽiñwe u fhaḽa khazwo u itela u thusa vhagudi u guda nḽivho na zwikili na zwiswa.

GUḽOSARI

mvelaphanḽa ya mveledziso

thevhekano ine khayi zwikili na magudiswa zwa fhaḽana

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.

Mugudi muñwe na muñwe a re ngomu kīlasini yavho u ḡo vha o no vhuya a vha na tshenzhemo. Izwi zwi amba uri vhoṭhe vha fhethu ha u thoma ho fhambanaho kha Gireidi ya Ṭ. Nḡivho thangeli ya mugudi muñwe na muñwe ndi mathomoni a zwine a ḡo guda. Vhagudi vha nga shumisa zwine vha vho zwi ḡivha u guda ḡivhaipfi ya mbalo ntswa na zwikili.



Nḡowedzo ...



-  Kha vha pulane mitambo na nyito dzo teaho u itela u lavhelesa nḡivho thangeli ya vhagudi.
-  Vha lavhelese zwine vhagudi vha ita na musi vha tshi khou tamba, na uri vha laula hani nyito dzo fhambanaho.
-  Vha rekhode vhukoni na ṭhoḡea zwa mugudi muñwe na muñwe.
-  Vha pulane nyito ntswa dzine dza fhaṭa kha nḡivho thangeli ya mugudi muñwe na muñwe na mapfesesele awe a tshenetsho tshifhinga.

Zwinzhi nga ha mulayo wa maimo

U fhambanyisa

Vhagudi vha kīlasini ya Gireidi ya Ṭ ndi vha thanga nthihi, fhedzi muñwe na muñwe u na vhumuthu hawe, ṭhoḡea, vhukoni, nungo na khaedu. Vha fhambana nga:

- ★ tshenzhemo yavho ya hayani
- ★ siangane ya mvelele
- ★ siangane ya ikononi ya matshilisano yavho
- ★ vhuimo havho ha luambo
- ★ madzangalelo avho
- ★ nḡivho thangeli yavho
- ★ u lugela havho u guda
- ★ luvhilo lune vha ṭoḡa u guda ngalwo
- ★ thikhedzo ine vha i ṭoḡa u bva kha vhagudisi na vhañwe uri vha gude.

Vhagudisi vha fanela u isa phanḡa na u lavhelesa na u rekhoda mvelaphanḡa na mveledziso ya mugudi muñwe na muñwe kha mbalo. U fhambanyisa zwi amba uri zwine vha gudisa na nḡila ine vha gudisa ngayo zwi dzhiela nzhele vhukoni ho fhambanaho kana maimo a mveledziso a vhagudi vhavho.

U shumisa maele aya, vhagudisi vha fanela u lavhelesa mugudi muñwe na muñwe nga tshifhinga tsha nyito vha kone u vhona zwine a pfesesa na zwine a kona u ita vha zwi khunyeledza, nahone vha shumise mafhungo ayo u pulana nyito na thikhedzo ya vhagudi. Vhañwe vhagudi vha nga pfesesa muhumbulo muswa une wa khou kumedzwa kha nyito, vha tshi tou ṭoḡa fhedzi thikhedzo ṭhukhu u bva kha mugudisi. Vhañwe vhagudi vha nga ṭoḡa tshifhinga tshinzhi, u sumbedzwa hunzhi, tsumbo nanzhi na thikhedzo nanzhi u bva kha mugudisi uri vha swikelele maimo a fanaho a u pfesesa.

Kha vha sedze tsumbo ya vhagudi vha kīlasini ya Gireidi ya Ṭ vhane vhoṭhe vha khou guda nga ha thero i fanaho – vhuimo tshikhalani (nṭha ha/fhasi ha, phanḡa ha/murahu ha).

- ★ Vhañwe vhagudi vha ḡo pfesesa phambano vhukati ha vhuimo uhu nga tshifhinga tshikhalani na nga ṭhalutshedzo ya mugudisi. Hu so ngo fhela tshifhinga vha ḡo vha vho no lugela u fhirela kha ḡivhaipfi i tevhelaho – maimo tshikhalani a wanalaho kha zwifanyiso.

- ✦ 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'.

- ★ Vhañwe vhagudi vha nga ṭoḡa tshifhinga tshinzhi na ṭhalutshedzo u bva kha mugudisi zwenezwi vha tshi khou shuma kha nyito. Vha ḡo dovha hafhu vha fhirela kha ḡivhaipfi ntswa fhedzi zwi ḡo dzhia tshifhinga tshilapfu nahone vha ḡo ṭoḡa thikhedzo nnzhi.



Ngowedzo ...



Vha nga shumisa u fhambanyisa kha u gudisa havho nga u:

- ✎ dzhiela nzhele zwi fanaho na zwo fhambanaho vhukati ha vhagudi vhavho
- ✎ pulana nḡila ya khwine ya u gudisa mugudi muñwe na muñwe zwo ḡisendeka nga vhukoni hawe
- ✎ shandukisa zwine zwa funzwa u itela uri zwi dzhieze nzhele vhukoni, **zwikili zwa u vhona na u pfa**, nḡivho thangeli, dzangalelo na siangane ya mvelele ya vhagudi vhoṭhe
- ✎ ndivhanyiso, hune zwa konadzea, zwine vha lavhelela uri mugudi muñwe na muñwe u fanela u vha o guda mafheleloni a nyito
- ✎ humbula nga ha vhumuthu ha vhagudi khathihi na vhukoni havho musi vha tshi dzhia tsheo ya u vha vhea nga zwigwada u itela uri vha kone u guda u bva kha na u tikedzana zwigwadani zwavho
- ✎ shumisa nyito dzo teaho na zwishumiswa
- ✎ gudisa vhagudi vho fhambanaho nga luvhilo lwo fhambanaho, sa tsumbo, vhañwe vhagudi vha nga ṭoḡa tshifhinga tshinzhi u fhedza nyito kana u fhindula mbudziso u fhira vhañwe vhagudi
- ✎ shumisa nyito dza zwigwada zwiṭuku u itela uri vha kone u sedza vhagudi nga vhoṭhe na u vha nṭshedza thikhedzo yo teaho arali vha tshi i ṭoḡa
- ✎ pulana nyito dza vhaḡa vhagudi vhane vha ṭoḡa mishumo i vha nṭeaho khaedu nnzhi.

GUḶOSARI

zwikili zwa u vhona na u pfa

u shumisa zwipfi u wana mafhungo nga ha mupo, sa tsumbo: u vhona, u kwama, u pfa, u nukhedza na u thetshela

5. Mulayo wa mvuvhano

Ṭhalutshedzo

U guda hu katela u dāvhidzana na u kovhana mihumbulo. Vhagudi vha fanela u ṭuṭuwedzwa u amba na mugudisi na nga tshavho nga ha zwine vha khou humbula na zwine vha khou ita. U kovhana mihumbulo, u vhudzisa mbudziso na u ṭalutshedza zwine vha khou ita zwi vha thusa u bveledza kupfesesele kwavho kwa ḡivhaipfi. Zwi dovha zwa vha thusa u guda u shumisa luambo lwa mbalo nga fulufhelo.



Ngowedzo ...



- ✎ Nyimele ya kiḡasirumu i ṭoḡa u vha yo fholaho u itela uri vhagudi vha pfe vho vhoḡholowa u vhudzisa mbudziso na u kovhana mihumbulo zwenezwi vhe kati na u tandulula thaidzo.
- ✎ Vhagudi vhaṭuku vha fanela u gudiswa u shumisa maipfi a mbalo nga nḡila yone u itela uri vha kone u a shumisa u ṭahisa mihumbulo yavho na u humbula, sa tsumbo, u guda u ṭalusa bola sa 'tshipulumbu' u fhirisa u amba uri ndi 'sekele'.

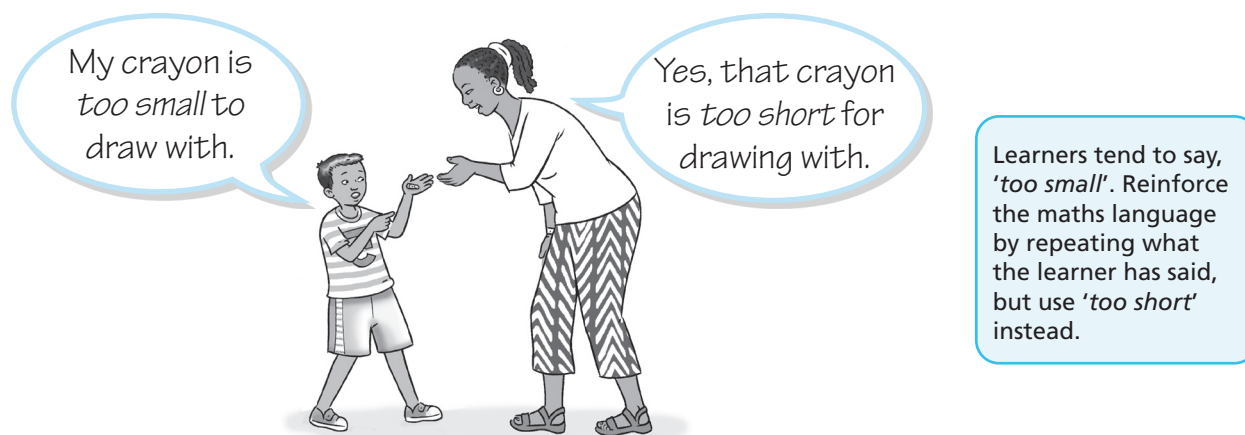


Figure 15 Teachers can guide children to use maths language.

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.



Figara ya 15 Vhagudisi vha nga endedza vhana u shumisa luambo lwa mbalo.

Zwinzhi nga ha mulayo wa mvuvhano

U dāvhidzana: U thetshesela na u amba

Ri guda khwine musi ri tshi tou ita tshinwe tshithu na u amba na muñwe muthu, nga vhavhili kana nga zwigwada. Vhagudi vha fanela u bvedza zwikili nga u dāvhidzana na uri vha fanela u givha uri vha vha hani tshipiḡa tsha nyambedzano. Vha fanela u guda u thetshesela zwine muñwe muthu a khou amba, na u fhindula nga nḡila yo teaho. Izwi zwi amba uri vha fanela u kona u:

- ★ thetshesela zwine zwa khou ambiwa
- ★ fhindula nga nḡila yo teaho
- ★ sielisana u amba na u thetshesela.



Nḡowedzo ...



U thusa vhagudi u bvedza zwikili zwavhuḡi zwa u thetshesela na u amba nga u vha netshedza zwickhala zwa u:

- 👉 dzhenela nyambedzano kana therisano
- 👉 thetshesela zwavhuḡi nga nḡila ya vhudzivha
- 👉 kovha na u ḡahisa mihumbulo yavho
- 👉 ḡea phindulo na u ḡea muvhigo
- 👉 vhudzisa mbudziso
- 👉 tevhela ndaela.

Musi vhagudisi vha tshi thetshesela vhagudi nga vhuronwane, vhagudi:

- ★ vha ḡuḡuwedzwa u kovhana mihumbulo, mbudziso, thaidzo na kuvhonele
- ★ vha pfa uri mugudisi u na dzangalelo khavho nahone u a vhilaela nga ha uri vha khou kona u pfesesa zwinwe zwithu
- ★ vha bvedza zwikili zwavho zwa u thetshesela.

U fhindula nga nḡila yo teaho kha zwinwe zwithu ndi tshipiḡa tsha ndeme tsha vhudāvhidzani, na u funza na u guda. Musi vhagudi vha tshi wana phindulo dzo teaho dza mbudziso dzavho kana mihumbulo, vha fulufhela uri mihumbulo yavho ndi ya khwine nahone ndi ya ndeme. Zwi dovha hafu zwa vha thusa u fhindula nga nḡila yo teaho.



In practice ...



You can respond appropriately to your learners by:

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

The role of language in maths

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

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

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

GLOSSARY

abstract

an idea, a thought or a feeling

exact

precise, accurate







Figure 16 Maths language is exact.



Nḡowedzo ...



Vha nga fhindula vhagudi vhavho nga ḡḡila yo teaho nga u:

-  sa vha tendela u pfa uri vho vhudzisa mbudziso ya vhutsilu
-  dovholola mbudziso ye vha vhudzisa tshinwe tshifhinga, u itela uri vha zwi ḡivhe uri vha khou thetsheleswa
-  vha ḡuḡuwedza u vhudzisa mbudziso dzi pfallaho nga u dzudzanyulula maipfi a dziḡwe dza mbudziso dzavho, kana u vha humbela u dovholola mbudziso nga iḡwe ḡḡila
-  lingedza u fhindula mbudziso dzavho nga ḡḡila dzine dza pfeesesa khavho, sa tsumbo, nga u dzhia kha zwine vha vho zwi ḡivha, na/kana u shumisa tsumbo u bva kha tshenzhemo dzavho.

Mushumo wa luambo kha mbalo

Roḡhe ri shumisa luambo u davhidzana. Ri lu shumisa u kovhana mihumbulo na mafhungo, na u ḡalusa mihumbulo ya **tshihumbulelwa**. Luambo ndi lwa ndeme kha mbalo. Ri a lu ḡoḡa u itela u ḡalusa, u pfeesesa, u vhudzisa, u humbula, u ḡea muhumbulo, u ḡalutshedza na u imelela ḡivhaipfi ya mbalo.

Luambo lwa mbalo lu katela maipfi na zwiga zwine ra shumisa u davhidzana kana u kovhana mihumbulo kana ḡivhaipfi. Tshiḡwe tshifhinga ri shumisa luambo lwa ḡuvha liḡwe na liḡwe, fhedzi luambo lwa mbalo lu tou **kwa** na uri lwo tiwa. Vha nga vhala zwinzhi nga ha ḡivho ya ḡuvha liḡwe na liḡwe na ḡivho ya tshikoloni kha masiatari a 16–23. Tsumbo tharu dza izwi asidzi.

- ★ Kha luambo lwa ḡuvha liḡwe na liḡwe ipfi ‘hafu’ li nga kha ḡi shumiswa u ḡalusa tshiḡwe tshithu tshine tshi nga kovhiwa tsha bva zwipiḡa zwivhili zwa muelo u fanaho. Hone ha, kha mbalo, ‘hafu’ i amba zwipiḡa zwivhili zwa tshithu tshithi tsha kovhekanywa u eḡana. Zwipiḡa zwivhili zwi tou kwa nga muelo kana nomboro.
- ★ Kha luambo lwa ḡuvha liḡwe na liḡwe ri nga ḡi ri, ‘Mugudisi ndi muhulwane.’ Hone ha, kha mbalo ri ngari ‘Mugudisi ndi mulapfu’, ra kala vhulapfu hawe, ri tshi vhalela ‘thihi’, ‘mbili’, ‘raru’, ngauralo ngauralo zwenezwi ri tshi khou kala.
- ★ Kha luambo lwa ḡuvha liḡwe na liḡwe ri nga ḡi amba uri ḡhofunderaru ndi ya tshivhumbeo tsha ḡhodzi. Hone ha, kha mbalo ri nga ri ḡhofunderaru i na masia tswititi mararu na khuḡa tharu.

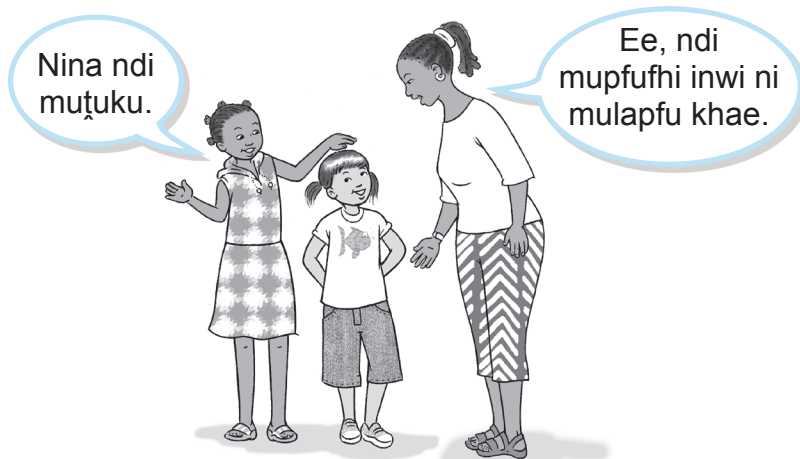
GULOSARI

tshihumbulelwa

muhumbulo, kana vhuḡipfi

kwa

zwonezwone, vhuronwane



Figara ya 16 Luambo lwa mbalo lwo tou kwa.

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.

U bveledza luambo lwa mbalo lwa vhana

Tshipiḡa tsha u guda ḡivhaipfi ntswa tshi katela u guda luambo luswa. Vhagudisi vha fanela u ranga phanḡa vhagudi nga zwiḡuku zwenezwi vha tshi khou thoma u pfesesa na u shumisa luambo luswa lwa mbalo tshikoloni na kha vhutshilo havho ha ḡuvha liḡwe na liḡwe. Vha fanela u ḡivhadza vhagudi vha Gireidi ya ḡ kha ḡivhaipfi yo teaho ya mbalo ine ya ḡo ita uri vha kone u tevhela ndaela, u vhudzisa mbudziso na u ḡahisa mihumbulo yavho na u ḡea mihumbulo. Vhagudi vha guda luambo luswa na mbalo nga tshifhinga tshithihi. Zwenezwi vha tshi khou guda maipfi maswa vha guda ḡivhaipfi nnzhi, vha kona ha u guda maḡwe maipfi manzhi na iḡwe ḡivhaipfi nnzhi, zwenezwo zwa ita uri vha bvelele kha mishumo yavho ya mbalo.



Nḡowedzo ...



Vhagudi vha ḡivhaho ḡhalutshedzo ya maipfi 'tshipulumbu' na 'fulethe' vha nga ḡalusa vhunzani ha zwithu zwa tshimbalo. Sa tsumbo, nga kha mitambo yavho vha kona u zwi vbona uri zwithu zwa tshipulumbu zwi a kunguluwa na uri zwithu zwa masia a fulethe zwi tou seseledza. Vhagudi vha sa ḡivhi ḡivhaipfi 'tshipulumbu' kana 'fulethe' vha nga vha na mawanwa maḡuku nga ha zwithu zwine vha tandula – mabogisi a a seseledza nahone bola dzi a kunguluwa. Vhagudi avha vha fanela u ḡuḡuwedzwa u guda luambo luswa lwo teaho u itela u engedza nḡivho yavho na u pfesesa ḡivhaipfi.



Figara ya 17 U bveledza luambo lwa mbalo nga a u tamba

Kha vha ḡuḡuwedze vhagudi u shumisa luambo lwa hayani nga hune vha nga kona. Izwi zwi thusa u bveledza vhukoni ha luambo nga u angaredza na zwikili zwa u humbula. Afrika Tshipembe, vhagudi vhanzhi vha Gireidi ya ḡ vha guda nga luambo lwa vhuvhili kana lwa vhuraru. U gudisa mbalo zwi nga thusa u bveledza vhukoni havho ha u shumisa nyambo idzi arali vho ḡewa zwickhala zwa u amba nga zwine vha khou ita nga tshifhinga tsha nyito dza mbalo, u kovhana mihumbulo na u rera kuhumbulele kwavho.

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)

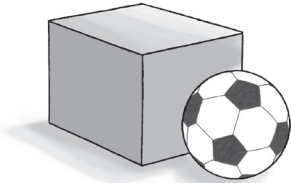


Figure 20

★ shape (round, square)



Figure 21

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

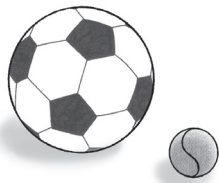


Figure 22

★ size (big, small)

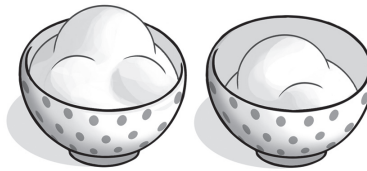


Figure 23

★ 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.

U guda divhaipfi yo teaho ya mbalo

Vhagudi vha tḡḡa divhaipfi u amba na u humbula nga ha divhaipfi ya mbalo. Sa tsumbo, vha fanela u divha maipfi a fanaho na aya u itela u ḡalusa:

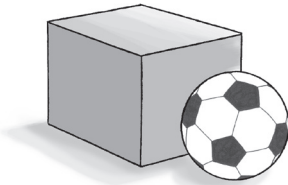


Figara ya 18

- ★ vhunzhi (zwinzhisesa, zwinzhisa, zwinzhi, zwi si gathi)

Figara ya 19

- ★ u rekanya (u ḡanganya, u ḡusa)

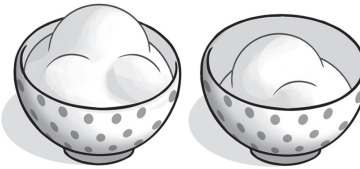
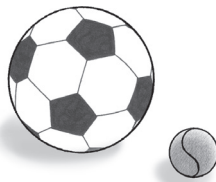


Figara ya 20

- ★ tshivhumbeo (tshipulumbu, tshikwea)

Figara ya 21

- ★ vhuimo (ha u thoma, ha vhuvhili, ha vhuraru, ha mafhelelo, phanḡa ha, murahu ha, vhukati ha)



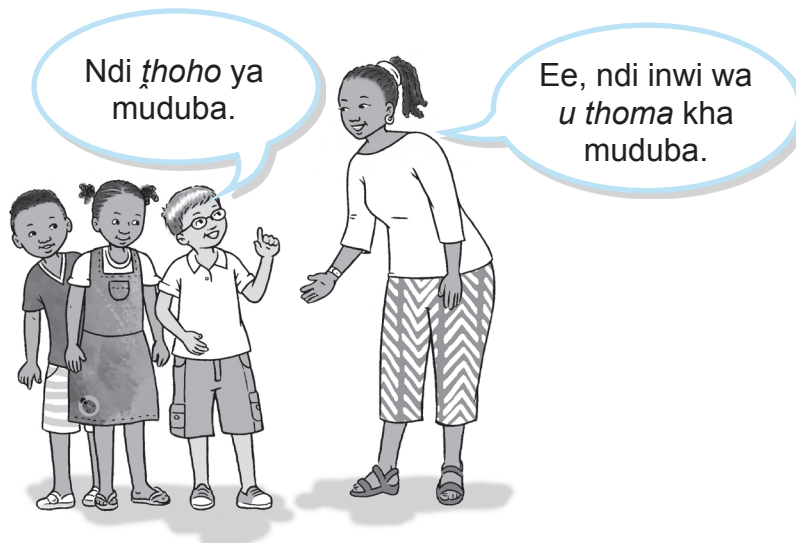
Figara ya 22

- ★ saizi (tshihulwane, tshitḡuku)

Figara ya 23

- ★ muelo (zwinzhisa, zwiḡuku, vhuḡapfu, vhuḡavha, dala, lemela, ndapfu, pfufhi, matsheloni, madekwana)

U ḡḡuwedza vhagudi uri vha shumise divhaipfi ya mbalo nga u i shumisa nga vhone musi vha tshi amba navho nga ha divhaipfi ya mbalo, na nga u amba nga inwe ḡḡila zve vha amba vha zwi isa kha luambo lwa mbalo. Mafheleloni a Sia ḡa Magudiswa kha Tshiteḡwa tsha 3 hu na mutevhe wo fhelelaho wa divhaipfi ya mbalo wo tetshelwaho Sia ḡa Magudiswa.



Figara ya 24 Vha ḡḡuwedze vhagudi u shumisa divhaipfi ya mbalo.

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.

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.

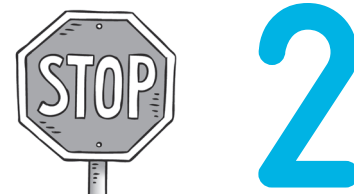


Figure 25 A stop sign and the numeral '2' are both symbols.

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:

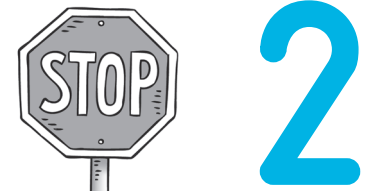
- ★ play
- ★ spend time with and communicate with adults and other children
- ★ talk about their ideas and reasoning.

Mbalo dzi sedzesa kha vhushaka vhukati ha zwithu. Vhagudi vha ɽoda luambo u humbula na u amba nga ha vhushaka uhu, hu tshi katelwa na:

- ★ mbambedzo vhukati ha khuvhanganyo ya zwithu (zwinzhi, zwi si gathi, zwinzhisa, zwiɽukusa)
- ★ mbambedzo ya saizi (khulwane/ɽhukhu, ndapfu/pfufhi, lemelesaho/leluwesaho)
- ★ mbambedzo ya tshivhumbeo (masia mararu, masia maɽa, tshipulumbu kana kheve)
- ★ vhuimo tshikhalani (phanɽa ha, murahu ha, fhasi ha, tsini ha, vhukati ha)
- ★ u tevhekanya zwithu (tsha u thoma, tsha u fhedzisela, tsha vhuvhili, tshi tevhelaho, tsha phanɽa, tsha murahu, tsha vhukati)
- ★ mbambedzo vhukati ha tshivhalo tsha zwithu (zwinzhisa, zwiɽuku, zwi eɽanaho).

U pfesesa na u shumisa zwiga

Zwiga zwi wanala hoɽhe hune ra vha hone. Tswayo dzine vhagudi vha vhona vhuɽoni havho ha ɽuvha liɽwe na liɽwe kanzhi dzi na maipfi na zwiga khadzo. Vhagudi vha guda uri maipfi aya na zwiga zwi na zwine zwa amba. Sa tsumbo, zwiga zwi ri sumbedza uri ri pfuke lini bada kana uri zwithu zwi ita vhugai.



Figara ya 25 Tshiga tsha u ima na nomboro '2' zwoɽhe ndi zwiga.

Vhana vhaɽuku vha edza nga zwiga zwo nwalwaho nga nyolo dzavho na ndingo dzavho dza u guda u nwala. Kha Gireidi ya ɽ, u pfesesa luambo lwa mbalo zwi fhaɽa mutheo wa u shumisa zwiga zwa mbalo nga nɽila yo teaho.

U n̄ea muhumbulo na u humbulela

Vhagudi vha ɽoda hafhu luambo u:

- ★ tevhela na u amba nga ha **u n̄ea muhumbulo** ha muɽwe
- ★ ɽalutshedza kuhumbulele kwavho na u shumisa izwi **u humbulela** zwine zwa ɽo bvelela. Vha ɽoda luambo u ɽalusa phetheni na u amba zwine zwa ɽo tevhela arali phetheni ya iswa phanɽa.

GUɽOSARI

u n̄ea muhumbulo
mahumbulwa a murahu ha muhumbulo kana tshitatamennde

u humbulela
u amba kana u anganyela zwine zwa ɽo itea tshifhinga tshi ɽaho



Figara ya 26 U humbulela uri ndi tshivhumbeo tshifhio tshi tevhelaho kha u tevhekana hu ɽaho.



Nɽowedzo ...



U ɽuɽuwedza mveledziso ya luambo lwa mbalo, vhagudi vha ɽoda zwikhala zwa tshivhalo u:

- ɽamba
- fhedza tshifhinga na khathihi na u davhidzana na vhaaluwa na vhaɽwe vhana
- amba nga mihumbulo yavho na kuhumbulele.



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 they 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

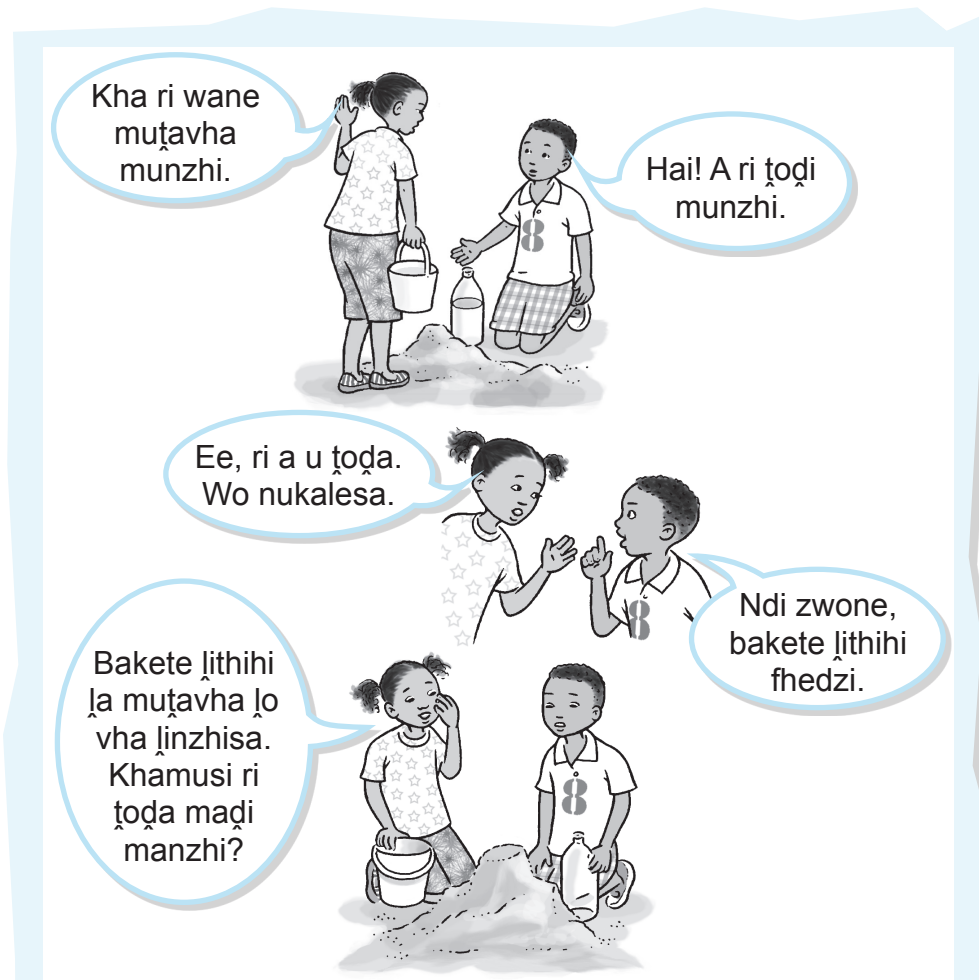
Definition

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



Figara ya 27 U tamba ndi tshikhala tsha u shumisa luambo lwa mbalo.

Kha vha dzhieze nzhele uri vhagudi vha khou shumisa hani luambo lwa mbalo musi vha tshi:

-  amba nga ha zwine vha khou ita
-  ṭalusa tshenzhemo dzavho dza nḡa ha tshikolo, sa tsumbo, u dzudzanya ṭafula ya tshiswiṭulo, u tamba mutambo kana u ṭalutshedza uri vho swikisa hani hayani u bva tshikoloni
-  u vhumba maipfi musi vha sa athu ḡivha luambo lwa mbalo lwo teaho lwa tshinwe tshithu, sa tsumbo, u ṭalusa khuḡa sa 'yo itaho ṭhodzi' kana u bula 'fumithihi' sa 'fumithihifumi'
-  u humbulela zwine zwa ḡo itea, tsumbo, 'Thawara i ḡo wa arali nda engedza zwinwe zwiḷoko zwinzhi nga nṭha.'

6. Mulayo wa nyendedzi

Ṭhalutshedzo

Vhagudisi vha ranga phanḡa vhagudi kha u pfesesa nḡivho ntswa. Vha dzudzanya nyimele ya u funza na u guda u itela u sikela vhagudi zwickhala zwa u sedzesa kha mishumo yo tiwaho na matheriala u itela uri vhagudi vha kone u tandula muhumbulo na u kovhana mihumbulo yavho nga ha thaidzo ya mbalo. Vhagudisi vha ita maedza a zwine zwa fanela u itwa na u vhudzisa mbudziso dzi sumbaho nḡila ya u thusa vhagudi u tandulula thaidzo. Izwi tshinwe tshifhinga zwi vhidzwa **vhukonanyi**. Nga vhukonanyi, vhagudi vha bveledza nḡivho ntswa, mikhwa na maano a u tandulula thaidzo dzine vha nga kona u dzi shumisa kha maḡwe magudiswa.

GUḶOSARI

vhukonanyi

ndi nyito ya ṭhanganelano ine muthu a ḡivhaho zwinzhi kana a vha na zwickili zwo bvelelaho zwa nṭha a endedza vhaḡwe u guda zwithu zwiswa



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.



Ngowedzo ...



Vha shumisa hani vhukonanyi ngomu kilasini

1. Kha vha topole uri ndi divhaipfi na zwikili zwifhio zwine vhagudi vha vho zwi divha vha kone u pulana nyito yo teaho.
2. Kha vha nee vhagudi nyito ine ya sedzesa kha divhaipfi ntswa kana zwikili.
3. Kha vha ite edza ja nyito kana vha sumbedze vhagudi uri i itwa hani.
4. Kha vha nee vhagudi muvhigo nga zwine vha khou ita.
5. Kha vha nee lusevhegi u thusa vhagudi, fhedzi vha songo vha nea thandululo.
6. Kha vha tũtũwedze vhagudi nga u vha vhudzisa mbudziso nga ha zwine vha khou ita.
7. Kha vha tũtũwedze vhagudi u vhudzisa mbudziso u itela uri vha ite vhuṭumani huswa na u ditumbulela nga vhone vhaṅe.
8. U nea vhagudi inwe nyito ine vha do ita nga vhone vhaṅe, vha tshi shumisa divhaipfi kana tshikili tshe vha guda. Kha nyito iyi, vha fanela u ita ngowedzowe vha tshi shumisa tshikili tshiswa kana ngivho nga ndila dzo fhambanaho. Kha vha vha range phanda na u vha tikedza, fhedzi nga zwiṭuku.
9. Kha vha nee vhagudi dziṅwe nyito nahone nga zwiṭuku vha tshi tũtshela nyendedzi yavho na thikhedzo, vha tshi vha tendela u ita zwithu nga vhoṭhe.

Zwizhi nga ha mulayo wa nyendedzi

Maele a u funza

U funza zwi katela u shumisa maele o fhambanaho nga zwifhinga zwo fhambanaho:

- ★ Ndaela dzo livhaho dzi katela therisano ṭhukhusa. Vhagudi vha nga vhudzisa mbudziso, fhedzi idzi kanzhi dzi tshimbilelana na u tevhela ndaela. Ndaela dzo livhaho dzi fanela u vha tshipiḁa tshiṭukusa tsha u funza.
- ★ Ndaela dzo rangwaho phanda dzi katela mugudisi na vhagudi vha tshi shumisana u tandulula thaidzo kana u guda tshikili kana divhaipfi ntswa. Mugudisi u nea nyendedzi na thikhedzo u swikela vhagudi vha tshi kona u ita nyito nga vhone vhaṅe. Kha *Grade R Maths* izwi zwi vhidzwa upfi nyito dzo rangwaho phanda nga mugudisi.

Nyito dzo dzudzanywaho

- ★ Nyito dzo dzudzanywaho ndi nyito dza u guda na u gudiswa, tshifhinga tshinzhi dzo rangwa phanda nga mugudisi. Dzi sedzesa kha divhaipfi tiwa ya mbalo kana tshikili.
- ★ Kha mbekanyamushumo ya *Grade R Maths*, nyito dzo dzudzanywaho dzo khethekanywa nga:
 - nyito dza kilasi yoṭhe
 - nyito dza tshigwada tshiṭuku dzo rangwaho phanda nga mugudisi
 - nyito dza tshigwada tshiṭuku dzo diimisaho
 - nyito dza u tou ḁinangela.

U vhudzisa mbudziso

Thekiniki dza u vhudzisa mbudziso dzavhuḁi ndi dza ndeme kha u funza. *Grade R Maths* i tũtũwedza vhagudisi u shumisa mbudziso dzo ṭandavhuwaho dzine dza tũtũla u humbula tshimbalo. Lushaka ulwu lwa mbudziso lu wanala kha thaidzo na tsedzuluso. Mbudziso dzo ṭandavhuwaho dzi dovha hafhu u thusa vhagudisi u kuvhanganya mafhungo nga ha maimo a kupfesesele na ngivho ya vhagudi.

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.

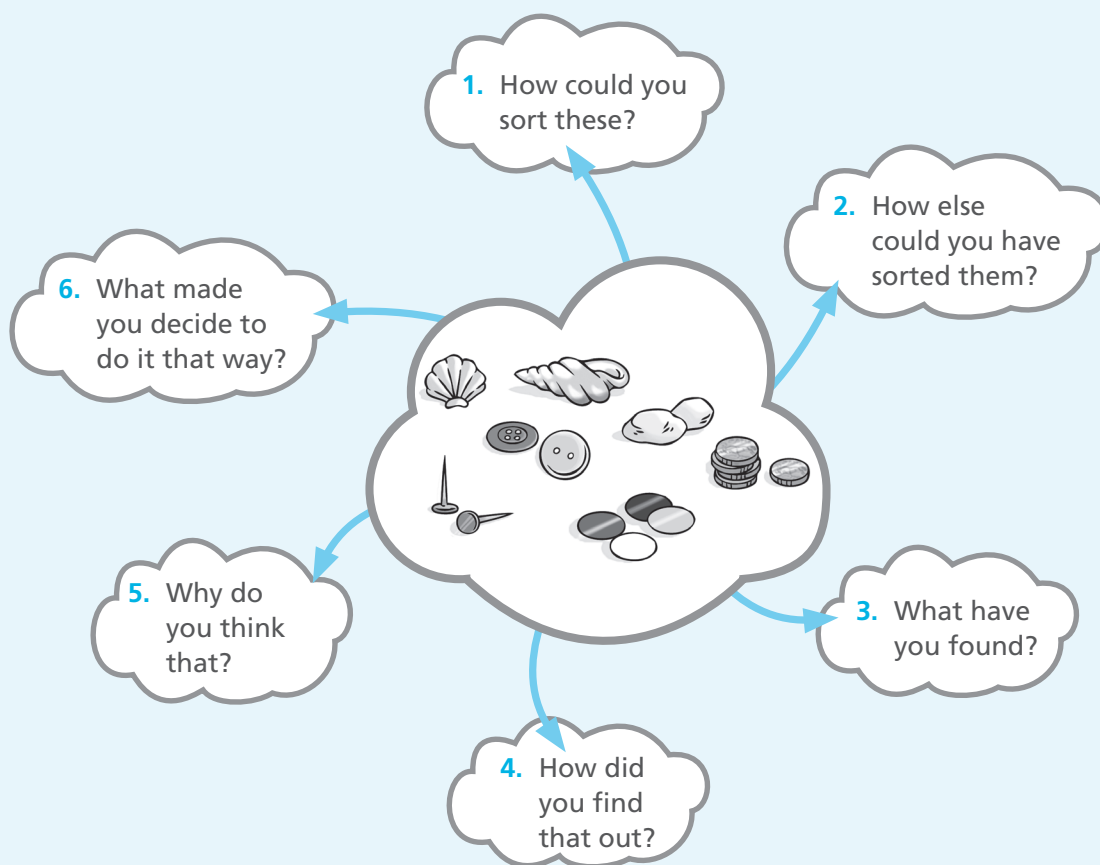


Figure 28 Open-ended questions

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.

Mbudziso dza phindulo nthihi (Mbudziso dzi sa konḡi)	Mbudziso dzo ṭaṅḡavhuwaho (Mbudziso dzi konḡaho)
Mbudziso dzine dza vha na phindulo ya 'ee'/'hai'.	Mbudziso dzine dza vha na khonadzeo ya phindulo dzi fhiraho nthihi.
Tsumbo: Iyi ndi ṭhofuṅḡeraru? Tsumbo: Iyi ndi ṭhofuṅḡeraru kana ndi tshikwea?	Tsumbo: Ni nga mmbudza mini nga ha ṭhofuṅḡeraru? Tsumbo: Ṭhofuṅḡeraru yo fhambana hani na tshikwea?



Nḡowedzo ...



- Kha vha vhudzise mbudziso dzo ṭaṅḡavhuwaho dzine dza ṅea vhagudi zwikhala zwa u humbula vho ḡiimisa na u amba nga zwine vha khou humbula. Vha lingedze u sa shumisa mbudziso dza phindulo nthihi dzine dza sedza fhedzi kha u elelwa mbuno, kana dzine dza vha na phindulo dza 'ee'/'hai' fhedzi.
- Kha vha ṅee vhagudi tshifhinga tsha u lingedza u fhindula mbudziso u itela uri vha humbule, u dzudzanya mihumbulo nahone vha kone ha u i ṭahisa nga maipfi.



Figara ya 28 Mbudziso dzo ṭaṅḡavhuwaho

U tandulula thaidzo

Vhagudi vha ṭaṅana na thaidzo dzine a vha koni u dzi tandulula ṅa tshenetsho tshifhinga. Vhagudisi vha Gireidi ya Ṭ vha fanela u tikedza vhagudi u bvedza zwikili zwa u kona u tandulula thaidzo idzi ṅa vhoṭhe. Izwi zwi katela tshifhinga tsho eḡanaho tsha u amba ṅa ha thaidzo, u lingedza mihumbulo, u guda ṅa phoswo dze vha ita, u sedza masia oṭhe a thaidzo na u ḡowedza mihumbulo yavho zwo ḡitika ṅa tzedzuluso.



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.



Nḡowedzo ...



-  Vhagudi vha vhe vhone vha ambesaho.
-  Vhagudi vha ṭuṭuwedzwa u lingedza mihumbulo miswa na uri vha ite phoswo.
-  Vhagudi vha kovhana zwine vha khou humbula na mugudisi khathihi na vhaḡwe vhagudi.
-  Vhagudisi vha thetshesela mihumbulo ya vhagudi.
-  Mbudziso dza vhagudisi nga u angaredza ndi mbudziso dzo ṭandavhuwaho nahone vha langa kuhumbulele kwa vhagudi.

7. Mulayo wa vhukатели

Ṭhalutshedzo

U ṭhonifha **phambano** na vhukатели ndi pfanelo dza vhana. Ndi dza ndeme arali ri tshi ṭoḡa vhana vhoṭhe vha tshi guda na u bvelela u ya nga ha vhukoni havho. Vhagudisi vha fanela u ḡivha vhuṅe ha mugudi muḡwe na muḡwe, ṭhoḡea dzavho na madzangalelo.

Kiḡasirumu iḡwe na iḡwe ya Afrika Tshipembe yo fhambana na iḡwe. Hu na vhana vhanzhi vho fhambanaho nahone muḡwe na muḡwe wavho u ḡa na vhuṅe hawe, vhumuthu, vhukoni, madzangalelo na siangane. **Vhukатели** ndi nḡowendowe ya u vhona uri vhana vhoṭhe, hu sa sedzwi phambano, vho katelwa kha nyito dzoṭhe dza kiḡasini, nga maandḡa vhaḡa vhagudi vhane vho vha vha tshi nga siwa nḡḡa kana u kandedzwa. Vhuholefhali ndi *tshithihi* tsha mihumbulo i nḡewaho uri ndi ngani vhana vha tshi anzela u siwa nḡḡa, fhedzi zwa ndeme, matshiliso, nyanyuwo, mbumbo na mafhungo a kuhumbulele na zwone zwi ḡikumedza sa zwithithisi zwa u guda. Vhagudisi vha re na muhumbulo wa mukatelo, vha ṭanganedza na u kuvhatedza phambano vhukati ha vhagudi.

Pfunzo yo katelaho i amba uri vhana vhoṭhe vha dzhena tshikolo kha kiḡasi dzo teaho miḡwaha yavho. Vha a ṭanganedzwa, u ṭuṭuwedzwa u shela mulenzhe kha zwipiḡa zwoṭhe zwa tshikolo nahone vha a tikedzwa u guda na u swikelela vhukoni havho ho fhelelaho.

GUḲOSARI

phambano

tsielisano ya vhatu vha re na phambano dzo fhambanaho dza, sa tsumbo, vhuṅe, vhumuthu, vhukoni, madzangalelo na siangane



vhukатели

nḡowelo dza u vhona uri vhana vhoṭhe, hu sa sedzwi phambano dzavho, dzo katelwa kha nyito dzoṭhe dza kiḡasini



Nḡowedzo ...



-  Vhagudi vhoṭhe vha na pfanelo ya u pfa vho khethea, u shela mulenzhe na u katelwa kha nyito dza kiḡasini na therisano. Izwi zwi katela vhana vha re na vuholefhali, mafhungo a mikhwa kana zwiḡwe zwithithisi zwa u guda.
-  Vhagudi vhoṭhe, vhabebi vhavho na vhashumi vha tshikoloni vha fanela u ṭanganedzwa, u katelwa, u farwa zwavhuḡi na u ṭhonifhiwa hu sa sedzwi mvelele, murafho, tsinde, mbeu, vhukoni ha muvhili kana muhumbulo, vhurerele kana maimo a ikonomi tshitshavhani.

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.

Zwizhi nga ha mulayo wa vhukатели

Zwitaela zwo fhambanaho zwa u guda

Phambano a si nga ha zwitalusi zwashu zwa muvhili fhedzi, lutendo, kana fulufhelo, i nga katela hafhu uri ri gudisa hani zwikili zwiswa.









Vhana vhothe a vha gudi nga ndila i fanaho. Hu na zwitaela zwa u guda zwo fhambanaho zwine zwo tea mugudi muñwe na muñwe. Sa tsumbo, a si vhana vhothe vhane vha nga tevhela ndaela dza mugudisi nga u tou thetshelisa fhedzi zwine a khou amba. Vhañwe vhagudi vha do vhuwela nga u tou vhona tshifanyiso tshine tsha imela zwine vha fanela u ita. Vhañwe vha nga toda musumbedzo kana nyito ya u ita vhone vhañe uri vha pfesese tshothe ndaela kana divhaipfi.



Ngowedzo ...



Vhagudisi vho bvelelaho vha a kona u topola thodea dza u guda dza mugudi muñwe na muñwe ngomu kilasini dzavho nahone vha kona u ita nyito dzine dzo tea thodea dza mugudi muñwe na muñwe. Zwitaela zwa u guda zwa malo zwi tevhelaho zwo tea kha u guda na u gudisa kha Gireidi ya T:

-  U vhona (Tshikhala): U guda nga u vhona zwi katela tshumiso ya zwifanyiso kana nyolo u humbula mafhungo. Vhañwe vhagudi vha pfesesa na u humbula mafhungo khwine musi o tou sumbedzwa sa zwifanyiso kana nyolo.
-  U pfa (U pfa-Mubvumo): U guda nga u pfa zwi ditika nga u thetshelisa mafhungo u itela u pfesesa tshothe na u a humbula. Vhañwe vhagudi vha guda khwine musi vha tshi nga thetshelisa mugudisi, kana luimbo kana zwo rekhodwaho.
-  U amba (Luambo): U guda nga u amba zwi katela u amba na u tahisela mihumbulo ntha, na u ola kana u nwala u itela u pfesesa tshothe na u humbula mafhungo.
-  Muvhili (Nyito dza muvhili): U guda nga muvhili zwi bvelela musi mugudi a tshi dzhanela kha nyito dza muvhili, kana nga u tou ita ene muñe. Vhagudi avha vha shumisa mivhili yavho na zwipfi zwa u kwama u itela u pfesesa mafhungo.
-  Thandulukano (Tshimbalo): U guda ha thandulukano hu katela u shumisa thandulukano na u nea mihumbulo u itela u pfesesa mafhungo. Vhagudi vha re na thandulukano vha shumisa thandulukano na u toda mihumbulo musi vha tshi khou guda zwithu zwiswa.
-  Matshilisano (Mvuvhano vhukati ha vathu): U guda ha matshilisano hu katela u guda na vhañwe. Vhañwe vhagudi vha tama u guda vhe tshipida tsha tshigwada kana na khonani.
-  Nga ethe (U shuma u wothhe): U guda nga ethe zwi katela u guda u wothhe. Vhañwe vhagudi vha a kanganyiswa nga vhañwe.
-  Nemupo (Mupo): U guda nga mupo zwi itea muponi. Vhañwe vhagudi vha guda na u pfesesa khwine musi vha tshi nga tandula na u sengulusa mupo nga tshenzhemo ya nnda, u fana na u lavhelesa phukha, ngade, u londota lifhasi kana u tandula mupo.

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.

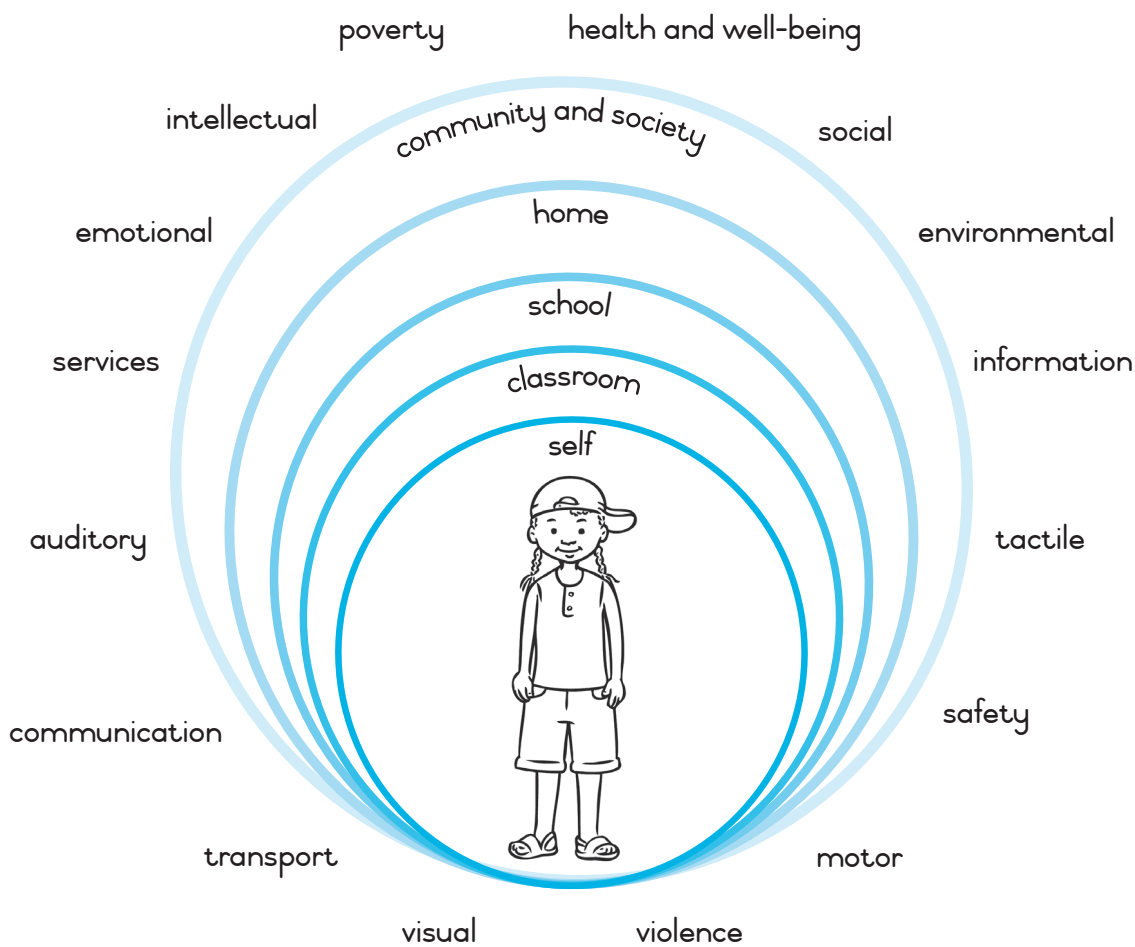


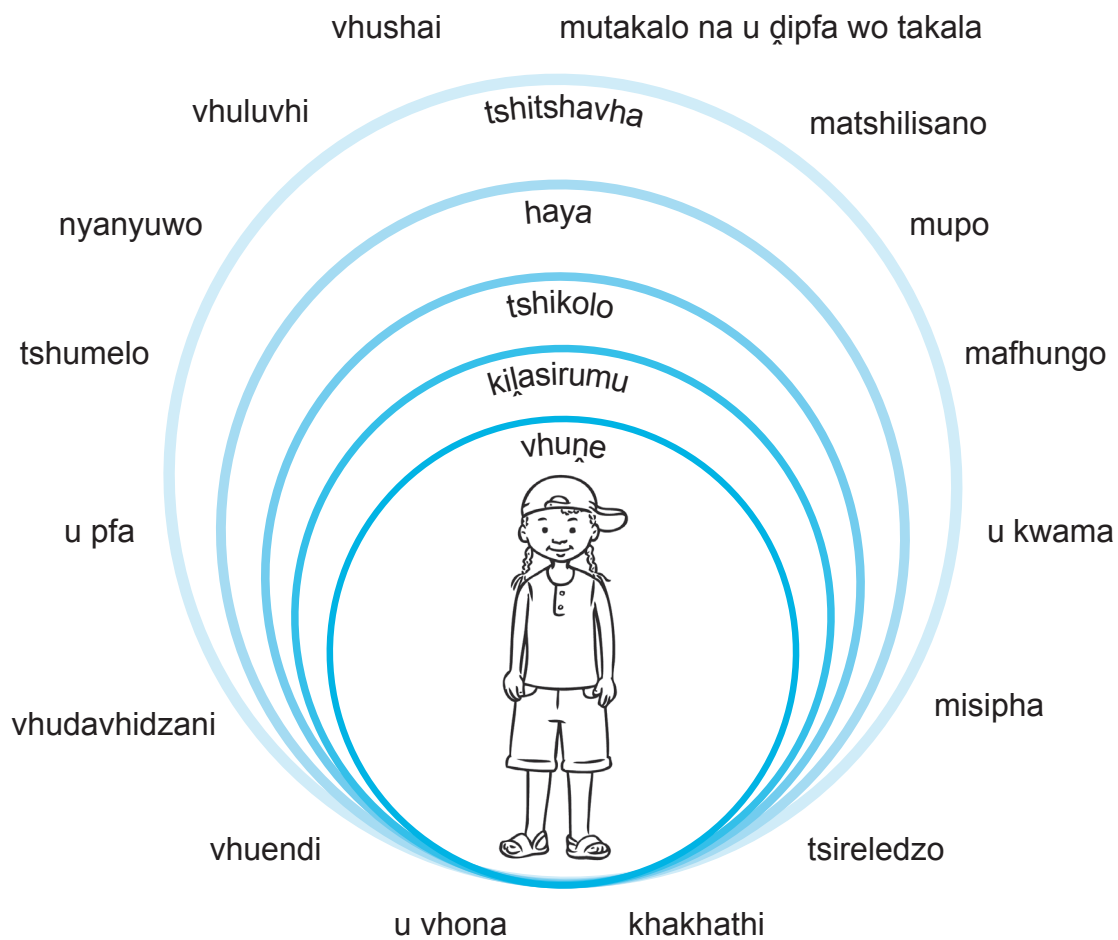
Figure 29 Barriers to learning

Zwithithisi zwa u guda mbalo

Zwithithisi zwa u guda ndi tshinwe na tshinwe tshine tsha kundisa nwana u guda zwavhudi. Zwithithisi zwi nga tumanywa na nwana (mupo), sa tsumbo, vuholefali ha muhumbulo, thaidzo kana tshanga tsho vundeaho. Zwithithisi zwa u guda zwi nga dovha hafhu zwa si vhe zwe nwana a zwi vhanga (zwi si zwa mupo), sa tsumbo, vhushai, u litshedzelwa kana kilasi yo dalesaho.

