Grade 3

Mathematics Teacher Guide

basic education
Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

ENGLISH
Book 1

Contents Grade 3 Book 1

Contents Grade 3 Book 2

Introduction to the workbooks

What are the workbooks?

The national Department of Basic Education is providing workbooks to every child in a public school in a number of subjects including mathematics. These workbooks are to be provided free of charge to every child.

Each and every child should have their own workbook. They should be allowed to take them home and they can (and indeed must) write in them.

These workbooks will help teachers to manage their teaching time and monitor the progress and performance of their learners.

The two books for Mathematics Grade 3 are available in all the official languages.

The workbooks have been designed to be fully compliant with the National Curriculum Statement (NCS) and the Curriculum and Assessment Policy Statements (CAPS).

What is the place of these worksheets in teaching?

It is important to see what place the worksheets can play in your teaching of Grade 3 mathematics. They are not a substitute for your teaching the concepts and procedures of mathematics. What the worksheets are for is as a help in the practical work you give the learners to do. There are three very important components in every teaching interaction:

1. Firstly, it is important to have a knowledgeable teacher who is familiar with the **content knowledge** being taught.

2. Secondly, it is necessary for the knowledgeable teacher to **communicate this knowledge** so that the learners do not just memorise facts or formulae. Provide concrete (hands on) activities and semi-abstract activities such as making drawings. Good teaching requires an understanding of what the learners already know, building on it, and the skill to communicate in a way that the learners can understand easily, but still be kept interested and challenged.

3. Thirdly, for learning to be retained, learners must make it their own, and this requires **immediate practice**. It is this component the worksheets are designed for – to help the learners make the new knowledge and skills their own. The worksheets provide a well designed and sequenced set of practical exercises for the learners to use under your guidance. They will save you a lot of time(and money) having to write exercises on the board or photocopying your own worksheets.

The structure of the worksheets

Worksheet number

Worksheet title

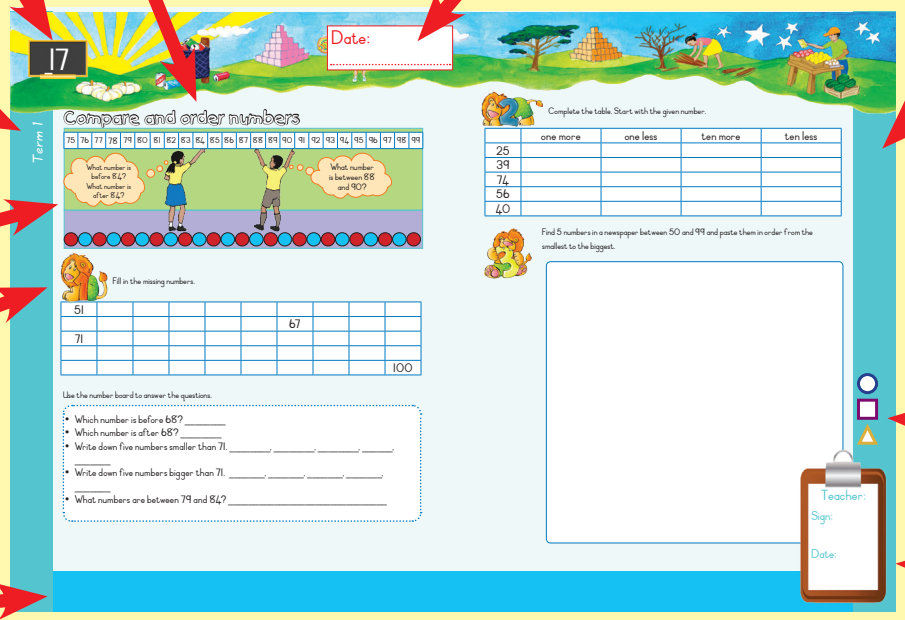
Place for learner to write the date

Term indicator
(32 worksheets per term)

Topic introduction frame
(A graphic, text and examples for pre-worksheet discussion)

Questions

Language colour code:
Afrikaans (Red), English (Turquoise), IsiNdebele (Navy blue), SePedi (Green), SeSotho (Light green), SiSwati (Orange), XiTsonga (Pink), SeTswana (Yellow), TshiVenda (Burnt Sienna), IsiXhosa (Ochre), IsiZulu (Royal blue)



Colour coded content area

Content	Side bar colour
Revision	Purple
Number	Turquoise
Patterns and functions (algebra)	Electric blue
Space and shape (geometry)	Orange
Measurement	Green
Data handling	Red

Teacher assessment rating

Place for teacher to sign and date

The structure of the Teacher Guide

Worksheet title

Content link: Link to all other worksheets on same topic in the workbook
Grade 2 link: Link to all similar worksheets
Grade 1 link: Link to all similar worksheets

Worksheet number

58 Fractions: halves, thirds and sixths

Content links: 7, 31, 57, 59, 91-93, 122-123, 125
Grade 2 links: 90-91, 94a-94b, 118, 122-123, 125-126
Grade 1 links: 47, 86, 123

Objectives

Objectives
- Recognise and identify the fractions of a number of objects.
- Recognise fractions in diagrammatic form.
- Recognise and identify halves, thirds, quarters, fifths, sixths, and twelfths.
- Solve and explain solutions to practical problems that involve equal sharing leading to solutions that include unit and non-unit fractions.

Resources

Resources
Teacher: Fraction strips, 1 to 100 number boards, Counters
Learner: Workbook page 130, Ruler
Mental mathematics: Count forwards and backwards in 2s, 3s and 6s.

Dictionary

Dictionary
Fractions: parts of a whole.

Page number logo

130 Teach mathematics

Introduction

Concrete
Let four learners work together and give each group 16 counters. They must equally share the counters between them. When they are finished ask the learners:
- How many counters did each person get? (4)
- What fraction of the counters did one person get? (a quarter)

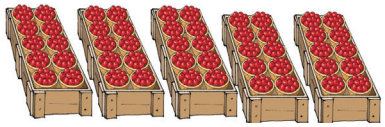
Then get them to do another example.

Term indicator

Term 2

Questions

Ask the learners to count the apples in the baskets and then answer the questions.



Answers

Answer:
There are 10 baskets in one crate.
There are 100 apples in one crate
There are 500 apples altogether

Oral questions

Oral questions
Ask your learners how they would place six square tiles.

Homework
Ask the learners to complete question 3 at home by following the example in the first line. ***Answer:***
- 457 apples

Reflection questions
- Can the learners tile a given area with square tiles?

Grade indicator

Reflection

Homework

Colour code for content area

Content	Side bar colour
Revision	Purple
Number	Turquoise
Patterns and functions (algebra)	Electric blue
Space and shape (geometry)	Orange
Measurement	Green
Data handling	Red

More notes on the structure of the Teacher Guide pages

Content link

The content link refers to the main concepts that we are dealing with in the Foundation Phase. For example, if we are describing how to measure a flat surface, the content link will be other worksheets dealing with measurement of area and volume of shapes and objects.

Resources

Note that sometimes you need additional resources and this needs careful preparation. E.g. if you need to use Cut-outs or any other resources, you have to ask yourself: "Do I have the resources in my class? Can I make it from recyclables? Can I ask the children to bring things from home?" Making sure you have the resources ready is in addition to the normal preparation that you need to make before any lesson. You should always have read the worksheet and worked through it yourself before using it.

Introduction

The introduction links to the Introduction in the worksheet in the learner's book. This could be:

- A fun activity to get the learner's attention
- A problem activity to get the learner involved and thinking
- A revision activity on some important concepts needed to further develop the concept in this lesson

Oral questions

These are questions you can pose for learners after they have been doing a question or two in their workbooks to check their understanding.

Homework

Possible homework questions are highlighted for you. You should always check this homework before, or at the start of, the next day's lesson. Note that you don't always have to mark the learners' homework. Learners can also mark each others' homework.

Reflection

These are the questions that you need to ask yourself after the lesson. If you cannot answer "Yes" to all of them you should plan to revise or cover those concepts again in the next lesson.

Common Errors

We can improve our teaching and learners' learning if we know what kind of mistakes are being made. You should keep a journal of common errors and how you can correct them. E.g. If you ask the learner "What is 7 + 6?" and he or she answers "12", don't just say "WRONG". Ask the learner: "How did you get the answer?" The learner might say I counted forwards: 7, 8, 9, 10, 11, 12. You can then quickly see that the child started to count from 7 and not 8. Only through identifying the cause of the problem can you correct it.

The concrete-to-representational-to-abstract sequence

What is the purpose of the "Concrete-to-representational-to-abstract" (CRA) sequence?

The purpose of teaching through a concrete-to-representational-to-abstract sequence of instruction is to ensure learners have a thorough understanding of the mathematical concepts and skills while they are learning.

What is this sequence?

Concrete level

The concrete level of understanding is the most basic level of mathematical understanding. This level is the crucial beginning for the development of conceptual understanding of mathematics.

Each mathematical skill and knowledge is first modelled with concrete materials. Children should be provided with many opportunities to practice and master mathematical skills and knowledge using concrete materials.

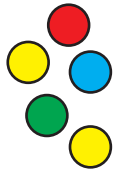
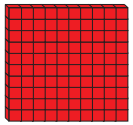
Concrete level learning occurs when children have opportunities to manipulate concrete objects to solve problems.

The concrete objects you use in a classroom lesson can include everyday objects (beans, sticks, matches, popsicle sticks or stones) or specially made objects (sometimes called manipulatives) designed so that a child can learn some mathematical concepts by actually handling it. The experience of using these concrete objects provides a way for children to learn concepts such as addition, subtraction, multiplication and division in a developmentally appropriate, hands-on way. Examples of specially made manipulatives are: counters, interlocking cubes, Cuisenaire rods, colour tiles, pattern blocks, base-ten blocks and rods, fraction strips, tangrams and geoboards.

There are two types of **concrete** objects we can use:

- **Discrete** concrete materials are those that are individual, distinct objects that can be counted.
- **Continuous** concrete materials are used in measurement, e.g. scales, rulers, measuring cups, trundle wheels.

Discrete materials
Discrete materials can be easily manipulated through sight and touch. Children first need a lot of experience with discrete materials before they will benefit from using continuous materials.

Unifix cubes	Counters	Pattern blocks	Beans	Stones	Base ten blocks
					

Continuous materials
There are concrete objects that can be used to do continuous measurements of other objects, such as scales, rulers and measuring cups, and clocks.

Digital bathroom scale	Analogue bathroom scale	Digital kitchen scale	Ruler	Measuring cups	Trundle wheel
					

There are some manipulatives that can be used to teach place value. Base ten blocks are a good example. They consist of cubes (for units), rods (for tens), flats (for hundreds) and blocks (for thousands). Their actual size is proportional, so a rod is ten times bigger than a cube. Other forms are blocks that can be linked together to make objects of the required size.

You can make home-made equivalents by taking single units (such as popsicle sticks) and bundling ten together with string or an elastic band to make a ten.

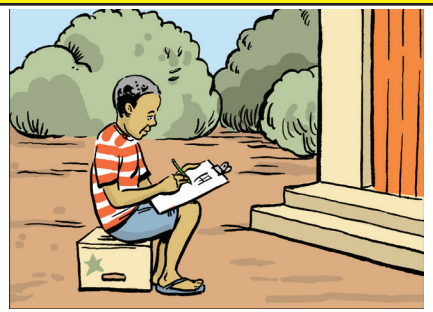
Non-proportional objects include such things as play money where the size is not indicative of the value while the other characteristics such as colour indicate value.

The workbooks provide learners with many opportunities to practice and demonstrate mastery using concrete materials. Your task as a teacher is to make sure they have these items. Some of the Workbook Cut-outs provide such items.

Representational level

At the representational level of understanding children use or draw pictures of concrete objects when solving problems. As soon as children have mastered a particular mathematical concept or skill at the concrete level they should move to the representational level. When children draw solutions, children are crossing an intermediate step where they begin to transfer their concrete understanding toward an abstract level of understanding.

The representational level includes the semi-concrete and semi-abstract levels. The semi-concrete involves the representation of actual numbers with things such as dominoes, pictures on cards, dice, etc. and the semi-abstract involve drawing pictures that represent the concrete objects previously used. This includes the semi-concrete and semi-abstract levels.

Semi-concrete	Semi-abstract
	

The **semi-concrete** involves the representation of actual numbers with things such as dominoes, pictures on cards, dice, etc. Some cut-outs enable objects such as dice to be made.

The **semi-abstract** involves drawing pictures that represent the concrete objects previously used.

The workbooks have a large number of pictures that the learners can use to solve problems.

Abstract level

After the learners have mastered the two previous levels they can move to the abstract level, using only numbers and mathematical symbols.

The child no longer uses concrete objects or drawings to solve problems.

When children solve problems using paper and pencil only, it is a common example of abstract level problem solving. Abstract understanding also enables us to do mental mathematics – 'doing maths in your head'.

Many opportunities in the workbooks are given on the abstract level to demonstrate and practice the concept before moving on to the next concept.

What if a child cannot solve problems at an abstract level?

We have these suggestions for you if a child is not successful at solving problems at an abstract level. Provide remedial instruction on the concept or skill at the:

- concrete level using appropriate concrete objects.
- representational level and provide opportunities for the child to practice by drawing solutions.
- abstract level giving the children the opportunity to explain their solutions and how they got them.

Mental mathematics

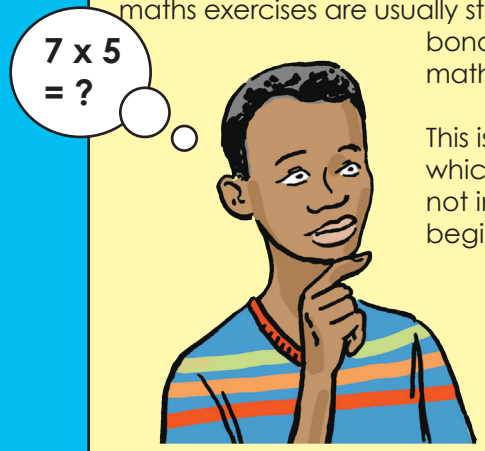
Mental mathematics is using knowledge of the basic mathematical facts to perform mental, as opposed to pen and paper, calculations. Mental maths calculations are done in one's head instead of using pencil and paper, calculators or other aids.

Do the workbooks have mental maths exercises?

No. The worksheets do not include mental maths exercises.

Why is this?

The reason is simple. The worksheets are pencil and paper exercises. They are often more complicated than mental maths exercises (and it would take a teacher a lot of time to design such exercises). By comparison mental maths exercises are usually straightforward and any teacher can test number bonds, knowledge of multiplication tables, and basic maths facts.



This is not to say that the lesson the teacher plans which includes the use of a worksheet should not include mental maths exercises (often at the beginning of a lesson as a way of 'warming up').

Also, mental maths skills will aid the learners as they do the worksheet.

What is mental mathematics?

Mental mathematics is using knowledge of the basic mathematics facts to perform mental calculations rather than using pen and paper or aids such as calculators or computers.

We use mental maths as a way to calculate (give exact answers) and estimate (give approximate answers) quickly, using the maths facts that we have committed to memory. These maths facts include such things as the rules of multiplication, division, etc. and bonds and times tables.

To use mental maths means being able to give an answer to a maths question after only thinking about it, rather than doing calculations on paper. Even if the calculation is such that one does need to use pen and paper (or a calculator), mental maths enables one to quickly judge the reasonableness of the answer so obtained.

For success in mental maths a learner needs a good number sense as he or she has to make sense of number combinations while going through the process of learning the basic mathematical facts. A mental mathematical calculation requires the learner to use a combination of maths factual knowledge and number sense.

An expanded conception of mental maths skills includes being able to truly understand maths concepts and solve problems in a logical, methodical way.

How does one learn to do mental maths?

Traditionally, training in doing mental calculations relied very heavily on 'learning by heart' such things as bonds and times tables, though this has limitations in developing true number sense, as people can mechanically memorise things they do not understand. However, it is still important that learners do know their bonds and times tables.

A number of well known mathematics programmes have their own special mental mathematics teaching methods.

To become competent in mental maths one first has to learn the 100 or so number facts relating to the single digits 0 to 9 for each of the four operations.

When the learners have memorised and know these facts, they can quickly retrieve them from memory, they have instant recall. Through practice over time the learner will achieve automaticity. He or she will no longer have to work out a strategy in their head on how to answer the problem.

So good teachers should be developing the "mental maths" skills wherever and whenever appropriate. Mental mathematics is a necessary part of what a knowledgeable maths learner does. Fluency in the 'language' of numbers and the use of that 'language' does require some degree of automacity (which would obviously include thorough memorisation of bonds and multiplication tables as well as a basic conceptual understanding of the four operations.)

[Becoming a good reader requires a similar development of automaticity – the beginning reader moves from sounding out words to reading instantly.]

What are the basic mathematical facts?

Number work	Comparing and ordering numbers
	Counting on
	Counting back
Addition	Number bonds
	Adding zero
	Number families
	Building up and breaking down numbers
	Doubling in addition
	Near doubles
	Filling up the tens
	Compensation
	Commutative property of addition
Subtraction	Taking away
	Halving in subtraction
	Doubling in subtraction
	Subtraction as the inverse operation of addition.

Multiplication	Skip counting (multiples)
	Multiplication by zero
	Multiplication tables
	Equal groups
	Repeated addition
	Commutative property of multiplication
	Place-value-change strategy for multiplying by 10, 100, 1000
Division	Sharing leading to division
	Grouping leading to division
	Halving in division

Teaching mental maths

A maths teacher needs to incorporate some aspect of mental maths in nearly every lesson. The actual time spent may often be very short – five minutes a day – though some lessons may focus more directly on mental maths.

To do mental maths learners need to know the number facts relating to the digits 0 to 9. Initially this involves learning and practice. With time the learner will be able to recall and use these facts automatically.

In the early years of mental maths development it is important to give the children short tests, mark them, and give the children feedback.

Mental maths tests can be oral or pencil and paper or you can have a combination of written and oral answers. Oral answers and explaining how they got the answer will be more valuable to you as teacher and the learners because they will hear and share different strategies.

When you for example ask "What is 7 times 5?" also ask what "7 times 5" means. They might answer "7 groups of 5". Then continue: "If 7 groups of 5 equals 35, how much will 8 groups of 5 be?" "6 groups of 5?", etc. Ask the children that gave the correct answer: "How did you get the answer?" and then ask the learners that got it incorrect: "How did you get the answer?"

Through their explanation not only can you assess them but the rest of the class also learn from them. You will notice that children will use a variety of strategies to calculate. The child that answered it incorrectly might correct him or herself when explaining how she or he got the answer or you as teacher can guide the child while giving feedback to the correct answer.

Help your learner to think mathematically using the workbooks

There are three kinds of knowledge: physical, social and conceptual knowledge.

Physical knowledge

Learners gain physical knowledge through touching, using, playing with, and acting on concrete/physical material. Learners need a lot of concrete experiences in the mathematics classroom to develop their physical knowledge of numbers and number patterns.

The workbooks provide a variety of ideas and pictures on how to use concrete resources. At the back of each workbook we include cut-outs that encourage the use of resources.

Teachers need to consider which concrete resources should go with each worksheet. The **Resources block** gives some suggestions. Find out if your school has these resources or whether you can make them yourself.

Social knowledge

Social knowledge is the words and conventions we need to know and remember if we are to be able to communicate with and interact with other people. For example, we need to be on time at school. It is a convention, it is a decision we have taken and all agree to. Below are examples of some mathematics conventions that we will find throughout the workbooks:

- The way in which we write a number sentence.
- The way in which we write a number symbol.
- The way in which we use the equal sign to show equivalence.

We have agreed to use these conventions so that we can communicate mathematically with others. The teacher must help learners to put what they have learned in words or writing to explain it to the others.

Conceptual knowledge

When learners see relationships, patterns, regularities and irregularities when doing activities, they are constructing conceptual knowledge. A concept is a general idea we hold in our minds that helps us to understand real individual things in the world. We build up conceptual knowledge based on our experience.

What is your role as a teacher in developing conceptual knowledge when using the workbooks?

You should use the worksheets to assist the learners to build up their understanding of mathematics and to see the patterns in numbers. Encourage your learners to reflect on what they are doing and thinking when completing a worksheet.

You can ask them questions like:

- How did you get this answer?
- What did you do to complete this task?
- What is another way to solve this problem?
- Can you compare your thinking or solutions with your partner's?
- How can you show your thinking using, drawings, concrete resources, numbers and words?

1 Count, Sort and Show!

Content links: 2, 23, 25a-25b, 27, 51, 55-56
Grade 2 links: 2, 18, 70
Grade 1 links: 5, 18-19, 45

Objectives
- Count by grouping
- Estimate and count up to 200 objects
- Count forward and backwards in 1s, 2s, 5s and 10s up to 200
- Write number sentences

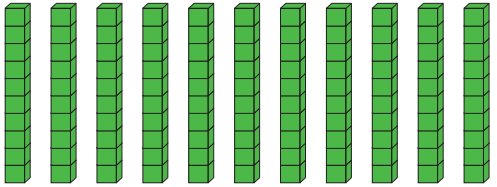
Resources
Teacher: Concrete objects such as: counters/blocks/stones, Base ten blocks and Number cards if needed
Learner: Workbook page 2

Dictionary
Grouping numbers: when we place numbers in smaller groups to make counting easier
Counting number: Any number you use for counting objects: 1, 2, 3, 4, 5…

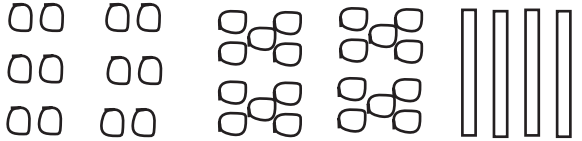
Note: These dictionary entries are for your own information. You do not have to teach them to your learners. Learners need to understand the concepts.

Teach mathematics
Learners need concrete objects and apparatus in the early years to make sense of mathematical concepts. Make use of concrete materials as often as you can to help learners construct their own knowledge and understanding.

Concrete
Give learners concrete objects to count in groups of twos, fives and tens.
Example: Count the base ten blocks in groups of ten.



Representational
Learners make drawings of groups of 2s, 5s and 10s.



Abstract
Learners count the groups and write the numbers.
Twos: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20
Fives: 5, 10, 15, 20, 25, 30
Tens: 10, 20, 30, 40

1 Count, Sort and Show! *continued*

Content links: 2, 23, 25a-25b, 27, 51, 55-56
Grade 2 links: 2, 18, 70
Grade 1 links: 5, 18-19, 45

Ask the learners to go to page 2 in the workbook. Tell the learners to work in groups of four and estimate the number of stars in the picture (there are 49). Then ask them to count the stars to see how close their estimation was. Observe how the learners are counting the stars. Do they count it one by one or do they count it in groups?

Learners then say what the difference between their estimates and counts were and share it with the rest of the class. You can ask who was the closest.

Oral questions

Ask learners to share with the class how they counted the stars.

After learners shared the way they are counting, ask them to look at each of the four friends' way of counting.

Answers
I counted in ones:
1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19, 20
I counted in twos: 2,4,6,8
I counted in fives: 5, 10, 15, 20
I counted in tens: 10,20

Oral questions

Which way of group counting is the easiest for you? Why?

Learners write two number sentences for the total number of stars on the first page of this worksheet.

Example:
26 big stars + 23 small stars
= 26 + 23
= 49

23 small stars + 26 big stars
= 23 + 26
= 49

Homework

- Learners practise counting in groups of 2s, 5s and 10s.

Reflection questions

Can the learners do the following?

- Count groups of objects
- Count by grouping
- Estimate and count up to 200 objects
- Count forward and backwards in 1s, 2s, 5s and 10s up to 200
- Write number sentences

Common errors

Make notes of common errors made by the learners.

2 Clever counting

Content links: 1, 23, 25a-25b, 27, 51, 55-56
Grade 2 links: 2, 18, 70
Grade 1 links: 5, 18-19, 45

Objectives

- Count in groups of ten
- Count forwards up to 200 and backwards in multiples of 10s
- Count up to 200 everyday objects
- Write repeated addition number sentences
- Move from repeated addition to writing multiplication number sentences

Resources

Teacher: Unifix blocks
Learner: Workbook page 4

Dictionary

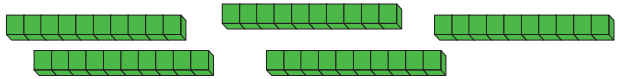
Unifix blocks: Unifix cubes are colourful, interlocking cubes that help learners to learn number and mathematical concepts. Unifix cubes represent 'units' and link in one direction. You can link ten unifix blocks to represent a ten.

4

Teach mathematics
Learners need concrete objects and apparatus in the early years to make sense of mathematical concepts. Make use of concrete materials as often as you can to help learners construct their own knowledge and understanding.

Concrete

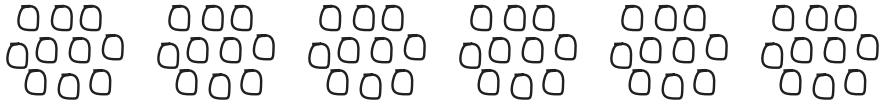
Give learners 100 loose unifix blocks. Ask them to make groups of 10. Ask learners to show you 5 groups. Ask them to count it.



Representational

Ask learners to draw a group of ten. Ask them to draw another group. How many groups do you have now? I have 2 groups of 10 that gives me 20.

Ask the learners: What will 6 groups of ten give us? Make a drawing.



Abstract

Learners use their drawings of 6 groups of ten to write:
Repeated addition number sentence:
10 + 10 + 10 + 10 + 10 + 10 = 60
Multiplication number sentence: 6 x 10 = 60

2 Clever counting *continued*

Content links: 1, 23, 25a-25b, 27, 51, 55-56
Grade 2 links: 2, 18, 70
Grade 1 links: 5, 18-19, 45

Ask the learners to count the pumpkins. Note how your learners are counting it. Do they count it:

- One-by-one, or
- Do they try to count in groups of 2s, 5s or 10s

Answer: 96

Tell learners that the same way they made groups of 10 with the unifix blocks, they are going to make groups of ten with the pumpkins.

Answers:

- **There are 96 pumpkins so you can make 9 bags of pumpkins.**
- **6**
- **4**

Oral questions

How can I write 9 bags of 10 as an:

- Addition number sentence:
  10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 = 90
- Multiplication number sentence: 9 x 10 = 90

Do the following example with learners:
10 + 10 + 10 + 10 = 40 ⟶ 4 groups of 10 = 40 ⟶ 4 × 10 = 40

Answers:
a. 10 + 10 + 10 = 30 ⟶ 3 groups of 10 = 30 ⟶ 3 × 10 = 30
b. 10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 = 80 ⟶
8 groups of 10 = 80 ⟶ 8 × 10 = 80

There are 20 hands. There are 10 pairs of hands.
There are 10 pairs of hands x 10 fingers = 100

Answers:
20
100
10 groups of 10 = 100
10 x 10 = 100

Homework

- Question 4

Reflection questions

Can the learners do the following?

- Count in groups of ten
- Count forwards up to 200 and backwards in multiples of 10s
- Count up to 200 everyday objects
- Write repeated addition number sentences
- Move from repeated addition to writing multiplication number sentences

Content links: 1-2, 4
Grade 2 links: 4, 18, 35, 65-66, 69, 97-98, 100
Grade 1 links: 9-11, 14, 17-18, 33-36, 38-39, 41, 65-69, 97-101

3a & b Numbers on a hundred board

Objectives
- Count forwards and backwards in 1s, 2s, 5s and 10s
- Recognise, read and write number names
- Copy, extend and describe simple number sequences up to 200

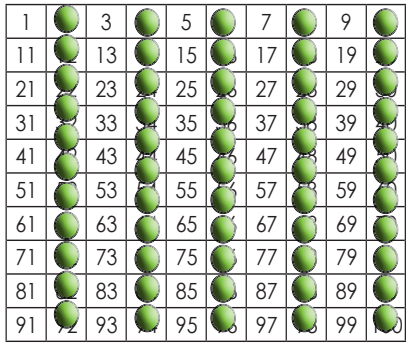
Resources
Teacher: Coloured counters, number board
Learner: Workbook page 6

Dictionary
Sequence: A sequence is an ordered list of numbers or objects.
Pattern: A pattern is a sequence that follows certain rules.
Number pattern: In Grade 3 we look mainly at sequences of numbers made by adding or subtracting some value each time.

6

Teach mathematics
Learners need concrete objects and apparatus in the early years to make sense of mathematical concepts. Make use of concrete materials as often as you can to help learners construct their own knowledge and understanding.

Concrete and Representational
Give learners a number board. Ask them to place counters on the twos, then the fives and then the tens. What pattern do they see each time?
Example: Twos



Abstract
Ask the learners to write the first 10 numbers covered with counters on their slates or a piece of paper.

2, 4, 6, 8, 10, 12, 14, 16, 18, 20

6

Ask the learners to count and say all the numbers from 1-100. Ask them to point as they go.

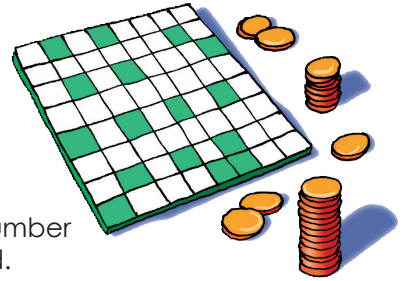
Answer:
a. 7, 15, 23, 31, 38, 46, 58, 62, 75, 79, 91
b. Learners fill in all the other numbers.
c. 12, 16, 20, 24, 28, 32, 36, 40, 44, 48, 52, 56, 60, 64, 68, 72, 76, 80, 84, 88, 92, 96, 100 (Multiples of 4)

Content links: 1-2, 4
Grade 2 links: 4, 18, 35, 65-66, 69, 97-98, 100
Grade 1 links: 9-11, 14, 17-18, 33-36, 38-39, 41, 65-69, 97-101

3a & b Numbers on a hundred board *cont...*

Learners write given numbers in words. Remember that we use a hyphen in all number words from twenty-one to ninety-nine.

- Forty-one
- Seventy-seven
- Fifty-six
- Fourteen
- Sixty-five



Let learners count and write number patterns using a number board.

Answers

- ***10, 20, 30, 40, 50, 60, 70, 80, 90, 100***
- ***5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 100***
- ***2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, … 100***
- ***10, 20, 30, 40, 50, 60, 70. 80, 90***

Learners discover patterns using a number board. ***Answer: 10, 20, 30, 40, 50, 60, 70, 80, 90, 100***

Homework
Learners complete the number patterns.
Answer:

9

0; 10; 20; **30** ; **40** ; 50; **60** ; **70** ; 80; **90** ; 100; **110** ; **120** ; 130; **140** ; **150** ; 160; **170** ; **180** ; **190** ; 200

0; 5; 10; **15** ; **20** ; 25; **30** ; **35** ; 40; **45** ; 50; 55; **60** ; **65** ; 70; **75** ; **80** ; 85; **90** ; **95** ; 100

0; 2; 4; 6; **8** ; **10** ; 12; **14** ; **16** ; 18; **20** ; 22; 24; **26** ; **28** ; 30; **32** ; **34** ; 36; 38; **40** ; **42** ; **44** ; 46; **48** ;

0; **4** ; 8; **12** ; 16; 20; **24** ; 28; **32** ; 36; **40** ; **44** ; **48** ; 52; **56** ; **60** ; 64; **68** ; 72; **76** ; 80

0; **5** ; 10; **15** ; 20; **25** ;30; **35** ; 40; **45** ; **50** ; 55; 60; **65** ; 70; 75; **80** ; 85; **90** ; **95** ; 100

0; 3; **6** ; 9; **12** ; 15; 18; **21** ; 24; **27** ; **30** ; 33; **36** ; 39; **42** ; 45; **48** ; **51** ; 54; 57; **60** ; 63; **66** ; **69** ; 72; 75

Reflection questions
Can the learners do the following?

- Count forwards and backwards in 1s, 2s, 5s and 10s
- Recognise, read and write number names
- Copy, extend and describe simple number sequences up to 200

4 Place value

Content links: 18-19
Grade 2 links: 3, 18, 35, 65-66, 69, 97-98, 100
Grade 1 links: 95

Objectives

- Identify and state the value of each digit of 2-digit numbers
- Order 2-digit numbers from the smallest to the biggest
- Decompose (break down) 2-digit numbers into multiples of tens and units
- Count forwards and backwards in 10s from any multiple between 0 and 200

Resources

Teacher: Place value cards, Base ten blocks, Place value cards
Learner: Workbook page 10, Cut-out sheet 1, scissors, slates and chalk or paper and pencils

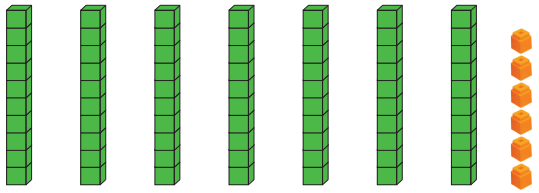
Dictionary

Place value: The value of where the digit is in the number, such as units, tens and hundreds.
Digit: A symbol used to make a number.
Number: A number is a count or measurement.

10

Teach mathematics
Learners need concrete objects and apparatus in the early years to make sense of mathematical concepts. Make use of concrete materials as often as you can to help learners construct their own knowledge and understanding.

Concrete
Learners show numbers, that include tens and units, using base ten blocks.
Example: Show me 76 using the base ten blocks.



Representational
Learners then show this number using the place value cards.
Example: Learners show the tens and units and then place the cards to show the number 76.

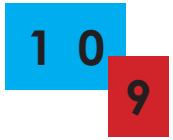
Abstract
Give the learners the number and ask them to write it as tens and units on their slates or a piece of paper.

76 = 70 + 6

4 Place value *continued*

Content links: 18-19
Grade 2 links: 3, 18, 35, 65-66, 69, 97-98, 100
Grade 1 links: 95

Learners use place value cards to build the numbers:
19, 43, 69, 54, 35 and 19.
See example under representational.



Learners look at the example given and then give their own examples.

Answers:

Number	Beads	Base ten blocks	Place value cards
54	5 groups of ten beads 4 loose beads	5 rods of ten each 4 loose cubes	50 card (tens) 4 card (units)
35	3 groups of ten beads 5 loose beads	3 rods of ten each 5 loose cubes	30 card (tens) 5 card (units)
69	6 groups of ten beads 9 loose beads	6 rods of ten each 9 loose cubes	60 card (tens) 9 card (units)

Learners write the numbers in expanded notation using symbols, then words, and then in number words.

Answer:
See example to guide you.

Learners write the first five numbers in the table, question 3, from the smallest to the biggest.

Answer:
19, 35, 43, 54, 69

Homework

- The last 5 rows of question 3.

Reflection questions

Can the learners do the following?

- Identify and state the value of each digit of 2-digit numbers
- Order 2-digit numbers from the smallest to the biggest
- Decompose (break down) 2-digit numbers into multiples of tens and units
- Count forwards and backwards in 10s from any multiple between 0 and 200

5 Addition and subtraction

Content links: 42, 46, 73-75, 105, 108-109
Grade 2 links: 5, 21, 23a-24, 37- 38, 74, 77, 101-102, 104-105
Grade 1 links: 15, 21-22, 77, 104

Objectives
- Add numbers up to 99
- Subtract numbers up to 99
- Identify number families
- Practise number bonds

Resources
Teacher: Base ten blocks
Learner: Workbook page 12, paper and pencil for drawings

Dictionary
Addition: Addition is finding the total, or sum, by combining two or more numbers. The symbol for addition is **+**.
E.g.: 10 + 5 = 15 is an addition number sentence.

Subtraction: Taking one number away from another.
The symbol for subtraction is **–**.
E.g. 18 – 15 = 3 is a subtraction number sentence.

Number family: Number families are groupings of numbers that result in the same numbers when added or subtracted from each other, e.g. 2 + 3 = 5, 5 – 2 = 3 and 5 – 3 = 2. Number families provide teachers with an easy way to explain the concepts of addition and subtraction.

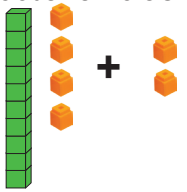
Number bond: A simple sum which has become so familiar that a child can recognise it and complete it almost instantly with automatic recall. E.g. 5 + 2 = 7. A learner who knows this number bond should be able to immediately fill in any one of these three numbers if it was missing, given the other two, without having to "work it out".

12

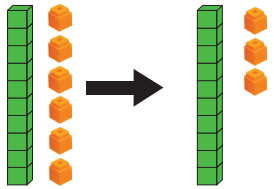
Teach mathematics
Learners need concrete objects and apparatus in the early years to make sense of mathematical concepts. Make use of concrete materials as often as you can to help learners construct their own knowledge and understanding.

Concrete
Give learners base ten blocks to add. Example:

We say 14 blocks plus 2 blocks are 16.



We say 16 blocks take away 3 blocks is 13.



Representational
Ask learners to make a drawing of what they did with the blocks.
Example:

Abstract
Ask the learners to write it as number sentences. ***14 + 2 = 16*** ***16 - 3 = 13***

5 Addition and subtraction *continued*

Content links: 42, 46, 73-75, 105, 108-109
Grade 2 links: 5, 21, 23a-24, 37- 38, 74, 77, 101-102, 104-105
Grade 1 links: 15, 21-22, 77, 104

Ask the learners to make use of base ten blocks and count out 19 blocks. Then take the 19 blocks and count out 13 blocks to indicate the number of apples Lebo had left at lunchtime. Tell the learners to count the difference.

Answers:

a. 6

b. 19 – 13 = 6

c. A few possible answers are listed below, but are not limited to these:

- ***12 – 6 = 6***
- ***18 – 12 = 6***
- ***9 – 3 = 6***
- ***10 – 4 = 6***
- ***8 – 2 = 6***
- ***7 – 1 = 6***

Tell the learners to complete the question by adding and subtracting the numbers given.

Answers:

10 + 5 = 15	***11 + 6 = 17***	***14 – 9 = 5***	***14 – 8 = 6***
11 + 5 = 16	***17 + 2 = 19***	***19 – 7 = 12***	***14 – 5 = 9***
12 + 6 = 18	***3 + 13 = 16***	***16 – 5 = 11***	***16 – 13 = 3***
17 + 2 = 19	***4 + 15 = 19***	***15 – 10 = 5***	***19 – 7 = 12***

Ask the learners to carefully look at the table and complete the empty boxes.

1 + 13 = 14	13 + 1 = 14	14 – 1 = 13	14 – 13 = 1
2 + 12 = 14	12 + 2 = 14	14 – 2 = 12	14 – 12 = 2
3 + 11 = 14	11 + 3 = 14	14 – 3 = 11	14 – 11 = 3
4 + 10 = 14	10 + 4 = 14	14 – 4 = 10	14 – 10 = 4
5 + 9 = 14	9 + 5 = 14	14 – 5 = 9	14 – 9 = 5
6 + 8 = 14	8 + 6 = 14	14 – 6 = 8	14 – 8 = 6
7 + 7 = 14	7 + 7 = 14	14 – 7 = 7	14 – 7 = 7

Homework

Do the same and complete the table for number "12"

1 + 11 = 12	11 + 1 = 12	12 – 1 = 11	12 – 11 = 1
2 + 10 = 12	10 + 2 = 12	12 – 2 = 10	12 – 10 = 2
3 + 9 = 12	9 + 3 = 12	12 – 3 = 9	12 – 9 = 3
4 + 8 = 12	8 + 4 = 12	12 – 4 = 8	12 – 8 = 4
5 + 7 = 12	7 + 5 = 12	12 – 5 = 7	12 – 7 = 5
6 + 6 = 12	6 + 6 = 12	12 – 6 = 6	12 – 6 = 6

Reflection questions

Can the learners do the following?

- Estimate, group and count up to 200 everyday objects
- Add numbers up to 99
- Subtract numbers up to 99
- Identify number families
- Number bonds

6 Doubles and halves

Content links: 61-62
Grade 2 links: 62, 87, 90-91
Grade 1 links: 26, 47, 85, 122-123

Objectives
- Double numbers up to 100
- Halve numbers up to 100

Resources
Teacher: Base ten blocks
Learner: Workbook page 14

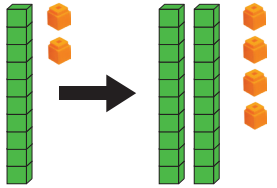
Dictionary
Double: Make twice as big. Multiply by 2. E.g. Double 5 is 10
Halve: Make half the size. Divide by 2. E.g. Half of 10 is 5.
Doubling is the inverse of halving.

14

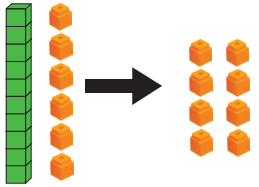
Teach mathematics
Learners need concrete objects and apparatus in the early years to make sense of mathematical concepts. Make use of concrete materials as often as you can help learners construct their own knowledge and understanding.

Concrete
Give learners base ten blocks to do the following:

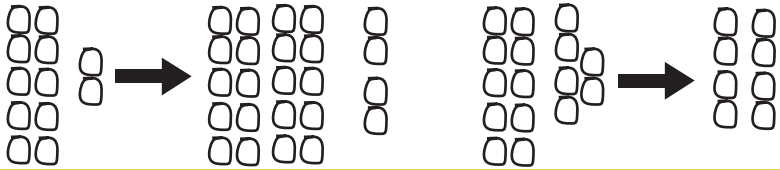
Double the blocks.



Half the blocks.



Representational
Ask learners to make a drawing of what they did with the blocks.
Example:



Abstract
Learners write what they did in words and then as number sentences.
Double 12 is 24. 12 + 12 = 24 or 12 x 2 = 24
Half of 16 is 8. 16 – 8 = 8 or 16 ÷ 2 = 8

Oral questions
Ask learners to form groups of 40 blocks and discuss what they can remember about doubles and halves (e.g. 20 is half of 40 and that 40 is double 20).

6 Doubles and halves *continued*

Content links: 61-62
Grade 2 links: 62, 87, 90-91
Grade 1 links: 26, 47, 85, 122-123

Instruct learners to complete the circles by filling in the halves that will total the number in the yellow circle.
Answers:

a. 8 → 4, 4

b. 60 → 30, 30

c. 50 → 25, 25

d. 48 → 24, 24

e. 34 → 17, 17

f. 66 → 33, 33

Ask the learners to make a drawing to show half of three. Once done, ask the learners to complete the question.
Answer:
One and one half + one and one half

Tell learners to look at the example given for a. and complete questions b – d and to fill in the answers on the number lines
Answer:
b. 5 + 5 = 10
c. 20 + 20 = 40
d. 40 + 40 = 80

Tell learners to complete the table

Double 1	***2***
Double 6	***12***
Double 10	***20***
Double 30	***60***
Double 50	***100***

Homework

Learners to complete Question 5 for homework ***Answers:***

Half 6	***3***
Half 8	***4***
Half 14	***7***
Half 60	***30***
Half 70	***35***

Reflection questions

Can the learners do the following?

- Double numbers up to 100
- Halve numbers up to 100

7 Fractions

Content links: 31, 57-59, 91-93, 122-123, 125
Grade 2 links: 90-91, 94a-94b, 118, 122-123, 125-126
Grade 1 links: None

Objectives

- Recognise and identify halves
- Recognise and identify quarters
- Recognise and identify the fraction of a number of objects
- Use and name unit fractions including halves and quarters in diagrammatic form
- Write one half and one quarter fractions

Resources

Teacher: Fruit or paper or plastic fractions
Learner: Workbook page 16

Dictionary

Fraction: A fraction is part of a whole.
Unit fraction: A unit or unitary fraction is a number written as a fraction where the top number (the numerator) is 1.

16

Teach mathematics
Note that the use of food to show fractions can be very sensitive in schools where children have no food. Please replace the concrete example with folding of paper or alternatively ask for a donation of fruit and after you cut it make a fruit salad for your class.

Concrete
Cut fruit in halves and quarters.
Halves:

Quarters:

Representational
Give learners some paper and pencils. Ask them to draw a square. Ask them to divide the square into exactly two parts. Point to the first part and say this is 'one half' and then point to the second part and say this is the other "half".
Do the same with quarters.

Abstract
Write the following on the board.
Ask learners to give or draw you example of this.

one half
one quarter

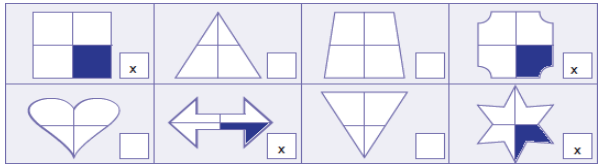
Introduction
Tell learners to colour in one quarter of the balloons in the picture in red and the rest in blue. Now colour one half of each square in red.

7 Fractions *continued*

Content links: 31, 57-59, 91-93, 122-123, 125
Grade 2 links: 90-91, 94a-94b, 118, 122-123, 125-126
Grade 1 links: None

Ask learners to look at the shapes and tick the shapes that show halves and colour one of each half in.
Answer:
All the shapes have a half therefore all boxes should be ticked and one half coloured.

Ask learners to look at the second set of shapes and tick the shapes that show quarters and colour one of each quarter in.
Answer:



Tell learners to colour in half of the shapes in each block and then to write the number of coloured blocks down in the space provided. ***Answer:***
a. 3
b. 2
c. 6

Oral questions

Ask learners to describe what one half and one quarter is in their own words.

Tell learners to colour in a quarter of the shapes in each block and then to write the number of coloured blocks down in the space provided.
Answer: a. 1 b. 1 c. 3

Instruct learners to write down the fraction symbol for one half and one quarter.
Answer: a. $\frac{1}{2}$ ***b.*** $\frac{1}{4}$

Homework

Ask learners to draw more shapes to make each half equal.

Ask learners to draw more shapes to make each quarter equal.

Reflection questions

Can the learners do the following?

- Recognise and identify halves
- Recognise and identify quarters
- Recognise and identify the fraction of a number of objects
- Use and name unit fractions including halves and quarters in diagrammatic form
- Write one half and one quarter fractions

8 Sorting money

Content links: 26, 56, 95a-95b, 107
Grade 2 links: 6, 25-26, 78-79, 108-109
Grade 1 links: 60a-62, 75-76, 107-108

Objectives
- Recognise, identify and sort South African coins and notes up to R50
- Count and estimate money
- Solve money problems involving totals and change up to R99 and 99c

Resources
Teacher: Play money. You can use Cut-out 9 from Grade 3 Book 2 Learner Workbook
Learner: Workbook page 18

Dictionary
South African money: South African money is made up of coins and notes. E.g Coins

Notes

Concrete
Ask the learners the value of the South African notes which have pictures of the following:
- lion: ***R50***
- elephant: ***R20***
- buffalo: ***R100***
- rhino: ***R10***
- leopard: ***R200***

Ask the learners what do they see on the coins?
Learners then sort the notes and coins.

Representational
Ask the learners to draw five R10 notes. How much is this in total?

Do the same with:
- Three fifty cent coins
- Two twenty rand notes

Abstract
Tell learners that you have R50.
- How many R10 tickets can you buy?
- How many R5 tickets can you buy?

8 Sorting money *continued*

Content links: 26, 56, 95a-95b, 107
Grade 2 links: 6, 25-26, 78-79, 108-109
Grade 1 links: 60a-62, 75-76, 107-108

18

Oral questions

Ask learners to estimate how much money is in the picture

Instruct learners to fill in their estimations in the answer box provided. Now ask them to count the money and then complete the answer box provided.

Answer:
a. Estimation: Each learner's answer will be different
b. R170,50

Tell the learners that if Gugu needs R89 and already has half the amount, they must take the amount she needs and half it in order to know what she still needs.

Answer:
a. R44,50
b. R89 divided by 2 = R44,50

Tell the learners to count the money in each row and write down the answer for each row.

Answer:
a. R130
b. R180
c. R220

If learners struggle to calculate the money activities, let them make drawings of the coins and notes.

Homework

Ask learners to complete Question 4 as homework by doing a few calculations with the values provided as long as the total money spent totals R90.

Answer:
Each learners answer might differ. Some answers are listed below but are not limited to the answers provided.
a. 3 Children
b. 3 Adults
c. Yes. ***Adults: 2*** ***Children: 5***

Reflection questions

Can the learners do the following?

- Recognise, identify and sort South African coins and notes up to R50
- Count and estimate money
- Solve money problems involving totals and change up to R99 and 99c

Common errors

Make notes of common errors made by the learners.

9 Patterns

Content links: 29
Grade 2 links: 7, 27, 28, 44, 51, 53, 56, 89, 112, 117
Grade 1 links: 51, 58-59, 83-84, 93, 115, 119-120

Objectives

- Copy, extend and describe simple number patterns to 200
- Count forwards and backwards in 2s, 3s, 4s and 5s to 200
- Identify, copy, extend and describe in words patterns made with drawings of lines, shapes or objects

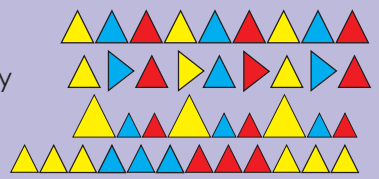
Resources

Teacher: 1 - 200 number board (Learner Workbook page 20)
Learner: Workbook page 20

Dictionary

Number patterns: A list of numbers that follow a certain sequence or pattern.
Geometric patterns: A pattern that can be made by using geometric shapes or objects where:

- the colour changes in a regular way
- the position changes in a regular way
- the size changes in a regular way
- identical groups are repeated



Note that a pattern made up of geometric shapes is **not** the same thing as a geometric sequence or **geometric progression** which is a sequence of numbers where each number after the first is found by multiplying the previous number by some value each time, e.g. the sequence 2, 4, 8, 16, 32, 64, 128, 256, ... (each number is 2 times the number before). Such a geometric progression can, of course, also be illustrated using geometric shapes.

Teach mathematics

Concrete
See geometric patterns on the left. Use real life objects and shapes to make patterns where:

- the colour changes in a regular way
- the position changes in a regular way
- the size changes in a regular way
- identical groups are repeated

Representational
Learners use a 1-100 number board and place counters on the following numbers.

- the twos, the threes, the fours, the fives

After setting out each multiple ask them to describe the pattern.

Abstract
Let learners count in: twos, threes, fours, and fives.

9 Patterns *continued*

Content links: 29
Grade 2 links: 7, 27, 28, 44, 51, 53, 56, 89, 112, 117
Grade 1 links: 51, 58-59, 83-84, 93, 115, 119-120

Instruct learners to use the number board provided to answer question 2.

Ask learners to complete the patterns using the number board and colour in as instructed in the question.

Answer:

120, 125, 130, 135	*96, 99, 102, 105*
48, 52, 56, 60	*190, 192, 194, 196*
55, 50, 45, 40	*129, 126, 123, 120*
168, 164, 160, 156	*8, 6, 4, 2*

Oral questions

Ask learners to count in twos, threes, fours and fives from a number given by you.

Ask the learners what they notice about the numbers shaded with the same colour.

Answer:

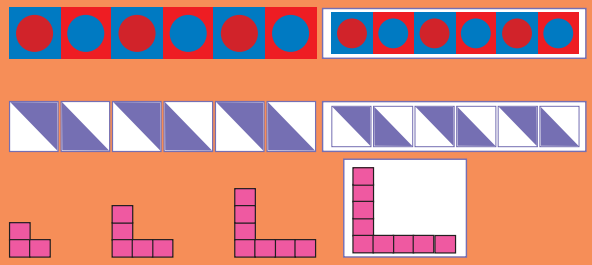
Each block has a different pattern that is shaded in purple

Homework

Ask learners to make use of colour pencils and extend the pattern in each row.

Answer:

Learners must copy the pattern that they have picked up for each row and draw the pattern to extend it.



Reflection questions

Can the learners do the following?

- Copy, extend and describe simple number patterns to 200
- Count forwards and backwards in twos to 200
- Count forwards and backwards in threes to 200
- Count forwards and backwards in fours to 200
- Count forwards and backwards in fives to 200
- Copy, extend and describe in words patterns made with drawings of lines, shapes or objects

10 Balls, boxes and cylinders

Content links: 90, 124
Grade 2 links: 9, 32, 75, 106
Grade 1 links: 23, 116

Objectives
- Recognise and name balls (spheres), boxes (prisms) and cylinders
- Describe, sort and compare 3-D objects that have flat or curved surfaces and that slide or roll

Resources
Teacher: Balls, boxes, cans, magazines, newspapers and advertisements
Learner: Workbook page 22

Dictionary
Sphere: A 3-D object shaped like a ball.
Prism: A 3-D object shaped like a box. All its edges are straight and its sides flat.
Cylinder: A 3-D object with two identical flat ends that are circular and one curved side.

Teach mathematics

22

Concrete
Give learners some everyday objects to explore:
Balls (spheres) Boxes (prisms) Cylinders



Learners slide or roll objects. Learners identify if the objects have straight or curved edges.

Representational
Give learners some magazines, newspapers, advertisements etc. Ask them to find one picture of each of a ball like object, a box like object and a cylinder like object. Ask learners to answer the following questions:
- Can the object roll and/or slide?
- Does the object have straight or curved edges?

Abstract
Ask learners to guess what the object could be:
- I can roll and have curved edges.
- I can slide and have straight edges.
- I can roll or slide and have curved and straight edges.

Oral questions
Ask learners how many boxes, balls and cool drink tins they count in each picture. ***Answer: A: 1 Box, 1 Ball, 2 Cool drink cans***
B: 0 Box, 6 Balls, 2 Cool drink cans

10 Balls, boxes and cylinders *continued*

Content links: 90, 124
Grade 2 links: 9, 32, 75, 106
Grade 1 links: 23, 116

Ask learners to draw circles around the boxes in blue, the balls in red and the cylinders in green.

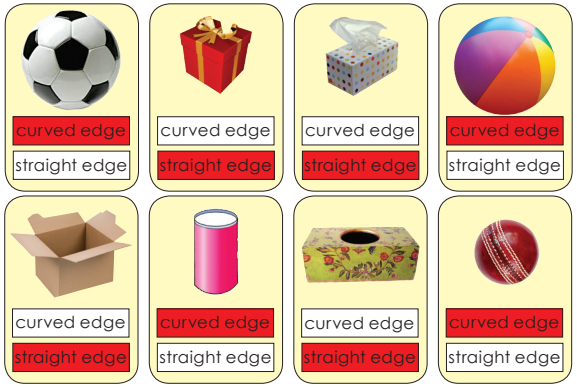
Answer:
Teacher to look at the picture of what each learner circled and ensure the correct instructions were followed.

Ask learners if each of the items in the picture slides or rolls and then to colour in the answer.

Answer:
Box: Slides
Ball: Rolls
Cylinder: Rolls if on its side
Cylinder: Slides if upright

Ask learners to colour the correct box for whether the object has curved or straight edges.

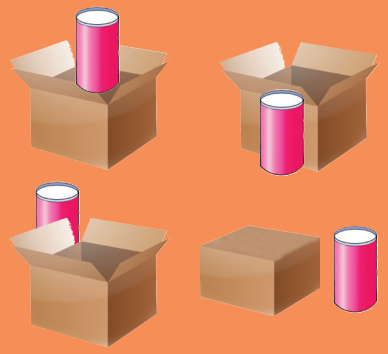
Answer:
All the balls:
Curved edges
All the boxes:
Straight edges
The cylinder:
Curved edges



Homework

Ask learners to complete question 4 as homework by saying if the can is behind, in front of, next to or on top of the box.

Answer:
a. On top of
b. In front of
c. Behind
d. Next to



Reflection questions

Can the learners do the following?

- Recognise and name balls (spheres), boxes (prisms) and cylinders
- Identify if objects have flat or curved surfaces
- Identify if objects can slide or roll

Common errors

Make notes of common errors made by the learners.

11 Draw, name and compare 2-D shapes

Content links: 72, 127
Grade 2 links: 8, 36, 99
Grade 1 links: 4, 8, 48a-48b, 63, 64b, 109-111

Objectives
- Recognise and name circles, triangles, squares and rectangles
- Describe, sort and compare 2-D shapes that have round or straight sides

Resources
Teacher: Pattern blocks, self-made shape cards
Learner: Workbook page 24

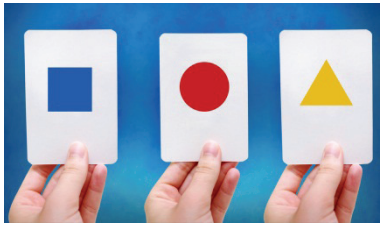
Dictionary
Triangle: A 2-D shape with three straight sides.
Square: A 2-D shape with four straight sides. All the sides are equal in length.
Rectangle: A 2-D shape with four straight sides, where the pairs of opposite sides are equal.
Circle: A 2-D shape with a curved side.

Teach mathematics

24

Concrete
Give learners pattern blocks. Ask them to identify the square, circle, triangle and rectangle. Notice that we focus on the 2-D shape and not the height of the pattern block.

Representational
Make cards with shapes on it. Show it to learners and ask them to identify the shapes.



Abstract
Ask learners what shape will the following be?
- A 2-D shape with curved sides ***(circle)***
- A 2-D shape with straight sides only ***(triangle, square, rectangle)***
- A 2-D shape with 4 straight sides where all the sides are equal in length ***(square)***
- A 2-D shape with 4 straight sides where the pairs of opposite sides are equal ***(rectangle)***

11 Draw, name and compare 2-D shapes *cont...*

Content links: 72, 127
Grade 2 links: 8, 36, 99
Grade 1 links: 4, 8, 48a-48b, 63, 64b, 109-111

Tell learners to draw the shape in each box as requested.
Answer:
Triangle ***Circle***
Square ***Rectangle***

Ask the learners to count each shape and fill in how many of each shape they counted. ***Answer:***
Triangle: 7
Rectangle: 6
Circle: 6
Oval: 7
Square: 5

Homework
Question 3 to be completed as homework
Ask learners to colour each shape (large / small) as indicated in the learner books.
Answer: See Learner Workbook for reference to what should be done

Oral questions
Name a shape with straight sides. Name a shape with a curved side.

Ask learners to count each shape's sides and say if it has straight or curved sides.
Answer:

3 Straight sides
4 Straight sides
10 Straight sides
3 Straight sides
4 Straight sides
1 Curved side
4 Straight sides
4 Straight sides

Reflection questions
Can the learners do the following?
- Recognise and name circles, triangles, squares and rectangles
- Describe, sort and compare 2-D shapes that have round or straight sides

Common errors
Make notes of common errors made by the learners.

12 Time passes

Content links: 32, 54, 80. 106
Grade 2 links: 13-14, 22, 55, 57a-57b, 81a-81b, 85a-85b, 116a-116b
Grade 1 links: 7, 16, 32

Objectives
- Count time in hours and minutes
- Tell 12-hour time in hours, half hours, and quarter hours
- Use clocks to calculate the length of (elapsed) time in hours, half hours and quarter hours
- Convert minutes to hours

Resources
Teacher: Pictures of clock faces without numbers.
Learner: Workbook page 26

Dictionary
Hour: A unit of time that equals 60 minutes or $\frac{1}{24}$th of a day.
Minute: A basic unit of time equal to one-sixtieth of an hour. It is also equal to 60 seconds.
Elapsed time: The time that has passed from the start of some event to the present or end of the event.

Teach mathematics

26

Concrete - body
It is important that learners should understand time. Give them physical activities such as the following to do:
- How many times do you think you can skip in a minute?
- What else can you do in a minute?
- What can you do in an hour?

Representational
Give learners a clock.
Give learners pictures of clocks.
Ask them to fill in the numbers. Ask them what the intervals mean.
Ask learners: How many minutes will it take from here (point to the one) to here (point to the four).
Do a few similar activities using hours and minutes.

Abstract
Ask learners questions such as:
- If I left school at two o' clock and arrived home at three o'clock. How long did it take me?
- My friend left school the same time as I did. He arrived home at ten to three. How long did it take him?

12 Time passes *continued*

Content links: 32, 54, 80. 106
Grade 2 links: 13-14, 22, 55, 57a-57b, 81a-81b, 85a-85b, 116a-116b
Grade 1 links: 7, 16, 32

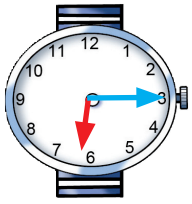
Ask learners what time it is and then to write the answers down in the block provided.
Answer:
3 o'clock 8 o'clock 12 o'clock 11 o'clock

Oral questions

Count the minutes in 5s around the clock
Answer: 5; 10; 15; 20; 25; 30; 35; 40; 45; 50; 55; 60

Ask learners how many minutes did they count and to write it down. Ask learners how many minutes there are in an hour.
Answer:
60 60 Minutes

Ask the learners to draw the hands to show the times



quarter past 6

half past 8

quarter to 11

half past 5

Ask learners to count the hours and minutes that Zander walks to school. ***Answer: 2 hours and a half hours (or 2 hours and 30 minutes).***

Ask the learners to count the minutes that Maria takes to bake the bread. ***Answer: Three quarters of an hour (or 45 minutes)***

Homework

Ask learners to complete question 5 as homework.
Answer:
a.

Hours	***1***	***2***	***4***	***8***
Minutes	***60***	***120***	***240***	***480***

b. 90 Minutes OR 1 and a half hours

Reflection questions

Can the learners do the following?

- Read hours and minutes
- Count time in hours and minutes
- Tell 12-hour time in hours, half hours, and quarter hours
- Write time

13 Measuring length

Content links: 40, 94, 97
Grade 2 links: 10, 40, 119
Grade 1 links: 12a-12b, 74, 96

Objectives
- Estimate, measure, compare, order and record length using non-standard measures
- Describe the length of objects by counting in informal units

Resources
Teacher: Plastic or paper triangles
Learner: Workbook page 28, pencils

Dictionary
Non-standards measurements: measurements made with using parts of the body or everyday tools or objects.

Teach mathematics

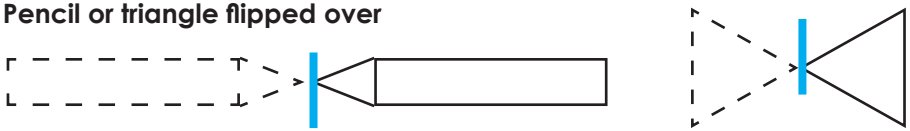
Concrete
Hand spans and foot lengths
Show learners how to place one next to the other, and then move the first to the other side of the second one.

Hand spans

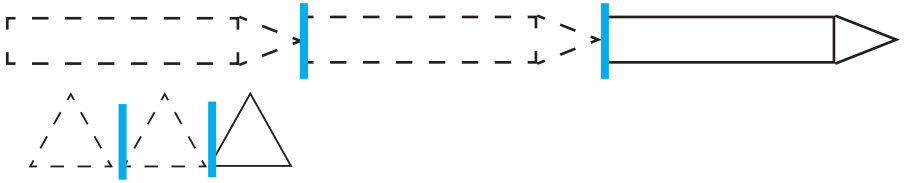
Foot lengths

Concrete
Give learners an object to measure with, such as a pencil or triangle block. Learners measure by flipping it over or marking its end point before sliding it along.

Pencil or triangle flipped over



Pencil or triangle sliding



13 Measuring length *continued*

Content links: 40, 94, 97
Grade 2 links: 10, 40, 119
Grade 1 links: 12a-12b, 74, 96

Ask the learners to count how many pencils are needed to measure the:

- triangle ***Answer: 3***
- square ***Answer: 4***
- yellow rectangle ***Answer : 6***

Then ask them to measure the large white rectangle below:
How many pencils long is the rectangle? ***Answer: 5***
How many pencils wide is the rectangle? ***Answer: 2***

How did you use the pencils to count?
Answer: Learners' own explanations.

Oral questions

Ask the learners to use counters to measure the length and the width of the rectangle. Ask learners how they used the counters to measure.

How do we use non-standard measuring units?

- We can use a **number of these units**, all objects of the same size, such as match boxes, identical bottle tops or counters, new pencils, etc.

  Set them out in out in a straight row across the object being measured, each one touching the next in the row.

  It is important that all the objects are the same length and that no gaps are left between the objects.

- We can use **two identical objects** as the non-standard units. Place the one next to the other, and then move the first to the other side of the second. This is done when measuring with hand spans, foot lengths or paces.

- We can use only **one object** as the non-standard measure. You can either flip it over or mark its end point before sliding it along.

Ask the learners to measure the red line against the black line and count how many red lines are needed.
Answers:
a. To cover the black line? 5
b. To go around the rectangle? 21

Homework

Ask learners to complete question 2. c. for homework.
Answer: Learners must say which line they think is the longest line and why they say so.

Reflection questions

Can the learners do the following?

- Estimate, measure, compare, order and record length using non-standard measures
- Describe the length of objects by counting in informal units

14 Capacity

Content links: 128a-128b
Grade 2 links: 12, 49, 67-68, 111
Grade 1 links: 37, 40, 126

Objectives
- Estimate, measure, compare, order and record the capacity of containers by using non-standard measures e.g. cups, glasses
- Describe the capacity of the container by counting how many informal units will fill the container

Resources
Teacher: Spoons, cups, jugs, water
Learner: Workbook page 30

Dictionary
Capacity and volume: Capacity is the amount that an object can hold (all the amount of space inside an object). Volume is the amount of space that something takes up. A bottle can have a capacity of four full cups, but at a particular time it may have the volume of only one cup of liquid in it.

Teach mathematics

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Concrete
Give learners a spoon and a cup.

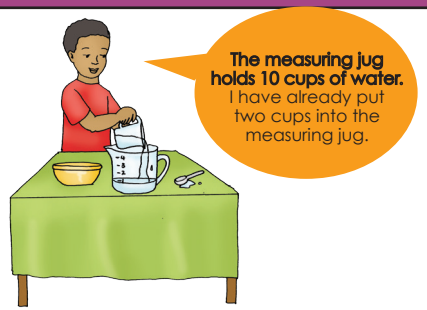
How many spoons do you think will fill this cup? Learners fill the cup to check their answer.

Give learners two other spoons (different sizes). Will you use the same number of spoons to fill the cup? Why or why not?

14 Capacity *continued*

Content links: 128a-128b
Grade 2 links: 12, 49, 67-68, 111
Grade 1 links: 37, 40, 126

This is a practical activity that you will do with your learners. The pictures will guide you. Note that the answers will differ because of the size of the measuring spoons and cups you are using. To get a standard measurement in your class, try to use spoons and cups of the same size.



Ask your learners to count the number of cups that we still need to add to the container in the picture.

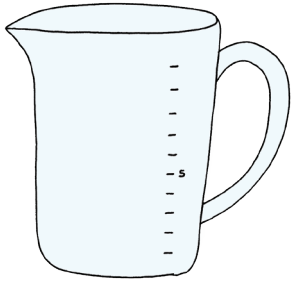
Answer:

a. In the container: 1 Need more: 9
b. In the container: 3 Need more: 7
c. In the container: 6 Need more: 4
d. In the container: 5 Need more: 5
e. In the container: 8 Need more: 2
f. In the container: 2 Need more: 8

Ask your learners to count the intervals on the jug and work out how many cups are needed to fill the jug.

Answer:

a. 2 b. 3
c. 4 d. 5



Homework

Ask learners to look at the pictures and indicate which pictures they think will contain 1 litre of liquid.

Answer:
Oil
Milk
Jug

Reflection questions

Can the learners do the following?

- Estimate, measure, compare, order and record the capacity of containers by using non-standard measures e.g. cups, glasses
- Describe the capacity of the container by counting how many informal units will fill the container

Common errors

Make notes of common errors made by the learners.

15 Working with mass

Content links: 44, 102a-102b
Grade 2 links: 11, 43, 120
Grade 1 links: 121

Objectives

- Estimate, measure, compare, order and record mass using a balancing scale and non-standard measures
- Compare, order and record the mass of commercially packaged objects in kilograms

Resources

Teacher: Balance scale, suitable things to weigh
Learner: Workbook page 32

Dictionary

Mass: A measure of how much matter is in an object. This gold bar is quite small but has a mass of 1 kilogram, so it contains a lot of matter. Mass is commonly measured by how much something weighs. But weight can change depending on where you are but mass always stays the same.

Note that a spring scale (or a bathroom scale) measures weight (not mass). Though for practical everyday purposes a spring scale and a balance scale (which measures mass) give us the same results, when teaching mass ideally you should correctly only use a balance scale.

Teach mathematics

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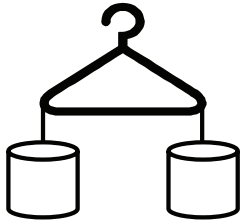
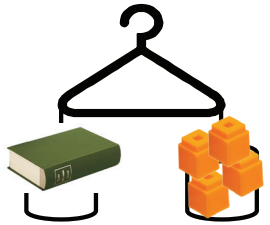
Practical: Informal measurement
Make a balance scale.



Give learners objects and some marbles/blocks.



Ask them how much the book weighs. For example the book weighs 34 blocks. Also see question 1 for a formal measurement activity.

15 Working with mass *continued*

Content links: 44, 102a-102b
Grade 2 links: 11, 43, 120
Grade 1 links: 121

This is a practical activity that you will do with your learners. Bring a scale to school for this activity and let each learner weigh themselves and write down their weight. (Note: You probably will only have access to a bathroom scale.)

Oral questions

Ask the learners to gather some items in and around the class to weigh and see which items are heavier than others.

Learners have to say on which scale the green apple is heavier or lighter than the red apple.
Answer: a. b.

Draw how many bricks or balls you need to make these scales balance.
Answers:
a. 2 balls (or 1 brick)
b. 3 bricks (or 6 balls)

Ask learners to work out the weight of the parcels listed.
Answer:
a. 2 parcels = 6 kg
b. 3 parcels = 9 kg
c. Each learner must give their own explanation of why they say Yes or No.

Homework

Ask learners to complete question 5 as homework by looking at the picture and comparing it to the items they have in their homes to see if they weigh 1 kg, 500 g, 250 g, or 200g.

Reflection questions

Can the learners do the following?

- Estimate, measure, compare, order and record mass using a balancing scale and non-standard measures
- Compare, order and record the mass of commercially packaged objects in kilograms

Common errors

Make notes of common errors made by the learners.

16 Data handling

Content links: 22, 36, 96
Grade 2 links: 1, 15-16, 64, 71, 93, 96, 107
Grade 1 links: 2-4, 27-28, 44, 78-79, 124-125

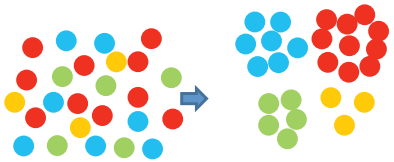
Objectives
- Collect and sort and organise data to answer questions
- Draw a pictogram to represent data
- Answer questions about the data in the pictograph
- Complete a simple data handing cycle

Resources
Teacher: Counters, paper for pictographs
Learner: Workbook page 34

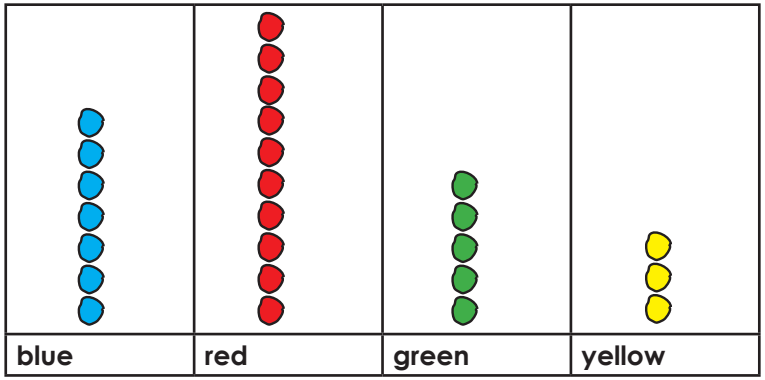
Dictionary
Pictograph: It is also called a pictogram or picture graph. It is a diagram that uses pictures or symbols to show data for quick understanding. A picture or symbol is used to represent a specific quantity.
Data handling cycle: This includes collecting, sorting, ordering, representing and answering questions on data.

Teach mathematics

Concrete
Give learners some different colour counters. Ask them to sort it.



Representational
Ask learners to draw a pictograph.
Ask the learners what they think the topic of the graph will be.



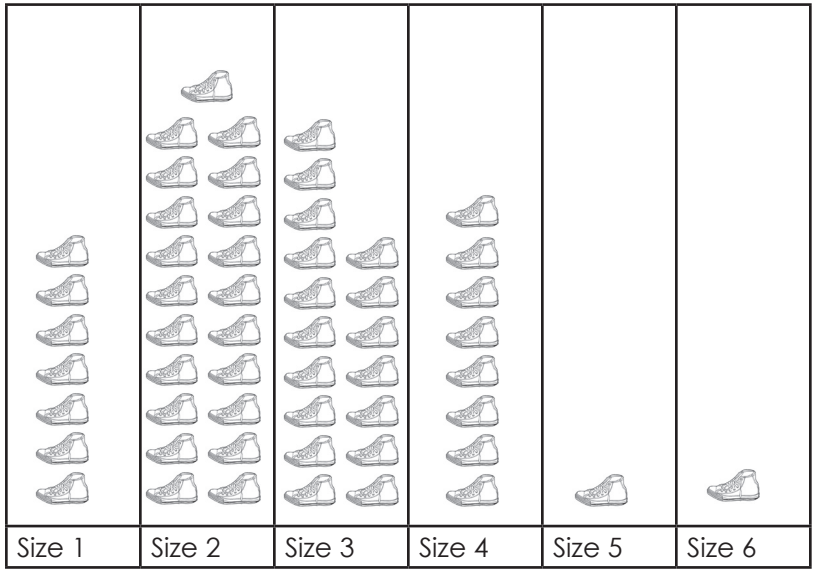
Ask learners to do the same activity for the learners in Mrs. Khoza's class and complete the table.
Answer:

Shoes sizes in the class					
Size 1	Size 2	Size 3	Size 4	Size 5	Size 6
7	***21***	***17***	***8***	***1***	***1***

16 Data handling *continued*

Content links: 22, 36, 96
Grade 2 links: 1, 15-16, 64, 71, 93, 96, 107
Grade 1 links: 2-4, 27-28, 44, 78-79, 124-125

Ask learners to draw the number of shoes for each size as in the first column. Remember to ask learners to give you the topic and the key of the graph. In this activity the key will be a shoe, given in the first column.



Size 1	Size 2	Size 3	Size 4	Size 5	Size 6

Note that learners only work with one-to-one correspondence. E.g. One shoe picture represents one. In the Intermediate phase they will use a key such as one shoe represents two.

Homework

Now ask the learners to answer the questions that follow:

Answer:
a. Size 2
b. Size 5 & Size 6
c. 55 children

Ask learners to make groups of 6 or 8 and draw a column as in question 1. Write down each learner's shoe size and add the totals for each size in each block. Once done, let the groups compare their data with the other groups.

Answer: Each group will differ. The groups should however be able to correctly collect the required data and complete the table in their teams.

Reflection questions

Can the learners do the following?

- Collect and sort and organise data to answer questions
- Draw a pictogram to represent data
- Answer questions about the data in the pictograph
- Complete a simple data handing cycle

Common errors

Make notes of common errors made by the learners.

17 Compare and order numbers

Content links: 65-67, 69-71, 98-101, 103-104
Grade 2 links: 17, 33-34, 65-66, 69, 97-98
Grade 1 links:13, 41-42, 105

Objectives

- Count forwards in 1s from any number between 0 and 200
- Describe, compare and order numbers up to 200 using the terms smaller than, greater than and equal to
- Use the symbols <, > and =

Resources

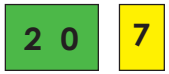
Teacher: Base ten blocks and Place value cards
Learner: Workbook page 36

Dictionary

Compare objects: Using vocabulary such as bigger, smaller, smaller than, greater than, more than, less than, equal to, most, least, fewer, shorter, longer, taller
Compare numbers: Compare numbers using vocabulary such as smaller than, greater than, less than, more than, equal to
Order objects: Order objects from smallest to greatest or or greatest to the smallest
Order numbers: Order numbers from smallest to greatest or greatest to the smallest

Concrete

Place base ten blocks and place value cards on the learners' tables.
Ask each learner to show 27 using the base ten blocks and place value cards.



Representational

Ask them to make a number smaller than 27 and a number bigger than 27.

- smaller than 27

- bigger than 27

Oral questions

Ask learners to look at the illustration on page 36 and answer the questions in the bubbles:

- Which number is before 84?
- Which number is after 84?
- Which number is between 88 and 90?

17 Compare and order numbers *cont...*

Content links: 65-67, 69-71, 98-101, 103-104
Grade 2 links: 17, 33-34, 65-66, 69, 97-98
Grade 1 links:13, 41-42, 105

Now ask learners to work out what the missing numbers are and complete the table. Learners must then use this number board to answer the questions that follow. Refer to Learner book for the questions.

Answer:

51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

- 67
- 69
- Learners can list any five numbers smaller than 71. (A few examples: 70, 69, 68, 67, 66)
- Learners can list any five numbers bigger than 71. (A few examples: 72, 73, 74, 75, 76)
- 80, 81, 82, 83
- 50, 52, 59, 61, 73
- 99, 96, 91, 74, 38

Ask learners to complete the table by starting with the given number:

Answer:

	One more	One less	Ten more	Ten less
25	***26***	***24***	***35***	***15***
39	***40***	***38***	***49***	***29***
74	***75***	***73***	***84***	***64***
56	***57***	***55***	***66***	***46***
40	***41***	***39***	***50***	***30***

Ask learners to circle the biggest number. ***Answer: 87 63***

Ask learners to circle the smallest number.
Answer : 9 14

If < means smaller than, and > means bigger than, complete:
Answer: 57 < 98 89 > 57

Homework
Ask learners to complete questions 4 & 5 for homework. Read the questions with the learners and make sure they understand what is expected.

Reflection questions
Can the learners do the following?
- Count forwards in 1s from any number between 0 and 200
- Describe, compare and order numbers up to 200 using the terms smaller than, greater than and equal to
- Use the symbols <, > and =

18 Place value to 99

Content links: 4, 19, 35a-35b, 42
Grade 2 links: 3, 35, 65-66, 69, 97-98, 100
Grade 1 links: 95

Objectives
- Understand units and tens
- Identify and state the place value of each digit in numbers up to 99
- Decompose 2-digit numbers into multiples of tens and units

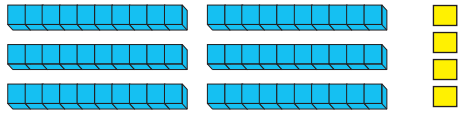
Resources
Teacher: Base ten blocks and Place value cards
Learner: Workbook page 38

Dictionary
Decompose: divide or break down a number into smaller parts

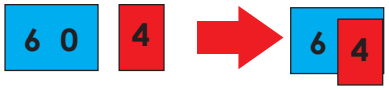
38

Teach mathematics
Demonstrate to the learners how 1 small block represents 1 unit and a rod of 10 small blocks represents 10 units.

Concrete
Place base ten blocks and place value cards on the learners' tables.
Ask each learner to pack out six 10s rods and four unit blocks.
Learners should make numbers using tens and units. E.g.



Ask them to show it using the place value cards and ask them to draw it.



Representational
Place value cards on the learners' desks. Ask the learners to show 53. Ask the learners what they should do to change the 53 to a 43.

Show the learners that we can write:
- 53 as 5 tens and 3 units
- 43 as 4 tens and 3 units.

You can also show 43 on a string of beads or abacus.

18 Place value to 99 *continued*

Content links: 4, 19, 35a-35b, 42
Grade 2 links: 3, 35, 65-66, 69, 97-98, 100
Grade 1 links: 95

Give learners base ten blocks and ask them to work with you to demonstrate 47.
Answer:
4 rods of 10 small units represents 40 + 7 small blocks stands for 7 units.

Ask the learners to write how many tens and how many units each picture has. Then write each number in symbols and then in words.

Ask the learners to make use of their place value cards to show the numbers and complete the table.
Answer:

a. 2 tens; 4 units
24
Twenty-four

8 tens; 3 units
83
Eighty-three

b.

Number	Tens?	Units?	Number in words
26	***2***	***6***	***Twenty-six***
46	***4***	***6***	***Forty-six***
99	***9***	***9***	***Ninety-nine***

Homework

Tell learners to look at the base ten blocks and complete the table.

30 + 5 ***35***	***3 Tens; 5 units*** ***Thirty-five*** ***35***
60 + 9 ***69***	***6 tens; 9 units*** ***Sixty-nine*** ***69***
80 + 3 ***83***	***8 tens; 3 units*** ***Eighty-three*** ***83***

Reflection questions

Can the learners do the following?

- Identify and state the place value of each digit in numbers up to 99
- Decompose 2-digit numbers into multiples of tens and units

Common errors

Make notes of common errors made by the learners.

Content links: 4, 18, 35a-35b, 42
Grade 2 links: None
Grade 1 links: 95

19 Putting tens together when we add to 99

Objectives
- Identify and state the place value of each digit in numbers up to 99
- Break down numbers into tens and units
- Add numbers up to 99

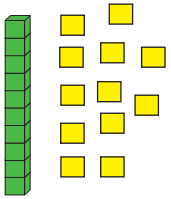
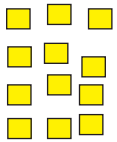
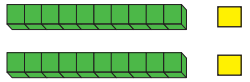
Resources
Teacher: Base ten blocks and Place value cards
Learner: Workbook page 40

Dictionary
Place value: The value of where the digit is in the number, such as units, tens, hundreds, etc. Example: In 15, the place value of the 1 is " 1 ten" and the 5 is "5 units".
Addition: Addition is finding the total, or sum, by combining two or more numbers. Example: 10 + 5 + 6 = 21 is an addition number sentence.

Teach mathematics

40

Concrete
Give learners base ten blocks (units and tens).

Give them 1 ten and 12 units.	Tell learners that we can make another ten with 10 unit blocks.	We can say that we put ten units in a group and 2 units are left.
		

Representational
Give learners place value cards (units and tens)

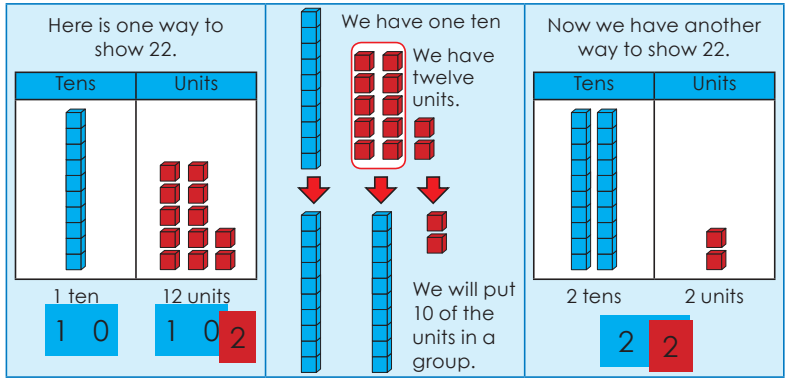
Give them 7 units and 8 units.	Ask the learners to add it and show it with their place value cards.	We put the units in a group of ten and five was left.
		

Abstract
Do a few examples orally with your learners:
- 9 + 6 = 9 + 1 + 5 = 10 + 5 = 15
- 8 + 5 = 8 + 2 + 3 = 10 + 3 = 13

19 Putting tens together when we add to 99 *cont...*

Content links: 4, 18, 35a-35b, 42
Grade 2 links: None
Grade 1 links: 95

Making use of base ten blocks work with the learners to illustrate the examples given in the Learner Books and ask them to complete the last block.



Answer:
30 + 1 = 31

Oral questions

Ask learners to calculate how many more rulers are needed if we have 35 but need a total of 53. ***Answer: 18***

Ask the learners to use their place value cards and complete the number sentences below:

Answer:

- 10 + 5 + 6
- 10 + 10 + 1
- 20 + 1

Homework

Ask learners to complete the rest of question 2 for homework by following the example done above.

Answer:
The first block of each table must have these answers:
30 + 10 + 3 = 43
40 + 10 + 2 = 52
There after each learner must be creative and draw the blocks as he / she thinks best as long as the total comes to the same as the first block with the answers as per above.

Reflection questions

Can the learners do the following?

- Identify and state the place value of each digit in numbers up to 99
- Break down numbers into tens and units
- Add numbers up to 99

20a & b Add on a number line

Content links: 21a-21b, 30b
Grade 2 links: 19, 20, 23a-24, 29-31, 39a-39b, 41-42b, 44-46, 50-54, 56, 65-66, 69, 86, 97-98, 104
Grade 1 links: 41, 45-46, 51, 58-59, 70-73, 83-84, 93, 104, 115, 119

Objectives
- Add on a number line up to 99
- Understand intervals on the number line
- Use the empty number line

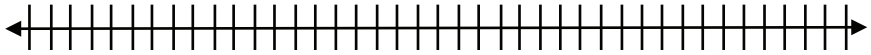
Resources
Teacher: Beads (two colours), paper
Learner: Workbook page 42, ruler, pencil

Dictionary
Empty number line: The empty number line is a visual representation for recording and sharing learners' thinking strategies during the process of mental computation.

Concrete and Representational
Give learners beads in groups of ten.

Ask them to make interval markings where the ones will go.

Remove the beads.



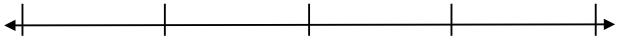
Write the intervals on the number line starting with the zero.

Give learners more examples where you start with e.g. 10/20/30/40/50 or 60. We used the beads so we can emphasize what the meaning of the intervals is.

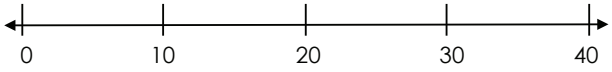
Repeat a similar activity:

Ask them to make interval markings where ten is.

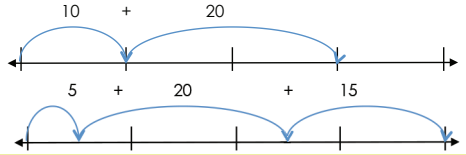
Remove the beads.



Write the intervals on the number line.



Show the learners how to use the empty number line to do calculations.



Note that when we do rough drawings for calculations the intervals do not have to be the exact size.

20a & b Add on a number line *cont...*

Content links: 21a-21b, 30b
Grade 2 links: 19, 20, 23a-24, 29-31, 39a-39b, 41-42b, 44-46, 50-54, 56, 65-66, 69, 86, 97-98, 104
Grade 1 links: 41, 45-46, 51, 58-59, 70-73, 83-84, 93, 104, 115, 119

Oral questions

Ask learners to calculate how many tables are needed if there are 46 learners in Grade 3A and 24 learners in Grade 3B. ***Answer: 70***

Ask learners to team up with the learner next to him/her and work in groups of 2. Ask learners to look at the examples in the book and complete the question a – c by completing the sums, show the numbers on the number cards and drawing the answers on a number line.

Answer:

a. 32 + 25	***b. 52 +26***	***c. 46 + 25***
32 + 10 + 10 + 5	***52 + 10 + 10 + 6***	***46 + 10 + 10 + 5***
42 + 10 + 5	***62 + 10 + 6***	***56 + 10 + 5***
52 + 5 = 57	***72 + 6 = 78***	***66 + 5 = 71***

Homework

Ask learners to do the same with Question 2 for homework. Remember to draw the answers on the number line.

Answers:
a. 36 + 41 = 77
b. 57 + 19 = 76

Homework

Ask learners to do the same with Question 3 for homework. Remember to draw the answers on the number line.

Answers:
a. 63 + 24 = 87
b. 65 + 29 = 94

Ask learners to work out how may loaves of bread the baker delivered. Ask learners to draw the jumps on the number line.

+10 +10 +10 +10 +10 +10 + 8

Answer: 54 + 68 = 122

Ask learners to do the following sums using their own methods.

Answer:

38 + 24 = 62	***b. 58 + 17 = 75***
75 + 16 = 91	***d. 83 + 29 = 112***

Reflection questions

Can the learners do the following?

- Add on a number line up to 99
- Understand intervals on the number line
- Use the empty number line

21a & b Subtract on a number line

Content links: 20a-20b, 21b, 30b
Grade 2 links: 23b, 41-42b, 104
Grade 1 links: 20, 22, 73, 104

Objectives
- Subtract on a number line up to 99
- Use the number line as a technique to do subtraction

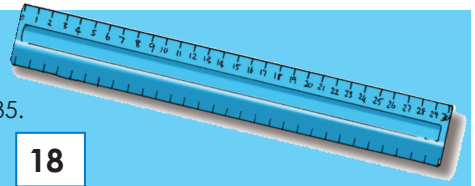
Resources
Teacher: Writing board, paper
Learner: Workbook page 46, ruler, pencil

Dictionary
Subtraction: Taking one number away from another. The symbol of subtraction is -. E.g. 18 – 15 = 3 is a subtraction number sentences.

46

Teach mathematics
Revise the number lines done in the previous worksheet.

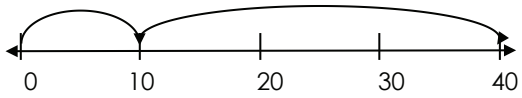
One learner! One ruler!



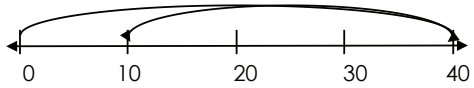
The class needs 53 rulers. We have only 35.

How many more do we need? 53 – 35 = **18**

Representational
Write the following on the board and ask learners to explain it.

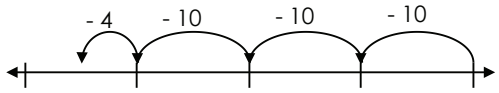


- 10 + 30 = 40
- The arrows show us that we are adding (counting on).



- 40 – 30 = 10
- The arrows show us that we are subtracting (counting back).

Also show examples of how the empty number line can be used.



- 40 – 10 → 30 – 10 → 20 – 10 → 10 – 4 = 6
- The arrows show us that we are subtracting. Note that when we use the empty number line for quick calculations the intervals don't have to be the exact size.

21a & b Subtract on a number line *continued*

Content links: 20a-20b, 21b, 30b
Grade 2 links: 23b, 41-42b, 104
Grade 1 links: 20, 22, 73, 104

Oral questions

Ask learners to calculate how many more rulers are needed if we have 35 but need a total of 53. ***Answer:18***

Ask learners to team up with the learner next to him/her and work in groups of 2. Ask learners to look at the examples in the book and complete the questions a – c by completing the sums and drawing the answers on a number line.

Answer:

a. 68 – 24 = 44
b. 74 – 38 = 36
c. 92 – 87 = 5

Homework

Ask learners to do the same with Question 2 for homework. Remember to draw the answers on the number line.

Answers:

a. 38 – 14 = 24
b. 65 – 43 = 22
c. 72 – 39 = 33
d. 85 – 48 = 37

Homework

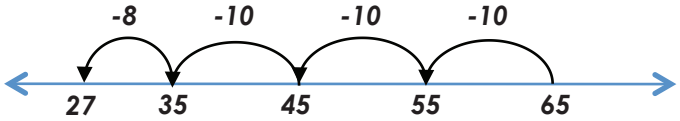
Ask learners to do the same with Question 3 for homework. Remember to draw the answers on the number line.

Answers:

a. 84 – 32 = 52
b. 6596 – 53 = 43
c. 78 – 19 = 59
d. 63 – 47 = 16

Ask learners to work out how much further the taxi must drive till they get to town.

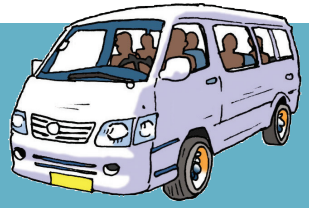
Answer: 65 – 38 = 27



Reflection questions

Can the learners do the following?

- Subtract on a number line up to 99
- Use the number line as a technique to do subtraction



22 It's party time

Content links: 16, 36, 96
Grade 2 links: 1, 15, 64, 71, 93, 96, 107
Grade 1 links: 28, 44, 78-79, 124-125

Objectives
- Sort data
- Organise data in tables
- Represent data in a pictograph

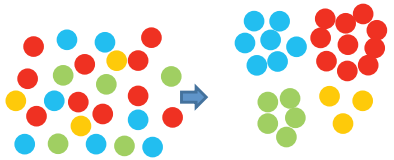
Resources
Teacher: Counters, paper
Learner: Workbook page 50, ruler, pencil

Dictionary
Pictograph: It is also called a pictogram or picture graph. It is a diagram that uses pictures or symbols to show data for quick understanding. A picture or symbol is used to represent a specific quantity.
Frequency table: A table that organizes data to show how often something happens. [You do not need to introduce the term frequency table to your learners yet. Simply refer to it as a table.]