Luambo ndi tshishumiswa tsha ndeme tsha u guda. Afrika Tshipembe lu anzela u divhonadza lu tshithithisi tsha u guda tsha ndeme kana tshi si tsha ndeme, zwi hulusa hune luambo lwa nwana lwa hayani lwa vha lwo fhambana na luambo lwa u gudisa na u guda.

Vhana vhanzhi vha tshenzhela tshithihi kana zwinzhi zwa zwithithisi zwa u guda. Vha nga kha di toda ndowendowe na thikhedzo nnzhi u fhira vha nwe vhagudi. Zwithithisi zwa u guda ndi zwithu zwine zwa kondisela vha nwe vha vhagudi u guda mbalo. Tsumbo dza zwithithisi zwa u guda dzo sumbedzwa kha nyolo i tevhelaho.



Figara ya 29 Zwithithisi zwa u guda



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.



Nḡowedzo ...



Dziḡwe dza ḡdila dzine vha nga katela vhagudi vhoḡthe kiḡasini yavho ya Gireidi ya Ṱ dzi katela zwi tevhelaho:

-  U pulana ngudo dzavho, nyito na matheriala uri a vhe o teaho ḡhoḡea dza vhagudi vho fhambanaho, sa tsumbo, thaidzo ya mbalo yo ḡisendekaho kha tshifanyiso i nga fanela u katela ḡhaluso yo dodombedzwaho u itela u thusa mugudi u sedza kha zwipiḡa zwa ndeme zwa tshifanyiso.
-  U shumisa nyito dza u ita nznzhi dzo fhambanaho na zwithu zwa vhukuma.
-  Kha vha ḡee vhagudi tshifhinga tshinzhi na thikhedzo u ita nyito, u humbula na/kana u fhindula mbudziso, arali vha tshi zwi ḡoḡa.
-  Zwi nga thusa u rera, na mushumisani kana tshigwada tsha thikhedzo tsha tshikolo, vhuimo vhune vha khou shuma khaho na mugudi u itela u vhona uri vha khou mu ḡetshedza thikhedzo ya khwine yo teaho. Vha nga ḡoḡa hafhu u ḡola na vhabebi vha ḡwana kana vhaundḡi na tshigwada tsha thikhedzo tsha tshiḡiriki u itela u ḡea mugudi zwikhala zwoḡthe zwi konadzeaho zwa u guda na mveledziso.


Zwikolo zwi fanela u vhona uri kiḡasirumu dzoḡthe na vhagudisi vha na zwishumiswa zwo teaho zwo eḡanaho zwi katelaho vhagudi vhoḡthe, na nga nḡa ha zwithithisi zwa u guda. Izwi zwi katela:


- ★ vhagudisi vho pfumbudzwaho u topola zwithithisi zwa u guda
- ★ maano a mafunzele o fhambanaho
- ★ kiḡasirumu yo dzudzanywaho zwavhuḡi
- ★ kiḡasi ḡhukhu i langeaho
- ★ vhathusedzi vha kiḡasini.




Nḡowedzo ...



 Kha vha ḡole vhagudi vhoḡthe musi vha tshi ḡanganedzwa kha Gireidi ya Ṱ vha rekhode mawanwa avho kha Phurofaili ya Mugudi u ya nga phoḡisi ya lushaka ya u Ṱola, u Topola, u Linga na Thikhedzo (Screening, Identification, Assessment and Support (SIAS)) ya vhagudi vhoḡthe.

 U bveledza Pulane ya Thikhedzo ya Muthu muthihi (Individual Support Plan (ISP)) u itela vhagudi vhane vha vha na zwithithisi zwa u guda. Mafhungo aya a fanela u swikiswa kha vhabebi na/kana vhaundḡi u itela uri vha ḡivhe nga ha ḡhoḡea dza u engedza na pulane ya thikhedzo ya ḡwana wavho.

 Kha vha shumisane na Tshigwada tsha Thikhedzo tsha Tshikolo u itela u ḡetshedza thikhedzo yo fanelaho. Mugudi u rumelwa kha vha Tshigwada tsha Thikhedzo tsha Tshiḡiriki arali hu tshi ḡoḡea iḡwe thikhedzo ya u engedza.

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.

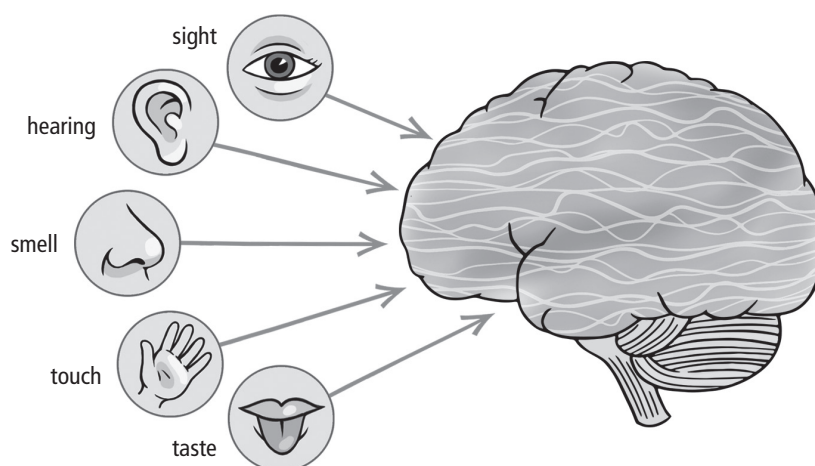


Figure 30 Our five senses



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?

Mveledziso ya zwipfi na misipha na marambo

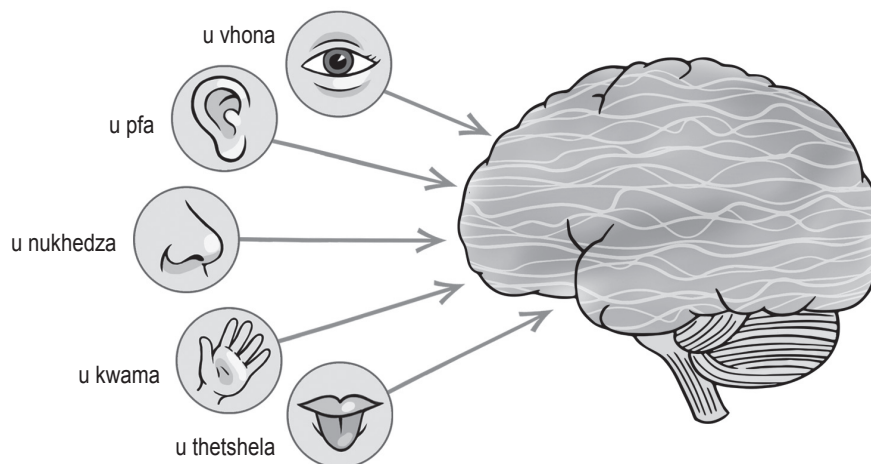
Mveledziso ya zwikili zwa zwipfi na misipha na marambo kha vhagudi vhaṭuku ndi ya ndeme nga maanda kha u tea mutheo wa mveledziso ya mbalo ya tshifhinga tshi ḍaho na u guda. U ḍivha ha muhumbulo zwine zwa khou itwa nga zwipfi zwi amba u shumisa zwipfi u wana mafhungo nga ha mupo. Zwikili zwa zwipfi zwa u sedza, u topola na u fhindula ndi zwa ndeme kha u guda mbalo ngauri zwi ri thusa u pfesesa:

- ★ ṅdila ine zwithu zwa vha na vhuṭumani ngayo
- ★ zwi fanaho na zwo fhambanaho
- ★ muelo, tshivhumbeo na phetheni
- ★ tshikhala na vhuimo
- ★ zwiga na zwine zwa amba zwone.

Zwikili zwa zwipfi zwi ri tendela u pfesesa lifhasi u mona na riṅe.

Mafhungo a zwipfi a kuvhanganywa nga zwipfi zwashu zwiṭanu, sa tsumbo, zwine maṭo ashu a vhona, ṅḍevhe dza pfa, lukanda lwa pfa, lulimi lwa thetshela na ningo ya fembedza.

Mafhungo aya a rumelwa vhuluvhini hashu. Vhuluvhi vhu a phurosesa, dzudzanya na u humbula mafhungo aya u itela uri ri kone u a shumisa nga murahu u itela nyito dza ḍuvha liṅwe na liṅwe, u fana na u vhala, u ola, u ṅwala, u gera, u ḍadza dziphazili, u shuma thaidzo dza mbalo, u ḍiphiṅa nga tshiṭori, u ambara, u wana zwienda zwaṅu ngomu khabodoni, u imba khathihi na zwiṅwe zwikili zwinzhi.



Figara ya 30 Zwipfi zwashu zwiṭanu



ṅḍowedzo ...



Kha vha lavhelese vhagudi vha tshi khou tamba nga zwithu zwo fhambanaho ṅḍa na musi vhe ngomu.

👉 Vha nga:

- ~ bula phambano vhukati ha mibvumo yo fhambanaho, maipfi o fhambanaho?
- ~ topola phambano vhukati ha zwifanyiso zwivhili kana zwigwada zwa zwithu?
- ~ humbula zwe vha vhona kana vha pfa?
- ~ dovholola mutevhe wa maipfi kana dzinomboro nga u tevhekana ho teaho?
- ~ kona u pfa mibvumo yo fhambanaho, madzina avho, na ndaela?
- ~ pfa phambano vhukati ha u suvhelela na u hwasa?
- ~ wana phambano vhukati ha u ḍifha na u dunga vho valwa maṭo?

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.

Zwikili zwa misipha ndi nyito dzine dza katela u shumisa misipha. Ri shumisa misipha mihulwane mivhilini yashu u itela nyito guṭe dza misipha, sa tsumbo, u raha bola, u gidima na u fhufha. Ri shumisa misipha miṭuku u itela nyito guṭe dza misipha, sa tsumbo, u gera, u ṅwala na u ola.

Mveledziso ya ṭhanganyo yo zwikili zwa zwipfi na misipha ya muvhili i katela zwi tevhelaho:

- ★ zwipfi zwa u vhona
- ★ zwipfi zwa u pfa
- ★ zwipfi zwa u kwama
- ★ zwipfi zwa vhunzani.

Grade R Maths i dzhiela nṭha ndeme ya zwikili izwi u itela mveledziso ya ḡvhaipfi ya mbalo kha vhagudi vha Gireidi ya Ṭ.

Zwipfi zwa u vhona

Zwipfi zwa u vhona ndi vhukoni ha vhuluvhi ha u shumisa zwine maṭo a khou vhona na u ṭalutshedza mafhungo ayo. Zwikili zwa zwipfi zwa u vhona ndi zwa ndeme kha u shumisa zwithu, nyolo, u vhala na u ṅwala mbalo.

U vhona hu khethululaho

U vhona hu khethululaho ndi vhukoni ha u vhona zwi fanaho na zwo fhambanaho vhukati ha zwithu. Sa tsumbo, u vhona uri ndi zwifhio zwi fanaho na uri ndi zwifhio zwo fhambanaho vhukati ha zwivhumbeo zwa zwithu zwa mielo mivhili u fana na tshifanyiso tsha tshikwea na tsha ṭhofundeina.

U pfananya maṭo, vhuluvhi na misipha

U pfananya maṭo, vhuluvhi na misipha ndi vhukoni ha maṭo, vhuluvhi na misipha ya muvhili ha u shumisana u ita nyito. Kha mbalo, ndi zwa ndeme uri nyito dzi fanaho na u shumisa zwithu, u ola na u ṅwala.

Nyito dzine dza thusa u bveledza pfananyo ya maṭo, vhuluvhi na misipha dzi katela:

- ★ mitambo ya bola na ya zwisagana zwa ṅawa
- ★ u shumisa zwibuḷoko zwa u fhaṭa
- ★ u tamba nga zwithu zwi kunguluwaho na zwi seseledzaho
- ★ u ola phetheni
- ★ u gera na u nambatedza
- ★ u lunzhedza.

U vhona zwo fhelelaho musi zwi songo fhelela

U vhona zwo fhelelaho musi zwi songo fhelela ndi vhukoni ha u fhedza zwithu, zwifanyiso kana nyolo dzi songo fhelelaho. Nga maṅwe maipfi, mugudi u kona u vhona kana u topola tshithu tsho fhelelaho na musi tshifanyiso itsho tshi songo fhelela. Vhagudi vha konḡelwa nga u vhona zwo fhelelaho ngeno zwi songo fhelela vha, sa tsumbo, a konḡelwa u ḡadza dziphazili. Vha nga dovha hafhu u konḡelwa u ṭalusa zwi no khou ṭahela kha tshifanyiso tshine tsha sumbedza fhedzi sia ḡa tsha uḡa ḡa tshifhaṭuwo kana muvhili, kana u fhedzisa tshifanyiso.

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.

U kona u fhambanya zwivhumbeo na zwiga na u kona u vhona zwipiḡa zwa tshithu

U kona u fhambanya zwivhumbeo na zwiga ndi vhukoni ha u bula phambano vhukati ha zwivhumbeo na zwiga, na musi mielo yazwo na vhuimo zwi tshi nga shanduka. Nga maḡwe maipfi, zwi amba u kona u topola zwiḡaluli zwi sa shanduki zwa tshithu. Sa tsumbo, tshipulumbu ndi tshipulumbu nga mulandu wa tshivhumbeo tshatsho. Tshi dzula tshi tshipulumbu na musi tshi tsha lutombo, phephulu, tshihulwane kana tshiḡuku, tshi buguni kana tsho olwa muḡavhani. Nga yeneyo nḡila nthihi, tshiga tsha nomboro '5' a tshi shanduki na musi tsha ḡwalwa nga mivhala yo fhambanaho kana nga muḡwalo muhulu kana muḡuku.

U vhona hu nanguludzaho vhukati ha zwiḡwe

U vhona hu nanguludzaho vhukati ha zwiḡwe ndi vhukoni ha u topola phambano vhukati ha zwithu zwi re phanḡa na zwiḡa zwi re murahu. Vha nga thusa vhagudi u bveledza tshikili itshi nga u vha humbela u topola tshiḡwe tshithu kha tshifanyiso kana kha khuvhanganyo ya zwithu, sa tsumbo, 'Wanani musidzana o ambaraho vhurukhu vhutswuku kha tshifanyiso' kana 'Wanani bogisi ḡi re na maswiri tshifanyisoni' kana 'Wanani zwienda zwaḡu kha tshiḡhopho tsha zwienda zwashu zwoḡhe'.

U vhona hu tevhekanaho

U vhona hu tevhekanaho ndi vhukoni ha u vhea zwithu nga mutevhe wo teaho nga murahu ha u zwi sedza kana u zwi lavhelesa. Kha vha thuse vhagudi u bveledza tshikili itshi nga u vha humbela uri vha lavhelese phetheni ya vhulungu ha mivhala yo fhambanaho kha muḡali vha kone ha u dovholola phetheni vhone vhaḡe.

Nyandanyo ya maḡo na misipha

Nyandanyo ya maḡo na misipha ndi vhukoni ha u kona u pfesesa mafhungo nga u tou sedza na u a shumisa kha iḡwe nyito i shumisaho misipha ya muvhili. Vhagudi vha shumisa mafhungo e vha vhona na misipha ya minwe musi, sa tsumbo, vha tshi kopa nomboro kana u ola zwithu zwi re phanḡa havho.

Zwifanyiso zwa muhumbulo

Zwifanyiso zwa muhumbulo ndi vhukoni ha u ita zwifanyiso muhumbuloni yavho (zwifanyiso zwa muhumbulo) zwo ḡisendeka nga tshenzhemo, u lavhelesa kana maḡwe mafhungo e muthu a vhona. Vhagudi vha shumisa tshikili itshi musi, sa tsumbo, vha tshi ola zwifanyiso zwa tshithu tshi ngaho lufhera mahayani avho kana miḡani ya havho.

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.

U pfa nga muhumbulo

U pfa nga muhumbulo ndi vhukoni ha vhuluvhi u shumisa zwine ndevhe dza pfa na u talutshedza mafhungo ayo. U pfa nga muhumbulo ndi zwa ndeme kha u bvedza zwikili zwa luambo, u tevhela na u pfesesa ndaela khathihi na u kovhana na u rerisana mihumbulo na mafhungo.

U pfa hu khethululaho

U pfa hu khethululaho ndi vhukoni ha u topola zwi fanaho na zwo fhambanaho kha mubvumo, tsumbo, u kona u pfa phambano vhukati ha maipfi 'thofundeina' na 'thofunderaru'.

U rwela ngomani

U rwela ngomani ndi vhukoni ha u vhulunga na u humbula tshiwe tshithu tshe muthu a pfa. Vhagudi vha shumisa tshikili itshi musi vha tshi tevhela sethe ya ndaela kana u dovhola thevhekano ya nomboro ye ya vhalelwa ntha, tsumbo, 4, 6, 8, 1.

U nanguludza mubvumo vhukati ha miwe

U nanguludza mubvumo vhukati ha miwe ndi vhukoni ha u divha kana u nanguludza mubvumo u bva kha miwe. Zwi dovha zwa vha vhukoni ha u sedza kha mubvumo tiwa u thungo kha miwe ine ya vha hone henefho fhethu huthihi. Tshikili itshi tshi tendela vhagudi u sedza kha zwine muwe tshigwadani tshavho a khou amba vha sa khou thithiswa nga phosho ya u amba ha zwiwe zwigwada.

U pfa hu tevhekanaho

U pfa hu tevhekanaho ndi vhukoni ha u humbula zwithu nga u tevhekana hazwo nga murahu ha u pfa mutevhe wazwo. Sa tsumbo, u tevhekana ha nomboro u bva kha 1 u ya kha 10 kana miwedzi ya nwa. U humbela vhagudi u talusa zwithu zwi si gathi zwa mitambo ya divha u itela u thusa u bvedza tshikili itshi.

U kwama na maga a u guda nga u ita

U kwama ndi vhukoni ha u shumisa zwipfi zwa u kwama u tandula vhupo hau. Liga la u guda nga u ita ndi u dzhiela nzhele musudzuluwo wa muvhili na vhuimo tshikhalani. Zwi shuma zwothe u netshedza vhuluvhi mafhungo. Nyito ine ya thusa u bvedza u kwama ha vhagudi na u guda nga u ita ndi u humbela vhagudi u bonya maoto avho, vha phuphuledza na u talusa tshivhalo tsha zwithu zwo fhambanaho ngomu ha saga kana tshilopo. Sa tsumbo, vha nga di ri tshi na dzikhuda kana ndi tshipulumbu.

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. Mulayo wa ndowendowe

Tthalutshedzo

Vhagudi vha fanela u vha na tshifhinga tshinzhi tsha u ita ndowendowe ya zwikili zwiswa na ndivho. Musi vhagudi vha tshi ita ndowendowe tshifhinga tshothe ya zwe vha guda, vha vha khwine khazwo nahone vha vha na vhudifulufheli. Vha diphina nga ndovhololo na ndowendowe. Mugudisi wa Gireidi ya T u fanela u netshedza vhagudi zwickhala zwi dovhololaho zwa u ita ndowendowe na u khwinisa zwikili zwiswa.



Ngowedzo ...



- U vhalela na u tandulula thaidzo zwi itwa duvha liñwe na liñwe sa nyito dza misi – na musi ho sedzeswa kha dziñwe divhaipfi u fana na tshivhumbeo kana muelo.
- U nea matheriala na mishumo yo fhambanaho u itela uri vhagudi vha ite ndowendowe ya zwikili zwiswa zwe vha guda nga ndila dzo fhambanaho.
- Divhaipfi ya mbalo i nga dovha hafhu ya itwa ndowendowe u mona na kharikhuḽamu, sa tsumbo, nyito dza Luambo lwa Hayani na Zwikili zwa Vhutshilo u fana na zwiṭori, matambwa, u pennda na mitambo ya khaedu dza muvhili sa u fhufha, u gonya na u kokovha.

Zwizhi nga ha mulayo wa ndowendowe

U shumisa zwidade, nyimbo na zwiṭori

U imba nyimbo na u dovholola zwidade vhothe, na u kovhana zwiṭori ndi zwithu zwi difhaho, ndila ya u guda i si na mutatisano. Vhana vha guda divhaipfi ya mbalo na zwikili musu vha tshi dovholola zwidade na nyimbo, na u thetshesha zwiṭori hafhu. Vha guda na u ita ndowendowe ya:

- ★ madzina a nomboro (tsumbo. 'Ho vha hu na vhukhohe vhuraru vhuṭuku ...')
- ★ thevhekano ya madzina a nomboro
- ★ u vhalela u ya phanda na murahu
- ★ u vhalela zwigwada zwa zwithu
- ★ mirekanyo i si fomaḽa, tsumbo, u tanganya na u tusa
- ★ u tevhekana ha zwiwo.



Ngowedzo ...



- Kha vha engedze musudzuluwo, mutevhetsindo na muzika kha nyimbo, zwidade na zwiṭori u ita uri zwi takadzese. Tshenzhemo dzi shumisaho zwipfi zwashu zwothe dzi thusa vhagudi u humbula zwithu u leluwa.
- Kha vha tuṭuwedze vhabebi na vhañwe vhaundi u guda zwiṭori, nyimbo na zwidade zwine vha zwi shumisa na vhagudi. Nga ndila iyi, zwi vha vhuṭamani ha ndeme ha vhana vhukati ha nyito dza hayani na tshikoloni.

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.

U țanganelana ha mbalo kha mbekanyamushumo yoțhe ya Gireidi ya T ya đuvha lińwe na lińwe





Vhagudisi vha fanela u ita vhuțumani vhukati ha mbalo, ndowelo dza đuvha lińwe na lińwe na dzińwe thero (tsumbo, Luambo lwa Hayani na Zwikili zwa Vhutshilo), khathihi na vhukati ha mbalo na vhutshilo ha đuvha lińwe na lińwe ha vhagudi. Vhagudisi vha fanela u shumisa zwikhala zwoțhe u ita ndowendowe ya zwikili zwa mbalo.






Nđowedzo ...



Vhagudi vha anzela u sumbedza dzangalelo ła u guda mbalo, nahone vha wana zwo leluwa u pfesesa, arali vha kona u vhona uri mbalo dzi pfesesea hani na uri dzi thusa hani kha vhutshilo havho. Vhagudisi vha nga thusa nga u ita zwi tevhelaho:

-  U dzhiela nzhele uri mbalo ndi tshipiđa tsha vhune havho na vhutshilo ha phurofeshinala hani.
-  U sumbedza vhagudi uri mbalo dzi shumiswa hani kha vhutshilo ha đuvha lińwe na lińwe, sa tsumbo, musi hu tshi shumiswa tshelede u renga tshińwe tshithu.
-  U țanganya nyito dza mbalo na dzińwe kiłasirumu na tshenzhemo ya nnda, u fana na:
 - ~ u shumisa nomboro thevhekano 'mathomo', 'vhuvhili' na 'vhuraru' musi vhagudi vho ita muduba
 - ~ u amba nga vhuimo na sia musi vhagudi vha tshi khou tamba
 - ~ u amba nga ha 'zwinzhi' na 'zwi si gathi' musi vhagudi vha tshi kovhana mutshelo, vhurotho na/kana dzhusi.
-  U ita vhuțumani na đivhaipfi dza mbalo u fana na saizi, muelo, tshifhinga, nyanganyelo, u vhalela, u vhambedza, tshivhumbeo na/kana vhukule musi vha tshi vhalela vhagudi zwițori.

U funza đivhapfi dza mbalo nga tshifhinga tsho sedzwaho kha *Grade R Maths* na u sedza zwińwe zwikhala u bvedza luambo lwa mbalo na đivhaipfi đuvha loțhe. Izwi:

-  zwi thusa vhagudi u bvedza kupfesesele kwa uri masia a ndivho o fhambanaho a na vhushaka hani
-  zwi ita uri hu vhe na u guda ho fhelelaho kana tshenzhemo yo fhelelaho ya u guda
-  zwi ņea vhagudi zwikhala zwinzhi zwa u ita ndowendowe ya zwi vha guda.

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

KHETHEKANYO YA 2

Mbekanyamushumo ya Duvha Linwe na Linwe ya Mbalo dza Gireidi ya T

Marangaphanda

Mbekanyamushumo ya *Grade R Maths* yo bveledzwa u khwaṭhisa na u tikedza kharikhulamu ya Mbalo dza Gireidi ya T. *Grade R Maths*:

- ★ i katela na u engedza TSHIPHOKHALI kha magudiswa a Mbalo dza Gireidi ya T o bulwaho kha Masia a Magudiswa maṭanu
- ★ i tuṭuwedza u guda ho ḡisendekaho kha tsenguluso nga u dzinginya nḡila dza u engedza vhulambati ha mupo wa vhagudi u tandula vhupo vhune vha vha khaho
- ★ i nea nyito dzine dza tuṭuwedza vhagudi u sengulusa na u tandula ḡivhaipfi dza mbalo
- ★ i tuṭuwedza vhagudisi u amba na vhagudi nga ha zwine vha humbula na u vha thusa u ṭahisa mihumbulo yavho
- ★ i dzinginya nḡila dza vhagudi dza u pulana, u lavhelesa na u kuvhanganya mafhungo, vha kona ha u a vhambedza, u vhekanya, u khethekanya na u ṭalutshedza mawanwa avho
- ★ i netshedza matheriala na zwishumiswa zwo teaho.

Masia a Magudiswa a Mbalo

Mbalo dza Vhuimo ha Fhasi (hu tshi katelwa na Gireidi ya T) dzi katela Masia a Magudiswa maṭanu. Sia la Magudiswa linwe na linwe li shela mulenzhe kha uri mugudi a bveledze nḡivho tiwa na zwikili zwa mbalo. Masia a Magudiswa ndi:

- ★ Nomboro, Tswayo na Vhushaka
- ★ Phetheni, Fankisheni na Alidzhebura
- ★ Tshikhala na Tshivhumbeo (Dzhometiri)
- ★ Muelo
- ★ U shuma na Data

Vha nga wana zwinzhi nga ha linwe na linwe la Sia la Magudiswa kha TSHIPHOKHALI na kha Khethekanyo ya 3 ya nyendedzi iyi (siaṭari la 111).

U nea tshileme Maisa a Magudiswa a Mbalo

TSHIPHOKHALI i dzinginya uri tshifhinga tsha u funza Mbalo kha Gireidi ya T ndi awara dza 23 nga vhege. Fhedzi, TSHIPHOKHALI, a i netshedzi u nea tshileme kana u fhandekanywa kha Gireidi ya T ha tshifhinga tshine tsha fanela u shumiswa kha Sia la Magudiswa linwe

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	3	4	5	5	17	42,5
	Number recognition						
	Number sense (relationships)						
	Problem solving Calculations						
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	4	3	2	2	11	27,5
	3-D objects and 2-D shapes						
	Symmetry						
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

na liñwe kha kotara inwe na inwe. U ñea tshileme Masia a Magudiswa a Mbalo zwi na ndivho mbili khulu:

- ★ U ñea nyendedzi kha tshifhinga tshi todeaho u tandulula magudiswa ngomu ha Sia ja Magudiswa liñwe na liñwe zwavhuḍi.
- ★ U ñea nyendedzi nga ha uri ndi u ñea tshileme hungafhani hune ha tea u ñetshedzwa zwipiḍa zwo fhambanaho kha kharikhulamamu ya Mbalo dza Gireidi ya T nga tshifhinga tsha u linga.

Mbekanyamushumo ya *Grade R Maths* i dzinginya u ñea tshileme ho anganyelwaho ha Masia a Magudiswa. Izwi zwo ñisendeka kha zwi tevhelaho:

- ★ Masia a Magudiswa othe nga u edana hao ndi a ndeme na musi tshifhinga tshi edanaho tshi nga si shumiswe kha liñwe na liñwe lao.
- ★ Mañwe Masia a Magudiswa a toḍa tshifhinga tshinzhi u itela mveledziso ya ñivhaipfi, sa tsumbo, Nomboro, Tswayo na Vhushaka, na Tshikhala na Tshivhumbeo (Dzhomeḱiri).

Mbekanyamushumo ya *Grade R Maths* yo sedzesa kha Sia ja Magudiswa tiwa vhege inwe na inwe ngeno i tshi dovha ya vhona uri hu a kuvhanganywa na u ñanganywa ndivho ntswa. *Nyendedzi ya Nyito* ya kotara inwe na inwe i dzudzanya magudiswa na tshivhalo tsha dzivhege u mona na u ñea tshileme uhu u itela thero na mveledziso ya ñivhaipfi ya ndeme dza Sia ja Magudiswa ja TSHIPHOKHALI dzo katelwa. Thebuḵu afha fhasi i sumbedza tshivhalo tsha vhege dza magudiswa dzi todeaho u itela Sia ja Magudiswa a kotara inwe na inwe.

Thebuḵu ya 1 Tshivhalo tsha dzivhege nga Sia ja Magudiswa tsha kotara inwe na inwe

U ñea tshileme tsha Magudiswa a Mbalo dza Gireidi ya T							
Sia ja Magudiswa	Thero	Kotara ya 1 dzivhege	Kotara ya 2 dzivhege	Kotara ya 3 dzivhege	Kotara ya 4 dzivhege	Ṭhanganyelo ya tshivhalo tsha dzivhege nga ñwaha	Ṭhanganyelo ya % dza tshifhinga
Nomboro, Tswayo na Vhushaka	U vhalela U topola nomboro U ñalukanya nomboro (vhushaka) U tandulula thaidzo Murekanyo	3	4	5	5	17	42,5
Phetheni, Fankisheni na Alidzhebura	U topola, u kopa, u engedza na u sika phetheni dzavho	1	1	1	1	4	10
Tshikhala na Tshivhumbeo (Dzhomeḱiri)	Vhuimo, u ñivhadza na u vhona Zwithu zwa mielo miraru na zwithu zwa mielo mivhili Ndinganyahuvhili	4	3	2	2	11	27,5
Muelo	Tshifhinga Vhulapfu Tshileme Vhungomu/Volumu	1	1	1	1	4	10
U shuma na Data	U kuvhanganya, u vhekanya, u imelela na u fhenda zwithu/mafhungo	1	1	1	1	4	10
Ṭhanganyelo ya vhege		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).

Mbalo na mbekanyamushumo ya ḍuvha ḷiñwe na ḷiñwe ya Gireidi ya Ṭ

Mbekanyamushumo ya ḍuvha ḷiñwe na ḷiñwe

Mbekanyamushumo ya Gireidi ya Ṭ ya ḍuvha ḷiñwe na ḷiñwe ndi mbekanyangudo ine mbonalo yayo yo fhambana na dziñwe. A i fani na dziñwe mbekanyangudo dzi no shumiswa kha dziñwe dzigireidi tshikoloni. I ñea vhagudi ðhõdea dza mveledziso ngeno i tshi tandulula ðhõdea dza pholisi ya TSHIPHOKHALI.

Nyolo ya mbekanyamushumo ya Gireidi ya Ṭ ya ḍuvha ḷiñwe na ḷiñwe (Figara ya 31) i katela u khaukanywa ha tshifhinga tsho gaganywaho sa nyendedzi ya vhagudisi. Zwifhinga izwi zwi fanela u vha na vhutepe kha Gireidi ya Ṭ, fhedzi hu fanela u vha:

- ★ awara 4 na minetse dza 36 nga ḍuvha (kana awara dza 23 nga vhege) dza tshifhinga tsha vhukwamani ha u gudiswa na u guda
- ★ nyito dzine dza katela thero tharu: Luambo lwa Hayani (awara dza 10 nga vhege), Mbalo (awara dza 7 nga vhege) na Zwikili zwa Vhutshilo (awara dza 6 nga vhege).

Thero iñwe na iñwe i na dzulo lo sedzwaho ḍuvha ḷiñwe na ḷiñwe nahone yo dovha hafhu ya ðanganelana na dziñwe nyito ḍuvha lothe. Mbekanyamushumo ya ḍuvha ḷiñwe na ḷiñwe kha Figara ya 31 i bvisela khagala tshifhinga tsha mbalo tsho sedzwaho khathihi na zwickhala zwa u guda mbalo hu sokou iteaho. U guda mbalo hu itea kha:

- ★ madzulo a kilasi yothe hune vhagudi vha vhuvhana sa tshigwada tshithihi tshihulwane na mugudisi
- ★ madzulo o rangwaha phanda nga mugudisi a tshigwada tshituku hune vhagudi vhane vha nga swika malo vha shuma na mugudisi
- ★ madzulo a tshigwada tshituku hune vhagudi vhane vha nga swika malo vha shuma vhe vhothe kha nyito mañafulani (zwititshini zwa u shumela)
- ★ madzulo a u ðinangela hune vhagudi vha nanga vhone vhañe zwine vha tama u ita u bva kha khetho ya nyito dzo dzudzanywaho nga mugudisi (vhuñinangeli).

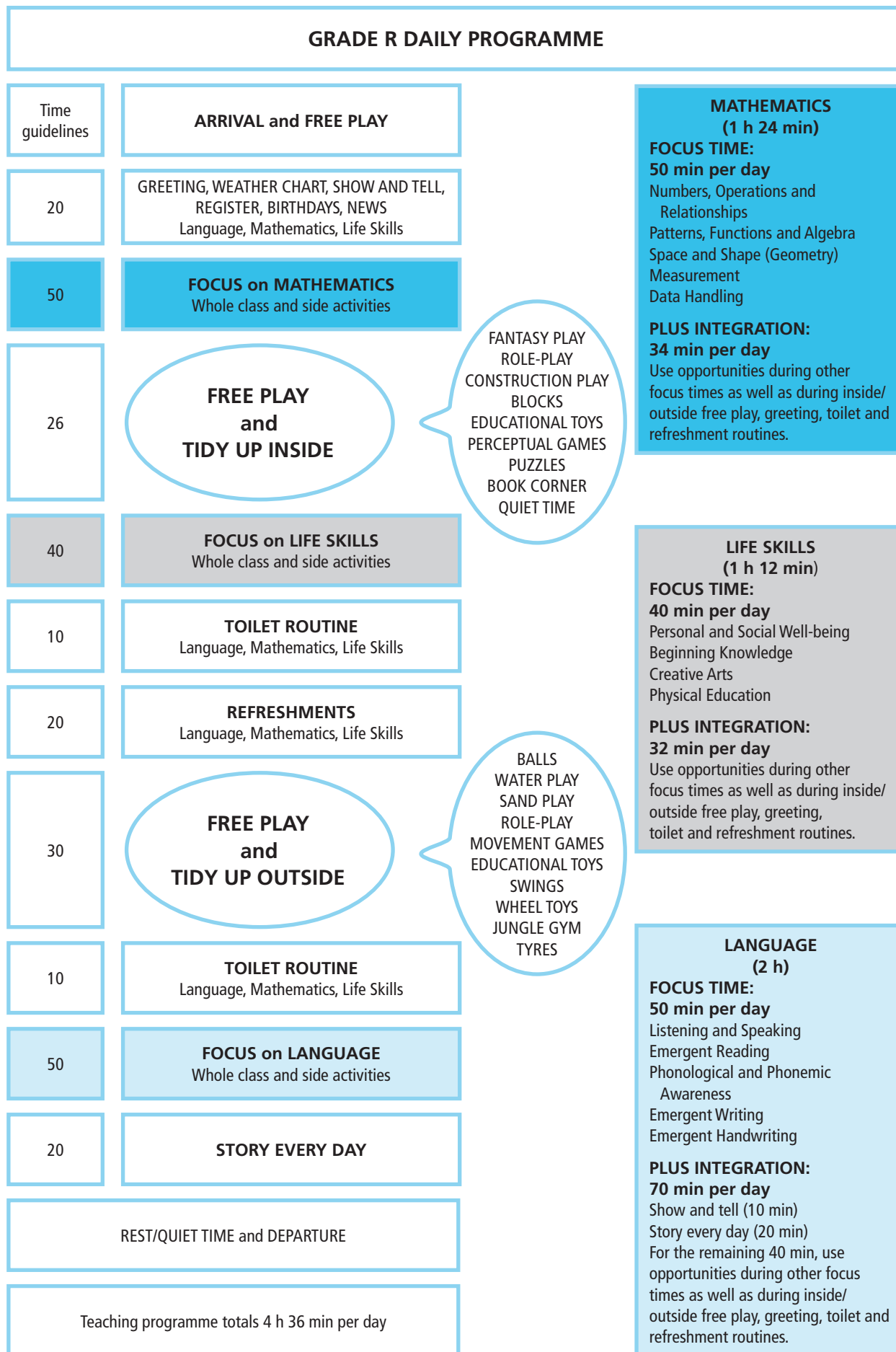


Figure 3| GDE exemplar Grade R Daily Programme

MBEKANYAMUSHUMO YA GIREIDI YA T YA DUVHA LIÑWE NA LIÑWE	
Nyendedzi dza tshifhinga	U SWIKA na U TAMBA NGA U FUNA
20	NDUMELISO, TSHATHI YA MUTSHO, U SUMBA NA U BULA, REDZHISIṬARA, MAḐUVHAA MABEBO, MAFHUNGO Luambo, Mbalo, Zwikili zwa Vhutshilo
50	U SEDZA kha MBALO Nyito dza kīlasi yoṭhe na dza u tikedza
26	U TAMBA NGA U FUNA na U KUNAKISA NGOMU
40	U SEDZA kha ZWIKILI ZWA VHUTSHILO Nyito dza kīlasi yoṭhe na dza u tikedza
10	TSHIFHINGA TSHA U YA BUNGANI Luambo, Mbalo, Zwikili zwa Vhutshilo
20	ZWINWIWA Luambo, Mbalo, Zwikili zwa Vhutshilo
30	U TAMBA NGA U FUNA na U KUNAKISA NNḐA
10	TSHIFHINGA TSHA U YA BUNGANI Luambo, Mbalo, Zwikili zwa Vhutshilo
50	U SEDZA kha LUAMBO Nyito dza kīlasi yoṭhe na dza u tikedza
20	TSHIṬORI DUVHA LIÑWE NA LIÑWE
	TSHIFHINGA TSHA U AWELA na U YA HAYANI
	Mbekanyamushumo ya u gudisa i eḑana na awara 4 na minetse dza 36 nga ḑuvha

MITAMBO KHUMBULELWA
U EDZISELA MUTAMBI
MITAMBO YA U FHAṬA
ZWIBULOLO
ZWITAMBISWA ZWA PFUNZO
MITAMBO YA MUHUMBULO
DZIPHAZILI
KHUḐA YA BUGU
TSHIFHINGA TSHA U FHUMULA

DZIBOLA
MUTAMBO WA MAḐI
U TAMBA MUṬAVHANI
U EDZISELA MUTAMBI
MITAMBO YA NNḐA
ZWITAMBISWA ZWA PFUNZO
DEMBETITI
ZWITAMBISWA ZWA MAVHILI
DEU
MATHAILA

MBALO
(awara 1 na minetse dza 24)
TSHIFHINGA TSHO SEDZWAHO:
Minetse dza 50 nga ḑuvha
Nomboro, Tswayo na Vhushaka Phetheni, Fankisheni na Ajidzhebura Tshikhala na Tshivhumbeo (Dzhomeṭiri)
Muelo
U shuma na Data
NA U ṬANGANELANA:
minetse dza 34 nga ḑuvha
U shumisa zwikhala nga tshifhinga tsha zwiñwe zwifhinga zwo sedzwaho khathihi na nga tshifhinga tsha u tamba nga u funa ngomu/nnḑa, na zwifhinga zwa bunga na zwinwiwa.

ZWIKILI ZWA VHUTSHILO
(awara 1 na minetse dza 12)
TSHIFHINGA TSHO SEDZWAHO:
minetse dza 40 nga ḑuvha
Vhune na Mutakalo wa Matshilisano Nḑivho Thangeli
Nyito dza Vhutshila
Pfunzo ya Nyonyoloso
NA U ṬANGANELANA:
minetse dza 32 nga ḑuvha
U shumisa zwikhala nga tshifhinga tsha zwiñwe zwifhinga zwo sedzwaho khathihi na nga tshifhinga tsha u tamba nga u funa ngomu/nnḑa, na zwifhinga zwa bunga na zwinwiwa.

LUAMBO
(awara 2)
TSHIFHINGA TSHO SEDZWAHO:
minetse dza 50 nga ḑuvha
U thetshesela na u Amba
U bveledzisa u Vhala
Ḑivhamabulele na u Dzhiela nzele fonimi
U bveledzisa u Nwala
U bveledzisa Muñwalo
NA U ṬANGANELANA:
Minetse dza 70 nga ḑuvha
U sumba na u bula (minetse dza 10)
Tshiṭori ḑuvha liñwe na liñwe (minetse dza 20)
Nga minetse dzo salaho dza 40, kha vha shumise zwikhala nga tshifhinga tsha zwiñwe zwifhinga zwo sedzwaho khathihi na nga tshifhinga tsha u tamba nga u funa ngomu/nnḑa, na zwifhinga zwa ndumeliso, bunga na zwinwiwa.

Figara ya 31 Tsumbo ya GDE ya Mbekanyamushumo ya Gireidi ya T ya Duvha Liñwe na Liñwe

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.

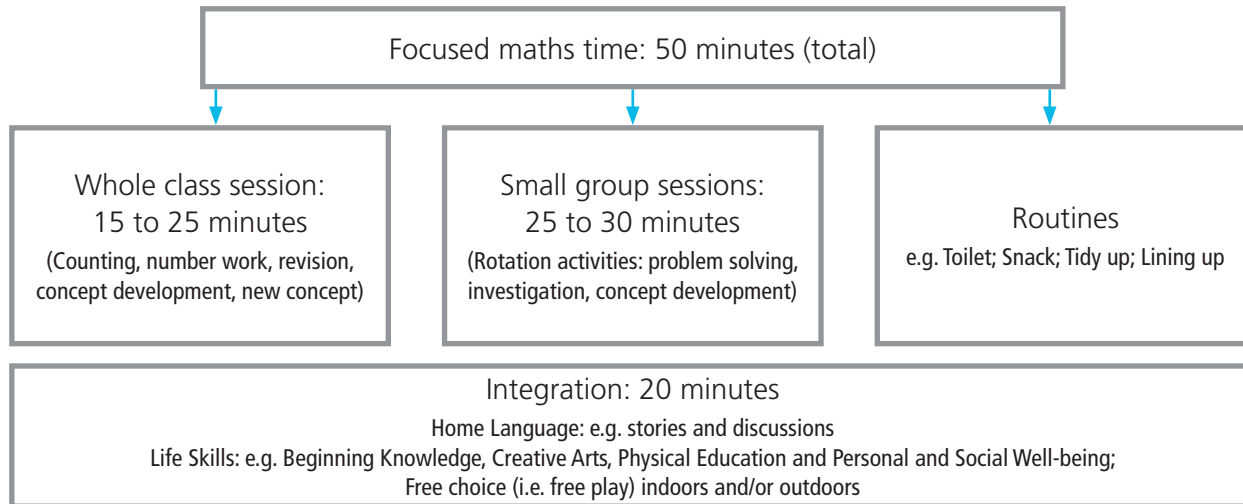


Figure 32 Suggested use of daily maths time

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

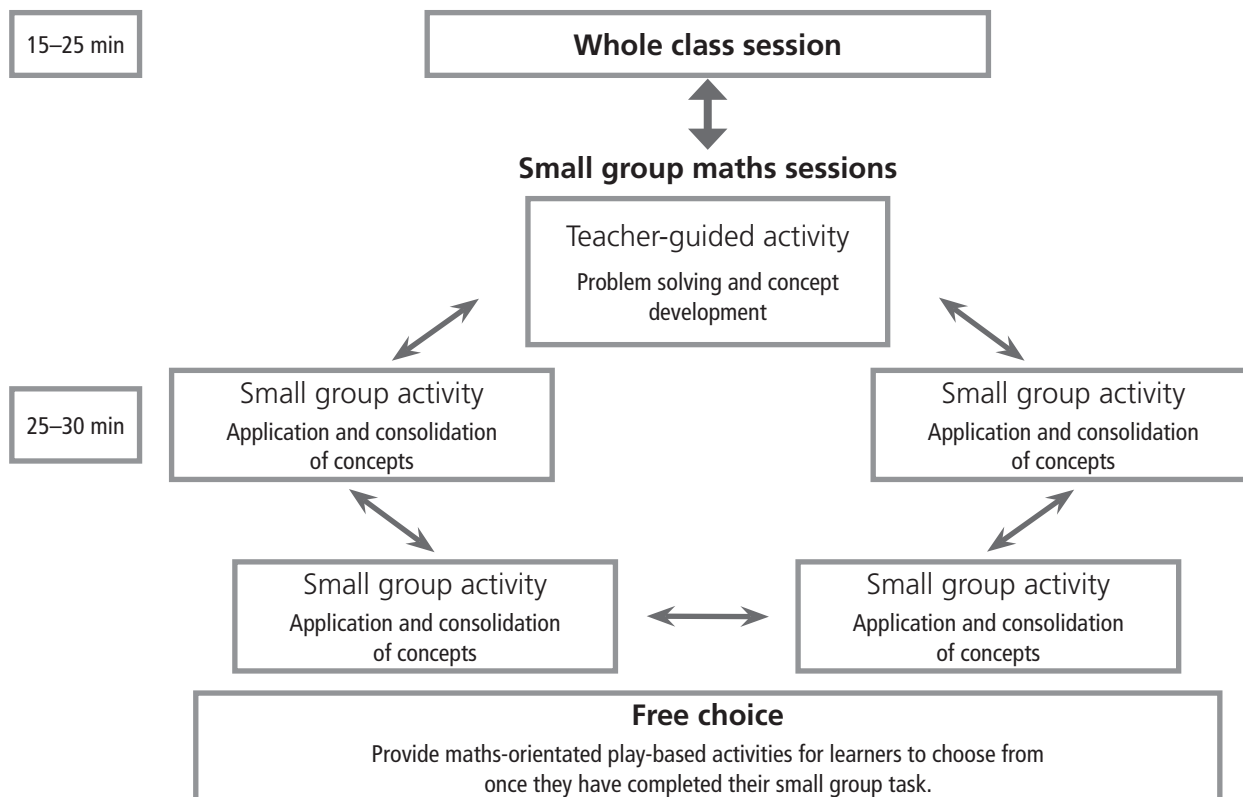


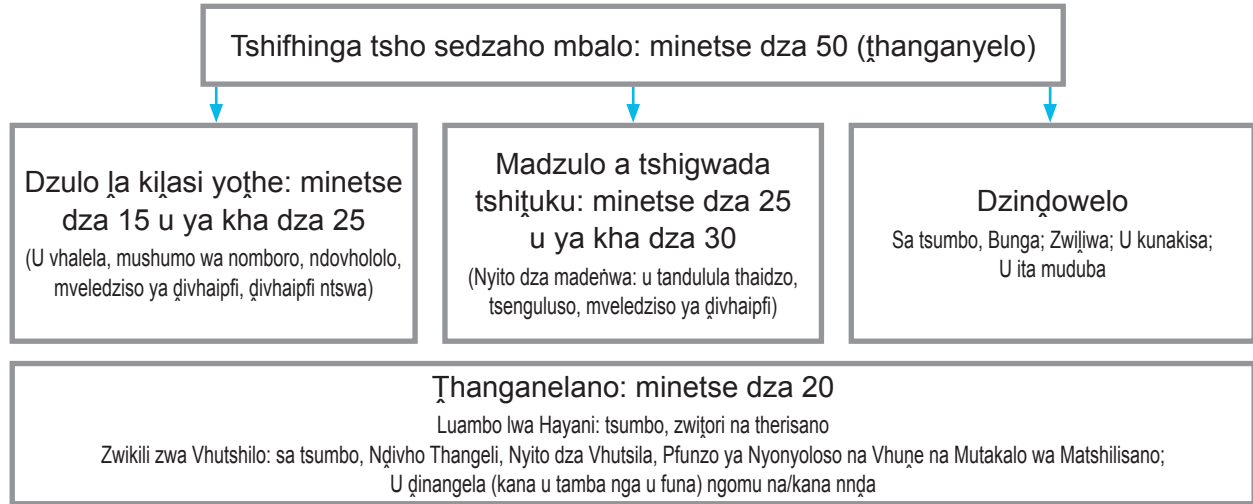
Figure 33 Daily maths focus time in Grade R Maths

U avhela tshifhinga kha Mbalo dza Gireidi ya T

Tshifhinga tsho avhelwaho Mbalo dza Gireidi ya T ndi awara dza sumbe nga vhege na awara 1 na minetse dza 24 (minetse dza 84) nga duvha. Duvha lijwe na lijwe tshifhinga itshi tsho vhumbwa nga:

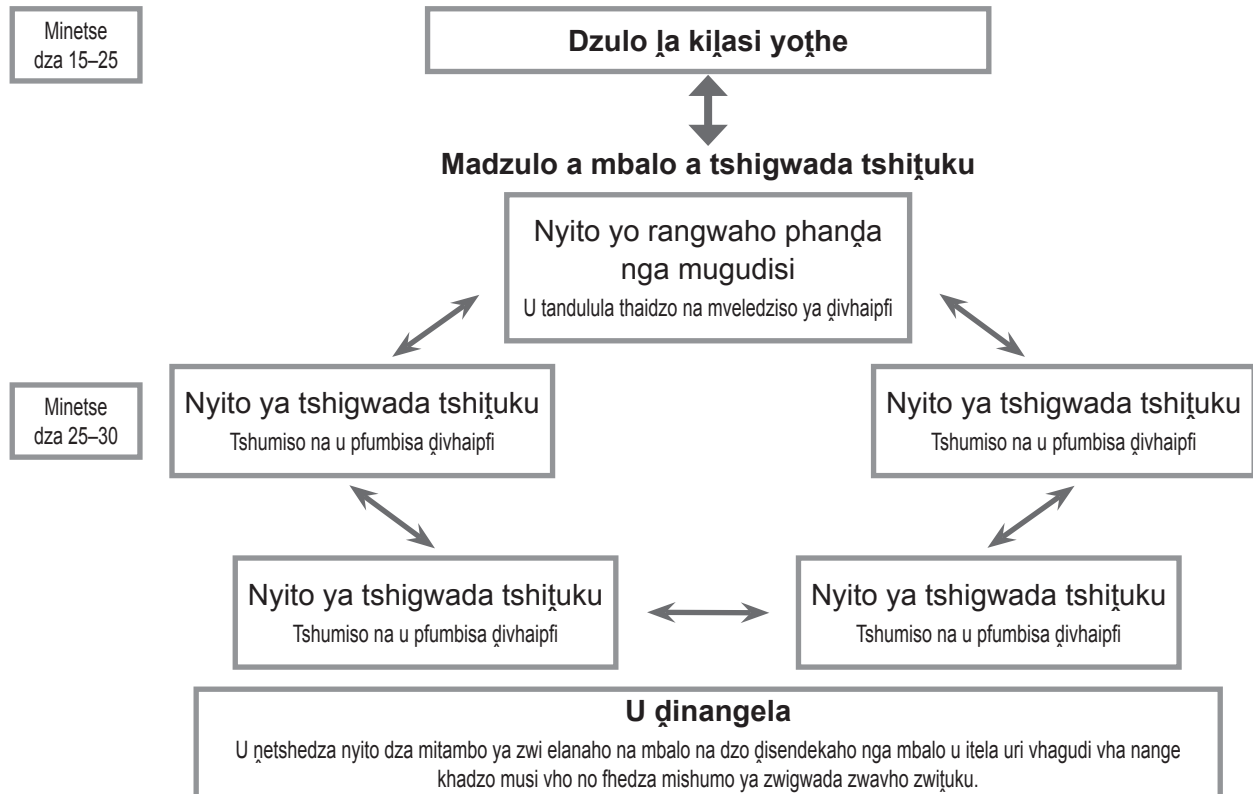
- ★ minetse dza 50 dza nyito dza u guda na u gudisa mbalo
- ★ minetse dza 34 dza u guda ho tlanganelanaho, nyito dzo dzudzanywaho na nyito dza mugudi nga ethe ngomu na nnda ha kilasirumu.