Teach mathematics

50

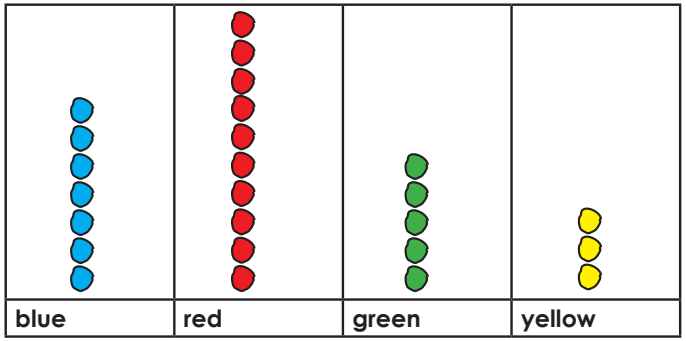
Concrete
Give learners some different colour counters. Ask them to sort it.



Representational
Ask learners to complete the table with your guidance.

Colour	Total
Blue	7
Red	10
Green	5
Yellow	3

Ask learners to draw a pictograph. Ask the learners what they think the topic of the graph will be.



22 It's party time *continued*

Content links: 16, 36, 96
Grade 2 links: 1, 15, 64, 71, 93, 96, 107
Grade 1 links: 28, 44, 78-79, 124-125

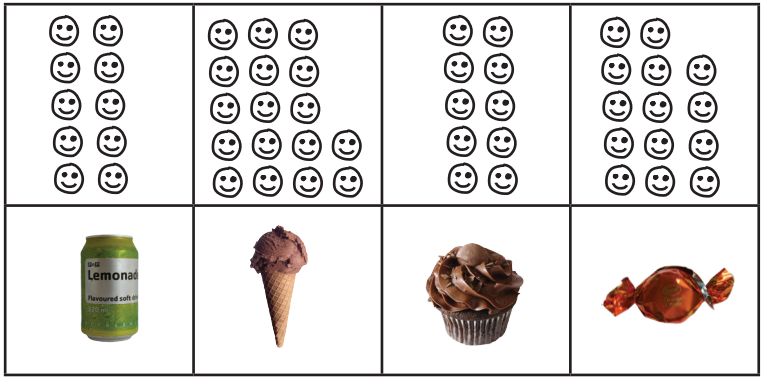
Ask the learners to count the sweets and other kinds of party food and drink and write down the number of each in the blocks provided.

Answer:

				
Number	***10***	***17***	***10***	***14***

Ask the learners to complete the pictograph based on the number of sweets counted in question 1.

Answer:



Homework
Learners complete their tables.

Reflection questions
Can the learners do the following?
- Sort data
- Organise data in a table
- Draw a pictograph

Common errors
Make notes of common errors made by the learners.

23 Counting up to 200

Content links: 1-2, 24-25b, 27-28, 49, 51, 55-56, 78, 81, 83-85, 87, 89
Grade 2 links: 2-5, 17-18, 29-30, 65-66, 69, 70, 97-98, 100
Grade 1 links: 5, 18-19, 45

Objectives

- Count by grouping
- Count in tens up to 200
- Use the multiplication (**x**) symbol correctly
- Multiply numbers 1 to 10 by 10
- Use number lines as a technique to do multiplication

Resources

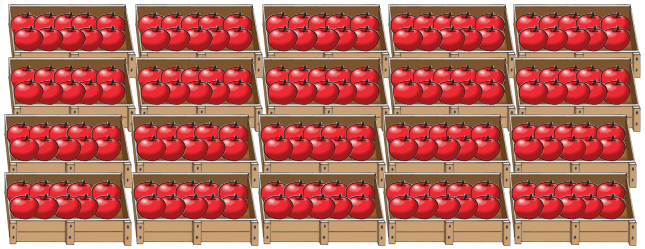
Teacher: Sticks, matches or popsicle sticks (200 +), string or elastic bands, base ten blocks
Learner: Workbook page 52

Dictionary

Group of ten: Ten objects that make one group.
Counting in tens: Count in multiples of ten. E.g. 10, 20, 30, …

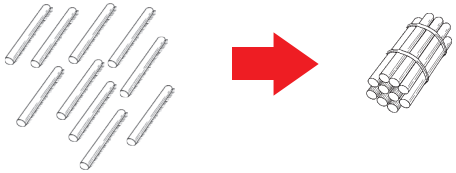
52

Teach mathematics



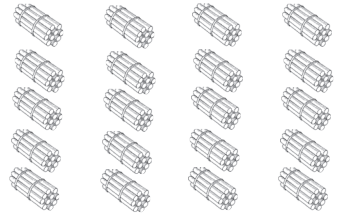
Concrete

Give learners ten sticks and a piece of string or an elastic band. Ask them to make a bundle.



It is very important to note if the learners are counting in ones or tens.

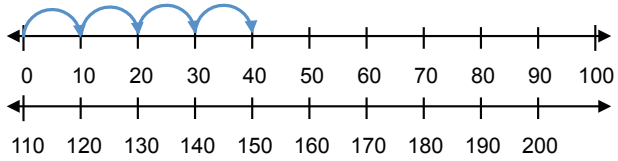
In groups ask learners to make 20 bundles and count it.



10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200

Representational

Give learners numbers lines to count in tens up to 200.



Remove some numbers and ask learners to tell you what the missing numbers are. Ask learners to look at the hoops on the number line. How many groups of ten are there? 4 groups of ten. Ask learners to show you 5, 6, 7, 8, 9 and 10 groups of 10 on the number line.

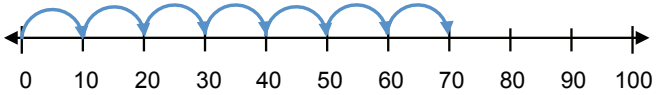
23 Counting up to 200 *continued*

Content links: 1-2, 24-25b, 27-28, 49, 51, 55-56, 78, 81, 83-85, 87, 89
Grade 2 links: 2-5, 17-18, 29-30, 65-66, 69, 70, 97-98, 100
Grade 1 links: 5, 18-19, 45

Ask learners to count the apples in each box and then count the number of boxes. Now ask the learners how many apples did they count?
Answer: 1 box has 10 apples. 1 row has 50 apples.
1 row has 5 boxes. 4 rows have 200 apples.

Ask learners to draw 10 apples in each box and then to count the number of apples in each row.
Answer:
a. 40 b. 60 c. 30

Tell your learners that they know now that each box represents 10 apples. Ask your learners to answer the questions making use of of the number lines provided
Answer:
a. +10 +10 +10 +10 +10 = 50
b. +10 +10 +10 +10 +10 +10 +10 = 70



Ask learners to look at the example and explain to them that 3 lots of 10 make 30. You can explain this with base 10 blocks. Then ask them to complete the questions.
Answer:
5 lots of 10 make 50 5 x 10 = 50 or 10 x 5 = 50
2 lots of 10 make 20 2 x 10 = 20 or 10 x 2 = 20

Homework

Ask learners to complete questions 5 and 6 for homework.
Answer:
a. 5 x 10 = 50 or 10 x 5 = 50
b. 10 + 10 + 10 + 10 = 40
4 x 10 = 40
10 x 4 = 40
c. 10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 = 90
9 x 10 = 90
10 x 9 = 90

Count in 10s
10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200

Reflection questions

Can the learners do the following?
- Count by grouping
- Count in tens up to 200
- Use the multiplication (x) symbol correctly
- Multiply numbers 1 to 10 by 10
- Use number lines as a technique to do multiplication

24 Practice with 5s

Content links: 1-2, 23-25b, 27-28, 49, 51, 53, 55-56, 78, 81, 83-85, 87, 89, 113
Grade 2 links: 7, 30, 56, 80, 83, 114-115
Grade 1 links: 17, 19-22, 56, 58, 81-84, 115

Objectives

- Count by grouping
- Count in groups of 5 up to 50
- Use repeated addition of fives up to 50
- Use multiplication of fives up to 50
- Multiply any number by 5 up to 60
- Solve problems with multiples of five
- Solve word problems in context using multiplication up to 100
- Use number lines as a technique to do multiplication

Resources

Teacher: Unifix blocks, counters, paper
Learner: Workbook page 54, pencil

Dictionary

Group of five: Five objects that make one group.
Counting in fives: Count in multiples of five. E.g. 5, 10, 15, …
Repeated addition: Repeated addition leads to multiplication. E.g. 5 + 5 + 5 + 5 = 20. We can also say 4 groups of 5 is 20.
Multiplication number sentence: A multiplication number sentence include the times sign (x), numbers and the equal (=) sign.

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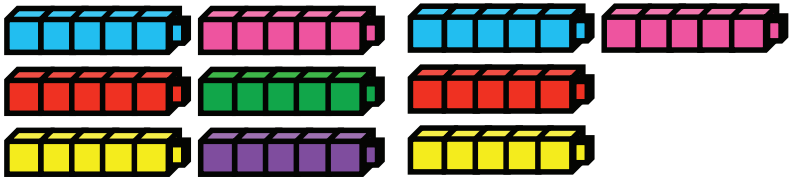
Teach mathematics

Concrete

Give learners 50 unifix blocks. Ask them to make ten groups of five.
We can also write it as:

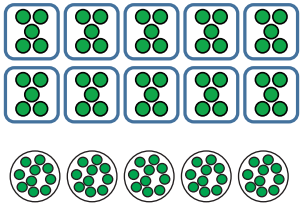
- A repeated addition number sentence:
  5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 = 50
- We can say: 10 groups of 5 is 50
- A multiplication number sentence: 10 x 5 = 50

Give learners 50 counters each and ask them to make groups of five counters each. 50 counters will make 10 groups of five.



Concrete-representational

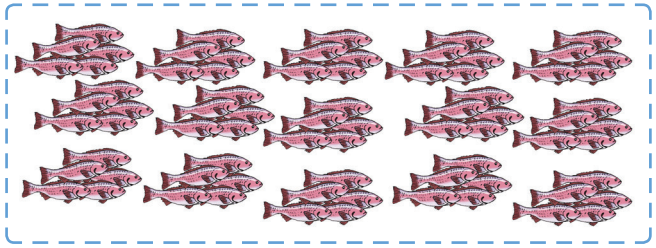
Ask the learners to draw five circles on a page. Ask them to share the counters equally between the five circles.



24 Practice with 5s *continued*

Content links: 1-2, 23-25b, 27-28, 49, 51, 53, 55-56, 78, 81, 83-85, 87, 89, 113
Grade 2 links: 7, 30, 56, 80, 83, 114-115
Grade 1 links: 17, 19-22, 56, 58, 81-84, 115

Tell your learners to count the number of fish in a group. Now tell your learners to count the groups. Ask your learners how many fish they counted.



Answer: 75

Ask your learners to compete the table by writing + and x number sentences. ***Answer:***

Fish and eggs	*How many eggs altogether*	
5 fish, each lay 2 eggs	*2 + 2 + 2 + 2 + 2 = 10*	*5 x 2 = 10*
5 fish, each lay 10 eggs	*10 + 10 + 10 + 10 + 10 = 50*	*5 x 10 = 50*
5 fish, each lay 4 eggs	*4 + 4 + 4 + 4 + 4 = 20*	*5 x 4 = 20*
5 fish, each lay 3 eggs	*3 + 3 + 3 + 3 + 3 = 15*	*5 x 3 = 15*
5 fish, each lay 6 eggs	*6 + 6 + 6 + 6 + 6 = 30*	*5 x 6 = 30*
5 fish, each lay 8 eggs	*8 + 8 + 8 + 8 + 8 = 40*	*5 x 8 = 40*
5 fish, each lay 5 eggs	*5 + 5 + 5 + 5 + 5 = 25*	*5 x 5 = 25*

Ask learners to complete the number sentences as well as the number lines. ***Answer:***

a. 5 + 5 + 5 + 5 = 20 ***OR*** ***4 x 5 = 20***
b. 5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 = 45 ***OR*** ***9 x 5 = 45***
c. 5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 = 50 ***OR*** ***10 x 5 = 50***

Homework

Question 4: Learners must complete the word sum on counting fish for homework.

Answer: Counting in 2s:
2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, and 1 left over
Counting in 5s:
5, 10, 15, 20, 25, 30, 35, 40, 45, and 2 left over
Therefore: Sipho caught 47 fish

Reflection questions

Can the learners do the following?

- Count by grouping
- Count in groups of 5 up to 50
- Use repeated addition of fives up to 50
- Use multiplication of fives up to 60
- Multiply any number by 5 up to 100
- Solve problems with multiples of five
- Solve word problems in context using multiplication up to 100
- • Use number lines as a technique to do multiplication

25a & b Count in 2s

Content links: 1-2, 23-25b, 27-28, 41, 43, 51, 55-56, 78, 81, 83-85, 87, 89
Grade 2 links: 29, 44, 84, 86
Grade 1 links: 49-51, 90-93, 117-120

Objectives
- Count by grouping
- Count forwards in 2s
- Use repeated addition of 2s up to 50
- Multiply any number by 2 up to 50
- Use the multiplication (**x**) symbol
- Use number lines as a technique to do multiplication

Resources
Teacher: Unifix blocks, counters, paper
Learner: Workbook page 56, pencil

Dictionary
Group of two: Two objects that make one group.
Counting in twos: Count in multiples of twos. E.g. 2, 4, 6, …
Repeated addition: Repeated addition leads to multiplication. E.g. 2 + 2 + 2 + 2 = 8. We can also say 4 groups of 2 is 8.
Multiplication number sentence: A multiplication number sentence include the times sign (x), numbers and the equal (=) sign.

Teach mathematics

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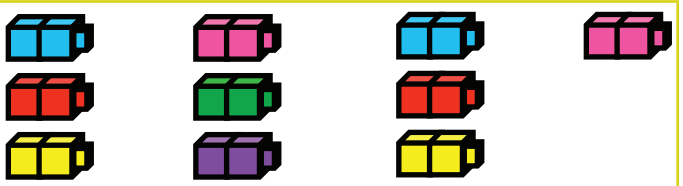
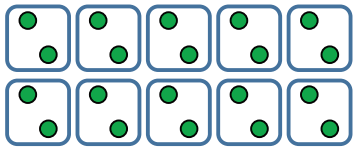
Concrete
Give learners 20 unifix blocks. Ask them to make ten groups of 2
We can also write it as:

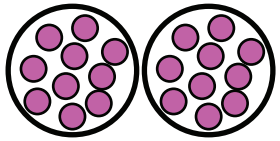


- A repeated addition number sentence:
  2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 = 20
- We can say: 10 groups of 2 is 20
- A multiplication number sentence: 10 x 2 = 20

Give learners 20 counters each and ask them to make groups of two counters each.
20 counters will make 10 groups of two.



Concrete-representational
Give the leaners twenty counters.
Ask the learners to draw two circles on a page.
Ask them to share the counters amongst the two circles.



25a & b Count in 2s *continued*

Content links: 1-2, 23-25b, 27-28, 41, 43, 51, 55-56, 78, 81, 83-85, 87, 89
Grade 2 links: 29, 44, 84, 86
Grade 1 links: 49-51, 90-93, 117-120

Tell your learners that 2 socks = 1 pair. Now ask your learners to complete the questions that follow.
Answer: a. 23 b. 23 x 2 = 46 c. No. [0]

Ask your learners to count the socks as well as the pairs and complete the table. ***Answer:***

Socks	*Number of pairs*	*Number of socks in the pairs*	*Single socks left over*
	16	*32*	*1*
	10	*20*	*0*
	18	*36*	*1*
	14	*28*	*0*
	21	*42*	*1*

Ask your learners to write down the even numbers from 1 – 60 in the space provided.
Answer: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60
b. 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59

Oral questions

Ask your learners who knows what an odd number is and who knows what an even number is.

Now ask your learners to complete the question on odd and even numbers. ***Answer:***
a. Even numbers can be divided by 2. e.g. 32, 38, 40, 46, 64
b. Odd numbers have 1 left over if divided by 2.
e.g. 81, 121, 207

Homework

Ask learners to complete Question 5 as homework
Answer:
a. 2 pairs = 2 x 2 = 4 socks
4 pairs = 4 x 2 = 8 socks
8 pairs = 8 x 2 = 16 socks
9 pairs = 9 x 2 = 18 socks
b. 2 + 2 + 2 + 2 + 2 + 2 + 2 = 14 OR 7 x 2 = 14

Make sure question 5b has been drawn on the number line as well.

Reflection questions

Can the learners do the following?
- Count by grouping
- Count forwards in 2s
- Use repeated addition of 2s up to 50
- Multiply any number by 2 up to 60
- Use the multiplication (x) symbol
- Use number lines as a technique to do multiplication

26 Money then and now

Content links: 8, 56, 95a-95b, 107
Grade 2 links: 6, 25-26, 78-79, 108-109
Grade 1 links: 60a-62, 75-76, 107-108

Objectives
- Recognise and identify South African coins and bank notes
- Solve money problems involving totals and change in rands or cents
- Convert between rands and cents

Resources
Teacher: Coins (1, 2 and 5 cents and 1 rand)
Learner: Workbook page 60

Dictionary
Money: coins or notes used as a payment for goods and services. It is a medium of exchange. Each coin or money note represents a specific value.
Cent: a unit of money equal to one hundredth of the main currency unit (such as the Rand, Dollar, or Euro).
Pounds, shillings and pence: Money units used in South Africa prior to 1961, based on the currency units then used in the United Kingdom.

Teach mathematics

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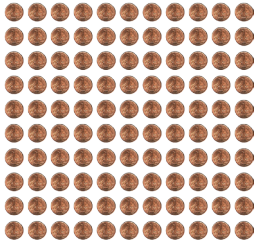
Teach about money
Teaching learners about money, explaining the following concepts:
- what money is
- why money is important
- how money is used in everyday life
- how rands and cents are written using the R, and c symbols
- how one converts rands to cents and cents to rands

Explain the importance of the cent (as one hundredth of a rand) even though the 1 and 2 cent coins are no longer being made and circulated.

Concrete
Show examples of 1 cent, 2 cent and 5 cent coins and 1 rand coins. If possible show 100 1 cent coins and explain that these are equal in value to a 1 rand coin.



Representational
These coins all have a certain value.

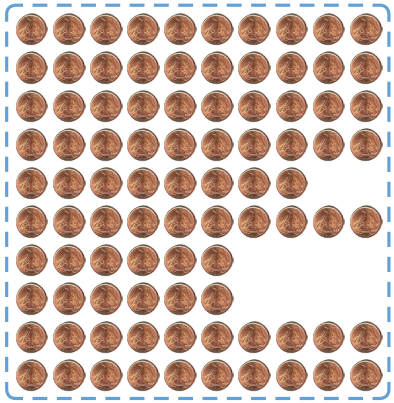
Get the class to discuss what you can buy with R1, R2, R5 and with 1c, 2c, 5c, 10c, and 20c.

Abstract
Explain the conventions used to write down money values.
R for Rand, c for cent and the comma to separate the Rands from the cents (from no cents (00) to 99 cents).
Explain that sometimes the comma is replaced by a . or a –.

26 Money then and now *continued*

Content links: 8, 56, 95a-95b, 107
Grade 2 links: 6, 25-26, 78-79, 108-109
Grade 1 links: 60a-62, 75-76, 107-108

Count the cents



Answers:
How many cents are there? ***90 cents.***
How many more cents do you need to make R1,00? ***10 cents***

Learners should have drawn two cents in row 5 and 4 cents each in rows 7 and 8. You can ask the learners whether they:

- counted the cents one by one

or

- counted the full rows of ten cents (rows 1 to 4, 6, 9 and 10) and then added the number of cents in the other three rows (rows 5, 7 and 8)

or

- worked out that ten full rows is equal to 100 cents and then subtracted the missing spaces (ten coins) to get 90.

How many cents?
Answers:
R1,00 = 100 c
R2,00 = 200 c
R3,00 = 300 c
R1,50 = 150 c

What does the fruit cost? ***Answer:***
If 2 bananas cost R4,00 then for R20,00 you will get 10 bananas.

If 2 apples cost R2,00 then for R9,00 you will get 9 apples. [You may need to explain that to get the correct answer you need to work out the cost of one apple. An alternative possible answer is 8 apples and R1,00 change.]

Homework

- Ask learners to ask their parents to show them any coins they have and to ask the value of these coins.

Reflection questions

Can the learners do the following?

- Recognise and identify all the South African coins and bank notes
- Solve money problems involving totals and change in rands and cents
- Convert between rands and cents

27 Count in 3s

Content links: 1-2, 23-25b, 28, 51, 55-56, 78, 81, 83-85, 87, 89
Grade 2 links: 50-51, 84, 113-114
Grade 1 links: 11, 52-53

Objectives
- Count by grouping
- Counts forwards in 3s
- Use repeated addition of 3s up to 99
- Multiply any number by 3 up to 36
- Solves problems with multiples of 3
- Use number lines as a technique to do multiplication

Resources
Teacher: Unifix blocks, counters
Learner: Workbook page 62

Dictionary
Group of three: Three objects that make one group.
Counting in threes: Count in multiples of three. E.g. 3, 6, 9, …
Repeated addition: Repeated addition leads to multiplication. E.g. 3 + 3 + 3 + 3 = 12. We can also say 4 groups of 3 is 12.
Multiplication number sentence: A multiplication number sentence include the times sign (x), numbers and the equal (=) sign.

Teach mathematics

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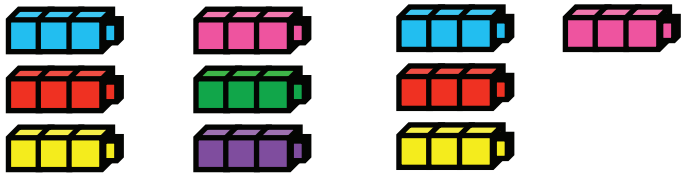
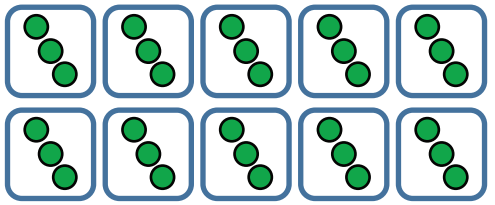
Concrete
Give learners 30 unifix blocks.
Ask them to make ten groups of three
We can also write it as:

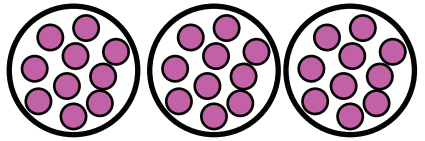


- A repeated addition number sentence:
  3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 = 30
- We can say: 10 groups of 3 is 30
- A multiplication number sentence: 10 x 3 = 30

Give learners 30 counters each and ask them to make groups of three counters each.
30 counters will make 10 groups of three.



Concrete-representational
Ask the learners to draw three circles on a page.
Ask them to share the 30 counters between the three circles.



27 Count in 3s *continued*

Content links: 1-2, 23-25b, 28, 51, 55-56, 78, 81, 83-85, 87, 89
Grade 2 links: 50-51, 84, 113-114
Grade 1 links: 11, 52-53

Ask your learners many wheels a tricycle has and to write down their answers in their books. ***Answer: 3***

Work out the first line of the table with your learners and ask them to complete the rest. ***Answer:***

5 tricycles have 15 wheels	***3 + 3 + 3 + 3 + 3 = 5 x 3 = 15***
2 tricycles have 6 wheels	***3 + 3 = 2 x 3 = 6***
4 tricycles have 12 wheels	***3 + 3 + 3 + 3 = 4 x 3 = 12***
6 tricycles have 18 wheels	***3 + 3 + 3 + 3 + 3 + 3 = 6 x 3 = 18***
9 tricycles have 27 wheels	***3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 = 9 x 3 = 27***
8 tricycles have 24 wheels	***3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 = 8 x 3 = 24***

Ask your learners to complete the sums and then to draw their answers on the number lines.

Answer:

a. 3 + 3 + 3 + 3 = 12 = 4 x 3 = 12
b. 3 + 3 + 3 + 3 + 3 = 15 = 5 x 3 = 15
c. 3 + 3 + 3 + 3 + 3 + 3 = 18 = 6 x 3 = 18
d. 3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 = 30 = 10 x 3 = 30

Homework

Ask learners to complete the word sums in question 3 for homework

Answer:

Learners could have any one of the answers listed below:

Bicycles	***Tricycles:***
7	***0***
1	***4***
4	***2***

Reflection questions

Can the learners do the following?

- Count by grouping
- Counts forwards in 3s
- Use repeated addition of 3s up to 99
- Multiply any number by 3 up to 36
- Solves problems with multiples of 3
- Use number lines as a technique to do multiplication

Common errors

Make notes of common errors made by the learners.

Content links: 1-2, 23-25b, 27, 51, 55-56, 78, 81, 83-85, 87, 89
Grade 2 links: 52-54, 88
Grade 1 links: 14, 54-55

28 What comes in 4s?

Objectives
- Count by grouping
- Counts forwards in 4s
- Use repeated addition of 4s up to 100
- Multiply any number by 4 up to 48
- Solves problems with multiples of 4
- Use number lines as a technique to do multiplication

Resources
Teacher: Unifix blocks, counters
Learner: Workbook page 64

Dictionary
Group of four: Four objects that make one group.
Counting in fours: Count in multiples of fours. E.g. 4, 8, 12, …
Repeated addition: Repeated addition leads to multiplication.
E.g. 4 + 4 + 4 + 4 + 4 = 20. We can also say 5 groups of 4 is 20.
Multiplication number sentence: A multiplication number sentence include the times sign (x), numbers and the equal (=) sign.

Teach mathematics

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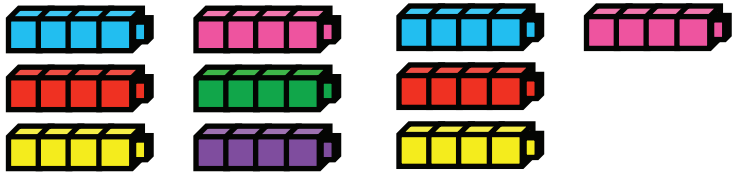
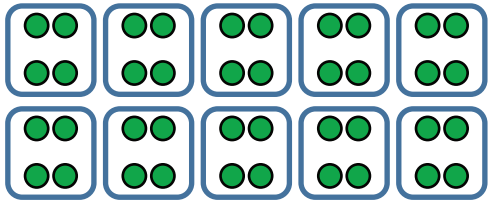
Concrete
Give learners 40 unifix blocks.
Ask them to make ten groups of four.

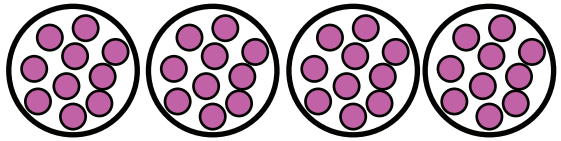


We can also write it as:
- A repeated addition number sentence:
  4 + 4 + 4 + 4 + 4 + 4 + 4 + 4 + 4 + 4 = 40
- We can say: 10 groups of 4 is 40
- A multiplication number sentence: 10 x 4 = 40

Give learners 40 counters each and ask them to make groups of four counters each.
40 counters will make 10 groups of four.



Concrete-representational
Ask the learners to draw four circles on a page.
Ask them to share the counters amongst the four circles.



28 What comes in 4s? *continued*

Content links: 1-2, 23-25b, 27, 51, 55-56, 78, 81, 83-85, 87, 89
Grade 2 links: 52-54, 88
Grade 1 links: 14, 54-55

Ask your learners to write down some other items they can think of that comes in 4s.
Answer:
Learners need to list their own creative answers e.g. tables legs, chairs legs, sheep legs, pig legs, etc.

Ask your learners to complete the table. Then share answers to see what answers your class wrote down and ask them to explain how they got their answers.

1 cow		***4***	legs	2 cows	***8***	legs
3 cows		***12***	legs	4 cows	***16***	legs
5 cows		***20***	legs	6 cows	***24***	legs
7 cows		***28***	legs	8 cows	***32***	legs
9 cows		***36***	legs	10 cows	***40***	legs

Homework

Ask your learners to complete question 3 as homework

3 cows have 12 legs	4 + 4 + 4 = 12 = 4 x 3 = 12
5 cows have 20 legs	4 + 4 + 4 + 4 + 4 = 20 = 4 x 5 = 20
4 cows have 16 legs	4 + 4 + 4 + 4 = 14 = 4 x 4 = 16
7 cows have 28 legs	4 + 4 + 4 + 4 + 4 + 4 + 4 = 28 = 4 x 7 = 28
8 cows have 32 legs	4 + 4 + 4 + 4 + 4 + 4 + 4 + 4 = 32 = 4 x 8 = 32

Tell your learners to complete the sums and then to draw the answers on the number line. ***Answer:***
a. 4 + 4 + 4 + 4 + 4 = 20 = 5 x 4 = 20
b. 4 + 4 + 4 + 4 + 4 + 4 + 4 + 4 + 4 = 36 = 9 x 4 = 36

Reflection questions

Can the learners do the following?

- Count by grouping
- Counts forwards in 4s
- Use repeated addition of 4s up to 100
- Multiply any number by 4 up to 48
- Solves problems with multiples of 4
- Use number lines as a technique to do multiplication

29 Patterns in numbers

Content links: 9, 47, 76, 79, 82, 86, 88, 111, 114, 116, 119, 121
Grade 2 links: 44, 51, 53, 56, 89, 112, 117
Grade 1 links: 51, 58-59, 83-84, 93, 115, 119-120

Objectives
- Copy, extend and describe number patterns
- Recognise 2s, 3s, 4s and 5s patterns on a number board grid
- Create and describe own number patterns

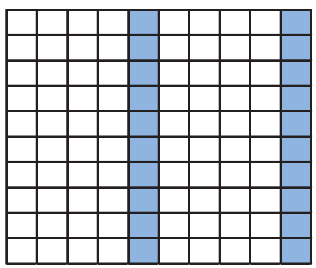
Resources
Teacher: Grid board or grid paper (Cut-out 2)
Learner: Workbook page 66

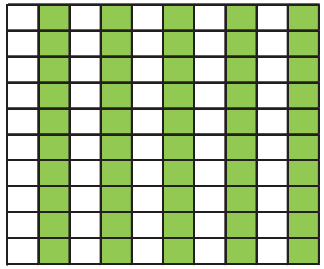
Dictionary
Number pattern: A list of numbers that follow a certain sequence or pattern. E.g.: 3, 6, 9, 12, 15, ... starts at 3 and jumps 3 each time.

66

Teach about patterns in numbers

Concrete, Representational and Abstract
Draw the following grid patterns on the board.





Ask the learners to imagine filling the board with numbers from 1 to 100.
- Which numbers will be blue? (Multiples of 5 or 5 times table)
- Which numbers will be green? (Multiples of 2 or the 2 times table)

Give pairs of learners an empty grid.
What will the pattern look like if I colour the:
- 4 times table?
- 3 times table?

Ask your learners to look at the 100 grid shown in their learner books and then fill in what pattern each grid shows and then to draw more circles to complete the pattern. ***Answer:***
a. Count in 5s – Make sure the grid is complete
b. Count in 2s – Make sure the grid is complete
c. Count in 3s – Make sure the grid is complete
d. Count in 4s – Make sure the grid is complete

29 Patterns in numbers *continued*

Content links: 9, 47, 76, 79, 82, 86, 88, 111, 114, 116, 119, 121
Grade 2 links: 44, 51, 53, 56, 89, 112, 117
Grade 1 links: 51, 58-59, 83-84, 93, 115, 119-120

Ask learners to count forward and backwards to complete the pattern as instructed in their learner books.

Answer:
a. Counting in 2s: 66, 68, 70, 72, 74, 76, 78, 80, 82
Learners need to be creative and think which other numbers can be added and subtracted to keep the pattern and ensure that all the numbers remain even numbers.
Count in 4s / 6s / 8s / 12s etc.

b. Some examples:
Count in 2s: 57, 59, 61, 63, 65, 67, 69, 71, 73
Count in 4s / 6s / 8s / 12s etc.

Homework

To be completed as homework. Tell the learners that they must find out which of the numbers on the brown oval shapes are part of each of the pairs of patterns. They write the correct numbers in the three blocks below.

Answer:
3s and 4s pattern: 48, 12, 36, 84, 24, 72,
3s and 5s pattern: 90, 15, 150, 75
4s and 5s pattern: 40, 80

Ask your learners to count in 3s and 5s and then to identify which numbers will be between 60 and 70 and have 1 left over if counting in 3s and 4 left over if counting in 5s.

Answer:
Counting in 3s:
3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42, 45, 48, 51, 54, 57, 60, 63, 66, 69, 72 [The possible numbers are 61, 64, 67 and 70.]

Counting in 5s:
5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70
[The possible numbers are 64 and 69.]
Therefore Thembi has 64 shells (as 64 is the only number equal to a number between 60 and 70 which is divisible by both 3 and 4 and to which 1 or 4 has been added).

Reflection questions

Can the learners do the following?

- Copy, extend and describe number patterns
- Recognise 2s, 3s, 4s and 5s patterns on a number board grid.
- Create and describe own number patterns

30a & b Division

Content links: 50, 61- 63, 84-85, 87, 89, 113, 17-118, 120
Grade 2 links: 6, 58-63, 110
Grade 1 links: 29-30, 47, 86, 114, 123

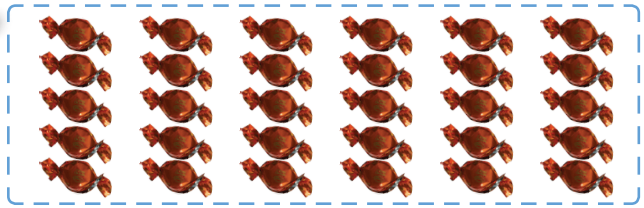
Objectives
- Sort and divide sets of objects up to 100
- Write a division number sentence
- Divide numbers up to 50 by 2, 3, 4, 5 and 10
- Use the division (÷) symbol
- Show repeated subtraction on a number line
- Solve division problems

Resources
Teacher: Counters, base ten blocks
Learner: Workbook page 68

Dictionary
Division: Division is splitting into equal parts or groups. It is the result of "sharing". We use the ÷ symbol, or sometimes the / symbol to mean divide.

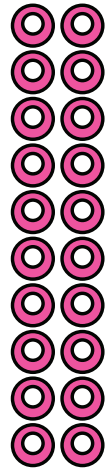
Teach mathematics

68



Concrete
Place the counters out on a desk.
- How many counters are in each row? (2)
- We can say that we have 10 rows of 2 counters each.
- Let us count: 2, 4, 6, 8, 10 ,12, 14, 16, 18, 20.
- How can I write it as a repeated addition number sentence:
  2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 = 20
- How can I write it as a multiplication number sentence:
  10 x 2 = 20
- How can I write it as a division number sentence:
  20 ÷ 2 = 10

Do more examples like this with your learners using the 3x, 4x and 5x tables up to 10.



Ask your learners to check the number of sweets in the picture and then put lines around groups of sweets to show how they divide the sweets between the children.

Answer:
a. 30 ÷ 2 = 15 sweets per child
b. 30 ÷ 3 = 10 sweets per child
c. 30 ÷ 5 = 6 sweets per child

30a & b Division *continued*

Content links: 50, 61- 63, 84-85, 87, 89, 113, 17-118, 120
Grade 2 links: 6, 58-63, 110
Grade 1 links: 29-30, 47, 86, 114, 123

Tell your learners to look at the first set of base ten blocks and then to answer the questions for a and b.

Answer:

a. 39 ÷ 3 = 13

b. 48 ÷ 4 = 12 Learners must draw pictures of the answer

Tell learners to write down a subtraction as well as a division number sentence for each of the questions

Answer:

a. 21: 3 – 3 – 3 – 3 – 3 – 3 – 3 = 0 ***21 ÷ 3 = 7***

b. 28: 4 – 4 – 4 – 4 – 4 – 4 – 4 = 0 ***28 ÷ 4 = 7***

c. 40: 5 – 5 – 5 – 5 – 5 – 5 – 5 – 5 = 0 ***40 ÷ 5 = 8***

Homework

Ask learners to complete question 4 as homework. Remind learners they must draw the answer on the number line:

Answer:

a. 30 ÷ 5 = 6

b. 22 ÷ 2 = 11

c. 27 ÷ 3 = 9

d. 32 ÷ 4 = 8

e. 25 ÷ 5 = 5

Class activity. To make this question more fun, you can do this question as a practical activity and bring enough toffees to school to do this exercise. In the question there are 24 sweets. If, for example, you divide the 24 sweets between a group of 8 children, then each child in the group will get 3 sweets. If you share them with a group of 12 children, each child will get 2 sweets.

As number sentences these would be:

Group of 8: 24 ÷ 8 = 3

Group of 12: 24 ÷ 12 = 2

The smaller the group the more sweets they receive.

Reflection questions

Can the learners do the following?

- Sort and divide sets of objects up to 100
- Write a division number sentence
- Divide numbers up to 50 by 2, 3, 4, 5 and 10
- Use the division (÷) symbol
- Show repeated subtraction on a number line
- Solve division problems

Common errors

Make notes of common errors made by the learners.

31 Fractions

Content links: 7, 57-59, 91-93, 122-123, 125-126
Grade 2 links: 90-91, 94a-94b, 118, 121-123, 125-126
Grade 1 links: 29-30, 114

Objectives
- Recognise fractions in diagrammatic form
- Use and name unit fractions and non-unit fractions
- Write half and third fractions

Resources
Teacher: Fruit or any other concrete resource such as fraction circles or strips
Learner: Workbook page 72

Dictionary
Unit fraction: A fraction where the numerator is one and the denominator is a positive integer, e.g. $\frac{1}{2}, \frac{1}{3}, \frac{1}{27}$.
(Also called unitary fractions.)

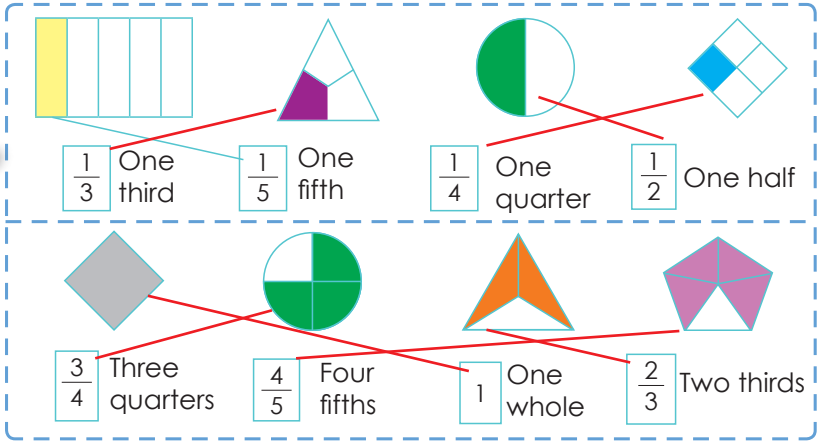
Teach mathematics

Concrete and Representational
Give learners some fruit to share between them.
Share 3 apples equally between two children.

Answer: Each child got one and a half apples.
Share 5 apples equally between 4 children.

Answer: Each child got one and a quarter apples.
See previous notes on using fruit in your classroom.

Ask the learners to draw a line to connect each shape with the fraction it represents.

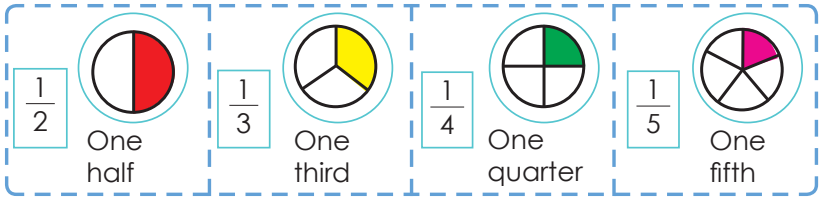


72

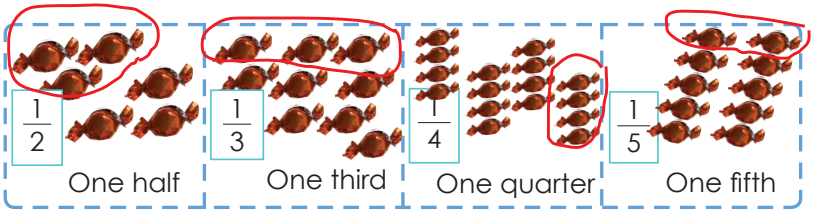
31 Fractions *continued*

Content links: 7, 57-59, 91-93, 122-123, 125-126
Grade 2 links: 90-91, 94a-94b, 118, 121-123, 125-126
Grade 1 links: 29-30, 114

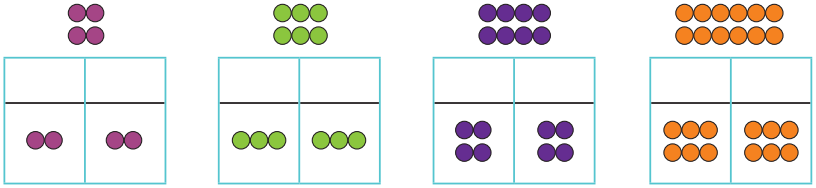
Divide and then colour the shape to show the fraction:



Show the fraction by drawing a line around the correct number of sweets:



Ask the learners to divide the counters between the children and write the word and number sums.



Answers:

Green counters:
- ***We got 3 counters each***
- ***Half of 6 counters is 3.***
- ***6 ÷ 2 = 3***

Purple counters:
- ***We got 4 counters each***
- ***Half of 8 counters is 4.***
- ***8 ÷ 2 = 4***

Orange counters
- ***We got 6 counters each***
- ***Half of 12 counters is 6.***
- ***12 ÷ 2 = 6***

Homework
Tell learners to complete question 3 for homework
Answer:
one quarter of the sweets = 3
two quarters of the sweets = 6
three quarters of the sweets = 9
four quarters of the sweets = 12

Reflection questions
Can the learners do the following?
- Recognise fractions in diagrammatic form
- Use and name unit fractions and non-unit fractions
- Write half and third fractions

32 It's about time

Content links: 12, 54, 80, 106
Grade 2 links: 13-14, 22, 55, 57a-57b, 81a-81b, 85a-85b, 89, 116a-116b
Grade 1 links: 7, 16, 32

Objectives

- Read minutes and hours
- Tell 12-hour time in hours, half hours, quarter hours
- Tell 12-hour time in minutes on analogue and digital clocks
- Read dates on a calendar
- Use calendars to calculate and describe lengths of time in days, weeks, months
- Convert between days and weeks
- Use clocks to calculate elapsed length of time in: hours, half hours and quarter hours

Resources

Teacher: Clocks, calendars
Learner: Workbook page 74

Dictionary

Elapsed time: The difference between two times, the starting time and the ending time. Time elapses while an event is occurring.

Teach mathematics

74

Give the learners an analogue clock(s) Ask them to show the following time on it.

- 7 o'clock
- half past 8
- quarter to one
- quarter past four

One group member shows the time on an analogue clock and the rest of the group should say what the time is.

Draw two clocks on the board. Ask learners what the difference is between the two times.

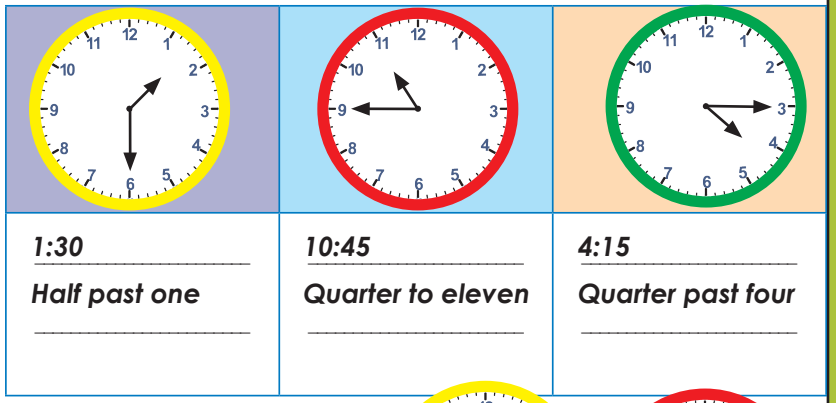
Ask the learners to bring calendars from home. Ask them questions such as:

- Show me your birthday on the calendar.
- Show me your friend's birthday.
- How many days or months are there between your and your friend's birthdays?

32 It's about time *continued*

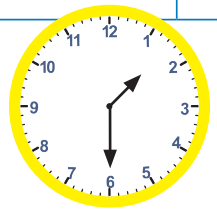
Content links: 12, 54, 80, 106
Grade 2 links: 13-14, 22, 55, 57a-57b, 81a-81b, 85a-85b, 89, 116a-116b
Grade 1 links: 7, 16, 32

Ask the learners to read the time and write it down in different ways
Answer:

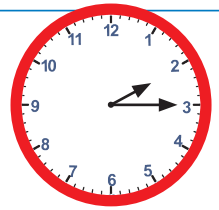


1:30	***10:45***	***4:15***
Half past one	***Quarter to eleven***	***Quarter past four***

Ask the learners to look at the two clocks and work out how long it takes Ben to get home.
Answer: 45 minutes



Ben leaves school.



Ben gets home.

Homework

Ask learners to complete question 3 for homework. ***Answer:***

Minutes in 2 hours?	***120 minutes***
Hours in 2 days?	***48 hours***
Days in 2 weeks?	***14 days***
Months in 2 years?	***24 months***

Ask learners to look at the calendars in their work books and answer the questions. Then check , compare and correct the answers. ***Answers:***

a. 1 month;	***2 weeks;***	***6 days***
b. 7 weeks;	***1 day;***	***50 days***
c. Lebo is older	***59 days***	

Reflection questions

Can learners do the following?

- Read minutes and hours
- Tell 12-hour time in hours, half hours, quarter hours
- Tell 12-hour time in minutes on analogue and digital clocks
- Read dates on a calendar
- Use calendars to calculate and describe lengths of time in days, weeks, months
- Convert between days and weeks
- Use clocks to calculate elapsed length of time in: hours, half hours and quarter hours

33 Target 200

Content links: 41, 43, 45, 65-67, 69-71, 98-101, 103-104
Grade 2 links: 2-5, 17-18, 35, 65-66, 69-70, 97-98, 100
Grade 1 links: None

Objectives

- Count forwards to at least 500
- Count forwards and backwards in 10s
- Recognise the place value of three-digit numbers and state the value of each as hundreds, tens and units
- Describe and order whole numbers from 0 to 200 from smallest to biggest and biggest to smallest

Resources

Teacher: Number 101 to 200 number board, place value cards, Cut-out 1, paper
Learner: Workbook page 76, Cut-out 1

Dictionary

Number: A number is a count or measurement. There are different types of numbers, such as whole numbers (1,2,3) decimals (1,5; 2,5), fractions ($\frac{1}{2}$, $\frac{3}{4}$), etc.

Place value: The value of where the digit is in the number, such as units, tens, hundreds, etc. Example: in 154, the place value of the 1 is "1 hundred", the 5 is "5 tens" and the 4 is "4 units".

Oral questions

Ask the learners what is the correct way to say 140 (write 140 on the board), "one forty" or "one hundred and forty"?

76

Teach mathematics

Concrete

In pairs give learners a 101 to 200 number board.

101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150
151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170
171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190
191	192	193	194	195	196	197	198	199	200

The first learner writes any number on the number board.
E.g. 145 The learner then lays out the number with the place value cards:

The learner then writes it as words: ***One hundred and forty-five.***
The next learner does the same with a different number on the board.

Ask learners to count and say all the numbers on the number board from 101 to 200. Tell them to point as they go.

33 Target 200 *continued*

Content links: 41, 43, 45, 65-67, 69-71, 98-101, 103-104
Grade 2 links: 2-5, 17-18, 35, 65-66, 69-70, 97-98, 100
Grade 1 links: None

Tell learners to write all the numbers on the number board and answer the questions that follow

Answers

a. See number board below

b. See number board below

c. 200; 201; 202; 203; 204; 205; 206; 207 208; 209; 210

101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150
151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170
171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190
191	192	193	194	195	196	197	198	199	200

Ask learners to write the missing numbers

Answer:

a. 200, 190, 180, 170, 160, 150, 140, 130, 120, 110, 100, 90, 80, 70, 60, 50, 40, 30, 20, 10, 0

b. 87, 97, 107, 117, 127, 137, 147, 157, 167, 177, 187, 197, 207, 217, 227, 237

Ask learners to complete the place value card sums and then to write the numbers in order from smallest to biggest

Answer:

200 + 30 + 5 = 235

200 + 40 +7 = 247

200 + 60 + 8 = 268

200 + 90 + 3 = 293

200 + 50 + 6 = 256

Small to big: 235; 247; 256; 268; 293

Homework

Ask learners to fill in the empty boxes by calculating what is needed to add to get to the next number

Answer

100 ***+25*** 125 ***+4*** 129 ***+9*** 138 ***+7*** 145 ***+6*** 151 ***+6*** 157 ***+11*** 168

Reflection questions

Can the learners do the following?

- Count forwards to at least 500
- Count forwards and backwards in 10s
- Recognise the place value of three-digit numbers and state the value of each as hundreds, tens and units
- Describe and order whole numbers from 0 to 200 from smallest to biggest and biggest to smallest

34 Working with groups of numbers

Content links: 23, 49, 53, 55, 63
Grade 2 links: 29-30, 50, 52, 58-61, 110, 114
Grade 1 links: 30, 41, 49, 52, 54, 56, 80-84, 90-92, 112-113, 117, 120

Objectives
- Count in tens up to 500
- Understand groups of ten
- Understand the multiplication symbol
- Calculate groups of ten

Resources
Teacher: Sticks and/or base ten blocks
Learner: Workbook page 78

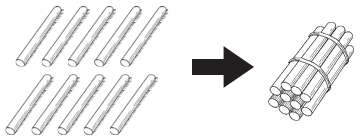
Dictionary
Group of ten: Ten objects that make one group.
Counting in tens: Count in multiples of ten. E.g. 10, 20, 30, …

78

Teach mathematics

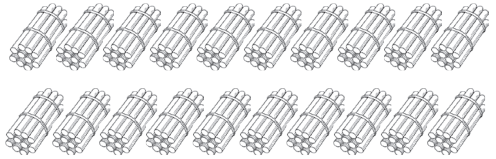
Concrete

Revise: Give learners ten sticks and a piece of string. Ask them to make a bundle.



Do the same activity where learners swop base ten unit blocks for one base ten rod.

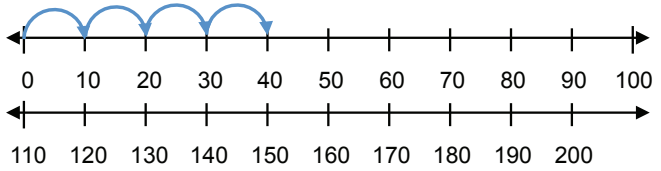
In groups ask learners to make 20 bundles and count all the sticks.



10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200

Representational

Give learners number lines to count in tens up to 200.



Ask learners questions such as: How many groups of ten will give you:
- 20, 30, 40, 50, 60, 70, 80, 90 and
- 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200.

34 Working with groups of numbers *cont...*

Content links: 23, 49, 53, 55, 63
Grade 2 links: 29-30, 50, 52, 58-61, 110, 114
Grade 1 links: 30, 41, 49, 52, 54, 56, 80-84, 90-92, 112-113, 117, 120

Ask the learners to count the candles in each box as well as all the boxes, then answer the questions

Answer:

How many candles in each box? ***10***
How many boxes in each rack? ***10***
How many candles in each rack? ***10 x 10 = 100***

Tell learners that ma Nkosi closed some of the boxes and that they must count the boxes and how many candles are in each box. Then answer the questions.

Answer:

a. How many boxes? ***13 boxes***
How many candles altogether? ***13 x 10 = 130***
How many more boxes does she need to make 200 candles? ***7 boxes***
b. 2 boxes? ***20 candles***
4 boxes? ***40 candles***
5 boxes? ***50 candles***
3 boxes? ***30 candles***
6 boxes? ***60 candles***
7 boxes? ***70 candles***

Homework

Ask learners to complete question 2 c for homework. ***Answer:***

c. 40 candles = 4 boxes
70 candles = 7 boxes
50 candles = 5 boxes
30 candles = 3 boxes

Reflection questions

Can the learners do the following?

- Count in tens up to 500
- Understand groups of ten
- Understand the multiplication symbol (x)
- Calculate groups of ten

Content links: 19, 42
Grade 2 links: None
Grade 1 links: 25, 46, 71-73

35a & b Putting tens together and taking them apart

Objectives
- Put tens together
- Decompose (break down) 2-digit numbers into multiples of tens and units
- Identify and state the value of each digit in 2-digit numbers
- Use building up and breaking down numbers as a technique to perform calculations

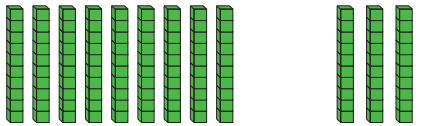
Resources
Teacher: Base ten blocks and place value cards (Cut-out 1)
Learner: Workbook page 80, Cut-out 1

Dictionary
Addition: Addition is finding the total, or sum, by combining two or more numbers. Example: 10 + 5 + 6 = 21 is an addition number sentence.

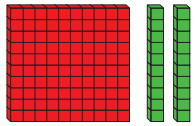
Teach mathematics

80

Concrete
Give the learners some base ten blocks, and do the following activity with them. Ask the learners to show you 9 ten rods.
Ask them to add another three and count it. 10, 20, 30, 40, 50, 60, 70, 80, 90 … 100, 110, 120



Show learners how they can swop ten rods for one hundred block.
We can write it as:
90 + 30 = 100 + 20 = 120



Representational
Do the same activity but learners use their place value cards.

Let learners write it in words: One hundred and ten.

Abstract
Write a few number sentences on the board for the learners to complete orally. If needed they can still make use of their base ten blocks or place value cards.
- 80 + 40 → 100 + 20 = 120
- 60 + 50 → 100 + 10 = 110
- 90 + 30 → 100 + 20 = 120
- 80 + 70 → 100 + 50 = 150

Content links: 19, 42
Grade 2 links: None
Grade 1 links: 25, 46, 71-73

35a & b Putting tens together and taking them apart *cont...*

Work through the example with your learners.

Work through the example with the learners and ask them to complete question a – c

Answer:
a. 65 + 52 = 117
60 + 5 + 50 + 2 = 117
Draw bars and dots to illustrate
b. 76 + 63 = 139
70 + 6 + 60 +3 = 139
Draw bars and dots to illustrate
c. 86 +65 = 151
80 + 6 + 60 + 5 = 151
Draw bars and dots to illustrate

Homework

Ask learners to break the sums up into tens and units and then to work out the sums and complete the table.

Answers:

- 23 + 99 = 122 ***(11 tens and 12 units)***
- 38 + 25 = 63 ***(5 tens and 13 units)***
- 77 + 31 = 108 ***(10 tens and 8 units)***
- 68 + 45 = 113 ***(10 tens and 13 units)***
- 83 + 47 = 130 ***(12 tens and 10 units)***

Oral questions

Ask the learners to break the number into hundreds, tens and units:
137 = 100 + 30 + 7

Do the subtraction sum of 60 – 55 with your learners. Once everyone understands how you worked out the sum based on the example, ask them to complete a – c

Answer:
a. 42 ***b. 44*** ***c. 27***

Ask learners to work out what number will complete the pair.

Answer:
a. 170 ***b. 130*** ***c. 95*** ***d. 115***

Reflection questions

Can the learners do the following?

- Put tens together
- Decompose (break down) 2-digit numbers into multiples of tens and units
- Identify and state the value of each digit in 2-digit numbers
- Use building up and breaking down numbers as a technique to perform calculations

Common errors

Make notes of common errors made by the learners.

36 A visit to the dentist

Content links: 16, 22, 96
Grade 2 links: 15-16, 64, 71, 93, 96, 107
Grade 1 links: 78-79, 124-125

Objectives
- Collect data about the class
- Organise the data into a table
- Represent data in a pictograph
- Answer questions about data

Resources
Teacher: Coloured chalk
Learner: Workbook page 84

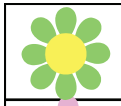
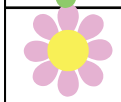
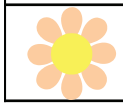
Dictionary
Table: Data written in columns and rows.

84

Teach mathematics

Representational
Draw the following on the board or draw it on cardboard.

Ask learners to help you to tick it off in the following table as you point to the flowers on the board.

	✔ ✔ ✔ ✔
	✔ ✔ ✔ ✔ ✔ ✔ ✔ ✔ ✔ ✔ ✔
	✔ ✔ ✔ ✔ ✔ ✔

Abstract
Ask the learners to write the ticks as numbers in a table.

Green flowers	4
Pink flowers	11
Orange flowers	6

36 A visit to the dentist *continued*

Content links: 16, 22, 96
Grade 2 links: 15-16, 64, 71, 93, 96, 107
Grade 1 links: 78-79, 124-125

Oral questions

Ask your learners how many times a day they brush their teeth per day.

Tell your class that each tick represents a child (that brushes his or her teeth). Each toothbrush represents brushing teeth once. Now ask them to count how many children brush their teeth once, twice or three times a day and complete the questions.

This is what the children tell him. = 1 time

	✓	✓	✓	✓	✓	✓	✓	✓	✓				
	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	✓	✓	✓	✓	✓								

Answer:
a. Once a day = 9
Twice a day = 14
Three times a day = 5

b. Most of the children brush twice a day. There are 28 children in the group

Homework

Ask learners to draw a pictograph of how many times a day the children brush their teeth.

Answer:
Each learner needs to be creative and draw a picture to illustrate the answers. The picture needs to show how many children brush their teeth:
Once = 9
Twice = 14
Three times = 5

Now ask your learners how many children brushed their teeth once -; twice – and three times a day.

Answer:
Learners own answers and pictographs. You may want to do a summary.

Reflection questions

Can the learners do the following?

- Collect data about the class
- Organise the data into a table
- Represent data in a pictograph
- Answer questions about data

37a & b Add and combine

Content links: 5, 35b, 38, 42, 46
Grade 2 links: 23a-24, 39a-39b, 72-74, 77, 101-102, 104-105
Grade 1 links: 15, 19, 43, 102, 104

Objectives
- Add to 400
- Use the multiplication (**x**) symbol
- Use breaking up numbers as a technique to do calculations
- Solve word problems in context and explain own solutions to problems including addition

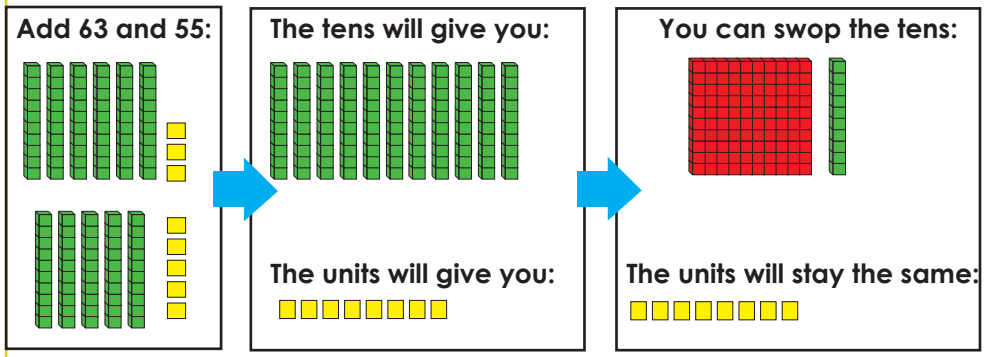
Resources
Teacher: Base ten blocks and place value cards (Cut-out 1)
Learner: Workbook page 86, Cut-out 1

Dictionary
Addition: Addition is finding the total, or sum, by combining two or more numbers. Example: 63 + 55 = 118 is an addition number sentence.

86

Teach mathematics

Concrete
Give learners some base ten blocks and guide them through the following:



Representational
Do the same activity but use place value cards.

37a & b Add and combine *cont...*

Content links: 5, 35b, 38, 42, 46
Grade 2 links: 23a-24, 39a-39b, 72-74, 77, 101-102, 104-105
Grade 1 links: 15, 19, 43, 102, 104

Abstract
Do a few examples with the learners on the board:

63 + 55 → 60 + 50 = 110 → 3 + 5 = 8 → 118

Work through the three examples with your learners to ensure everyone understands what the 3 methods are.

Now ask your learners to do it by themselves using Dumi and Aakar's methods.

Answer
a. 86 + 62 = 148
b. 72 + 63 = 135
c. 81 + 57 = 138
d. 69 + 71 = 140

Oral questions
If 86 is 80 + 6 what will 145 be? ***Answer: 100 + 40 + 5***

Homework
Ask learners to complete the question just like they did with question 2 by using both Busi and Dumi's methods, only this time they need to subtract and not add.

Answer:
a. 87 – 53 = 34
b. 95 – 73 = 22
c. 86 – 62 = 24
d. 85 – 69 = 16

Ask learners to solve the word sums using the way they know and like best and that they must show how they worked out the sum.

Answer:
a. 34 peaches + 67 peaches = 101 peaches
b. R47 + R58 = R105
c. 88 km + 73 km = 161km

Reflection questions
Can the learners do the following?
- Add to 400
- Use the multiplication (x) symbol
- Use breaking up numbers as a technique to do calculations
- Solve word problems in context and explain own solutions to problems including addition

38 Solve it!

Content links: 5, 35b, 37, 42, 46
Grade 2 links: 5, 21, 37a-39b, 70, 74, 77, 101-102, 104
Grade 1 links: 15, 19, 43, 102, 104

Objectives
- Solve addition and subtraction problems in context and explain own solutions
- Build up and break down numbers to perform calculations

Resources
Teacher: Concrete resources, base ten blocks, paper
Learner: Workbook page 90

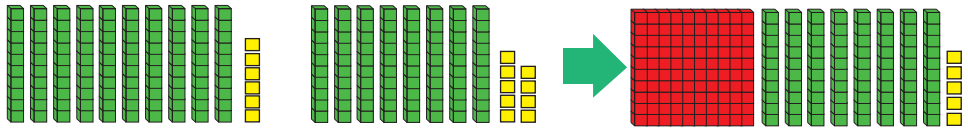
Dictionary
Problem: A mathematical problem is a question that needs a solution. In mathematics some problems use words.

Teach mathematics

Solving problems in context enables learners to communicate their own thinking orally and in writing through drawings and symbols. A variety of strategies are available. We made a summary of a few strategies combined below.

Example: The boys collect R96 for a class trip. The girls collect R79. How much do the collect altogether?

- Read and underline the question
- Circle the key words such as: add, plus, and, increase by, combine, altogether, makes, sum
- Circle key numbers and hidden numbers
- Cross out the number you don't need (if any)
- Solve by using pictures, drawings or concrete apparatus



- Write a number sentence: ***R96 + R79 = R175***
- Show all your work.
- Does your answer make sense?

38 Solve it! *continued*

Content links: 5, 35b, 37, 42, 46
Grade 2 links: 5, 21, 37a-39b, 70, 74, 77, 101-102, 104
Grade 1 links: 15, 19, 43, 102, 104

Tell learners to work out the subtraction sum. They may use any method they like as long as they show their work.
Answer: 87 bottle tops - 38 bottle tops = 49 bottle tops

Sipho

Andile

Oral questions
Ask learners how they will solve the problem.

Ask learners to work out the subtraction sum and show how they worked it out.

Musa

Answer: 92 tickets - 67 tickets left = 25 tickets sold so far

Work through Gugu and Aakar's way to solve the sum with your class and make sure they know what you did.

Ask your learners to only complete question a in the class so that you can check if they understand what is expected from them.
Answer: R96 + R79 = 175 (make sure both methods were used to calculate the sums)

Homework
Now ask your class to complete question 3 b for homework making use of both Jabu and Thembi's way
Answer:
b. 76 kg + 68 kg = 144

Reflection questions
Can the learners do the following?
- Solve addition and subtraction problems in context and explain own solutions
- Build up and break down numbers to perform calculations

Common errors
Make notes of common errors made by the learners.

39 Count and calculate

Content links: 4-5, 18-19, 35a-35b, 38, 42, 46
Grade 2 links: 2-5, 18, 21, 35, 37-39b, 65-66, 69, 70, 74, 77, 97-98, 100-102, 104-105
Grade 1 links: 25, 46, 71-73

Objectives
- Subtract numbers from 400
- Add numbers up to 400

Resources
Teacher: Beads grouped in tens, place value cards (Cut-out 1)
Learner: Workbook page 92, Cut-out 1

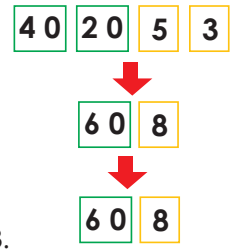
Dictionary
Addition: Addition is finding the total, or sum, by combining two or more numbers. Example: 10 + 5 + 6 = 21 is an addition number sentence.
Subtraction: Taking one number away from another. The symbol of subtraction is -. E.g. 18 – 15 = 3

92

Teach mathematics

Concrete
Use the beads to add up to 100. Example: 45 + 23 is
- 40 + 20 is 60. Show it on the bead line
- 5 + 3 is 8. Show it on the bead line
- 60 + 8 = 68

Now subtract 23 and then 45 from 68.
Give learners some place value cards to do the same operations. 45 + 23. Now subtract 23 and then 45 from 68.



Ask your learners to find the missing number and write it down in the blocks provided.

a.

100	
73	27

b.

100	
39	***61***

c.

100	
43	***57***

d.

100	
56	***44***

e.

200	
140	***60***

f.

200	
90	110

g.

200	
135	***65***

h.

200	
80	120

Ask learners to fill in the blocks by subtracting back from 220 to 100. Tell them they can check their answers by starting at 100 and work back to 220 by adding the number.

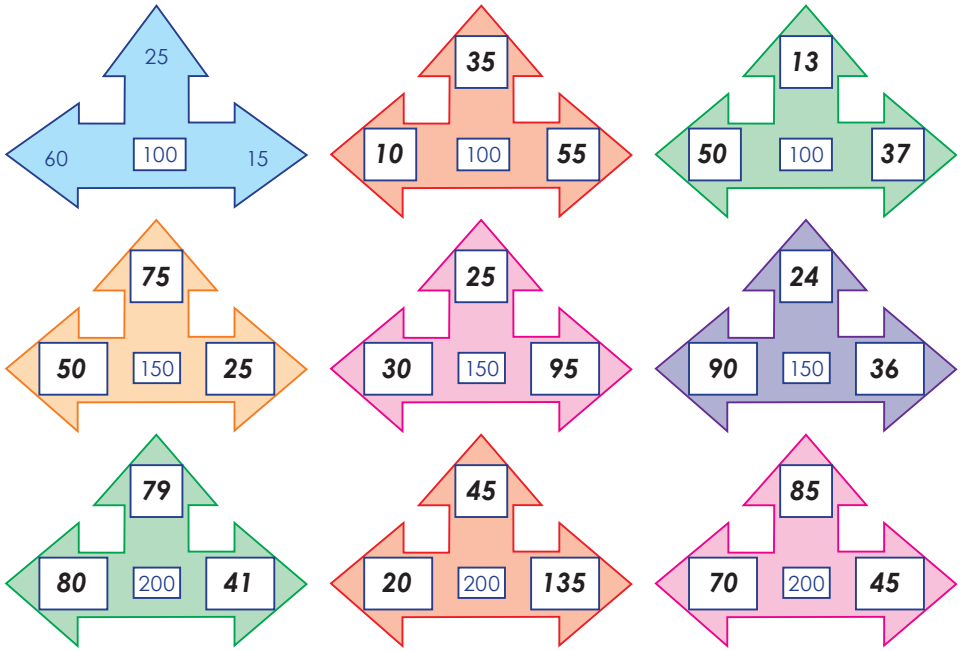
Answer:

220 – 15 → 205 – 5 → ***200*** – 10 → ***190*** – 20 → ***170*** – 20 → ***150*** – 5 → ***145*** – 5 → ***140*** – 10 → ***130*** – 15 → ***115*** – 10 → ***105*** – 5 → 100

39 Count and calculate *cont...*

Content links: 4-5, 18-19, 35a-35b, 38, 42, 46
Grade 2 links: 2-5, 18, 21, 35, 37-39b, 65-66, 69, 70, 74, 77, 97-98, 100-102, 104-105
Grade 1 links: 25, 46, 71-73

Tell your learners that you will be working out 3 numbers that can be added together to make the target, but that there is one rule they must obey. Only one of the three numbers is allowed to end in 0. Each answer must have different numbers.
Answer: these are some of the possible answers



Homework

Ask your learners to complete the blocks by adding 50 or subtracting 50 as requested by each set and then complete the table.
Answer

+50	70	125	150	81	96	122	134	111	70
	120	***175***	***200***	***131***	***146***	***172***	***184***	***161***	***120***
−50	186	200	158	179	139	79	126	138	99
	136	***150***	***108***	***129***	***89***	***29***	***76***	***88***	***49***

Reflection questions

Can the learners do the following?

- Subtract numbers from 400
- Add numbers up to 400

Common errors

Make notes of common errors made by the learners.

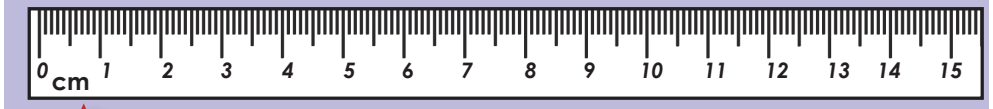
40 Measuring in centimetres

Content links: 13, 94, 97
Grade 2 links: 10, 40, 119
Grade 1 links: 12a-12b, 74, 96

Objectives
- Estimate, measure, compare lengths using the centimetre as a standard unit of length
- Estimate and measure lengths in centimetres using a ruler

Resources
Teacher: 1 cm stick or piece of paper
Learner: Workbook page 94, ruler

Dictionary
Centimetre: A centimetre is a measure of length. There are 100 centimetres in a metre.
The abbreviation is cm.
This image of a ruler is marked in cm along the top.
Millimetre: a measure of length. There are 1 000 millimetres in a metre and 10 millimetres in a centimetre.
The abbreviation is mm.

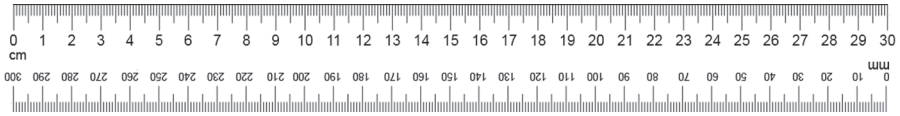


Teach mathematics

94

Concrete
Give learners a stick or a piece of paper that is 1 cm long. Ask them to use it to measure the:
- The length of their book
- The length of their pencil

Representational
Ask learners to look at their rulers. Ask them to find where it says cm. Ask them to find the zero and show them how to measure from zero.



Note that some rulers don't have a zero written on the first interval.

Ask the learners to measure their stick in the previous activity. Ask them what is the length of the book and pencil in cm.

Oral questions
- Does anyone know how big is a centimetre?
- Does anyone know what the numbers on the ruler stand for? centimetres
- What abbreviation / symbol do we use? cm

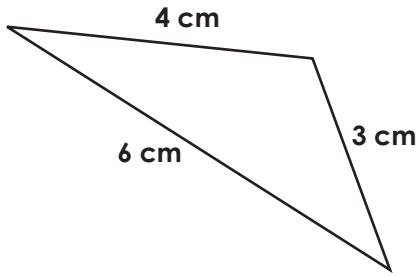
40 Measuring in centimetres *continued*

Content links: 13, 94, 97
Grade 2 links: 10, 40, 119
Grade 1 links: 12a-12b, 74, 96

Tell your learners that when you use a ruler, you must start to measure from 0 and that not all rulers show the 0 like the one in their books. Ask the learners to find the 0 on the ruler and write it in. Now ask the learners to find 10 on the ruler and also write it in.

Tell your learners to look at each of the lines and estimate how long they think each of these lines is and to write it down in the block provided.

Now tell your learners that they must use a ruler and measure each line and write it down. It could be easier if they measure each part of the line, write it down and then add it to get to the total length, like in this example of a line making up a triangle where the three parts of the line measure 6 cm + 4 cm + 3 cm = 13 cm.



Answers:

a. 17 cm
b. 11 cm
c. 9 cm

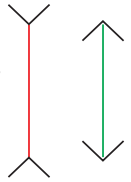
Homework

Tell your learners to complete the question for homework by using their rulers.

Answer:

a. 2 cm b. 4 cm c. 1 cm d. 1 cm e. 4 cm f. 4 cm.

Ask the learners which line they think is the longest by just looking at it. The red line or the green line?
Now ask them how they will be able to check?
Answer: Both lines are equal in length (about 5 cm).



Tell your learners this is what we call an optical illusion.
Read with your learners the block in their learner books

Reflection questions

Can the learners do the following?

- Estimate, measure, compare lengths using the centimetre as a standard unit of length
- Estimate and measure lengths in centimetres using a ruler

Common errors

Make notes of common errors made by the learners.

41 Target 300

Content links: 23, 33, 43, 45, 65-67, 69-71, 98-101, 103-104
Grade 2 links: 3-4, 18, 35, 65-66, 69, 97-98, 100
Grade 1 links: None

Objectives

- Recognise and use place value of hundreds, tens and units
- Recognise the place value of 3-digit numbers
- Order numbers between 200 and 300
- Recognise, identify and read number symbols
- Describe and order whole numbers from the smallest to the greatest

Resources

Teacher: 201 to 300 number board, place value cards (Cut-out 1), paper
Learner: Workbook page 96, Cut-out 1

Dictionary

Group of two: Two objects that make one group.
Number: A number is a count or measurement. There are also different types of numbers, such as whole numbers (1,2,3) decimals (1,5; 2,5), fractions ($\frac{1}{2}$, $\frac{3}{4}$), etc.

Place value: The value of where the digit is in the number, such as units, tens, hundreds, etc. Example: in 154, the place value of the 1 is " 1 hundred", the 5 is "5 tens" and the 4 is "4 units".

Teach mathematics

96

In pairs give learners a 201 to 300 number board.

201	202	203	204	205	206	207	208	209	210
211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230
231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250
251	252	253	254	255	256	257	258	259	260
261	262	263	264	265	266	267	268	269	270
271	272	273	274	275	276	277	278	279	280
281	282	283	284	285	286	287	288	289	290
291	292	293	294	295	296	297	298	299	300

The first learner chooses any number on the number board. ***E.g. 246***
The next learner then shows it with the place value cards:

The learner then writes it in words: ***Two hundred and forty-six.***
The next learner does the same with a different number on the board.

41 Target 300 *continued*

Content links: 23, 33, 43, 45, 65-67, 69-71, 98-101, 103-104
Grade 2 links: 3-4, 18, 35, 65-66, 69, 97-98, 100
Grade 1 links: None

Tell your learners to count from 201 to 300 while pointing at their number boards as they go. Ask them to fill in the blue blocks first and then to complete the rest of the number board. ***Answer:***

201	202	203	204	205	206	207	208	209	210
211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230
231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250
251	252	253	254	255	256	257	258	259	260
261	262	263	264	265	266	267	268	269	270
271	272	273	274	275	276	277	278	279	280
281	282	283	284	285	286	287	288	289	290
291	292	293	294	295	296	297	298	299	300

Now ask your learners to write the next 10 numbers after 300
Answer: 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310

Ask your learners to work out what the jump is from 301 to 281 and then to complete the blocks
Answer:
301, 291, 281, 271, 261, 251, 241, 231, 221, 211, 201, 191, 181, 171, 161, 151, 141, 131, 121, 111, 101, 91

Ask learners to break up the numbers and write it in the number cards given in their books. Once they're done they must arrange the numbers from small to big.
Answer:
a. 208 = 200; 00; 8 ***301 = 300; 00; 1***
276 = 200; 70; 6 ***227 = 200; 20; 7***
269 = 200; 60; 9 ***311 = 300; 10; 1***
b. 208; 227; 269; 276; 298; 301; 311

Homework
Tell learners to complete this question for homework
200 + 25 = 225 + 12 = 237 + 12 = 249 + 12 = 261 + 17 = 278 + 8 = 286 + 14 = 300

Reflection questions
Can the learners do the following?
- Recognise and use place value of hundreds, tens and units
- Recognise the place value of 3-digit numbers
- Order numbers between 200 and 300
- Recognise, identify and read number symbols
- Describe and order whole numbers from the smallest to the greatest

Common errors
Make notes of common errors made by the learners.

42 Addition and subtraction with 100s

Content links: 5, 35a-35b, 46, 73-75, 105, 108-109
Grade 2 links: 5, 21, 23a-24, 37-38, 70, 74, 77, 101-102, 104-105
Grade 1 links: None

Objectives

- Add and subtract to and from 400
- Count forwards and backwards in 100s
- Add and subtract with 100s using different methods
- Break down numbers to perform calculations

Resources

Teacher: Place value cards (Cut-out 1), Base ten blocks
Learner: Workbook page 98, Cut-out 1

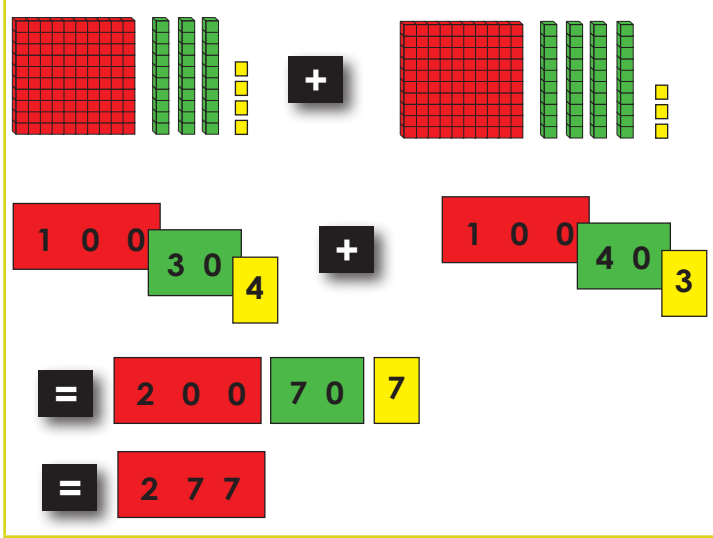
Dictionary

Addition methods: When we add numbers, there are different methods we can use, e.g. breaking and building numbers, column method, etc.
Subtraction: When we subtract numbers, there are different methods we can use e.g. breaking and building numbers, column method, etc.

Teach mathematics

98

Go to question 1. Work through the example with your learners using base ten blocks and place value cards. Let learners explain step by step what they did.



Ask learners to look at their base ten blocks and flard cards.
Ask learners to write down a number sentence:134 + 143.
Ask the learners to solve it using their own method.

42 Addition and subtraction with 100s *cont...*

Content links: 5, 35a-35b, 46, 73-75, 105, 108-109
Grade 2 links: 5, 21, 23a-24, 37-38, 70, 74, 77, 101-102, 104-105
Grade 1 links: None

Work through the methods used by Busi and Dumi to refresh your learners and ask them to complete b and c by themselves

Answer:
b. 114 + 162 = 276
c. 276 + 148 = 424

After completing this ask learners questions such as:

Oral questions
What method do you prefer? Why?
Why is the other method more difficult?
Do you know any other method? Show it to us on the board.

Homework
Before giving the learners the sums for homework work through the methods used by Busi and Dumi.
Ask your learners to complete question 3 as homework making use of both Busi and Dumi's methods

Answer:
b. 194 – 122 = 72
c. 288 – 199 = 89

Reflection questions
Can the learners do the following?

- Add and subtract to and from 400
- Count forwards and backwards in 100s
- Add and subtract with 100s using different methods
- Break down numbers to perform calculations

Common errors
Make notes of common errors made by the learners.

43 Target 400

Content links: 23, 33, 41, 45, 65-67, 69-71, 98-101, 103-104
Grade 2 links: 3-4, 18, 35, 65-66, 69, 97-98, 100
Grade 1 links: None

Objectives

- Recognise, identify and read number symbols
- Count to 400
- Count forwards and backwards in multiples of 10s
- Describe and order whole numbers from smallest to biggest and biggest to smallest
- Identify and state the place value of digits

Resources

Teacher: 301 to 400 number board, number blocks, place value cards (Cut-out 1), paper
Learner: Workbook page 100, Cut-out 1

Dictionary

Number: A number is a count or measurement. There are also different types of numbers, such as whole numbers (1,2,3) decimals (1,5; 2,5), fractions ($\frac{1}{2}$, $\frac{3}{4}$), etc.

Place value: The value of where the digit is in the number, such as units, tens, hundreds, etc. Example: in 154, the place value of the 1 is " 1 hundred", the 5 is "5 tens" and the 4 is "4 units".

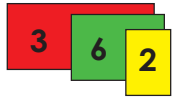
Teach mathematics

100

In pairs give learners a 301 to 400 number board.

301	302	303	304	305	306	307	308	309	310
311	312	313	314	315	316	317	318	319	320
321	322	323	324	325	326	327	328	329	330
331	332	333	334	335	336	337	338	339	340
341	342	343	344	345	346	347	348	349	350
351	352	353	354	355	356	357	358	359	360
361	362	363	364	365	366	367	368	369	370
371	372	373	374	375	376	377	378	379	380
381	382	383	384	385	386	387	388	389	390
391	392	393	394	395	396	397	398	399	400

The first learner chooses any number on the number board. ***E.g. 362***
The next learner then shows it using the place value cards:



The learner then writes it in words: ***Three hundred and sixty-two.***
The next learner does the same with a different number on the board.

43 Target 400 *continued*

Content links: 23, 33, 41, 45, 65-67, 69-71, 98-101, 103-104
Grade 2 links: 3-4, 18, 35, 65-66, 69, 97-98, 100
Grade 1 links: None

Tell your learners to count from 301 to 400 while pointing at their number boards as they go. Ask them to fill in the missing numbers on the number board.

Answer:

301	302	303	304	305	306	307	308	309	310
311	312	313	314	315	316	317	318	319	320
321	322	323	324	325	326	327	328	329	330
331	332	333	334	335	336	337	338	339	340
341	342	343	344	345	346	347	348	349	350
351	352	353	354	355	356	357	358	359	360
361	362	363	364	365	366	367	368	369	370
371	372	373	374	375	376	377	378	379	380
381	382	383	384	385	386	387	388	389	390
391	392	393	394	395	396	397	398	399	400

Now ask your learners to write the next 10 numbers after 400

Answer: 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410

Ask your learners to fill in the empty blocks

Answer:

a. 300; 310; 320; 330; 340; 350; 360; 370

b. 390; 380; 370; 360; 350; 340; 330; 320; 310; 300; 290

Homework

Ask the learners to complete the question as homework

Answer:

300 + 20 + 4 = 324 ***300 + 10 + 5 = 315***
300 + 50 + 3 = 353 ***300 + 70 + 7 = 377***
300 + 60 + 2 = 362 ***300 + 90 + 9 = 399***
300 + 80 + 1 = 381 ***300 + 40 + 8 = 348***

Write the numbers from smallest to biggest:

315; 324; 348; 353; 362; 377; 381; 399

Reflection questions

Can the learners do the following?

- Recognise, identify and read number symbols
- Count to 400
- Count forwards and backwards in multiples of 10s
- Describe and order whole numbers from smallest to biggest and biggest to smallest
- Identify and state the place value of digits

44 Weighing in

Content links: 15, 102a-102b
Grade 2 links: 11, 43, 120
Grade 1 links: 121

Objectives
- Round off numbers
- Measure and record mass in kilograms
- Order mass in kilograms
- Make estimates of the mass of objects

Resources
Teacher: Counters
Learner: Workbook page 102

Dictionary
Number: A number is a count or measurement. There are also different types of numbers, such as whole numbers (1,2,3) decimals (1,5; 2,5), fractions ($\frac{1}{2}$, $\frac{3}{4}$), etc.

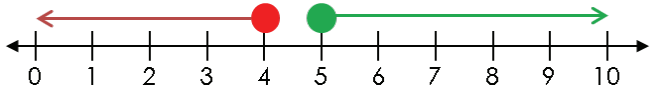
Place value: The value of where the digit is in the number, such as units, tens, hundreds, etc. Example: in 154, the place value of the 1 is " 1 hundred", the 5 is "5 tens" and the 4 is "4 units".
Mass: A measure of how much matter is in an object.
Mass is commonly measured by how much something weighs. When we do measurements in everyday life on earth, mass and weight are the same. In scientific terms weight can change depending on where you are but mass always stays the same.
Rounding off: change a number by reducing or increasing its value to another number which is more convenient to use. You round up by choosing the nearest number that ends in zero. A number ending in 5 is always rounded up. You round down by choosing the nearest number ending in zero.

102

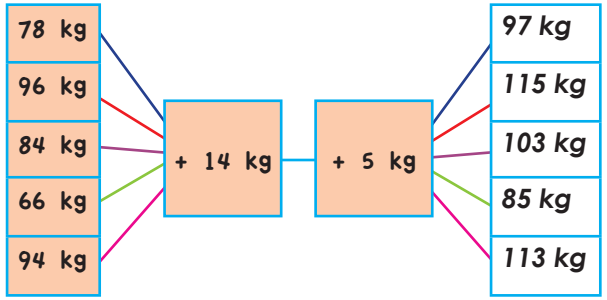
Teach mathematics

Concrete
Give the learners at least 30 counters. Call out different sums and let them show the sum using counters and counting all the counters to figure out the answers.

Give the learners at least 30 counters. Call out different sums and let them show the sum using counters and then round off the answers.



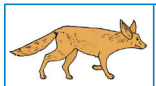
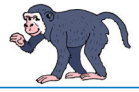
Tell your learners to add the numbers together. ***Answer:***



44 Weighing in *continued*

Content links: 15, 102a-102b
Grade 2 links: 11, 43, 120
Grade 1 links: 121

Ask your learners to round off and answer the questions.

				
Jackal 25 kg	Tortoise 98 kg	Baboon 59 kg	Baby zebra 88 kg	Pelican 9 kg

Answers:
Jackal - 30 kg
Tortoise – 100 kg
Baboon – 60 kg
Baby Zebra – 90 kg
Pelican – 10 kg
Pelican, Jackal, Baboon, Baby Zebra and Tortoise.
290 kg – Add all rounded off

Ask your learners to fill in the empty blocks

	I estimate	I calculate	The difference
	***30 + 90 = 120 kg***	***25 + 88 = 113 kg***	***120 – 113 = 7 kg***
	***30 + 10 + 60 = 100 kg***	***25 + 9 + 60 = 94 kg***	***100 – 94 = 6 kg***
	***100 + 90 + 60 = 250 kg***	***98 + 88 + 59 = 245 kg***	***250 – 245 = 5 kg***

Ask your learners to complete the story sum.
Answer:
88 + 98 = 186 kg
239 – 186 = 53 kg
Vusi weighs 53 kg

Homework
Ask the learners to complete the question as homework
Answer: This will differ according to the mass of the learners.

Reflection questions
- Can the learners do the following?
- Round off numbers
- Measure and record mass in kilograms
- Order mass in kilograms
- Make estimates of the mass of objects

Common errors
Make notes of common errors made by the learners.

45 Target 500

Content links: 23, 33, 41, 43, 65-67, 69-71, 98-101, 103-104
Grade 2 links: 3-4, 18, 35, 65-66, 69, 97-98, 100
Grade 1 links: None

Objectives

- Add and subtract three digit numbers
- Count in 2s and 5s from any multiple thereof
- Decompose (break down) 3-digit numbers into multiples of hundreds, tens and units

Resources

Teacher: 401 to 500 number board, Place value cards (Cut-out 1), paper
Learner: Workbook page 104, Cut-out 1

Dictionary

Number: A number is a count or measurement. There are also different types of numbers, such as whole numbers (1, 2, 3) decimals (1,5; 2,5), fractions ($\frac{1}{2}$, $\frac{3}{4}$), etc.

Place value: The value of where the digit is in the number, such as units, tens, hundreds, etc. Example: in 154, the place value of the 1 is " 1 hundred", the 5 is "5 tens" and the 4 is "4 units".

Teach mathematics

Representational

In pairs give learners a 401 to 500 number board.

401	402	403	404	405	406	407	408	409	410
411	412	413	414	415	416	417	418	419	420
421	422	423	424	425	426	427	428	429	430
431	432	433	434	435	436	437	438	439	440
441	442	443	444	445	446	447	448	449	450
451	452	453	454	455	456	457	458	459	460
461	462	463	464	465	466	467	468	469	470
471	472	473	474	475	476	477	478	479	480
481	482	483	484	485	486	487	488	489	490
491	492	493	494	495	496	497	498	499	500

The first learner chooses any number on the number board. E.g. 465
The next learner then shows it with the place value cards:

The learner then writes it in words: Four hundred and sixty-five.

The next learner does the same with a different number on the board.

45 Target 500 *continued*

Content links: 23, 33, 41, 43, 65-67, 69-71, 98-101, 103-104
Grade 2 links: 3-4, 18, 35, 65-66, 69, 97-98, 100
Grade 1 links: None

Tell your learners to count from 201 to 300 while pointing at their number boards as they go. Ask them to complete the rest of the number board.
Answers: b.

401	402	403	404	405	406	407	408	409	410
411	412	413	414	415	416	417	418	419	420
421	422	423	424	425	426	427	428	429	430
431	432	433	434	435	436	437	438	439	440
441	442	443	444	445	446	447	448	449	450
451	452	453	454	455	456	457	458	459	460
461	462	463	464	465	466	467	468	469	470
471	472	473	474	475	476	477	478	479	480
481	482	483	484	485	486	487	488	489	490
491	492	493	494	495	496	497	498	499	500

c. 500, 501, 502, 503, 504, 305, 506, 507, 508, 509.
d. 404, 406, 408, 410, 412, 414, 416, 418.
e. 410, 415, 420, 425, 430, 435, 440, 445.

Ask your learners to work out what the change is
Answers:
a. 420, 450, 460, 470, 490, 500, 550.
b. – 2, – 2, – 10, – 10, – 20, – 20, – 20, – 10, – 2, – 2.

Homework

Tell learners to complete this question for homework

405 + 10	415	400 + 10 + 5	398 + 10	408	400 + 8
446 + 10	456	400 + 50 + 6	424 + 10	434	400 + 30 + 4
455 + 10	465	400 + 60 + 5	460 + 20	480	400 + 80

Reflection questions

Can the learners do the following?

- Add and subtract three digit numbers
- Count in 2s and 5s from any multiple thereof
- Decompose (break down) 3-digit numbers into multiples of hundreds, tens and units
- Add to 500 and subtract from 500

Common errors

Make notes of common errors made by the learners.

46 More adding and subtracting

Content links: 5, 37a-75b, 42, 73-75, 105, 108-109
Grade 2 links: 5, 21, 23a-23b, 37-38, 70, 74, 77, 101-102, 104-105
Grade 1 links: 15, 19, 21-22, 43, 77, 104

Objectives
- Add and subtract three digit numbers
- Decompose (break down) 3-digit numbers into hundreds, tens and units
- Break down numbers to perform calculations

Resources
Teacher: Base ten blocks, Place value cards (Cut-out 1)
Learner: Workbook page 106, Cut-out 1

Dictionary
Addition: Addition is finding the total, or sum, by combining two or more numbers.

The symbol of addition is **+** .

E.g.: 10 + 5 = 15 is an addition number sentence.

Subtraction: Taking one number away from another.

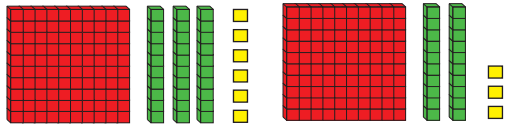
The symbol of subtraction is **–** .

E.g. 18 – 15 = 3 is a subtraction number sentence.