Figara ya 32 i sumbedza mudzinginyo wa uri vha nga shumisa hani nyavhelo ya duvha lijwe na lijwe ya awara 1 na minetse dza 24.



Figara ya 32 Madzinginywa a u shumisa tshifhinga tsha mbalo duvha lijwe na lijwe

Figara ya 33 i sumbedza uri duvha lijwe na lijwe la tshifhinga tsho sedzaho mbalo lo dzudzanywa kha *Grade R Maths*.



Figara ya 33 Tshifhinga tsho sedzwaho tsha mbalo dza duvha lijwe na lijwe kha *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.

Nyito dza u engedzedza dzine dzi nga newa vhagudi dzi katela:

- ★ u fhaṭa phazili
- ★ nyito dza dowu ya u tambisa
- ★ nyito dza vhufhaṭi
- ★ mitambo ya pfunzo
- ★ khuda ya bugu – ‘u vhala’
- ★ Bugu dza Mishumo na mabambiri a mushumo zwa Muhasho wa Pfunzo ya Mutheo.

Musi dzulo la mbalo lo fhela vhagudi vhoṭhe vha shela mulenzhe kha u kunakisa na u rathela kha tshipiḁa tshi tevhelaho tsha mbekanyamushumo ya duvha liṅwe na liṅwe.

Vha nga dzudzanya hani kiḁasirumu yavho u itela dzula la mbalo la duvha liṅwe na liṅwe

Vha tevhele nyendedzi idzi uri dzi vha thuse u ita ndowendowe ya mbekanyamushumo ya *Grade R Maths* kiḁasini yavho duvha liṅwe na liṅwe.

Tshifhinga tsho sedzwaho tsha Mbalo dza Gireidi ya T tshi fanela u dzudzanywa na u pulanwa u itela mutanganelano wa nyito dza kiḁasi yoṭhe na dza tshigwada tshiṭuku. Zwigwada zwa mielo yo fhambanaho zwi khunyeledza zwipikwa zwo fhambanaho zwa u guda na u gudiswa. U nanga tshigwada tshihulu kana tshiṭuku zwo diṣendeka kha nyito dza u linga kana u funza hune mugudisi o pulana. U langa kiḁasi khulu ndi khaedu, zwiḁulu arali mugudisi o pulana u sedza kha mugudi a eṭhe na u katela vhagudi vha re na zwithithisi zwa u guda.

Dzulo la mbalo la kiḁasi yoṭhe

Madzulo a mbalo a kiḁasi yoṭhe a anzela u vha vhukati ha vhulapfu ha minetse dza 15 na 25 nahone vhagudi vhoṭhe vha dzula vhoṭhe vho ita tshitendeledzi na mugudisi.

Nyito dzi tevhelaho dza mbalo dzi nga itwa kha madzulo a mbalo a kiḁasi yoṭhe:

- ★ u kuvhanganya na u ita ndowendowe ya divhaipfi yo no funzwaho
- ★ u divhadza divhaipfi ntswa
- ★ u engedza divhaipfi ine ndi yone ho sedzwaho khayi iyo vhege
- ★ u vhalela nga thotho (zwidade, nyimbo, u tevhekanya nomboro)
- ★ murekanyo wa mbalo (zwi neaho thaidzo, mitambo ya muhumbulo)
- ★ u nea ndaela u itela mishumo ine ya do itwa nga magudiswa a tshigwada tshiṭuku ngeno vhone vha kati na nyitio yo rangwaho phanda nga mugudisi.



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.



Figara ya 34 Dzulo la mbalo la kilasi yothe

Madzulo a mbalo a tshigwada tshikutu

Kha madzulo a tshigwada tshikutu, kilasi i khethekanywa ya bva zwigwada zwiṭanu zwa vhagudi. Duvha liṅwe na liṅwe, tshigwada tshithi tshi shuma na mugudisi (nyito yo rangwaho phanḁa nga mugudisi) ngeno zwiṅwe zwigwada zwiṅa zwi tshi khou shuma nga zwoṭhe kha nyito dza mbalo dze mugudisi a pulana.

Zwivhuya zwa u pulanela nyito dzo rangwaho phanḁa nga mugudisi dza tshigwada tshikutu na dza vhagudi nga vhoṭhe ndi uri:

- ★ Tshigwada tshikutu tshi ṭoḁa zwishumiswa zwi si gathi u fhira kilasi yoṭhe, sa tsumbo, tshigero, zwa u vhalela, zwibuḁoko, ngauralo ngauralo.
- ★ Mugudi muṅwe na muṅwe u na tshikhala tsha u fara matheriala na zwishumiswa.
- ★ U ṭuṭuwedza zwikili zwa u davhidzana na vhaṅwe, sa tsumbo, u kovhana, u ita madeṅwa, u amba na u thetshesela.
- ★ Vhagudi vha dzhia vhuḁifhinduleli ha mishumo ya zwigwada, u fana na u kunakisa.
- ★ Mugudisi a nga ṅea ndaela na mbudziso kha vhuimo ha tshigwada.
- ★ Mugudisi a nga lavhelesa mugudi muṅwe na muṅwe nga eṭhe u itela zwikili zwa mugudi nga eṭhe.

U shumisa zwigwada zwiṭuku zwi ṅea mugudisi tshikhala tsha u kuvhanganya vhagudi vha maimo a fanaho a zwikili na vhukoni. Nga maṅwe maipfi, mugudisi u kona u kuvhanganya vhagudi u ya nga maimo a thikhedzo ine vha i ṭoḁa u itela u guda zwavhuḁi.

Nga tshifhinga tsha maḁuvha maṭanu, zwigwada zwi sielisana nyito dzo fhambanaho duvha liṅwe na liṅwe. Izwi zwi amba uri nga vhege vhagudi vhoṭhe vha tshikhala tsha u kunyeledza **nyito yo rangwaho phanḁa nga mugudisi** na dziṅwe nyito dza zwigwada zwiṭuku zwiṅa (**ṭhanganyelo ya nyito dza mbalo ṭhanu dzo fhambanaho**). Nyito ṅṅa dzo ḁiimisaho (kana **nyito dza thikhedzo**) dzi fanela u dzudzanyelwa **zwiṭitshini zwa u shumela** zwiṅa u mona na kilasi – hu nga vha kha maṭaṭula e vhagudi vha dzula kana u ima khao, kana kha methe, kana nḁa. Zwigwada zwi ita madeṅwa vhege yeneyo, zwi tshi ya ngauri mugudisi o pulana hani nyito.





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.





Ngowedzo ...



Ngila dza u kuvhanganya vhagudi u itela mbalo

U lavhelesa vhagudi hu yaho phanda nga tshifhinga tsha nyito dza nnda na dza ngomu zwi nea mugudisi ndivho nga ha madzangalelo na vhukoni ha vhagudi. Ndivho idzi dzi do vha thusa u kona u khethekanya vhagudi nga zwigwada zwo fhambanaho. Zwigwada zwi nga vha zwo disendekaho nga vhukoni kana zwa nangwa u ya nga vhukoni ha vhagudi kha tshikili tshiswa.

 Zwigwada zwa vhukoni: Kha zwigwada izwi, vhagudi vha kha maimo a fanaho a mveledziso. Tshinwe tshifhinga zwo leluwa u funza divhaipfi ya mbalo ntswa vha tshi shumisa zwigwada zwa vhukoni vhunga vhañwe vhagudi vha tshi do toda tshifhinga tshinzhi tsha u khunyeledza mushumo ngeno vhañwe vha tshi do toda mishumo i vha neaho khaedu. Tshinwe tshifhinga vha nga toda u shuma na vhagudi vha re na zwithithisi zwa u guda u itela u kuvhanganya divhaipfi u fana na u livhanya tshithu nga tshithu na u vhaleta zwo kuvhanganywaho, kana vha nga toda u engedzedza vhagudi vha re phanda kha vhañwe nga u vha nea thaidzo dza mbalo dzi neaho khaedu.

 Zwigwada zwa vhukoni ho vanganaho: Kha zwigwada izwi, vhagudi vha na maimo o fhambanaho a zwikili na kupfesesele kwa divhaipfi. Lushaka ulwu lwa zwigwada lu shuma zwavhuḏi kha vhuḏaḏi, muelo, u ita phetheni na nyito dza u vhekanya, na mitambo.

Ngila inwe na inwe ine vha do nanga ngayo u kuvhanganya vhagudi, zwigwada a zwo ngo fanela u vha zwithihi nga murahu ha tshifhinga tsho engedzwaho nahone tshigwada tshinwe na tshinwe tshi fanela u vha tshiga (tshifanyiso kana tshivhumbeo) na dzina.

Nyito dzo rangwaho phanda nga mugudisi dza tshigwada tshiḏuku

Kha nyito dzo rangwaho phanda nga mugudisi, mugudisi u shuma na tshigwada tshithihi tsha vhagudi ngeno zwinwe zwigwada zwi kati zwi tshi khou fhedzisa nyito dzo pulanwaho kha tshithihi tsha zwiḏitshi zwa mushumo zwiḏa.

Nyito dzi tevhelaho dzo tea kha nyimele dzo rangwaho phanda nga mugudisi dza tshigwada tshiḏuku:


- ★ u kuvhanganya na u ita ndowendowe ya divhaipfi ye vha funza murahu
- ★ u khwaḏisedza kupfesesele kwa divhaipfi ntswa.





Ngowedzo ...



Tsvihudzo dza nyito dza mbalo dzo rangwaho phanda nga mugudisi dza tshigwada tshiḏuku

 U khunyeledza nyito dzine dzo sedza kha divhaipfi ya Mbalo dza Gireidi ya T dzo pulanelwaho vhege yeneyo.

 U shuma na vhagudi kha fuloro kana tafulani.

 Kha vha ite uri hu vhe na mvuvhano kha dzulo, vhone na vhagudi vha tshi dzhenela.


 Hu fanela u sedzeswa kha u shuma nga u amba na u ita na vhagudi.



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



Figara ya 35 U vhambedza zwa u vhalela na garaṭa dza nomboro

Nyito dza tshigwada tshiṭuku

Nyito dzi tevhelaho dzo tea magudiswa a tshigwada tshiṭuku hune vhagudi vha shuma vhe vhoṭhe vha sa thuswi nga mugudisi:

- ★ u kuvhanganya na u ita ṅdowṅowe ya ḍivhaipfi yo no funziwaho
- ★ u ita tsenguluso ya ḍivhaipfi ntswa ine ndi yone ho sedzwaho khayoye vhege
- ★ u ita ṅdowṅowe ine ndi yone yo sedzeswaho iyo vhege.



ṅdowedzo ...



Tsivhudzo dza u pulana na u langa nyito dza tshigwada tshiṭuku tsho ḍiimisaho nga tshoṭhe

- 👤 Vhagudi vha re na vhukoni ho fhambanaho vha fanela u kona u khunyeledza nyito.
- 👤 Nyito dzi fanela u pfesesea kha vhagudi.
- 👤 Nyito dzi fanela u vha khagala na u leluwa u dzi khunyeledza vhagudi vha sa khou humbela thuso kha mugudisi.
- 👤 Arali vhagudi vha tshi khou shuma nga u ongolowa, vha vha tandule uri ndi ngani. Kha vha tshintshe nyito arali zwi tshi konadzea.
- 👤 Vhagudi vha fanela u dzhia vhuḍifhinduleli ha u khunyeledza nyito dzavho na hone vha sa kanganyise mugudisi ane a ḍo vha e kati nga nyito yo rangwaho phanḍa nga mugudisi.
- 👤 Kha vha gudise vhagudi milayo yo leluwaho ya zwine vha fanela u ita na uri vha ḍifara hani nga tshifhinga tsha nyito dza tshigwada tshiṭuku: kukunakisele/kupakele kwa mushumo wavho musi vho fhedza; uri vha ḍifarisa hani kha nyito dza muratho. Kha vha dovholole milayo ḍuvha ḷiṅwe na ḷiṅwe u swikela vhagudi vha tshi ḍivha na u kona u i tevhela nga vhone vhane. Izwi zwi dzhia tshifhinga! Vha dzie khazwo. Vha khakhulule vhagudi nga vhulenda arali vha tshi khou ṅea milayo khaedu.

Nyito dza u ḍinangela

Nyito dza u engedzedza dzi fanela u ṅetshedzwa vhala vhagudi vhane vha fhedza nyito dza tshigwada tshavho tshiṭuku phanḍa ha mafhelo a dzulo ḷa mbalo. Nyito idzi dzi fanela u shuma u khaṭhisedza magudiswa a mbalo e vha funza. Vhagudi vha fanela u nanga nyito

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.

kha dze dza nangwa nga mugudisi. Nyito idzi dzi fanela u vha dzo sedza mbalo, sa tsumbo, phazili, u thopha zwibuloko, nyolo, u nea muvhala, u vhumba, u vhekanya zwivhumbeo kana u edzisela mutambi.

U ratha vhukati ha nyito (miratho)

Muratho ndi tshifhinga tsha musu vhagudi vha tshi bva kha inwe nyito vha tshi ya kha inwe. Sa tsumbo, musu dzulo la mbalo la klasa yothe lo fhela, klasirumu i fanela u kunakiswa na u lugisela dzulo li tevhelaho. Zwifhinga zwa muratho zwi fanela u shumiswa u ita ndowendowe dza Mbalo, Luambo lwa Hayani na Zwikili zwa Vhutshilo, tsumbo, u vhalela nga thoho, phetheni dza u vhandu zwanu.




Vhagudisi vhane vha pulana na u langa miratho vha anzela u vha na klasa yo dzikaho, klasa dzo dzudzanywaho dzi re na vhagudi vho takalaho, vha pfesesa na vha si na mutsiko.



Ngowedzo ...



Tsivhudzo dza u ombedzela mbalo nga tshifhinga tsha miratho

-  U nea vhagudi ngeletshedzo yo edanaho phandu ha musu vha tshi fanela u tshintsha nyito, sa tsumbo, 'Nga minetse mivhili ri khou do fhedza dzulo.'
-  U nea ndaela, sa tsumbo, 'Kha vha thome u vhea kule zwine vha khou ita vha kone u ita muduba vho fhumula muhangoni/kana vho dzula nga gumba.'
-  Kha vha shumise 'zwishumiswa zwi itaho uri vha fhiwe ndevhe' u fana na u vhalela nga u vhandu zwanu, u nea nomboro nyimbo na zwidade, na u nea nomboro zwiga (u vhalela hu tsaho/hu gonyaho).

U pulana na u lugisela ngudo dza mbalo

Hu na vhege dzine dzi nga anganyelwa heneffa kha 40 nga nhaha. Vha do fanela u pulana na u lugisela nga vhudzivha vhege inwe na inwe.

Kha vhege ya phandu ha ngudo

- ★ Kha vha vhale zwitehwa zwo teaho zwa *Nyendedzi ya Divhaipfi* na *Nyendedzi ya Nyito*. Izwi zwi talutshedza magudiswa na divhaipfi zwine zwa do gudiswa, na u nea madzinginywa o teaho nyito na therisano.
- ★ Kha vha pulane na u dzudzanya nyito kha vhege ya phandu ha musu dzi tshi gudiswa.
- ★ Kha vha topole zwo sedzwaho nga u linga. (Vha nga wana mafhungo manzhi nga ha u linga kha siatari la 99.)
- ★ Kha vha lugisele zwishumiswa na u dzudzanya klasa vhege yeneyo.
- ★ Zwiwe zwishumiswa zwi fanela u kuvhanganywa hu tshe na tshifhinga, sa tsumbo, mabogisi a makumba, rolo dza ngomu ha bambiri la bungani, khaphu dza yogathi, mabodelo a mafhi kana zwithu zwa u vhekanya.

Vhukati ha vhege

- ★ Kha vha sedze kha u gudisa u pfesesa divhaipfi ya mbalo vhege iyo.
- ★ Kha vha vhale tshitehwa tsho teaho kha *Nyendedzi ya Divhaipfi*.
- ★ Duvha linwe na linwe, kha vha sedze uri vha na zwishumiswa zwi todeaho zwa nyito dza duvha li tevhelaho.
- ★ Kha vha divhe nyito hu tshe na tshifhinga. Vhagudisi a vho ngo fanela u lugisela vhagudi vho no dzula vho lindela nyito i tshi thoma.

The Grade R Maths programme resources

The Grade R Maths programme has four components.

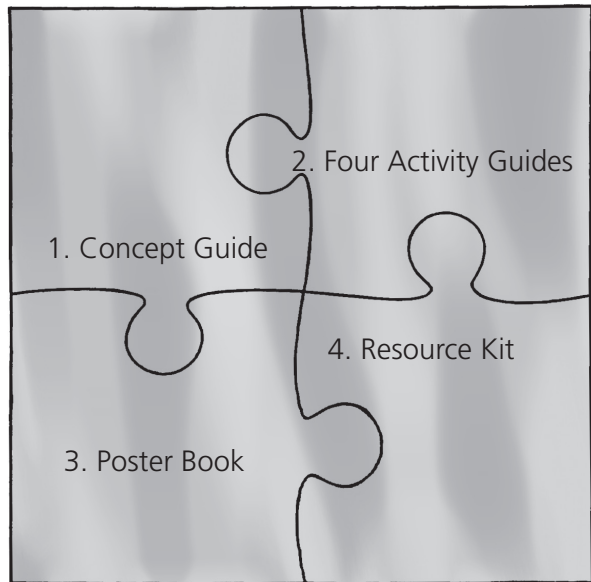


Figure 36 The components of the Grade R Maths programme

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.

Zwishumiswa zwa mbekanyamushumo ya *Grade R Maths*

Mbekanyamushumo ya *Grade R Maths* i na zwiṑiḑa zwiṑa.



Figara ya 36 Zwiṑiḑa zwa mbekanyamushumo ya *Grade R Maths*

Nyendedzi ya Divhaipfi (iyi bugu)

Bugu iyi i ṑetshedza:

- ★ milayo ya mbekanyamushumo ya *Grade R Maths* ya u gudisa vhagudi vhaṑuku mbalo
- ★ nyendedzi dza uri vha nga dzudzanya hani kiḑasirumu yavho u itela u funza na u guda ha khwine
- ★ madzinginywa nga ha uri vha nga gudisa hani mbalo kha Gireidi ya T
- ★ u gavhelwa nga ha magudiswa a mbalo ane a ḑo gudiswa kha mbekanyamushumo ya *Grade R Maths*
- ★ nyendedzi dza u shumisa *Grade R Maths*
- ★ guḑosari.

Nyendedzi dza Nyito

Hu na *Nyendedzi dza Nyito nṑa* – nthihi ya kotara iṑwe na iṑwe ya tshikolo. *Nyendedzi ya Nyito* iṑwe na iṑwe i katela:

- ★ manweledzo a zwine zwa ḑo kwamiwa nga kotara
- ★ thero ya sia ḑa divhaipfi ya mbalo ine ha ḑo sedzwa khayoyhege iṑwe na iṑwe
- ★ nyito dzo dzinginywaho dza vhege iṑwe na iṑwe: kiḑasi yoṑthe, na nga vhoṑthe na nyito dzo rangwaho phanda nga mugudisi dza zwigwada zwiṑuku
- ★ tsivhudzo dza magudisele u itela u pulana na u dzudzanya nyito dza mbalo
- ★ divhaipfi ya mbalo ine ya gudwa nga nyito dza vhege iṑwe na iṑwe
- ★ mafhungo nga ha zwishumiswa zwine zwa ḑo ṑodea vhege yeneyo
- ★ zwishumiswa zwi fanaho na zwidade, nyimbo, zwiṑori na dzithemphuleithi.

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

Bugu ya Dziphositara

Bugu ya Dziphositara ndi bugu khulwane i re na dziphositara dza fumithihi. Dziphositara dzo itelwa u shumiswa kha nyito dza kilasi yothe na nyito dzo rangwaho phanda nga mugudisi dza zwigwada zwiṭuku. Dzi thusa u tumanya mbalo na vhutshilo ha duvha liṅwe na liṅwe na uri dzi nga shumiswa nga ndila dzo fhambanaho, sa tsumbo, u vhalela, u rera nga vhuimo na sia, tshifhinga (u tevhekanya mitambo) na u tandulula thaidzo.

Khithi ya Zwishumiswa

Khithi ya Zwishumiswa i na matheriala a ndeme a u funza na u guda ane a do shumiswa tshifhinga tshothe sa tshipiḁa tsha nyito dzo rangwaho phanda nga mugudisi. Khithi i neshedza zwishumiswa zwa tshigwada tshiṭuku tsha vhagudi vha rathi u ya kha malo. Khithi iṅwe na iṅwe i na zwi tevhelaho sa zwe zwa sumbedziswa kha Figara ya 4 kha siaṭari 13:

- ★ zwishumiswa zwa u vhalela, sa tsumbo, disiki dza mivhala na zwitanda, mitshele na phukha dza u vhalela, na zwiḁuloko zwa yunifikisi
- ★ daisi khulwane
- ★ midali ya vhulungu ha zwivhumbeo zwa fumi
- ★ garaṭa dza nomboro: zwiḁa zwa nomboro (0–10) na ipfinomboro (pumu–fumi)
- ★ zwiḁuloko zwi re na zwidodombedzwa
- ★ magaraṭa a zwithoma.

Zwiṅwe zwishumiswa

- ★ Liṅwalo 1a phoḁisi ya TSHIPHOKHALI
- ★ Bugu ya u shumela na zwiṅwe zwishumiswa zwa Muhasho wa Pfunzo ya Mutheo

Zwishumiswa zwa u engedzedza (a zwo ngo newa) zwine zwa toḁea kha nyito dza *Grade R Maths* zwi katela:

- ★ 'bogisi 1a pitsa'
- ★ tshathi ya vhulapfu
- ★ magaraṭa a u tamba mahulwane
- ★ daisi: 1i re na nomboro na zwivhumbeo
- ★ tshedele ya u tambisa: mangwende na maṭari
- ★ khalenda ya ṅaṅwaha
- ★ watshi ya anaḁo ya luvhondoni khulwane
- ★ tshikalo tsha tshanduko
- ★ mapopayi
- ★ zwiḁuloko zwa phetheni (zwiḁuloko zwi re na zwidodombedzwa) na magaraṭa
- ★ bodo ya phekhisi na dziphekhisi
- ★ zwisagana zwa ṅawa
- ★ bola khulwane na ṭhukhu
- ★ vhulungu ha u vhalela, u vhekanya, u lunzhedza na u ita phetheni (na midali)
- ★ zwiḁuloko zwa u fhaṭa na dzibodo
- ★ Lego: mielo yo fhambanaho na zwivhumbeo
- ★ zwitambiswa zwa u fhaṭa
- ★ dziphazili: zwipiḁa zwa 8, 12, 20, 36 na 48
- ★ vumba 1a u tambisa/dowu ya u tambisa
- ★ zwa u tshea makhekhe/bantsi

- ★ 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.

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.

GLOSSARY

formative assessment

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



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.

- ★ mabogisi a zwivhumbeo na mielo yo fhambanaho
- ★ mabodelo a puḷasiṭiki o fhambanaho na midzio u itela u ṭalusa na u vhambedza vhungomu
- ★ mitambo ya tshimbalo: *Lotto*, *Ludo*, nowa na Jeri, dziphazili, domino (u katela muvhala, tshivhumbeo, dzinomboro, u tevhekanya, u fanyisa, u khethekanya na mitambo ya muhumbulo)
- ★ zwishumiswa zwa u tamba nga muṭavha na maḍi
- ★ khaphu dzi ṭhopheaho dza mielo yo fhambanaho
- ★ zwishumiswa zwa u gonya, u linganya, u dembelela
- ★ vhengele ḷa u tambisa ḷi re na zwithu zwine zwa ḍo rengwa nga tshelede ya u tambisa
- ★ zwivhaleli zwa u vhekanya
- ★ mabogisi a u vhea khao: ḷitha dza 40, ḷitha 5 na ḷitha 2.

U linga kha Gireidi ya Ṭ

Kha Gireidi ya Ṭ, u linga ndi maitete a bvelaho phanḍa, o pulanwaho a u kuvhanganya, u sengulusa na u ṭalutshedza mafhungo nga ha mugudi muṅwe na muṅwe. U linga hu fanela u vha **fomethivi** na u sa vha fomaḷa. Nga maṅwe maipfi, mafhungo o kuvhanganywaho nga ha mvelaphanḍa ya mugudi nga tshifhinga tsha u linga a fanela u vha thusa u pulana na/kana u mu ḍowedza nyito dza u guda. Kha Gireidi ya Ṭ, u linga hu shumiswa u dzhia tsheo nga ha nḍila dza khwine dza u tikedza mveledziso ya mugudi muṅwe na muṅwe.

U linga ndi vhuṭumani vhukati ha thero ya magudiswa ya TSHIPHOKHALI, u funza na nyito dza u guda. Vha nga si linge zwe vha si funze. Ndivho ya u linga ndi u:

- ★ wana vhuimo ha mugudi muṅwe na muṅwe
- ★ endedza vhupulani na u ḍivhadza u gudisa
- ★ ṭuṭuwedza mvelaphanḍa ya mugudi muṅwe na muṅwe
- ★ thusa u wana mivhigo i thusaho nga zwe mugudi a swikelela.

GUḶOSARI

u linga ha fomethivi

u linga hune ha ṅetshedza mafhungo musi u guda hu tshi khou itea na u ṭola mvelephanḍa ya mugudi



Nḍowedzo ...



Tsivhudzo dza u linga

- 👤 U linga a ho ngo fanela u ita uri vhagudi vha vhilaele kana vha ofhe.
- 👤 Nyito dza u linga dzi fanela u vha dzo teaho kuthetsheselese kwa mugudi muṅwe na muṅwe.
- 👤 Zwenezwi vha kati vha tshi khou lavhelesa tshigwada tshiṭuku tsha vhagudi vha rathi kana malo kha nyito dzo rangwaho phanḍa nga mugudisi, vhaṅwe vhagudi vha fanela u vha vhe kati vha tshi khou shuma nga vhoṭhe kha nyito zwigwadani zwavho zwiṭuku fhethu havho ha u shumela ho fhambanaho.
- 👤 Kha vha shume na tshigwada tshithihi tsha vhagudi vha rathi kana malo ḍuvha ḷiṅwe na ḷiṅwe kha nyito tiwa (zwi tshi ya nga tshivhalo tsha vhagudi kiḷasini yavho). Zwenezwi vhagudi vha kati na nyito, kha vha lavhelese nga vhuronwane mugudi muṅwe na muṅwe kha tshigwada tshenetsho tshiṭuku vha vhudzise mbudziso u wanisisa zwine vha khou humbula.
- 👤 Mafhungo nga ha zwine vhagudi vha ḍivha na zwine vha nga ita (kana 'vhuṭanzi') zwi fanela u kuvhanganywa u ya phanḍa (ḍuvha ḷiṅwe na ḷiṅwe) nga murahu ha tshifhinga.
- 👤 Mafhungo nga ha zwe vhone vha vhone a fanela u rekhodwa mafheloni a ḍuvha, nga murahu ha tshifhinga tsha u funza.

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.



Ndi khwine u shumisa ndila dzo fhambanaho dza u linga vhagudi. Dzinwe dza tsumbo asidzi.

- ★ Kha vha lavhelese vhagudi nga tshifhinga tsha kilasi yothe, nyito dzo rangwaho phanda nga mugudisi dza tshigwada tshitungu na u tamba nga u funa ngomu na nda ha kilasi.
- ★ Kha vha rekhode kupfesesele kwa vhagudi kwa divhaipfi tiwa ya mbalo nga tshifhinga tsha nyito dzo rangwaho phanda nga mugudisi na nga murahu.
- ★ Mbudziso na khaseledzo na mugudi nga ethe kana zwigwada zwingu zwa vhagudi zwi nga vha thusa u pfesesa vhuimo na mahumbulele a vhagudi na u nea muhumbulo havho.
- ★ Kha vha sedze nga vhuronwane kha zwithu zwine vhagudi vha ita vha rekhode (vha tshi shumisa zwifanyiso, nyolo, zwithu na/kana 'u nwala'). Izwi zwi vha sumbedza zwine vhagudi vha pfesesa na zwe vha swikelela.
- ★ U thetshesela na u rekhoda phindulo dza vhagudi (dza u ita, dza oral, dza u nwala) zwi vha tendela u linga hu yaho phanda.

Vha fanela u dzulela u linga vhagudi vhothe:

- ★ ndivho ya mbalo
- ★ u pfesesa mbalo
- ★ zwikili zwa mbalo
- ★ phindulo dza u tandulula thaidzo
- ★ ndila dza u ita zwithu. (Vhagudi vha shumisa ndila dzavho dza u tandulula thaidzo dza mbalo. Izwi zwi nga fhambana na ngona dzavho fhedzi a zwi iti uri dzi vhe dzo khakhea.)

U linga hu yaho phanda ndi ha ndeme u thusa vhagudi u pulana nyito, u tola mvelaphanda ya vhagudi na u pulana thikhedzo ya u engedza ya vhagudi vhane vha tangana na zwithithisi zwa u guda. (Vha nga wana manwe mafhungo manzhi nga ha zwithithisi zwa u guda kha siatari ja 58 na ja 61.)

Zwishumiswa zwa u linga

Zwine Gireidi ya T ya sedzesa zwone kha u linga a si u nea maraga fhedzi ndi u vha thusa nga thaluso nga vhudalo na u tola mvelaphanda ya vhagudi. Mugudisi u fanela u shumisa zwishumiswa zwi tevhelaho u linga.

Bugu ya u lavhelesa

Kha Gireidi ya T mugudisi u fanela u lavhelesa vhagudi ngomu na nda ha kilasi, nga tshifhinga tsha u tamba nga u funa na nyito dzo dzudzanywaho. U lavhelesa uhu hu nea vhagudisi mafhungo a ndeme ane a fanela u vha thusa kha kupulanele kwavho na u nanga mishumo. Nga tshifhinga tsho sedzesaho mbalo, mugudisi u do shuma na tshigwada tshithihi tshitungu divha linwe na linwe. Mugudisi u do pulana nyito tiwa dzi re na vhumani na divhaipfi ya TSHIPHOKHALI. Zwenezwi vhagudi vhe kati kha iyi nyito, mugudisi u do lavhelesa nga vhuronwane mugudi muwe na muwe a vhudzisa na mbudziso u wana mafhungo nga ha kuhumbulele kwa mugudi na vhuimo ha kupfesesele.

Musi vhagudi vho no ya hayani, mugudisi u do rekhoda mawanwa a izwi na huwe u lavhelesa ho sokou iteaho. Zwi a thusa u shumisa bugu yo indekisiwaho u fhandekanya vhagudi u ya nga ledere ja u thoma ja madzina avho.

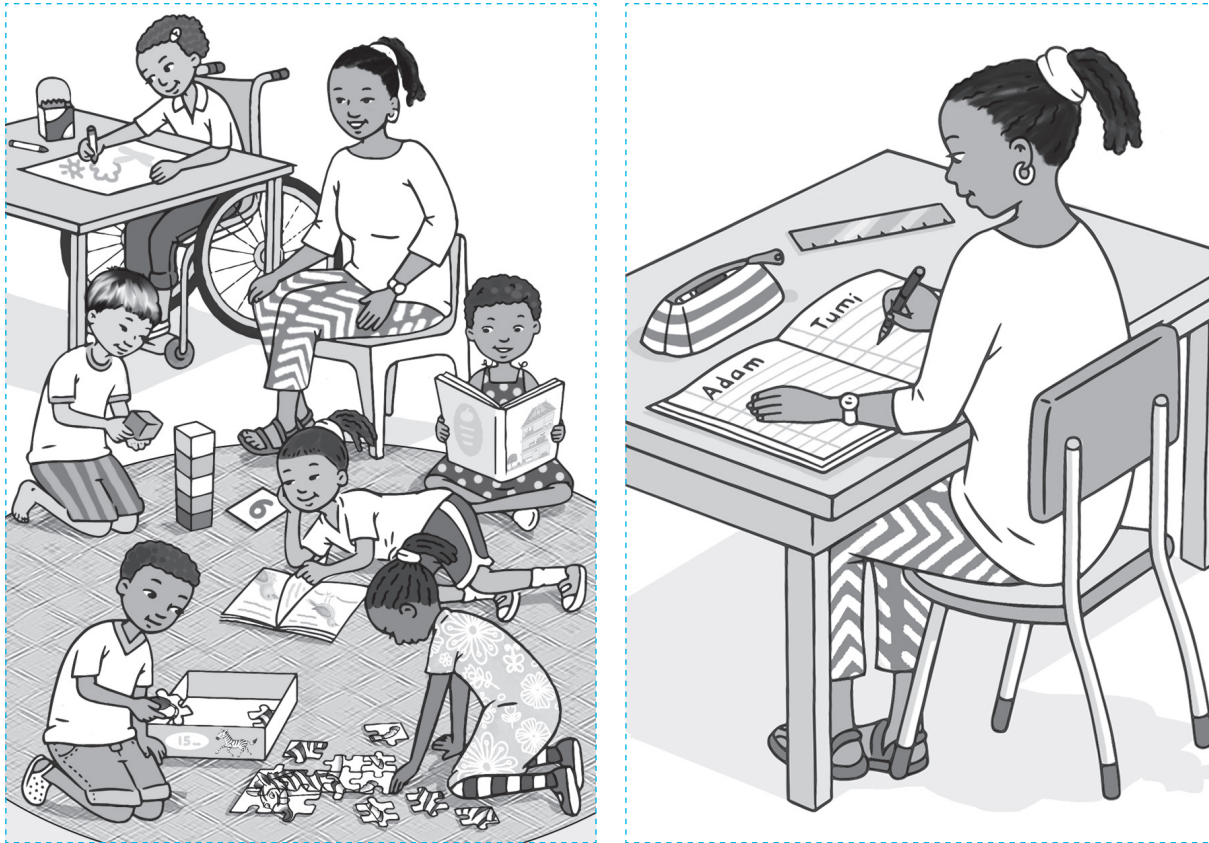
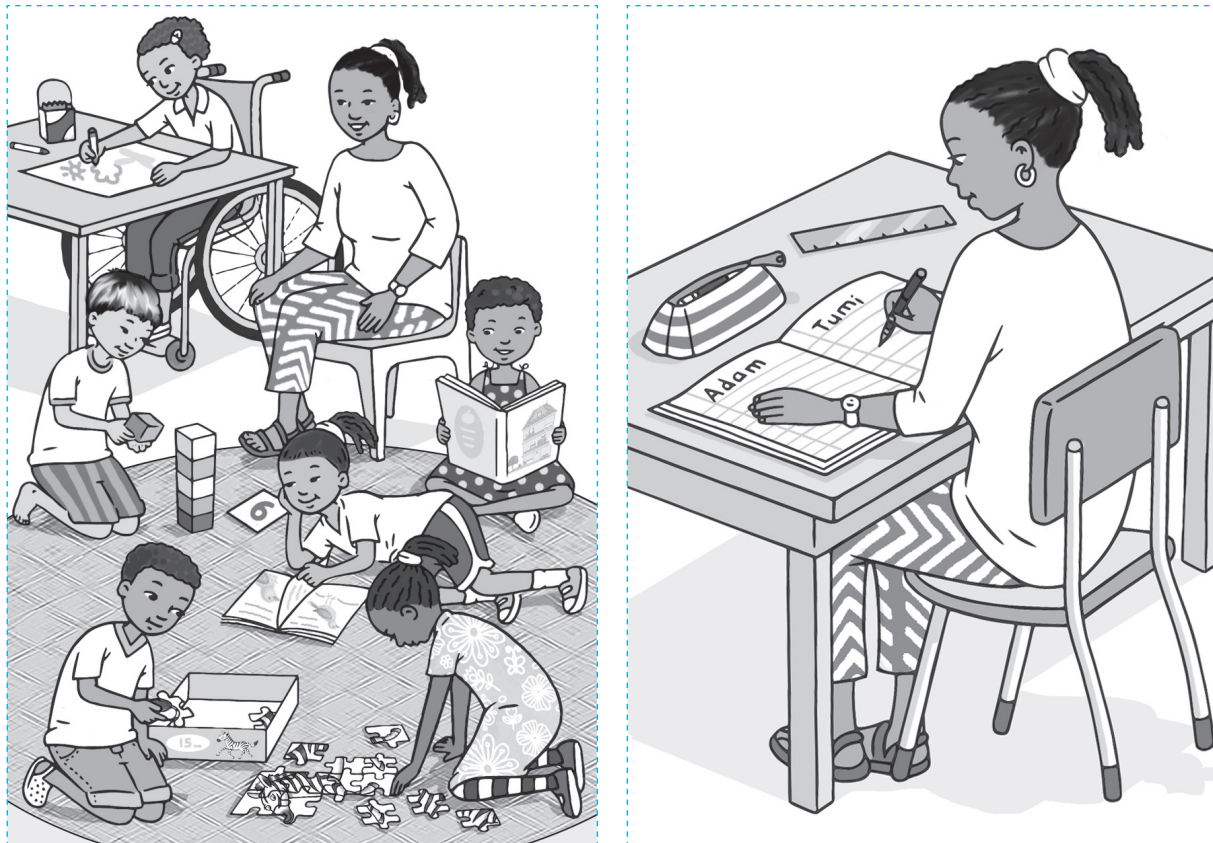


Figure 37 Observe learners then record your observations

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.



Figara ya 37 Kha vha lavhelese vhagudi vha rekhode zwe vha vhona

Mutevhe wa u sedzulusa

Mutevhe wa u sedzulusa ndi mutevhe wa maitete a u linga ane a ngetshedza manweledzo a zwikili na vhukoni ha mugudi muñwe na muñwe zwa thero inwe na inwe. Mafheloni a *Nyendedzi ya Nyito inwe* na inwe ya mbekanyamushumo ya *Grade R Maths* hu na mutevhe wa u sedzulusa u linga wa kotara. Mutevhe wa u sedzulusa u ngetshedza manweledzo a magudiswa maswa e a gudwa kotarani iyo. Mugudisi a nga shumisa zwiga u sumbedza vhuimo ha u swikelela ha mugudi. Sa tsumbo, kha vha shumise luswayo lwa u koreka arali tshikili tsho swikelwa, kha vha shumise luswayo lwa tshifhambano arali tshi songo swikelwa, na u shumisa tshithoma u sumbedza uri vhukoni ha mugudi a ho ngo swikelwa tshothe, fhedzi u khou vhone e ndilani ya u swikela tshikili.

Figara ya 38 i ri nea tsumbo ya uri mugudisi wa magudiswa u fanela u rekhoda hani, na uri zwi nga dzudzanywa hani. Madzina a vhagudi a rekhodwa kha kholomu ya u thoma a tevhelwa nga datumu ya u linga. Tshiga (✓ x ●) tshi fanela u rekhodwa tsini ha dzina la mugudi nahone lo livhana na divhaipfi kana tshikili tsho newaho kha kholomu inwe na inwe. Tshishumiswa itshi tsha u linga tshi shuma fhedzi arali mugudisi a na ndivho ya khwine ya mugudi muñwe na muñwe, zwo qisendeka kha u lavhelesa vha tshi isa na notsi dze vha rekhoda kha bugu yavho ya u lavhelesa.

Term 1: Exemplar Record of Continuous Assessments

Key	NUMBERS, OPERATIONS AND RELATIONSHIPS												PATTERNS, FUNCTIONS AND ALGEBRA			COMMENTS					
<p>✓ = competent</p> <p>● = partially competent</p> <p>X = not yet competent</p>																					
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

Kotara ya 1: Tsumbo ya Rekhodo ya u Linga hu yaho Phanḁa

Khii	NOMBORO, TSWAYO NA VHUSHAKA	PHETHENI, FANKISHENI NA ALIDZHEBURA	MUHUMBULO
✓ = vhukoni ● = vhukoni huṭuku X = u sa athu vha na vhukoni	U vhalela u ya phanḁa kha 10 U anganyela na u vhalela zwiṭhu 1–5 U vhalela u ya murahu 5–1 U kona u vhona nomboro kha nyimele dzo ḁoweleaho U pfelesa nomboro thevhokano, tsumbo, u dubekanya U kona u vhona doto/garata dza zwifanyiso 1–3 U kona u vhona zwiḁa zwa nomboro: 1 U kona u vhona madzina a nomboro: tṭhihi U tevhokanya nomboro: 1–3 U pfelesa u livhanyisa tshithu na tshirwe U fhambanyisa vhukati ha zwinzhi na zwi si gathi U tandulula thaidzo nga zwiṭhu zwi fareaho U tandulula thaidzo hu tshi shumiswa minwe kana zwa u vhalela ngazwo	U kona u vhona phetheni muponi U kona u vhona 'ndovhololo' kha phetheni U kopa phetheni hu tshi shumiswa musudzuluwo wa muvhili U kopa, u fhedzisa na u sika phetheni dzavho U falutshedza phetheni yawe (mulayo wa u dovholola)	Khoudu ya u ela
Datumu			

Figara ya 38 Tsumbo ya mutevhe wa u sedzulusa

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.

Dziruburiki

Ruburiki ndi tshinwe tshishumiswa tsha u linga zwe vhagudi vha swikela. I dovha hafhu ya vha na mutevhe wa milayo i re na maimo a thaluso ya vhukoni ha tshikili tiwa. Thaluso inwe na inwe i thalutshedza zwine mugudi a ita kana a bveledza nga tshifhinga tsha nyito ya u linga u itela mulayo uyo. Ruburiki i fanela u netshedza thalutshedzo dzo nwalwaho zwavhuḏi na maimo a vhukoni u itela uri izwi zwi kone u fanyisa kokotolo na vhukoni ha mugudi muḏwe na muḏwe. Ruburiki zwenezwo i tendela vhagudisi u ita zwithu nga ndivho na u dzia kha u linga havho na u langa vhpulani havho ha u isa phanda nyito dza mugudisi vhunga i tshi bvisela khagala u khwaḥa na magake kha ndivho ya mugudi.

Figara ya 39 i netshedza tsumbo dza ruburiki ya u tandulula thaidzo dza u tanganya u swika kha 10 nga ndila ya u ita.

Maitele	U sa swikelela	Vhuswikeleli ha ndinganyelonyana	Vhuswikeleli ha ndinganyelo	Vhuswikeleli vhu fushaho	Vhuswikeleli ha nḥa	Vhuswikeleli ha nḥesa	Vhuswikeleli ha masase
	[1]	[2]	[3]	[4]	[5]	[6]	[7]
U tandulula thaidzo dza u tanganya nga ndila ya u ita u swika kha 10.	U sa kona u tandulula thaidzo nga ndila ya u ita.	U kona u tandulula thaidzo nga ndila ya u ita, a tshi shumisa zwishumiswa zwi fareaho.	U kona u tandulula nga ndila ya u ita, fhedzi a sa koni u thalutshedza ngona ya thandululo.	U kona u tandulula thaidzo nga ndila ya u ita na u thalusa ngona dza thandululo musi o vhudziswa.	U kona u tandulula thaidzo nga ndila ya u ita na u thalusa ngona dza thandululo nga eḥe.	U kona u tandulula thaidzo nga ndila ya u ita na u kona u thalutshedza ngona dza thandululo.	U kona u tandulula thaidzo nga ndila ya u ita na u kona u thalutshedza ngona dza thandululo na u dzinginya ngona dza thandululo yo teaho.

Figara ya 39 Tsumbo ya ruburiki

Zwiḥalusi zwa vhuimo kha ruburiki zwi nga thumanywa na khoudu dza u ela. Muhasho wa Pfunzo ya Mutheo u netshedza khoudu dza u ela na thaluso ya vhukoni, nahone wa thumanya izwi na dziphesenthe (vha lavhelese Figara ya 40). U itela ndivho dza u vhiga khoudu dza u ela na zwiḥalusi zwi nga shandukiselwa u vha dziphesenthe.

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.

Khoutu ya u ela	U ũalusa vhukoni	Phesenthedzhi
7	Vhuswikeleli ha masase	80–100
6	Vhuswikeleli ha nthesa	70–79
5	Vhuswikeleli ha nthā	60–69
4	Vhuswikeleli vhu fushaho	50–59
3	Vhuswikeleli ha ndinganelo	40–49
2	Vhuswikeleli ha ndinganelonyana	30–39
1	U sa swikelela	0–29

Figara ya 40 Khoutu ya u ela

U linga kha Gireidi ya \bar{T} ho sedzesa kha u ũalusa vhukoni u fhirisa u sengulusa ho sedzwa dziphesenthedzhi. Mivhigo ine ya ũea vhabebi na vhaŵwe vhagudisi ũhaluso dzo pfumaho dza mikhwa na zwine vhagudi vha bveledza, ndi ya ndeme khulu kha u linga vhukoni vhune phesenthedzhi dza vha hone. Ndi khwine u ita uri hu si vhe na u linga hu si havhuḁi hune ha kundisa vhagudi mathomoni kha sisiteme. U linga hu fanela u shumiswa u wana u pfesesa ha maimo a vhukoni a vhagudi u itela u livhanya vhupulani na u gudisa u itela u katela na u ũuṩuwedza mugudi muŵwe na muŵwe ngomu kilasini.

Vha ḁo fanela u rekhoda zwe vha vhone musi vha tshi linga na vhuŵwe ‘vhuṩanzi’ kha dzhenala, nahone kha bammbiri \bar{I} u sedza kana mutevhe wa u sedzulusa. Nga ndila iyi, vhukati ha ŵwaha, tshifanyiso tsho fhelelaho tsha mugudi muŵwe na muŵwe, khathihi na zwine a kona na vhuṩudzeṩudze hawe, zwi khou fhaṩea nga zwiṩuku.

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:

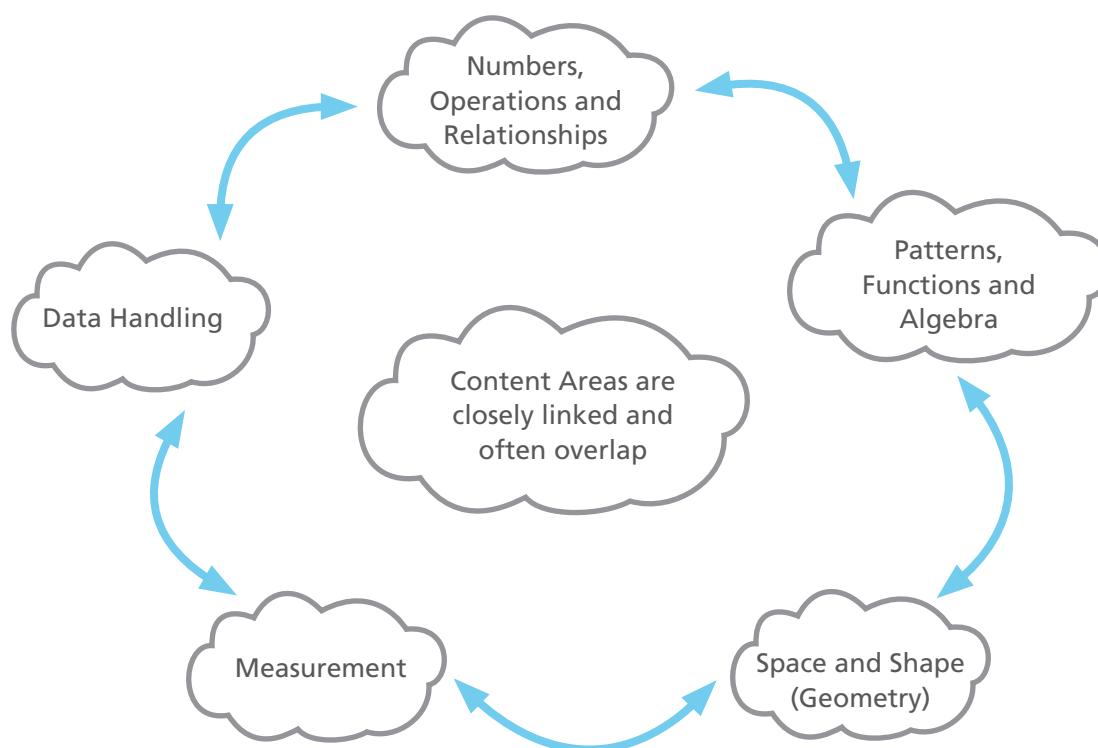


Figure 4.1 Grade R CAPS Mathematics Content Areas

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.

KHETHEKANYO YA 3

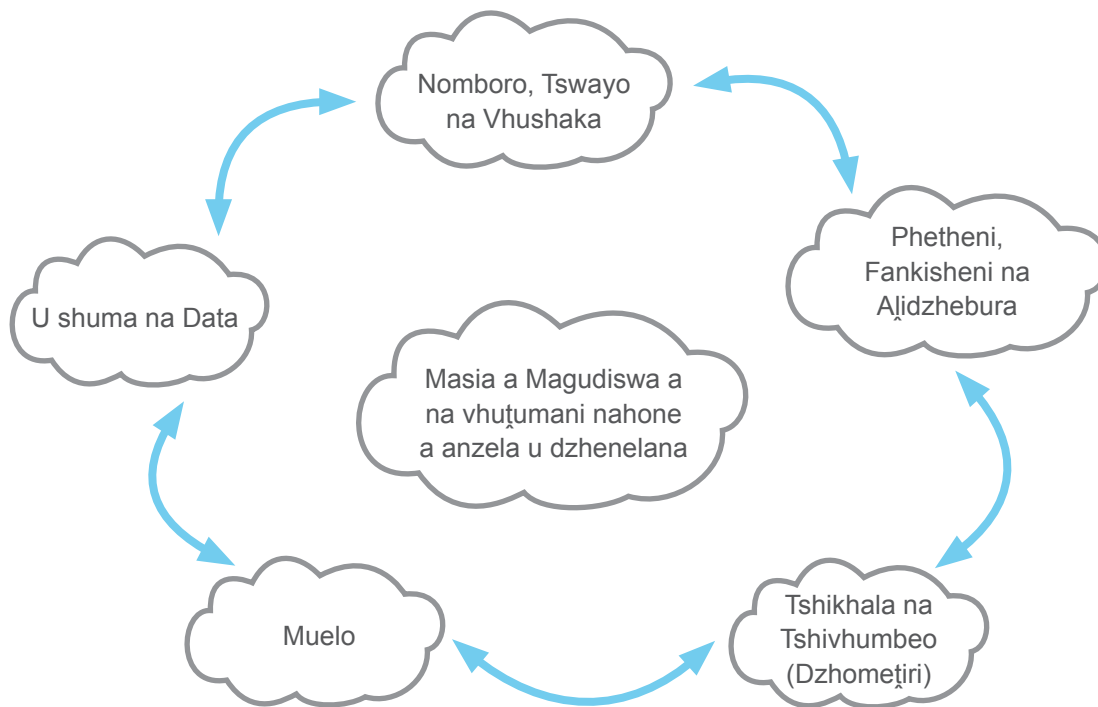
Mbalo kha Gireidi ya T

Marangaphanda

Tshitehwa itshi tsha *Nyendedzi ya Divhaipfi* tshi netshedza manweledzo a Masia a Magudiswa a Mbalo dza Gireidi ya T TSHIPHOKHALI na:

- ★ u nea mihumbulo ya vhukuma ya mashumisele a ngomu klasini
- ★ u tshutshedza divhaipfi dza mbalo na magudiswa ane vhagudisi vha fanela u pfesesa
- ★ u bvisela khagala mveledziso ya ndivho ya mbalo kha vhagudi vhatuku.