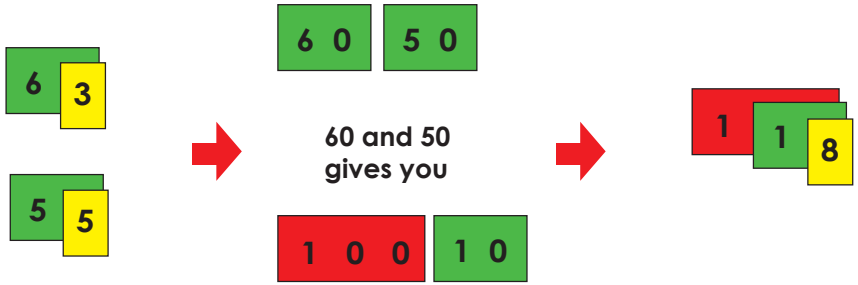
106

Teach mathematics

Concrete
Give the learners base ten blocks and ask them to set out the following: 136 + 123. Get the learners to work out the answers by adding all the same colour blocks.



Concrete - Representational
Draw another example on the board using base ten blocks, this time let the learners lay out the place value cards to show the numbers being added together.



Abstract
Ask the learners to write a number sentence for different examples given in class.

46 More adding and subtracting *cont...*

Content links: 5, 37a-75b, 42, 73-75, 105, 108-109
Grade 2 links: 5, 21, 23a-23b, 37-38, 70, 74, 77, 101-102, 104-105
Grade 1 links: 15, 19, 21-22, 43, 77, 104

Tell the learners to use the two different methods to solve the given sums.

Busi's method
= 200 + 200 + 40 + 30 + 5+ 1
= 400 + 70 + 6
= 476

Dumi's method
245 + 231
= 400 + 70 + 6
= 476

b. 278 + 136

278 + 136
= 200 + 100 + 70 + 30 + 8 + 6
= 300 + 100 + 14
= 414

265 + 148
= 300 + 100 + 14
= 414

c. 265 + 148

265 + 148
= 200 + 100 + 60 + 40 + 5 + 8
= 300 + 100 + 13
= 413

265 + 148
= 300 + 100 + 13
= 413

Ask learners to use the two different methods to solve the given sums.

b. 278 + 136

489 - 456
= 400 - 400 + 80 - 50 + 9 - 6
= 30 + 3
= 33

489 - 456
= 0 + 30 + 3
= 33

c. 482 - 161

482 - 161
= 400 - 100 + 80 - 60 + 2 - 1
= 300 + 20 + 1
= 321

482 - 161
= 300 + 20 + 1
= 321

Homework

Ask the learners to complete the question 3 story sum by subtracting R189 (the money raised so far) from R300 (the target) from the money raised so far.

Answer:

R300 – R189 = ☐ = 300 – 100 = 200 – 80 = 120 – 9 = R111

To reach the target we need R111 more.

Reflection questions

Can the learners add and subtract three digit numbers?

47 Sharpen your skills

Content links: None
Grade 2 links: 27-28, 51, 53, 56
Grade 1 links: 83-84, 89, 93, 115, 119-120, 127

Objectives
- Identify and describe patterns
- Extend patterns made with drawings
- Multiply by 2 and 3

Resources
Teacher: Number board (1 to 100) with hearts round even numbers and circles round multiples of 3
Learner: Workbook page 108

Dictionary
Number pattern: It is a special sequence of numbers arranged in order according to a rule (for example, by adding or subtracting some value each time).

108

Teach mathematics

Concrete, Representational and Abstract
Show the learners a number board with:
- Hearts on the multiples of two
- Circles around the multiples of three

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Ask learners to identify and describe the patterns with hearts and then circles.

Ask learners how will they show counting in fours with triangles and counting in fives with squares.

47 Sharpen your skills *continued*

Content links: None
Grade 2 links: 27-28, 51, 53, 56
Grade 1 links: 83-84, 89, 93, 115, 119-120, 127

Ask your learners to match each answer in the table to a letter in the code to find out what the name of the highest mountain in Gauteng is.

Answer:

Number clues	Answer	Letter
Example: 2 × 3 × 3 × 1 = ☐	***18***	***R***
50 + 50 + 50 + 100 – 200 – 45 = ☐	***5***	***E***
1 + 2 + 7 + 10 + 7 + 1 – 14 = ☐	***14***	***N***
60 – 30 + 50 + 20 – 50 – 15 – 20 = ☐	***15***	***O***
3 + 2 + 7 + 1 + 2 + 1 + 3 = ☐	***19***	***S***
5 + 3 + 30 = 4 + 2 + 12 + ☐	***20***	***T***
100 – 5 – 70 = 20 + ☐	***5***	***E***
36 + 44 – 60 – 2 = ☐	***18***	***R***
10 + 15 = 14 + ☐	***11***	***K***
2 + 1 + 14 + 9 + 14 = 25 + ☐	***15***	***O***
1 × 2 × 2 × 2 × 2 = ☐	***16***	***P***

The mountain's name is: Renosterkop

Ask learners to look at the pattern and answer the questions that follow

Answer:

a. What shape will 16 be? ●
What shape will 18 be? ☾
What shape will 23 be? ☾

b. Number 50 will be a ✷ ***. False***
Number 100 will be a ● ***. True***
Number 28 will be a ✷ ***. True***

As June and July total 31 days, the total for the daily payments is R152,50, so it is more.

Ask the learners to explain how they got their answers.

Homework
Ask learners to create their own secret code and then give it to their friends to solve the next day.

Reflection questions
Can the learners do the following?
- Identify and describe patterns
- Extend patterns made with drawings
- Multiply by 2 and 3

48 Symmetry

Content links: 115
Grade 2 links: 8, 124, 127-128
Grade 1 links: 94, 128

Objectives
- Recognise and draw lines of symmetry on 2-D geometrical shapes
- Determine a line of symmetry through reflection
- Create a symmetrical pattern

Resources
Teacher: Magazines and advertising pamphlets
Learner: Workbook page 110, scissors, rulers, pencils

Dictionary
Reflection Symmetry: (sometimes called Line Symmetry or Mirror Symmetry) is easy to recognise, because one half is the reflection of the other half.

110

Teach mathematics
Ask your learners to have a look at the shapes at the top of page 110 and tell you what they notice about them.

Representational
Ask learners to work in pairs. Ask them to find pictures in a magazine or pamphlet on which they can show the line of symmetry. For example:

Ask the learners to cut the pictures from magazines. Ask them to fold it to show the line of symmetry. Ask learners to describe why the picture is symmetrical. Learners draw the line of symmetry on the pictures.

48 Symmetry *continued*

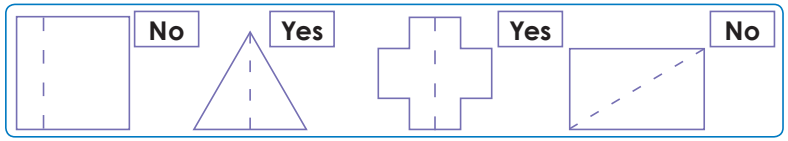
Content links: 115
Grade 2 links: 8, 124, 127-128
Grade 1 links: 94, 128

Ask the learners to draw a line of symmetry for each of the shapes

Answer:

Ask the learners to look at the second set of shapes and say if the line is a line of symmetry or not.

Answer:



Ask the learners if the next shapes have a line of symmetry and why.

Answer:

Yes, all 3 shapes have a line of symmetry.

If the shape is folded on the line both sides will be exactly the same size.

Tell the learners to complete the drawings by drawing shapes to make both sides the same

Answer:

Learners need to draw their own shapes to match the other side of the line. Check to make sure the shapes on both sides of the line are the same.

Homework

Tell learners to create their own symmetrical carpet using shapes.

Answer:

Learners needs to be creative and make use of various shapes to create their own symmetrical carpet. Make sure that the symmetrical line has been drawn and that the shapes on both sides are symmetrical

Reflection questions

Can the learners do the following?

- Recognise and draw lines of symmetry on 2-D geometrical shapes
- Determine a line of symmetry through reflection
- Create a symmetrical pattern

Common errors

Make notes of common errors made by the learners.

49 Building up to 500

Content links: 23, 34, 63
Grade 2 links: 3-4, 18, 35, 65-66, 69, 97-98, 100
Grade 1 links: 71, 80

Objectives
- Count forwards in multiples of 10s and 100s
- Multiply numbers by 10 up to 100

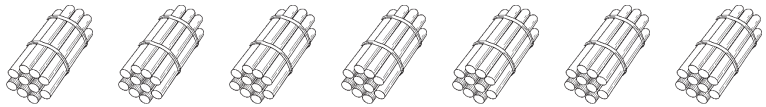
Resources
Teacher: Bundles of ten sticks, Place value cards (tens)(Cut-out 1)
Learner: Workbook page 112, Place value cards (tens)(Cut-out 1)

Dictionary
Group of 10: Ten objects that make one group
Tens: Two digit numbers that end on a zero: 10, 20, 30, 40, 50, 60, 70 ,80, 90
Units: Single digit numbers: 1, 2, 3, 4, 5, 6, 7, 8, 9

Teach mathematics

112

Concrete
Revision: Give learners bundles of sticks to count. E.g. 7 bundles equals 70. Ask the learners what will 7 bundles and 9 bundles will be altogether.



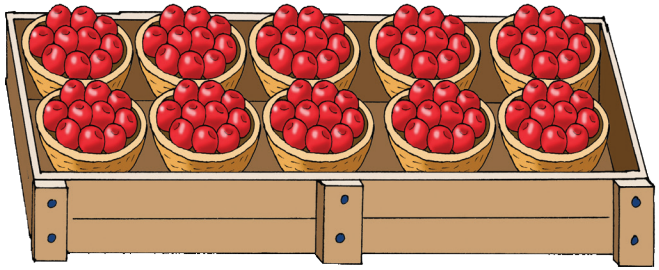
Representational
Give learners two sets of the ten place value cards. Ask them to show you all the tens cards. In pairs learners play a game. Place all the cards face down. The first learner picks up two cards and gives the total. If he or she is correct she keeps the cards, if not she places it face down on the table. The second learner does the same. The first learner now picks up three cards and gives the answer. Repeat the game until all the cards are used. The learner with the most cards is the winner.

49 Building up to 500 *continued*

Content links: 23, 34, 63
Grade 2 links: 3-4, 18, 35, 65-66, 69, 97-98, 100
Grade 1 links: 71, 80

Ask the learners to count the apples in each basket as well as the number of baskets. Then complete the questions that follow

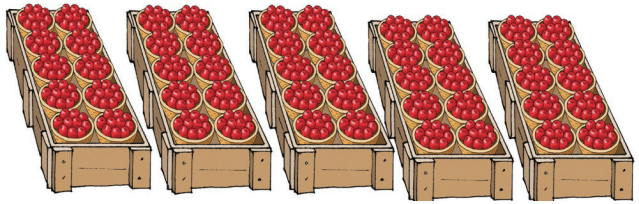
Answer:



1 basket holds 10 apples	***1 x 10 = 10***
3 baskets hold 30 apples	***3 x 10 = 30***
5 baskets hold 50 apples	***5 x 10 = 50***
4 baskets hold 40 apples	***4 x 10 = 40***
2 baskets hold 20 apples	***2 x 10 = 20***

1 crate holds 100 apples
2 crates hold 200 apples
3 crates hold 300 apples
4 crates hold 400 apples
5 crates hold 500 apples
2 half crates hold 100 apples

Ask the learners to count the apples in the baskets and then answer the questions. ***Answer:***



There are 10 baskets in one crate.
There are 100 apples in one crate
There are 500 apples altogether

Homework

Ask the learners to complete question 3 at home by following the example in the first line. ***Answer:***

- 457 apples
- 523 apples
- 472 apples

Reflection questions

Can learners:

- Count forwards in multiples of 10s and 100s
- Multiply numbers by 10 up to 100

50 Multiplication and division (10)

Content links: 78, 81, 83-85, 87, 89, 113, 117-118, 120
Grade 2 links: 6, 29-31, 45-48, 50, 52, 54, 58-63, 82-84, 86-88,110, 113-115
Grade 1 links: 71

Objectives
- Multiply with 10
- Divide by 10

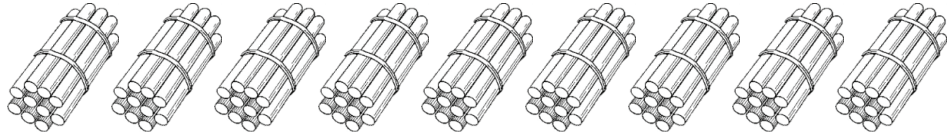
Resources
Teacher: Bundles of ten sticks
Learner: Workbook page 114

Dictionary
Multiplication number sentence: A multiplication number sentence includes the time sign (x), numbers and the equal (=) sign.
Division number sentence: A division number sentence includes the division sign (÷), numbers and the equal (=) sign.

Teach mathematics

114

Concrete
Give learners one bundle of 10 sticks. Ask them how many sticks will there be if you give 9 children each a bundle. Write down a number sentence for it.



Number sentence: 10 x 9 = 90

Representational
Give a group of 9 learners 90 sticks. Ask learners how many bundles can they make. Ask them to write a number sentence.

Number sentence: 90 ÷ 9 = 10

Abstract:
Ask learners to draw a number line from 0 to 100 with tens intervals. Ask the learners to show you a:
- Multiplication sum using tens, and then a
- Division sum using tens on the number line.

50 Multiplication and division (10) *cont...*

Content links: 78, 81, 83-85, 87, 89, 113, 117-118, 120
Grade 2 links: 6, 29-31, 45-48, 50, 52, 54, 58-63, 82-84, 86-88,110, 113-115
Grade 1 links: 71

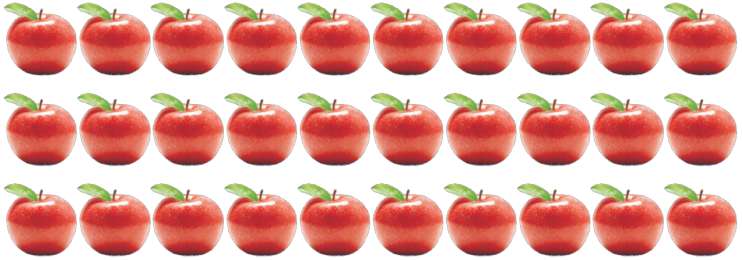
Ask learners to complete the table

Answer:

10	*20*	*30*
1	*2*	*3*
10 ÷10 = 1	*20 ÷ 10 = 2*	*30 ÷ 10 = 3*
1 X 10 = 10	*2 X 10 = 20*	*3 X 10 = 30*

40	*50*
4	*5*
40 ÷ 10 = 4	*50 ÷ 10 = 5*
4 X 10 = 40	*5 X 10 = 50*

Ask learners to count the apples, divide them between the 4 children and to draw a picture to illustrate how many apples each child will get.



Answer:

a. 40 ÷ 4 = 10	*4 x 10 = 40*
b. 30 ÷ 3 = 10	*3 x 10 = 30*

Tell your learners to use the numbers shown on the number line to make their own number sentences as shown in the example.

Answer:

a. 50 ÷ 10 = 5	*5 x 10 = 50*
b. 20 ÷ 10 = 2	*2 x 10 = 20*
c. 30 ÷ 10 = 3	*3 x 10 = 30*

Homework

Ask learners to give a number that is10 smaller and 10 bigger than the given number.

Answer

450,	*460,*	*470*
380,	*390,*	*400*
490,	*500,*	*510*

Reflection questions

Can the learners do the following?

- multiply by ten
- divide by ten

Common errors

Make notes of common errors made by the learners.

51 Count in 2s

Content links: 1-2, 23-25b, 27-28, 33, 41, 43, 45, 51, 55-56, 65, 67, 70, 98, 100, 103
Grade 2 links: 2, 18, 29, 44, 70, 84, 86-87
Grade 1 links: 10, 49-51, 90-93, 117-120

Objectives
- Count forwards in 2s and 20s from any multiple
- Multiply by 2 up to 50
- Divide by 2 from 50 with and without remainders
- Copy and extend simple number sequences

Resources
Teacher: 100 counters per group
Learner: Workbook page 116

Dictionary
Group of two: Two objects that make one group
Counting in twos: Count in multiples of two. E.g. 2, 4, 6, …
Multiplication number sentence: A multiplication number sentence includes the times sign (x), numbers and the equal (=) sign.
Division: Division is splitting into equal parts or groups. It is the result of "sharing". We use the ÷ symbol, or sometimes the / symbol to show divide.

Teach mathematics

116

Concrete
Give learners +/- 100 counters per group. Each group divides into two smaller groups. The first group counts the counters in twos. The second group then check if they are correct by re-counting the counters in groups of two. Ask the first group to remove a few counters. Give the counters to the second group. They count it and the first group checks it. Note that if learners get an odd number of counters the last counter will be counted as one.

Abstract
Revise the 2 times table with the learners.

Ask your learners to count forwards and backwards.
Answer:
a. 232; 234; 236; 238; 240; 242; 244; 246; 248
b. 500; 498; 496; 494; 492; 490; 488; 486; 484
c. 460; 440; 420; 400; 380; 360; 340; 320; 300
d. 341; 351; 361; 371; 381; 391; 401; 411; 421; 431

51 Count in 2s *continued*

Content links: 1-2, 23-25b, 27-28, 33, 41, 43, 45, 51, 55-56, 65, 67, 70, 98, 100, 103
Grade 2 links: 2, 18, 29, 44, 70, 84, 86-87
Grade 1 links: 10, 49-51, 90-93, 117-120

Ask your learners to count the pairs of gloves in the picture and then answer the questions.

Answers:

a. 12 pairs per row
b. 24 single gloves per row
c. 3 rows
d. 12 x 3 = 36 pairs 36 x 2 = 72
e. Show how you worked it out: Pairs of gloves x rows =____ x 2 gloves per pair = _____ OR Total number of gloves per row x rows = _____
f. As a number sentence: 12 x 3 = 36 pairs 36 x 2 = 72

Ask the learners to complete the table.

Answer:

a.	Pairs	Gloves
	10	20
	5	10
	50	100
	4	8
	40	80
	3	6
	30	60
	100	200

b.	Single	Pairs	Single gloves left over
	20	10	0
	21	10	1
	70	35	0
	73	36	1

Homework

Ask your learners to count in 2s and fill in the number .

Answer:

a. 266	***393***	***412***
b. 377, 379	***484, 486***	***266, 268***
c. 350, 352	***419, 421***	***301, 303***

Reflection questions

Can the learners do the following?

- Count forwards in 2s and 20s from any multiple
- Multiply by 2 up to 50
- Divide by 2 from 50 with and without remainders
- Copy and extend simple number sequences

Common errors

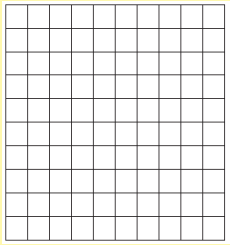
Make notes of common errors made by the learners.

52 Pave with tiles

Content links: 13, 110
Grade 2 links: None
Grade 1 links: None

Objectives
- Investigate area using tiling

Resources
Teacher: Grid paper (Cut-out 2)
Learner: Workbook page 118, Cut-out 2

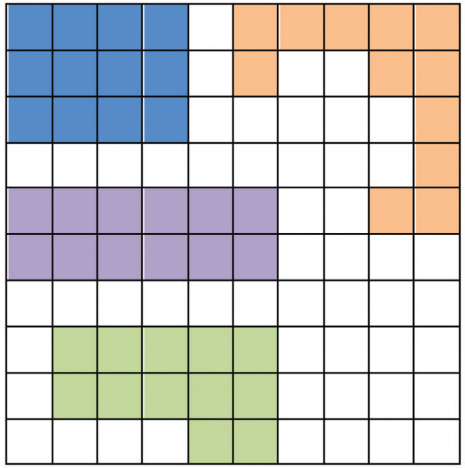


Dictionary
Tiling: The placing of tiles of a set shape or shapes in such a way that they form a **tessellation,** that is, they fill the space with no overlaps or empty spaces.

Teach mathematics

118

Representational
Give the learners grid paper. Ask them to colour any 12 adjacent squares. Ask them to describe the shape they have coloured, e.g. "I have coloured 4 by 3 squares. It formed a rectangle." Ask learners to colour a different shape using 12 squares. Ask learners to colour two more shapes that look different using 12 squares.



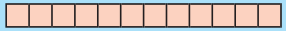
Oral questions
Ask your learners how they would place six square tiles.

52 Pave with tiles *continued*

Now work with them through the example to show them the different ways to lay 12 square tiles. And then ask them to complete the next block by themselves.
Answer:

I can make 1 row with 6 tiles.	I can make 2 rows with 3 tiles in a row.	I can make 3 rows with 2 tiles in each row.
 6 × 1 = 6	 3 × 2 = 6	 2 × 3 = 6

Now work with them through the example to show them the different ways to lay 12 square tiles. And then ask them to complete the next two by themselves.
Answer:

Example: 	1 × 12 = 12 12 × 1 = 12
	6 x 2 = 12 ***OR*** ***2 x 6 = 12***
	4 x 3 = 12 ***OR*** ***3 x 4 = 12***

Homework

Ask learners to use the grid from Cut-out 2 and to shade in 24 blocks in different ways and write a number sentence to match each drawing.
Answer:
Learners needs to be creative and use their own ideas on how they would pave the 24 tiles in different ways.

Ask learners to complete the sums
Answer:

12 = 2 × ***6***	3 × ***4*** = 12	9 = ***3*** × 3
6 = 3 × ***2***	***4*** × 3 = 12	24 = 3 × ***8***

Reflection questions

Can the learners do the following?

- tile a given area with square tiles

Common errors

Make notes of common errors made by the learners.

53 Using fives

Content links: 24
Grade 2 links: 30, 56, 83
Grade 1 links: 56-58, 80-84, 112-113

Objectives
- Count forwards and backwards in multiples of 5
- Multiply by 5 up to 100
- Divide by 5 from 100
- Extend simple number sequences
- Complete a fives number pattern
- Count money using R5 coins

Resources
Teacher: Counters, Play money - R5 coins
Learner: Workbook page 120

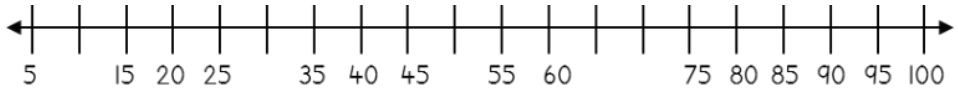
Dictionary
Group of five: Five objects that make one group
Counting in fives: Count in multiples of five. E.g. 5, 10, 15, ...
Multiplication number sentence: A multiplication number sentence include the times sign (x), numbers and the equal (=) sign.

Teach mathematics

120

Concrete
Give the learners 75 counters and let them work in pairs to lay out the counters in groups of 5.
Ask the learners:
- How many counters did you receive?
- How many groups did you get?
- How many counters in each group?

Representational
Draw a number line going up in 5s on the board, leave out some of the numbers. As a class use the number lines to count in 5s to 75. Let the learners come to the board to fill in the missing numbers.



Abstract
Ask the learners to write a number sentence using repeated addition to show what they done with the counters:
5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 = 75
A multiplication number sentence: 15 x 5= 75

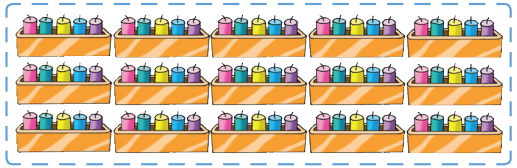
53 Using fives *continued*

Content links: 24
Grade 2 links: 30, 56, 83
Grade 1 links: 56-58, 80-84, 112-113

Tell the learners to fill in the empty blocks. ***Answer:***

	1	2	3	4	5	6	7	8	9	10
× 5	5	***10***	***15***	***20***	***25***	***30***	***35***	***40***	***45***	***50***

Ask learners to count the candles and boxes and then answer the questions below



Answer:
a. 5
b. 5
c. 25
d. 75

Tell the learners to work out the sums and then tick the sums in the blocks provided that are equal to the total number of candles in the picture.
Answer:
Only question c & d are equal to 75

Tell the learners to count forward and backward by completing the empty spaces.
Answer:
85, 80, 75, 70, 65, 60, 55, 50, 45
240, 245, 250, 255, 260, 265, 270, 275, 280
405, 400, 395, 390, 385, 380, 375, 370, 365, 360

If the children collect R5 coins, how many coins do they need to complete the amounts shown in the table?

R5 ? ***1***	R10 ? ***2***	R15 ? ***3***	R20 ? ***4***	R25 ? ***5***
R30 ? ***6***	R35 ? ***7***	R40 ? ***8***	R45 ? ***9***	R50 ? ***10***

2 x R5 = R10 3 x R 5= R15 4 x R5 = R20 6 x R5 = R 30

Homework

- Ask the learners to complete the table by multiplying by 5s and completing the table. ***Answer:***

1	2	3	4	5	6	7	8	9	10
5	***10***	***15***	***20***	***25***	***30***	***35***	***40***	***45***	***50***
11	12	13	14	15	16	17	18	19	20
55	***60***	***65***	***70***	***75***	***80***	***85***	***90***	***95***	***100***

Reflection questions

Can the learners do the following?

- Count forwards and backwards in multiples of 5
- Multiply by 5 up to 100
- Divide by 5 from 100
- Extend simple number sequences
- Complete a fives number pattern
- Count money using R5 coins

54 Working with time

Content links: 12, 32, 80, 106
Grade 2 links: 13-14, 22, 55, 57a-57b, 80-81b, 85a-85b, 89, 116a-116b
Grade 1 links: 7, 16, 32

Objectives
- Tell 12-hour time in hours, half hours, quarter hours and minutes on analogue clocks
- Calculate the length of time and passing of time

Resources
Teacher: Clocks
Learner: Workbook page 122

Dictionary
Analogue clock: A clock or watch is called "analog" when it has moving hands and hours marked from 1 to 12 to show you the time.

Teach mathematics

122

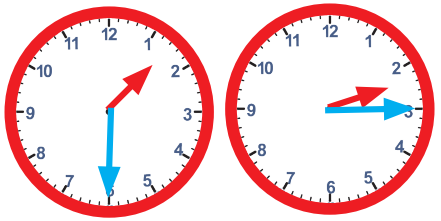
Concrete
Let the learners make an analogue clock and use a split pin to join hands to the clock.

You can call out different times and the learners can show you the clocks.
Or they can work in pairs.

Representational
Give the learners blank analogue clocks and ask them to work in pairs to draw in the times written on the board. (Have the learners draw the hour hand in one colour and the minute hand in another to help them differentiate between the two.)

By working in pairs they can also help correct each other if mistakes are made.

Abstract
Draw two clocks on the board and ask the learners to work in pairs to find out how much time has passed.

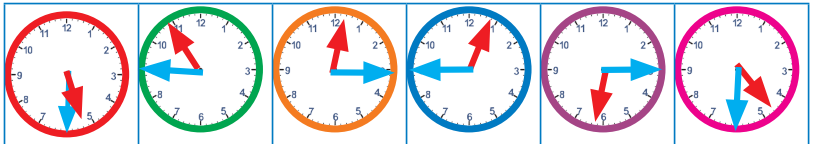


54 Working with time *continued*

Content links: 12, 32, 80, 106
Grade 2 links: 13-14, 22, 55, 57a-57b, 80-81b, 85a-85b, 89, 116a-116b
Grade 1 links: 7, 16, 32

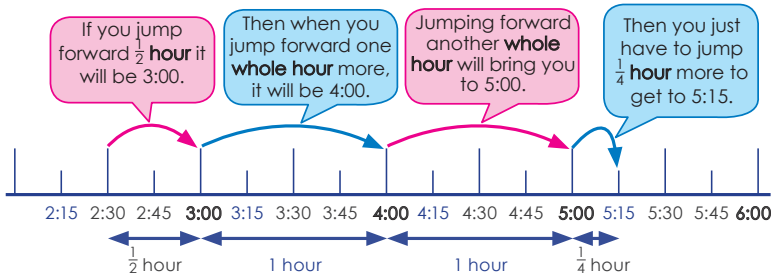
Tell the learners to look at the times given under each clock and then to complete the pictures by completing the pictures

Answer:



Half past 5	Quarter to eleven	Quarter past 12	12:45	6:15	4:30

Read through the question with the learners. Now ask the learners to work through solving the solution for the word sum with you while you read through the steps. Make sure the learners understand how to get to the answer.



Now ask learners to make use of the time lines in their books by completing and drawing in the time lines in order to solve the word sums

Answer:

1 hour; 30 min OR 1 and a half hours
1 hour; 45 min OR 1 and three-quarters of an hour

Homework

Question 3c
Ask learners to complete question 3.c. for homework.

Learners make use of number lines to work out how much time has passed.
Answers: 1 hour 30 minutes or 1 and a half hours.

Reflection questions

Can the learners do the following?

- Tell 12-hour time in hours, half hours, quarter hours and minutes on analogue clocks
- Calculate the length of time and passing of time

Common errors

Make notes of common errors made by the learners.

55 Count in 3s and 4s

Content links: 1-2, 23-25b, 27-28, 51, 56, 78, 81, 83-85, 87, 89
Grade 2 links: 2, 50-54, 70, 113
Grade 1 links: 52-55

Objectives
- Count forwards in multiples of 3s and 4s
- Multiply by 3 and 4 up to 50
- Solve word problems in context using multiplication

Resources
Teacher: Counters
Learner: Workbook page 124

Dictionary
Group of three: Three objects that make one group.
Group of four: Four objects that make one group.
Counting in fours: Count in multiples of four. E.g. 4, 8, 12, …
Multiplication number sentence: A multiplication number sentence include the times sign (x), numbers and the equal (=) sign.

Teach mathematics

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Concrete
Arrange the learners' tables in groups of three or four. Let the learners in each group count the legs of the tables. Ask the learners:
- How many tables are in a group?
- How many legs in a group?
- How many groups of tables?

Before the learners answer the question they must physically touch the items.

Representational
Draw cherries in groups of three on the board. Let the learners count in threes. Recap the questions above but this time show the learners how we can use questions to help us work out the number sentence:

How many groups are there? (5)
How many cherries in each group? (3)
Number sentence 5 x 3 = 15

Abstract
Draw a few more examples on the board of objects that can be counted in threes and fours. Have the learners work in pairs to write number sentences for the drawings without assistance.

55 Count in 3s and 4s *continued*

Content links: 1-2, 23-25b, 27-28, 51, 56, 78, 81, 83-85, 87, 89
Grade 2 links: 2, 50-54, 70, 113
Grade 1 links: 52-55

Ask the learners to count the pots and answer the questions

Answer:

a. 7
b. 21
c. 3
d. 63
3 x 7 x 3 = 63 21 x 3 = 63

Add some fun to the question. Ask the learners to see if they can give the answers as quickly as possible.

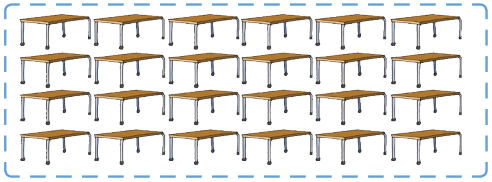
Answer:

1 pot	***3*** legs	10 pots	***30*** legs	5 pots	***15*** legs
2 pots	***6*** legs	15 pots	***45*** legs	12 pots	***36*** legs
5 pots	***15*** legs	13 pots	***39*** legs	14 pots	***42*** legs

Ask your learners to count the tables and the table legs and then to answer the questions that follow

Answer:

a. 6
b. 24
c. 4
d. 96



Ask the learners to complete the questions

Answer:

48 legs ÷ 4 = 12 tables
4 more legs needed

Homework

Tell the learners that question 5 is homework and that they need to complete the table my multiplying by 3 and by 4

Answer:

	2	3	4	5	8	10	11	12
x3	**6**	**9**	**12**	**15**	**24**	**30**	**33**	**36**
x4	**8**	**12**	**16**	**20**	**32**	**40**	**44**	**48**

Reflection questions

Can the learners do the following?

- Count forwards in multiples of 3s and 4s
- Multiply by 3 and 4 up to 50
- Solve word problems in context using multiplication

Common errors

Make notes of common errors made by the learners.

56 Count in 50s

Content links: 1-2, 23-25b, 27-28, 51, 54-55, 78, 81, 83-85, 87, 89
Grade 2 links: 2, 30, 38, 55-56, 83
Grade 1 links: 56-59, 80-84, 112-113, 115

Objectives
- Count in fifties
- Extend numeric patterns
- Solve money problems including totals in rands

Resources
Teacher: Counters, prepared number lines
Learner: Workbook page 126, paper, ruler

Dictionary
Group of fifty: Fifty objects that make one group
Counting forwards in fifties: Count in multiples of fifty. E.g. 50, 100, 150, …
Counting backwards in fifties: Count in multiples of fifty. E.g. 450, 400, 350, …
Multiplication number sentence: A multiplication number sentence include the times sign (x), numbers and the equal (=) sign.

Teach mathematics

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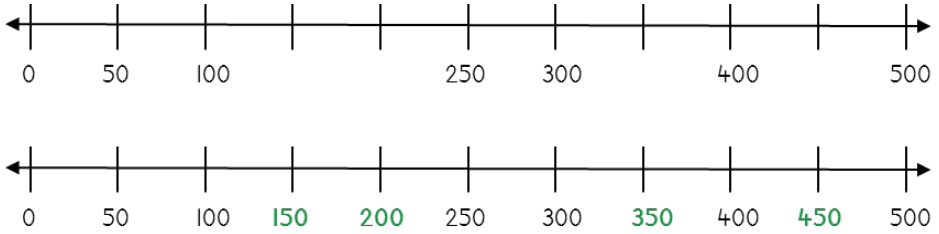
Concrete
Allow the learners to work in pairs or groups. Give them more than a hundred counters and let them make groups of 50. The teacher can then go around to a few groups and let the class count in fifties when she points to the groups of counters.

The teacher can also allow learners to count play R50 notes.

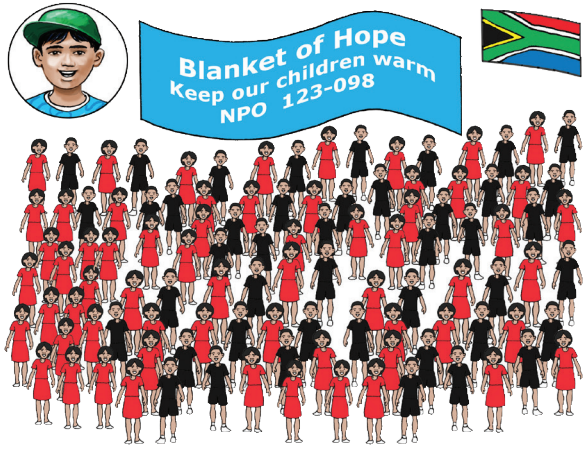
Representational
Draw a number line with some missing numbers. Ask the learners to first count from 0 - 500 in fifties, then ask them to help you fill in the missing numbers on the number line.



56 Count in 50s *continued*

Content links: 1-2, 23-25b, 27-28, 51, 54-55, 78, 81, 83-85, 87, 89
Grade 2 links: 2, 30, 38, 55-56, 83
Grade 1 links: 56-59, 80-84, 112-113, 115

Ask the learners to first estimate how many children there are in total and then write down their answers. Now ask them to count the boys and girls in order to answer the questions below



Answer:

Estimate:	***Each learner will differ***
Count:	***106***
Compare:	***Answers will differ due to estimates***
	44 Boys 62 Girls

Ask your learners to calculate how much each person pays for their purchases if 1 blanket cost R50. ***Answer:***

Gwazi:	***2 x R50 = R100***
Mrs Chaane	***5 x R50 = R250***
Thembi stores	***20 x R50 = R1 000***

5	for R50 = R250	10	for R50 = R500
4	for R50 = R ***200***	15	for R50 = R ***750***
3	for R50 = R ***150***	6	for R50 = R ***300***
7	for R50 = R ***350***	12	for R50 = R ***600***
8	for R50 = R ***400***	9	for R50 = R ***450***

Homework

The grade 3 class collects money to buy 4 blankets. They collect R5 a day for 5 days a week. How many weeks do they need to collect money for the blankets?
Answer: If the class wants to buy 4 blankets, they will pay R200. If they collect R5 a day for 5 days a week, they'll have R25 per week. Therefore R200 ÷ R25 = 8 weeks.

Reflection questions

Can the learners do the following?

- count in fifties
- extend numeric patterns
- solve money problems including totals in rands

57 Fractions: halves and quarters

Content links: 7, 31, 58-59, 91-93, 122-123, 125
Grade 2 links: 90-91, 94a-94b, 118, 122-123, 125-126
Grade 1 links: 47, 86, 123

Objectives

- Recognise and identify the fraction of a number of objects
- Recognise fractions in diagrammatic form
- Recognise and identify halves of a whole, thirds of a whole and quarters of a whole
- Recognise that one half and two quarters are equivalent

Resources

Teacher: Fraction strips, Fraction circles, 1 to 100 number boards, counters
Learner: Workbook page 128

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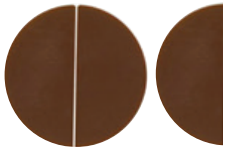
Dictionary

Fractions: parts of a whole.

Teach mathematics

Concrete

Give learners the fractions circles and ask them to look at the circle that has two equal pieces . Let them hold the two pieces in the air. Ask the learners to take a piece away. Ask how much (one piece) is left. We call this a half.



Let the learners set out the circle divided into quarters on the table and discuss this with the learners

Representational

Learners use a 1-100 number board and place counters on the following numbers.

- The twos
- The threes
- The fours
- The fives

After they have set out each multiple, ask them to describe the pattern on the board.

Abstract

Let learners count in:

- twos,
- threes,
- fours, and
- fives.

57 Fractions: halves and quarters *cont...*

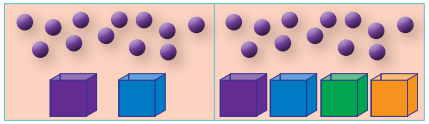
Content links: 7, 31, 58-59, 91-93, 122-123, 125
Grade 2 links: 90-91, 94a-94b, 118, 122-123, 125-126
Grade 1 links: 47, 86, 123

128

Ask the learners to divide the balls equally between the boxes and then answer the questions that follow

Answer:

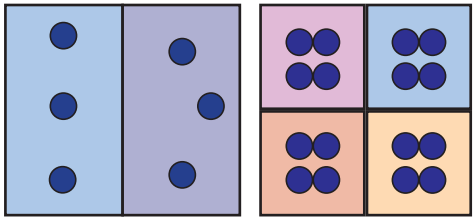
- ***6 balls per box***
- ***6 balls in the purple box***
- ***6 twelfths (or 1 half)***



- ***3 balls per box***
- ***3 balls in the purple box***
- ***3 twelfths (or 1 quarter)***

Tell your learners to look at the pictures and then to answer the questions. ***Answer:***

- ***6 circles***
- ***Half the circles = 3***
- ***16 circles***
- ***Quarter circles = 4***
- ***2 quarter circles = 8***
- ***3 quarter circles = 12***
- ***4 quarter circles = 16***



Ask the learners to colour in the shapes as instructed in their books. ***Answer:***

One half = 

One quarter = 

(or similar halving)

Two quarters = 

Three quarters = 

Homework

Ask learners to carefully look at the illustration of the fractions and then answer the questions .***Answers:***

a. 2 halves make 1 whole
4 quarters make 1 whole
2 quarters make 1 half
b. 1 quarter
2 quarters
3 quarters
4 quarters OR 1 whole
c. 1 half is bigger

Reflection questions

Can the learners do the following?

- Recognise and identify the fraction of a number of objects
- Recognise fractions in diagrammatic form
- Recognise and identify halves of a whole, thirds of a whole and quarters of a whole
- Recognise that one half and two quarters are equivalent
- Solve and explain solutions to practicalproblems that involve equal sharing leading to solutions that include unit and non-unit fractions

58 Fractions: halves, thirds and sixths

Content links: 7, 31, 57, 59, 91-93, 122-123, 125
Grade 2 links: 90-91, 94a-94b, 118, 122-123, 125-126
Grade 1 links: 47, 86, 123

Objectives
- Recognise and identify the fractions of a number of objects
- Recognise fractions in diagrammatic form
- Recognise and identify halves, thirds, quarters, fifths, sixths, and twelfths
- Solve and explain solutions to practical problems that involve equal sharing leading to solutions that include unit and non-unit fractions

Resources
Teacher: Fraction strips, 1 to 100 number boards, Counters
Learner: Workbook page 130, Ruler

Dictionary
Fractions: Parts of a whole

Teach mathematics

Concrete
Let four learners work together and give each group 16 counters. They must equally share the counters between them. When they are finished ask the learners:
- How many counters did each person get? (4)
- What fraction of the counters did one person get? (a quarter)

Then get them to do another example.

Representational
Draw a large illustration of a 20 centimetre ruler on the board – with the markings. Ask the learners how many pieces of the ruler there are when we work with:
- Half (2)
- Quarters (4)
- Fifths (5)

Show the learners we can work out a fraction of this ruler and work through each of the above.

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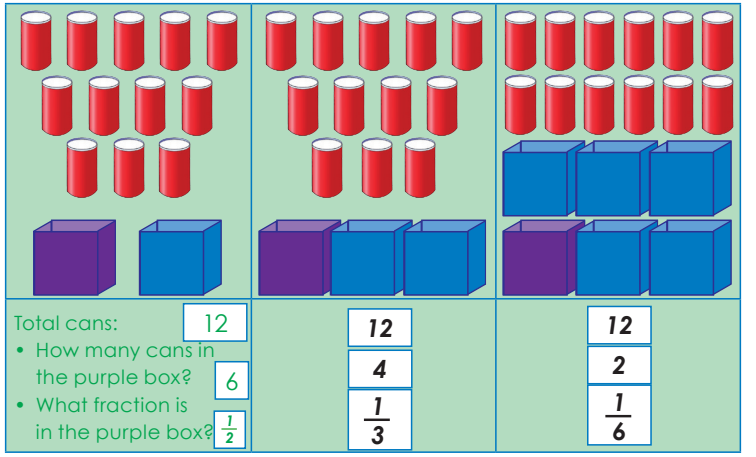
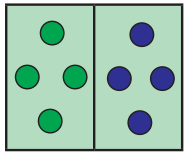
Ask the learners to count the number of cylinders and then answer the question in each block. ***Answer:***



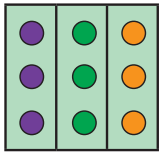
58 Fractions: halves, thirds and sixths *cont...*

Content links: 7, 31, 57, 59, 91-93, 122-123, 125
Grade 2 links: 90-91, 94a-94b, 118, 122-123, 125-126
Grade 1 links: 47, 86, 123

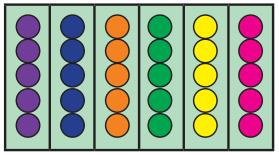
Ask the learners to count the circles in each picture and then answer the questions. ***Answer:***



Block 1:
8 circles
1 half = 4



Block 2:
9 circles
1 third = 3
2 thirds = 6
3 thirds = 9



Block 3:
30 circles
1 sixth = 5
2 sixths = 10
3 sixths = 15
4 sixths = 20
5 sixths = 25

Ask the learners to look at the ruler in their books and answer the questions. ***Answer:***
1 half = 15 cm
1 third = 10 cm
1 sixth = 5 cm

Ask the learners to look at the fraction stripes and complete the sentences. ***Answer:***
2 halves in a whole
6 sixths in a whole
2 sixths in a third
3 thirds in a whole
3 sixths in a half

Homework

Ask learners to complete as homework.
Write a fraction for the shaded part. ***Answer***

$\frac{2}{3}$

$\frac{1}{2}$

$\frac{4}{6}$

$\frac{3}{6}$ or $\frac{1}{2}$

Circle the bigger fraction.
Answer: In a., b., and c. one half is bigger in all three cases.

Reflection questions

Can the learners do the following?

- Recognise and identify the fractions of a number of objects
- Recognise fractions in diagrammatic form
- Recognise and identify halves, thirds, quarters, fifths, sixths, and twelfths
- Solve and explain solutions to practical problems that involve equal sharing leading to solutions that include unit and non-unit fractions

59 Fractions: fifths

Content links: 7, 31, 57-58, 91-93, 122-123, 125
Grade 2 links: 90-91, 94a-94b, 118, 122-123, 125-126
Grade 1 links: None

Objectives
- Recognise and identify the fractions of a number of objects
- Recognise and identify fifths

Resources
Teacher: Fraction strips, Counters
Learner: Workbook page 132, Ruler

Dictionary
Fraction: a part of a whole

Teach mathematics

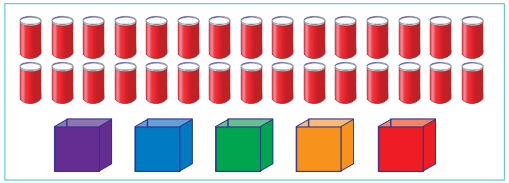
Concrete
Let the learners sit in groups of 5, give each group of five, 30 counters. The learners must equally share the counters between them. Ask the learners:
- How many counters did each person get? (6)
- How many groups of 6 counters? (5)
- What fraction of the counters did each person get? (one fifth)

Now ask the learners
- How many counters would there be if you had two fifths? (12)
- How many counters would there be if you had three fifths? (18)
- How many counters would there be if you had four fifths? (24)
- How many counters would there be if you had five fifths? (30)

Representational
Draw 20 counters on the board and ask someone in the class to come and circle five groups.