I dovha hafhu ya netshedza musaukanyo wa Kotara ya 1–4 wa magudiswa a Gireidi ya T (masiatari a 114–137). Masia a Magudiswa a TSHIPHOKHALI matanu ndi:



Figara ya 41 Masia a Magudiswa a Mbalo dza Gireidi ya T ya TSHIPHOKHALI

Sia linwe na linwe la Magudiswa lo khethekanywa nga dzithero. Kha inwe na inwe ya idzi thero, tshitehwa itshi tsha *Nyendedzi ya Divhaipfi* tshi netshedza:

- ★ tshutshedzo ya thero, ine ya katela u topola divhaipfi tiwa na zwikili
- ★ mazinginywa a u funza kha mabogisi a 'Ndowedzo'
- ★ tshutshedzo ya mathemo a mbalo.

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.

Naho Masia a Magudiswa a tshi bvisela khagala vhukonḑi tiwa ha mveledziso ya mbalo, one a na vhuṭumani nahone a a dzhenelana vhukati ha nyito. Sa tsumbo, musi vhagudi vho tou fombe kha mushumo wa u ela, vha timbanya zwikili u bva kha liṅwe Sia la Magudiswa, sa tsumbo, Nomboro, Tswayo na Vhushaka, vha shumisa hafhu ṅdivho yavho ya nomboro, u vhalela na mbambedzo ya zwikili. Vhagudi vha na zwickhala zwa u shumisa ṅdivho na zwikili zwavho kha nyimele dzo fhambanaho.



Ṅdowedzo ...



Zwenezwi vhagudisi vho sedza nga maṅdesa kha aya Masia a Magudiswa nga tshifhinga tsha mbalo, vha fanela u humbula hafhu u shumisa zwiṅwe zwickhala kha mbekanyamushumo ya ḑuvha liṅwe na liṅwe u:

- shumisa luambo lwa mbalo u ḑivhadza na u khwaṭhisedza ḑivhaipfi
- edzisa tshumiso yo angalalaho ya ḑivhaipfi yo fhambanaho i re na vhuṭumani na nomboro, tshivhumbeo, tshikhala, muelo na u shuma na data.

Dziṅwe dza ṅdila dza vhukuma dza u ita izwi asidzi:

- U ṅetshedza vhagudi matheriala o rengwaho, o bikululwaho na a mupo u itela uri vha vhekanye, u elanya na u tevhekanya.
- U ṅetshedza zwishumiswa zwa u edzisela u renga na u rengisa, u kala na u ela.
- U ita sethe dza zwifanyiso u sumbedza thevhekano ya zwiwo zwa masiari na mutsho wa vhukati ha vhege.
- U vhona na u amba nga ha tshivhumbeo na phetheni dza ṅdilani, luhurani na ngadeni dza miroho.
- U pulana nyito na mitambo hune vhagudi vha shumisa mivhili yavho na zwikili zwa mbalo u tevhelela na u ṅea masia.
- U ṭumanya zwiṭori na u tamba mitambo ya ṅḑa vha tshi itela mbalo.

Magudiswa a Mbalo

Manweledzo a magudiswa a tevhelaho a ṅetshedza thebuḽu ya magudiswa a *Grade R Maths* ane a ḑo funzwa kha ṅwaha wa Gireidi ya Ṭ. A sumbedza uri ndi magudiswa afhio ane a ḑo funzwa kotara iṅwe na iṅwe.

- ★ Maṅwalwa nga muvhala wa lutombo ndi magudiswa a bvaho kha Mbalo dza Gireidi ya Ṭ ya TSHIPHOKHALI.
- ★ Ṭhalutshedzo ya maṅwalwa na magudiswa nga muvhala mutswu zwo ḑadzisela u engedza na u fhaṭa kha TSHIPHOKHALI.
- ★ Thero dzo tevhekanywa u sumbedza mvelaphanḑa ya mveledziso u bva kha thero iṅwe u ya kha iṅwe.

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)	<p>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</p>	<p>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</p>	<p>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</p>	<p>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’</p>
1.2	Count forwards and backwards Oral or rote counting (rhythmic)	<p>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</p>	<p>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</p>	<p>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</p>	<p>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</p>

1. NOMBORO, TSWAYO na VHUSHAKA					
	THERO	KOTARA YA 1	KOTARA YA 2	KOTARA YA 3	KOTARA YA 4
U VHALELA					
1.1	U vhalela zwithu (Anganyelani ni vhalele zwithu u bvedza u pfesesa mbalo)	Mutevhe wa nomboro: 1–5 Vhalelani nga nthihi nthihi: u livhanyisa tshithu nga tshinwe: mirado ya muvhili na zwithu zwi fareaho Kha vha divhadze tshathi ya Thuso Kha vha divhadze divhaipfi ya nyanganyelo (u humbulela hu pfeseseaho) Magaraṭa a zwithoma: - u topola tshivhalo tsha zwithoma kha magaraṭa, dominosi na daisi (1–5) - u vhambedza zwithu na zwifanyiso na magaraṭa a zwithoma U vhalela uri 'ndi zwingana' vha tshi shumisa minwe, magaraṭa a zwithoma, zwithu zwi re ngomu na nṅa ha kijasirumu, zwifanyiso na nyito, sa tsumbo, u vhanda zwanda, u rwisa milenzhe na fhasi	Mutevhe wa nomboro: 1–7 Anganyelani ni vhalele Vhalelani nga nthihi nthihi: u livhanyisa tshithu nga tshinwe: mirado ya muvhili na zwithu zwi fareaho Kha vha kwaṭhisedze tshathi ya Thuso Magaraṭa a zwithoma: - u topola tshivhalo tsha zwithoma kha magaraṭa, dominosi na daisi (1–6) - u vhambedza zwithu na zwifanyiso na magaraṭa a zwithoma Kha vha shumise magudiswa o fhambanaho, zwithu na zwiwo u itela u vhalela uri 'ndi zwingana'. Minwe, magaraṭa a zwithoma, vhulungu ha tshivhumbeo tsha fumi, zwiṅwe zwithu zwi re ngomu na nṅa ha kijasirumu, zwifanyiso na nyito, sa tsumbo, u vhanda zwanda, u rwisa milenzhe na fhasi Kha vha sumbedze 'nthihi u fhira/nthihi thukhu kha' Kha vha vhande zwanda lunzhi/lu si gathi	Mutevhe wa nomboro: 1–10 Anganyelani ni vhalele Vhalelani nga nthihi nthihi: u livhanyisa tshithu nga tshinwe; vhalelani zwoṭhe: - mirado ya muvhili - zwithu zwi fareaho Kha vha kwaṭhisedze tshathi ya Thuso Magaraṭa a zwithoma: u vhona khuvhanganyo dza zwithoma 1–5 na u swika kha 3 u engedza kha magaraṭa, daisi na dominosi Kha vha thome kha nomboro yo netshedzwaho vha 'vhalele u ya phanda' vha tshi pfuka mutalombalo, vha tshi shumisa vhulungu ha tshivhumbeo tsha fumi, magaraṭa a zwifanyiso, muḡali wa u anea nomboro Kha vha sumbedze 'nthihi u fhira/nthihi thukhu kha; mbili u fhira/tharu thukhu kha' Kha vha vhande zwanda lunzhi/lu si gathi: - ndi tshivhalo tshifnio tsha u vhanda tshi re tshinzhi/tshi si gathi, tshinzhisa/tshiṭukusa	Mutevhe wa nomboro: 0–10 na u fhira Anganyelani ni vhalele Vhalelani nga nthihi nthihi: u livhanyisa tshithu nga tshinwe; vhalelani zwoṭhe: - mirado ya muvhili - zwithu zwi fareaho Kha vha kwaṭhisedze tshathi ya Thuso Magaraṭa a zwithoma: u vhona khuvhanganyo dza zwithoma 1–5 na u swika kha 5 kha daisi (1–6) na dominosi Kha vha thome kha nomboro yo netshedzwaho vha 'vhalele u ya phanda' vha tshi pfuka mutalombalo, vha tshi shumisa vhulungu ha tshivhumbeo tsha fumi, magaraṭa a zwifanyiso, muḡali wa u anea nomboro Kha vha sumbedze 'nthihi u fhira/nthihi thukhu kha; mbili u fhira/tharu thukhu kha' Kha vha vhande zwanda lunzhi/lu si gathi: - ndi tshivhalo tshifnio tsha u vhanda tshi re tshinzhi/tshi si gathi, tshinzhisa/tshiṭukusa Zwine pumu (noto) '0' ya amba zwone
1.2	U vhalela u ya phanda na murahu U vhalela nga thoho kana nga u dovholola (mutevhetsindo)	U vhalela phanda: 1–10 U vhalela murahu: 5–1 U vhalo hu no sokou itea vha tshi shumisa zwidade na nyimbo dza nomboro, ṅowelo dza ḡuvha, musudzuluwo wa muvhili, nz. U vhalela nga nthihi nthihi Mutevhe wa nomboro: 1	U vhalela phanda: 1–15 U vhalela murahu: 7–1 U vhalo hu no sokou itea vha tshi shumisa zwidade na nyimbo dza ḡuvha, musudzuluwo wa muvhili, nz. U vhalela nga nthihi nthihi Mutevhe wa nomboro: 1–4	U vhalela phanda: 1–20 U vhalela murahu: 10–1 U vhalo hu no sokou itea vha tshi shumisa zwidade na nyimbo dza ḡuvha, musudzuluwo wa muvhili, nz. U vhalela nga nthihi nthihi Mutevhe wa nomboro: 1–7	U vhalela phanda: 0–20 na u fhirisa U vhalela murahu: 10–0 U vhalo hu no sokou itea vha tshi shumisa zwidade na nyimbo dza ḡuvha, musudzuluwo wa muvhili, nz. U vhalela nga: nthihi nthihi, mbili mbili Mutevhe wa nomboro: 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

	Thero	Kotara ya 1	Kotara ya 2	Kotara ya 3	Kotara ya 4
1.3	Zwiga zwa nomboro na madzina a nomboro U vhona na u topola zwiga zwa nomboro na madzina a nomboro	Zwiga zwa nomboro: 1, 2, 3 Madzina a nomboro: thihi, mbili, raru U imela nomboro vha tshi shumisa: - muvhili (khainesitetiki) - zwithu (zwi fareaho) - zwifanyiso, nyolo (zwi fareaho zwiṭuku) - magaraṭa a zwithoma (a fareaho zwiṭuku) U vhambedza na tshiga tsha nomboro (khumbulelo) and dzina ḷa nomboro Tshiga tsha nomboro: 1 Dzina ḷa nomboro: thihi	Zwiga zwa nomboro: 4 na 5 Madzina a nomboro: iṅa, ṭhanu U imela nomboro vha tshi shumisa: - muvhili (khainesitetiki) - zwithu (zwi fareaho) - zwifanyiso, nyolo (zwi fareaho zwiṭuku) - magaraṭa a zwithoma (a fareaho zwiṭuku) U vhambedza na tshiga tsha nomboro (khumbulelo) na dzina ḷa nomboro Kha vha khwaṭhisedze: 1, 2, 3 Kha vha khwaṭhisedze: thihi, mbili, raru Tshiga tsha nomboro: 2, 3, 4 Dzina ḷa nomboro: mbili, raru, iṅa	Zwiga zwa nomboro: 6, 7, 8 Madzina a nomboro: rathi, sumbe, malo U imela nomboro vha tshi shumisa: - muvhili (khainesitetiki) - zwithu (zwi fareaho) - zwifanyiso, nyolo (zwi fareaho zwiṭuku) - magaraṭa a zwithoma (a fareaho zwiṭuku) U vhambedza na tshiga tsha nomboro (khumbulelo) and dzina ḷa nomboro Kha vha khwaṭhisedze: 1, 2, 3, 4, 5 Kha vha khwaṭhisedze: thihi, mbili, raru, iṅa, ṭhanu Tshiga tsha nomboro: 5, 6, 7 Dzina ḷa nomboro: ṭhanu, rathi, sumbe	Tshiga tsha nomboro: 0 u ya kha 10 Dzina ḷa nomboro: pumu (noto), malo, ḷahe, fumi U imela nomboro vha tshi shumisa: - muvhili (khainesitetiki) - zwithu (zwi fareaho) - zwifanyiso, nyolo (zwi fareaho zwiṭuku) - magaraṭa a zwithoma (a fareaho zwiṭuku) U vhambedza na tshiga tsha nomboro (khumbulelo) and dzina ḷa nomboro Kha vha khwaṭhisedze nomboro dzoṭhe
U TOPOLA NOMBORO					
1.4	U shumisa nomboro kha nyimele dzo ḍowealeho	U shumisa nomboro kha nyimele dzo ḍowealeho: - vhukale - nomboro zwifanyisoni na magaraṭa a zwithoma - mitambo ya magaraṭa a nomboro - redzhisitara ya maḍele	U shumisa nomboro kha nyimele dzo ḍowealeho: - ḍiresi - nomboro zwifanyisoni na magaraṭa a zwithoma - mitambo ya magaraṭa a nomboro - nomboro kha khungedzelo/fuḷayasi/ magaraṭa a ḍuvha ḷa mabebo - redzhisitara ya maḍele	U shumisa nomboro kha nyimele dzo ḍowealeho: - ḍiresi, nomboro dza vhukwamani - ḍuvha ḷa mabebo - nomboro zwifanyisoni na magaraṭa a zwithoma - mitambo ya magaraṭa a nomboro - nomboro kha khungedzelo/fuḷayasi/ magaraṭa a ḍuvha ḷa mabebo - redzhisitara ya maḍele	U shumisa nomboro kha nyimele dzo ḍowealeho: - ḍiresi, nomboro dza vhukwamani - nomboro zwifanyisoni na magaraṭa a zwithoma - mitambo ya magaraṭa a nomboro - nomboro kha khungedzelo/fuḷayasi/ magaraṭa a ḍuvha ḷa mabebo - redzhisitara ya maḍele
U ṬALUKANYA NOMBORO (VHUSHAKA)					
U ṭalusa, u vhambedza na u tevhekanya nomboro					
1.4	U topola na u ṭalusa mbalosa	Mutevhe wa nomboro: 1–3 U topola na u ṭalusa mbalosa u swika kha 1, 2, 3 vha tshi shumisa khuvhanganyo na zwiga (nthihi u fhira, nthihi ṭhukhu kha; phanda ha, murahu ha, vhukati) Mutevhe wa nomboro: 1	Mutevhe wa nomboro: 1–5 U topola na u ṭalusa mbalosa u swika kha 4, 5 vha tshi shumisa khuvhanganyo na zwiga Kha vha khwaṭhisedze nomboro 1–3	Mutevhe wa nomboro: 1–8 U topola na u ṭalusa mbalosa u swika kha 6, 7, 8 vha tshi shumisa khuvhanganyo na zwiga Kha vha khwaṭhisedze nomboro 1–5 Mutevhe wa nomboro: 1–7	Mutevhe wa nomboro: 0–10 U topola na u ṭalusa mbalosa 0, 9, 10 Kha vha khwaṭhisedze nomboro 1–8

TOPIC	TERM 1	TERM 2	TERM 3	TERM 4
Compare numbers	<p>Compare which of two given collections of objects are:</p> <ul style="list-style-type: none"> - big, small - bigger, smaller - biggest, smallest <p>Order more than two given collections of objects from smallest to biggest and biggest to smallest</p> <p>Many and fewer, e.g. incidental clapping, snack time, sharing equipment</p>	<p>Compare which of two given collections of objects are:</p> <ul style="list-style-type: none"> - big, small - bigger, smaller - biggest, smallest <p>More than, less than, equal to</p> <p>Many and fewer, e.g. incidental clapping</p>	<p>More than, less than, equal to</p> <p>Many and fewer</p> <p>Ask questions: 'Which was most/least?'</p>	<p>More than, less than, equal to</p> <p>Many and fewer</p> <p>Ask questions: 'Which was most/least?'</p>
		<p>Make equal groups (sets) of objects, e.g. children or objects in the classroom</p>	<p>Use objects to make equal groups (sets)</p>	<p>Use objects to make equal groups (sets)</p>
	<p>Breaking down and building up collections of 2 and 3, e.g. 3 could be:</p> <p>1 and 1 and 1 OR 2 and 1 OR 1 and 2 OR nothing (zero) and 3</p>	<p>Breaking down and building up collections of 4 and 5, e.g. 4 could be:</p> <p>1 and 1 and 1 and 1 OR 3 and 1 OR 2 and 2 OR nothing (zero) and 4</p>	<p>Use manipulatives to investigate and develop strategies for breaking down and building up collections to 8</p>	<p>Use manipulatives to investigate and develop strategies for breaking down and building up collections to 10</p>
Order (sequence) numbers	<p>Order more than two given collections of objects from smallest to biggest and biggest to smallest</p>	<p>Order more than two given collections of objects from smallest to biggest and biggest to smallest</p>	<p>Order collections of objects from smallest to biggest and biggest to smallest</p>	<p>Order collections of objects from smallest to biggest and biggest to smallest</p> <p>Match number symbol card to collections</p>
	<p>Incidental ordering of numbers</p> <p>'What comes next, after, between':</p> <ul style="list-style-type: none"> - number/washing line - number track or ladder - number cards 	<p>Place number symbols in the correct counting order</p> <p>'What comes next, after, between':</p> <ul style="list-style-type: none"> - number/washing line - number track or ladder - number cards 	<p>Place number symbols in the correct counting order</p> <p>'What comes next, after, between':</p> <ul style="list-style-type: none"> - number/washing line - number track or ladder - number cards 	<p>Incidental: Number range: 0–10</p> <p>Place number symbols in the correct counting order</p> <p>'What comes next, after, between':</p> <ul style="list-style-type: none"> - number/washing line - number track or ladder - number cards

Thero	Kotara ya 1	Kotara ya 2	Kotara ya 3	Kotara ya 4
U vhambedza nomboro	U vhambedza uri ndi ifhio ya khuvhanganyo mbili dzo netshedzwaho dza zwithu dzine dza vha: - khulwane, thukhu - khulwanesa, thukhusa - khulwanesesa, thukhusesa Tevhekanyani khuvhanganyo dzi fhiraho mbili dza zwithu u bva kha thukhusesa u ya kha khulwanesesa na khulwanesesa u ya kha thukhusesa Nnzhi na dzi si gathi, sa tsumbo, u vhanda hu no sokou itea, tshifhinga tsha zwidyangudyangu, u kovhana tshishumiswa	U vhambedza uri ndi ifhio ya khuvhanganyo mbili dzo netshedzwaho dza zwithu dzine dza vha: - khulwane, thukhu - khulwanesa, thukhusa - khulwanesesa, thukhusesa Nnzhi kha, thukhu kha, eḡana na Nnzhi na dzi si gathi, sa tsumbo, u vhanda hu no sokou itea	Nnzhi kha, thukhu kha, eḡana na Nnzhi na dzi si gathi Kha vha vhudzise mbudziso: 'Ndi zwiifhio zwe zwa vha zwinzhi/ zwiṭuku?'	Nnzhi kha, thukhu kha, eḡana na Nnzhi na dzi si gathi Kha vha vhudzise mbudziso: 'Ndi zwiifhio zwe zwa vha zwinzhi/ zwiṭuku?'
		Kha vha ite zwigwada zwi eḡanaho (dzisethe) zwa zwithu, sa tsumbo, vhana kana zwithu zwi re ngomu kijasini	Kha vha shumise zwithu u ita zwigwada zwi eḡanaho (dzisethe)	Kha vha shumise zwithu u ita zwigwada zwi eḡanaho (dzisethe)
	U kwashekanya na u fhaṭa khuvhanganyo dza 2 na 3, sa tsumbo, 3 i nga vha: 1 na 1 na 1 KANA 2 na 1 KANA 1 na 2 KANA noto (pumu) na 3	U kwashekanya na u fhaṭa khuvhanganyo dza 4 na 5, sa tsumbo, 4 i nga vha: 1 na 1 na 1 na 1 KANA 3 na 1 KANA 2 na 2 KANA noto (pumu) na 4	Kha vha shumise zwiifhaṭi zwa u guda mbalo u sengulusa na u bveledza maano a u kwashekanya na u fhaṭa khuvhanganyo u swika kha 8	Kha vha shumise zwiifhaṭi zwa u guda mbalo u sengulusa na u bveledza maano a u kwashekanya na u fhaṭa khuvhanganyo u swika kha 10
Tevhekanyani (tevhokano) nomboro	Tevhekanyani khuvhanganyo dzi fhiraho mbili dzo netshedzwaho dza zwithu u bva kha thukhusesa u ya kha khulwanesesa na u bva kha khulwanesesa u ya kha thukhusesa	Tevhekanyani khuvhanganyo dzi fhiraho mbili dzo netshedzwaho dza zwithu u bva kha thukhusesa u ya kha khulwanesesa na u bva kha khulwanesesa u ya kha thukhusesa	Tevhekanyani khuvhanganyo dza zwithu u bva kha zwiṭukusesa u ya kha zwiikulwanesesa na u bva kha zwiikulwanesesa u ya kha zwiṭukusesa	Tevhekanyani khuvhanganyo dza zwithu u bva kha zwiṭukusesa u ya kha zwiikulwanesesa na u bva kha zwiikulwanesesa u ya kha zwiṭukusesa Vhambadzani garaṭa ya tshiga tsha nomboro na khuvhanganyo
	U tevhokanya nomboro hu no sokou itea 'Hu tevhela mini, nga murahu, vhukati': - nomboro/muḡali wa u anea - Jeri kana mutalombalo - magaraṭa a nomboro	Kha vha vhee zwiḡa zwa nomboro nga mutevhe wo teaho wa u vhalela 'Hu tevhela mini, nga murahu, vhukati': - nomboro/muḡali wa u anea - Jeri kana mutalombalo - magaraṭa a nomboro	Vheani zwiḡa zwa nomboro nga mutevhe wo teaho wa u vhalela 'Hu tevhela mini, nga murahu, vhukati': - nomboro/muḡali wa u anea - Jeri kana mutalombalo - magaraṭa a nomboro	Zwi no sokou itea: Mutevhe wa nomboro: 0–10 Vheani zwiḡa zwa nomboro nga mutevhe wo teaho wa u vhalela 'Hu tevhela mini, nga murahu, vhukati': - nomboro/ muḡali wa u anea - Jeri kana mutalombalo - magaraṭa a nomboro

	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			

	Thero	KOTARA YA 1	KOTARA YA 2	KOTARA YA 3	KOTARA YA 4
	Nomboro thevhekano	U bveledza u dzhiela nzhele hu no sokou itea ha mathomo, ha vhuvhili, ha vhuraru ... ha mafhelelo, hu tevhelaho Kha vha divhadze nga tshifhinga tsha: - tshifhinga tsha zwinwiwa/ zwidyangudyangu na tsha u ya bungani - kha nyimele dza duvha liñwe na liñwe, u mona na thero dzothe, u ita muduba, sa tsumbo, 'Ndi nnyi we a vha e mathomoni/ mafheleloni/wa vhuvhili u dzhena munangoni'	U bveledza u dzhiela nzhele hu no sokou itea ha mathomo, ha vhuvhili, ha vhuraru, ha vhuṅa, ha mafhelelo, hu tevhelaho Kha nyimele dza duvha liñwe na liñwe: ndowelo ya duvha liñwe na liñwe – u ita muduba, tshifhinga tsha zwidyangudyangu, tshifhinga tsha u ya bungani U tangelana: Zwikili zwa Vhutshilo, mveledziso ya muvhili na nyito dza vhutsila (hune zwa konadzea), nyito dza nṅa, sa tsumbo, mbambe Kha vha dubekanye zwithu kana zwifhaṅi zwa u guda mbalo vha haseledze vhuimo	U bveledza u dzhiela nzhele hu no sokou itea ha mathomo, ha vhuvhili, ha vhuraru, ha vhuṅa, ha vhuṅanu, ha mafhelelo, hu tevhelaho Kha vha khwaṅhisedze nomboro thevhekano kha ndowelo ya duvha liñwe na liñwe vha i dzhenise masiari na kha nyito dza nṅa, sa tsumbo, mbambe Kha vha vhee vhagudi na zwithu nga u tevhekana vha topole vhuimo ha thevhekano ha sia jithihi, sa tsumbo, mondeni u ya kha tshauḷa	U bveledza u dzhiela nzhele hu no sokou itea ha mathomo, ha vhuvhili, ha vhuraru, ha vhuṅa, ha vhuṅanu, ha vhurathi, ha mafhelelo, hu tevhelaho Kha vha khwaṅhisedze nomboro thevhekano kha ndowelo ya duvha liñwe na liñwe vha i dzhenise masiari na kha nyito dza nṅa, sa tsumbo, mbambe Kha vha vhee vhagudi na zwithu nga u tevhekana vha topole vhuimo ha thevhekano ha masia othe, sa tsumbo, mondeni u ya kha tshauḷa na tshauḷa u ya mondeni
1.5	Vhuimo ha nomboro	A hu na magudiswa a TSHIPHOKHALI a Gireidi ya T (kha vha sedzese kha divhaipfi ya nomboro ya nomboro 1–9 na pumu, 1.1 na 1.4)			
U TANDULULA THAIDZO NYIMELENI					
1.6	Thekeniki dza u tandulula thaidzo	Mutevhe wa nomboro: 1–3 U tandulula thaidzo kha nyimele dza duvha liñwe na liñwe U shumisa thekeniki dzi tevhelaho: - zwishumiswa zwi fareaho, sa tsumbo, zwa u vhalela - u vhalela zwothe nga tshithihi tshithihi	Mutevhe wa nomboro: 1–5 U tandulula thaidzo kha nyimele dza duvha liñwe na liñwe U shumisa thekeniki dzi tevhelaho: - zwishumiswa zwi fareaho, sa tsumbo, zwa u vhalela - jeri ya nomboro - tshivhumbeo tsha vhulungu ha fumi - u vhalela zwothe nga tshithihi tshithihi Mutevhe wa nomboro: 1–4	Mutevhe wa nomboro: 1–8 U tandulula thaidzo kha nyimele dza duvha liñwe na liñwe U shumisa thekeniki dzi tevhelaho: - zwishumiswa zwi fareaho, sa tsumbo, zwa u vhalela - jeri ya nomboro - tshivhumbeo tsha vhulungu ha fumi - u vhalela zwothe nga tshithihi tshithihi - u vhalela u ya phanḍa Mutevhe wa nomboro: 1–7	Mutevhe wa nomboro: 0–10 U tandulula thaidzo kha nyimele dza duvha liñwe na liñwe U shumisa thekeniki dzi tevhelaho: - zwishumiswa zwi fareaho, sa tsumbo, zwa u vhalela - jeri ya nomboro - tshivhumbeo tsha vhulungu ha fumi - u vhalela zwothe nga tshithihi tshithihi - u vhalela u ya phanḍa Mutevhe wa nomboro: 0–10
1.7	U tṅanya na u tusa Nga u tou amba vha tandulula thaidzo dza ipfi (mbalo dza zwiṅori) vha talutshedza thandululo dzavho dza thaidzo dzi katelaho u tṅanya na u tusa dzi re na phindulo u swika kha 10	U sengulusa u tṅanya na u tusa kha nyito dza duvha liñwe na liñwe nga u shumisa zwifhaṅi zwa u guda mbalo na zwiṅori Nga u tou amba vha tandulula thaidzo dzi kwamaho nomboro 1–3 vha tshi shumisa zwa u vhalela, zwiṅori, zwifanyiso	Nga u tou amba vha tandulula thaidzo dzi kwamaho nomboro 1–5 vha tshi shumisa zwa u vhalela, zwiṅori, zwifanyiso Kha vha shumise zwa u vhalela na uri nga u tou amba vha tandulule thaidzo dzine dza katela nomboro 2, 3 na 4 Kha vha khwaṅhisedze u tandulula thaidzo dzine dza katela nomboro 1 u ya kha 4	Nga u tou amba vha tandulula thaidzo dzi kwamaho nomboro 1–8 vha tshi shumisa zwa u vhalela, zwiṅori, zwifanyiso Kha vha divhadze teo (u tṅanya na u tṅanya, u bvisa/u tusa) Kha vha shumise zwa u vhalela na uri nga u tou amba vha tandulule thaidzo dzine dza katela nomboro 5, 6 na 7 Kha vha khwaṅhisedze u tandulula thaidzo dzine dza katela nomboro 1 u ya kha 7	Nga u tou amba vha tandulula thaidzo dzi kwamaho nomboro 0–10 vha tshi shumisa zwa u vhalela, zwiṅori, zwifanyiso Kha vha shumise teo (u tṅanya na u tusa) Kha vha shumise zwa u vhalela na uri nga u tou amba vha tandulule thaidzo dzine dza katela nomboro 8, 9 na 10 Kha vha khwaṅhisedze u tandulula thaidzo dzine dza katela nomboro 1 u ya kha 10
1.8	Ndovhololo ya u tṅanya i livhaho kha muandiso	A hu na magudiswa a TSHIPHOKHALI a Gireidi ya T			

	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)			

	Thero	Kotara ya 1	Kotara ya 2	Kotara ya 3	Kotara ya 4
1.9	U vhea nga zwigwada na u kovhana hu livhaho kha u kovha (u kovhana hu eđanaho na u vhea nga zwigwada nga mbalosa u swika kha 10 na phindulo dzine dza katela zwiđahe)	Kha vha đivhadze đivhaipfi ya u kovhana hu eđanaho: - nga tshifhinga tsha nyito dza đuvha lińwe na lińwe - zwiđori na zwifanyiso - u kovhana tshithu nga tshithu	U kovhana hu eđanaho: - nga tshifhinga tsha nyito dza đuvha lińwe na lińwe - zwiđori na zwifanyiso - u kovhana tshithu nga tshithu	U kovhana hu eđanaho: - u vhea nga zwigwada - u hafula - u shumisa zwithu zwi fareaho	U kovhana hu eđanaho: - u vhea nga zwigwada - u hafula na u ita kavhili - u shumisa zwithu zwi fareaho
1.10	U kovhana hu livhaho kha zwiđa	A hu na magudiswa a TSHIPHOKHALI a Gireidi ya T (kha vha sedzese kha u tandulula thaidzo dzi re na zwiđahe zwine zwi nga kovhiwa, 1.9)			
1.11	Tshelede		Kha vha bveledze u dzhiela nzhele mangwende a Afrika Tshipembe: 10c, 20c, 50c, R1, R2, R5 U topola muvhala na phukha U topola zwi fanaho na zwo fhambanaho U vhekanya tshelede ya u tambisa u ya nga muvhala na saizi U netshedza tshelede ya u tamba khuđani ya kijasini	Kha vha bveledze u dzhiela nzhele tshelede ya mađari ya Afrika Tshipembe: R10, R20, R50, R100, R200 U topola zwi fanaho na zwo fhambanaho U vhekanya tshelede ya u tambisa u ya nga muvhala na saizi U netshedza tshelede ya u tamba khuđani ya kijasini	U netshedza tshelede ya u tamba khuđani ya kijasini
U REKANYA HU SONGO ĐISENDEKAHO KHA NYIMELE: TSWAYO					
1.12	Thekeniki	A hu na magudiswa a TSHIPHOKHALI a Gireidi ya T (kha vha sedzese kha u vhalela zwođe na u vhalela u ya phanđa, 1.1 na 1.6)			
1.13	U řanganya na u řusa: u tandulula thaidzo dzo bulwaho nga u tou amba dza u řanganya na u řusa		Mutevhe wa nomboro: 1–5 U tandulula thaidzo dza u řanganya na u řusa dzi re na thandululo dza u swika kha 5 nga u tou amba Mutevhe wa nomboro: 1–4	Mutevhe wa nomboro: 1–8 U tandulula thaidzo dza u řanganya na u řusa dzi re na thandululo dza u swika kha 8 nga u tou amba Mutevhe wa nomboro: 1–7	Mutevhe wa nomboro: 1–10 U tandulula thaidzo dza u řanganya na u řusa dzi re na thandululo dza u swika kha 10 nga u tou amba Mutevhe wa nomboro: 1–10
1.14	Ndovhololo ya u řanganya i livhaho kha muandiso	A hu na magudiswa a TSHIPHOKHALI a Gireidi ya T			
1.15	U kovha	A hu na magudiswa a TSHIPHOKHALI a Gireidi ya T (kha vha sedzese kha u kovhana hu eđanaho, 1.9)			
1.16	Murekanyo wa mbalo	Kha vha thome kijasi yođe ińwe na ińwe na nyito dzo rangwaho phanđa nga mugudisi nga murekanyo wa mbalo vha ite murekanyo wa mbalo hune zwikhala zwa u guda hu no sokou itea zwa bvelela U vhalela zwithu zwa đuvha lińwe na lińwe U vhalela phanđa na u ya murahu U vhalela ha thevhekano U anganyela U tandulula thaidzo Mitambo ya muhumbulo			
1.17	Zwiđa	A hu na magudiswa a TSHIPHOKHALI a Gireidi ya T (kha vha sedzese kha u kovhana hu eđanaho, 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. PHETHENI, FANKISHENI na ALIDZHEBURA				
Thero	KOTARA YA 1	KOTARA YA 2	KOTARA YA 3	KOTARA YA 4
2.1 PHETHENI DZA DZHOMETIRI				
Kha vha topole phetheni	Kha vha topole phetheni vhuponi ho dowealeaho ha duvha liñwe na liñwe, sa tsumbo, zwiambaro, zwithu na mupo Kha vha kone u vhona 'ndovhololo' kha phetheni			
Kha vha kope na u engedza phetheni dzo leluwaho dzi dovhololaho vha tshi shumisa zwithu na nyolo dza vhukuma	Kha vha kope na u fhedzisa phetheni Kha vha kope phetheni vha tshi shumisa musudzuluwo wa muvhili Kha vha kope, vha fhedzise na u sika phetheni dzavho Kha vha divhadze luambo: Hu tevhela mini? Ho da mini phanda? Zwi fana hani? Zwo fhambana hani?	Kha vha kope na u engedza phetheni dzi re na zwifanyiso Kha vha kope phetheni yo newaho vha tshi shumisa mangwende Kha vha taluse ndovhololo kha phetheni Kha vha kope phetheni yo newaho vha tshi shumisa zwithu zwi fareaho zwa mielo miraru na zwivhumbeo zwa mielo mivhili, mangwende, vhulungu, nz.	Kha vha kope na u engedza phetheni dzavho dzi re na zwifanyiso Kha vha kope phetheni dza vhutengu na dza nzimo vha tshi shumisa zwithu zwi fareaho Kha vha engedze phetheni dzi sa konqi dzi dovhololaho	Kha vha kope na u engedza phetheni dzavho dzi re na zwifanyiso Kha vha kope phetheni ya phosho (mubvumo/ zwi pfallaho ngevheni) Kha vha shumise mbumbo ya zwithu zwa vhukuma vha ole phetheni
Vha sika phetheni dzavho dzi dovhololaho	Kha vha sika phetheni yavho vha tshi shumisa zwithu zwa vhukuma, nyolo, phetheni dza dzhometiri Kha vha talutshedze phetheni yavho (mulayo wa ndovhololo): - muvhala muthihi, zwivhumbeo zwivhili - tshivhumbeo tshithihi, mivhala mivhili	Kha vha sika phetheni yavho nga zwifanyiso Kha vha talutshedze phetheni yavho (mulayo wa ndovhololo): - mivhala mivhili, zwivhumbeo zwivhili - zwivhumbeo zwivhili, mivhala mivhili	Kha vha sika phetheni yavho nga zwifanyiso Kha vha talutshedze phetheni yavho (mulayo wa ndovhololo): - mivhala miraru/maṅa, zwivhumbeo zwo fhambanaho, nz.	Kha vha sika phetheni yavho Kha vha talutshedze phetheni yavho (mulayo wa ndovhololo): - mivhala miraru/maṅa, zwivhumbeo zwo fhambanaho, nz.
2.1	Phetheni dza nomboro	A hu na magudiswa a TSHIPHOKHALI a Gireidi ya 1 (kha vha sedzese kha u vhaleta: u tevhakanya nomboro nga nthihi nthihi na nga mbili mbili, 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. TSHIKHALA na TSHIVHUMBEO (DZHOMEṬIRI)					
	Thero	Kotara ya 1	Kotara ya 2	Kotara ya 3	Kotara ya 4
3.1	Vhuimo, u ḡivhadza na mihumbulo U ṭalusa tshithu tshithihi tsha mielo miraru tshi tshi vhambedzwa na tshiṅwe (sa tsumbo, phanḡa na murahu)	Vhushaka ha tshikhala Vhuimo ha ṅwana vhu tshi vhambedzwa na vhupo vhune avha khaho Vhuimo ha zwithu zwivhili kana zwinzhi zwi tshi vhambedzwa na mugudi: - phanḡa ha na murahu - kha, ṅṭha ha, fhasi, fhasi - ngomu na ṅṅḡa, nga ngomu na nga ṅṅḡa - ṅṭha na fhasi - tsini ha na vhukati	Vhushaka ha tshikhala Vhuimo ha ṅwana vhu tshi vhambedzwa na vhupo vhune avha khaho Vhuimo ha zwithu zwivhili kana zwinzhi zwi tshi vhambedzwa na mugudi: - kha na fhasi ha - nga ṅṭha ha na nga fhasi ha - phanḡa ha na murahu	Vhushaka ha tshikhala Vhuimo ha zwithu zwivhili kana zwinzhi zwi tshi vhambedzwa na zwiṅwe na tshiṅwe ngatsho: - phanḡa ha na murahu - kha, ṅṭha ha, fhasi, fhasi na nga fhasi - tsini ha - vhukati - monde na tshauḡa - mushumo wa bodo ya phekhisi Kha vha ṭaluse zwithu u bva kha mbonalo vhukuleni dzo fhambanaho, sa tsumbo, ṅṅḡu ya mpopi nga phanḡa, nga murahu, nga matungo zwi tshi ya nga he vha ima hone	Vhushaka ha tshikhala Vhuimo ha zwithu zwivhili kana zwinzhi zwi tshi vhambedzwa na zwiṅwe na vhagudi na u vhambedzwa na tshiṅwe ngatsho: - phanḡa ha na murahu - nga ṅṭha ha, fhasi, ṅṭha ha, nga fhasi - ṅṭha na fhasi - tsini ha, vhukati ha na vhukati - monde na tshauḡa Vhuimo ha zwithu zwivhili kana zwinzhi zwi tshi vhambedzwa na zwiṅwe ngazwo
	Tevhelani masia (e eṭhe na/kana sa muraḡo wa tshigwada kana thimu) u sudzuluwa/u ḡi vhea ngomu ha tshikhala tiwa (masia)	Masia – phanḡa na murahu ṅṭha na fhasi Mitambo i fanaho na mutambo wa u tevhela tshidimela Mitambo ya u shumisa muvhili woṭhe – u tevhela sia Ngudo ya nyonyoloso na muzika	Masia – phanḡa na murahu Mitambo ya u shumisa muvhili woṭhe – u tevhela sia Nyito dza ṅṅḡa Zwi no sokou itea: monde na tshauḡa	Phanḡa na murahu Tshathi ya musevhe Monde na tshauḡa	Phanḡa na murahu ṅṭha na fhasi U yela ṅṭha na u yela fhasi Monde na tshauḡa Mubvumo u bva ngafhi?
3.2	Zwithu zwa mielo miraru				
	U vhona, u topola na u bula zwithu zwa mielo miraru ngomu kijasirumuni	U ḡivhadza na u fandula U vhambedza na u vhekanya: - dzibola - mabogisi a re na matungo (masia) a zwickwea na ṭhofundeṅa			

	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

	THERO	KOTARA YA 1	KOTARA YA 2	KOTARA YA 3	KOTARA YA 4
	<p>U ũalusa, u vhekanya na u vhambedza zwithu zwa mielo miraru</p>	<p>Kha vha ðivhadze tshathi ya u kunakisa (u vhekanya zwitambiswa)</p> <p>U vhekanya zwithu zwa mielo miraru u ya nga (tshidombedzwa tshithihi):</p> <ul style="list-style-type: none"> - saizi (khulwane/thukhu) - muvhala - tshivhumbeo <p>U topola na u tandula zwithu zwa mielo miraru: fulethe, tshipulumbu, tshikwea kana tshivhumbeo tsha thofundeina</p> <p>Zwithu zwi kunguluwaho</p> <p>Zwithu zwi suvhaho</p>	<p>U vhekanya zwithu zwa mielo miraru u ya nga zwi fanaho na zwo fhambanaho:</p> <ul style="list-style-type: none"> - saizi - muvhala - tshivhumbeo 	<p>U vhekanya zwithu zwa mielo miraru u ya nga zwi fanaho na zwo fhambanaho (zwidombedzwa zwivhili):</p> <ul style="list-style-type: none"> - saizi - muvhala - tshivhumbeo <p>U tandula zwithu zwa mielo miraru: fulethe, tshipulumbu, tshikwea kana tshivhumbeo tsha thofundeina</p>	<p>U vhekanya zwithu zwa mielo miraru u ya nga (zwidombedzwa zwivhili kana zwinzhi):</p> <ul style="list-style-type: none"> - saizi - muvhala - tshivhumbeo <p>U tandula zwithu zwa mielo miraru: fulethe, tshipulumbu, tshikwea kana tshivhumbeo tsha thofundeina</p>
	<p>U fhaŵa zwithu zwa mielo miraru</p>	<p>A zwi gumi</p> <p>Kha vha vha nee zwibuŵoko zwa u fhaŵa na matheriala a u fhaŵa nga tshifhinga tsha u tamba nga u funa ngomu kijasini ðuvha jirwe na jirwe</p> <p>Kha vha tandule nga zwibuŵoko zwa u fhaŵa</p>	<p>A zwi gumi</p> <p>Kha vha vha nee zwibuŵoko zwa u fhaŵa na matheriala a u fhaŵa nga tshifhinga tsha u tamba nga u funa ngomu kijasini ðuvha jirwe na jirwe</p> <p>Kha vha tandule nga zwibuŵoko zwa u fhaŵa</p> <p>Kha vha shumise zwibuŵoko zwa u fhaŵa na matheriala o bikululwaho u fhaŵa zwifhaŵo zwavho</p>	<p>A zwi gumi</p> <p>Kha vha vha nee zwibuŵoko zwa u fhaŵa na matheriala a u fhaŵa nga tshifhinga tsha u tamba nga u funa ngomu kijasini ðuvha jirwe na jirwe</p> <p>Kha vha fhaŵe zwifhaŵo zwavho nga u kopa u bva kha tsumbo yo newaho</p> <p>Kha vha kope tshifhaŵo tshenetsho tshithihi u bva kha dizaini kana garaŵa ja tshifanyiso</p>	<p>A zwi gumi</p> <p>Kha vha vha nee zwibuŵoko zwa u fhaŵa na matheriala a u fhaŵa nga tshifhinga tsha u tamba nga u funa ngomu kijasini ðuvha jirwe na jirwe</p> <p>A zwi gumi nga tshifhinga tsha u tamba nga u funa ngomu kijasini</p>
3.3	Zwivhumbeo zwa mielo mivhili				
	<p>U kona u vhona, u topola na u bula zwivhumbeo zwa mielo mivhili ngomu kijasini</p>	<p>Kha vha ðivhadze U kunakisa/tshathi ya Thuso</p> <p>Kha vha kone u vhona tshiga na dzina zwa mugudi</p> <p>Kha vha ðivhadze zwivhumbeo zwa mielo mivhili: tshitendeledzi, tshikwea, thofunderaru, thofundeina</p> <p>Dziphazili (gumotuku ja zwipiða zwa 6)</p>	<p>Kha vha kone u vhona tshiga na dzina zwa mugudi</p> <p>Kha vha kone u vhona, u topola na u bula zwivhumbeo zwa mielo mivhili: tshitendeledzi, tshikwea na thofunderaru</p> <p>Dziphazili (gumotuku ja zwipiða zwa 12)</p>	<p>Kha vha kone u vhona na u topola dzina ja mugudi</p> <p>Kha vha khwaŵhisedze: tshitendeledzi, tshikwea, thofunderaru</p> <p>Kha vha vhambedze thofundeina na zwikwea</p> <p>Dziphazili (gumotuku ja zwipiða zwa 18)</p>	<p>Kha vha topole dzina ja mugudi</p> <p>Kha vha khwaŵhisedze: thofundeina</p> <p>Kha vha kone u vhona, u topola na u bula zwivhumbeo zwa mielo mivhili: tshitendeledzi, tshikwea, thofunderaru, thofundeina</p> <p>Dziphazili (gumotuku ja zwipiða zwa 24)</p>
	<p>U ũalusa, u vhekanya na u vhambedza zwivhumbeo zwa mielo mivhili</p>	<p>Kha vha vhekanye zwivhumbeo zwa mielo mivhili u ya nga:</p> <ul style="list-style-type: none"> - muvhala - tshivhumbeo <p>Tshitendeledzi: mutalo wo kevaho</p> <p>Tshikwea: masia 4, mitalo tswititi, dzikhudã</p> <p>Thofunderaru: masia 3, mitalo tswititi, dzikhudã</p>	<p>Kha vha vhekanye zwivhumbeo zwa mielo mivhili u ya nga zwi fanaho na zwo fhambanaho:</p> <ul style="list-style-type: none"> - tshivhumbeo <p>Kha vha khwaŵhisedze thofunderaru</p> <p>Kha vha khwaŵhisedze tshitendeledzi na tshikwea</p>	<p>Kha vha vhekanye zwivhumbeo zwa mielo mivhili u ya nga:</p> <ul style="list-style-type: none"> - muvhala - tshivhumbeo (mutalo wo kevaho, mitalo miraru kana miŵa) <p>Kha vha khwaŵhisedze tshitendeledzi, tshikwea na thofunderaru</p>	<p>Kha vha vhekanye zwivhumbeo zwa mielo mivhili u ya nga:</p> <ul style="list-style-type: none"> - saizi - muvhala - tshivhumbeo

	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)

	THERO	KOTARA YA 1	KOTARA YA 2	KOTARA YA 3	KOTARA YA 4
	Zwithu zwiṭuku nga zwiḥulwane Zwivhumbeo zwa dzhomeṭiri	Kha vha ḍivhadze zwithu zwiṭuku nga zwiḥulwane (u topola zwithu na zwivhumbeo – ‘mutambo wa u humbulela’) Kha vha ḍivhadze tshitendeledzi, tshikwea na ṭhofunderaru	Kha vha khwaṭhisedze zwithu zwiṭuku nga zwiḥulwane nga u vhekanya, u vhambedza na nyito dza zwigwada na ṅḍowelo ya u kunakisa Kha vha khwaṭhisedze ṭhofunderaru U vhulunga tshivhumbeo (u vhona na u kona u Jebuḷa ṭhofunderaru)	Kha vha khwaṭhisedze zwithu zwiṭuku nga zwiḥulwane nga u vhekanya, u vhambedza na nyito dza zwigwada na ṅḍowelo ya u kunakisa Kha vha khwaṭhisedze tshikwea U vhulunga tshivhumbeo (u vhona na u kona u Jebuḷa zwivhumbeo zwo gudwaho u swika zwino)	Kha vha khwaṭhisedze zwithu zwiṭuku nga zwiḥulwane nga u vhekanya, u vhambedza na nyito dza zwigwada na ṅḍowelo ya u kunakisa Kha vha khwaṭhisedze tshitendeledzi, ṭhofunderaru, tshikwea na ṭhofundeina U vhulunga tshivhumbeo (u vhona na u kona u Jebuḷa zwivhumbeo zwo gudwaho u swika zwino)
3.4	Ndinganyahuvhili (U vhona mutalo wa ndinganyahuvhili kha iwe muṅe, na kha vhupo hau)	Kha vha topole mirado ya muvhili U dzhiela nzhele muvhili u ya nga: - uri muvhili wa muthu u na masia mavhili - sia jithihi, na jinwe sia, zwi isaho kha tsha monde na kha tshauḷa - nṭha/fhasi - murahu/phanḍa - u pfuka mutalo wa vhukati (nyito dza muvhili) Nyito dzine dza fanela u itwa nga tshifhinga tsha mveledziso ya muvhili – u shumisa zwidade na nyimbo, na nga tshifhinga tsha Vhutsila na Mishumo ya zwangḍa	U pfuka mutalo wa vhukati – u ita nyito Kha vha shumise u pfuka mutalo wa vhukati nga tshifhinga tsha Zwikili zwa Vhutshilo (mveledziso ya muvhili) – u shumisa zwidade na nyimbo, na nga tshifhinga tsha Vhutsila na Mishumo ya zwangḍa	U pfuka mutalo wa vhukati (nyito dza kha bodo ya u ṅwalela) Kha vha shumise u pfuka mutalo wa vhukati nga tshifhinga tsha Zwikili zwa Vhutshilo (mveledziso ya muvhili)	Kha vha bveledze u dzhiela nzhele uri hu na ndinganyahuvhili kha zwithu Kha vha shumise u pfuka mutalo wa vhukati nga tshifhinga tsha Zwikili zwa Vhutshilo (mveledziso ya muvhili)

4. MEASUREMENT

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

4. MUELO					
	Thero	KOTARA YA 1	KOTARA YA 2	KOTARA YA 3	KOTARA YA 4
4.1	Tshifhinga	<p>Kha vha divhadze divhaipfi dza masiari/vhusiku, tshedza/swiswi, matsheloni/masiari/vhusiku (madekwana a namusi)</p> <p>Kha vha divhadze mbekanyamushumo ya divha liñwe na liñwe vho țana zwifanyiso u bva mondeni u ya kha tshauja na musevhe u sumbedzaho nyito zwenezwi divha li khou bvela phanđa</p> <p>Kha vha divhadze tshathi ya mutsho (divha liñwe na liñwe) na dzina ja divha, datumu na ñwedzi nga luimbo na tshidade, magarațatai vha țane dzilebulu, zwiđa na zwifanyiso kha khalenda yo imelaho vhege</p> <p>Mađuvha a vhege (divha liñwe na liñwe) thevhekano i gudwaho nga luimbo kana tshidade</p> <p>Kha vha sumbedze mađuvha a mabebo, u đi bvisa, mađuvha o khetheaho, holodei dza vhukati ha vhege</p> <p>Kha vha tevhekanye miñwedzi ya ñwaha nga luimbo</p> <p>Kha vha bveledze u dzhielwa nzhele ha divhaipfi ya tshifhinga</p> <p>Kha vha divhadze tshathi ya khalañwaha tshilimo, tshifneho, vhuriha, luțavula</p> <p>Kha vha divhadze tshathi ya divha ja mabebo na miñwaha yavho, divha ja mabebo (divha na ñwedzi)</p> <p>Kha vha bveledze u dzhielwa nzhele u vhalo sia</p>	<p>Mbekanyamushumo ya divha liñwe na liñwe (a zwi gumi)</p> <p>Kha vha khwațhisedze u tevhekana ha zwiwo zwi dovhoolaho kha divha liñwe</p> <p>Tshathi ya mutsho (divha liñwe na liñwe) i na divha, datumu na ñwedzi nga luimbo na tshidade, magarațatai vha țane dzilebulu, zwiđa na zwifanyiso kha khalenda ya vhege iñwe na iñwe</p> <p>Mađuvha a vhege (a zwi gumi) kha vha dovhoolole luimbo kana tshidade divha liñwe na liñwe</p> <p>Kha vha bveledze u dzhielwa nzhele ha zwine mugudi a ita u bva musi a tshi vuva u swika a tshi ya tshikoloni</p> <p>Kha vha bveledze u dzhielwa nzhele ha zwine zwa itea vhukati ha tshifhinga tsha tshiswutulo na tshifhinga tsha u eđela</p> <p>Tshathi ya divha ja mabebo tshifhinga tshoțhe musi mugudi a na divha ja mabebo</p> <p>Tshathi ya dzikhalañwaha tshilimo, tshifneho, vhuriha, luțavula</p>	<p>Mbekanyamushumo ya divha liñwe na liñwe (a zwi gumi)</p> <p>Kha vha khwațhisedze u tevhekana ha zwiwo zwi dovhoolaho kha divha liñwe</p> <p>Tshathi ya mutsho (divha liñwe na liñwe) i na divha, datumu na ñwedzi nga luimbo na tshidade, magarațatai vha țane dzilebulu, zwiđa na zwifanyiso kha khalenda ya vhege iñwe na iñwe</p> <p>Mađuvha a vhege (a zwi gumi)</p> <p>Tshathi ya dzikhalañwaha (a zwi gumi)</p> <p>Tshathi ya divha ja mabebo tshifhinga tshoțhe musi mugudi a na divha ja mabebo</p>	<p>Mbekanyamushumo ya divha liñwe na liñwe (a zwi gumi)</p> <p>Kha vha khwațhisedze u tevhekana ha zwiwo zwi dovhoolaho kha divha liñwe</p> <p>Tshathi ya mutsho (divha liñwe na liñwe) i na divha, datumu na ñwedzi nga luimbo na tshidade, magarațatai vha țane dzilebulu, zwiđa na zwifanyiso kha khalenda ya vhege iñwe na iñwe</p> <p>Mađuvha a vhege (a zwi gumi)</p> <p>Tshathi ya dzikhalañwaha (a zwi gumi)</p> <p>Tshathi ya divha ja mabebo tshifhinga tshoțhe musi mugudi a na divha ja mabebo</p>