Ask the learners
- How many counters would there be if you had two fifths? (8)
- How many counters would there be if you had three fifths? (12)
- How many counters would there be if you had four fifths? (16)
- How many counters would there be if you had five fifths? (20)

Ask the learners to count the cans and then to divide them equally into the 5 boxes and answer the questions that follow



Answer:
1 fifth = 6
2 fifths = 12
3 fifths = 18
4 fifths = 24
5 fifths = 30

59 Fractions: fifths *continued*

Content links: 7, 31, 57-58, 91-93, 122-123, 125
Grade 2 links: 90-91, 94a-94b, 118, 122-123, 125-126
Grade 1 links: None

Ask learners to look at the picture of the box of chocolates and then answer the questions

Answer: 20 chocolates in the box

1 fifth = 4 ***2 fifths = 8***
3 fifths = 12 ***4 fifths = 16***
5 fifths = 20

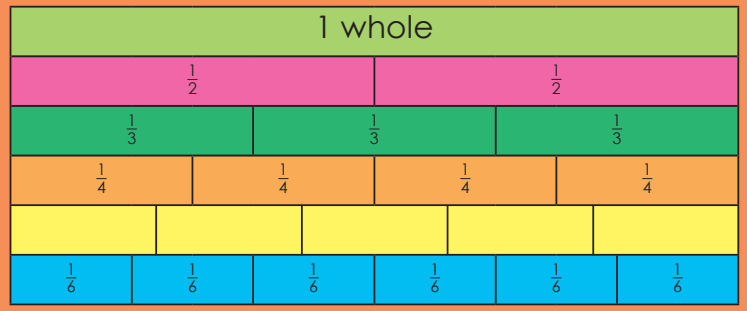
After I ate 1 fifth, there are 16 chocolates left
After I ate another fifth, there are 12 chocolates left

Ask the learners to colour in 1 fifth of the ruler

Answer: 6 cm must be coloured in

Homework

Tell learners to look at the fraction stripes and then answer the questions as homework



Answers:
a. 1 half = bigger than 1 quarter
b. 1 third = smaller than 1 half
c. 1 fifth = bigger than 1 sixth
d. 1 sixth is smaller than 1 third
e. 3 sixths is bigger than 2 sixths.

Reflection questions

Can the learners do the following?

- recognise and identify the fractions of a number of objects
- recognise and identify fifths

Common errors

Make notes of common errors made by the learners.

60 3-D objects

Content links: 10, 90, 124
Grade 2 links: 9, 32, 92, 106
Grade 1 links: 23, 87-88, 116

Objectives
- Recognise and name balls (spheres), boxes (prisms) and cylinders
- Identify and count faces
- Recognises and match different views
- Describe, sort and compare 3-D objects in terms of size, colour, flat or curved surfaces, objects that roll, objects that slide
- Describe the position of one object in relation to another e.g. on top of, in front of, behind, left, right, up, down, next to, at side of

Resources
Teacher: Balls, boxes and cans
Learner: Workbook page 134, Cut-outs 3 and 4, scissors

Dictionary
Sphere: A 3-D object shaped like a ball
Prism: A 3-D object shaped like a box. A 3-D object that has two identical ends and all flat sides
Cylinder: A 3-D object with two identical flat ends that are circular and one curved side
Face: a side or flat surface on an object enclosed by an edge or edges

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Teach mathematics

Concrete
Have examples of a ball, box and cylinder in the class. Let the learners identify the objects and report back how many examples you have of each.

Concrete - Representational
Use the first question to let the learners identify the drawings of balls, boxes and cylinders.

Make the cut outs with the learners and discuss how to go about sticking the smiley stickers on each face or drawing them.

The learners must then record their answers.

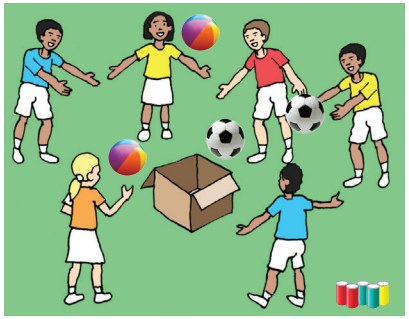
Discuss positions and views and let the learners complete a practical example, then complete the worksheet.

60 3-D objects *continued*

Content links: 10, 90, 124
Grade 2 links: 9, 32, 92, 106
Grade 1 links: 23, 87-88, 116

Ask your learners to look at the children playing in the picture and then answer the questions that follow.

Answer:
1 box
4 balls
5 cylinders



Tell your learners to cut out the three boxes on Cut-out sheets 3 and 4 and then fold the boxes.

Answer: This is a practical activity and learners must be able to fold the boxes

Tell your learners that each flat surface is called a face. They must stick or draw a smiley face on each face of the box and then answer the questions.

Answer: Square: 6 Triangular prism: 5 Pentagon: 7
Prism faces are flat

The learners now make the cylinder from Cut-out 4 and answer the question.

Answer: Cylinder faces are flat and curved.

Ask the learners to look at the 3 pictures of the box and cylinder and then use the words in the boxes to describe the position of the cylinder.

Answer:
The cylinder is on the side of the box
The cylinder is in front of the box
The cylinder is on top of the box

Homework

Ask learners to look at the picture and then complete the sentences. ***Answer:***
The girl looks at the front of the building.
The man looks at the side of the building.
The bird looks at the top of the building.

Reflection questions

Can the learners do the following?

- Recognise and name balls (spheres), boxes (prisms) and cylinders
- Identify and count faces
- Recognises and match different views
- Describe, sort and compare 3-D objects in terms of size, colour, flat or curved surfaces, objects that roll, objects that slide
- Describe the position of one object in relation to another e.g. on top of, in front of, behind, left, right, up, down, next to, at side of

61 Double and half

Content links: 6, 62
Grade 2 links: 45-48, 86-87
Grade 1 links: 26, 47, 85-86, 122-123

Objectives
- Double numbers to 400
- Half numbers to 400

Resources
Teacher: Base ten blocks
Learner: Workbook page 136

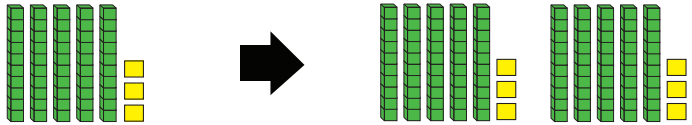
Dictionary
Double: Make twice as big. Multiply by 2. E.g. double 5 is 10
Halve: Make half the size. Divide by 2. E.g. half 10 is 5

Doubling is the inverse of halving.

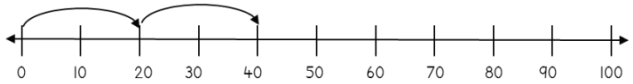
Teach mathematics

136

Concrete
Give the learners base ten blocks and ask them to lay out 53 in front of them. Once the teacher has checked they must then double the blocks.



Representational
Use number lines to help the learners see that when we double a number the "jumps" are still the same size.
Double 20 . **20 + 20 = 40**



Abstract
Let the learners write the number sentences for the number line examples completed.

They can either say 20 + 20 = 40 or 20 x 2 = 40

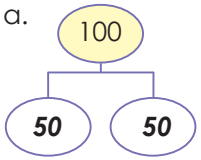
61 Double and half *continued*

Content links: 6, 62
Grade 2 links: 45-48, 86-87
Grade 1 links: 26, 47, 85-86, 122-123

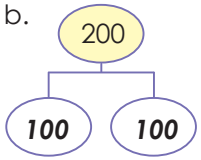
Tell your learners to find the doubles or halves for each of the numbers

Answer:

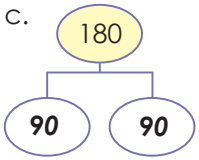
a.



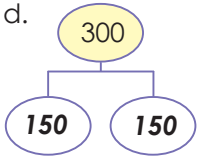
b.



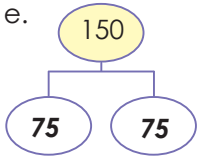
c.



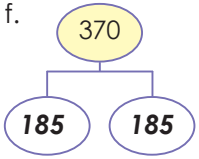
d.



e.



f.



Tell your learners to use the number line and double the number. Make sure that the learners draw on the number line to show what they did.

Answer:

Double 60
60 + 60 = 120

Double 150
150 + 150 = 300

Double 200
200 + 200 = 400

Homework

Ask learners to complete the table at home.

Answer:

a. Double 100	200
b. Double 150	300
c. Double 120	240
d. Double 200	400
e. Double 170	340

Ask the learners to complete the table at home

Answer:

a. Half 220	110
b. Half 180	90
c. Half 260	130
d. Half 60	30
e. Half 320	160

Reflection questions

Can the learners do the following?

- double numbers to 400
- half numbers to 400

62 More double and halving

Content links: 6, 61
Grade 2 links: 45-48, 86-87
Grade 1 links: 26, 47, 85-86, 122-123

Objectives
- Double numbers to 400
- Half numbers to 400

Resources
Teacher: Base ten blocks
Learner: Workbook page 138

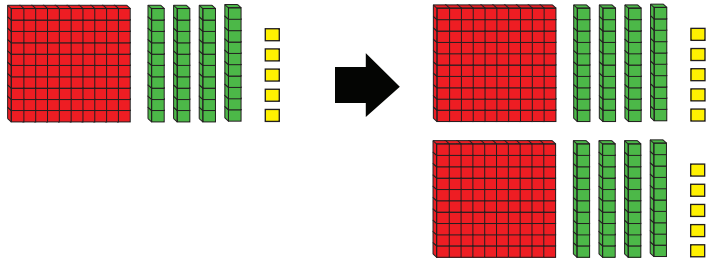
Dictionary
Double: Make twice as big. Multiply by 2. E.g. double 5 is 10
Halve: Make half the size. Divide by 2. E.g. half 10 is 5

Doubling is the inverse of halving.

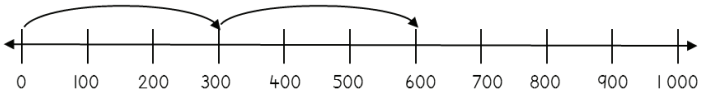
Teach mathematics

138

Concrete
Give the learners base ten blocks and ask them to lay out 145 in front of them. Once the teacher has checked they must then double the blocks.



Representational
Use number lines to help the learners see that we when we double a number the "jumps" remain the same size.
Double 300. **300 + 300 = 600**



Abstract
Let the learners write the number sentences for the number line examples completed.
The can either say 300 + 300 = 600 or 300 X 2 = 600

62 More double and halving *continued*

Content links: 6, 61
Grade 2 links: 45-48, 86-87
Grade 1 links: 26, 47, 85-86, 122-123

Tell the learners to find the doubles or halves
Answer:

a. 146 → 73, 73

b. 148 → 74, 74

c. 192 → 96, 96

d. 134 → 67, 67

e. 166 → 83, 83

f. 178 → 89, 89

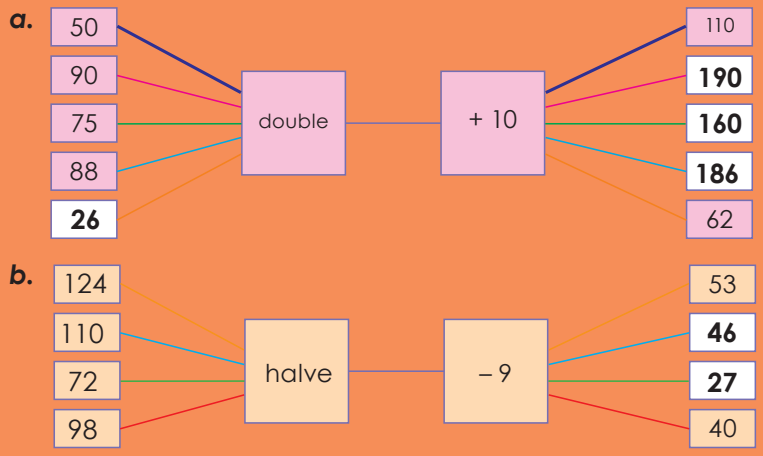
Tell the learners to work out the word sum
Answer: R450 ÷ R25 per week = 18 weeks

Ask the learners to work out what the price was for each item on the sale
Answer:
a. R190 ÷ 2 = R95
b. R154 ÷ 2 = R77
c. R54 ÷ 2 = R27
d. R220 ÷ 2 = R110

Tell the learners to work out the word sums. ***Answer:***
Musa still needs R67,50
Peter's shoes cost: R157
Phindi's dress cost: R194

Homework

Tell the learners to complete the spidergram
Answer:



Reflection questions

Can the learners do the following?

- double numbers to 900
- half numbers to 900

63 Group and combine

Content links: 23, 34, 49
Grade 2 links: 29-30, 50, 82, 110, 114
Grade 1 links: 30, 41, 49, 52, 54, 56, 80-84, 90-92, 112-113, 117, 120

Objectives
- Count in groups of 4
- Count in groups of 5

Resources
Teacher: Counters
Learner: Workbook page 140

Dictionary
Group of four: Four objects that make one group
Counting in fives: Count in multiples of fives. E.g. 5, 15, 20, …

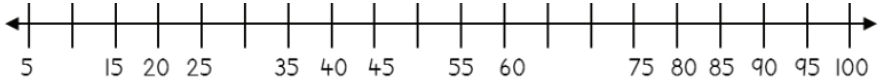
Teach mathematics

140

Concrete
Let the learners work in pairs and give them 40 counters, ask the learners to divide their counters into groups of 4.
Ask the learners:
- How many counters did you receive?
- How many groups did you get?
- How many counters in each group?

Count in 4s as a class.

Representational
Draw a number line going up in 5s on the board, leave out some of the numbers. As a class use the number lines to count in 5s to 75. Let the learners come to the board to fill in the missing numbers.



Abstract
Ask the learners to write a number sentence using repeated addition to show the what they done with the counters: ***4+4+4+4+4+4+4+4+4+4 = 40***
A multiplication number sentence: ***10 x 4 = 40***

63 Group and combine *continued*

Content links: 23, 34, 49
Grade 2 links: 29-30, 50, 82, 110, 114
Grade 1 links: 30, 41, 49, 52, 54, 56, 80-84, 90-92, 112-113, 117, 120

Tell the learners to count in fours

Answer:

- ***36***
- ***9***
- ***Groups of 2, 6, 9 or 12***

Tell the learners to count in fives

Answer:

- ***25 outfits.***

Y short/ G short	***B shirt/ G short***	***W shirt/ G short***	***R shirt/ G short***	***P shirt/ G short***
Y short/ P short	***B shirt/ P short***	***W shirt/ P short***	***R shirt/ P short***	***R shirt/ P short***
Y short/ R short	***B shirt/ R short***	***W shirt/ R short***	***R shirt/ R short***	***R shirt/ R short***
Y short/ B short	***B shirt/ B short***	***W shirt/ B short***	***R shirt/ B short***	***R shirt/ B short***
Y short/ O short	***B shirt/ O short***	***W shirt/ O short***	***R shirt/ O short***	***O shirt/ O short***

Homework
Question 2: Tell the learners to complete the predict section
Answer: 6 sets of shirts and shorts will make 36 outfits.

Reflection questions
Can the learners do the following?

- Count in groups of 4
- Count in groups of 5

Common errors
Make notes of common errors made by the learners.

64 Maths fun

Content links: 76, 79, 82, 86, 88, 111, 114, 116, 119, 121
Grade 2 links: None
Grade 1 links: 51, 58-59, 115, 119-120

Objectives
- Use a rule to fill in missing numbers
- Build 20 in different ways

Resources
Teacher: Counters, prepared flow diagram illustration
Learner: Workbook page 142

Dictionary
Number pattern: A list of numbers that follow a certain sequence or pattern. E.g.: 3, 6, 9, 12, 15, ... starts at 3 and jumps 3 every time

142

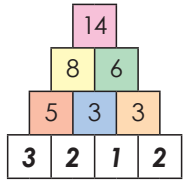
Teach mathematics

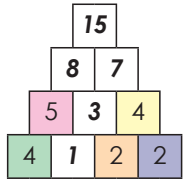
Concrete
Put the learners in pairs give them 50 counters, show the learners to set out two groups of counters:
E.g. Set out one group with 12 counters and another group of 23 counters.

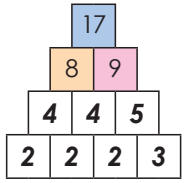
Ask the learners to work in pairs to give different "rules" of what we added to get the second amount.

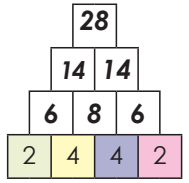
Representational
Draw flow diagrams on the board and explain to and discuss with the learners how we use flow diagrams.
The left side is the input and usually the number we start with. The right side is the output and usually is the answer. In the middle is the rule that will help us to work out the answer. (Remember if you get the output you have to work backwards to get the answer.)

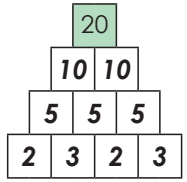
Tell the learners to use the rule to fill in missing numbers:
Answers:

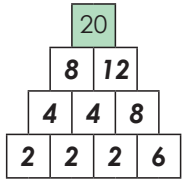


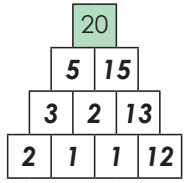








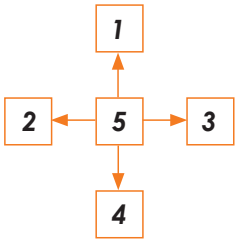




64 Maths is fun *continued*

Content links: 76, 79, 82, 86, 88, 111, 114, 116, 119, 121
Grade 2 links: None
Grade 1 links: 51, 58-59, 115, 119-120

Answer:



Homework

a. Tell the learners to fill in the missing numbers. The rows must each add up to 16. **Answer:**

2	5	3	6
11	***2***	***1***	2
4	***2***	2	***8***

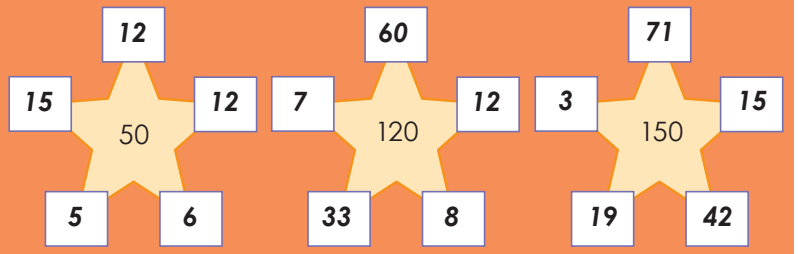
Many other answers are also possible.

b. Rule: The 3 numbers, across the rows and down the columns, add up to the same total. **Answer:**

2	7	6
9	***5***	1
4	3	8

23	28	21
12	***34***	26
37	10	***25***

c. Rule: Write in any 5 numbers that add up to the middle number inside the star. **Answer: Here is one example answer. Many answers are possible.**



Reflection questions

Can the learners do the following?

- Use a rule to fill in missing numbers
- Build 20 in different ways

Common errors

Make notes of common errors made by the learners.

Grade 3 Book 2

Mathematics
Teacher Guide

basic education
Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

ENGLISH
Book 2

Contents Grade 3 Book 2

65 Numbers 500 to 600

Content links: 23, 33, 41, 43, 45, 66-67, 69-71, 98-101, 103-104
Grade 2 links: 3-4, 18, 35, 65-66, 69, 97-98, 100
Grade 1 links: None

Objectives
- Count from 500 to 600
- Fill in missing numbers up to 750
- Complete number lines up to 750

Resources
Teacher: 501 - 600 number board, counters, pieces of paper
Learner: Workbook page 2

Dictionary
Counting: To name or list (the units of a group or collection) one by one in order to determine a total; number.

2

Teach mathematics

Representational
The learners work in pairs with a 500- 600 number board, they use five counters to cover numbers and take chances to work out which numbers are missing.

501	502	503	504	505	506	507	508	509	510
●	512	513	514	515	516	517	518	519	520
521	522	523	524	525	526	527	528	529	530
531	532	533	534	535	536	537	●	539	540
541	542	543	544	545	546	547	548	549	550
551	552	553	554	555	556	557	558	559	560
561	562	563	●	565	566	567	568	569	570
571	572	573	574	575	576	577	578	579	580
581	582	583	584	585	586	●	588	589	590
591	592	593	594	595	596	597	598	599	●

Representational
Ask the learners to draw a number line that starts at 501 and ends at 510.
Ask the learners to share their number lines with the rest of the class.
- Do all the number lines look the same?
- Did you count in ones?
- Did you count in twos?
- Did you count in fives?
- Did you count in something differently?

If necessary repeat the activity but use numbers 591 to 600.

a. Ask the learners to count and write the following. Ask them to count from 500 to 600. Tell them that we are going to say the numbers as they go.
Answer:

501	502	503	504	505	506	507	508	509	510
511	512	513	514	515	516	517	518	519	520
521	522	523	524	525	526	527	528	529	530
531	532	533	534	535	536	537	538	539	540
541	542	543	544	545	546	547	548	549	550
551	552	553	554	555	556	557	558	559	560
561	562	563	564	565	566	567	568	569	570
571	572	573	574	575	576	577	578	579	580
581	582	583	584	585	586	587	588	589	590
591	592	593	594	595	596	597	598	599	600

65 Numbers 500 to 600 *continued*

Content links: 23, 33, 41, 43, 45, 66-67, 69-71, 98-101, 103-104
Grade 2 links: 3-4, 18, 35, 65-66, 69, 97-98, 100
Grade 1 links: None

b. Ask the learners to write the missing numbers in the grids above. ***Answer: See answer above.***
c. Ask the learners to write the 10 numbers that come after 500.
Answer: 500; 501; 502; 503; 504; 505; 506; 507; 508; 509; 510
d. Write the next 8 numbers in the 2s pattern.
Answer: 510; 512; 514; 516; 518; 520; 522; 524; 526; 528
e. Write all the numbers in the 2s pattern from 548 to 570
Answer: 548; 550; 552; 554; 556; 558; 560; 562; 564; 566; 568; 570
f. Write the next 8 numbers in the 5s pattern.
Answer: 515; 520; 525; 530; 535; 540; 545; 550; 555; 560

Ask the learners how many blocks do they count? Ask the learners how did they count the blocks? ***Answer:***
10 x 10 = 100
then 100 x 5 = 500 blue blocks
8 yellow blocks
500 + 8 = 538

Ask the learners to complete the number lines.

540	***541***	***542***	543	***544***	***545***	***546***	547	***548***	549	***550***
550	***591***	***592***	***593***	***594***	***595***	***596***	597	598	599	***600***
592	***593***	***594***	***595***	***596***	597	598	599	***600***	***601***	***602***

Ask the learners to complete the table.
Answer:

	Write from smallest to biggest	Write from biggest to smallest
582, 586, 584, 581, 585	***581, 582, 584, 585, 586***	***586, 585, 584, 582, 581***
566, 506, 560, 516, 506	***506, 506, 516, 560, 566***	***566, 560, 516, 506, 506***

Write the number in words
Answer: Five hundred and twenty

Reflection questions
Can the learners do the following?
- Count from 500 to 600
- Fill in missing numbers up to 750
- Complete number lines up to 750

Common errors
Make notes of common errors made by the learners.

66 More numbers 500 to 600

Content links: 23, 33, 41, 43, 45, 65, 67, 69-71, 98-101, 103-104
Grade 2 links: 3-4, 18, 35, 65-66, 69, 97-98, 100
Grade 1 links: None

Objectives
- Write number sentences up to 750
- Complete number lines up to 750
- Break up numbers up to 750

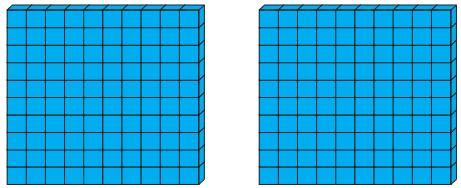
Resources
Teacher: Base 10 blocks, place value cards
Learner: Workbook page 4

Dictionary
Place value: The value of where the digit is in the number, such as units, tens, hundreds, etc.

4

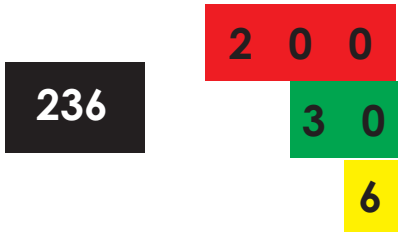
Teach mathematics

Concrete
Revise with the learners the different blocks we use with base ten blocks and then ask questions to see if they have understood.
Example:



After asking a few questions let the learners use the blocks to represent numbers the teacher calls out.

Representational
Learners take out their place value cards and try to make the number the teach has written on the board.



The teacher shows the learners how to write number sentences using the places value cards. The teacher gives the learners another five numbers to try independently.

66 More numbers 500 to 600 *continued*

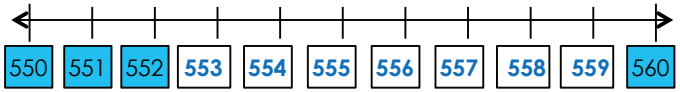
Content links: 23, 33, 41, 43, 45, 65, 67, 69-71, 98-101, 103-104
Grade 2 links: 3-4, 18, 35, 65-66, 69, 97-98, 100
Grade 1 links: None

Ask the learners to write a number sentence and then the answer.
Answer:
500 + 10 + 7 = 517 ***500 + 50 + 5 = 555*** ***500 + 0 + 0 = 500***

Ask the learners to write a number sentence and then the answer.
Answer:

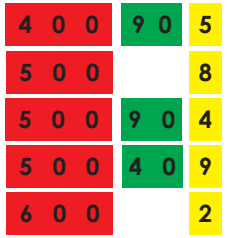
5 0 0 7 0 3	5 0 0 9 0	9 0 1
500 + 70 + 3	***500 + 90***	***90 + 1***
= ***573***	= ***590***	= ***91***

Ask the learners to complete the number line.
Answer:



a. Write all the numbers smaller than 556.
Answer: 550, 551, 552, 553, 554, 555
b. Write all the numbers bigger than 556.
Answer: 557, 558, 559, 560

Ask the learners to break up each number into its parts and build it using the place value cards. They then must write the value for each digit.
a. Ask them to each build each number with their cards. ***Answer:***



b. Ask them to write the value for each digit.
Answer: 495: 400, 90, 5
508: 500, 00, 8
594: 500, 90, 4
549: 500, 40, 9
602: 600, 00, 2

Ask them to do write the number names.
Answer: 221: Two hundred and twenty-one
486: Four hundred and eighty-six
369: Three hundred and sixty-nine
419: Four hundred and nineteen
491: Four hundred and ninety-one

Reflection questions

Can the learners do the following?

- Write number sentences up to 750
- Complete number lines up to 750
- Break up numbers up to 750

67 Numbers 600 to 700

Content links: 23, 33, 41, 43, 45, 66-67, 69-71, 98-101, 103-104
Grade 2 links: 3-4, 18, 35, 65-66, 69, 97-98, 100
Grade 1 links: None

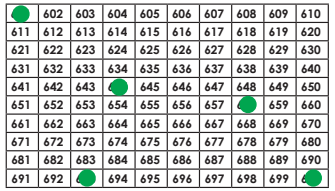
Objectives
- Count from 600 to 700
- Fill in missing numbers up to 750
- Complete number lines up to 750

Resources
Teacher: Number boards and counters, base 10 blocks, place value cards
Learner: Workbook page 6

Dictionary
Counting: To name or list (the units of a group or collection) one by one in order to determine a total; number.

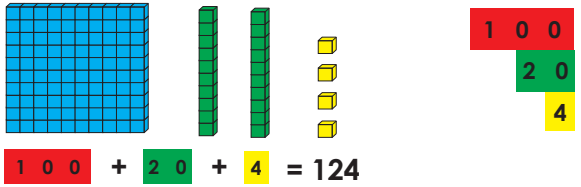
Teach mathematics

Concrete
Count from 600 to 700 in ones as a class. Using a number board, cover some of the numbers with counters, and ask the class to work out what numbers are being covered. Then get the class to work in groups to cover other numbers and work out what they are.



	602	603	604	605	606	607	608	609	610
611	612	613	614	615	616	617	618	619	620
621	622	623	624	625	626	627	628	629	630
631	632	633	634	635	636	637	638	639	640
641	642	643		645	646	647	648	649	650
651	652	653	654	655	656	657		659	660
661	662	663	664	665	666	667	668	669	670
671	672	673	674	675	676	677	678	679	680
681	682	683	684	685	686	687	688	689	690
691	692		694	695	696	697	698	699	

Representational
Draw numbers using base ten blocks on the board and the learners can use their place value cards to represent the number. Example:



a. Ask the learners to count on from 600 to 700. Ask them to say the numbers as you go.
b. Ask the learners to write the missing numbers in the grid. ***Answers:***

601	602	603	604	605	606	607	608	609	610
611	612	613	614	615	616	617	618	619	620
621	622	623	624	625	626	627	628	629	630
631	632	633	634	635	636	637	638	639	640
641	642	643	644	645	646	647	648	649	650
651	652	653	654	655	656	657	658	659	660
661	662	663	664	665	666	667	668	669	670
671	672	673	674	675	676	677	678	679	680
681	682	683	684	685	686	687	688	689	690
691	692	693	694	695	696	697	698	699	700

67 Numbers 600 to 700 *continued*

Content links: 23, 33, 41, 43, 45, 66-67, 69-71, 98-101, 103-104
Grade 2 links: 3-4, 18, 35, 65-66, 69, 97-98, 100
Grade 1 links: None

c. Ask the learners to write the 10 numbers that come after 600.
Answer: 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610

d. Ask the learners to write the next 8 numbers in the 2s pattern
Answer: 622, 624, 626, 628, 630, 632, 634, 636, 638, 640, 642

e. Ask the learners to write all the numbers in 2s pattern from 611 to 633.
Answer: 611, 613, 615, 617, 619, 621, 623, 625, 627, 629, 631, 633

f. Ask the learners to write the next 8 numbers in the 5s pattern.
Answer: 645, 650, 655, 660, 665, 670, 675, 680, 685, 690, 695

Ask the learners how many blocks do you count? ***Answer: 675 blocks.*** Ask the learners how they count it.
Answer:
10 x 10 = 100 then 100 x 6 = 600
10 x 7 = 70
5 yellow blocks
600 + 70 + 5 = 675

Ask the learners to complete the number lines. ***Answer:***

640	***641***	***642***	643	***644***	***645***	***646***	647	***648***	649	***650***
580	***581***	***582***	***583***	***584***	***585***	***586***	687	688	689	***690***
592	***594***	***596***	***598***	***600***	602	604	606	***608***	***610***	***612***

Ask the learners to complete the table.
Answer:

	Write from smallest to biggest	Write from biggest to smallest
672, 676, 674, 671, 675	***671, 672, 674, 675, 676***	***676, 675, 674, 672, 671***
656, 605, 650, 615, 605	***605, 605, 615, 650, 656***	***656, 650, 615, 605, 605***

Ask the learners to write the number in words.
Answer:

631	***Six hundred and thirty-one***

Reflection questions

Can the learners do the following?
- Count from 600 to 700
- Fill in missing numbers up to 750
- Complete number lines up to 750

Common errors

Make notes of common errors made by the learners.

68 Map work

Content links: None
Grade 2 links: None
Grade 1 links: 1, 24a-24b

Objectives
- Draw items on the map
- Give directions using the map

Resources
Teacher: Large treasure map prepared by the teacher
Learner: Workbook page 8

Dictionary
Position: Where something is located (often in relation to something else).

8

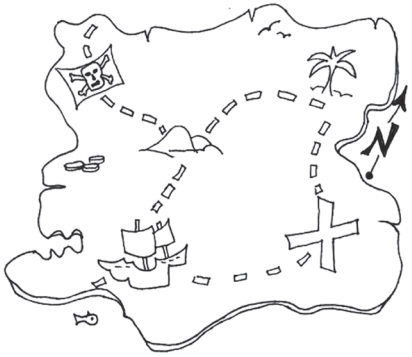
Teach mathematics

Look at the picture.
- What is it?
- For what do we use it?
- What can we find on a map?

Concrete
Ask one learner to go stand at the back of the classroom and the other learners must give him/her instructions to get to the door of the class. The learner can only do as instructed and if he cannot get the front door he/she goes back to the starting point.

The learners then work in pairs to give each other directions from one point to another - it would be best to try this activity outside.

Representational
Let the learners work in groups and give them a treasure map. Ask the learners:
- What can you see?
- How many trees do you see?
- What could we add to this map? Etc.

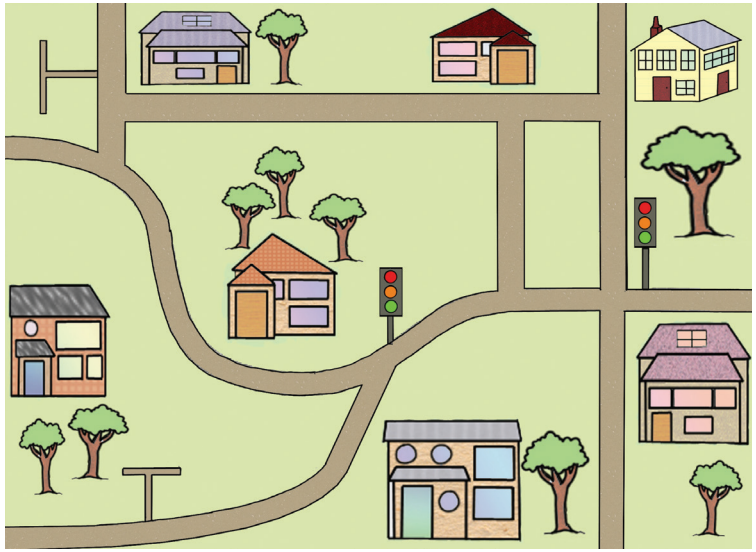


Let the learners practice giving directions - e.g. from palm tree to wrecked ship.

68 Map work *continued*

Content links: None
Grade 2 links: None
Grade 1 links: 1, 24a-24b

Draw the following on the map: library, schools, clinic, hospital, police station, shopping centre. You can add some extra streets.
Answer: Learner's own drawing



Ask the learners to use the map above to give their friends directions from:
Answer: Depends on the learner's drawing

b. the school to the clinic
Answer: Depends on the learner's drawing

b. the school to the clinic
Answer: Depends on the learner's drawing

d. the shopping centre to the library
Answer: Depends on the learner's drawing

e. the library to the school
Answer: Depends on the learner's drawing

f. the hospital to the school
Answer: Depends on the learner's drawing

Reflection questions
Can the learners do the following?
- Draw items on the maps
- Give directions using the maps

Common errors
Make notes of common errors made by the learners.

69 More numbers 600 to 700

Content links: 23, 33, 41, 43, 45, 66-67, 69-71, 98-101, 103-104
Grade 2 links: 3-4, 18, 35, 65-66, 69, 97-98, 100
Grade 1 links: None

Objectives
- Count from 600 to 700
- Fill in missing numbers up to 750
- Complete number lines up to 750

Resources
Teacher: Number boards and counters, base 10 blocks, place value cards
Learner: Workbook page 10

Dictionary
Counting: To name or list (the units of a group or collection) one by one in order to determine a total; number.

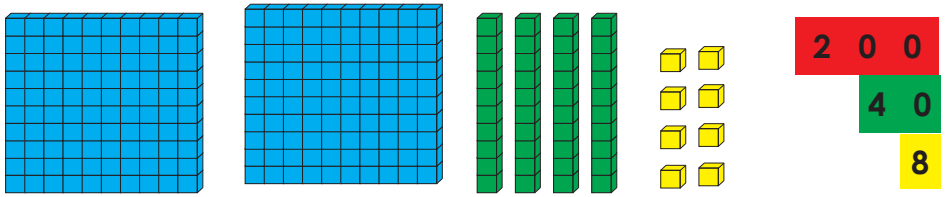
Teach mathematics

10

Concrete
Do more exercises using a number board. Cover some of the numbers with counters, and ask the class to work out what numbers are being covered. Then get the class to work in groups to cover other numbers and work out what they are.

601	602	603	604	605	606	607	608	609	610
611	612	●	614	615	616	617	618	619	●
621	622	623	624	625	626	627	628	629	630
631	632	633	634	635	636	637	638	639	640
641	642	643	644	645	646	647	648	649	650
●	652	653	654	655	656	657	●	659	660
661	662	663	664	665	666	667	668	669	670
671	672	673	674	675	676	677	678	679	680
681	682	683	684	685	●	687	688	689	690
691	692	693	694	695	696	697	698	699	600

Representational
Draw numbers using base ten blocks on the board and the learners can use their place value cards to represent the number. Example:



Ask the learners to write a number sentence and then the answer. ***Answer:***
600 + 30 + 7 = 637 ***600 + 50 + 5 = 655*** ***600 + 6 = 606***

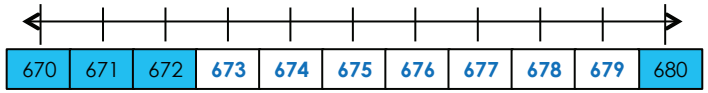
69 Numbers 600 to 700 *continued*

Content links: 23, 33, 41, 43, 45, 66-67, 69-71, 98-101, 103-104
Grade 2 links: 3-4, 18, 35, 65-66, 69, 97-98, 100
Grade 1 links: None

Ask the learners to write a number sentence and then the answer.
Answer:

6 0 0 + 9 0 + 8	6 0 0 + 7 0	6 0 0 + 5 0 + 8
600 + 90 + 8	***600 + 70***	***600 + 50 + 8***
= 698	***= 60***	***= 658***

Ask the learners to complete the number line.
Answer:



a. Ask the learners to write all the numbers smaller than 675.
Answer: 674, 673, 672, 671, 670
b. Ask the learners to write all the numbers bigger than 675.
Answer: 676, 677, 678, 679, 680

Ask the learners to fill in <, > or =
Answers:
a. 670 > 607
b. 688 < 699
c. 600 + 50 + 5 = 655

a. Ask the learners to break up their number.
b. Ask the learners to write the value for each digit.
Answers:
686: 600, 80, 66
90: 600, 90
699: 600, 90, 9
673: 600, 70, 3
665: 600, 60, 5

6 0 0	8 0	6
6 0 0	9 0	
6 0 0	9 0	9
6 0 0	7 0	3
6 0 0	6 0	5

Ask the learners to write the number names.
Answer:
672: Six hundred and seventy-two
693: Six hundred and ninety-three
607: Six hundred and seven
697: Six hundred and ninety-seven
660: Six hundred and sixty

Reflection questions

Can the learners do the following?

- Count from 600 to 700s
- Fill in missing numbers up to 750
- Complete number lines up to 750

Common errors

Make notes of common errors made by the learners.

70 Numbers 650 to 750

Content links: 23, 33, 41, 43, 45, 66-67, 69-71, 98-101, 103-104
Grade 2 links: 3-4, 18, 35, 65-66, 69, 97-98, 100
Grade 1 links: None

Objectives
- Count from 650 to 750
- Fill in missing numbers up to 750
- Complete number lines up to 750
- Order from smallest to biggest or biggest to smallest up to 750

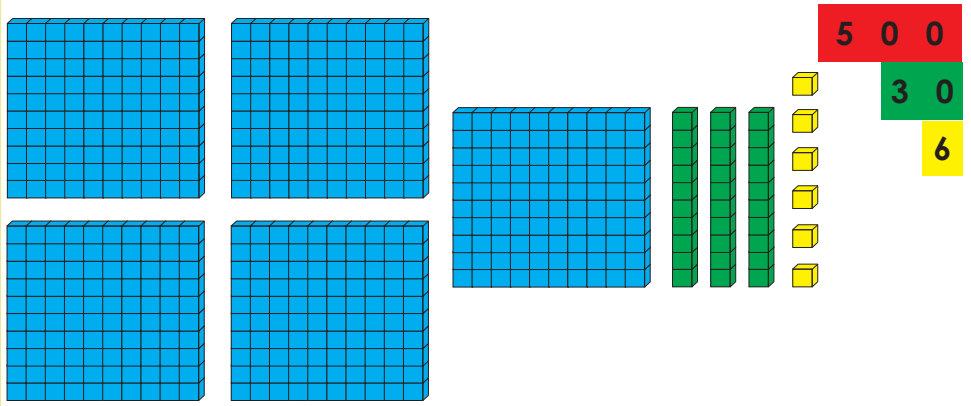
Resources
Teacher: Base 10 blocks, place value cards
Learner: Workbook page 12

Dictionary
Counting: To name or list one by one the units of a group or collection of objects until the total number of the units is reached.

Teach mathematics

Concrete-Representational
Write 5 numbers between 600 and 700, the learners then work in groups to pack out the numbers using both base 10 blocks and place value cards . The learners can then pack the numbers from biggest to smallest.

Representational
Draw numbers using base ten blocks on the board and the learners can use their place value cards to represent the number. Example:



5 0 0 + 3 0 + 6 = 536

12

a. Ask the learners to count on from 650 to 750. Ask the learners to say the numbers as they go.

b. Ask the learners to write the missing numbers in the grid.

70 Numbers 650 to 750 *continued*

Content links: 23, 33, 41, 43, 45, 66-67, 69-71, 98-101, 103-104
Grade 2 links: 3-4, 18, 35, 65-66, 69, 97-98, 100
Grade 1 links: None

Answer:

651	652	653	654	655	656	657	658	659	660
661	662	663	664	665	666	667	668	669	670
671	672	673	674	675	676	677	678	679	680
681	682	683	684	685	686	687	688	689	690
691	692	693	694	695	696	697	698	699	700
701	702	703	704	705	706	707	708	709	710
711	712	713	714	715	716	717	718	719	720
721	722	723	724	725	726	727	728	729	730
731	732	733	734	735	736	737	738	739	740
741	742	743	744	745	746	747	748	749	750

c. Ask the learners to write the 10 numbers that come after 750.
Answer: 651; 652; 653; 654; 655; 656; 657; 658; 659; 670
d. Ask the learners to write the next 8 numbers in the 2s pattern.
Answer: 711, 713; 715; 717; 719; 721; 723; 725
e. Ask the learners to write all the numbers in 3s pattern from 719 to 749.
Answer: 722; 725; 728; 731; 734; 737; 740; 743; 746
f. Ask the learners to write the next 8 numbers in the 5s pattern.
Answer: 720; 725; 730; 735; 740; 745; 750; 755

Ask the learners how many blocks do you count? ***Answer: 615***
Ask the learners how did they count the blocks?
Answer:
10 x 10 = 100 then 100 x 6 = 600
10 x 1 = 105 yellow blocks
600 + 10 + 5 = 615

Ask the learners to complete the number lines. ***Answer:***

700	***701***	***702***	703	***704***	***705***	***706***	707	***708***	709	***710***
740	***741***	***742***	***743***	***744***	***745***	***746***	746	747	748	***749***
681	***686***	***691***	***696***	***701***	706	711	716	***721***	***726***	***731***

Ask the learners to complete the table. ***Answer:***

	Write from smallest to biggest	Write from biggest to smallest
729, 720, 728, 721, 725	***720, 721, 725, 728, 729***	***729, 728, 725, 721, 720***
659, 705, 607, 701, 706	***607, 659, 701, 705, 706***	***706, 705, 701, 659, 607***

Ask the learners to write the following in words. ***Answer:***

706	***Seven hundred and six***

Reflection questions
Can the learners do the following?
- Count from 700 to 750s
- Fill in missing numbers
- Complete number lines
- Order from smallest to biggest or biggest to smallest up to 750

71 Numbers 700 to 750

Content links: 23, 33, 41, 43, 45, 66-67, 69-71, 98-101, 103-104
Grade 2 links: 3-4, 18, 35, 65-66, 69, 97-98, 100
Grade 1 links: None

Objectives
- Count from 700 to 750
- Fill in missing numbers up to 750
- Complete number lines up to 750
- Write number names up to 750

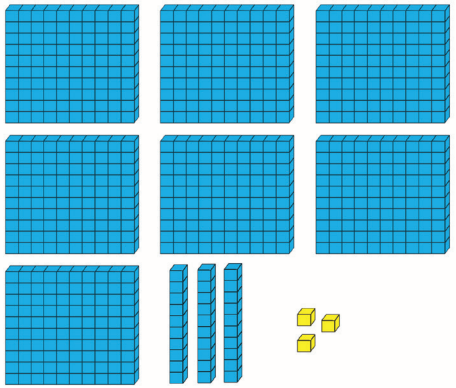
Resources
Teacher: Base 10 blocks, place value cards, piece of paper
Learner: Workbook page 14

Dictionary
Counting: To name or list one by one the units of a group or collection of objects until the total number of the units is reached.

Teach mathematics

14

Concrete - Representational
Draw this diagram on the board and let the learners pack out this number using base 10 blocks. Ask the learners what number the blocks epresent and discuss with the learners how we write number names. Do a few examples like this.



Representational
Write 5 numbers between 700 and 750 on the board and the learners must first pack out the number using the place value cards and then write down the number name for the numbers given.

Ask the learners to write a number sentence and then the answer.
Answer:
700 + 40 + 3 = 743 ***700 + 30 + 7 = 737*** ***700 + 10 + 1 = 711***

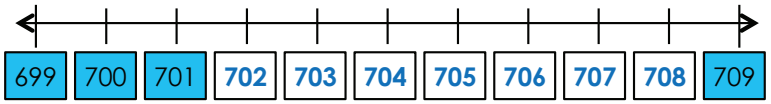
Ask the learners to write a number sentence and then the answer.
Answer:

7 0 0 / 4 0 / 5	7 0 0 / 3 0	7 0 0 / 9
700 + 40 + 5	***700 + 30***	***700 + 9***
= 745	***= 730***	***= 709***

71 Numbers 700 to 750 *continued*

Content links: 23, 33, 41, 43, 45, 66-67, 69-71, 98-101, 103-104
Grade 2 links: 3-4, 18, 35, 65-66, 69, 97-98, 100
Grade 1 links: None

Ask the learners to complete the number line.
Answer:



a. Give me all the numbers smaller than 704.
Answer: 703, 702, 701, 700, 699

b. Give me all the numbers bigger than 704.
Answer: 705, 706, 707, 708, 709

Ask the learners to fill in <, > or =
Answer:
a. 750 > 749
b. 732 > 723
c. 700 + 40 + 9 = 749

Ask the learners to build each number with their cards.Ask them to write the value for each digit. ***Answer:***

750: 700, 50, 0 7 0 0 | 5 0

728: 700, 20, 8 7 0 0 | 2 0 | 8

703: 700, 00, 3 7 0 0 | 3

730: 700, 30, 0 7 0 0 | 3 0

749: 700, 40, 9 7 0 0 | 4 0 | 9

Ask the learners to write the number names.
Answer:

714	***Seven hundred and fourteen***
750	***Seven hundred and fifty***
742	***Seven hundred and forty-two***
738	***Seven hundred and thirty-eight***
704	***Seven hundred and four***

Reflection questions
Can the learners do the following?
- Count in threes
- Count in fours
- Multiply by three
- Multiply by four
- Solve problems

Common errors
Make notes of common errors made by the learners.