	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			

	THERO	KOTARA YA 1	KOTARA YA 2	KOTARA YA 3	KOTARA YA 4
4.2	Vhulapfu Kha vha vhambedze na u tevhekanya zwithu zwi fareaho vha tshi shumisa divhaipfi yo teaho u țalusa vhulapfu	Nga tshifhinga tsha nđowelo dza đuvha lińwe na lińwe kha vha đivhadze đivhaipfi ya vhunavha: tshilapfu na tshipfufhi, ndapfu, ndapfusa na ndapfusesa Kha vha đivhadze tshathi ya vhulapfu Vhagudi vha nga vhambedza vhulapfu havho na ha tshińwe tshithu ngomu kijasini, sa tsumbo, khabodo: - kha vha kale nga zwanđa (u vhona na zwi no sokou itea) - kha vha kale nga luswayo lwa nayo/ nayo	Nga tshifhinga tsha nđowelo dza đuvha lińwe na lińwe kha vha tandule đivhaipfi ya vhunavha: tshilapfu na tshipfufhi, ndapfu, ndapfusa na ndapfusesa Kha vha vhambedze na u tevhekanya zwithu zwi vhili kana zwinzhi nga u zwi vhea tsini na tsini U shumisa đivhaipfi yo teaho u țalusa vhunavha: tshilapfusa na tshipfufhisa, ndapfusa na pfufhisa Mbambedzo ya tshathi ya vhulapfu: vhagudi vha tumbula arali vho aluwa u bva tsha kotara yo fhiraho	Kha vha anganye vvhulapfu ha zwithu zwo fhambanaho Kha vha anganye na u ela vhulapfu ha zwithu zwo fhambanaho vha tshi shumisa nayo, zwanđa, tshipiđa tsha muđali, thanda Mbambedzo ya tshathi ya vhulapfu: vhagudi vha tumbula arali vho aluwa u bva tsha kotara yo fhiraho	Kha vha kale vhulapfu ha vhagudi nga theiphi ya u kala Mbambedzo ya tshathi ya vhulapfu: vhagudi vha tumbula arali vho aluwa u bva tsha kotara yo fhiraho
4.3	Tshileme U shumisa zwi fareaho u vhambedza na u tevhekanya zwithu a tshi shumisa đivhaipfi yo teaho	U guda hu no sokou itea ngomu na nńđa U ya phanđa nga tshifhinga tsha mutambo wa mađi na muđavha	U guda hu no sokou itea ngomu na nńđa U ya phanđa nga tshifhinga tsha mutambo wa mađi na muđavha	Kha vha đivhadze đivhaipfi ya tshileme nga u vhambedza zwileme zwa zwithu zwo fhambanaho: - leluwa/lemela - leluwesa/lemelesa - leluwesesa/lemelesesa	Kha vha khađhisedze luambo lwa tshileme nga tshifhinga tsha nyito dza ngomu na dza nńđa
4.4	Vhungomu/Voľumu U shumisa zwi fareaho u vhambedza na u tevhekanya zwithu a tshi shumisa đivhaipfi yo teaho	U guda hu no sokou itea ngomu na nńđa: a hu na tshithu/đala, zwinzhi kha, zwiđuku kha U ya phanđa nga tshifhinga tsha mutambo wa mađi na muđavha	Nyito dza u guda hu no sokou itea ngomu na nńđa Mutambo wa mađi/ muđavha U shumisa mudzio u vhambedza zwi vhalo vha tshi shumisa midzio u đowe leaho	Kha vha đivhadze đivhaipfi ya u kala ya vhungomu nga u vhambedza uri midzio yo fhambanaho i faredza zwingafhani: - u sa vha na tshithu/u đala - zwinzhi kha/ zwiđuku kha	U ya phanđa nga tshifhinga tsha mutambo wa mađi na muđavha Kha vha khađhisedze luambo lwa vhungomu/ voľumu nga tshifhinga tsha nyito dza ngomu na dza nńđa
4.5	Vhunńđa na Nyalo	A hu na magudiswa a TSHIPHOKHALI a Gireidi ya T			

5. DATA HANDLING

	TOPIC	TERM 1	TERM 2	TERM 3	TERM 4
5.1	<p>Collect and sort objects</p> <p>Collect and sort physical objects according to one attribute, e.g. size of leaves</p>	<p>Introduce the concept of data handling:</p> <ul style="list-style-type: none"> - 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 	<p>Collect objects (twigs of different sizes/lengths)</p> <p>Sort the collected objects (twigs)</p>	<p>Pose a question: 'Are names with six letters the most popular?'</p> <p>Collect data to answer the question using the learners' name cards</p> <p>Sort the name cards according to the number of letters in each name</p>	<p>Collect data: Whose birthdays are in which month?</p> <p>Sort the data according to the relevant birthday month of each learner</p> <p>Collect data: e.g. What is your favourite playdough colour?</p> <p>Select one block representing the colour of his/her choice of playdough for the week</p> <p>Collect data: Which mode of transport do learners use to come to school?</p> <p>Sort the collected data (walk, with parent's car, taxi or bus)</p>
5.2	<p>Represent sorted collections of objects</p>	<p>Represent the graph using concrete objects</p> <p>Make a graph representing the data using blocks or shapes</p> <p>Make a pictograph</p>	<p>Draw a graph to display data (twigs)</p> <p>Draw a picture as a record of collected objects</p>	<p>Draw a graph by pasting each name card below the relevant column</p> <p>Make a pictograph</p>	<p>Draw a graph representing the learners' birthdays in each month</p> <p>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</p> <p>Draw a pictograph representing the learners who walk and come by taxi, car, bus</p>
5.3	<p>Discuss and report on sorted collections of objects</p>	<p>Read and interpret data by using playdough to make a representation of the number of boys and girls in the class</p> <p>Answer questions based on own sorting of objects</p> <p>How many big leaves did you draw? Which are the most: the big leaves or the small leaves?</p> <p>How many/more/less/same as?</p>	<p>Read and interpret graphs using questions</p> <p>Answer questions based on own picture or own sorted objects</p>	<p>Read and interpret data by counting the number cards in each column and coming to a conclusion</p>	<p>Read and interpret graphs using questions to determine which month has the most birthdays</p> <p>According to the choice of the learners, the colour of the playdough for the week will be, for example, yellow</p> <p>Read and interpret graphs (How many walk, come by taxi, bus, etc.?)</p>

5. U SHUMA NA DATA					
	Thero	KOTARA YA 1	KOTARA YA 2	KOTARA YA 3	KOTARA YA 4
5.1	<p>U kuvhanganya na u vhekanya zwithu</p> <p>Kha vha kuvhanganye na u vhekanya zwithu u ya nga tshidombedzwa tshithihi, sa tsumbo, saizi ya matari</p>	<p>Kha vha divhadze divhaipfi ya u shuma na data:</p> <ul style="list-style-type: none"> - kha vha kuvhanganye na u vhekanya data, sa tsumbo, Hu na vhatukana/ vhasidzana vhangana ngomu kijasini? - kha vha vhekanye data nga u tendela vhagudi vha tshi ima kha muduba wa vhatukana/ vhasidzana 	<p>Kha vha kuvhanganye zwithu (matavhi a saizi/vhulapfu zwo fhambanaho)</p> <p>Kha vha vhekanye zwithu zwo kuvhanganywaho (matavhi)</p>	<p>Kha vha vhudzise mbudziso: 'Madzina a majedere a rathi ndi one a divheswaho?'</p> <p>Kha vha kuvhanganye data u fhindula mbudziso vha tshi shumisa magarata a madzina a vhagudi</p> <p>Kha vha vhekanye magarata a madzina u ya nga tshivhalo tsha majedere kha dzina lijwe na lijwe</p>	<p>Kha vha kuvhanganye data: Ndi maduvha a vhonny a mabebo nga nwedzi ufho?</p> <p>Kha vha vhekanye data u ya nga nwedzi wo teaho wa divha ja mabebo ja mugudi muhwe na muhwe</p> <p>Kha vha kuvhanganye data: sa tsumbo, Ndi ufho muvhala une na u takalela wa suko ya u tambisa?</p> <p>Kha vha nange buloko nthihi yo imelaho muvhala we mugudi a nanga wa suko ya u tambisa u itela vhege</p> <p>Kha vha kuvhanganye data: Ndi lushaka lufho lwa vhuendi lune vhagudi vha lu shumisa u da tshikoloni?</p> <p>Kha vha vhekanye data yo kuvhanganywaho (nga milenzhe, na vhabebi nga modoro, thekhisi kana bisi)</p>
5.2	<p>U imela khuvhanganyo dzo vhekanywaho dza zwithu</p>	<p>Kha vha imele girafu vha tshi shumisa zwithu zwi fareaho</p> <p>Kha vha ite girafu yo imelaho data vha tshi shumisa zwi buloko kana zwi humbeo</p> <p>Kha vha ite girafu ya zwifanyiso</p>	<p>Kha vha ole girafu u itela u fana data (matavhi)</p> <p>Kha vha ole tshifanyiso sa rekhodo ya zwithu zwo kuvhanganywaho</p>	<p>Kha vha ole girafu nga u nambatedza garata ja dzina lijwe na lijwe fhasi ha kholumu yo teaho</p> <p>Kha vha ite girafu ya zwifanyiso</p>	<p>Kha vha ole girafu yo imelaho maduvha a mabebo a vhagudi kha nwedzi muhwe na muhwe</p> <p>Kha vha shumise zwithu zwa vhukuma u ita girafu, u fana na zwi buloko u imela muvhala wa suko ya u tambisa ine vha khou pulana u ita, sa tsumbo, lutombo, tafa, dala</p> <p>Kha vha ole girafu ya tshifanyiso yo imelaho vhagudi vhane vha da tshikoloni nga milenzhe na vha daho nga thekhisi, modoro, bisi</p>
5.3	<p>U haseledza na u vhiga nga ha khuvhanganyo dza zwithu dzo vhekanywaho</p>	<p>Kha vha vhale na u talutshedzelele data vha tshi shumisa suko ya u tambisa u itela u imela tshivhalo tsha vhatukana na vhasidzana vha re ngomu kijasini</p> <p>Kha vha fhindule mbudziso dzo disendekaho kha u vhekanya zwithu ha vhone</p> <p>Ndi matari mangana mahulwane e na ola? Ndi afho a re manzhi: matari mahulwane kana matari matuku? Ndi mangana/manzhi kha/ matuku kha/u fana na?</p>	<p>Kha vha vhale vha pindulele dzigirafu vha tshi shumisa mbudziso</p> <p>Kha vha fhindule mbudziso dzo disendekaho nga tshifanyiso tshavho kana zwithu zwe vha vhekanya vhone vha ne</p>	<p>Kha vha vhale vha talutshedzelele data nga u vhalela tshivhalo tsha magarata kha kholumu inwe na inwe vha kone u swikelela tsho</p>	<p>Kha vha vhale vha talutshedzelele dzigirafu vha tshi shumisa mbudziso u itela u divha uri ndi nwedzi ufho ure na maduvha a mabebo manzhi</p> <p>U ya nga zwe vhagudi vha nanga muvhala wa suko ya u tambisa wa vhege u do vha, sa tsumbo, tafa</p> <p>Kha vha vhale vha talutshedzelele dzigirafu (Ndi vhangana vha daho nga milenzhe, vha daho nga thekhisi, nga bisi, nz?)</p>

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

Nomboro, Tswayo na Vhushaka

U pfesesa nomboro

Vhana vha bveledza zwipfi zwa nomboro na u vhalela nga tshenzhemo yavho ya ñvha liñwe na liñwe. Vha shumisa izwi u thoma u ita vhuṭumani vhukati ha kupfesesele kwa nomboro dzo fhambanaho. Vha tumbula uri nomboro dzi nga shumiswa u fhambana kha nyimele dzo fhambanaho. Sa tsumbo, 'ṭhanu' i nga shumiswa:

- ★ u ṭahisa tshivhalo ('ndi zwingana'): 'Ndi na maḽegere maṭanu.'
- ★ u ṭahisa u tevhekana ha zwithu: 'Ndi muthu wa vhuṭanu kha mutevhe.'
- ★ sa u kala: 'U na miñwaha miṭanu.'
- ★ sa ḽebuḽu: 'Ri dzula kha nomboro ṭhanu.'
- ★ kha u rekanya: ' $2 + 3 = 5$ '

Nomboro ndi mihumbulo kana ñvhaipfi ya vhunzhi (ndi zwingana). Vhagudi vha thoma u pfesesa uri 'ṭhanu' zwi amba uri hu na zwithu zwiṭanu, na uri ṭhanu zwi nga vha vhuimo ha vhuṭanu kha mutevhe, kana 'ṭhanu' i nga ri vhudza uri hu na zwithu zwingana zwi re hone. Nomboro dzi amba mafhungo tiwa o dodombedzwaho nga ha khuvhanganyo na vhunzhi ha zwithu, zwiwo kana nyito.



Figara ya 42 Ṭhalutshedzo dzo fhambanaho dza 'ṭhanu'

Nomboro ndi ñvhaipfi dza khumbulelwa. A si zwithu nga dzone dzine. Dzi ṭalusa zwiñwe nga ha zwiñwe zwithu. Sa tsumbo, u fana na ipfi 'dala' ḽi nga shumiswa u ṭalusa muvhala wa apula, nomboro 'rathi' i nga shumiswa u ṭalusa tshivhalo tsha maapula kha khuvhanganyo. Arali muñwe muthu a vha humbela uri vha mu ḽee phuleithi, vha nga mu ḽea tshithu tsha vhukuma, fhedzi arali muñwe muthu a vha humbela uri vha mu ḽee 'ṭhanu' vha nga si i dobe vha mu ḽea yone. Vha nga humbula

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.

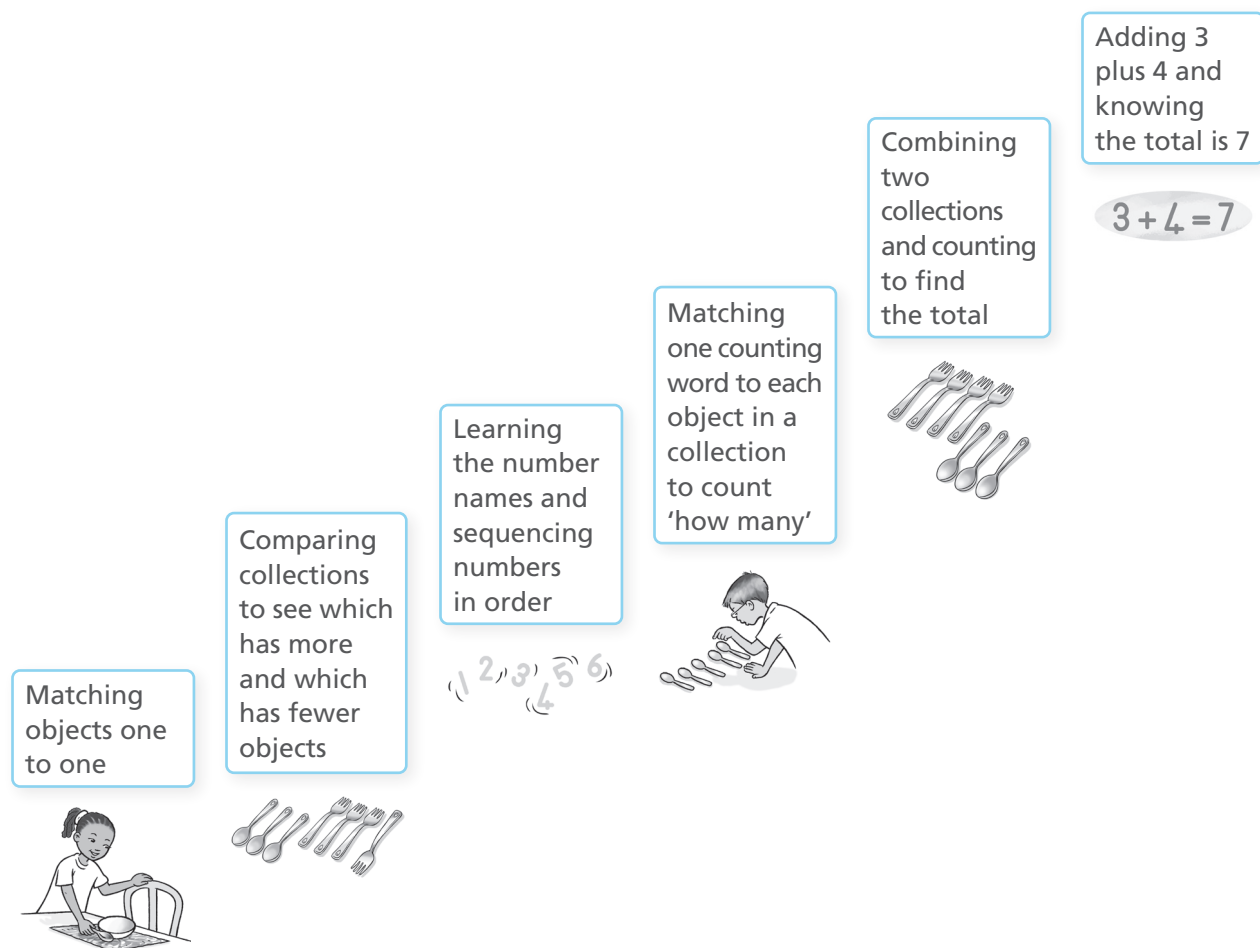


Figure 43 Progression

u mu nea nomboro '5' yo nwalwa kha garaṭa kana vha nga mu nea zwiṭanda zwiṭanu, kana vha sumbedza minwe miṭanu. Zwi a konḡa u sumbedza nomboro yone ine ngauri ndi muhumbulo ṭhohoni dzashu, zwenezwo ri wana nḡila dza u sumbedza kana u imela nomboro, u fana na u shumisa khuvhanganyo ya zwithu, tshifanyiso kana tshiga u fana na nomboro kana ipfi.



Nḡowedzo ...



Kha vha thuse vhagudi u fhaṭa ndivho ntswa ya mbalo na ḡivhaipfi yo ḡisendekaho kha tshenzhemo dzavho dza ḡuvha liṅwe na liṅwe:

- Kha vha wane nḡivhothangeli ya vhagudi musi vha tshi ḡivhadza ḡivhaipfi ntswa ya mbalo.
- Kha vha shumise nyimele dza vhukuma u edzisela ḡivhaipfi ntswa ya mbalo.
- Kha vha ite vhuṭumani vhukati ha nyito dza ḡuvha liṅwe na liṅwe na ḡivhaipfi.
- Kha vha pulane nyito dzine dza fhaṭa kha na u khwaṭhisedza kupfesesele kwa ḡivhaipfi ya mbalo kwa vhagudi.

Figara ya 43 i sumbedza mvelaphanḡa yo leluwaho u bva kha nyito dza ḡuvha liṅwe na liṅwe u ya kha ḡivhaipfi i konḡaho ya nomboro kha Gireidi ya Ṥ. I thoma nga nyito dza ḡuvha liṅwe na liṅwe dzine dza vha na vhuṭumani na nomboro na ḡivhaipfi ya nomboro ya u tou thoma na mvelaphanḡa u ya kha u konḡa ha ḡivhaipfi ya nomboro.

U elanya ipfi liṭhihi la u vhalela na tshithu tshiṅwe na tshiṅwe kha khuvhanganyo u itela u vhalela uri 'ndi zwingana'

U guda madzina a nomboro na u tevhekanya nomboro nga mutevho kwao

U vhambedza khuvhanganyo u itela u vhona uri ndi ifnio ine ya vha na zwithu zwinzhi na i re na zwi si gathi

U elanya tshithu nga tshithu

U ṭanganya khuvhanganyo mbili na u vhalela u itela u wana ṭhanganyelo

U ṭanganya 3 na 4 na u ḡivha uri ṭhanganyelo ndi 7

$3 + 4 = 7$

Figara ya 43 Mvelaphanḡa

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.

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 4.4. 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.

GLOSSARY

represent

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

U imela nomboro

Kha Gireidi ya \bar{T} , vhagudi vha shumisa zwiḡa u **imela** maipfi, zwifanyiso na mihumbulo. Vhana vha thoma u guda u imela mihumbulo kana nyito nga mutambo khumbulelwa, sa tsumbo, zwandḡa zwa mugudi ndi phapha dza bufho musi a tshi nga u khou fhufha u mona na kiḡasi, kana mugudi a nga shumisa tshitibo tsha puḡasiḡiki sa tshiḡereni u reila moḡoro.

Vhagudi vha thoma u imela nomboro nga u shumisa minwe yavho vha kona ha nga zwiḡuku u thoma u shumisa dziḡwe ngona, u fana na zwithu, nyolo, zwifanyiso kana tswayo. Vhagudi vha bvela phandḡa:

- ★ u bva kha u shumisa zwithu zwone zwine u ya kha u imela nomboro, sa tsumbo, tshikavhavhe, maḡegere, dzipenisela, maḡari
- ★ u ya kha u shumisa zwifanyiso kana nyolo u imela zwithu, sa tsumbo, nyolo ya tshikavhavhe, muthu, moḡoro
- ★ u ya kha u shumisa zwa u vhalela u imela zwithu kana zwifanyiso, sa tsumbo, disiki dza puḡasiḡiki u sumbedza tshivhalo tsha zwikavhavhe
- ★ u ya kha u shumisa zwiḡa u imela zwithu na zwifanyiso, sa tsumbo, tshitendeledzi, zwithoma, zwitanda sa zwiḡa
- ★ u ya kha u shumisa tswayo dza nomboro dzo ḡwalwaho na ipfinomboro, sa tsumbo, '2' kana 'mbili'.

Dziḡwe ḡila dzo fhambanaho dza u imela 'ḡhanu'.



Figara ya 44 ḡila dza u imela 'ḡhanu' dzo fhambanaho

Tshakha dza nomboro dzo fhambanaho

Hu na tshakha dzo fhambanaho dza nomboro kha sisiteme ya nomboro. **Kha Gireidi ya \bar{T} ri sedzesa fhedzi kha u pfesesa na u shumisa mbalosa.**

Kha gireidi dza ḡḡha, vhagudi vha ḡo guda uri:

- ★ **mbalosa** dzi katela mbalosa na nomboro mviswa
- ★ **mbalo dzi re na ndivhanele** dzi katela mbalosa, nomboro mviswa, desimala na zwipiḡa.

GUḲOSARI

imela

u shumisa zwithu, tswayo kana nyito u imela mihumbulo kana ḡivhaipfi

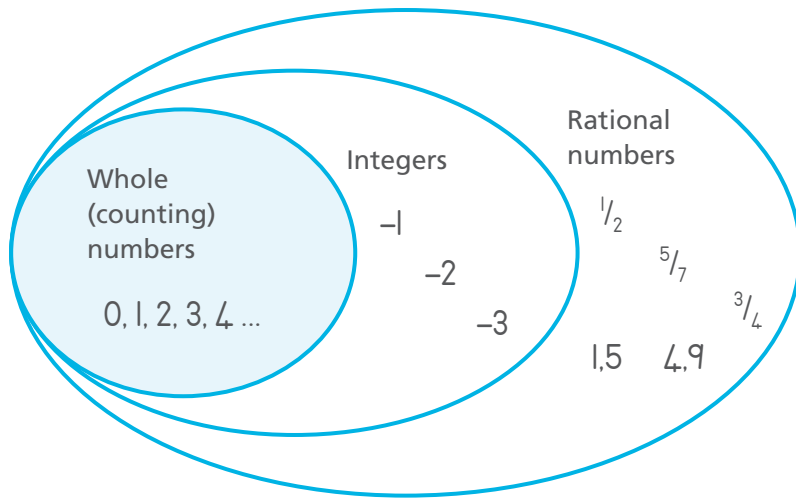


Figure 4.5 In Grade R the focus is on whole numbers.

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.

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.

GLOSSARY

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

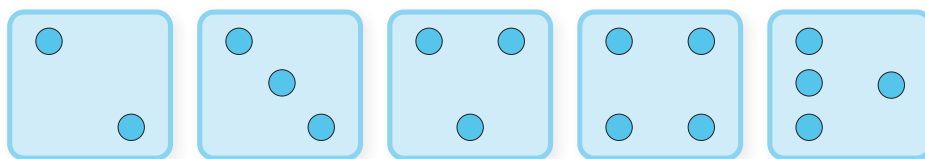
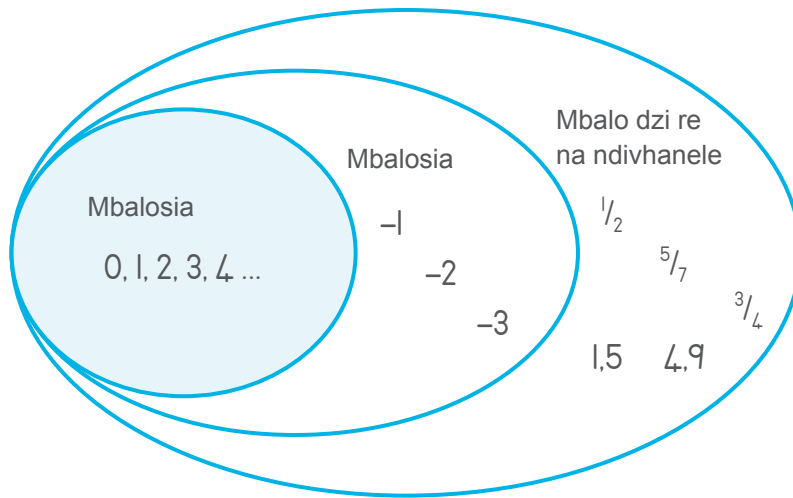


Figure 4.6 Dot arrangements for two, three and four

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.



Figara ya 45 Kha Gireidi ya \mathbb{T} hu sedzeswa mbalosia.

U anganyela

U anganyela zwi katela u vhona nga u \mathbb{T} avhanya, vha songo vhalela, tshivhalo tsha zwithu kha khuvhanganyo \mathbb{T} hukhu. U anganyela ndi tshikili tsha vhana vha \mathbb{T} uku tshine tsha vha hone phanda ha u guda madzina a nomboro kana u guda u vhalela. U anganyela hu vhumba mutheo wa u vhalela khuvhanganyo dza zwithu na u rekanya vha tshe vha \mathbb{T} uku.

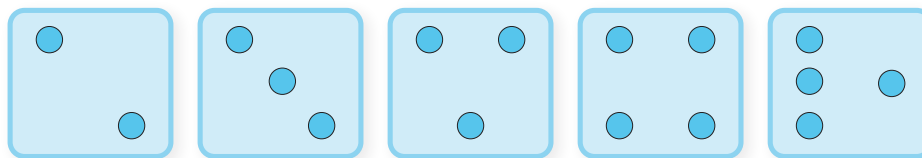
U anganyela nga u vhona u \mathbb{T} avhanya u songo vhalela

U anganyela nga u vhona u \mathbb{T} avhanya u songo vhalela ndi vhukoni ha u \mathbb{T} avhanya u vhona tshivhalo tsha zwithu kha khuvhanganyo \mathbb{T} hukhu. Vhana vha \mathbb{T} uku vha kona u vhona phambano vhukati ha tshivhalo tsha zwithu kha khuvhanganyo, vha songo vhalela, nahone vha nga amba uri ndi zwi \mathbb{T} hio zwinzhi kana zwi si gathi vha sa \mathbb{T} ivhi madzina a nomboro kana tswayo. Kanzhi, vha nga shumisa minwe yavho u elanya na u sumbedza tshivhalo tshi fanaho tsha zwithu. Nga zwi \mathbb{T} uku vha guda u elanya madzina a nomboro kha khuvhanganyo vha kona u bula, vha songo vhalela, uri hu na tshithu tshithihi, zwiraru, zwi \mathbb{T} hili, zwi \mathbb{T} anu kha khuvhanganyo. Ulwu lushaka lwa u anganyela lu konadzea fhedzi nga tshivhalo tshi \mathbb{T} uku tsha zwithu nahone vhana vhanzhi na vhaaluwa vha kona u ita izwi u swika kha \mathbb{T} hanu.

GULOSARI

u anganyela

vhukoni ha muhumbulo ha u \mathbb{T} avhanya u vhona \mathbb{T} hanganyelo ya zwithu kha khuvhanganyo hu songo vhalelwa



Figara ya 46 Nzudzanyo ya zwithoma u itela zwi \mathbb{T} hili, zwiraru na zwi \mathbb{T} ana

U anganyela nga zwi \mathbb{T} ana

Kha Gireidi ya \mathbb{T} vhukoni ha mugudi ha u vhona uri ndi zwithu 'zwingana' zwi re hone kha u engedzea ha khuvhanganyo. I nga engedzea u ya kha zwi \mathbb{T} halo zwi fira \mathbb{T} o \mathbb{T} hanu nga u shumisa zwi \mathbb{T} anyiso u fana na nzudzanyo ya zwithoma kha daisi, domino na fureme dza fumi.

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

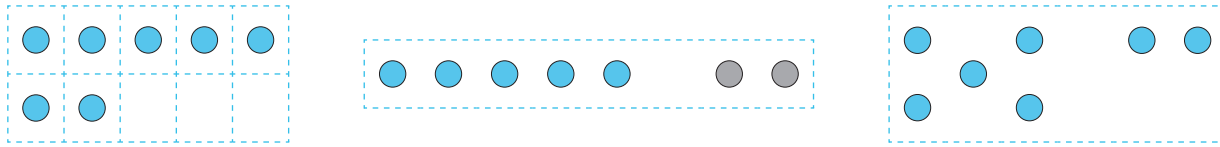


Figure 47 Dot arrangements for seven

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.

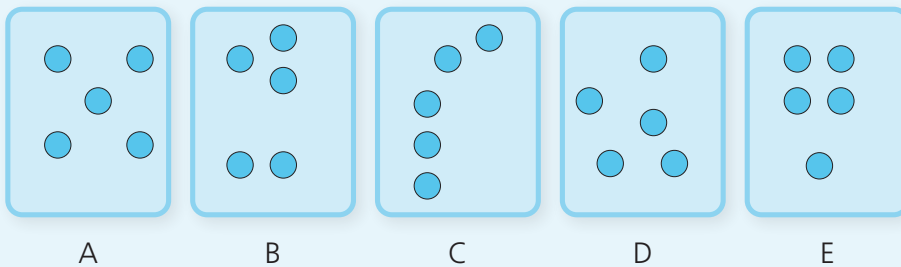


Figure 48 Dot cards

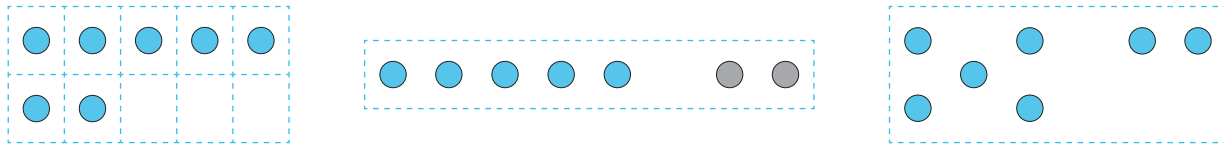
Activities such as dominoes and dice games provide fun opportunities to practise subitising skills.

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'.

Kha tsumbo dzi re afho fhasi, nga u shumisa u anganyela ha zwiḡa vhaḡudi vha nga ṭavhanya u vhona uri liṅwe na liṅwe la magaraṭa aya li sumbedza zwithu zwa sumbe.



Figara ya 47 Nzudzanyo dza zwithoma u itela sumbe

U engedzea uhu ha u anganyela hu vhidzwa upfi u anganyela ha zwiḡa. Ho ḡisendeka kha ṅḡivho ya tshipiḡa tsha tsho fhelelaho nahone hu konisa vhaḡudi u ṭavhanya u topola nomboro khulwane kha ṭhanu.



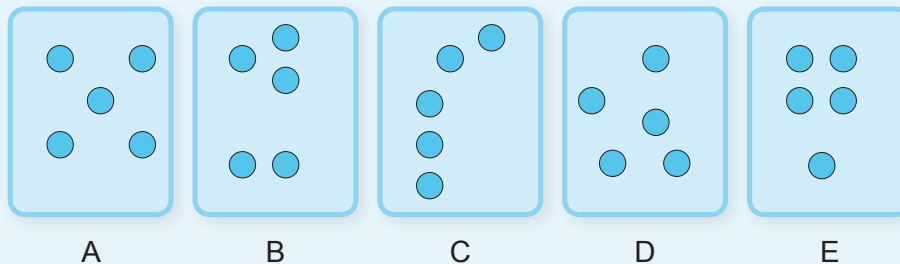
Nḡowedzo ...



Vhaḡudi vha ḡiphiṅa nga u tamba mitambo ine ya katela u ṭavhanya u sumbedza tshivhalo tshiṭuku tsha zwithu phanḡa ha musi zwi tshi dzumbiwa, ha kona u vhudziswa uri zwo vha zwi zwingana. Mitambo ya u elanya na u vhalela i ḡo pfumbisa u anganyela, sa tsumbo, u kona u vhona tshivhalo tsha zwithu kha tshigwada tshiṭuku muthu a songo zwi vhalela. Izwi zwi ḡo thusa vhaḡudi nga u rwela ngomani phaṭhekanyo ya nomboro u swika kha fumi na murekanyo wa u ranga (u ṭanganya na u ṭusa).

Magaraṭa a zwithoma a nga shumiswa u:

- ṅea nzudzanyo dza nomboro dzo fhambanaho u bva kha thihi u ya kha ṭhanu
- tikedza mveledziso ya u vhona nomboro ṭhukhu
- anḡanya madzina a nomboro na khuvhanganyo ṭhukhu
- elanya zwa u vhalela na zwithoma.



Figara ya 48 Magaraṭa a zwithoma

Mitambo i fanaho na domino na mitambo ya daisi i ṅetshedza zwikhala zwi mvumvusaho u ita ṅdowendowe ya zwikili zwa u anganyela.

U vhalela

U vhalela ndi tshikili tshi konḡaho tshine tsha ṭoḡa ṅdowendowe nnzhi. Vhaḡudi vha tshi bveledza zwenezwi vha tshi khou ita ṅdowendowe ya u vhalela zwithu zwa vhukuma. Tshifhinga tshinzhi vha thoma nga u edzisela u vhalela ha vhaḡudi vhaḡulwane na vhaaluwa.

Hu na nyito mbili dzi katelaho u vhalela. Ya u thoma ndi u vhalo ha mutsevhetisindo kana u vhalo nga ṭhoho hune ha katela u rwela ngomani madzina na u tevhekana ha u vhalela nomboro, kanzhi kha tshidade kana luimbo. Ya vhuvhili ndi u vhalela zwithu nga tshithihi nga tshithihi u wana uri 'ndi zwingana'.

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'.

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.

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'

U vhala ha mutevhetsindo

Kha Gireidi ya \bar{T} , vhagudi vha guda u tevhokana ho teaho ha madzina a nomboro vha dovholola u tevhokana uho \bar{d} uvha \bar{l} inwe na \bar{l} inwe, vha tshi vhalela n̄tha. Lushaka ulwu lwa **u vhala ha mutevhetsindo** lu vhidzwa hafhu **u vhalela nga u dovholola kana nga \bar{t} hoho**. Ndivho ya u vhalela n̄tha ndi u thusa vhagudi u pfesesa uri musi ri tshi vhalela, hu na u tevhokana ho tiwaho u itela madzina a nomboro, u thoma kha thihi, ha kona u tevhela mbili, raru, in̄a. Mathomoni, vhagudi a vha pfesesi zwine madzina a nomboro a amba zwone nahone vha nga pfuka nomboro kha mutevhe wa u vhalela.

U renda tshidade kana mutevhe wa nomboro nga mulomo zwi amba u dovholola nomboro u bva muhumbuloni. Na musi vhagudi vha tshi vhalela nga maga a mbili, \bar{t} hanu na fumi vha khou shumisa n̄divho yavho ya u tevhokana ha nomboro. U guda madzina a nomboro na u dzi dovholola nga u tevhokana ho teaho a zwi ambi uri vhagudi vha nga vhalela. Izwi zwo fhambana na u vhalela u wana uri zwithu 'ndi zwingana'.

U vhalela zwithu

U vhalela zwithu zwi vhidzwa hafhu **u vhalela hu vhambedzaho**. Izwi zwi amba uri zwithu kana zwiwo zwi elanywa na dzina \bar{l} a nomboro. U vhalela uri 'ndi zwingana', vhagudi vha fanela u zwi \bar{d} ivha uri tshithu tshin̄we na tshin̄we kha khuvhanganyo tshi wana dzina \bar{l} a nomboro ('thihi, mbili, raru, in̄a ...') na uri ni nga vhalela tshithu tshin̄we na tshin̄we luthihi fhedzi.

Nga vhunzhi ha nyito dza u ita vhone vhane na u rangwa phanda nga mugudisi, vhagudi vha thoma u pfesesa na u shumisa milayo i tevhelaho ya u vhalela:

- 1. Mulayo wa u livhanyisa tshithu nga tshithu:** U elanya thihi, nahone thihi fhedzi, u vhalela maipfi kha tshithu tshin̄we na tshin̄we kha khuvhanganyo tshi no khou vhaliwa. Mathomoni vhagudi vha nga vhalela tshithu tshithihi luvhili, u pfuka tshithu kana u hangwa uri ndi zwithu zwifhio zwo no vhaelwaho. Zwi nga thusa vhagudi u kwama na u sudzulusa zwithu zwenezwi vha tshi vhalela.
- 2. Mulayo wa u vhalela na vhunzhi:** Madzina a nomboro a dzulela u dzudzanywa nga u tevhokana hu fanaho hu sa shanduki, sa tsumbo, thihi i tevhelwa nga mbili, mbili i tevhelwa nga raru, raru i tevhelwa nga in̄a, ngauralo ngauralo.
- 3. Mulayo wa nomboro ya u vhaelwa lwa u fhedza:** Dzina \bar{l} a nomboro ye ya bulwa lwa u fhedza musi hu tshi vhaelwa khuvhanganyo \bar{l} i imela \bar{t} hanganyelo ya nomboro kha khuvhanganyo.
- 4. Mulayo wa u vhalela khuvhanganyo i fareaho na i sa farei:** Vhagudi vha pfesesa uri naho hu na uri zwigwada zwi re na tshivhalo tshi fanaho tsha zwithu zwi tshi vhone zwo fhambana (sa tsumbo, n̄dirivhe \bar{t} hanu, vathu vha \bar{t} hanu, n̄ndu \bar{t} hanu) zwo \bar{t} he zwi na tshivhalo tshi fanaho, ' \bar{t} hanu' khazwo. Vha a kona u zwi vhone uri u vhalela hu nga shumiswa kha zwithu, zwifanyiso, mivhala, zwivhumbeo, kana nyito kana mibvumo.
- 5. Mulayo wa u sa vha na ndeme ya u tevhokana:** U tevhokana ha u vhalela zwithu kha khuvhanganyo a zwi na ndavha. Vhagudi vha fanela u pfesesa uri n̄dila in̄we na in̄we ine ra dzudzanya zwithu, tshivhalo tsha \bar{t} hanganyelo ya zwithu kha khuvhanganyo tshi dzula tsho ralo.

GUḶOSARI

u vhala ha mutevhetsindo/u vhalela nga u dovholola/u vhalela nga \bar{t} hoho

u vhalela n̄tha, u bula nomboro nga u tevhokana ho teaho

u vhalela hu vhambedzaho

u vhalela zwithu u wana uri 'ndi zwingana'



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.

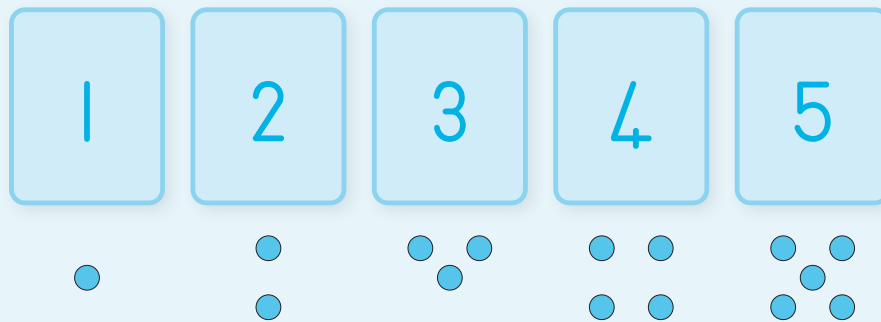
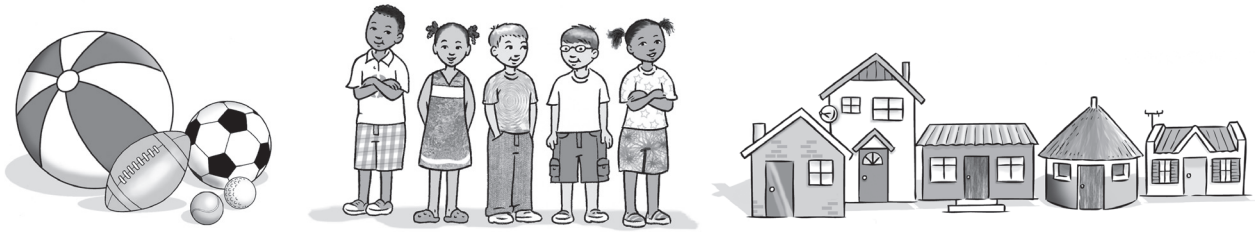


Figure 50 Counters represent number quantities in order.

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.



Figara ya 49 Tsumbo ya mulayo wa u vhalela khuvhanganyo i fareaho na i sa farei




Musi vhagudi vho no pfesesa nahone vha tshi kona u shumisa milayo iyi miṭanu ya u vhalela yoṭhe, ri nga ri nga fulufhelo vha a kona u vhalela.

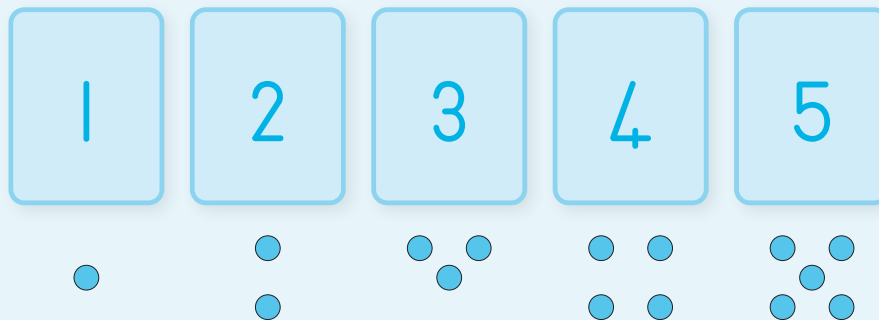


Nḁowedzo ...



Nga nḁowedzo, vhagudi vha pfesesa uri u vhalela hu nga shumiswa u vhambedza khuvhanganyo dza zwithu. Musi vhagudi vha tshi ḁivha u tevhekana ha u vhalela kana mutevhekanyo wa u vhalela nomboro vha:

-  thoma u pfesesa uri nomboro iṅwe na iṅwe kha u tevhekana ha u vhalela ndi khulwane kha ya murahu nahone ndi ṭhukhu kha nomboro ine ya khou tevhelela.
-  nga u vhambedza ṭhohoni nomboro vha vhona uri mbili i fhira thihi nga thihi, na uri raru i fhira mbili nga thihi.
-  vhona uri nomboro dzi gonya nga thihi tshifhinga tshiṅwe na tshiṅwe na uri nomboro iṅwe na iṅwe kha u tevhekana ha u vhalela ndi thihi kokotolo u fhira nomboro ya murahu.



Figara ya 50 Zwa u vhalela zwi imela vhunzhi ha nomboro kha mutevhekano.

Nyanganyelo

Naho u vhalela hu nga ha u wana tshivhalo kokotolo tsha zwithu kha khuvhanganyo, vhagudi vha fanela hafhu u bvedza zwikili zwa nyanganyelo u itela uri vha kone u ri 'hone' hu nga vha hu na zwithu zwingana kha khuvhanganyo. Vha fanela u kona u shumisa mathemo a fanaho na 'zwinzhi', 'zwi si gathi', 'zwinzhisa', 'zwinzhisesa' kana 'u fana na'. Nyanganyelo ndi musi vhagudi vha tshi shumisa kupfesesele kwavho kwa nomboro uri vha kone u hambulela kwao nga ha vhunzhi na zwiḁhalo ngeno vha tshi kona u vhona uri u anganyela a zwo ngo fanela u tou vha zwone kokotolo. Vhagudi vha anzela u sa funa u hambulela nga maṅḁesa arali zwo khakhea kana zwi si zwone.



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.

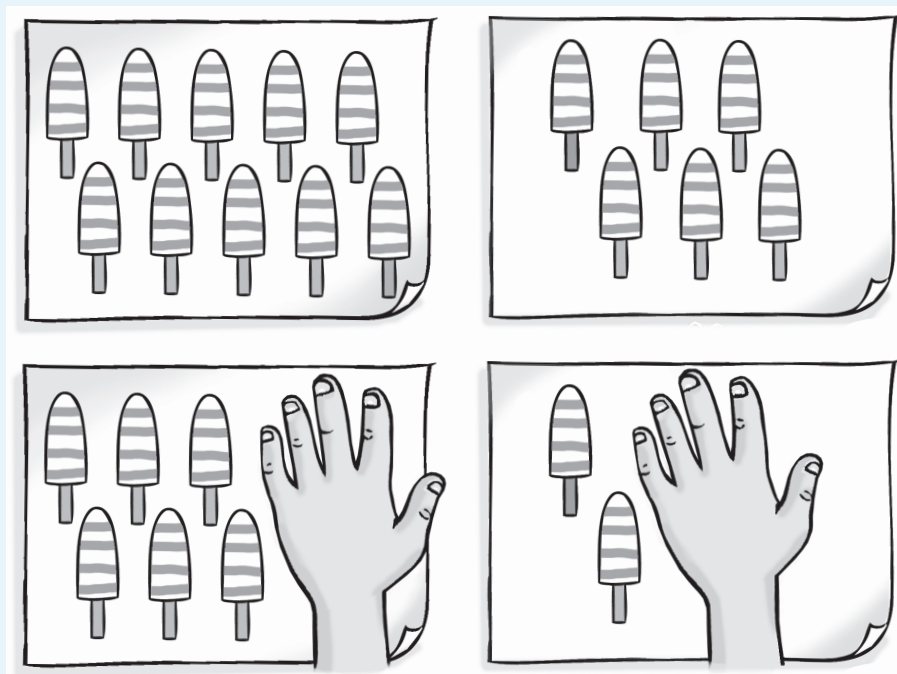


Figure 51 Estimating based on the visual image that is seen

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'.

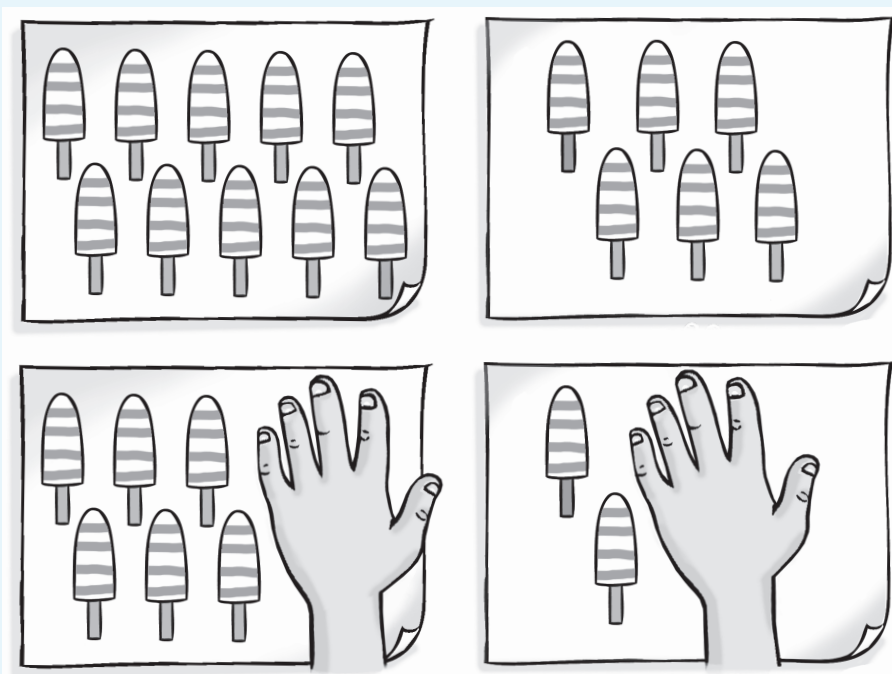


Ngowedzo ...



Naho vhagudi vha nga vha vha sa athu kona u vhalela tshivhalo tsha zwithu lwa tshoṱhe, vha nga wana phindulo nga nyanganyelo.

-  Zwo ḡisendeka nga tshifanyiso, vhagudi vha nga vhona uri hu na zwithu zwinzhi kha tshifanyiso. Vha nga bula uri ndi tshifhio tshi re na zwinzhi kana tshi re na zwi si gathi.
-  Vhagudi vha nga wana phindulo nga u shumisa u elanya tshithu nga tshithu kha zwithu u bva kha khuvhanganyo mbili u itela u vhambedza uri ndi khuvhanganyo ifhio ine ya vha na zwinzhisesa nahone ndi ifhio i re na zwiṱukusesa.
-  Vhagudi vha nga vhambedza tshivhalo tsha zwithu kha zwifanyiso zwihili nga u ola mutalo u mona na tshivhalo tsha zwithu zwi fanaho kha tshifanyiso tshiṱwe na tshiṱwe.
-  Vhagudi vha nga shumisa hafhu zwandḡa zwavho u vhala tshivhalo tsha zwithu, sa tsumbo, aisikhirimu nḡa kha tshifanyiso tshiṱwe na tshiṱwe. Zwi ḡo vha khagala uri hu na aisikhirimu nnzhi dzi songo vhalwaho kha tshifanyiso tsha u thoma.



Figara ya 51 U anganyela ho ḡisendeka kha tshifanyiso tshi vhonehalaho

Nomboro thevhekano

Nomboro thevhekano dzi shumiswa u ṱalusa fhethu kana vhuimo ha muthu kana tshithu, sa tsumbo, kha mutevhe kana ḡaini. Vhagudi vha pfesesa uri arali vha gidima mbambe a vha fhedzi vhe kha 'raru' vha fhedza vhe kha vhuimo ha 'vhurarur'. Nga nḡila yeneyo nthihi, vha a zwi ḡivha uri a vha imi kha mutevhe sa 'thihi' fhedzi vha ima sa wa 'u thoma'.



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).



Figara ya 52 Vhuimo ha u thoma, ha vuvhili na ha vhuraru

U rekanya

U pfesesa havhuḡi ha nomboro na u vhalela ndi zwa ndeme kha u guda marekanye. Vhagudi vha fanela u thoma u pfesesa vhushaka vhukati ha nomboro: mbambedzo, thevhekano na u khethekanya (u kwashekanya na u fhaḡa nomboro) u itela u guda mashumele a nomboro, u fana na u ḡanganya, u ḡusa, u andisa na u kovha.

Nyito na tshenzhemo dzine dza katela u kwashekanya na u fhaḡa nomboro, dzi ḡanganywaho na u vhambedza khuvhanganyo ndi mathomo a ḡivhaipfi ya u ḡanganyiswa (u ḡanganya) na u fhambanya (u ḡusa). Vhagudi vha Gireidi ya T vha dovha hafhu u ḡaniwa kha u ḡanganya na u ḡusa nga tshifhinga tsha mitambo na nyito dzavho dza ḡuvha liḡwe na liḡwe, sa tsumbo, musi vha tshi tamba mutambo wa 'u renga' vhoḡhe kana vha tshi fanela u kovhana zwitambiswa. Kha u ḡusa, vhagudi vha fanela u shela mulenzhe kha nyito dza vhukuma dzi katelaho 'u bvisa', nga maḡwe maipfi, u wana uri ndi zwingana zwo salaho kha khuvhanganyo ya zwithu musi zwiḡwe zwo bviswa. Mathomoni vhagudi vha ḡo shumisa maano a u vhalela u tandulula thaidzo dzi katelaho u ḡanganya kana u ḡusa, sa tsumbo, u vhalela zwithu zwoḡhe kha khuvhanganyo mbili u itela u swikelela ḡhanganyelo ya tshivhalo musi khuvhanganyo mbili dzo ḡanganyiswa, kana u vhalela uri ho sala mangwende mangana musi maḡwe o ḡewa vhaḡwe.


U andisa, u kovha na zwipiḡa a zwi funzwi lwa fomaḡa kha Gireidi ya T , fhedzi vhagudi vha shumisa ḡivhaipfi idzi musi vha tshi tandulula thaidzo dzi katelaho u vhumba zwigwada zwa zwithu na musi vha tshi kovhana zwiḡwe zwithu nga ḡdila ya u eḡana. Nyito dzine dza katela ndovhololo ya u ḡanganya na ndovhololo ya u ḡusa dzi vha mutheo wa ḡivhaipfi dza muandiso na u kovha. Nyito idzi dzi dovha dza thusa u tumbula vhushaka vhukati ha u ḡanganya na u andisa, na u ḡusa na u kovha, zwine zwa fanela u pfesesa miḡwahani iḡaho henefha tshikoloni.



Nḡowedzo ...



Kha vha ḡee vhagudi thaidzo dzine dza tandula u vhumba zwigwada zwi eḡanaho na u kovhana hu eḡanaho, sa tsumbo:

 Kha vha humbele vhagudi vhararu uri muḡwe na muḡwe a dzhie zwa u vhalela zwivhili. Vhoḡhe kha vha vhalele ḡhanganyelo ya tshivhalo tsha zwa u vhalela, sa tsumbo, mbili na mbili ndi iḡa na mbili ndi rathi (ndovhololo ya u ḡanganya).

- 👉 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.

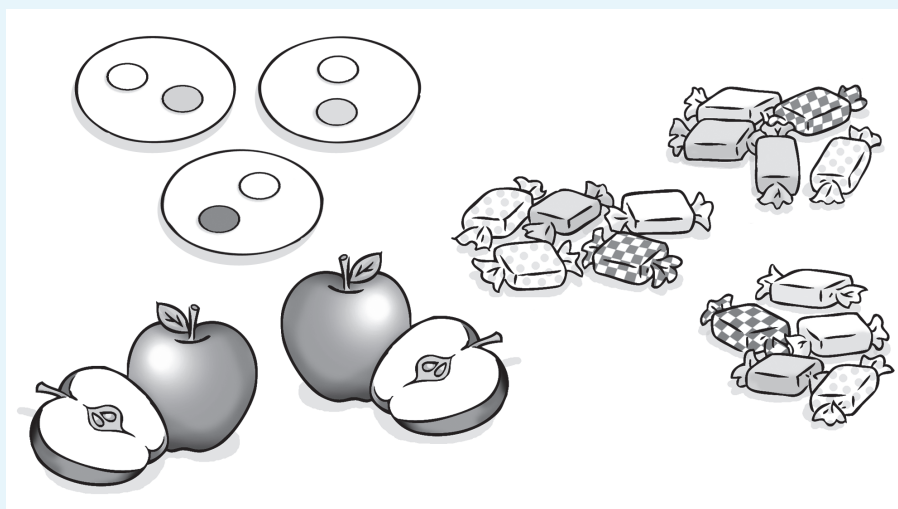
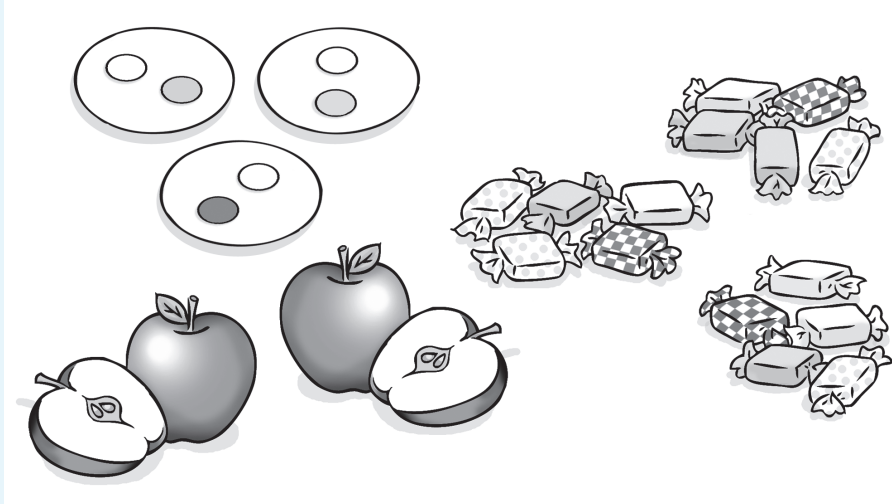


Figure 53 Using objects for calculations

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?

- ✋ Kha vha vhee zwa u vhalela zwa rathi kha methe. Kha vha bwise zwivhili nga tshifhinga tshithihi vha tshi amba vha tshi ri, 'rathi ra bvisa mbili ndi iṅa, ra bvisa mbili hu sala mbili nahone ra bvisa mbili a hu sali tshithu' (ndovhololo ya u ṭusa).
- ✋ Kha vha ṅee vhagudi zwitendeledzi zwo gerwaho. Kha vha vha humbele u ita zwigwada zwi eḁanaho kha tshitendeledzi tshiṅwe na tshiṅwe vha tshi shumisa zwa u vhalela, sa tsumbo, zwivhili kha tshitendeledzi tshiṅwe na tshiṅwe.
- ✋ Kha vha humbele vhagudi u kovhana zwithu vhukati havho nga ṅḁila ya u eḁana, sa tsumbo, kha vha kovhane zwa u vhalela zwa 15 vhukati ha vhagudi vhararu.
- ✋ Kha vha humbele u kovhana zwithu hune tshithu tsho salaho tsha ḁo kovhiwa, sa tsumbo, kha vha kovhe maapula mavhili nga ṅḁila ya u eḁana vhukati ha vhagudi vhararu.



Figara ya 53 U shumisa zwithu u itela u rekanya

Mbudziso dza u vhudzisa kha Nomboro, Tswayo na Vhushaka

- Ni nga dzudzanya izwi nga iṅwe ṅḁila?
- Hu na zwingana?
- Ndi zwingana zwine ni nga vhala?
- Ndi nnyi a re na zwinzhi/zwi si gathi?
- Ndi nomboro ifhio iḁaho phanḁa ha ...? Ndi nomboro ifhio iḁaho nga murahu ha ...? Ndi nomboro ifhio i re vhukati ha ... na ...?
- Ndi zwifhio zwiṅwe zwi re kha itshi tshigwada?
- Arali ra kovhana izwi nga ṅḁila ya u eḁana vhukati hashu, muṅwe na muṅwe washu u ḁo vha na zwingana?
- Arali nda vala zwiṅwe zwa izwi, ndi zwingana zwo dzumbiwaho?
- Ndi nomboro ifhio iyi? (vha tshi khou sumbedza garaṭa ya nomboro kana nomboro yo tou ṅwalwaho)
- Ni nga vhekanya magariṭa a nomboro nga u tevhekana ho teaho?
- Ndi nnyi o imaho mathomoni, wa vhuvhili ...?
- Arali ni na zwivhili zwa izwi, nda ni ṅea zwiṅwe zwivhili, ni ḁo vha na zwingana?
- Arali ndi na zwiraru zwa izwi, nda ni ṅea tshithihi, ndi ḁo sala na zwingana?

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

Divhaipfi ya Nomboro, Tswayo na Vhushaka

U vhalela na u vhona nomboro

- u elanya, u vhekanya, u vhambedza
- nomboro
- thihi, mbili, raru ... fumbili na u fhira
- a hu na, a hu na tshithu, pumu, noto
- ndi zwingana ...?
- u vhalela u swika kha
- u vhalela (u bva kha, u ya kha)
- u vhalela murahu (u bva kha, u ya kha)
- u vhalela nga nthihi nthihi, mbili mbili ... mahumi ...
- zwinzhi, zwo vhalaho, zwi si gathi, zwiṭukusa
- zwi si gathi kha, zwiḥulwane kha, zwinzhisesa, zwiṭukusa
- zwinzhisa, zwi si gathisa, zwo eḍana, a zwo ngo eḍana
- tshiṅwe na tshiṅwe
- tshigwada, khuvhanganyo
- zwo ṭoḍou swika, tsini na, zwo ṭoḍou fana na
- ho sala zwingana, zwo salaho
- u fhira nga zwiṭuku, zwi fhasi nga zwiṭuku

U vhambedza na u tevhekanya nomboro

- u elanya, u vhekanya, u vhambedza, u tevhekanya
- tshivhalo tshi fanaho sa, zwinzhi sa
- tshithihi hafhu, zwivhili hafhu, ...
- tshithihi tsho bviswaho, zwivhili zwo bviswaho, ...
- phanḁa ha, murahu ha, zwi tevhelaho, tsini ha, vhukati
- tsha u thoma, tsha vhuvhili, tsha vhuraru ... tsha vhufumi
- tsha u fhedzisela, tsha phanḁa ha, tsha murahu ha

Kha zwithu/zwivhalo **zwivhili**: tshihulwane, zwinzhi, zwiḥulwane, zwiḥulusa, tshiṭuku, zwiṭukusa, tshiṭukusa

Kha zwithu/zwivhalo **zwiraru**: tshihulwanesa, zwinzhisesa, zwiḥulwanesa, zwiḥulusesa, tshiṭukusa, zwiṭukusesa, tshiṭukusesa

Mashumele nga nomboro

U ṭanganya na u ṭusa

- u elanya, u vhambedza
- u engedza, zwinzhi, na
- vhoṭhe, zwo ṭangana zwoṭhe
- u ita kavhili/hafu
- tshithihi nṭha, zwivhili nṭha, ...
- hu nga engedzwa zwiṅwe zwingana ...?
- ndi zwiṅwe zwingana zwi ... u fhira ...?
- ra bvisa, u ṭusa
- ra bvisa tshithihi, ra bvisa zwivhili, ...
- ho sala zwingana?
- phambano vhukati ha

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

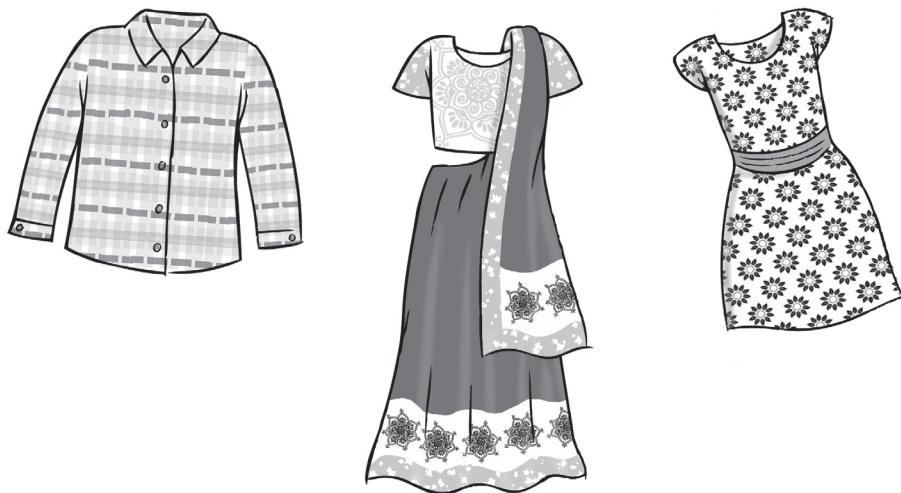


Figure 54. Patterns in clothes

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

U andisa na u kovha

- dzikhuvhangano, zwigwada zwa zwivhili, zwiraru, ...
- u kovhana zwavhuḍi/nga u eḍana
- u kovhana, u kovha vhukati ha
- u kovhana tshithihi/zwi fhiraho tshithihi nga tshifhinga tshithihi
- tshi fana na, tsho fhambana na
- ho sala zwingana, zwo salaho

U eḍana na

- u elanya, u vhambedza
- u fana kokotolo
- u fana na, u fhambana na
- tshi ita
- zwi eḍana na
- zwigwada zwi eḍanaho

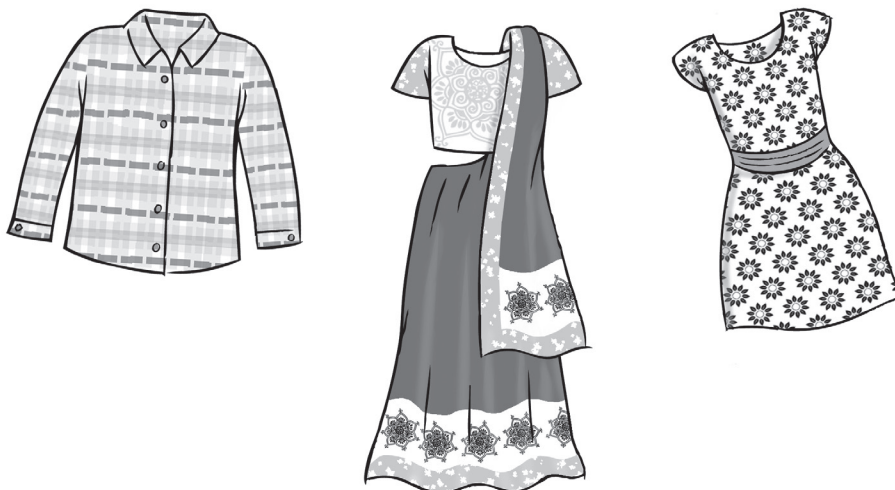
U anganyela

- u elanya, u vhambedza
- humbulelani uri ndi zwingani; anganyelani
- zwi ṭoḍou eḍana na, zwi tsini na
- zwi ṭoḍou fana na
- fhasinyana ha, nṭhanyana ha
- ndi zwinzhisa, ndi zwi si gathi, zwo eḍana, a zwo ngo eḍana

Phetheni, Fankisheni na Aḷdzhebura

Phetheni ndi zwoṭhe u mona na riṇe. Vhana vha ṭangana na phetheni na **tevhhekano** kha vhuḍifari ha vthathu, kha nḍowelo dza ḍuvha liṇwe na liṇwe, maḍuvha a vhege, miṇwedzi ya ṇwaha, kha mutevheṭhandu wa mutsho, kha muzika na vhutsila, na kha vhupo ha u fhaṭa. Sa tsumbo:

- ★ zwiambaro



Figara ya 54 Phetheni kha zwiambaro

GUḶOSARI

phetheni

tevhhekano yo ḡoweleaho ya zwithu, misudzuluwo kana zwiwo zwine zwa dovhoolola nga nḍila i humbuleleaho

tevhhekano

u tevhhekana tiwa hune zwithu, misudzuluwo kana zwiwo zwa tevhelana ngayo

★ buildings

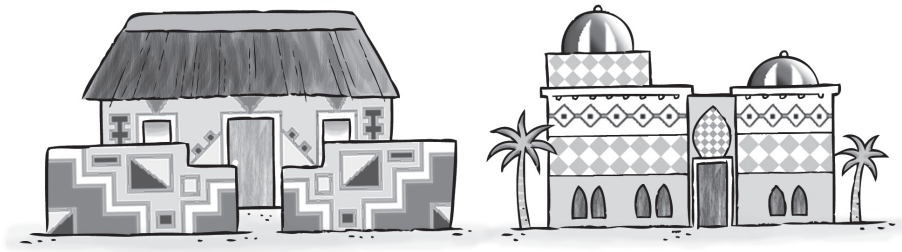


Figure 55 Patterns in buildings

★ nature

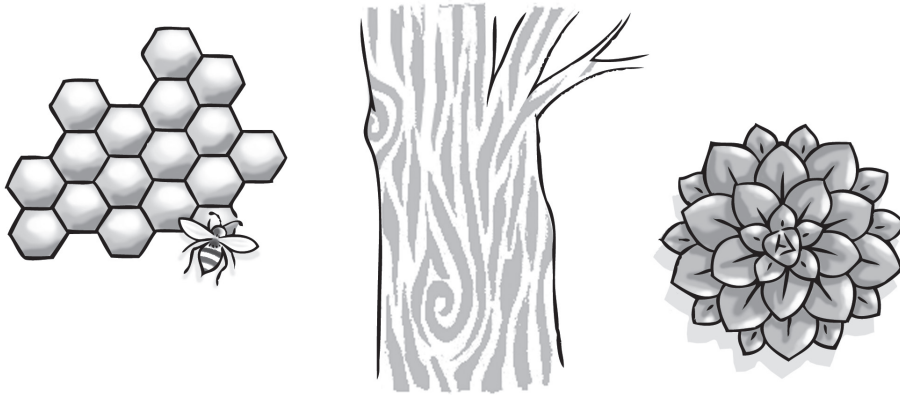


Figure 56 Patterns in nature

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.

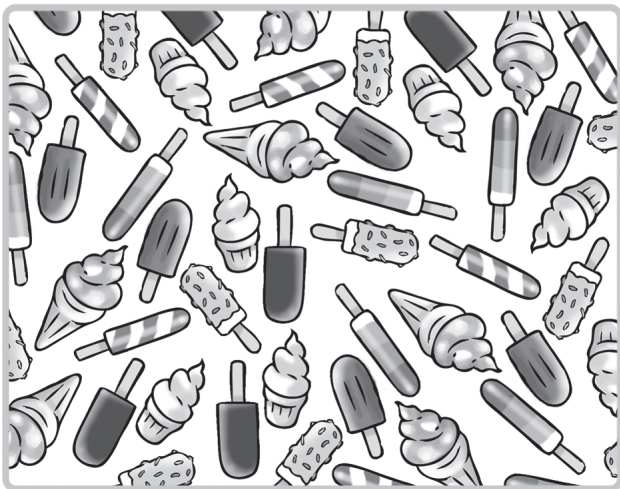
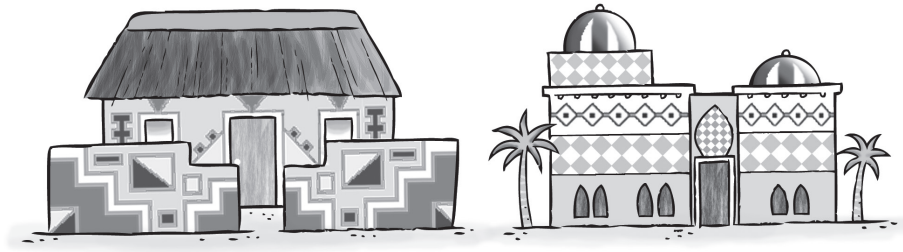


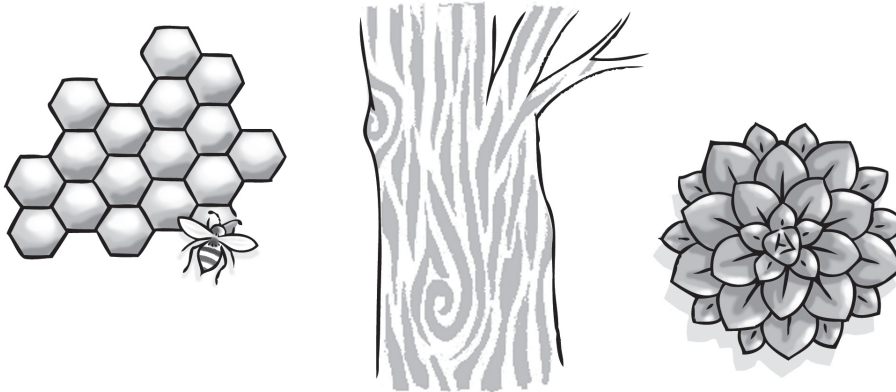
Figure 57 Irregular patterns

★ zwifhato



Figara ya 55 Phetheni kha zwifhato

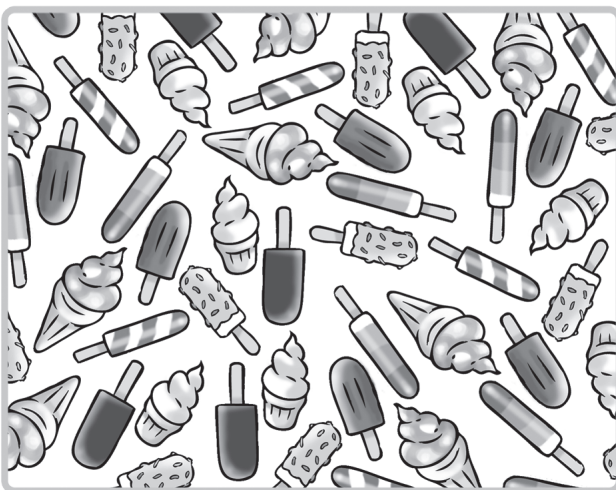
★ mupo



Figara ya 56 Phetheni muponi

U topola phetheni

Vhana vhaṭuku vha anzela u sedzesa muvhala na u kunga ha tshifanyiso kana tshithu, sa tsumbo, tshipiḡa tsha bammbiri ḡa u putela, nahone vha ḡo ri ḡi na 'phetheni dzo nakaho'. Vhunzhi ha idzi phetheni ndi **phetheni dzi songo dowelehaho**. Ri nga kona u vhona uri hu na ndovhololo ya zwithu, mivhala kana zwivhumbeo fhedzi ri nga si bule uri ndovhololo iyi i khou shuma hani.



Figara ya 57 Phetheni dza maphinde

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

Vhagudisi vha fanela u ita uri vhagudi vha dzhiele nzhele phetheni dza ngomu na nnda ha kiasirumu. Sa tsumbo, kha vha sumbedze uri zwidina kha luvhondo zwo dzudzanywa hani, dzithaila dzo thailaho luḡila kana makolo kha phukha.



Figara ya 58 Phetheni u mona na riḡe

Kha phetheni dzo dowealeho ri kona u vhona uri **miraḡo ya sethe** kha phetheni yo dovhololwa hani nahone ri kona u vumba u tevhekana kana thevhekano ine phetheni ya ḡo tevhela, sa tsumbo, kha phetheni i re afho fhasi ri kona u vhona uri tshitendeledzi na tshikwea zwo dovhololwa nahone ri nga vumba uri tshivhumbeo tshi tevhelaho kha thevhekano tshi ḡo vha tshitendeledzi, tsha tevhelwa nga tshikwea, ngauralo ngauralo.

GUḲOSARI

miraḡo ya sethe
zwithu, misudzuluwo kana zwiwo kha phetheni



Figara ya 59 Phetheni ya tshitendeledzi, tshikwea

Kha Gireidi ya T, vhagudi vha nga kona u vhona phetheni fhedzi vha si kone u topola kana u ḡalusa 'zwo vhumbaho phetheni'. Vhagudisi vha nga thusa vhagudi u topola phetheni nga u vha vhudzisa uri phetheni tiwa yo vhumbwa ngani na uri miraḡo ya sethe yo tevhekanywa hani. Sa tsumbo, kha phetheni i re afho nḡha: 'Ndi tshivhumbeo tshifhio tsha u thoma? Ndi tshivhumbeo tshifhio tshi tevhelaho? Ndi tshivhumbeo tshifhio tshine na humbula uri hu ḡo tevhela tshone?'

Tshaka dzo fhambanaho dza phetheni

Phetheni dza dzhomeḡiri

Phetheni ya dzhomeḡiri ndi phetheni ine yo itwa nga mitalo na zwiivhumbeo zwa dzhomeḡiri zwine zwo dzudzanywa nga u tevhekana hu dovhololaho, sa tsumbo, rombasi, ḡhofundeina, tshikwea kana khudaḡhanu. Phetheni dza dzhomeḡiri dzi nga wanala hoḡhe u mona na riḡe, sa tsumbo, kha thaili dza fuḡoro na kha mabambiri a u putela.



Figara ya 60 Phetheni dza dzhomeḡiri

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.

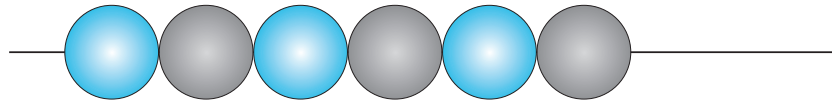


Figure 61 AB pattern

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

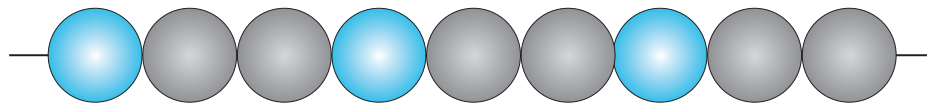


Figure 62 ABB pattern

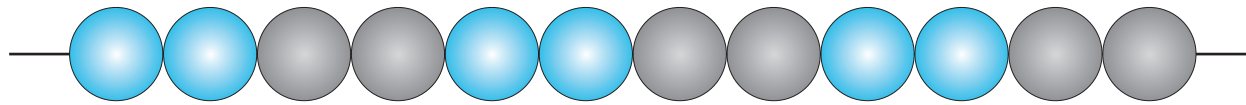


Figure 63 AABB pattern

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

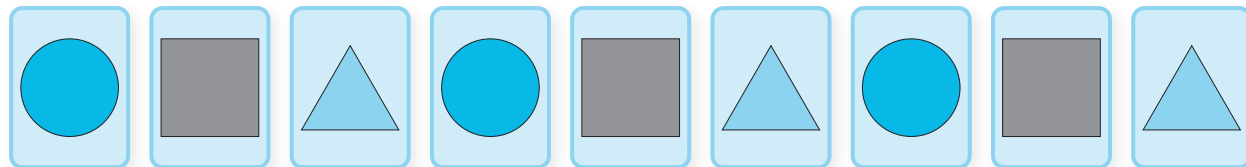


Figure 64 ABC pattern

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.

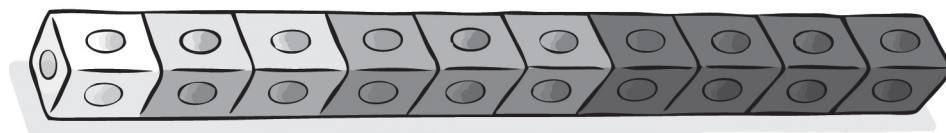
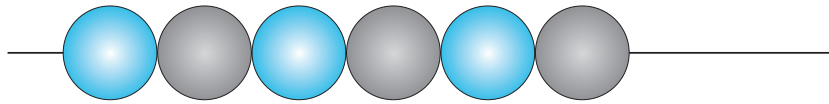


Figure 65 Growing pattern

Phetheni dzi dovhololaho

Phetheni dzi dovhololaho dzo vhumbwa nga ndovhololo ya thevhekano ya mirado ya sethe, sa tsumbo, zwivhumbeo, mivhala, mibvumo, zwithu, misudzuluwo kana zwiwo. Kha phetheni dzi dovhololaho, mirado ya sethe i fanaho i a dovhololwa tshifhinga tshothe.



Figara ya 61 Phetheni ya AB

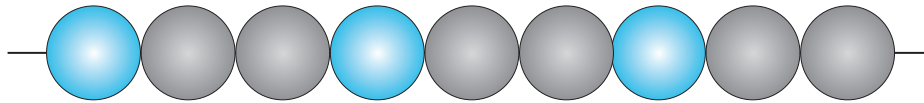
Kha vha thome nga u divhadza vhagudi phetheni dzi re na **vhunzani** vhuthihi fhedzi ho fhambanaho, sa tsumbo, muvhala kana tshivhumbeo, na u netshedza ndovhololo ya thevhekano nnzhi u itela uri vhagudi vha kone u pfesesa phetheni.

Vhagudi vha kona u vhona phetheni nnzhi dzi vha neaho khaedu, u fana na phetheni dza ABB kana AABB.

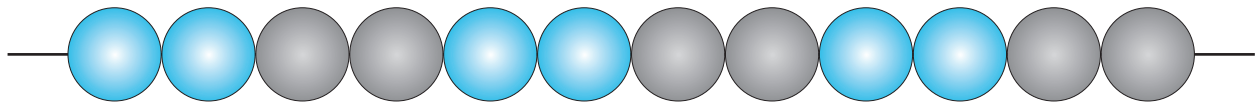
GULOSARI

vhunzani

mbonalo kana tshitaluli tsha tshinwe tshithu, sa tsumbo, muvhala kana tshivhumbeo

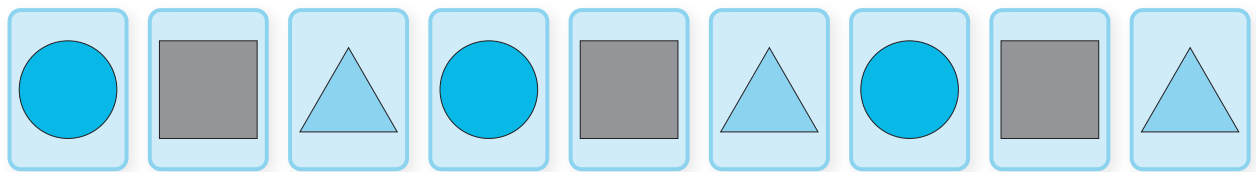


Figara ya 62 Phetheni ya ABB



Figara ya 63 Phetheni ya AABB

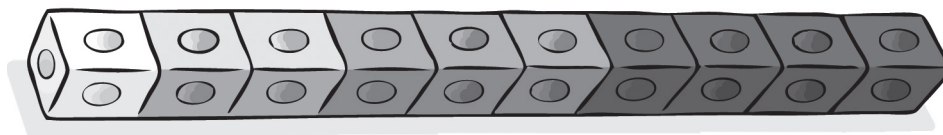
Nga zwiṭuku kha vha divhadze vhagudi phetheni dzine dza vha na vhunzani huvhili kana u fhira, u fana na muvhala na tshivhumbeo.



Figara ya 64 Phetheni ya ABC

Phetheni dzi engedzeaho

Phetheni dzi engedzeaho dzo fhambana na phetheni dzi dovhololaho ngauri phetheni i a engedzea kana ya fhungudzea nga muelo kha thevhekano inwe na inwe. Kha phetheni i re kha Figara ya 65, tshivhalo tsha zwibuḽoko zwa muvhala tshi a engedzea nga tshithihi kha inwe na inwe ya thevhekano ya zwibuḽoko.



Figara ya 65 Phetheni dzi engedzeaho

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



Figure 66 Growing pattern

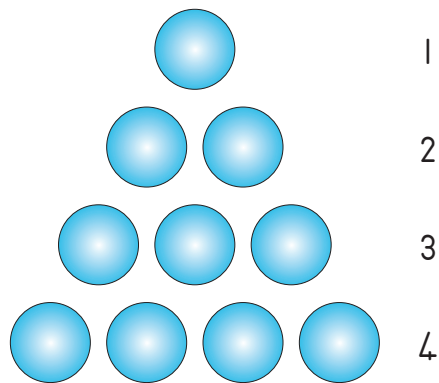


Figure 67 Growing pattern

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

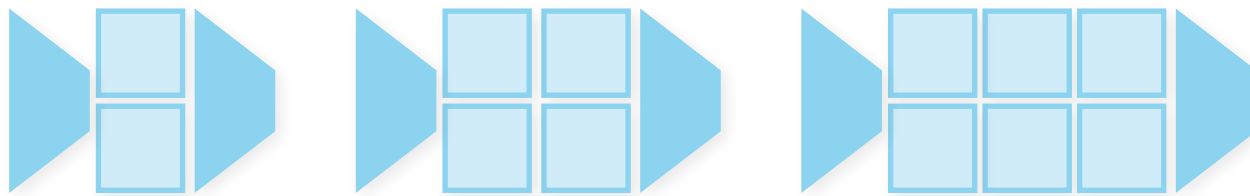


Figure 68 Growing pattern

Patterning skills – what learners need to know

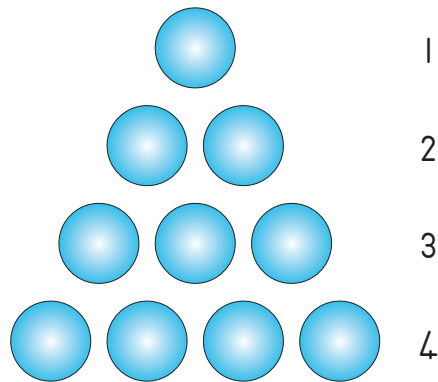
Learners' skills will vary, but generally Grade R learners will work towards being able to:

- ★ 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

Vhagudi vha anḡanya phetheni na thevhekano ya nomboro na u vhona uri nomboro dzi a engedzea nga thihi tshifhinga tshoṭhe.

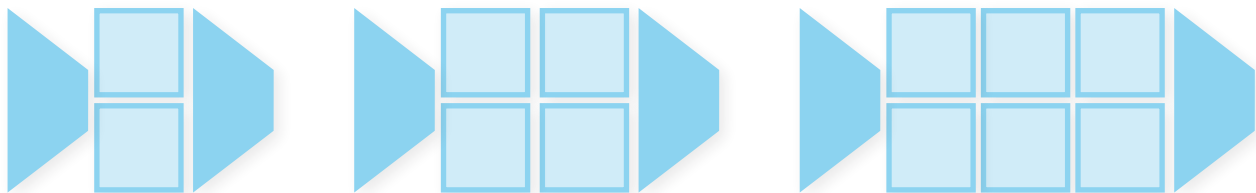


Figara ya 66 Phetheni dzi engedzeaho



Figara ya 67 Phetheni dzi engedzeaho

Kha phetheni i re afho fhasi, thevhekano i engedzea nga mbili tshifhinga tshinwe na tshinwe.



Figara ya 68 Phetheni dzi engedzeaho

Zwikili zwa u ita phetheni – zwine vhagudi vha fanela u ḡivha

Zwikili zwa vhagudi zwi ḡo fhambana fhedzi nga u angaredza vhagudi vha Gireidi ya ṽ vha ḡo shuma u ya kha u kona u:

- ★ elanya na u vhekanya zwithu u ya nga vhunzani huthihi kana hunzhi, sa tsumbo, tshivhumbeo, muvhala, mubvumo
- ★ vhambedza zwi fanaho na zwo fhambanaho kha zwithu zwivhili kana zwinzhi
- ★ amba nga phetheni dzi ḡiswaho nga tshenzhemo ya ḡuvha ḡinwe na ḡinwe
- ★ vhona phetheni vhuḡoni havho, sa tsumbo, mbalelo dza luhura, zwidina, u ita phevimennde
- ★ topola phetheni
- ★ kopa phetheni dze vhaḡwe vha ita
- ★ engedza phetheni dze vhaḡwe vha thoma

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

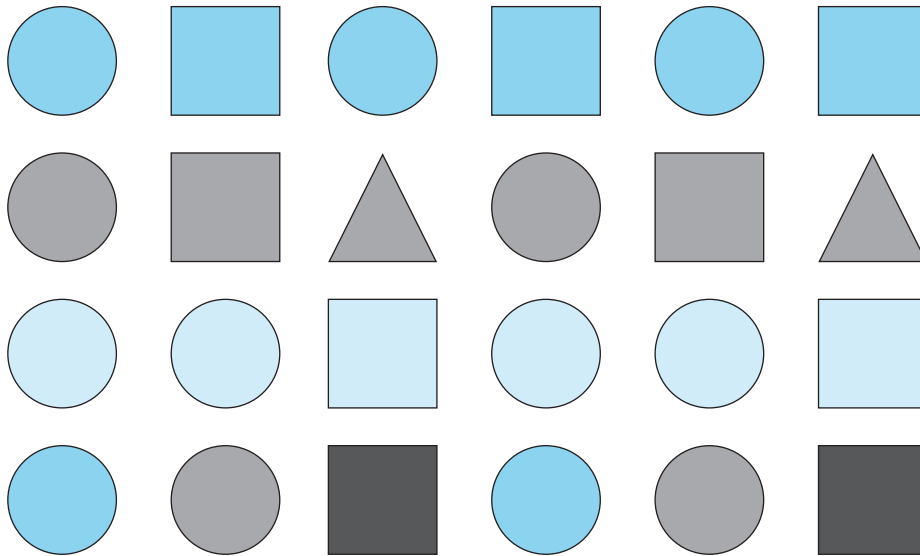


Figure 69 Creating patterns

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



In practice ...



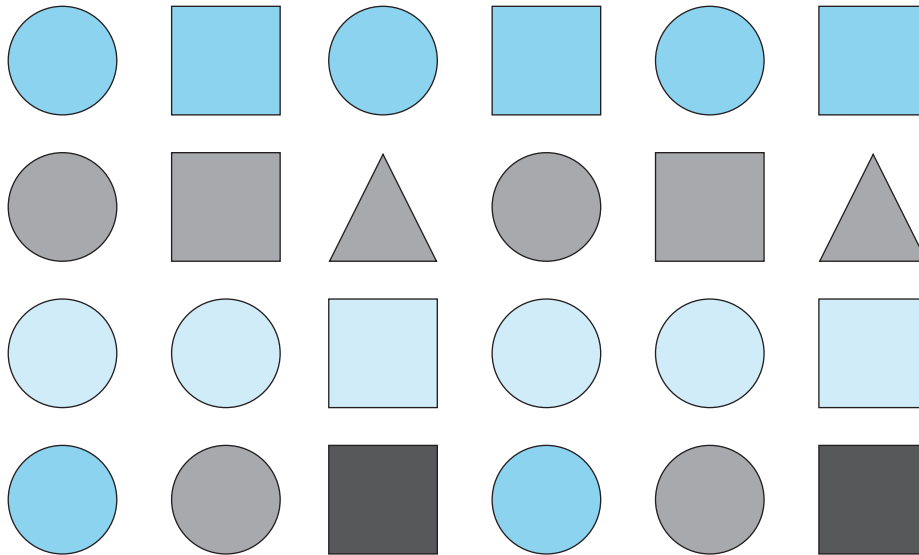
Teachers should guide learners to recognise and make patterns and provide opportunities for them to observe, describe and discuss patterns, focusing on activities that involve:

- 👋 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?

★ vha sika phetheni dzavho kha maimo o fhambanaho a vhukonqi u fana na:



Figara ya 69 U sika phetheni

★ bulani zwo tshelaho arali tshipiqa tsha phetheni tsho dzumbiwa.



Nḁowedzo ...



Vhagudisi vha fanela u ranga vhagudi phanḁa u vhona na u vhumba phetheni na u vha netshedza zwickhala zwa u dzi lavhelesa, u tḁalusa na u haseledza ngadzo, vho sedzesa kha nyito dzine dza katela:

- u amba nga 'zwine zwa vhumba phetheni'
- u tandula phetheni vha tshi shumisa zwithu, zwifanyiso na mutevhetsindo, u fana na u vhandu, nga tshifhinga tsha mbalo khathihi na kha mishumo ya vhutsila, muzika na nyito dza muvhili dza nḁa
- u vhumba phetheni dzavho vhone vhane na u amba nga uri vho dzi vhumbisa hani na uri ndi ngani vho tevhedza miraḁo ya sethe nga nḁila tiwa
- u ola phetheni na u shumisa mivhala yo fhambanaho na zwivhumbeo, na u amba nga nḁila ine phetheni ya khou dovhololwa ngayo.

Mbudziso dza u vhudzisa dza Phetheni, Fankisheni na Aḁidzhebura

- Ni khou vhona phetheni? Ambani nga hayo.
- Hu thoma mini mathomoni, mafheleloni, zwi tevhelaho, nga murahu ha, phanḁa ha?
- Phetheni idzi mbili dzi a fana? Ho fhambana mini? Ni nga dzi ita hani uri dzi fane?
- Ni nga kopa iyi phetheni? Ndi zwifhio zwine zwa ḁo tevhela kha phetheni?
- Ndi nga ita mini u engedza phetheni iyi?
- Ni nga bula uri phetheni yaḁu ndi phetheni ḁe? Ni nga vhumba inwe yo fhambanaho nayo? Ndi zwifhio zwi siho kha iyi phetheni?

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

Divhaipfi ya Phetheni, Fankisheni na Aļidzhebura

- u elanya, u vhambedza, u tevhekanya, u vhekanya
- mathomo, mathomoni
- phanḁa, vhukati, mafhelelo
- phanḁa ha, murahu ha, magumo
- ndi zwifhio zwi tevhelaho ...?
- muelo
- tshihulwane, tshihulwanesa, tshihulusesa
- tshiḁuku, tshiḁukusa, tshiḁukusesa
- u fana, u fhambana, phambano
- madzina a mivhala
- u fhaḁa phetheni
- u vhona
- u sumbedza, u topola
- u bvela phanḁa, u isa phanḁa, u engedza
- u kopa
- u dovholola, hafhu
- u ḁalusa, u ḁalutshedza
- hu ḁa mini phanḁa ha/murahu ha?
- tevhelaho, vhukati
- kha mutevhe, zwi tevhelanaho
- tshikhala, zwikhala vhukati

Tshikhala na Tshivhumbeo (Dzhomeḁiri)

Vhana vhaḁuku vha tandula tshikhala na tshivhumbeo nga tshifhinga tsha nyito dza ḁuvha liḁwe na liḁwe zwenezwi vha tshi khou lingedza u pfesesa mbumbo na zwivhumbeo u mona navho, u fana na tshifhaḁuwo tsha vhomme avho, zwithu zwi sudzuluwaho na mivhili yavho. Vha tandula divhaipfi dza tshikhala dzi re na vhushaka na tshivhumbeo na tshikhala musi vha tshi tamba nga dzibola kana u dzhena na u bva mabogisini na u gonya nḁha ha na fhasi ha zwithu. Vho vhona zwivhumbeo zwo fhambanaho kha zwithu zwi re mahayani avho na nḁa, u fana na makole, zwifhaḁo, maḁari na zwiendedzi.

Vhana vhanzhi vha ḁa kha Gireidi ya ḁ vha na nḁivho ya zwivhumbeo zwo fhambanaho nahone vha nga kona u topola na u ola zwivhumbeo zwi fanaho na zwitendeledzi na ḁhofunderaru. Vha nga vha vho no tamba nga zwibuḁoko, zwitambiswa zwa u fhaḁa na dziphazili. Kha Gireidi ya ḁ, vhagudi vha fhaḁa kha idzi tshenzhemo zwenezwi vha tshi guda nga ha tshikhala, tshivhumbeo, vhuimo, **u divhadza**, mihumbulo na sia. Vha ḁoḁa tshifhinga tshinzhi u sengulusa na u tandula zwithu zwo fhambanaho zwa ḁuvha liḁwe na liḁwe. Tshenzhemo idzi dza tshikhala na tshivhumbeo dzi thusa u vhea mutheo wo khwaḁhaho wa u pfesesa **dzhomeḁiri** kha gireidi dza nḁha.

GUḁOSARI

u divhadza

uri zwithu zwo vhwela hani nga nḁila ine zwa elana

dzhomeḁiri

tshipiḁa tsha mbalo tshine tsha shuma na vhunzani, muelo na vhushaka ha masia, mitalo na khuḁa dza zwivhumbeo tshikhalani

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.

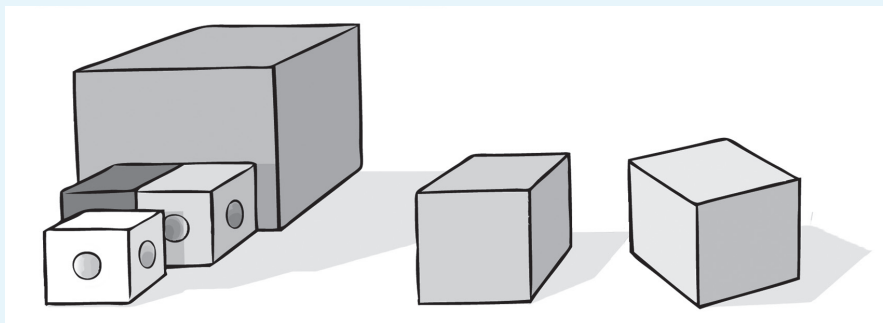


Figure 70 Exploring position

Tshikhala

Vhana vha dīdivhadza vhone vhone tshikhalani vha tshi shumisa mivhili yavho. Vha thoma nga u tandula vhushaka vhukati havho, vhañwe vhathu na zwithu. Dzitshetshe dzi hovhelela na u fara zwithu zwi re tsini hadzo, nga zwiṭuku dza thoma u tshimbila tshimbila na u tandula vhupo hadzo nga u shumisa zwipfi zwadzo zwoṭhe. Dzi tandula zwine zwa itea musi dzi tshi sukumedza, kokodza, u rola kana u rembulusa zwithu zwo fhambanaho zwenezwi dzi tshi khou tamba ngazwo, nahone musi dzi tshi ita izwi dzi bveledza vhuḍipfi hadzo zwi tshi elana na zwithu. Dzi dovha dza guda na vhuṭuku ha u sudzuluwa ha vhune zwenezwi dzi tshi gonya nṭha na fhasi ha zwidulo, ngomu mabogisini, u dzumbama murahu ha miri kana u sedza fhasi dzi nṭha ha zwiṭepisi.

Vhuimo

Vhuimo kha Gireidi ya Ṫ vhu thoma nga maimo a zwithu zwi tshi elana na mugudi, ha ya phanda zwi tshi ya kha vhuimo ha zwithu zwi tshi elana na zwiñwe. Divhaipfi ya vhuimo i katela ngomu, kha, nṭha ha, phanda ha, murahu ha, vhukati ha, tsini na, ngauralo ngauralo.

Nga thuso ya vhaaluwa hayani na mugudisi tshikoloni, vhagudi vha Gireidi ya Ṫ vha nga bveledza divhaipfi ya u ṭalusa tshikhala, vhuimo na sia zwenezwi vha tshi khou tamba, u ṭoda zwithu kana u gonya nṭha na kha zwithu.



Ngowedzo ...

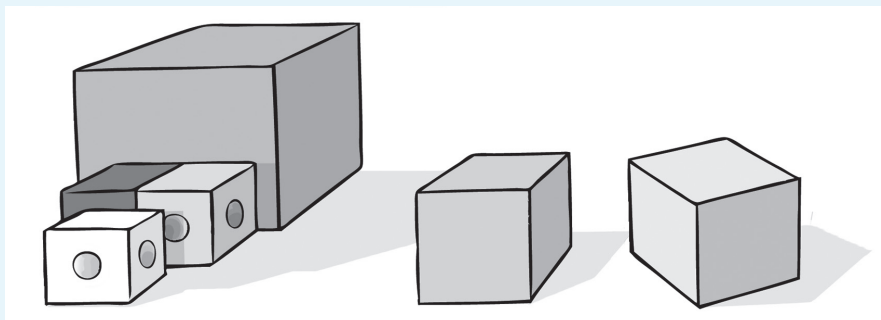


Hu na zwickhala zwinzhi masiari zwa uri vhagudi vha humbule nga tshikhala na u shumisa divhaipfi ya vhuimo:

- 👤 kha mitambo
- 👤 musi vha tshi vhea zwithu kule nga tshifhinga tsha u kunakisa
- 👤 musi vha tshi ita muduba
- 👤 musi vha tshi amba nga ha hune zwithu zwa vha hone kha zwifanyiso na zwiṭori.

U tendela vhagudi u tandula misudzuluwo yavho:

- 👤 u sika tshikundisi ngomu kana nṅa vha tshi shumisa zwidulo, mathaela, mabogisi na/kana mabulanga
- 👤 u tamba zwiṭori zwine zwa shumisa divhaipfi ya mbalo nga ha vhuimo, sa tsumbo, nṭha ha na fhasi ha, nṭha na fhasi, tsini na kule, matungo na vhukati
- 👤 u vhea zwithu kha vhuimo ho fhambanaho na u divhadza ho fhambanaho
- 👤 u humbela vhagudi u lavhelesa zwithu u bva kha vhuimo ho fhambanaho (u vhona) na zwine vha khou vhonwa.



Figara ya 70 U tandula vhuimo

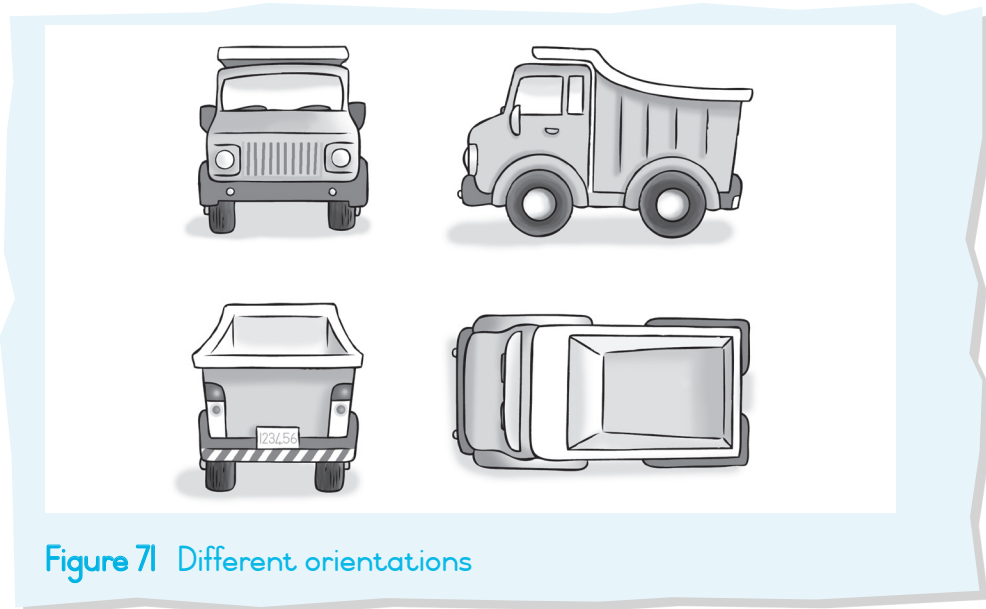


Figure 71 Different orientations

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.



In practice ...

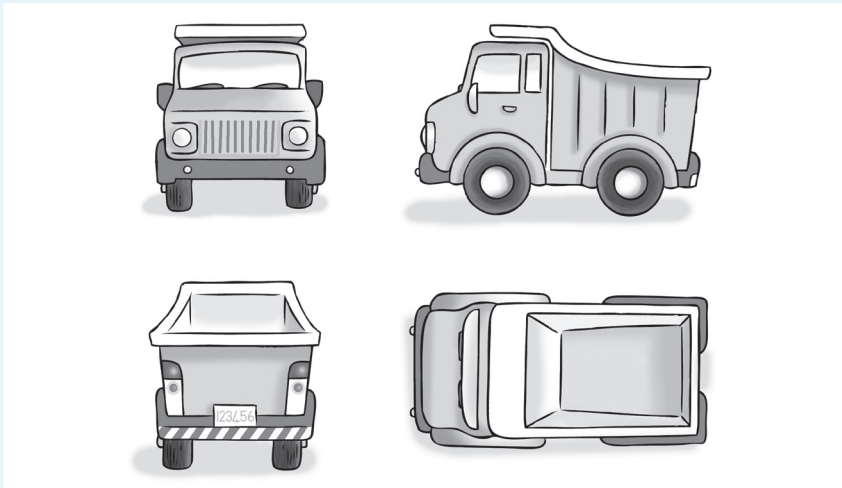


- Observe people and objects outside the classroom and talk about why they look smaller.
- Close one eye and measure how big a person or object looks and talk about whether they are really that small.
- Focus attention on objects in pictures that appear to be small and talk about why this is so.

GLOSSARY

perspective

the effect of distance or depth on the appearance of objects



Figara ya 71 U ðivhadza ho fhambanaho

Sia




Vhagudi vha re kha Gireidi ya T mathomoni vha thoma nga u sumbedza sia nga u sumba, vha kona ha u shumisa mafhungo a sa konði u fana na 'hafhala'. Ðivhaipfi ya sia i bvela phanda u bva kha u vha nga ha vhuimo vhune vhana vha vha khaho u ya kha hune vha vha hone ho sedzwa na zwiñwe zwithu, sa tsumbo, tshimbilani tswititi, khonani, ngauralo ngauralo.



Nðowedzo ...



Shumisani ðivhaipfi ya sia:

-  nga tshifhinga tsha zwiðyangudyangu na tsha u kunakisa
-  musi vha tshi ñea ndaela nga ha uri zwithu zwi vhewa fhi na nga ha uri ni isa hani fhethu huñwe u bva huñwe
-  musi vha tshi khou ðibvisa.




Mbonalo vhukuleni

Kha Gireidi ya T, zwenezwi u pfesesa ha vhagudi hu tshi khou engedzea ha uri musi zwithu zwi kule zwi vhone zwi zwiñtuku, ðivhaipfi yavho ya **mbonalo vhukuleni** i a bveledzea.



Nðowedzo ...



-  Kha vha lavhelese vthathu na zwithu nnda ha kijasirumu vha ambe nga ha uri ndi ngani vha tshi vhone vhe vhañtuku.
-  Kha vha bonye ito lithihi vha ele uri muthu ndi muhulu zwingafhani kana tshithu tshi vhone hani vha ambe nga ha uri hone izwo zwithu ndi zwiñtuku nga ngoho naa.
-  Kha vha sedzese kha zwithu zwifanyisoni zwine zwa vhone zwi zwiñtuku vha ambe uri ndi ngani zwo ralo.