72 2-D shapes

Content links: 23, 33, 41, 43, 45, 66-67, 69-71, 98-101, 103-104
Grade 2 links: 3-4, 18, 35, 65-66, 69, 97-98, 100
Grade 1 links: None

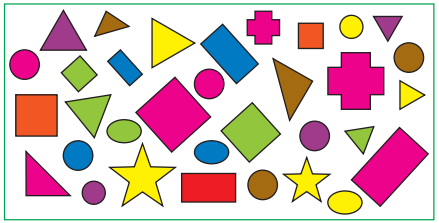
Objectives
Describe, sort and compare 2-D shapes in terms of: shape, straight sides, round sides

Resources
Teacher: Cardboard or plastic shapes
Learner: Learner workbook page 16, piece of paper

Dictionary
2-D shapes: a shape that only has two dimensions (such as width and length) and no thickness

Teach mathematics 16

Concrete - Representational
Revise straight and round sides with the learners by drawing the shapes below on the board and by giving the learners plastic or cardboard shapes. Discuss as a class.



Ask the learner to name four of the shapes.

Representational
Ask the learners to work in pairs and draw as many shapes with straight sides as they can.

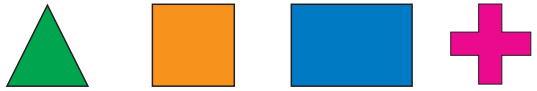
Then ask them to turn over the paper and draw as many shapes with curved sides. Discuss the shapes and ask them to show each other the shapes they drew.

Learners can now choose one of each shape and draw the same shape bigger or smaller than the original shape drawn.

Ask the learners to say if the shape has a straight or round edge. ***Answer:***

			
round	***straight***	***straight***	***straight***

How many shapes can you draw with straight edges?
Answer: 4 (answers may differ)



72 2-D shapes *continued*

Content links: 23, 33, 41, 43, 45, 66-67, 69-71, 98-101, 103-104
Grade 2 links: 3-4, 18, 35, 65-66, 69, 97-98, 100
Grade 1 links: None

Ask the learners to find pictures of shapes that have straight edges and paste them here.
Answer: (answers may differ)



Ask the learners to find pictures with shapes that have round edges and paste them here.
Answer: (answers may differ)




Ask the learners to complete the following. ***Answer:***

	Draw the shape in different positions.
triangle	
rectangle	
square	

Ask the learners to complete the table. ***Answer:***

	Name the shape	Draw a shape that is smaller	Draw a shape that is bigger
	square		
	rectangle		
	circle		
	triangle		

Ask the learners to find pictures of squares, triangles, rectangles and circles of different sizes in magazines. Paste them here.
Answer: Learner's own pictures

Reflection questions
Can the learners do the following?
- Describe, sort and compare 2-D shapes in terms of: shape, straight sides, round sides

Common errors
Make notes of common errors made by the learners.

73 Addition and subtraction to 800

Content links: 5, 37a-37b, 42, 46, 74-75, 105, 108-109
Grade 2 links: 5, 21, 23a-23b, 37-38, 74-75, 77, 101-102, 104-105
Grade 1 links: 15, 21-22, 73, 77, 104

Objectives
- Add from 600
- Count back from 800
- Complete addition sums up to 800
- Solve story sums

Resources
Teacher: Base 10 blocks
Learner: Workbook page 18, piece of paper or little chalk board or slate

Dictionary
Addition: is finding the total, or sum, by combining two or more numbers.
Subtraction: is taking one number away from another.

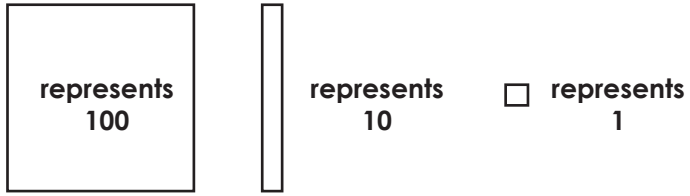
Teach mathematics

18

Concrete
Write an addition sum on the board and let the learners work in pairs to set out the base 10 blocks to represent the numbers in the addition sum. The learners can then add the hundreds together, the tens together and the units together.

Do a few examples with the learners and allow them to also try to complete their own two sums in the same way.

Representational
The learners should be able to draw rough sketches of the base 10 blocks they should know :



Give the learners numbers to draw using these sketches and then allow them to try addition sums using these sketches.

73 Addition and subtraction to 800 *cont...*

Content links: 5, 37a-37b, 42, 46, 74-75, 105, 108-109
Grade 2 links: 5, 21, 23a-23b, 37-38, 74-75, 77, 101-102, 104-105
Grade 1 links: 15, 21-22, 73, 77, 104

18

Ask the learners what can I buy with R500? Ask them how many of items they can buy for R500?

Answer: There is not enough money to buy all the items. The best option is to buy the watch, shoes and sunglasses for R454.

Ask the learners to add on from 600. Ask them to write the missing numbers.

Answer:
Start 600 + 20 = 620 + 15 = 635 + 15 = 650 + 10 = 660 + 5 = 665 + 25 = 690 + 10 = 700 end

Ask learners to write the "change" each time.

Answer:
Start 800 - 10 = 790 - 4 = 786 - 10 = 776 - 10 = 766 - 6 = 760 - 20 = 740 - 25 = 715 - 10 = 705 - 15 = 690 – 30 = 660 end

Ask learners to solve the following.

Answers:
a. 725 + 53 = 778
b. 664 + 87 = 751
c. 564 + 132 = 696
d. 75 + 717 = 792

Ask learners to solve the following.
James has collected 525 marbles. If Sipho gave him another 205 marbles, James would have the same number as Sipho.

a) How many marbles would they both have?
Answer: 730

b) How many marbles did Sipho have to begin with?
Answer: 935

Reflection questions

Can the learners do the following?

- Add from 600
- Count back from 800
- Complete addition sums 800
- Solve story sums

Common errors

Make notes of common errors made by the learners.

Content links: 5, 37a-37b, 42, 46, 73, 75, 105, 108-109
Grade 2 links: 5, 21, 23a-23b, 37-38, 73, 75, 77, 101-102, 104-105
Grade 1 links: 15, 21-22, 73, 77, 104

74 More addition and subtraction to 800

Objectives
- Identify number families
- Write number sentences up to 800
- Identify patterns up to 750
- Solve sums using a given method

Resources
Teacher: Counters
Learner: Workbook page 20, piece of paper or little chalk board or slate

Dictionary
Addition: is finding the total, or sum, by combining two or more numbers.
Subtraction: is taking one number away from another.

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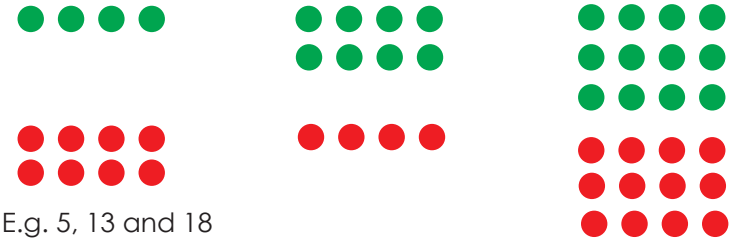
Teach mathematics

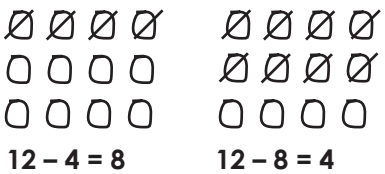
4 + 8 = 12	8 + 4 = 12
12 – 8 = 4	12 – 4 = 8

Concrete
Let the learners work in pairs but give each learner at least 30 counters. The learners pack out the counters of the addition number families of 4, 8 and 12. Let the learners do a few more examples.



E.g. 5, 13 and 18
6, 7 and 13
9, 19 and 10

Representational
Let the learners use the same example but this time they must show the subtraction number families but drawing pictures.



74 More addition and subtraction to 800 *cont...*

Content links: 5, 37a-37b, 42, 46, 73, 75, 105, 108-109
Grade 2 links: 5, 21, 23a-23b, 37-38, 73, 75, 77, 101-102, 104-105
Grade 1 links: 15, 21-22, 73, 77, 104

Ask the learners to find the number families.
Ask the learners to write 4 number sentences for each group of numbers.
Answer:
6 8 14:
6 + 8 = 14, 8 + 6 = 14, 14 – 8 = 6, 14 – 6 = 8
17 17 34:
17 + 17 = 34, 34 – 17 = 17
25 45 70:
25 + 45 = 70, 45 + 25 = 70, 70 – 45 = 25, 70 – 25 = 45
65 335 400:
65 + 335 = 400, 335 + 65 400, 400 – 65 = 335,400 – 335 = 65
240 260 500:
240 + 260 = 500, 260 + 240 = 500, 500 – 260 = 240, 500 – 240 = 260

Ask the learners to look for links.
Tell them that in this activity we are going to warm up by identifying the pattern.
Answers:

360 – 50 = 310	***50 + 310 = 360***	***310 + 50 = 360***
570 – 480 = 90	***480 + 90 = 570***	***90 + 480 = 570***
430 – 31 = 399	***31 + 399 = 430***	***399 + 31 = 430***
676 – 70 = 606	***70 + 606 = 676***	***606 + 70 = 676***
799 – 701 = 98	***701 + 98 = 799***	***98 + 701 = 799***

Tell learners that this is a long drive. Mr Mkhize drives to visit his mother who lives 352 km away. He makes a stop after 166 km. How much further must he travel?
Ask the learners to tell you about the different ways.
Ask them which way do you like the best?
Ask them why do they say so?
Answer: Learner's own answer.

Ask the learners to solve the following. Ask them to use any of the above methods.
Answers:

746 – 328 ***= 746 - 300 - 28*** ***= 446 - 28*** ***= 418***	800 – 499 ***= 800 – 400 – 99*** ***= 400 – 99*** ***= 301***

Reflection questions

Can the learners do the following?

- Identify number families
- Write number sentences
- Identify patterns
- Solve sums using a given methods

Common errors

Make notes of common errors made by the learners.

Content links: 5, 37a-37b, 42, 46, 73-74, 105, 108-109
Grade 2 links: 5, 21, 23a-23b, 37-38, 73-74, 77, 101-102, 104-105
Grade 1 links: 15, 21-22, 73, 77, 104

75 More addition and subtraction to 800

Objectives
- Build own number families up to 750
- Double or halve
- Identify patterns up to 750
- Solve sums using a given method

Resources
Teacher: Counters
Learner: Workbook page 22, piece of paper or little chalk board or slate

Dictionary
Addition: is finding the total, or sum, by combining two or more numbers.
Subtraction: is taking one number away from another.

22 **Teach mathematics**

Concrete
Let the learners work in pairs but give each learner at least 30 counters. The learners lay out the counters of the addition number families of 2, 12 and 14. Let the learners do a few more examples.

2 + 12 = 14

8 + 4 = 12

E.g. 8, 9 and 17
6, 15 and 21
13, 15 and 28

Representational
Let the learners use the same example but this time they must show the subtraction number families by drawing pictures.

14 – 2 = 12

14 – 12 = 2

Content links: 5, 37a-37b, 42, 46, 73-74, 105, 108-109
Grade 2 links: 5, 21, 23a-23b, 37-38, 73-74, 77, 101-102, 104-105
Grade 1 links: 15, 21-22, 73, 77, 104

75 More addition and subtraction to 800 *cont...*

Tell the learners that this is a warm up activity. Ask learners to build their own families. Tell learners for each number below, choose 2 more to make a family. Write four number sentences (two + and two –) for each number family.
Answer:

			+	+	–	–
16	7	9	7 + 9 =16	9 + 7 = 16	9 + 7 = 16	16 – 7 = 9
20	***11***	***9***	***11 + 9 = 20***	***9 + 11 = 20***	***20 – 11 = 9***	***20 – 9 = 11***
200	***150***	***50***	***150 + 50 = 200***	***50 + 150 = 200***	***200 – 50 = 150***	***200 – 150 = 50***
75	***70***	***5***	***70 + 5 = 75***	***5 + 70 = 75***	***75 – 70 = 5***	***75 – 5 = 70***
50	***20***	***30***	***20 + 30 = 50***	***30 + 20 = 50***	***50 – 20 = 30***	***50 – 30 = 20***
500	***350***	***150***	***350 + 150 = 500***	***150 + 350 = 500***	***500 – 350 = 150***	***500 – 150 = 350***
190	***100***	***90***	***100 + 90 = 190***	***90 + 100 = 190***	***190 – 90 = 100***	***190 – 100 = 90***

Ask learners to find the missing doubles or halves.
Answer: 246 = 123 + 123, 370 = 185 + 185, 530 = 265 + 265

Tell the learners that if you know halves and doubles, you can sometimes use them to add or subtract.
Answer: 340 – 176 = 164 , 145 + 148 = 293, 900 – 452 = 448

256 Children each get a Xmas present. Half get dolls and half get cars. How many get cars? Ask the learners to study the two examples of ways to work this out.

Way 1	Way 2
256 = 200 + 50 + 6 ***Half of 200 is 100*** ***Half of 50 is 25*** ***Half of 6 is 3*** ***100 + 25 + 3 = 128*** ***Half of 256 is 128*** ***So 128 get cars***	***Half of 250 = 125*** ***Half of 6 is 3*** ***125 + 3 = 128*** ***Half of 256 is 128*** ***So 128 get cars***

Tell the learners that they can use any method to solve these.
Answer:

728 = half of 700 is 350 ***half of 20 is 10*** ***half of 8 is 4*** ***350 + 10 + 4 = 364*** ***Half of 728 is 364***	***642 = half of 600 is 300*** ***half of 40 is 20*** ***half of 2 is 1300 + 20 + 1 = 321*** ***Half of 642 is 321***

Reflection questions

Can the learners do the following?

- Build own number families
- Double or halve
- Identify patterns
- Solve sums using a given method

76 Number patterns: tens to 800

Content links: 9, 29, 47, 64, 79, 82, 86, 88, 111, 114, 116, 119, 121
Grade 2 links: 44, 51, 53, 56, 80, 89, 112, 117
Grade 1 links: 51, 58-59, 83-84, 93, 115, 119-120

Objectives
- Add tens up to 800
- Subtract tens up to 800
- Extend patterns up to 750

Resources
Teacher: Number lines drawn in the sand outside, sheets of empty number lines
Learner: Workbook page 24, piece of paper or little chalk board or slate

Dictionary
Addition: is finding the total, or sum, by combining two or more numbers.
Subtraction: is taking one number away from another.

Teach mathematics

Concrete - Representational
Draw at least two number lines in the sand outside and label in intervals of ten. Let the learners all get a chance to walk the number line reading out the numbers as they walk. Delete a few numbers and let them try again.

Give the learners a page of empty numbers lines. The teacher will then draw a number line on the board with missing numbers. The learners must then copy the numbers from board and fill in the missing numbers. The teacher can also give the learners numbers that are not in the correct order and the learners can first order the numbers and them fill the numbers in on an empty number line.

Ask the learners what they can tell you about the numbers in the orange blocks? ***Answer: Counting in tens.***

Count in tens from 710 to 800. What comes after 720 when you count in tens? ***Answer: 730***

Count backwards in tens from 800 to 710. What comes before 760 when you count in tens? ***Answer: 770***

Ask the learners to complete the number sequences.
Answer:
a. 720, 730, 740, 750, 760, 780
b. 800, 790, 780, 770, 760, 750

76 Number patterns: tens to 800 *cont...*

Content links: 9, 29, 47, 64, 79, 82, 86, 88, 111, 114, 116, 119, 121
Grade 2 links: 44, 51, 53, 56, 80, 89, 112, 117
Grade 1 links: 51, 58-59, 83-84, 93, 115, 119-120

Tell the learners that we are going to add and subtract ten.
1. Ask learners to add ten to the given number. We did the first one for you. ***Answer:***

a. 767 + 10 = 777	b. 762 + 10 = 772	c. 783 + 10 = 793
d. 756 + 10 = 766	e. 714 + 10 = 724	f. 799 + 10 = 809

2. Ask the learners to subtract ten from the given number. We did the first one for you. ***Answer:***

a. 767 - 10 = 757	b. 762 - 10 = 752	c. 783 - 10 = 773
d. 756 - 10 = 746	e. 714 - 10 = 704	f. 799 - 10 = 789

3. What happens when you add or subtract ten to the numbers above? ***Answer: The number in the tens column changes***

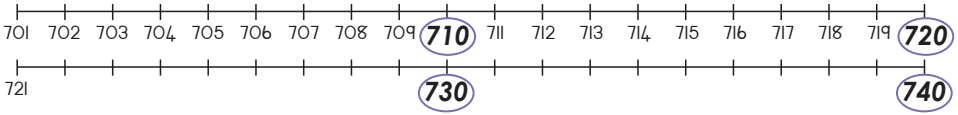
What happens ..." questions are meant to get the learner to look carefully at the numbers and to try and see patterns.

Ask learners to look at the red circles on the number board.
a. What do you notice about these circles?
Answer: Counting in 2s

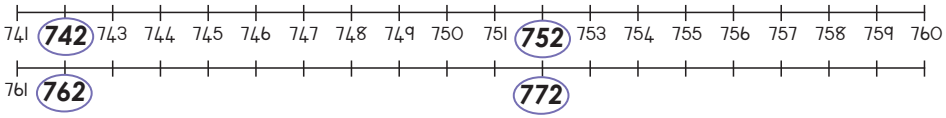
b. Extend the following number sequence:
704, 714, 724, 734, 744
715, 725, 735, 745, 755
799, 789, 779, 769, 759
782, 772, 762, 752, 742
737, 747, 757, 767, 777

Ask learners to fill in the correct number on the number line.
Answer:

a.



b.



I have a 3-digit number. The first digit is 7, the next digit is one more than seven, and the last digit is three less than seven. If I count forward in fours from this number. What will the number be?
Answer: The number will be 788

Reflection questions

Can the learners do the following?

- Complete number sequences
- Add tens up to 800
- Subtract tens up to 800
- Extend patterns up to 750

77 Rounding off to tens

Content links: 112
Grade 2 links: None
Grade 1 links: None

Objectives
- Use techniques like rounding off in tens when performing calculations

Resources
Teacher: Number lines drawn in the sand outside, sheets of empty number lines
Learner: Workbook page 26, piece of paper or little chalk board or slate

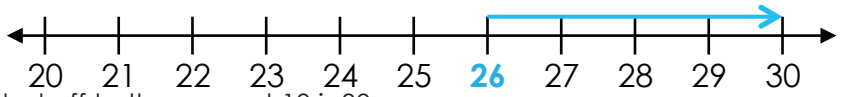
Dictionary
Rounding off: This is to change a number (reducing or increasing its value) to another more convenient to use number. You round up by choosing the nearest highest number that ends in zero. A number ending in 5 is always rounded up. You round down by choosing the nearest number ending in zero.

Teach mathematics

26

Concrete - Representational
Draw at least two number lines in the sand outside each from 0 to 10. As a class discuss and show the learners that anything between 0 and 4 is closer to 4 so we round down but anything from 5 and bigger will be rounded up to the ten. Call two learners up at a time and give them a number where they need to stand - the learner must then decide which number it will rounded off to. You can also try this activity using other numbers. E.g. 30 - 40, 50 - 60, etc.

Concrete - Representational
Give the learners a page of empty numbers lines. The teacher will then draw a number line on the board with missing numbers. The learners must then copy the numbers from board and fill in the missing numbers. Next the learner can use a different colour pencil to circle a number to be rounded of and use an arrow to indicate which number it will be rounded off to.



26 rounded off to the nearest 10 is 30

Ask the learners to round of to the nearest 10.
Answer:
12 rounded off is? ***10***
19 rounded off is? ***20***
53 rounded off is? ***50***
58 rounded off is? ***60***

77 Rounding off to tens *continued*

Content links: 112
Grade 2 links: None
Grade 1 links: None

Ask the learners to round off to the nearest 10 drawing your own number line.

Round to

a. 46 — **50**

Between which two tens is 46? — ***40 & 50***

40 41 42 43 44 45 46 47 48 49 50

b. 63 — **60**

Between which two tens is 63? — ***60 & 70***

60 61 62 63 64 65 66 67 68 69 70

c 37 — **40**

Between which two tens are 37? — ***30 & 40***

30 31 32 33 34 35 36 37 38 39 40

d. 99 — **100**

Between which two tens is 99? — ***90 & 100***

90 91 92 93 94 95 96 97 98 99 100

Tell the learners that Tom has R48,00. The pack of cards he collects cost R5,00. How many packs of cards can he buy for R48,00?

Answer: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50
He can buy 9 packs of cards with R48,00.

Reflection questions

Can the learners do the following?

- Use techniques like rounding off in tens when performing calculations

Common errors

Make notes of common errors made by the learners.

78 Multiplication: fives up to 75

Content links: 1-2, 23-25b, 27-28, 50, 55-56, 81, 83-85, 87, 89, 113, 117-118
Grade 2 links: 30, 56, 83
Grade 1 links: 56, 58, 81-84, 115

Objectives
- Match the columns
- Complete the table
- Link grouping to multiplication up to 99
- Link sharing to division up to 99
- Complete flow diagrams

Resources
Teacher: Counters
Learner: Workbook page 28, piece of paper or little chalk board or slate

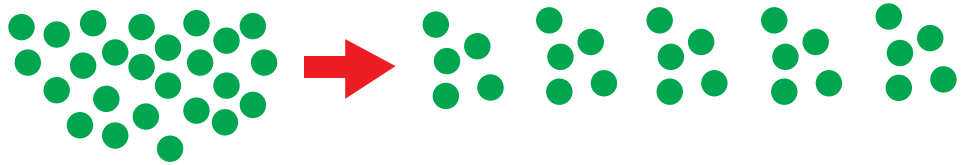
Dictionary
Multiplication: a number is added to itself a number of times.

Teach mathematics

Concrete - Representational
The learners must get at least at least 25 counters each, the teacher can demonstrate how to make one group of five and then asks the learner to make two groups of 5. Ask the learners : How many counters are there in total? 10. Could you work out the answer if there were no counters? Yes because we working in groups of five, we could count in fives.
Now let the learners set out :
- 3 groups of 5
- 4 groups of 5
- 5 groups of 5

The learners can work in pairs and complete up to 10 groups.

Concrete - Representational
The learners can now count out 25 counters each and ask the learners to share the 25 counters between 5.



The learners can also share:
- 20 between 5
- As a class work through sharing 12 counters between 5.

28

Ask learners to complete the table:

Grouping	Multiply	Sharing	Divide
2 groups of 5	2 x 5 = **10**	Share **10** between **5**	10 ÷ 5 = 2
7 groups of 5	**7 x 5 = 35**	Share 35 between 5	**35 ÷ 5 = 7**
12 groups of 5	**12 x 5 = 60**	Share 60 between 5	**60 ÷ 5 = 12**
15 groups of 5	**15 x 5 = 75**	Share 75 between 5	**75 ÷ 5 = 15**

78 Multiplication: fives up to 75 *cont...*

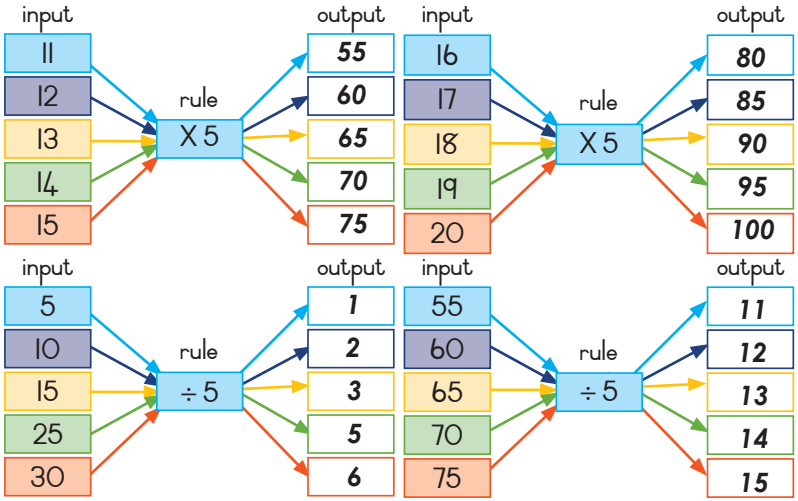
Content links: 1-2, 23-25b, 27-28, 50, 55-56, 81, 83-85, 87, 89, 113, 117-118
Grade 2 links: 30, 56, 83
Grade 1 links: 56, 58, 81-84, 115

Ask learners to complete the table:

Sharing	Divide
Share 12 between 5	13 ÷ 5 = 2 remainder 3
Share 64 between 5	***64 ÷ 5 = 12 remainder 4***
Share 39 between 5	***39 ÷ 5 = 7 remainder 4***
Share 73 between 5	***73 ÷ 5 = 14 remainder 3***

Ask learners to complete the flow diagram.

Answer:



Ask the learners to complete the tables below: How will you work out the answers that should be written in the blue blocks?

Answer:

×	1	2	3	4	5	6	7	8	9	10
5	5	10	15	20	25	30	35	40	45	50

×	11	12	13	14	15	16	17	18	19	20
5	55	60	65	70	75	80	85	90	95	100

Ask learners how they worked out the answers in the blue blocks.

Ask the learners to solve the following:

Answer: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70
70 ÷ 5 = 14 packets of sweets

Reflection questions

Can the learners do the following?

- Match the columns
- Complete the table
- Link grouping to multiplication up to 99
- Link sharing to division up to 99
- Complete flow diagrams

79 Number patterns: fives to 800

Content links: 9, 29, 47, 64, 76, 82, 86, 88, 111, 114, 116, 119, 121
Grade 2 links: 30, 56, 83
Grade 1 links: 58, 81-84, 115

Objectives
- Complete number sequences
- Add fives up to 800
- Subtract fives up to 800
- Extend fives up to 750

Resources
Teacher: Number board 701 - 800
Learner: Workbook page 30, piece of paper or little chalk board or slate

Dictionary
Addition: is finding the total, or sum, by combining two or more numbers.
Subtraction: is taking one number away from another.

Teach mathematics

Concrete - Representational
Give the learners counters and a 701 to 800 number board, the learners place the counters onto the board as they count in 5s. Begin at 705.

Now let the learners begin at 703.

701	702	703	704	705	706	707	708	709	710
711	712	713	714	715	716	717	718	719	720
721	722	723	724	725	726	727	728	729	730
731	732	733	734	735	736	737	738	739	740
741	742	743	744	745	746	747	748	749	750
751	752	753	754	755	756	757	758	759	760
761	762	763	764	765	766	767	768	769	770
771	772	773	774	775	776	777	778	779	780
781	782	783	784	785	786	787	788	789	790
791	792	793	794	795	796	797	798	799	800

Concrete - Representational
The Learners can fill in the missing numbers on the number boards. Show the learners how to write the number patterns: 705; 710; 715; 720; 725; 730; 735; 740; 745; ...

701	702	703	704		706	707	708	709	
711	712	713	714		716	717	718	719	
721	722	723	724		726	727	728	729	
731	732	733	734		736	737	738	739	
741	742	743	744		746	747	748	749	
751	752	753	754		756	757	758	759	
761	762	763	764		766	767	768	769	
771	772	773	774		776	777	778	779	
781	782	783	784		786	787	788	789	
791	792	793	794		796	797	798	799	

Ask the learners what they can tell you about the numbers in the orange blocks?
Answer: Counting in tens.

Count in fives from 705 to 800. What comes after 720 when you count in fives?
Answer: 725

Count backwards in fives from 800 to 705. What comes before 730 when you count in fives?
Answer: 735

Ask the learners to complete the number sequences.
Answer:
a. 725, 730, 735, 740, 745, 750
b. 800, 795, 790, 785, 780, 775

79 Number patterns: fives to 800 *cont...*

Content links: 9, 29, 47, 64, 76, 82, 86, 88, 111, 114, 116, 119, 121
Grade 2 links: 30, 56, 83
Grade 1 links: 58, 81-84, 115

Tell the learners that we are going to add and subtract five.

1. Ask learners to add five to the given number. We did the first one for you. ***Answer:***

a. 760 + **5** = 765	b. 725 + **5** = 730	c. 780 + **5** = 785
d. 755 + **5** = 760	e. 715 + **5** = 720	f. 790 + **5** = 795

2. Ask the learners to subtract five from the given number. We did the first one for you. ***Answer:***

a. 765 - **5** = 760	b. 760 - **5** = 755	c. 785 - **5** = 780
d. 750 - **5** = 745	e. 715 - **5** = 710	f. 790 - **5** = 785

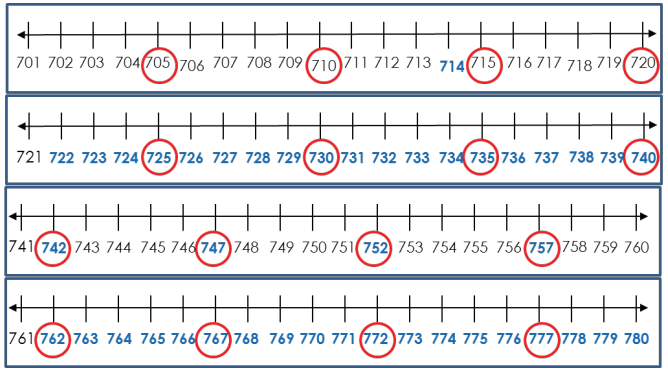
3. What happens when you add or subtract five to the numbers above?
Answer: The answer will end in either a 0 or a 5.

Ask learners to look at the blue circles on the number board on page 30.

a. What do you notice about these circles?
Answer: Counting in 5s

b. Extend the following number sequence:
703, 708, 713, 718, 723, 728, 733
753, 758, 763, 768, 773, 778, 783
701, 706, 711, 716, 721, 726, 731
722, 727, 732, 737, 742, 747, 752
714, 719, 724, 729, 734, 739, 744

Ask learners to fill in the correct number on the number lines.
Answer:



I have a 3-digit number. The first digit is 7, the next digit is one more than seven, and the last digit is five less than seven. If I count forward in fives from this number. What will the number be?
Answer: The number will be 787

Reflection questions

Can the learners do the following?

- Complete number sequences
- Add fives up to 800
- Subtract fives up to 800
- Extend fives up to 750

80 Day time and night time

Content links: 12, 32, 54, 106
Grade 2 links: 13-14, 22, 55, 57a-57b, 80-81b, 85a-85b, 89, 116a-116b
Grade 1 links: 7, 16, 32

Objectives
- Calculate length of time and passing of time
- Use clocks to calculate length of time in hours and minutes

Resources
Teacher: Analogue clock
Learner: Workbook page 32, piece of paper or little chalk board or slate

Dictionary
Time: is the on going sequence of events taking place, the past, present and future

Teach Time

Worksheet 80 will be hard to do unless you have already taught learners about reading time in hours and minutes and that they fully understand the concept of the two 12 hour periods in a 24 hour day. Recap with the learners how many hours we have in a day. Ask the learners: "How many hours in the day? How many hours in the night? Is it always the same? Who can think of a reason for this changing?"
As a class work through the examples below. **Example 1:**
- The sun rises at 05:03 am
- The sun sets at 05:03 pm

Answer:
Length of day: 12 hours - from 5:03 in the morning to 5:03 to the afternoon 12 hours have passed (show the learners on a analogue clock if possible)
Length of night: 12 hours - a day has 24 hours in total so if a day is 12 hours the night will be 12 hours as well.

Example 2:
- The sun rises at 06:31 am
- The sun sets at 5:57 pm
-

Length of day: 11 hours 26 minutes
From 06:31 - 5:31 is 11 hours
Length of night:12 hours 34 minutes

A day has 24 hours so the remaining hours is the length of the night
The actual mechanics of calculating time passed in the 12 hour system can usually be done in two ways. Here is an example using figures from question 1: How much time has passed since start time (sunrise 7:51 am) and an end time (sunset 5:44pm)

Method 1:
7:51 am + 12 hours is 7:51 pm.
But sunset comes at 5:44 pm.
7:51 – 5:44 = 2:07
So 12 hours – 2:07 = 9:53 hours

Method 2:
7:51 am until 12 noon is 12:00 – 7:51 = 4:09.
12 noon until 5:44 pm = 5:44
So 4:09 + 5:44 = 9:53 hours

80 Day time and night time *cont...*

Content links: 12, 32, 54, 106
Grade 2 links: 13-14, 22, 55, 57a-57b, 80-81b, 85a-85b, 89, 116a-116b
Grade 1 links: 7, 16, 32

Tell the learners that the table below shows when the sun rises and sets at different times of the year in Cape Town. Read the times in the table and then fill in the rest of the table before answering the questions below.

Cape Town	Sunrise	Sunset	Length of day	Length of night
March 23	6:53 am	6:53 pm	***12 hours***	***12 hours***
June 21	7:51 am	5:44 pm	***9 hours 53 mins***	***14 hours 7 mins***
September 19	6:41 am	6:41 pm	***12 hours***	***12 hours***
December 22	5:32 am	7:58 pm	***14 hours 26 mins***	***9 hours 34 mins***

a) In which months are the day and the night the same length? ***Answer: March and September***
b) Which month has the longest days? ***Answer: December***
c) Which month has the shortest days? ***Answer: June***
d) Find the difference in hours and minutes between the longest day and the shortest day. ***Answer: 4 hours and 33 minutes***
e) For each date above, find the length of the day and of the night. ***Answer: See above***

This table shows when the sun rises and sets at different times of the year in Polokwane. Read the times in the table and then fill in the rest of the table before answering the questions below.

Polokwane	Sunrise	Sunset	Length of day	Length of night
March 25	***6:08 am***	***6:08 pm***	***12 hours***	***12 hours***
June 21	***6:44 am***	***5:24 pm***	***10 hours 40 mins***	***13 hours 20 mins***
September 17	***5:57 am***	***5:57 pm***	***12 hours***	***12 hours***
December 22	***5:13 am***	***6:50 pm***	***13 hours 37 mins***	***0 hours 23 mins***

a. In which months are the day and the night the same length? ***Answer: March and September***
b. In which of these months is the length of day the same in Cape Town and Polokwane? ***Answer: March and September***
c. In which months are they different? ***Answer: June and December***
d. Find the difference in hours and minutes between the longest day and the shortest day. ***Answer: 2 hour 43 mins***
e. Find the length of day and night for each date. ***Answer: see above***

Tell learners that they must ask someone to help them to find the sunrise and sunset times in your area. Write them down for one week. Are the days getting longer or shorter?

Reflection questions
Can the learners do the following?
- Calculate length of time and passing of time
- Use clocks to calculate length of time in hours and minutes

81 Multiplication: twos up to 75

Content links: 1-2, 23-25b, 27-28, 51, 55-56, 78, 83-85, 87, 89, 117-118
Grade 2 links: 29, 44-48, 84, 86-87, 114-115
Grade 1 links: 26, 47, 49-51, 90-92, 117-120, 122

Objectives
- Link grouping to multiplication up to 99
- Link sharing to division up to 99
- Complete flow diagrams

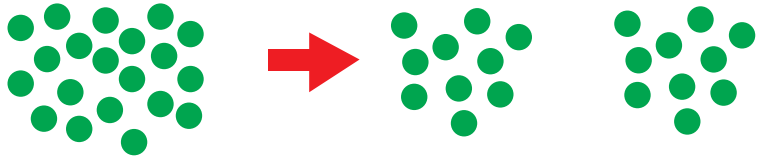
Resources
Teacher: Counters
Learner: Workbook page 34, piece of paper or little chalk board or slate

Dictionary
Multiplication: a number is added to itself a number of times.
Division: Division is splitting into equal parts or groups. It is the result of "fair sharing".

Teach mathematics

Concrete - Representational
The learners must get at least at least 20 counters each. The teacher can demonstrate how to make one group of 2 and then ask the learner to make two groups of 2. Ask the learners: "How many counters are there in total? We are 4. Could you work out the answer if there were no counters? Yes because we are working in groups of two, we could count in twos".
Now let the learners set out :
- 3 groups of 2 and 10 groups of 2
- The learners can work in pairs and complete up to 10 groups.

Concrete - Representational
The learners can now count out 25 counters each and ask the learners to share the 20 counters between 2.



The learners can also share:
16 between 2
12 between 2
As a class work through - sharing 15 between 2.

Ask the learners to complete the table.
Answer:

Grouping	Multiply	Sharing	Divide
10 groups of 2	10 × 2 = 20	Share 20 between 2	20 ÷ 2 = 10
15 groups of 2	***15 x 2 = 30***	Share 30 between 2	***30 ÷ 2 = 15***
20 groups of 2	***20 x 2 = 40***	Share 40 between 2	***40 ÷ 2 = 20***
35 groups of 2	***35 x 2 = 70***	Share 70 between 2	***70 ÷ 2 = 35***

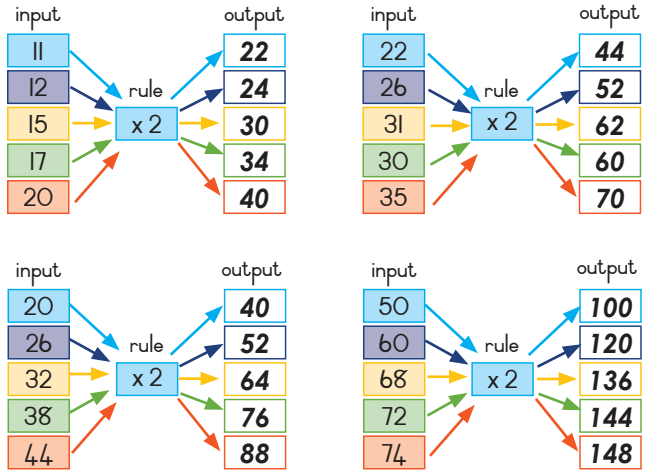
81 Multiplication: twos up to 75 *cont...*

Content links: 1-2, 23-25b, 27-28, 51, 55-56, 78, 83-85, 87, 89, 117-118
Grade 2 links: 29, 44-48, 84, 86-87, 114-115
Grade 1 links: 26, 47, 49-51, 90-92, 117-120, 122

Ask the learners to complete the table. ***Answer:***

Sharing	Divide
Share 21 between 2	21 ÷ 2 = 10 remainder 1
Share 33 between 2	***33 ÷ 2 = 16 remainder 1***
Share 67 between 2	***67 ÷ 2 = 33 remainder 1***
Share 75 between 2	***75 ÷ 2 = 37 remainder 1***

Ask the learners to complete the flow diagrams.
Answer:



Ask the learners to complete the tables below.
Answer:

×	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
2	***2***	***4***	***6***	***8***	***10***	***12***	***14***	***16***	***18***	***20***	***22***	***24***	***26***	***28***	***30***	***32***	***34***	***36***	***38***	***40***

×	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
2	***42***	***44***	***46***	***48***	***50***	***52***	***54***	***56***	***58***	***60***	***62***	***64***	***66***	***68***	***70***	***72***	***74***

Ask the learners to solve the following: I bought 36 lollipops for R2. I paid with a R50, R20 and a R5 coin. What was my change?
Answer: 36 x R2 = R72, Paid with R75. R75 – R72 = R3 change

Reflection questions

Can learners do the following?

- Link grouping to multiplication up to 99
- Link sharing to division up to 99
- Complete flow diagrams

Common errors

Make notes of common errors made by the learners.

82 Number patterns: twos to 800

Content links: 9, 29, 47, 64, 76, 79, 86, 88, 111, 114, 116, 119, 121
Grade 2 links: 44, 117
Grade 1 links: 51, 90-93, 119-120

Objectives
- Complete number sequences
- Add twos up to 800
- Subtract twos up to 800
- Extend patterns up to 800

Resources
Teacher: Number board 701 - 800, sheets of number boards with missing numbers (as in the second illustration below), counters
Learner: Workbook page 36, piece of paper or little chalk board or slate

Dictionary
Multiplication: a number is added to itself a number of times.
Division: division is splitting into equal parts or groups. It is the result of "fair sharing".

Teach mathematics

Concrete - Representational
Give the learners counters and a 701- 800 number board.The learners place the counters onto the board as they count in 2s. Begin at 702.
Take off the counters and count in 2s starting from 701.

701	702	703	704	705	706	707	708	709	710
711	712	713	714	715	716	717	718	719	720
721	722	723	724	725	726	727	728	729	730
731	732	733	734	735	736	737	738	739	740
741	742	743	744	745	746	747	748	749	750
751	752	753	754	755	756	757	758	759	760
761	762	763	764	765	766	767	768	769	770
771	772	773	774	775	776	777	778	779	780
781	782	783	784	785	786	787	788	789	790
791	792	793	794	795	796	797	798	799	800

Concrete - Representational
The Learners can fill in the missing numbers on the number boards. Show the learners how to write the number patterns.
702; 704; 706; 708; 710

701		703		705		707		709	
711		713		715		717		719	
721		723		725		727		729	
731		733		735		737		739	
741		743		745		747		749	
751		753		755		757		759	
761		763		765		767		769	
771		773		775		777		779	
781		783		785		787		789	
791		793		795		797		799	

Ask the learners what they can tell you about the numbers in the orange blocks?
Answer: Counting in twos. The dark orange blocks are counting down in tens.

Count in twos from 700 to 800. What comes after 700 when you count in twos? ***Answer: 702***

Count backwards in tens from 800 to 710. What comes before 750 when you count in twos? ***Answer: 752***

Ask the learners to complete the number sequences.
Answer: a. 720, 722, 724, 726, 728, 730
b. 800, 798, 796, 794, 792, 790

82 Number patterns: twos to 800 *cont...*

Content links: 9, 29, 47, 64, 76, 79, 86, 88, 111, 114, 116, 119, 121
Grade 2 links: 44, 117
Grade 1 links: 51, 90-93, 119-120

Tell the learners that we are going to add and subtract two.

1. Ask learners to add two to the given number. We did the first one for you. ***Answer:***

a. 764 + **2** = 76**6**	b. 762 + **2** = 76**4**	c. 783 + **2** = 78**5**
d. 756 + **2** = 75**8**	e. 714 + **2** = 71**6**	f. 799 + **2** = **801**

2. Ask the learners to subtract two from the given number. We did the first one for you. ***Answer:***

a. 764 - **2** = 76**2**	b. 762 - **2** = 76**0**	c. 783 - **2** = 78**1**
d. 756 - **2** = 75**4**	e. 714 - **2** = 71**2**	f. 799 - **2** = **797**

What happens ..." questions are meant to get the learner to look carefully at the numbers and to try and see patterns.

3. What happens when you add or subtract two to the numbers above? ***Answer: If you add or subtract 2 from an even number your answer will be even. If you add or subtract from an odd number your answer will be odd.***

Ask learners to look at the blue circles on the number board on the previous page (page 35).

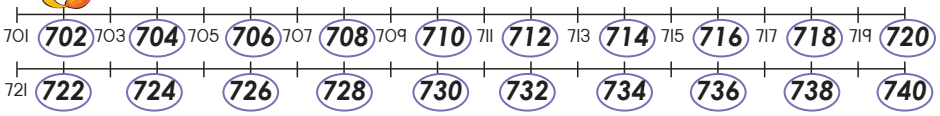
a. What do you notice about these circles?
Answer: Counting in 2s

b. Extend the following number sequence:

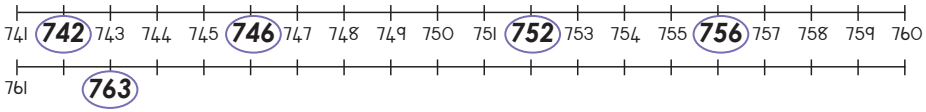
- 701, 703, 705, **707, 709, 711**
- 725, 727, 729, **731, 733, 735**
- 799, 797, 795, **793, 791, 789**
- 783, 785, 787, **789, 791, 793**
- 779, 781, 783, **785, 787, 789**

Ask learners to fill in the correct number on the number line
Answer:

a.



b.



I have a 3-digit number. The first digit is 7, the next digit is two more than seven, and the last digit is four less than seven. If I count forward in twos from this number. What will the number be?
Answer: The number will be 795

Reflection questions

Can learners do the following?

- Complete number sequences
- Add twos up to 800
- Subtract twos up to 800
- Extend patterns up to 800

Common errors

Make notes of common errors made by the learners.

83 Multiplication: 2s and 5s up to 75

Content links: 1-2, 23-25b, 27-28, 51, 55-56, 78, 81, 84-85, 87, 89, 117-118
Grade 2 links: 29-30, 44-48, 82-84, 86-87, 114-115
Grade 1 links: 49-51, 56-58, 80-84, 90-93, 112-113, 115, 117-120, 122

Objectives
- Complete number sequences
- Use different methods of multiplication up to 99
- Multiply numbers to a total of 99

Resources
Teacher: sheets with Number board 1 - 100, counters
Learner: Workbook page 36, piece of paper or little chalk board or slate

Dictionary
Multiplication: a number is added to itself a number of times.

38

Teach mathematics

Concrete and Representational
Give the learners each a number board that they colour in on. The learners can use one colour to colour in all the 5s and another colour for all the 2s. Discuss with the learners that there are different ways to calculate multiplication sums.

As a class work through the example below: 3 groups of 5

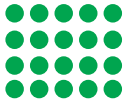
Skip counting	Equal groups	Repeated addition	Arrays	Facts
5, 10, 15		5 + 5 + 5	3 rows of 5 xxxxx xxxxx xxxxx	3 x 5 = 15 5 x 3 = 15 15 ÷ 5 = 3 15 ÷ 3 = 5

Give the learners different examples to try using the different methods.