GULOSARI

mbonalo vhukuleni
masiandoitwa a
vhukule kana ñwongo
kha mbonalo ya zwithu

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 inner 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)

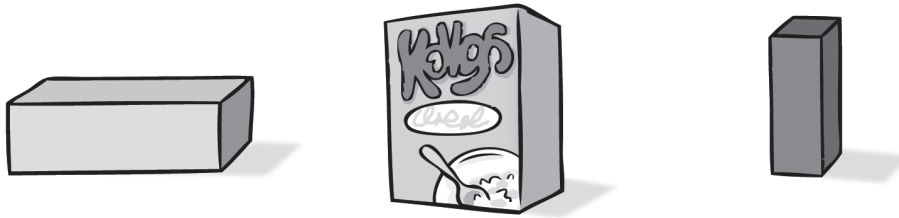
3-dimensional (3-D)

an object has three dimensions: length, breadth (width) and height

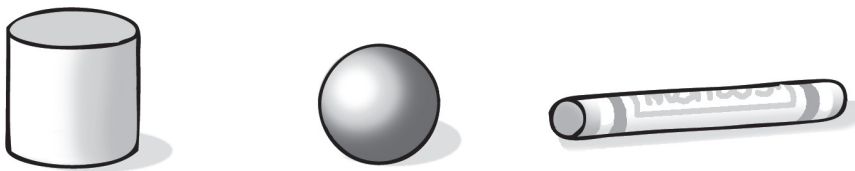
property

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

These all have flat faces.



These will all roll.



These all have triangles on some of their faces.

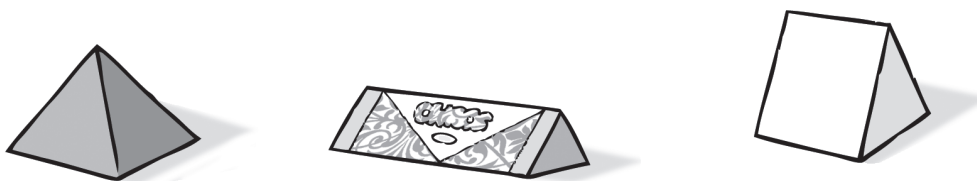


Figure 72 3-D objects

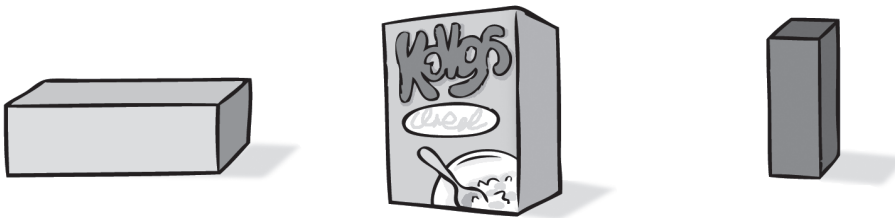
Tshivhumbeo

Kha Gireidi ya T, vhagudi vha sedzesa kha u vhona, u topola na u nea madzina zwithu zwa **mielo miraru (3-D)** na zwithumbeo zwa **mielo mivhili (2-D)**. Kha luambo lwa duvha liñwe na liñwe, vhagudi vha do bula uri vha nga lavhelesa tshithu u bva kha masia othe, nga ntha na nga fhasi. Nga tshimbalo ri talusa **mbonalo** ya zwithu zwa 3-D nga vhulapfu, vhuphara (u tanjavhuwa) na vhuntha hazwo. Kha luambo lwa duvha liñwe na liñwe, vhagudi vha do amba nga ha zwithumbeo zwa 2-D sa zwifanyiso, fhedzi nga tshimbalo ri amba nga ha zwithumbeo sa zwine zwa vha na vhulapfu na vhuphara (u tanjavhuwa) u talusa mielo mivhili.

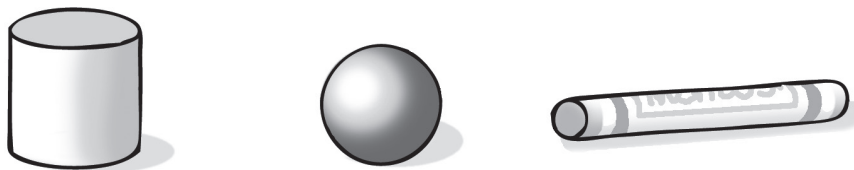
Zwithu zwa mielo miraru (3-D)

Kha Gireidi ya T, vhagudi vha tandula mbonalo ya duvha liñwe na liñwe ya zwithu zwa mielo miraru. Vha fhaa zwifhaa vha tshi shumisa matheriala o bikululwaho a nduni u fana na mabogisi, zwikoiko, zwifaredzi, mabambiri a bambiri la ngomu ha la bungani na dzibola. Vha sengulusa na u talusa zwithu zwa tshivhumbeo tsha bogisi na bola. Vha vhambedza na u vhekanya zwithu, na u amba nga ha zwi fanaho na zwo fhambanaho.

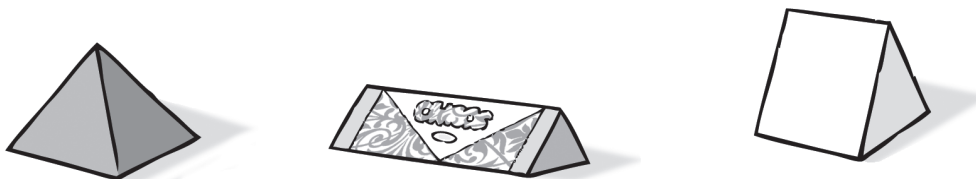
Izwi zwothe zwi na matungo a fulethe.



Izwi zwothe zwi do kunguluwa.



Izwi zwothe zwi na thofunderaru kha manwe a matungo azwo.



Figara ya 72 Zwithu zwa mielo miraru

GULOSARI

mielo mivhili (2-D)

tshivhumbeo tshi na mielo mivhili: vhulapfu na vhuphara (u tanjavhuwa)

mielo miraru (3-D)

tshithu tshi na mielo miraru: vhulapfu, vhuphara (u tanjavhuwa) na vhuntha

mbonalo

zwiatalusi zwa tshivhumbeo tsha milelo mivhili kana zwithu zwa mielo miraru, sa tsumbo, vhulapfu, vhuphara, vhuntha, matungo, dzimeme, dzikhuḁa



In practice ...

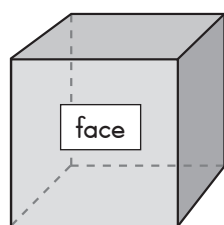


Learners can:

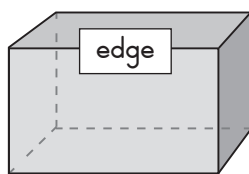
- Play with collections of 3-D objects including blocks, tins, boxes and balls.
- Describe objects. They can choose one object at a time. You can prompt their thinking through questioning, and introduce them to the correct names and properties of each object.
- Sort 3-D objects according to a particular 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.

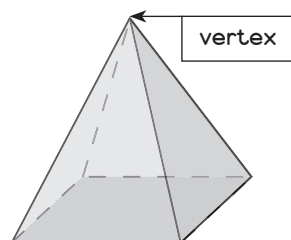
Grade R learners may ask what the name of an object is, e.g. a cube, cylinder or cone. In higher grades learners learn about the 3-D solids shown in Figure 73.



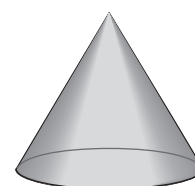
Cube



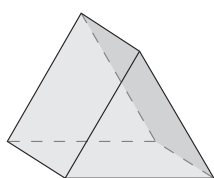
Cuboid



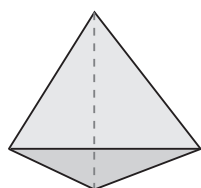
Square-based pyramid



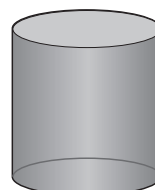
Cone



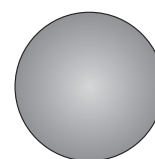
Triangular prism



Triangular-based pyramid



Cylinder



Sphere

Figure 73 3-D solids



Ngowedzo ...

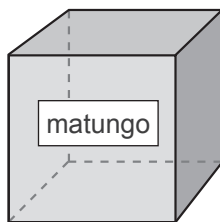


Vhagudi vha nga:

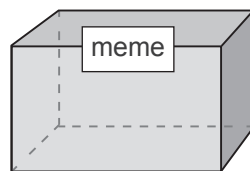
- Tamba nga khuvhanganyo ya zwithu zwa mielo miraru hu tshi katelwa zwibuḽoko, zwikoḽikoḽi, mabogisi na dzibola.
- Ṭalusa zwithu. Vha nga nanga tshithu tshithihi nga tshifhinga tshithihi. Vha nga ḽuḽuwedza kuhumbulele kwavho nga u vha vhudzisa na u vha ḽivhadza kha madzina a vhukuma na mbonalo ya tshithu tshiḽwe na tshiḽwe.
- Vhekanya zwithu zwa mielo miraru u ya nga mbonalo tiwa, u fana na meme tswititi kana arali zwi tshi nga kunguluwa. Izwi zwi ḽo tendela vhagudi u ḽivha, na u tandula mbonalo dza zwithu.
- Ṭalusa izwi zwithu vha tshi shumisa luambo lwa ḽuvha liḽwe na liḽwe u fana na tswititi, suvhelela, ḽhodzi. Zwenezwi vhagudi vha tshi dzhiela nzhele mbonalo nnzhi vha guda madzina o teaho, sa tsumbo, meme, khuda, nyalo kana mutheo, matungo. U vhekanya nyito na khaseledzo nga zwithu ndi zwa ndeme ngauri zwi thusa vhagudi u pfesesa, sa tsumbo, uri naho tshupu ya khadibogisi yo lapfa na u sekana ngeno tshikoḽikoḽi tsha nyamunaithi tshi tshipufhi, zwoḽhe ndi dzisiḽindere.

Vhagudi vha fanela u rangwa phanda uri vha vhone uri ndi mbonalo ya tshithu, u fana na vhulapfu, vhuphara kana vhunḽha, ine ra khou sedzana nayo musi ri tshi vhekanya nahone hu si muvhala, muelo kana zwiḽwe zwiḽalusi.

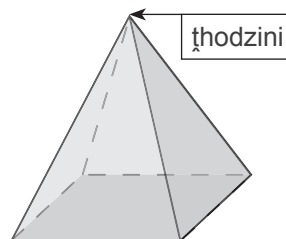
Vhagudi vha Gireidi ya Ṭ vha nga vhudzisa uri dzina la tshithu ndi liḽhio, sa tsumbo, khubu, siḽindere kana khounu. Kha gireidi dza nḽha vhagudi vha guda nga zwiomate zwa mielo miraru zwo sumbedzwaho kha Figara ya 73.



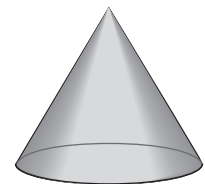
Khubu



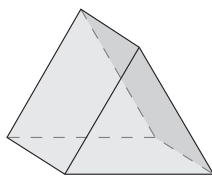
Tshivhumbeo tsha khubu



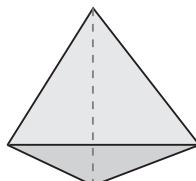
Phiramidi ya zwikwea



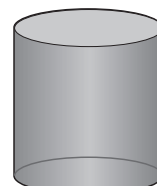
Khounu



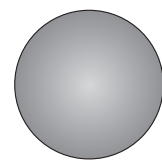
Phirisimu ya ḽhofunderaru



Phiramidi dza ḽhofunderaru



Siḽindere



Sifere (sifhere)

Figara ya 73 Zwiomate zwa mielo miraru

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.

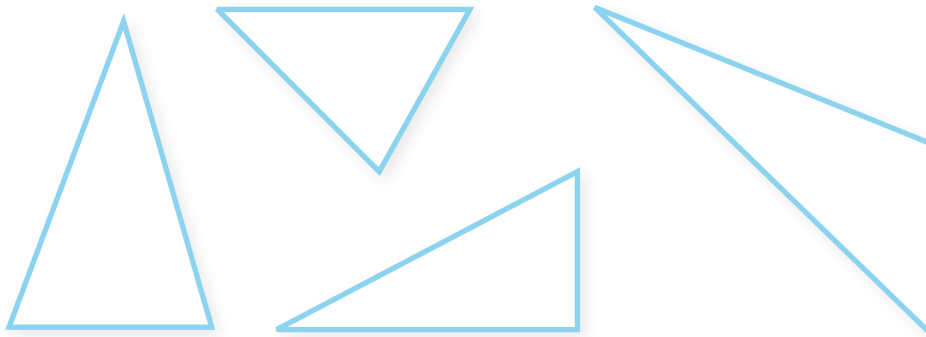


Figure 74 Shapes with three sides

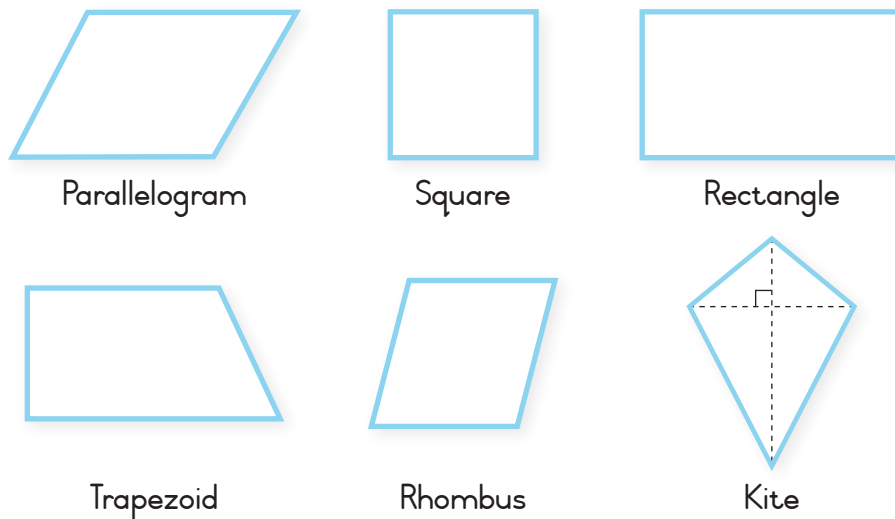


Figure 75 Shapes with four sides

Zwivhumbeo zwa mielo mivhili

Kha Gireidi ya \bar{t} , vhagudi vha vhona, topola na u bula zwivhumbeo zwa mielo mivhili: zwitendeledzi, \bar{t} hofunderaru, zwickwea na \bar{t} hofundeina. Ngomu na nnda ha kiasirumu vha vhona zwivhumbeo nahone vha nga tandula mbonalo ya izwi zwivhumbeo zwifanyisoni vha sedza zwithu zwine 'zwa fana na' zwivhumbeo, sa tsumbo, luswayo lwa badani lu nga fana na tshitendeledzi, fasi \bar{t} ere \bar{t} nga fana na tshikwea, munango u nga fana na \bar{t} hofundeina.



Ndowedzo ...



Vhagudi vha nga:

- Tandula mbonalo dza zwivhumbeo zwa mielo mivhili zwi re ngomu na nnda ha kiasirumu, u fana na zwitendeledzi, zwickwea, \bar{t} hofundeina na \bar{t} hofunderaru.
- \bar{t} oda zwithu zwi re na tshivhumbeo tsha 'tshikwea', vha tshi khou ambela kha sia kana matungo a bogisi kana tshivhumbeo tsha 'tshitendeledzi' vha tshi khou ambela kha luswayo lwa badani kana lumeme lwa khaphu.
- \bar{t} alusa zwivhumbeo zwa mielo mivhili zwa mielo yo fhambanaho na u divhonadza zwifanyisoni.

Vhagudi vha fanela u vhona zwivhumbeo zwa mielo mivhili zwo fhambanaho, sa tsumbo, \bar{t} hofunderaru dzo fhambanaho (hu si \bar{t} hofunderaru dza ndingano fhedzi), \bar{t} hofundeina dza mielo yo fhambanaho. Izwi zwi thusa vhagudi u \bar{t} alukanya uri zwivhumbeo tiwa zwi na zwifhio zwi fanaho, sa tsumbo, uri \bar{t} hofunderaru dzo \bar{t} he dzi na masia mararu na khu \bar{t} a tharu fhedzi zwi nga itea dza si fane kokotolo, na uri \bar{t} hofundeina dzi na masia ma \bar{t} a hu sa sedzwi u divhonadza.

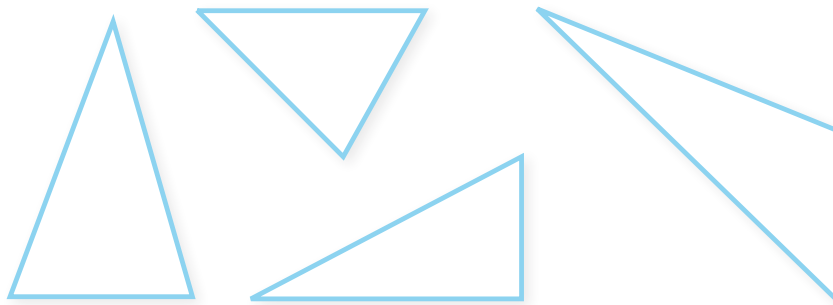


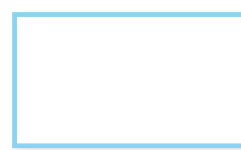
Figura ya 74 Zwivhumbeo zwi re na masia mararu



Pharalelogireme



Tshikwea



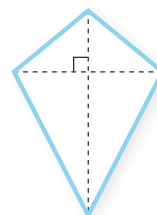
\bar{t} hofundeina



\bar{t} hirapezoidi



Rombasi



Khaiti

Figura ya 75 Zwivhumbeo zwi re na masia ma \bar{t} a

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.

Kha vha nee vhagudi zwickhala zwa u tandula zwivhumbeo zwa mielo mivhili nga tshifhinga tsha nyito dza u tamba nga vhothe. Kha vha vhe na matheriala o fhambanaho – zwivhumbeo zwa pułasiṭiki (zwibułoko zwa zwidodombedzwa) na zwivhumbeo zwa makhadibogisi zwa mivhala na mielo yo fhambanaho – vha kone u tuṭuwedza vhagudi u zwi shumisa u sika phetheni, zwifanyiso na u imela zwithu zwo leluwaho. Nga tshifhinga tsha idzi nyito, vhagudisi vha nga haseledza na vhagudi zwine vha khou ita na u vha vhudzisa mbudziso dzi tuṭuwedzaho u fana na: ‘Mmbudzeni nga ha phetheni ine na khou ita.’ ‘Iyo ndi nṅṅu yavhuḍi, no i itisa hani? Ṭalusani maga kha mushumisani na inwi.’

Musi vhagudi vha Gireidi ya Ṭ vha tshi thoma u sengulusa na u ṭalusa zwivhumbeo na zwithu, vha anzela u shumisa luambo lwa ḍuvha liṅwe na liṅwe u fana na fulethe, u suvhelela, ṭhodzi. Nga zwiṭuku vhagudisi vha nga vha thusa u sedzesa kha mitalo ya tshivhumbeo kana tshithu na uri vha shumise mathemo a mbalo vhuimoni ha luambo lwa ḍuvha liṅwe na liṅwe – masia, kheve, tswititi, khuḍa.

U pfesesa ha vhagudi mbonalo ya zwivhumbeo zwi bveledzea musii vha tshi kona u vhona **phambano** na **zwi fanaho** vhukati ha zwivhumbeo. Izwi zwi nga itwa nga u vhekanya na u khethekanya nyito khathihi na nga u elanya nyito u fana na u dzhia tsheo ya uri tshivhumbeo tshi ḍo dzhena kha phazili kana vuhfaṭi kana u tamba lotho ya tshivhumbeo.



Figara ya 76 Phambano na u fana ha zwivhumbeo



Nḍowedzo ...



Tshimbilani u bva kha 3-D u ya kha 2-D

Oledzelani u mona na vhagudi na zwiṅwe zwithu ngomu kiłasirumuni u itela u vhona na u amba nga ha ‘tshifayiso’ tshe tsha vhumbea. Vhagudi vha nga dzhenisa zwithu ngomu ha pennde vha zwi bvisa vha vhea kha bambiri u ita mugandiso. Vha nga oledzela hafhu u mona na meme dza zwithu vha amba nga mutalo na tshivhumbeo tshe vha sika. Zwidongo, zwibułoko zwa u fhaṭa, mabambiri a ngomu ha thishu, na matheriala maṅwe na maṅwe o bikululwaho a nga shumiswa u sika zwifanyiso zwa tshivhumbeo nga ṅdila iyi.

Mitambo ya tshivhumbeo

Vhagudi vha tamba nga vhavhili vhavhili. Mugudi muthihi u dzumba tshivhumbeo kana tshithu murahu hawe ngeno uḷa muṅwe mugudi a tshi vhudzisa mbudziso nga hatsho u swikela a tshi humbulela uri ndi mini. ‘Tshi fulethe? Tshi na masia mararu?’

Vhagudisi vha nga itela vhagudi khaedu ya uri vha ite zwivhumbeo zwinzhi zwo fhambanaho nga hune vha kona kha dzhiobodo.

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?'

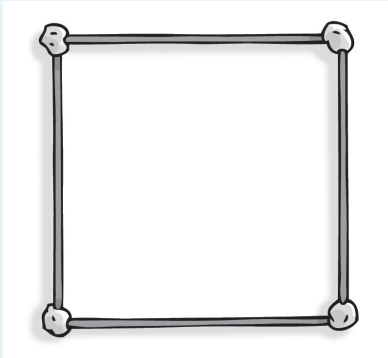


Figure 77 Building shapes

Construct shape pictures

Learners can use attribute blocks to create a picture.

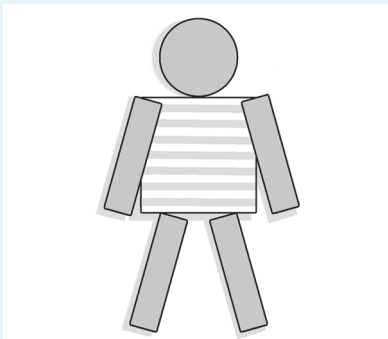


Figure 78 A shape picture

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.

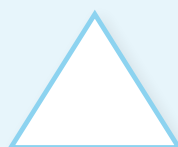
In higher grades learners will learn about a range of 2-D shapes. Learners in Grade R will often ask teachers and adults what a shape is called and the diagrams below provide a reference for these instances.



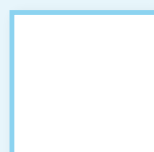
Circle



Oval



Triangle



Square

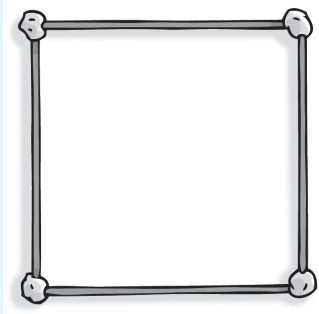


Trapezium

U fhaṭa na u thutha zwivhumbeo

Musi vhagudi vha tshi kona u topola zwivhumbeo zwa mielo mivhili (tshikwea, tshitendeledzi, ṭhofunderaru, ṭhofundeina) na zwithu zwa mielo miraru (mabogisi na dzibola), vho no lugela u fhaṭa na u thutha zwivhumbeo:

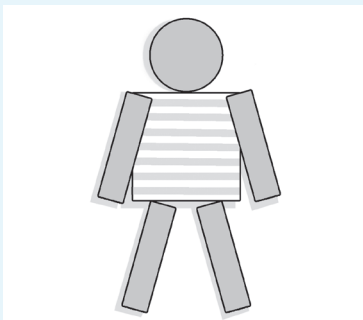
- 👉 Zwiṭiroo, zwitanda na maṅwe matheriala a fanaho na aya a nga shumiswa na suko ya u tambisa u ita zwivhumbeo.
- 👉 Kha vha humbele vhagudi u ita tshivhumbeo na u haseledza ngatsho. 'Itsho ndi tshikwea. Ni nga tshi shandukisa tsha vha ṭhofunderaru?'



Figara ya 77 U fhaṭa zwivhumbeo

Fhaṭani zwifanyiso zwa zwivhumbeo

Vhagudi vha nga shumisa zwiḅuḷoko zwa zwidodombedzwa u sika tshifanyiso.



Figara ya 78 Tshifanyiso tsha tshivhumbeo

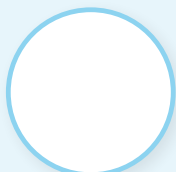
Vha nga nambatedza zwivhumbeo zwo gerwaho kha bambbiri u itela u vhumba zwiṅwe zwivhumbeo kana zwifanyiso.

Vha nga rola, u tota na u puṭedza suko ya u tambisa u ita zwivhumbeo na u ṭanganya izwi u ita zwivhumbeo zwiswa.

Dzitshanduko

Vhagudi vha a seseledza, u rembulusa na u shandula zwivhumbeo zwenezwi vha tshi khou tandulula thaidzo dzi katelaho zwivhumbeo, u fana na u elanya zwivhumbeo kha zwifanyiso, na u kopa phetheni dza tshivhumbeo vha tshi shumisa zwiḅuḷoko zwa zwidodombedzwa.

Kha girieidi dza ṅṅha vhagudi vha ḡo guda nga ha zwivhumbeo zwo fhambanaho zwa mielo mivhili. Vhagudi vha re kha Gireidi ya Ṭ vha anzela u vhudzisa vhagudisi na vhaaluwa uri tshivhumbeo tshi pfi mini nahone dayagiramu afha fhasi i ṅetshedza referentsi ya nyimele idzi.



Tshitendeledzi



Gumba



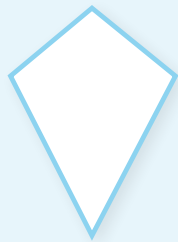
Ṭhofunderaru



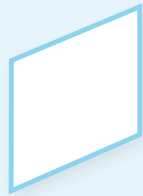
Tshikwea



Ṭhirapeziamu



Kite



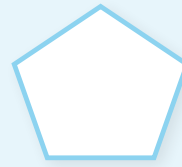
Rhombus



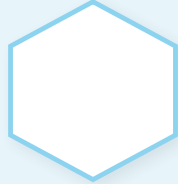
Parallelogram



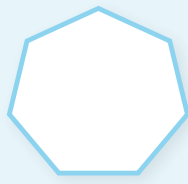
Rectangle



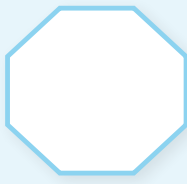
Pentagon



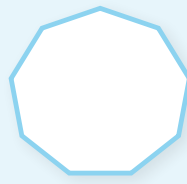
Hexagon



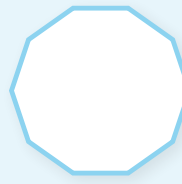
Heptagon



Octagon



Nonagon



Decagon

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.

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.

GLOSSARY

symmetry
when a shape or object can be divided into two equal halves along a central line

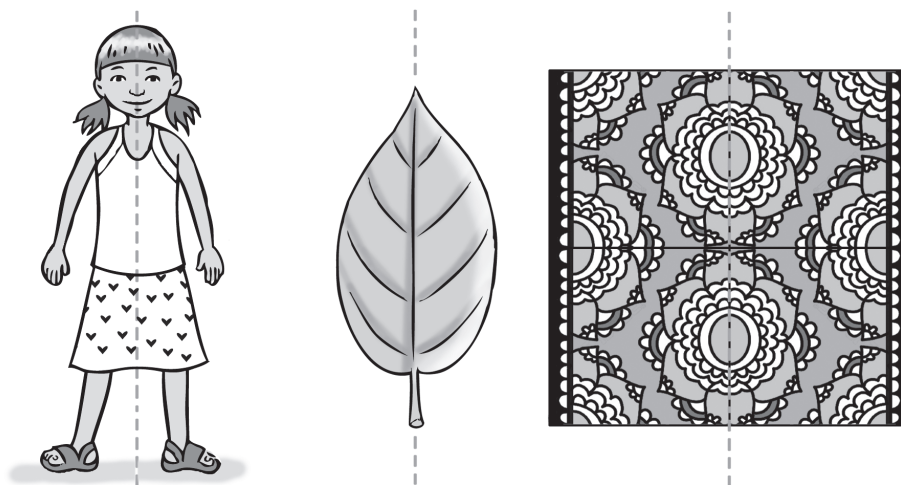
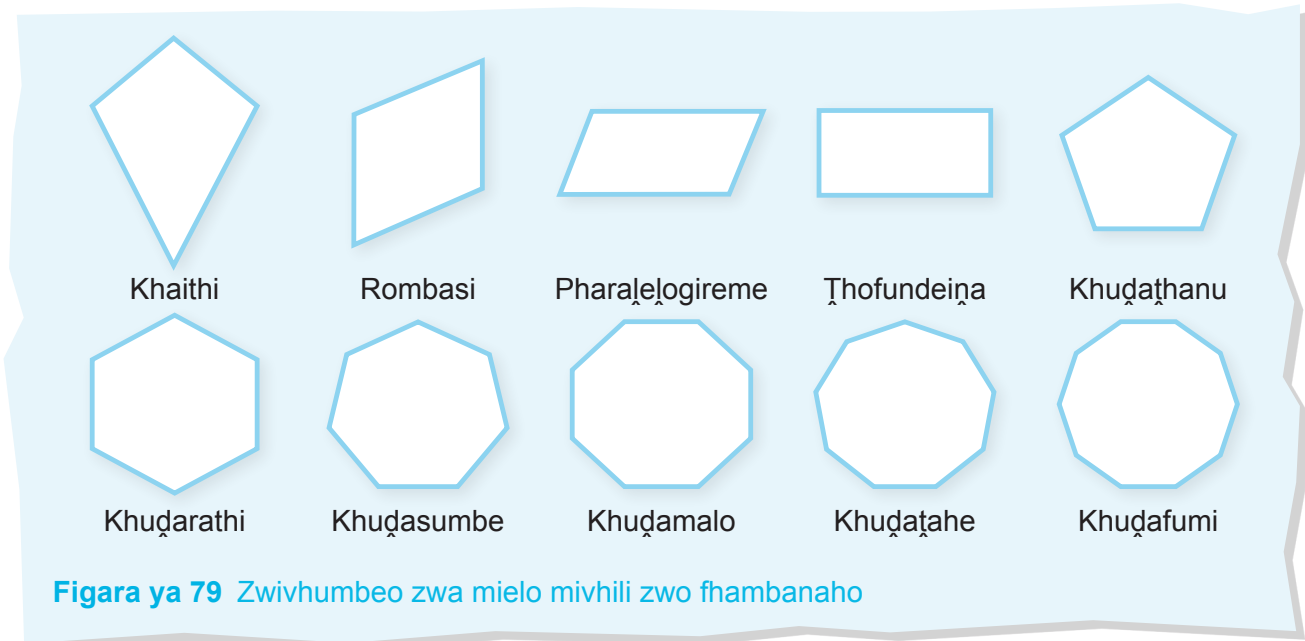


Figure 80 Line symmetry divides the shape into two identical parts.

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.



Figara ya 79 Zwivhumbeo zwa mielo mivhili zwo fhambanaho

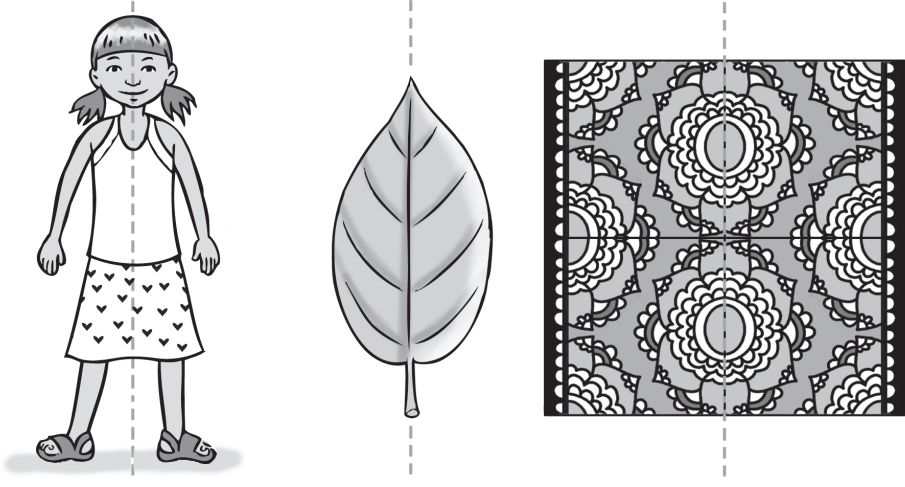
Ndinganyahuvhili

Vhagudi vha nga dzhiela nzhele phetheni dza ndinganyahuvhili hoṭhe u mona navho, muṑoni, kha zwifhaṭo, kha nyolo na zwithu. Kha gireidi dza fhasi, **ndinganyahuvhili** i pfeesesa u leluwa sa ‘u bvisela khagala’ kana ‘tshivhoni’. Vhagudi vha nga tandula ḡivhaipfi iyi nga u peta na u gera zwivhumbeo na zwifanyiso nga vhukati, kana nga u ola tshifanyiso kha hafu nthihi ya bammbiri vha tshi shumisa khirayoni ya mapfura, vha kona ha u peta bammbiri vha ḡi raba nga murahu ha he vha ola hone na u vbona khophi i fanaho kokotolo na zwe vha ola yo dovhoolwa kha inwe hafu ya siaṭari.

Phetheni dza ndinganyahuvhili dzi nga wanala mivhilini yashu, muṑoni, kha vhupo ha vhufhaṭi na kha zwifanyiso. Mutalo wa ndinganyahuvhili u khethekanya tshivhumbeo tsha bva zwipiḡa zwivhili zwi fanaho. Mutalo uyu u nga vha vhutengu kana nzimo.

GUḶOSARI

ndinganyahuvhili
 musi tshivhumbeo kana tshithu tshi tshi nga kovhiwa tsha bva hafu mbili dzi eḡanaho vhukati hatsho



Figara ya 80 Mutalo wa ndinganyahuvhili u khethekanya tshivhumbeo tsha bva zwipiḡa zwivhili zwi fanaho.

Kha Gireidi ya T, vhagudi vha tandula ndinganyahuvhili nga u vhambedza zwithu na zwifanyiso. Vha guda uri ndinganyahuvhili a si nga ha ‘u fana na’ fhedzi nga ha u fana kokotolo, sa tsumbo, tshisusu tshi nga vha ndinganyahuvhili fhedzi tshanda tshi nga si kone.

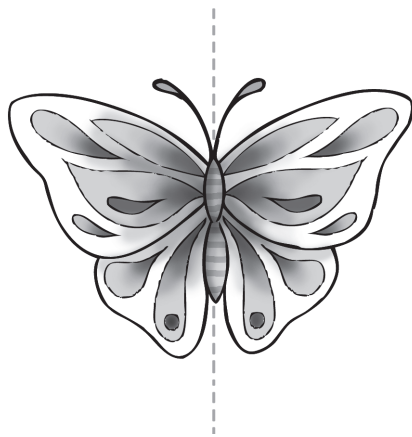


Figure 81 Symmetrical

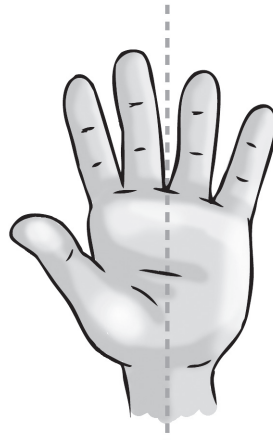


Figure 82 Not symmetrical

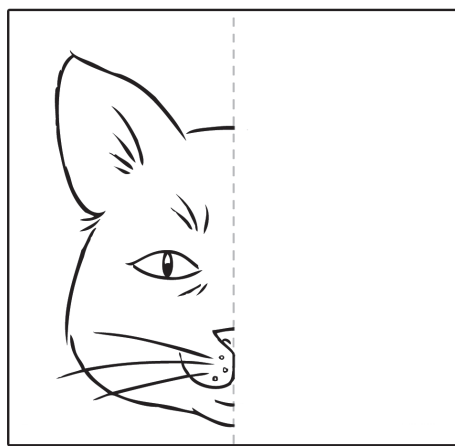
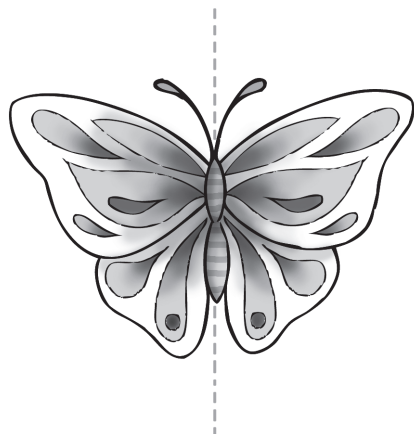


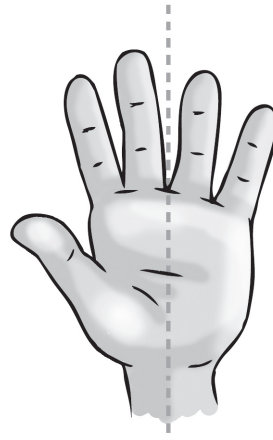
Figure 83 Folded piece of paper with image cut out and copied opposite to show symmetry.

Questions to ask for Space and Shape (Geometry)

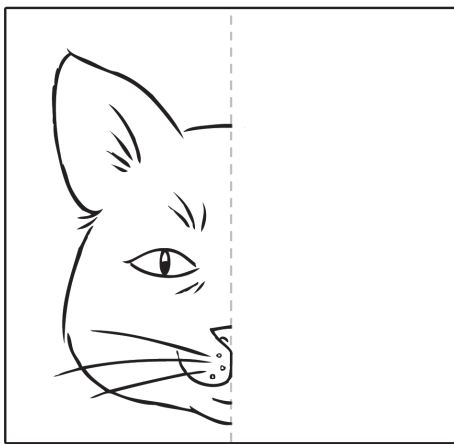
- Where are you standing?
- What is in front of/behind you?
- Can you tell me how to get from ... to ...?
- Can you show me how to move around the box, over the chair and under the table?
- What shape is this?
- How do you know it is a triangle/square/rectangle/circle?
- How many sides does this shape 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?



Figara ya 81 Ndinganyahuvhili



Figara ya 82 Zwi si ndinganyahuvhili



Figara ya 83 Tshipiḁa tsha bammbiri ḁo petwaho tshi re na tshifanyiso tsho gerwaho tsha kopiwa nga thungo ha tshirwe u sumbedza ndinganyahuvhili.

Mbudziso dza u vhudzisa u itela Tshikhala na Tshivhumbeo (Dzhomeḁiri)

- No ima ngafhi?
- Ndi mini tshi re phanḁa haḁu/murahu haḁu?
- Ni nga mmbudza uri ri tshimbila hani u bva ... u ya ...?
- Ni nga nsumbedza uri ri tshimbilisa hani u mona na bogisi, nḁha ha tshidulo na fhasi ha ḁafula?
- Ndi tshivhumbeo tshifhio itshi?
- Ni zwi ḁivha hani uri ndi ḁhofunderaru/tshikwea/ḁhofundeina/tshitendeledzi?
- Itshi tshivhumbeo tshi na masia mangana?
- Tshivhumbeo itshi tshi na khuḁa/ḁhodzi nngana?
- Ni nga mmbudza mini nga ha masia a itshi tshivhumbeo?
- Ni nga mmbudza mini nga ha mutalo?
- Ndi zwifhio zwi fanaho/zwo fhambanaho nga ha zwivhumbeo izwi zwivhili?
- Ndi ngani zwi tshi wela fhethu huthihi?

- 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

- Hu na tshine na khou vhona afha kijasini tshi fanaho na itshi tshivhumbeo?
- Hu do itea mini arali nda rembulusa itshi tshivhumbeo? Hu do itea mini arali nda shandula itshi tshivhumbeo?
- Ni nga shumisa izwi zwivhumbeo u ita modele wa tshija tshifanyiso?
- Ndi zwifhio zwa zwithu izwi zwine zwi nga kunguluwa/seseledza?
- Ni nga thopha izwi zwithu?
- Izwi zwivhumbeo zwi nga dzhenelana?
- Ni nga wana tshithu tshi re na masia a fulethe?
- Ni nga wana tshithu tshi re na masia o kevaho?
- Ndi meme/khuda/thodzi nngana dzine bogisi ja vha nadzo?
- Ndi zwifhio zwi fanaho/fhambanaho nga ha mabogisi aya mavhili?

Divhaipfi ya Tshikhala na Tshivhumbeo (Dzhometiri)

Vhuimo na sia

- ngomu, kha, tsima, ntha ha, u fhira, fhasi ha, nnda, ngomu ha, nnda ha, ntha, fhasi, nga ntha, nga fhasi, vhukati, phanda ha, murahu, tsini ha, shandula
- tsini, kule, nga thungo, sia, ngomu, nnda
- tsini, tsinisa
- kule, kulesa
- tsini
- tswititi, u khona
- u mona, u vhambelana, nga kha
- u ya, u bva, u tutshela kha, kule na
- nga thungo ha
- phanda, murahu, matungo
- monde, tshauja

Zwivhumbeo zwa mielo mivhili

- tshitendeledi, tshikwea, thofundeina, thofunderaru
- mutalo, sia, meme, khuda, thodzi, shaphu
- kevaho, tswititi

Zwithu zwa mielo miraru

- tshibuoko, bogisi, fhasi, ntha, masia, fulethe
- mitalo, tswititi, meme
- khuda, shaphu, thodzi
- bola, tshikate, kevaho

Ndinganyahuvhili

- u fana na
- monde, tshauja
- ntha, fhasi

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.

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.

GLOSSARY

measurement

'how much' of something, e.g. height, length, mass, volume, capacity

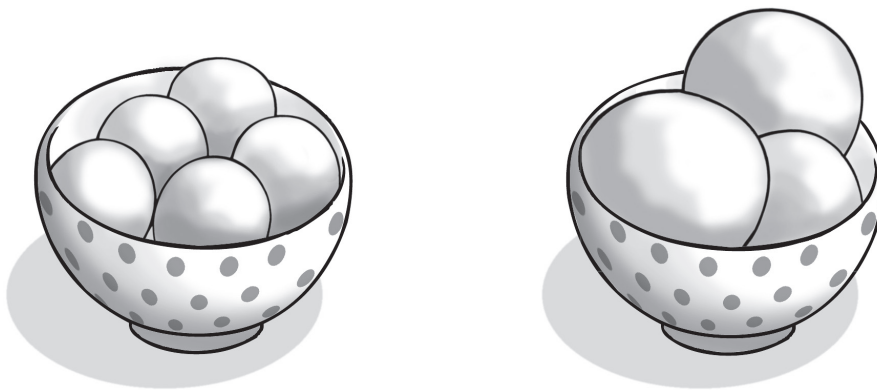


Figure 84. Estimating the amount of ice cream

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.

Muelo

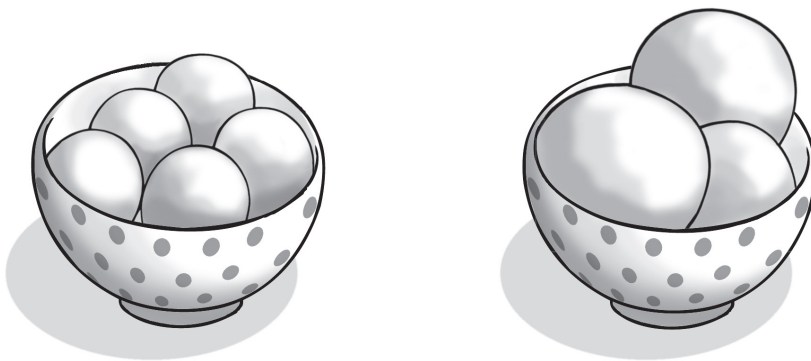
Vhana vha a shela mulenzhe kha **muelo** musi vha tshi tamba na u tandula vhutshiloni havho ha duvha liñwe na liñwe. Vha da kha Gireidi ya T vhe na mihumbulo yavho ya u ela, sa tsumbo, uri mualuwa ndi 'muhulwane', uri tshithu tshi nthesa u swikelelea, uri vha toda zwithu zwinzhi u dadza bogisi, uri zwi dzhia tshifhinga tshilapfu u tshimbila u ya vhengeleni. Vha do vhambedza uri ndi lifhio kha malegere mavhili li re lihulwane, ndi thawara ya tshibuḽoko tshifhio i re ndapfusa kana ndi bogisi lifhio li lemelesaho kha mabogisi mavhili. Divhaipfi ya u pfesesa tshaka dzo fhambanaho dza u ela dzi bvedzea nga zwiḽuku nahone i a aluwa u bva kha tshenzhemo na nyambedzano dza vhukuma dza vhana dza duvha liñwe na liñwe na vhaaluwa na dzikhonani, musi, sa tsumbo, vha tshi nga dzhia tshipida tshihulwanesa tsha vhurotho kana u vhambedza vhunḽha kana u wanisisa uri ndi nnyi a re na mulenzhe mutukusa kana ndi nnyi o itaho thawara ndapfusa. Vha dzhia tsheo nga ha uri ndi tshitambiswa tshifhio tsha modoro kha zwivhili tshine tsha do edana garatshini na uri ndi zwiḽoko zwingana zwine vha do toda u ita uri garatshi i vhe khulwane kana thukhu. Vha nga ela thimbinywa dza u bika, u shela maḽi kana mutavha u bva kha dzhege u itela u vhona uri ndi khaphu nngana dzine dzi nga dadzwa, kana u vhambedza uri sagana ya swigiri na bogisi la maswiri zwi lemela hani.

Mielo na yuniti dzine ra dzi shumisa u ela ndi nga ha u wana uri 'ndi zwingana' zwi re hone zwa tshithu tiwa. U ela zwi na vhumani na mañwe masia a mbalo, u fana na nomboro, phetheni, tshivhumbeo na data. Vhagudi vha vhalela uri hu na yuniti nngana dzi todeaho u ela mbumbo ya vhezhi ha zwithu, u fana na vhunḽha, vhungomu, ndadzo, vhulapfu, tshileme, kana ha zwi si na mbumbo, u fana na tshifhinga, tshiledo kana thempheretsha. Vha nga anganyela uri ndi zwifhio zwa zwithu zwi re 'zwinzhi' kana 'zwiḽuku', sa tsumbo, zwifhaho zwa aisikhirimu kha tshidongo. Vha do sendeka nyanganyelo yavho kha tshikhala tshi dzhiwaho nga aisikhirimu, hu si tshileme tsha tshidongo kana tshivhalo tsha zwifhaho.

GUḽOSARI

muelo

'ndi zwingana' zwithu, sa tsumbo, vhunḽha, vhulapfu, tshileme, volumu, vhungomu



Figara ya 84 U anganyela vhezhi ha aisikhirimu

Kha Gireidi ya T, u ela ndi ha vhukuma nahone vhagudi vha fanela u ita nyito nnzhi nga vhone vhane dzine dza pfesesea khavho. U pfesesa divhaipfi ya u ela, sa tsumbo, tshithu tshi 'lemela' hani, vhagudi vha fanela u doba zwithu vha vhambedze zwileme zwazwo. U ela ndi u wana saizi kana tshivhalo tsha tshithu tshithihi nga u tshi vhambedza na yuniti i si ya tshitandadi, u fana na zwanḽa, milenzhe, penisela kana tshipida tsha muḽali, kana yuniti ya tshitandadi, u fana na senthimithara kana lithara.

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

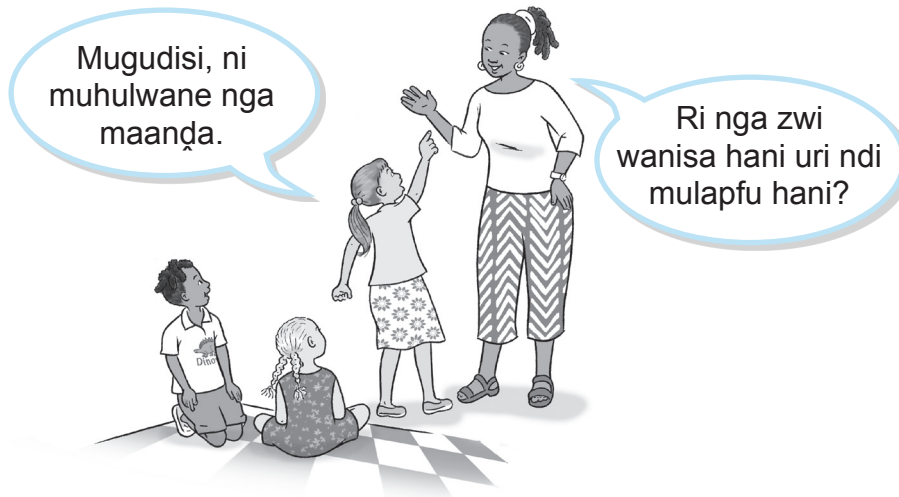
Once learners have decided what they want to measure (the attribute) they need to decide how they will measure a particular attribute, such as height.



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.

Vhagudisi vha tea u lavhelesa vhagudi nga tshifhinga tsha nyito vha ambe navho nga ha mihumbulo yavho. Vhagudisi vha nga divhadza divhaipfi ntswa ngeno vhagudi vha tshi khou vhambedza, sa tsumbo, uri zwithu ndi zwilapfu hani. Musi vhagudi vha tshi amba nga ha tshihwe tshithu 'tshihulwane' kana 'tshituku' mugudisi a nga edzisa tshumiso ya divhaipfi yo teaho nga u vhekanyulula maipfi avho. Sa tsumbo, musi mugudi a tshi amba uri muñwe ndi muhulwane kana mutuku, vhagudisi vha fanela u vha tūtuwedza u amba uri ndi zwifhio nga ha muthu zwine zwa ita uri a vhe muhulwane kana mutuku. Ndi nga vhulapfu kana u khwaṭha kana tshileme tsha muthu?



Figara ya 85 U shumisa divhaipfi ya mbalo

Musi vhagudi vho no dzhia tsheo ya zwine vha ṭoda u ela (zwidodombedzwa) vha fanela u dzhia tsheo ya uri vha ḑo elisa hani tshidodombedzwa tiwa, u fana na vhunṭha.



Figara ya 86 U shumisa zwanda u ela vhunṭha

Nga ṅdila iyi, vhagudi vha ḑo thoma u pfesesa uri zwithu 'zwhulwane' a hu tou vha zwithu zwhulu, na uri vha nga zwi sedza u ya nga vhulapfu, vhunṭha kana tshileme tshazwo.



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.



Nḡowedzo ...



Vhagudi hafhu vha a ṭanganya kana u ṭusa musi vha tshi tandulula thaidzo dza u ela dzine dza katela nomboro, sa tsumbo, musi vha tshi:

-  vhambedza zwivhalo musi vha tshi khou shela maḡi kana muṭavha ngomu ha midzio yo fhambanaho, vha ḡo ṭalukanya uri vha ṭoḡa khaphu mbili uri vha ḡadze dzhege
-  shuma uri ndi zwithu zwingana zwine vha fanela u vhea kha masia oṭhe a tshikalo tsha ndinganyo u itela uri masia a lingane, vha ḡo zwi ṭalukanya uri vha ṭoḡa tshithihi tsha u engedza kana zwi si gathi vha vhalela ṭhanganyelo ya nomboro
-  fhaṭa thawara dza tshibuḡoko vha ṭanganya, u ṭusa na u vhalela tshivhalo tsha zwibuḡoko u itela uri thawara i lapfe kana i vhe pfufhi.

U bveledza ḡivhaipfi ya muelo

Vhagudi vha fanela u vha na zwikhala zwinzhi zwa u tandulula thaidzo dza u ela nahone vha fanela u vha na midzio yo teaho yo fhambanaho ine vha ḡo shumisa kha nyito dzi si dza fomaḡa u itela u sengulusa na u wana thandululo vhone vhane. Vhagudi vha ṭoḡa nyito dza u ita vhone vhane dzine dza katela mbambedzo nga u doba, u shela, u kwama na u amba nga ha zwine vha tshenzhela.



Figara ya 87 Midzio ya nyito dza muelo

Nḡila dzo fhambanaho dza u ela

Mbambedzo ya livhaho

Muelo wo sedzesa kha u vhambedza zwidodombedzwa zwa tshithu nga nḡila yo 'livhaho'. Sa tsumbo, u ela vhulapfu ha penisela na iṅwe penisela kana u vhambedza vhulapfu ha vhagudi vhavhili vho ima vho furaletana.

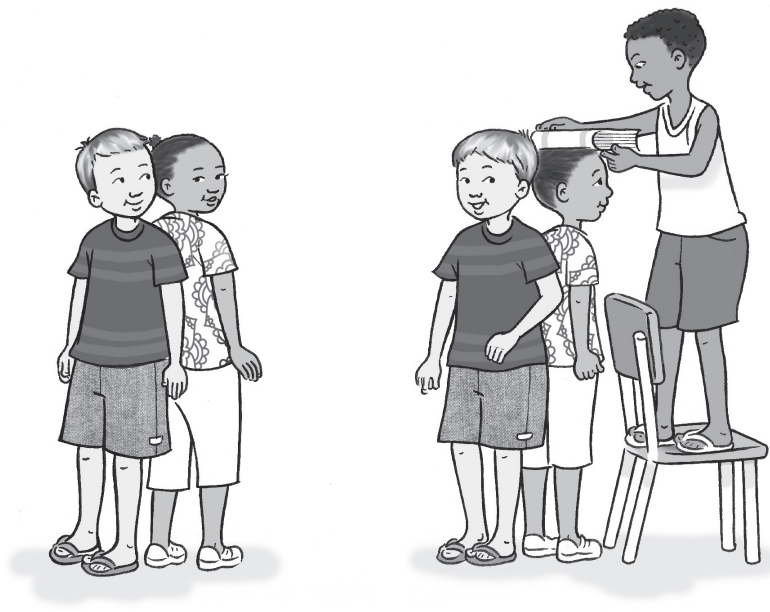


Figure 88 Comparing the height of two learners

'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

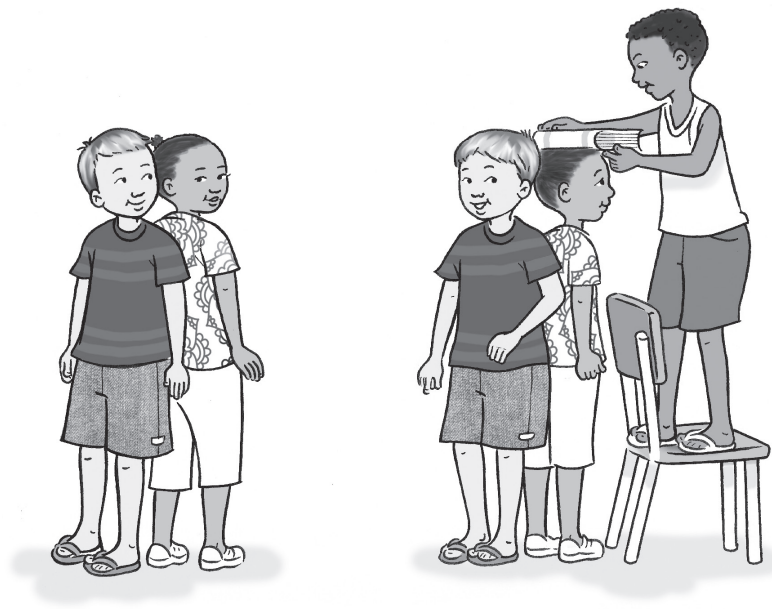
Informal measuring

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



Figara ya 88 U vhambedza vhulapfu ha vhagudi vhavhili

'Max ndi mulapfu kha Lola.'

'O lapfa zwingafhani?'

Mbambedzo dzi nga katela hafhu u tevhekanya:

'Max ndi mulapfu kha Lola fhedzi ndi mupufhi kha Elton.'



Figara ya 89 U lapfesa u ya kha u pfufhifhalesa

U ela hu si ha fomaḷa

Ri ela hu si ha fomaḷa, ri tshi shumisa **zwa u ela zwi si zwa tshitandadi** u ela, sa tsumbo, musi ri tshi shumisa vhulapfu ha tshanda u ela tshipiḷa tsha muḍali, kana u shumisa nayo dzashu u ela saizi ya khaphethe.

GUḶOSARI

zwa u ela zwi si zwa tshitandadi

yuniti ya u ela ine ya shumisa tshithu u fana na tshienda, kilipi ya bambiri kana khubu; zwi nga ḷi vha hafhu tshithu tshi si tsha fomaḷa u fana na u bva kha gunwe u ya kha munwe, nayo kana vhulapfu ha muvhili

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.

Zwa u ela zwi re tshitandadi

Ri shumisa yuniti dza tshitandadi u fana na mijimithara, lithara, senthimithara, mithara, gireme, khilogireme, minetse na dziawara u vhambedza vhulapfu ha tshithu, uri tshithu tshi lemela hani kana uri zwi dzhia tshifhinga tshingafhani u ita tshithu. Ri shumisa zwa u ela zwa tshitandadi u ela nga vhuronwane.

Nyanganyelo




Vhagudi vha bvedza zwikili zwa nyanganyelo nga tshifhinga tsha nyito dza muelo dzi si dza fomaḷa, sa tsumbo, vha fanela u anganyela uri vha humbula uri tshithu tshi lemela hani vha sa athu tshi ela, kana vha humbula uri tshithu tsho lapfa hani zwo disendeka kha tshivhalo tsha zwiḅuḷoko zwine vha humbula uri vha ḑo zwi ḑoḑa uri vha tshi ele, kana vha humbula uri zwi ḑo dzhia tshifhinga tshingafhani uri vha fhedze u kunakisa kilasirumu. Vha kona ha u shumisa zwishumiswa zwa u ela u wana uri nyanganyelo yavho yo vha i ya vhuronwane hani.



Ngowedzo ...



Vhagudi vha thoma u pfesesa uri muelo ndi mini na uri ndi ngani ri tshi fanela u ela. Vha pfesesa uri:

-  Muelo u katela mbambedzo yo livhaho na tshumiso ya zwa u ela zwi si zwa tshitandadi, u fana na zwanḑa na milenzhe, na dziḥwe yuniti dzine dzi fana kokotolo na saizi kana vhulapfu u fana na zwiḅuḷoko, muḑali, zwiḡiroo zwa u vhalela.
-  Yuniti inḥe na inḥe yo fhambana nga saizi; vha ḡalukanya uri u ela huḥwe na huḥwe hu bvedza mvelelo dzo fhambanaho.
-  Ri shumisa zwa u ela zwa tshitandadi u ela u itela uri roḡhe ri vhe na mvelelo dzi fanaho musi ri tshi vhambedza tshidombedzwa.

Vhagudi vha ḡoḑa zwickhala zwinzhi u dzhia tsheo vhone vhane nga ha zwine vha ḡoḑa u ela na uri vha ela hani. Vha fanela u vhambedza mvelelo dza mielo yavho nahone vha shumise yuniti dzo fhambanaho u ela zwithu zwi fanaho.

Kha gireidi dza nḡha, musi vhagudi vho no kona zwikili zwa u vhambedza na u anganyela, vha thoma u shumisa zwa u ela zwa tshitandadi. Vhanwe vhagudi vha Gireidi ya ḡ vha nga ḡanea kha zwishumiswa zwa u ela hayani nahone izwi zwi nga haseledzwa lu si lwa fomaḷa tshikoloni, sa tsumbo:

- ★ dzhege dza u ela, lebula dza u ela – u ela dzimililithara, dzilithara
- ★ dziruḷa, theiphi ya u ela – u ela senthimithara, mithara
- ★ zwikalo – u ela gireme, khilogireme
- ★ watshi dza tshandani na dza luvhondoni – u ela minetse, dziawara.

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.

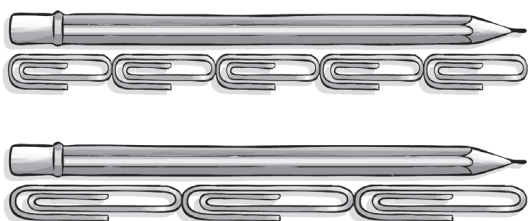


Figure 90 Measuring length with two different units of measurement

Tshifhinga

Zwipida zwa vhukuma zwa muelo – vhukule, vhungomu, tshileme – zwi nga kumedzwa kha vhagudi nga nyito dzo dowealeho na zwiwo, fhedzi tshifhinga ndi divhaipfi i kondaho i todaho u hambula uri vhagudi vha i pfesese. Izwi ndi nga mulandu wa uri vhaaluwa a vha anzeli u shumisa luambo lwa tshifhinga nga vhuronwane, nahone vha shumisa mafhungo a duvha linwe na linwe sa, 'ndi do vha ndi henefho nga minete,' fhedzi vha dzhia tshifhinga tshilapfu u fhira minete. Hafhu, vhana vhatuku vha tshilela 'tshifhinga tshenetsho' nahone zwenezwo u elelwa zwiwo zwa kale u itela u hambulela zwiwo zwa matshelo zwi a vha kondela. Vhagudi vha fanela u pfesesa uri tshifhinga tshi tshimbila hani kha vhutshilo havho, zwenezwo vhagudisi vha fanela u anetshela tshifhinga kha tshenzhemo dza vhagudi dza duvha linwe na linwe na zwiwo zwine vha zwi divha.

- ★ U tevhekanya zwiwo: Vhagudi vha fanela u pfesesa luambo lwa tshifhinga u itela uri vha kone u amba nga ha u tevhekana hune zwiwo zwa khou itea ngaho. Kha vha shumise ndowelo ya duvha linwe na linwe na zwiwori u amba nga ha u tevhekana ha zwiwo masiari na thevhekano ya nyito ya u khunyeledza mushumo – 'ho itea mini u bva afho/phanḁa ha/nga murahu ha'.
- ★ Yuniti dza tshifhinga: Kha vha vhambedze yuniti dza tshifhinga: tshifhinga tsha tshikolo ndi nga matsheloni, tshifhinga tsha u ya hayani ndi nga masiari, tshifhinga tsha u edela ndi vhusiku, 'u edela' luvhili phanḁa ha duvha la mabebo. Kha vha ite tshathi ya mutsho, kha vha vhe na khalenda ya nwedzi na hone vha rekhode zwiwo zwa ndeme kha mbekanyangudo ya zwifanyiso. Kha vha ambe nga 'mulovha, namusi, matshelo'. Nga zwiwori vhagudi vha thoma u pfesesa uri tshifhinga tshi fhateya hani u vha maduvha a vhege, miñwedzi ya nwhaha na dzikhalañwaha.
- ★ Phimo dza luvhilo: U gidima na mbambe nḁa. Kha vha shumise puḁasiḁiki yo itaho foro u ita nḁila ya u kungulusa mimavhulu khayoy na fhethu ho tsaho uri vha sukumedze mimodoro u ya nḁha na fhasi. Vha tshinele muzika u ongolowaho na u ḁavhanyaho. Vha vhudzise vhagudi uri zwi dzhia tshifhinga tshingafhani u bulatsha mano avho kana u tshimbila u mona na tshikolo. Kha vha ambe nga misudzuluwo i ḁavhanyaho, ya tshihaḁu na i ongolowaho na nyito.

Vhulapfu

Kha Gireidi ya T, hu sedzeswa kha u anganyela, u ela, u vhambedza na u tevhekanya vhulapfu na vhukule. Vhagudi vha fanela u pfesesa uri u itela u wana vhulapfu ha tshithu vha fanela u tshi ela u bva kha luḁa luñwe u ya kha luñwe. Sa tsumbo, vha nga ela na u vhambedza vhulapfu ha penisela vha tshi shumisa dzikilipi dza mabammbiri sa zwa u ela zwi si zwa tshitandadi. Tshifanyiso tshi re afho fhasi tshi sumbedza uri penisela yeneyo nthi i nga elwa hani hu tshi shumiswa yuniti mbili dzo fhambanaho dza muelo. Kha tshifanyiso tsha u thoma hu na dzikilipi dza mabammbiri ḁhanu ngeno kha tshifanyiso tsha vuvhili hu na dzikilipi dza mabammbiri khulwane tharu.



Figara ya 90 U ela vhulapfu nga yuniti mbili dza u ela dzo fhambanaho

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.

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

mass
how heavy something is

GLOSSARY

capacity
the maximum or greatest amount that something (such as a bucket or a box, or a stadium) can hold

Vhagudi vha nga kona hafhu u ela u bva nṱha u ya fhasi uri vha wane vhulapfu ha tshithu, sa tsumbo, u vbona uri vhagudi vha kilasini ndi vhalapfu hani. Vha nga vha vhekanya nga mutevhe u thomaho kha mulapfusa u ya kha mupfufhisa.

- ★ Mbambedzo yo livhaho: Kha vha wane zwithu zwilapfu kha/zwipfufhi kha ... Kha vha vhekaye zwithu u ya nga vhulapfu na vhunṱha. Kha vha ambe nga na u ṱalusa uri ndi ngani zwithu zwo vhekanywa nga iṅwe nḽila.
- ★ Zwidodombedzwa: Kha vha ambe nga vhulapfu, vhunṱha kana vhuphara vhune ha ḽo elwa.
- ★ Zwa u ela zwi si zwa tshitandadi: Kha vha shumise zwanda, maṱari, penisela u ela na u vhambedza zwithu.
- ★ Zwa u ela zwi si zwa tshitandadi zwi fanaho: Kha vha shumise yuniti dza saizi i fanaho, sa tsumbo, zwiḽoko. Kha vha zwi vhee zwo vhambelana na vhulapfu hoṱhe ha tshithu tshi no khou elwa. Nga murahu vha shumise tshibuḽoko tshithihi vha tshi tshi tshimbidza tsho vhambelana, vha tshi vhalela tshivhalo tsha u tshimbidza uho.

Tshileme

Kha Gireidi ya Ṭ hu vha ho sedzeswa kha u anganyela, u kala, u vhambedza na u tevhekanya zwithu u ya nga uri zwi lemela kana u leluwa hani. Zwi dzhia tshifhinga uri vhagudi vha pfelese ḽivhaipfi ya uri muelo na tshileme zwo fhambana. Vhagudi vha fanela u tandula zwithu zwiṱuku zwi lemelaḽo, zwithu zwiṱuku zwi leluwaho, zwithu zwiḽwane zwi lemelaḽo na zwithu zwiḽwane zwi leluwaho vha ite mbambedzo vhukati hazwo. Vhagudisi vha fanela u thusa vhagudi uri vha sedzesa kha u pfelesa uri tshithu tshi lemela hani, hu si saizi yatsho.

- ★ U vhambedza ho livhaho: Kha vha fare tshithu vha anganyele **tshileme** tshatsho. Kha vha wane zwithu zwi lemelaḽo kana zwi leluwaho u tshi fhira.
- ★ Zwidodombedzwa: Kha vha ambe nga tshivhumbeo, muelo na tshileme zwa tshithu tshi no khou elwa.
- ★ Zwa u ela zwi si zwa tshitandadi: Kha vha shumise tshikalo tsha tshanduko u vhambedza tshileme tsha zwithu. Kha vha vhee tshithu tshi no ḽo kalwa kha iṅwe sia ḽa tshikalo. Kha vha engedze tshinwe tshithu (kana tshi fhiraho tshithihi) kha iṅwe sia ḽa tshikalo uri zwi eḽane.
- ★ Zwa u ela zwi si zwa tshitandadi zwi fanaho: Kha vha shumise yuniti dza muelo muthihi dzi fanaho, sa tsumbo, tshibuḽoko tshihulwane kana bugu u vhambedza tshileme tsha zwithu vha tshi shumisa tshikalo tsha masia mavhili.

Vhungomu

Vhungomu ha tshithu ndi uri tshi nga faredza zwingafhani, sa tsumbo, ḽithara nthihi ya boḽelo ḽa mafhi i nga faredza ḽithara nthihi ya tshiluḽi. Kha Gireidi ya Ṭ, hu sedzeswa kha u anganyela, u ela, u vhambedza na u tevhekanya midzio u ya nga uri i nga faredza zwingafhani. Vhagudisi vha fanela u ṅea vhagudi zwiḽhala zwinzhi zwa u shumisa ḽivhaipfi ya u sa vha na tshithu na u ḽala, sa tsumbo, musi vha tshi khou ḽadza kana u shulula maḽi kana muṱavha ngomu ha midzio nga tshifhinga tsha zwiḽiwa. Vhagudi vha nga ḽadza midzio nga zwithu zwo fhambanaho vha amba nga ha vhungomu hazwo: 'Ri ṱoḽa khaphu nngana dza maḽi u ḽadza iyi dzhege? Ndi ngani ri tshi ṱoḽa maboḽelo a mafhi a si gathi a maḽi u ḽadza dzhege?'

GUḽOSARI

tshileme
tshithu tshi lemela hani

GUḽOSARI

vhungomu
ṅadzo kana tshivhalo tshihulwanesa tshine tshinwe tshithu (u fana na bakete kana bogisi, kana tshifediamu) tshi nga faredza

- ★ 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

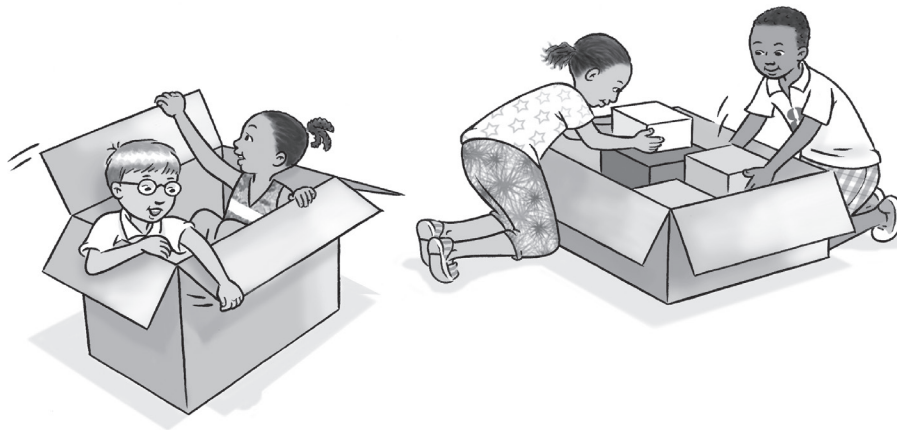


Figure 9I Exploring capacity and volume

- ★ 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?'

- ★ U vhambedza ho livhaho: Kha vha ḡadze, vha shulule na u shela vhukati ha midzio i fanaho vha tshi shumisa maḡi kana muḡavha u vhona arali i tshi faredza tshivhalo tshi eḡanaho. Mathomoni, vhagudi vha nga anganyela uri mudzio mulapfu kha mivhili u ḡo faredza maḡi manzhi.
- ★ Zwa u ela zwi si zwa tshitandadi: Kha vha lingedze nga u vhona uri midzio yo fhambanaho i faredza maḡi kana muḡavha mungafhani. Kha vha vhambedze uri ndi ufho u faredzaho 'zwinzhi' kana 'zwiḡuku'. Kha vha ḡadze mudzio muthihi vha shele maḡi kana muḡavha kha muḡwe u vhona arali u tshi shuluwa kana arali hu kha ḡi vha na tshikhala tsho salaho uri hu kone u engedzwa hafhu. Kha vha ḡadze midzio milapfu na yo aḡamaho vha i vhee nga mutevhe u bvaho kha une wa faredza zwinzhisesa u ya kha une wa faredza zwiḡukusesa.
- ★ Zwa u ela zwi si zwa tshitandadi zwi fanaho: Kha vha vhalele tshivhalo tsha lebula kana khaphu dzine dza ḡadza midzio ya saizi dzi fanaho na dzo fhambanaho.

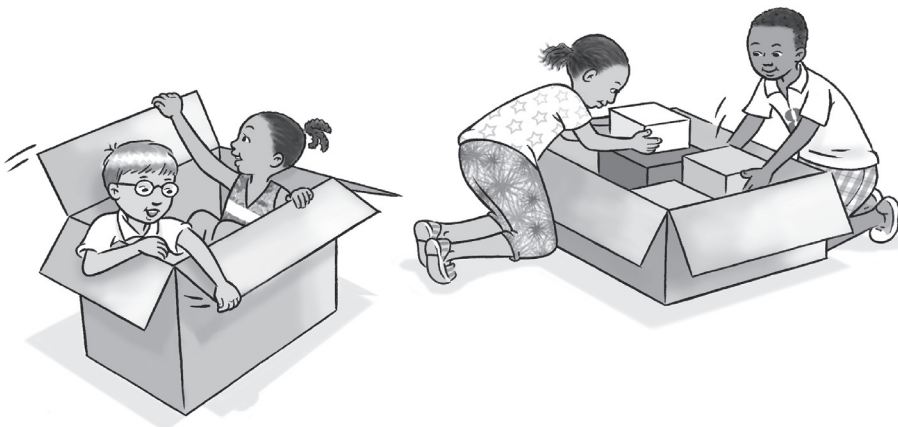
Voḷumu

Voḷumu ndi nga ha uri tshithu tshi nga faredza zwingafhani, u fana na maḡi, muḡavha, raisi kana swigiri. Kha Gireidi ya T , u sedzeswa kha u ela zwi fanela u vha kha uri mudzio u nga faredza zwingafhani (vhungomu) u fhira tshivhalo tsha tshikhala tshine mudzio wa faredza (voḷumu). Voḷumu i nga shanduka u ya nga tshivhalo tsha zwi re ngomu tshifhinga tshiḡwe na tshiḡwe, fhedzi vhungomu vhu dzula ho ralo, sa tsumbo, vhungomu ha dzhege ndi ḡithara 1 hu sa sedzhwi uri ndi zwingafhani zwine ya vha nazwo zwa zwino. Iyi ndi ḡivhaipfi i kondelaho vhagudi vha Gireidi ya T uri vha i pfesese.

GUḶOSARI

voḷumu

tshivhalo tshine tshiḡwe tshithu tsho tshi faredza kana tshikhala tshine zwi re ngomu zwa tshi dzhia



Figara ya 91 U tandula vhungomu na voḷumu

- ★ Mbambedzo yo livhaho: Vhagudi vha lingedza nga midzio ya zwivhumbeo zwo fhambanaho u wana uri mudzio ndi muhulu zwingafhani na uri vha humbula uri u nga faredza zwingafhani.
- ★ Zwa u ela zwi si zwa tshitandadi: Kha vha papamalise ngomu maḡini midzio i fanaho na midzio ya puḷasiḡiki i faraho zwiliwa, maboḡelo a puḷasiḡiki a boḡoro ya nḡuhu, dzhege dza mafhi. Kha vha zwi ḡadze nga zwa u vhalela kana muḡavha nahone vha haseledze zwine zwa itea. Vha vhudzise mbudziso dzi fanaho na: 'I kha ḡi papamala? Hu itea mini kha maḡi a re ngomu baketeni? A a tevhuwa?'

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

Mbudziso dzine vha fanela u vhudzisa nga Muelo

- No ita mini musu ni tshi vuwa?
- Na ita mini hafhu?
- Ha iteani nga murahu ha izwo?
- Ro ita mini phanḁa ...?
- Ri ḁo ita mini nga murahu ...?
- Ndi tshifhio tshi tshimbalaho nga u ṭavhanyedzesa/u ongolowesa?
- Ndi ḁuvha ḁifhio ...? Hu ḁo vha hu ḁuvha ḁifhio ...?
- Ndi tshifhio tshilapfu/tshipfufhi?
- Ndi tshifhio tshi lemelesaho/leluwesaho?
- Ndi khaphu/lebula/maboḁelo mangana ane ... tsha faredza?
- Ndi mudzio ufhio une wa nga faredza u fhira uyu?
- Ndi mudzio wa nnyi une wa vha na vhungomu huhulu? Ni zwi ḁivha hani?
- Ndi na ḁora nga maanḁa. Ndi shumise khaphu ifhio? Ndi ngani?

ḁivhaipfi ya u Muelo

- u elanya, u vhekanya, u vhambedza, u tevhekanya
- u ela, u fana na

Tshifhinga

- phanḁa ha, murahu ha, tsini ha, zwino, kale
- u ṭavhanya, u ongolowa
- masiari, vhusiku, matsheloni, masiari
- ḁamusi, mulovha, matshelo
- vhege, maḁuvha a vhege
- ḁwedzi, miḁwedzi ya ḁwaha
- khaḁenda
- ḁwaha, ḁuvha
- luṭavula, vhuriha, tshifhefho, tshilimo, khalaḁwaha

Vhunavha

- zwo navha, pfufhifhala, aṭama, lapfa lungafhani
- lapfesa, ndapfusa, pfufhi, aṭamesa
- pfufhisa u ya kha ndapfusa, ndapfusa u ya kha pfufhisa

Tshileme

- lemela, lemelesa, lemelesesa
- leluwa, leluwesa, leluwesesa

Vhungomu

- zwinzhi, zwi si gathi, a hu na tshithu, ḁala

Voḁumu

- khulu, ṭhukhu, khulwane, ṭhukhu, ṭhukhusa

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.

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.

GLOSSARY

classify

the process of grouping similar things in a systematic way, e.g. separating clothes by winter and summer

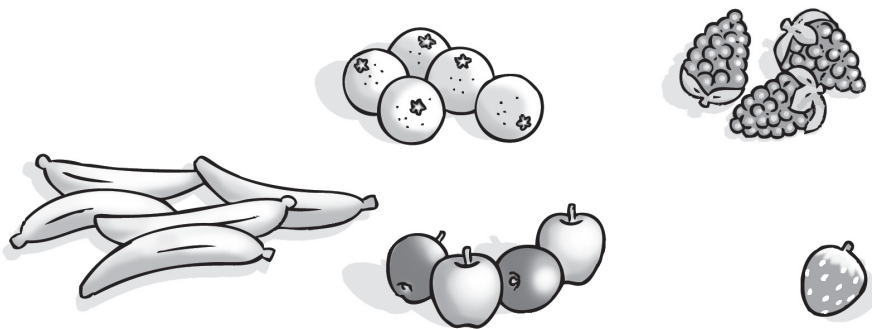


Figure 92 Collecting, sorting and organising into groups

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.

U shuma na Data

Vhana vhaṭuku vha vhudzisa mbudziso zwenezwi vha tshi khou lingedza u pfesesa lifhasi line vha tshila khalo. Vhagudisi vha fanela u tuṭuwedza vhagudi vha re kha Gireidi ya T u vhudzisa mbudziso na u toḁa ṭhalutshedzo. Mbudziso idzi dzi nga shumiswa sa mutheo wa u kuvhanganya mafhungo (data) na u wanisisa nga ha zwithu na zwiwo.

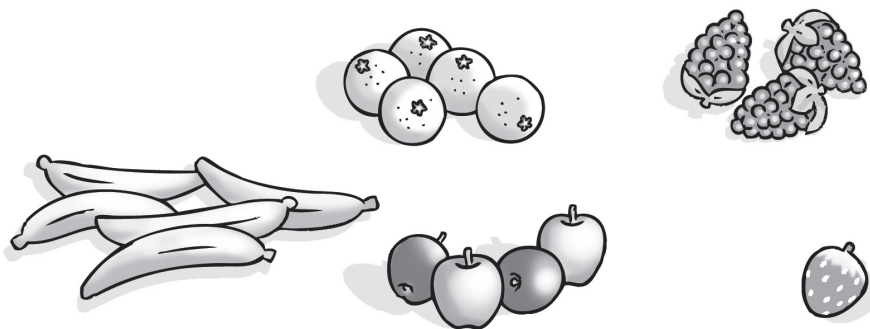
U vhekanya na u khethekanya

Tshifhinga tshoṭhe vhagudi vha vhekanya na **u khethekanya** zwithu u mona navho nga ṅila dzo fhabanaho. Vha vhea zwithu nga zwigwada zwa mivhala yo fhambanaho na saizi, vha paka na u pakulula zwithu hayani na tshikoloni, u zwi vhekanya nga zwiṭhopho zwa zwivhumbeo zwo fhambanaho na mishumo, sa tsumbo:

- ★ u vhekanya na u elanya zwigwada zwa zwithu: maswogisi, zwienda, dziphuleithi, dzikhaphu
- ★ u paka zwithu: zwikoṭikoṭi, mabogisi, mabogelo, zwa u vhalela
- ★ u vhekanya zwa u vhalela kana zwitambiswa u ya nga zwiṭalusi: muvhala, saizi, lushaka
- ★ tshifhinga tsha u kunakisa: dzibugu, zwiḁoko, dziphazili, mitambo, dzikhirayoni.

Zwithu zwi nga vhekanywa na u khethekanywa u ya nga u fana hazwo, u fana na muvhala. Zwenezwi vhagudi vha tshi ḁivha nga ha vhunzani ha zwithu u fana na zwimela na phukha, na u fana hazwo na u fhambana hazwo, zwi ita uri vha kone u zwi khethekanya u ya nga zwigwada zwo fhambanaho.

U shuma na Data zwi katela u kuvhanganya, u vhekanya na u dzudzanya, u imela na u ṭalutshedzelela mafhungo u itela u tandulula thaidzo kana u fhindula mbudziso, sa tsumbo, 'Ndi vhagudi vhangana vha takalelaho u ja maapula?' U itela u fhindula mbudziso iyi, vhagudi vha ḁo fanela u kuvhanganya mafhungo, u a vhekanya na u a imela nga ṅila ine zwa ḁo vha lelutshela u a ṭalutshedzelela u itela u fhindula mbudziso.



Figara ya 92 U kuvhanganya, u vhekanya na u dzudzanya nga zwigwada

U shuma na Data zwi nga ṭumana na maṅwe masia a u guda, sa tsumbo, u wana nga ha:

- ★ lifhasi u mona na riṅe, nga u sedza na u rekhoda mutsho wa ḁuvha liṅwe na liṅwe kana u kuvhanganya tshakha dzo fhambanaho dza maṭari
- ★ zwitaṅwa zwa vhuṅe, u fana na mivhala ine muthu a takalela
- ★ zwiliwa zwa mutakalo, u fana na mitshelo na miroho.

GUḂOSARI

u khethekanya

maitele a u vhea zwithu nga zwigwada zwa zwi fanaho nga ṅila ya vhudzivha, sa tsumbo, u khethekanya zwiambaro zwa vhuriha na zwa tshilimo

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.

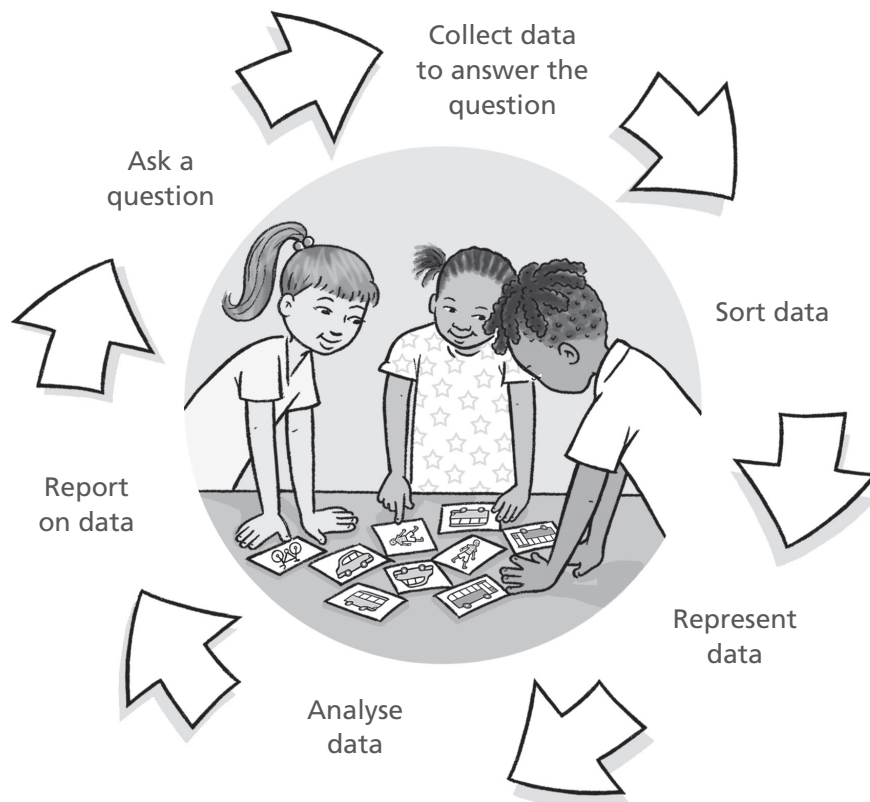


Figure 93 The Data Handling cycle

U topola zwiṭalusi

Mathomoni, vhagudi vha vhekanya na u khethekanya zwithu u ya nga tshiṭalusi tshithihi, u fana na muvhala, muelo kana tshivhumbeo. Nga zwiṭuku vha nga ṅea mihumbulo uri ndi ngani vho vhekanya zwithu nga zwigwada nga iyo ṅila. Vha nga dovha hafhu vha humbula nga ha dziṅwe ṅila dza u vhea zwithu zwi fanaho nga zwigwada, zwo ḍisendeka kha zwiṭalusi zwo fhambanaho. Zwenezwi vhagudi vha tshi khou tandula na u amba nga ha uri vha khou zwi kuvhanganya hani, u dzudzanya na u vhekanya 'zwithu' u mona navho, vha thoma u dzudzanya zwithu nga zwigwada zwo ḍisendeka nga tshiṭalusi tshi fhiraho tshithihi, u fana na muvhala na tshivhumbeo zwa zwithu.



Ṅdowedzo ...



Mugudisi a nga humbela vhagudi u vhekanya kuvhanganyo ya zwiṭhumbelo zwa mivhala yo fhambanaho:

👉 Wanani zwiṭhumbelo zwoṭhe zwidala.

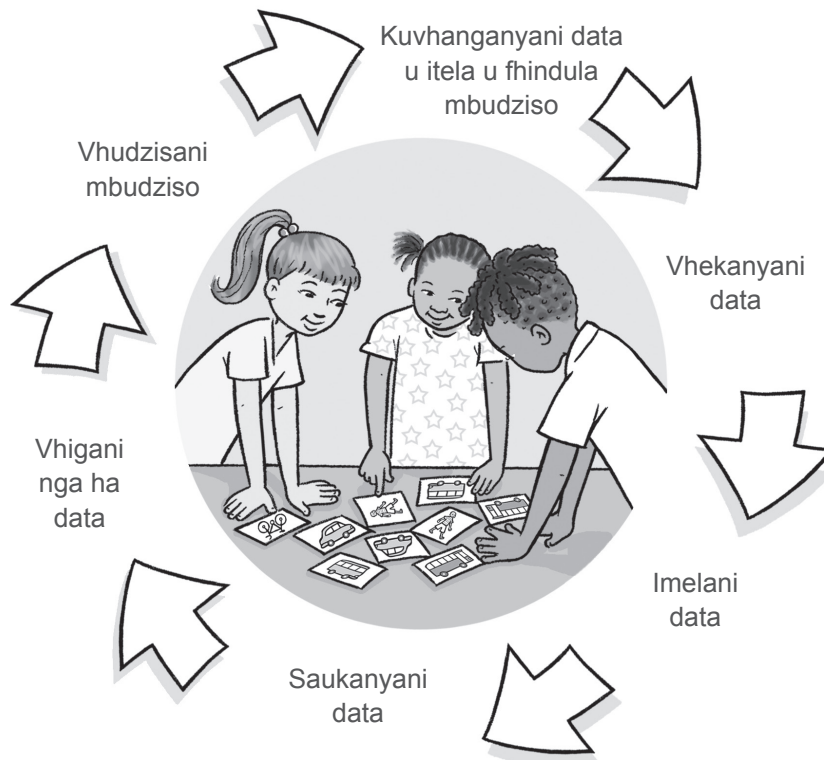
👉 Wanani zwiṭhumbelo zwoṭhe.

👉 Wanani zwiṭhumbelo zwidala.

U vhekanya nga zwiṭalusi zwiṭhumbelo ndi khaedu kha vhagudi ngauri vha fanela u pfesesa phambano vhukati ha zwigwada zviraru. Zwiṭhumbelo zwa zwigwada zwi na tshiṭalusi tshithihi fhedzi ngeno tshigwada tsha vhuraru tshi na zwiṭalusi zwi itaho uri tshi wele kha zwigwada izwo zwiṭhumbelo.

Mutevheṭhandu wa U shuma na Data

Vhathu vha anzela u amba nga maitele a U shuma na Data sa mutevheṭhandu ngauri zwiwo kana nyito dzo katelwaho dzi a dovhololwa nga u tevhekana hu fanaho kha mbudziso iṅwe na iṅwe ntswa ine ya fhindulwa.



Figara ya 93 Mutevheṭhandu wa U shuma na Data

- 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

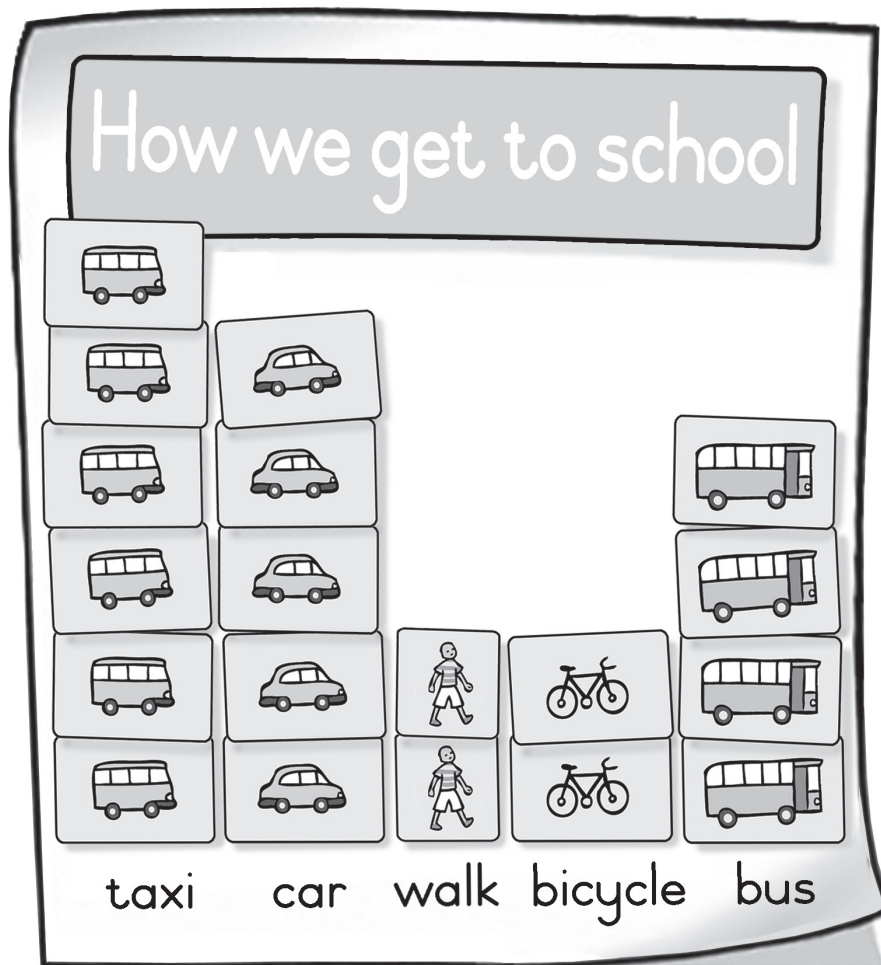
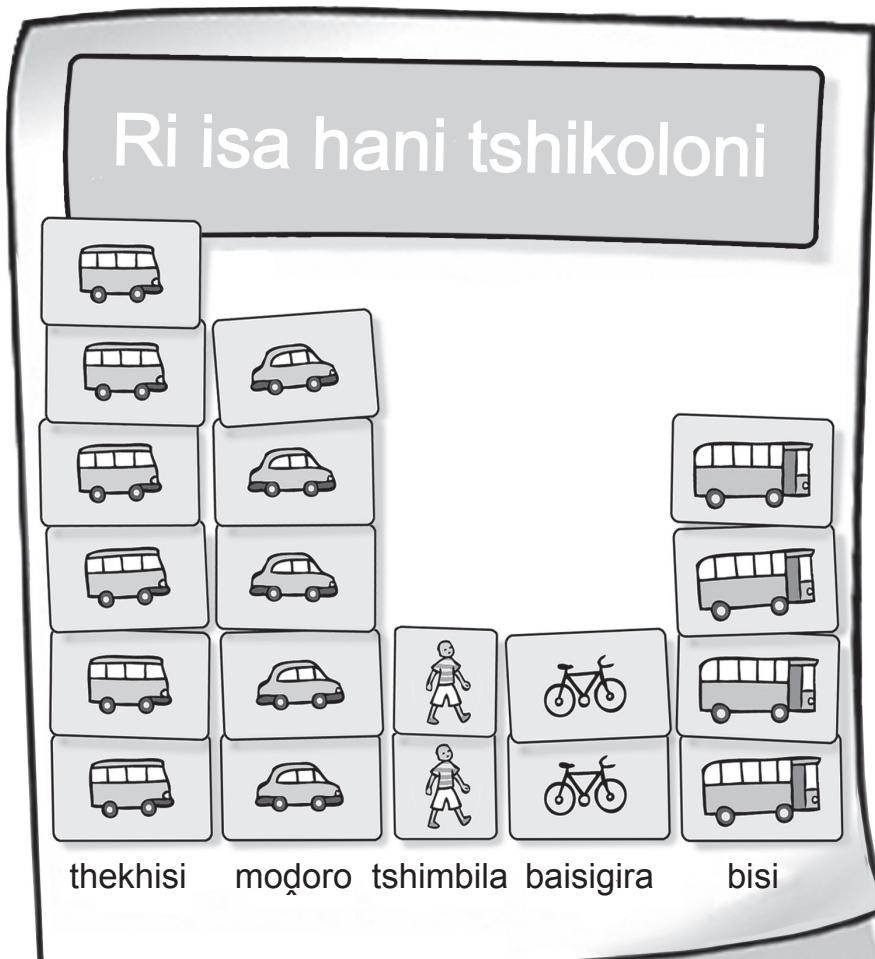


Figure 94. A pictograph

- Vhudzisani mbudziso:** Vhagudi vha dzhia tsheo ya zwine vha toḡa u wanulusa nga hazwo, sa tsumbo, 'Ndi a divhudzisa uri ndi vhagudi vhangana vha ḡaho tshikoloni nga bisi na uri ndi vhangana vha ḡaho nga moḡoro?' Muḡali wo farekanyaho data ndi wone muhumbulo wa u kuvhanganya data tiwa kana mafhungo. Izwi zwi amba uri data yo kuvhanganywaho kana zwigwada zwo vhumbwaho nga u vhekanya zwi fanela u thusa kha u fhindula mbudziso dze vhagudi vha dzhia tsheo ya u toḡa u wana phindulo dzadzo.
- U kuvhanganya data:** Vhagudi vha dzhia tsheo ya uri vha khou toḡa u kuvhanganyisa hani data zwo ḡisendeke kha mbudziso kana thaidzo, sa tsumbo, nga u vhudzisa vhaḡwe vhagudi uri vha ḡa hani tshikoloni na u ola tshifanyiso tsha muḡwe na muḡwe wavho.
- U vhekanya data:** Vhagudi vha dzudzanya na u vhekanya data nga zwigwada u ya nga tshiḡalusi. U itela u fhindula mbudziso na u dzhia tsheo ya uri data ye vha kuvhanganya i ḡo imelelwa hani, tsheo dzi fanela u itwa nga ha uri zwithu zwi nga vhekanywa hani.
- U imela data:** Vhagudi vha tandula nḡila dzo fhambanaho dza u sumbedza kana u ḡana mafhungo e vha kuvhanganya, sa tsumbo, nga u vhea zwithu zwa vhukuma kha metha kana u fhaḡa **girafu ya zwifanyiso**.
- U saukanya data:** Vhagudi vha ḡalusa na u vhambedza data yo imelelwaho, sa tsumbo, ndi lushaka lufhio lu shumiseswaho kana u sa shumiseswa u ḡa tshikoloni.

GUḲOSARI

girafu ya zwifanyiso
nḡila ya u imela data
hu tshi shumiswa
zwifanyiso



Figara ya 94 Girafu ya zwifanyiso

- 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. Muvhigo nga data:** Vhagudi vha fhindula mbudziso ye ya vhudziswa mathomoni, 'Ndi a dxvhudzisa uri ndi vhagudi vhangana vha dxaho tshikoloni nga bisi nahone ndi vhangana vha dxaho nga modoro?' Vha a kona u zwi vhona uri vhagudi vhaṅa vha dxaho tshikoloni nga bisi na uri vhagudi vhaṅanu vha dxaho tshikoloni nga modoro. Vha nga kona hafhu na u vhambedza maṅwe mafhungo u fana na uri ndi vhagudi vhangana vha dxaho tshikoloni nga dziṅwe ṅdila na uri ndi lushaka lufhio lwa vhuendi lune lwa shumiseswa kana lu shumiswaho zwiṅuku.

Mbudziso dza u vhudzisa kha U shuma na Data

- Ndi tshigwada tshifhio tshi re na zwinzhisa/zwiṅukusa? Ni nga bula ni songo vhalela?
- Ndi tshigwada tshifhio tshi re na zwinzhi/zwi si gathi?
- Ni humbula uri phindulo ndi ifhio?
- Ri nga zwi wanisa hani?
- Ndi ngani no vhea zwithu izwi fhethu huthihi?
- Ni nga dzudzanya izwi nga iṅwe ṅdila?
- Izwi zwi wela afha?
- Mutshelo u dxivheswaho ndi maswiri kana miomva?
- Ndi maḍuvha mangana e ha vha na: dxuvha, muya, mvula, ...?
- Hu dxo bvelela mini arali ...?

Dxvhaipfi ya U shuma na Data

- u elanya, u vhekanya, u vhambedza
- u fana, u fhambana, u wela kha, u sa wela kha
- zwinzhi kha, zwiṅuku kha, u fana na
- tshifhinga tshoṅthe, tshiṅwe tshifhinga, na luthihi
- rou, kholumu
- khamusi, konadzea, vhuṅanzi

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

Gulosari

- divhaipfi** muhumbulo. Nga mañwe maipfi, a u kwamei. Divhaipfi ya mbalo i katela nomboro, u vhalela, tshikhala, u țanganya na u țusa.
- dzhomețiri** tshipiđa tsha mbalo tshine tsha shuma na vhunzani, muelo na vhushaka ha masia, mitalo na khuđa dza zwivhumbeo tshikhalani
- girafu ya zwifanyiso** nđila ya u imela data hu tshi shumiswa zwifanyiso
- imela** u shumisa zwithu, tswayo kana nyito u imela muhumbulo kana divhaipfi
- kwa** zwonezwone, vhuronwane
- mashumisele** nđila dzo fhambanaho dza u shumisa divhaipfi ya mbalo na zwikili, sa tsumbo, u sedza tshintshi vhengeleni, u vhalela tshelede ya u badela thekhisi, kana u kovha phakhethe ya nđuhu vhukati ha khonani tharu
- mbonalo** zwițalusi zwa tshivhumbeo tsha mielo mivhili kana zwithu zwa mielo miraru, sa tsumbo, vhulapfu, vhuphara, vhunțha, matungo, dzimeme, dzikhuđa
- mbonalo vhukuleni** masiandoitwa a vhukule kana nđwongo kha mbonalo ya zwithu
- mielo miraru (3-D)** tshithu tshi na mielo miraru: vhulapfu, vhuphara (u țandavhuwa) na vhunțha
- mielo mivhili (2-D)** tshivhumbeo tshi na mielo mivhili: vhulapfu na vhuphara (u țandavhuwa)
- milayo** milayo nga u angaredza ine ya tendiwa sa yone ya ngoho
- mirađo ya sethe** zwithu, misudzuluwo kana zwiwo kha phetheni
- muelo** 'ndi zwingana' zwithu, sa tsumbo, vhunțha, vhulapfu, tshileme, volumu, vhungomu
- mvelaphanda ya mveledziso** thevhekano ine khayi zwikili na magudiswa zwa fhațana
- nđivho thangeli** zwine vhagudi vha đa vha tshi zwi đivha na zwine vha vho kona u zwi ita
- ndinganyahuvhili** musi tshivhumbeo kana tshithu tshi tshi nga kovhiwa tsha bva hafu mbili dzi eđanaho vhukati hatsho
- phambano** tselisano ya vhathu vha re na phambano dzo fhambanaho dza, sa tsumbo, vhuņe, vhumuthu, vhukoni, madzangalelo na siangane
- phetheni** thevhekano yo đowealeho ya zwithu, misudzuluwo kana zwiwo zwine zwa dovholola nga nđila i humbuleleaho
- thevhekano** u tevhekana tiwa hune zwithu, misudzuluwo kana zwiwo zwa tevhelana ngayo
- tshihumbulelwa** muhumbulo, kana vhuđipfi
- tshileme** tshithu tshi lemela hani
- u anganyela** vhukoni ha muhumbulo ha u țavhanya u vhona țhanganyelo ya zwithu kha khuvhanganyo hu songo vhalelwa
- u đivhadza** uri zwithu zwo vhewa hani nga nđila ine zwa elana
- u davhidzana** ndi u amba na vhañwe vhathu; u ita nyito na vhañwe vhathu
- u fanyisa** u topola vhunzani hu fanaho kha zwithu zwivhili kana zwinzhi, sa tsumbo, zwithu zwoțhe zwa muvhala wa țađa. U fanyisa ndi tshikili tsha ndeme tsha u guda u livhanyisa tshithu nga tshithu.
- u humbulela** u amba kana u anganyela zwine zwa đo itea tshifhinga tshi đaho
- u khethekanya** maitele a u vhea zwithu nga zwigwada zwa zwi fanaho nga nđila ya vhudzivha, sa tsumbo, u khethekanya zwiambaro zwa vhuriha na zwa tshilimo

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

u lavhelesa ri tshi shumisa zwipfi zwashu u wanisisa nga ha zwithu, mitambo na mahumbulele. Ri fanela u lavhelesa u itela u wana mafhungo nga ha lifhasi, sa tsumbo, u sedza na u thetshhelesa nga vhuronwane kha zwine zwa khou itea u mona na riqe.

u linga ha fomethivi u linga hune ha netshedza mafhungo musu u guda hu tshi khou itea na u tola mvelephanda ya mugudi

u nea muhumbulo mahumbulwa a murahu ha muhumbulo kana tshitatamennde

u tevhekanya u dubekanya zwithu zwiraru kana zwinzhi kana mitambo nga u tevhekana, sa tsumbo, ndowelo ya kilasini ya duvha liñwe na liñwe, ndowelo ya matsheloni ya vhagudi ('musi ndi tshi karuwa ndi bva mmbeteni, nda tamba khofheni, nda la vhuragane ...') kana zwiwo kha tshitori

u vhala ha mutevhetsindo u vhalela ntha, u bula nomboro nga u tevhekana ho teaho (hu dovha hafhu ha divhea sa u vhalela nga u dovholola kana u vhalela nga thoho)

u vhalela hu vhambedzaho u vhalela zwithu u wana uri 'ndi zwingana'

u vhalela nga thoho u vhalela ntha, u bula nomboro nga u tevhekana ho teaho (hu dovha hafhu ha divhea sa u vhalela nga u dovholola kana u vhala ha mutevhetsindo)

u vhalela nga u dovholola u vhalela ntha, u bula nomboro nga u tevhekana ho teaho (hu dovha hafhu ha divhea sa u vhala ha mutevhetsindo kana u vhalela nga thoho)

u vhambedza u toga zwi fanaho na zwo fhambanaho vhukati ha zwithu zwivhili kana zwinzhi, sa tsumbo, 'idzi dzothe ndi phukha fhedzi nthihi yadzo ndi ya muvhala wa lutombo ngeno inwe i ya muvhala mutswuku'. U vhambedza ndi nga ha u wana vhushaka vhukati ha zwithu zwo disendekaho nga zwidodombedzwa tiwa. Tshikili itshi tshi ri livhisa kha vhukoni ha u khethekanya zwithu.

u vhekanya u wana zwithu zwi fanaho, na u zwi vhea nga zwigwada hu tshi tevhelwa zwidodombedzwa tiwa. Mathomoni kha vha vhekanye nga tshinwe tsha zwidodombedzwa, u fana na muvhala, sa tsumbo, 'zwivhumbeo zwothe zwidala'. Vha kone ha u vhekanya nga zwivhili zwa zwidodombedzwa u fana na muvhala na muelo, sa tsumbo, 'zwivhumbeo zwothe zwiutuku, zwidala'.

vhukateli ndowelo dza u vhona uri vhona vhothe, hu sa sedzwi phambano dzavho, dzo katelwa kha nyito dzothe dza kilasini

vhukonanyi ndi nyito ya thanganelano ine muthu a divhaho zwinzhi kana a vha na zwikili zwo bevelelaho zwa ntha a endedza vhanwe u guda zwithu zwiwa

vhungomu ndadzo kana tshivhalo tshihulwanesa tshine tshinwe tshithu (u fana na bakete kana bogisi, kana tshitediamu) tshi nga faredza

vhunzani mbonalo kana tshitaluli tsha tshinwe tshithu, sa tsumbo, muvhala kana tshivhumbeo

vhushaka uri zwithu kana mihumbulo zwo tumana hani

vojumu tshivhalo tshine tshinwe tshithu tsho tshi faredza kana tshikhala tshine zwi re ngomu zwa tshi dzhia

zwa u ela zwi si zwa tshitandadi yuniti ya u ela ine ya shumisa tshithu u fana na tshienda, kilipi ya bammbiri kana khubu; zwi nga di vha hafhu tshithu tshi si foma la u fana na u bva kha gunwe u ya kha munwe, nayo kana vhulapfu ha muvhili

zwiga zwithu zwine zwa sumbedza kana u imela zwiñwe zwithu, u fana na zwiga zwa nomboro, logo kana tswayo dza badani

zwikili zwa u vhona na u pfa u shumisa zwipfi u wana mafhungo nga ha mupo, sa tsumbo: u vhona, u kwama, u pfa, u nukhedza na u thetshela

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