Ask the learners how fast they can answer the following?
Answers:

1 x 2 = 2	***2 x 5 = 10***	***10 x 2 = 20***	***7 x 2 = 14***
8 x 2 = 16	***5 x 2 = 10***	***8 x 5 = 40***	***4 x 5 = 20***
5 x 5 = 25	***6 x 5 = 30***	***3 x 2 = 6***	***7 x 5 = 35***
6 x 2 = 12	***9 x 5 = 45***	***3 x 5 = 15***	***4 x 2 = 8***
10 x 5 = 50	***5 x 2 = 10***	***1 x 5 = 5***	***9 x 5 = 45***

Ask the learners to do the same with 4 x 5 = 20

Skip counting	Equal groups	Repeated addition	Arrays	Facts
5, 10, 15, 20		5 + 5 + 5 + 5	4 rows of 5 xxxxx xxxxx xxxxx xxxxx	4 x 5 = 20 5 X 4 = 20 20 ÷ 5 = 4 20 ÷ 4 = 5

83 Multiplication: 2s and 5s up to 75 *cont...*

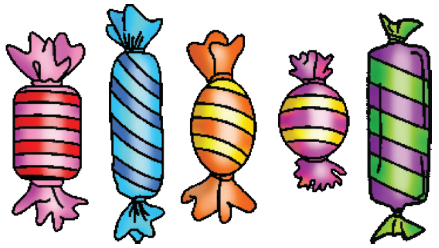
Content links: 1-2, 23-25b, 27-28, 51, 55-56, 78, 81, 84-85, 87, 89, 117-118
Grade 2 links: 29-30, 44-48, 82-84, 86-87, 114-115
Grade 1 links: 49-51, 56-58, 80-84, 90-93, 112-113, 115, 117-120, 122

Ask the learners to multiply the following.

24 × 3 = (20 + 4) × 3 = (20 × 3) + (4 × 3) = 60 + 12 = 72	a. 13 × 3 ***= (10 + 3) x 5*** ***= (10 x 5) + (3 x 5)*** ***= 50 + 15*** ***= 65***	b. 18 × 3 ***= (10 + 8) x 3*** ***= (10 x 3) + (8 x 3)*** ***= 30 + 24*** ***= 54***
c. 12 × 5 ***= (10 + 2) x 5*** ***= (10 x 5) + (2 x 5)*** ***= 50 + 10*** ***= 60***	d. 21 × 3 ***= (20 + 1) x 3*** ***= (20 x 3) + (1 x 3)*** ***= 60 + 3*** ***= 63***	e. 14 × 3 ***= (10 + 4) x 3*** ***= (10 x 3) + (4 x 3)*** ***= 30 + 12*** ***= 42***
f. 25 × 3 ***= (20 + 5) x 3*** ***= (20 x 3) + (5 x 3)*** ***= 60 + 15*** ***= 75***	g. 12 × 3 ***= (10 + 2) x 3*** ***= (10 x 3) + (2 x 3)*** ***= 30 + 6*** ***= 36***	h. 15 × 5 ***= (10 + 5) x 5*** ***= (10 x 5) + (5 x 5)*** ***= 50 + 25*** ***= 75***

I bought 14 sweets for R3. My friend bought 12 sweets for R5. How much did we pay altogether for the sweets?

Answer:
14 x R3 = R42 and 12 x R5 = R60.
R42 + R60 = R102



Reflection questions

Can learners do the following?

- Complete number sequences
- Use different methods of multiplication up to 99
- Multiply numbers to a total of 99

Common errors

Make notes of common errors made by the learners.

84 Multiplication: threes up to 75

Content links: 1-2, 23-25b, 27-28, 51, 55-56, 78, 81, 83, 85, 87, 89
Grade 2 links: 50-51, 54, 86-87, 113-115
Grade 1 links: 52-53

Objectives
- Match the columns
- Complete the table
- Link grouping to multiplication
- Link sharing to division
- Complete flow diagrams

Resources
Teacher: Number board 701 - 800, counters
Learner: Workbook page 40, piece of paper or little chalk board or slate

Dictionary
Multiplication: a number is added to itself a number of times.

Teach mathematics

Concrete and Representational
The learners must get at least at least 30 counters each, the teacher can demonstrate how to make one group of 3 and then asks the learner to make two groups of 3. Ask the learners : How many counters are there in total? 6. Could you work out the answer if there was no counters? Yes because we working in groups of 3, we could count in threes.
Now let the learners lay out:
- 3 groups of 3
- 4 groups of 3
- 5 groups of 3

The learners can work in pairs and complete up to 10 groups.

The learners can now count out 21 counters each and ask the learners to share the 21 counters between 3.

The learners can also share:
- 18 between 3
- 12 between 3

As a class work through - sharing 10 between 3.

Ask the learners to complete the table.
Answer:

Grouping	Multiply	Sharing	Divide
11 groups of 3	11 × 3 = 33	Share 33 between 3	33 ÷ 3 = 11
15 groups of 3	***15 x 3 = 45***	Share 45 between 3	***45 ÷ 3 =15***
25 groups of 3	***25 x 3 = 75***	Share 60 between 3	***75 ÷ 3 = 25***
12 groups of 3	***12 x 3 = 36***	Share 36 between 3	***36 ÷ 3 =12***

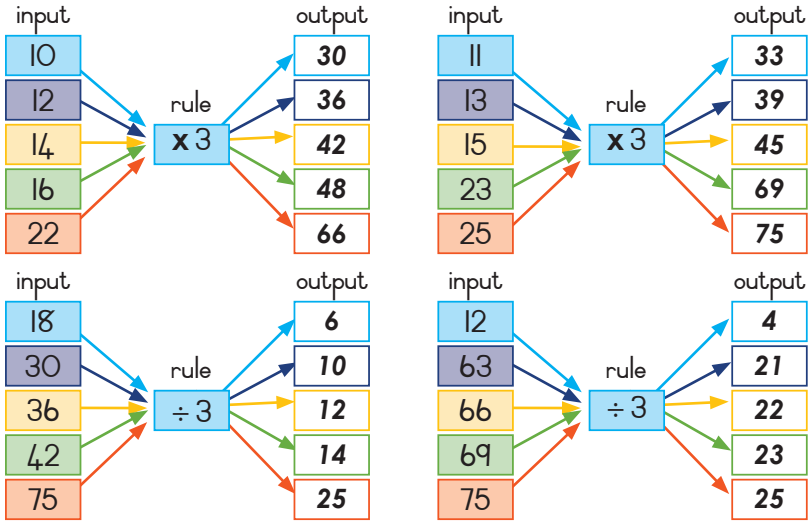
Content links: 1-2, 23-25b, 27-28, 51, 55-56, 78, 81, 83, 85, 87, 89
Grade 2 links: 50-51, 54, 86-87, 113-115
Grade 1 links: 52-53

84 Multiplication: threes up to 75 *cont...*

Ask the learners to complete the table. ***Answer:***

Sharing	Divide
Share 37 between 3	37 ÷ 3 = 12 remainder 1
Share 74 between 3	74 ÷ 3 = 24 remainder 2
Share 49 between 3	49 ÷ 3 = 16 remainder 1
Share 68 between 3	68 ÷ 3 = 22 remainder 2

Ask the learners to complete the flow diagram. ***Answer:***



Ask the learners to complete the tables below.
Answer:

X	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
3	3	6	***9***	***12***	***15***	***18***	***21***	***24***	***27***	***30***	***33***	***36***	***39***	***42***	***45***

X	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
3	***48***	***51***	***54***	***57***	***60***	***63***	***66***	***69***	***72***	***75***	***78***	***81***	***84***	***87***	***90***

The entry fee was R3 for each child and 23 children entered the park. How much did they pay altogether? How much did they pay altogether?
Answer: R3 x 23 = R69

Reflection questions

Can the learners do the following?

- Link grouping to multiplication
- Link sharing to division
- Complete flow diagrams

Common errors

Make notes of common errors made by the learners.

85 Multiplication: 2s, 3s and 4s up to 75

Content links: 1-2, 23-25b, 27-28, 51, 55-56, 78, 81, 83-84, 87, 89
Grade 2 links: 29, 50-51, 52-54, 84, 86-88, 113-115
Grade 1 links: 49-55, 90-93, 117-120, 122

Objectives
- Complete number sequences
- Use different methods of multiplication up to 99
- Multiply numbers to a total of 99

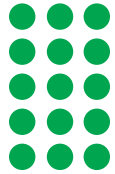
Resources
Teacher: Number board 0 - 100, counters
Learner: Workbook page 42, piece of paper

Dictionary
Multiplication: a number is added to itself a number of times
Division: is splitting into equal parts or groups. "Fair sharing" is a form of division.

Teach mathematics

Concrete and Representational
Give the learners each a number board that they colour in on. The learners can use on colour to colour in all the 2s and another colour for all the 3s and 4s. Discuss with the learners that there are different ways to calculate multiplication sums.

As a class work through the example below: 5 groups of 3

Skip counting	Equal groups	Repeated addition	Arrays	Facts
3, 6, 9, 12, 15		3 + 3 + 3 + 3 + 3	5 rows of 3 xxx xxx xxx xxx xxx	3 x 5 = 15 5 x 3 = 15 15 ÷ 5 = 3 15 ÷ 3 = 5

Give the learners different examples to try using the different methods.

Ask the learners how fast they can answer the following?
Answers:

1 x 2 = 2	***5 x 4 = 20***	***5 x 2 = 10***	***2 x 2 = 4***
6 x 3 = 18	***4 x 2 = 8***	***2 x 4 = 8***	***7 x 3 = 21***
8 x 4 = 32	***2 x 3 = 6***	***7 x 2 = 14***	***9 x 4 = 36***
3 x 2 = 6	***4 x 4 = 16***	***10 x 3 = 30***	***1 x 3 = 3***
3 x 3 = 9	***9 x 2 = 18***	***6 x 4 = 24***	***10 x 3 = 30***

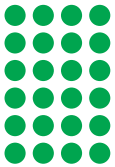
Ask the learners to do the same with 8 x 3 = 24 = 10. ***Answer:***

Skip counting	Equal groups	Repeated addition	Arrays	Facts
3, 6, 9, 12, 15, 18, 21, 24		3 + 3 + 3 + 3 + 3 + 3 + 3 + 3	8 rows of 3 xxx xxx xxx xxx xxx xxx xxx xxx	8 x 3 = 24 3 x 8 = 24 24 ÷ 3 = 8 24 ÷ 8 = 3

85 Multiplication: 2s, 3s and 4s up to 75 *cont...*

Content links: 1-2, 23-25b, 27-28, 51, 55-56, 78, 81, 83-84, 87, 89
Grade 2 links: 29, 50-51, 52-54, 84, 86-88, 113-115
Grade 1 links: 49-55, 90-93, 117-120, 122

Ask the learners to do the same with 6 x 4 = 24. ***Answer:***

Skip counting	**Equal groups**	**Repeated addition**	**Arrays**	**Facts**
4, 8, 12, 16, 20, 24		4 + 4 + 4 + 4 + 4 + 4	6 rows of 4 xxxx xxxx xxxx xxxx xxxx xxxx	6 x 4 = 24 4 x 6 = 24 24 ÷ 4 = 6 24 ÷ 6 = 4

Ask the learners to divide and test their answer. ***Answer:***

63 ÷ 3 = (60 + 3) ÷ 3 = (60 ÷ 3) + (3 ÷ 3) = 20 + 1 = 21	21 × 3 = (20 + 1) × 3 = (20 × 3) + (1 × 3) = 60 + 3 = 63
a. 48 ÷ 5 ***= (40 + 8) ÷ 5*** ***= (40 ÷ 5) + (8 ÷ 5)*** ***= 8 + (1 + remainder 3)*** ***= 9 remainder 3***	***9 x 5 + remainder 3*** ***= (9 x 5) + 3*** ***= 45 + 3*** ***= 48***
b. 64 ÷ 5 ***= (60 + 4) ÷ 5*** ***= (60 ÷ 5) + (4 ÷ 5)*** ***= 12 + remainder 4*** ***= 12 remainder 4***	***12 x 5 + remainder 4*** ***= (12 x 5) + 4*** ***= 60 + 4*** ***= 64***

Ask the learners to solve the following. My friends and I have R63 altogether.

- We want to share it equally between the three of us.
- How much will each of us get?

Answer: R63 ÷ 3 = R21

Reflection questions

Can the learners do the following?

- Complete number sequences
- Use different methods of multiplication up to 99
- Multiply numbers to a total of 99

Common errors

Make notes of common errors made by the learners.

86 Number patterns: threes to 800

Content links: 9, 29, 47, 64, 76, 79, 82, 88, 111, 114, 116, 119, 121
Grade 2 links: 50-51, 54, 113-115
Grade 1 links: 52-53

Objectives
- Complete number sequences
- Add threes up to 800
- Subtract threes up to 800
- Extend threes up to 750

Resources
Teacher: Number board 701 - 800, counters, sheets of number boards with missing numbers (as in the second illustration below),
Learner: Workbook page 44, piece of paper or little chalk board

Dictionary
Addition: is finding the total, or sum, by combining two or more numbers.
Subtraction: is taking one number away from another.

Teach mathematics

Concrete - Representational
Give the learners counters and a 701- 800 number, the learners place the counters onto the board as they count in 3s. Begin at 703.Now let the learners begin at 704.

701	702	703	704	705	706	707	708	709	710
711	712	713	714	715	716	717	718	719	720
721	722	723	724	725	726	727	728	729	730
731	732	733	734	735	736	737	738	739	740
741	742	743	744	745	746	747	748	749	750
751	752	753	754	755	756	757	758	759	760
761	762	763	764	765	766	767	768	769	770
771	772	773	774	775	776	777	778	779	780
781	782	783	784	785	786	787	788	789	790
791	792	793	794	795	796	797	798	799	800

Concrete - Representational
The Learners can fill in the missing numbers on the number boards. Show the learners how to write the number patterns. 703; 706; 709; 712; 715; ...

701	702		704	705		707	708		710
711		713	714		716	717		719	720
	722	723		725	726		728	729	
731	732		734	735		737	738		740
741		743	744		746	747		749	750
	752	753		755	756		758	759	
761	762		764	765		767	768		770
771		773	774		776	777		779	780
	782	783		785	786		788	789	
791	792		794	795		797	798	799	800

Ask the learners what they can tell you about the numbers in the orange blocks?
Answer: Counting in threes

Count in threes from 703 to 799. What comes after 745 when you count in threes?
Answer: 748

Count backwards in tens from 799 to 703. What comes before 766 when you count in threes? ***Answer: 769***

Ask the learners to complete the number sequences.
Answer:
a. 703, 706, 709, ***712, 715, 718***
b. 799, 796, 793, ***790, 787, 784***

86 Number patterns: threes to 800 *cont...*

Content links: 9, 29, 47, 64, 76, 79, 82, 88, 111, 114, 116, 119, 121
Grade 2 links: 50-51, 54, 113-115
Grade 1 links: 52-53

Tell the learners that we are going to add and subtract three.

1. Ask learners to add three to the given number. We did the first one for you. ***Answer:***

a. 766 + **3** = 76**9**	b. 766 + **3** = 76**9**	c. 783 + **3** = 78**6**
d. 756 + **3** = 75**9**	e. 713 + **3** = 71**6**	f. 790 + **3** = 79**3**

2. Ask the learners to subtract three from the given number. We did the first one for you. ***Answer:***

a. 766 - **3** = 76**3**	b. 763 - **3** = 76**0**	c. 789 - **3** = 78**6**
d. 756 - **3** = 75**3**	e. 713 - **3** = 71**0**	f. 799 - **3** = 79**6**

What happens ..." questions are meant to get the learner to look carefully at the numbers and to try and see patterns.

3. What happens when you add or subtract three to the numbers above? ***Answer: If you add or subtract 3 from an even number your answer will be odd. If you add or subtract from an odd number your answer will be even.***

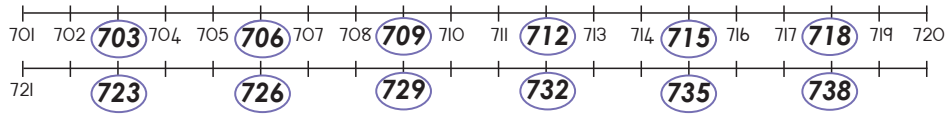
Ask learners to look at the blue circles on the number board on the previous page.

a. What do you notice about these circles?
Answer: Counting in 3s

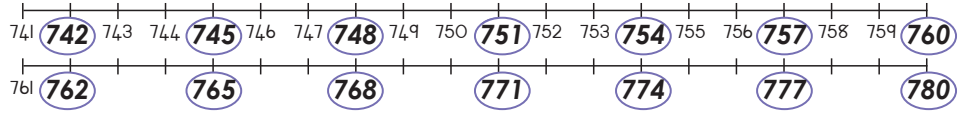
b. Extend the following number sequence. ***Answers:***
704, 707, 710, ***713, 716, 719, 722***
773, 776, 779, ***782, 785, 788, 791***
779, 776, 773, ***770, 767, 764, 761***
782, 785, 788, ***791, 794, 797, 800***
779, 782, 785, ***788, 791, 794, 797***

Ask learners to fill in the correct number on the number line.
Answer:

a.



b.



I have a 3-digit number. The first digit is 7, the next digit is two more than seven, and the last digit is seven less than seven. If I count forward in threes from this number. What will the number be? ***Answer: The number will be 793***

Reflection questions

Can the learners do the following?

- Complete number sequences
- Add threes up to 800
- Subtract threes up to 800
- Extend threes up to 750

Common errors

Make notes of common errors made by the learners.

87 Multiplication: fours up to 75

Content links: 1-2, 23-25b, 27-28, 51, 55-56, 78, 81, 83-85, 89
Grade 2 links: 52-54, 88, 113-115
Grade 1 links: 54-55

Objectives
- Link grouping to multiplication
- Link sharing to division
- Complete flow diagrams

Resources
Teacher: Counters
Learner: Workbook page 46, piece of paper or little chalk board or slate

Dictionary
Multiplication: a number is added to itself a number of times

46

Teach mathematics

Concrete and Representational
The learners must get at least at least 30 counters each. The teacher can demonstrate how to make one group of 4 and then ask the learner to make two groups of 4. Ask the learners: "How many counters are there in total? 8. Could you work out the answer if there was no counters? Yes because we working in groups of 4, we could count in fours."
Now let the learners set out :
- 3 groups of 4
- 4 groups of 4
- 5 groups of 4

The learners can work in pairs, join their counters and complete up to 10 groups.

The learners can now count out 20 counters each and ask the learners to share the 20 counters between 4.

The learners can also share:
- 16 between 4
- 12 between 4
-

As a class work through - sharing 18 between 4.

Ask the learners to complete the table.
Answer:

Grouping	Multiply	Sharing	Divide
12 groups of 4	12 × 4 = 48	Share 48 between 4	48 ÷ 4 = 12
16 groups of 4	***16 x 4 = 64***	Share 64 between 4	***64 ÷ 4 =16***
18 groups of 4	***18 x 4 = 72***	Share 72 between 4	***72 ÷ 4 = 18***
15 groups of 4	***15 x 4 = 60***	Share 60 between 4	***60 ÷ 4 =15***

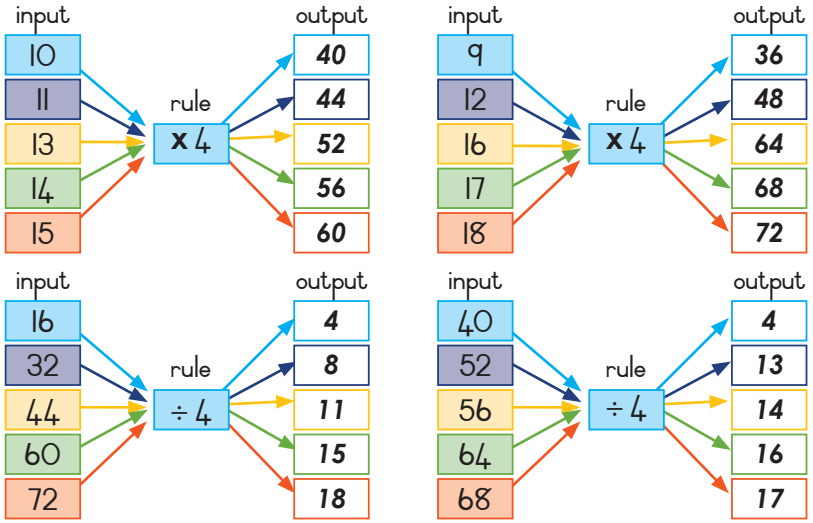
87 Multiplication: fours up to 75 *cont...*

Content links: 1-2, 23-25b, 27-28, 51, 55-56, 78, 81, 83-85, 89
Grade 2 links: 52-54, 88, 113-115
Grade 1 links: 54-55

Ask the learners to complete the table. ***Answer:***

Sharing	Divide
Share 35 between 4	35 ÷ 4 = 8 remainder 3
Share 55 between 4	55 ÷ 4 = 13 remainder 1
Share 70 between 4	70 ÷ 4 = 17 remainder 2
Share 75 between 4	75 ÷ 4 = 18 remainder 3

Ask the learners to complete the flow diagram. ***Answer:***



Ask the learners to complete the tables below.
Answer:

X	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
4	***4***	***8***	***12***	***16***	***20***	***24***	***28***	***32***	***36***	***40***	***44***	***48***	***52***	***56***	***60***

X	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
4	***64***	***68***	***72***	***76***	***80***	***84***	***88***	***92***	***96***	***100***	***104***	***108***	***112***	***116***	***120***

I have R75. How many small party gifts of R4 can you buy?
Answer: 75 ÷ 4 = 18

Reflection questions

Can the learners do the following?

- Link grouping to multiplication
- Link sharing to division
- Complete flow diagrams

Common errors

Make notes of common errors made by the learners.

88 Number patterns: fours to 800

Content links: 9, 29, 47, 64, 76, 79, 82, 86, 111, 114, 116, 119, 121
Grade 2 links: 52-53, 88, 117
Grade 1 links: 54-55, 58-59

Objectives
- Complete number sequences
- Add fours
- Subtract fours
- Extend fours

Resources
Teacher: Number board 701 - 800, counters, sheets of number boards with missing numbers (as in the second illustration below),
Learner: Workbook page 42, piece of paper or little chalk board

Dictionary
Addition: is finding the total, or sum, by combining two or more numbers.
Subtraction: is taking one number away from another.

Teach mathematics

Concrete - Representational
Give the learners counters and a 701 - 800 number board. The learners place the counters onto the board as they count in 4s. Begin at 788 and count back.

701	702	703	704	705	706	707	708	709	710
711	712	713	714	715	716	717	718	719	720
721	722	723	724	725	726	727	728	729	730
731	732	733	734	735	736	737	738	739	740
741	742	743	744	745	746	747	748	749	750
751	752	753	754	755	756	757	758	759	760
761	762	763	764	765	766	767	768	769	770
771	772	773	774	775	776	777	778	779	780
781	782	783	784	785	786	787	788	789	790
791	792	793	794	795	796	797	798	799	800

Now let the learners begin at 703 count forwards.

Concrete - Representational
The Learners can fill in the missing numbers on the number boards. Show the learners how to write the number patterns.
704; 708; 712; 716; ...

701	702	703		705	706	707		709	710
711		713	714	715		717	718	719	
721	722	723		725	726	727		729	730
731		733	734	735		737	738	739	
741	742	743		745	746	747		749	750
751		753	754	755		757	758	759	
761	762	763		765	766	767		769	770
771		773	774	775		777	778	779	
781	782	783		785	786	787		789	790
791		793	794	795		797	798	799	

Ask the learners what they can tell you about the numbers in the orange blocks? ***Answer: Counting in fours.***

Count in fours from 704 to 800. What comes after 736 when you count in fours? ***Answer: 740***

Count backwards in tens from 800 to 704. What comes before 776 when you count in fours? ***Answer: 780***

Ask the learners to complete the number sequences.
Answer:
a. 704, 708, 712, 716, 718, 720
b. 724, 728, 732, 736, 740, 744

88 Number patterns: fours to 800 *cont...*

Content links: 9, 29, 47, 64, 76, 79, 82, 86, 111, 114, 116, 119, 121
Grade 2 links: 52-53, 88, 117
Grade 1 links: 54-55, 58-59

Tell the learners that we are going to add and subtract fours.

1. Ask learners to add four to the given number. We did the first one for you. ***Answer:***

a. 764 + **4** = 76**8**	b. 764 + **4** = 76**8**	c. 788 + **4** = 79**2**
d. 754 + **4** = 75**8**	e. 718 + **4** = 722	f. 794 + **4** = 79**8**

2. Ask the learners to subtract four from the given number. We did the first one for you. ***Answer:***

a. 764 - **4** = 76**0**	b. 768 - **4** = 76**4**	c. 784 - **4** = 78**0**
d. 752 - **4** = 74**8**	e. 714 - **4** = 710	f. 798 - **4** = 79**4**

3. What happens when you add or subtract four from the numbers above? ***Answer: If you add or subtract 4 from an even number your answer will be even.***

What happens ..." questions are meant to get the learner to look carefully at the numbers and to try and see patterns.

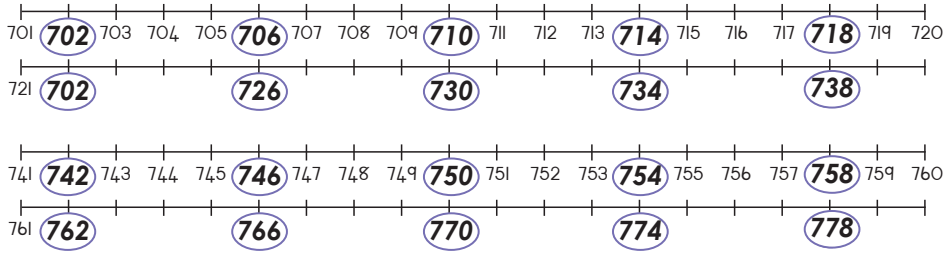
Ask learners to look at the blue circles on the number board on the previous page.

a. What do you notice about these circles?
Answer: Counting in 4s

b. Extend the following number sequence: ***Answer:***
703, 707, 711, ***715, 719, 723***
773, 777, 781, ***785, 789, 793***
711, 715, 719, ***723, 727, 731***
783, 779, 775, ***771, 767, 763***
799, 795, 791, ***787, 783, 779***

Ask learners to fill in the correct number in each circle on the number line.
Answer:

a.



I have a 3-digit number. The first digit is 7, the next digit is one more than seven, and the last digit is three less than seven. If I count forward in fours from this number. What will the number be?
Answer: The number will be 788

Reflection questions

Can learners do the following?

- Complete number sequences
- Add fours
- Subtract fours
- Extend fours

Common errors

Make notes of common errors made by the learners.

Content links: 1-2, 23-25b, 27-28, 51, 55-56, 78, 81, 83-85, 87
Grade 2 links: 29-31, 45-48, 50-54, 82-84, 86, 88, 113-115
Grade 1 links: 49-55, 58-59, 90-93, 117-120, 122

89 Multiplication and division: 2s, 3s, 4s and 5s up to 75

Objectives
- Complete number sequences
- Multipliy 2s, 3s, 4s and 5s up to 75
- Divide 2s, 3s, 4s and 5s up to 75
- Divide and test answers up to 75

Resources
Teacher: Counters
Learner: Workbook page 50, piece of paper or little chalk board

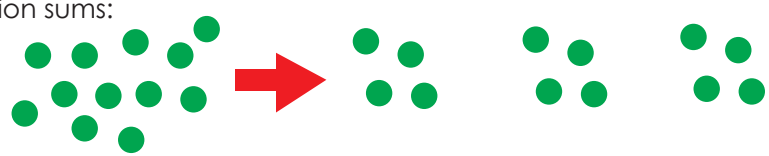
Dictionary
Multiplication: a number is added to itself a number of times
Division: is splitting into equal parts or groups. It is the result of "fair sharing".

Teach mathematics

Concrete and Representational
Recap with the learners the different method for calculating a multiplication sum. Give them a few examples to try first working in pairs and then by themselves.

Skip counting	Equal groups	Repeated addition	Arrays	Facts
5, 10, 15		5 + 5 + 5	3 rows of 5 xxxxx xxxxx xxxxx	3 x 5 = 15 5 x 3 = 15 15 ÷ 5 = 3 15 ÷ 3 = 5

Recap with the learners how they can use drawings to help them calculate division sums:
12 ÷ 3 = 4



Do a few examples and let learners draw different pictures.

Ask the learners how fast they can answer the following?
Answers:

1 x 2 = 2	***5 x 4 = 20***	***4 x 2 = 8***	***10 x 2 = 20***
4 x 3 = 12	***3 x 2 = 6***	***2 x 2 = 4***	***3 x 3 = 9***
6 x 4 = 24	***4 x 3 = 12***	***5 x 3 = 15***	***9 x 4 = 36***
6 x 5 = 30	***8 x 3 = 24***	***9 x 4 = 36***	***8 x 5 = 40***
7 x 3 = 21	***8 x 5 = 40***	***2 x 5 = 10***	***7 x 5 = 35***

Ask the learners to colour the blocks where the sum gives you a remainder. ***Answer:***

12 ÷ 2 = 6	13 ÷ 3 = 4 rem 1	15 ÷ 5 = 3	18 ÷ 5 = 3 rem 3
20 ÷ 4 = 5	23 ÷ 4 = 5 rem 3	16 ÷ 3 = 5 rem 1	18 ÷ 3 = 6
25 ÷ 2 = 12 rem 1	24 ÷ 2 = 12	30 ÷ 2 = 15	29 ÷ 2 = 14 rem 1
19 ÷ 3 = 6 rem 1	17 ÷ 3 = 5 rem 2	31 ÷ 5 = 6 rem 1	30 ÷ 5 = 6
55 ÷ 5 = 11	52 ÷ 5 = 10 rem 2	57 ÷ 5 = 11 rem 2	60 ÷ 5 = 12

89 Multiplication and division: 2s, 3s, 4s and 5s up to 75 *continued*

Ask the learners how do you know that a number can be divided by:

- 3? If you add the digits of a number (e.g. 72 has the digits 7 + 2 = 9) and you can divide that new number by 3 (e.g. 9 is divisible by 3). ***Answer:***
- ***2? The last digit of the number must be an even number.***
- ***5? The last digit of the number must be a 0 or 5.***

Ask the learners to divide and test their answer. ***Answer:***

65 ÷ 3 = (60 + 5) ÷ 3 = (60 ÷ 3) + (5 ÷ 3) = 20 + 1 rem 2 = 21 rem 2	21 × 3 + 2 = (20 + 1) × 3 + 2 = (20 × 3) + (1 × 3) + 2 = 60 + 3 + 2 = 65
a. 49 ÷ 5 ***= (40 + 9) ÷ 4*** ***= (40 ÷ 4) + (9 ÷ 4)*** ***= 10 + 2 rem 1*** ***= 22 rem 1***	***22 x 4 + 1*** ***= (20 + 2) x 4 + 1*** ***= (20 x 4) + (2 x 4) + 1*** ***= 40 + 8 + 1*** ***= 49***
b. 65 ÷ 5 ***= (60 + 5) ÷ 2*** ***= (60 ÷ 2) + (5 ÷ 2)*** ***= 30 + 2 rem 1*** ***= 32 rem 1***	***32 x 2 + 1*** ***= (30 + 2) x 2 ÷ 1*** ***= (30 x 2) + (2 x 2) + 1*** ***= 60 + 4 + 1*** ***= 65***

Ask the learners to go and do some research. How do you know if a number is divisible by 4?
Answer: If the last two digits of the number is divisible by 4.
Example: 624. 24 is divisible by 4.

Reflection questions

Can the learners do the following?

- Complete number sequences
- Multiply 2s, 3s, 4s and 5s up to 75
- Divide 2s, 3s, 4s and 5s up to 75
- Divide and tests answers up to 75

Common errors

Make notes of common errors made by the learners.

90 Properties of 3-D objects

Content links: 10, 60, 124
Grade 2 links: 9, 32, 75-76, 92, 106
Grade 1 links: 31, 87-88, 116

Objectives
- Compare 3-D objects
- Recognise and name 3-D objects used in pictures
- Identify flat and curved surfaces
- Draw 3-D objects

Resources
Teacher: 3-D objects
Learner: Workbook page 50, piece of paper or little chalk board

Dictionary
Cylinder is a solid object with:
- two identical flat ends that are circular or elliptical
- one curved side.

Teach mathematics

Concrete - Representational
Have five groups of objects set out in the front of the class - group 1 all ball shaped objects, group 2 all cylinder shaped objects and group 3 all box shaped objects, group 4 pyramids, group 5 cones. Place one object in each group that is the odd one out. Ask the learners to point to the group they think is ball, cylinder or box and discuss the straight and curved faces of each group. The learners should have identified that there are incorrect objects in each group. Let a learner come to the front and select the item and put it in the correct group - ask them to explain why they have selected that group.

Concrete - Representational
Allow the learners to work in groups. Give each group a cylinder, a sphere (ball) and a cone. The groups need to go outside and see what happens when they try to roll the objects. They must be able to answer two questions:
1. Can the object roll?
2. Can the object slide?
Give the learners the clue to test all faces.

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Ask the learners to look at the pictures and compare the objects.

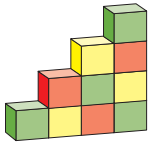
90 Properties of 3-D objects *continued*

Content links: 10, 60, 124
Grade 2 links: 9, 32, 75-76, 92, 106
Grade 1 links: 31, 87-88, 116

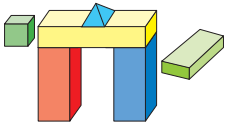
Ask the learners to look at the pictures and complete the sentences and questions. ***Answer:***

a. The ball rolls. 	b. Why doesn't the ball slide? ***Because the ball has round edges.*** 
c. The cylinder ***rolls.*** 	d. Can the cylinder also slide? ***Yes*** 

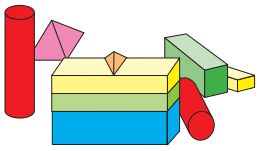
Ask the learners to name the objects used in each picture. Tell them that they only have to name each object once and then say if the object can roll or slide. ***Answer:***



box [cube] (slide)



pyramid (slide)
box [cube] (slide)
rectangular box (slide)



pyramid (slide)
rectangular box (slide)
cylinder (roll and slide)

Ask the learners to say if the 3-D objects have flat or curved surfaces.

		
Flat	***Round***	***Round and flat***

Ask the learners to draw: a box balancing on a cylinder, a ball balancing on a cylinder and a cylinder balancing on a box.
Answer: learner's own drawings

Reflection questions
Can the learners do the following?
- Compare 3-D objects
- Recognise and name 3-D objects used in pictures
- Identify flat and curved surfaces
- Draw 3-D objects

91 Fraction strip kits

Content links: 7, 31, 57-59, 92-93, 122-123, 125
Grade 2 links: 90-91, 94a-94b, 118, 121-123, 125-126
Grade 1 links: 47, 86, 123

Objectives
- Use a fraction kit to answer questions
- Colour in fractions on a fraction strip
- Draw fractions on shapes

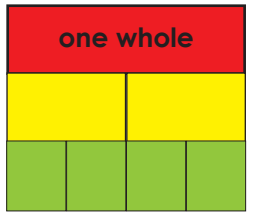
Resources
Teacher: Strips of paper in 5 different colours, a set of various shapes (rectangles, squares, triangles, circles, etc.)
Learner: Workbook page 54, Cut-outs 5 and 6, scissors, pencils or crayons, piece of paper

Dictionary
Fraction: a part of a whole

Teach mathematics

Concrete - Representational
Let the learners sit in pairs and give each of the pairs a shape to share between them – include rectangles, squares, triangles, circles, etc.
Ask the pairs to show the class how they divided their shape. Remember to recap that the parts should be equal – if the shapes have not been divided equally discuss with the class how we could make the fraction of the shape correctly.

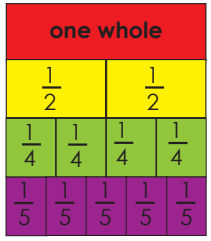
Concrete - Representational
Work as a class to start making the fraction kit. Remember to recap with the learners that the strip needs to be the same size and that when we divide the strip into part these parts must be equal in size – or they will not be true representations of the fractions we want to represent.

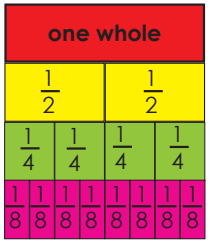


54

Ask the learners to make the kit. On one strip write the words: "One Whole". Take another strip and carefully fold it in half. Then open it up. How many equal parts do you have?

Write $\frac{1}{2}$ on each half and cut along the folds.
Take a third strip and fold it in half, then fold it in half again. Open it.
How many equal parts do you have? Write $\frac{1}{4}$ on each fourth, and then cut along the folds. Now try and make two more strips, one showing fifths and the other eighths. ***Answer:***





91 Fraction strip kits *continued*

Content links: 7, 31, 57-59, 92-93, 122-123, 125
Grade 2 links: 90-91, 94a-94b, 118, 121-123, 125-126
Grade 1 links: 47, 86, 123

Ask the learners to use the fraction kit pieces to help them answer these questions. How many fifths equal one whole?
Answer: five fifths

How many eighths equal one half?
Answer: Four eighths makes one-half.

Ask the learners to read and complete. ***Answer:***

This strip shows one whole. One Whole	This circle shows one whole. One Whole
Divide the strip into thirds. Colour one third.	Divide the circle into thirds. Colour one third.

Ask the learners to colour the following. ***Answer:***

One half	Three quarters	Two thirds
Four fifths	One half	Five Eighths

Ask the learners to draw the following. ***Answer:***

Three quarters using a square	One half using a circle	Two thirds using a triangle
Four fifths using a circle	Four eighths using a square	Two thirds using a rectangle

Tell the learners that we are going to prepare a fraction circle kit using Cut-out 6.
Answer: check the learner's work

Reflection questions

Can the learners do the following?

- Use fraction kit to answer questions
- Colour in fractions
- Draw fractions

Common errors

Make notes of common errors made by the learners.

92 More fractions

Content links: 7, 31, 57-59, 91, 93, 122-123, 125
Grade 2 links: 90-91, 94a-94b, 118, 121-123, 125-126
Grade 1 links: 47, 86, 123

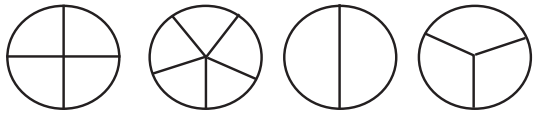
Objectives
- Answer questions about fractions
- Divide a shape into fractions

Resources
Teacher: Strips of paper in 5 different colours, a set of various shapes (rectangles, squares, triangles, circles, etc.)
Learner: Workbook page 56, Cut-out 6, scissors, pencils or crayons, piece of paper

Dictionary
Fraction: a part of a whole

Teach mathematics

Concrete - Representational
Recap with the learners the following fractions with learners: halves, thirds, quarters, and fifths. Have four shapes in front of the class and ask the learners how they would divide the shapes into the above fractions.



Concrete - Representational
As a class complete a similar activity to question 2 – ask the learners to share a circle between the four children. Remember to encourage learners to explain why they gave the answers. Compare the fractions of the circle to the fractions in the fraction circles in Cut-out 6.

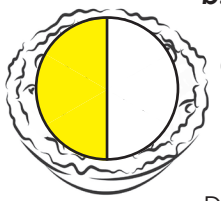
56

Ask the learners to write Yes or No.
Answers:
- A half is half of one whole? ***Yes***
- A half of a half is one quarter? ***Yes***
- A quarter is half of a half? ***Yes***
- A half and two quarters make a whole? ***Yes***
- A half and a quarter make three quarters? ***Yes***

Tell the learners we are going to share a pie. Sipho, Gugu, Andile and Lisa share one pie.
Answer:

a. I am hungry! I want half!

Sipho



Draw Sipho's share.

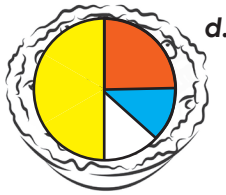
b. Okay! I'll have a quarter.

Gugu

Draw Sipho and Gugu's shares.

c. I will have half of what is left.

Andile



Draw Sipho, Gugu and Andile's share.

d. How much of the pie is left for me?

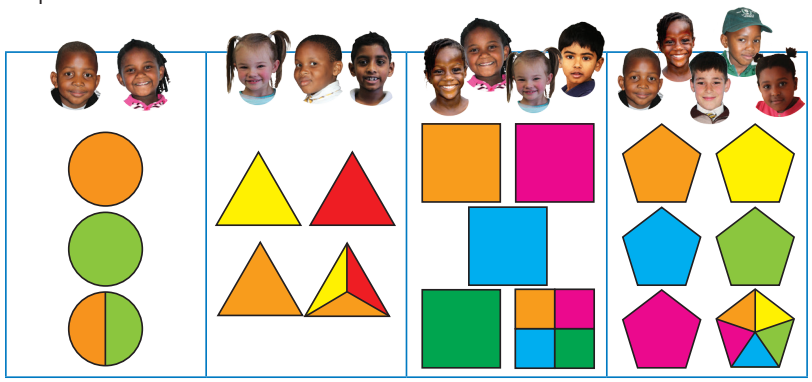
Lisa

Draw all their shares of the pie.

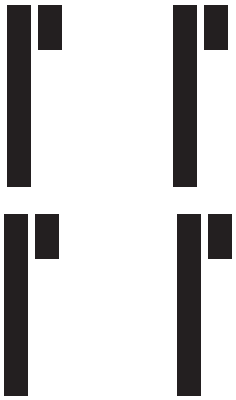
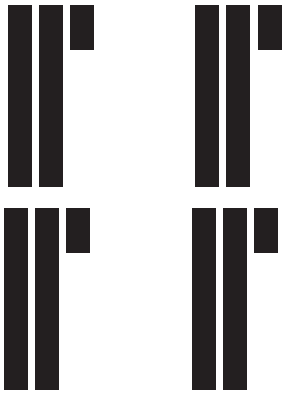
92 More fractions *continued*

Content links: 7, 31, 57-59, 91, 93, 122-123, 125
Grade 2 links: 90-91, 94a-94b, 118, 121-123, 125-126
Grade 1 links: 47, 86, 123

Share the shapes amongst the children. Use a different colour or pattern for each child. **Answers:**



Four friends share 5 liquorice sticks equally. How much will each one get? ***Answer: 1 and a quarter*** What is the question? ***Answer: How much will each one get by dividing the sticks equally?*** What are the numbers? ***Answer: Four friends and 5 liquorice sticks***	Six friends share 9 liquorice sticks equally. How much will each one get? ***Answer: 2 and a quarter*** What is the question? ***Answer: How much will each one get?*** What are the numbers? ***Answer: Four friends and 9 liquorice sticks***

Draw a picture	***Draw a picture***
	

Reflection questions
Can the learners do the following?
- Answer questions about fractions
- Divide a shape into fractions

Common errors
Make notes of common errors made by the learners.

93 Sharing leading to fractions

Content links: 7, 31, 57-59, 91-92, 122-123, 125
Grade 2 links: 90-91, 94a-94b, 118, 121-123, 125-126
Grade 1 links: 29-30, 114

Objectives
- Make drawings and answer questions about fractions
- Divide sets of objects into fractions
- Complete fraction story sums

Resources
Teacher: Counters
Learner: Workbook page 58, piece of paper

Dictionary
Fraction: a part of a whole

Teach mathematics

Concrete - Representational
Give each learner at least twenty counters. Ask the learners to share the counters between two. Ask the learners:
"What fraction does each group represent?
How many counters are in one group?"
Let the learners practice a few of these examples
Let the learners also practice sharing between 3 friends as well as between 4 friends.

Concrete - Representational
Ask the learners to draw on the sheet of paper how they would share 15 counters between three children. Ask them:
- How can we show the 3 groups?
- How many counters did each child get?
- What fraction of the counters did the children get?

58

Ask the learners to make a drawing of the following and answer the questions.

Nine balls divided between three friends.

- How many balls will each girl get? ***Answer: 3 balls***
- What is the fraction each girl will get?
Answer: one third $\frac{1}{3}$

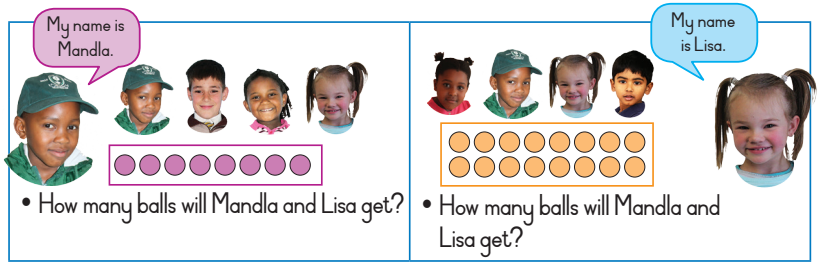
Twelve balls divided between four friends. Three of the friends are boys.

- How many balls will each boy get? ***Answer: 3 balls***
- What is the fraction each boy will get? $\frac{1}{4}$
Answer: one quarter

93 Sharing leading to fractions *continued*

Content links: 7, 31, 57-59, 91-92, 122-123, 125
Grade 2 links: 90-91, 94a-94b, 118, 121-123, 125-126
Grade 1 links: 29-30, 114

Ask the learners what fraction will Mandla get? What fraction will Lisa get?



Answer: 4 balls ***8 balls***

Tell the learners that some friends share some sweets. They each get $\frac{1}{2}$ (half) of a packet.

a) How many packets do they need to share between:
4 friends? ***2 packets***
6 friends? ***3 packets***
9 friends? ***4 $\frac{1}{2}$ packets***

b) How many friends can share:
4 packets? ***8 friends***
10 packets? ***20 friends***
3 $\frac{1}{2}$ packets? ***7 friends***

Tell the learners that the mothers and grannies make dancing skirts. For 1 skirt they need 2 $\frac{1}{2}$ metres (m) of fabric. The fabric costs R6 a metre.

a) How many skirts can they make from?
5 m ***Answer: 2 skirts***
10 m ***Answer: 4 skirts***
20 m ***Answer: 8 skirts***
25 m ***Answer: 10 skirts***

b) How much fabric do they need to make?
2 skirts ***Answer: 5 m***
3 skirts ***Answer: 7 m***
4 skirts ***Answer: 10 m***

c) How much does the fabric cost to make?
1 skirt ***Answer: R15***
2 skirts ***Answer: R30***
3 skirts ***Answer: R45***

d. How many skirts can they make for:
R450 ***Answer: 30***
R825 ***Answer: 55***
R180 ***Answer: 12***

Reflection questions
Can the learners do the following?
- Make drawings and answer questions
- Divide sets of objects into fractions
- Complete fraction story sums

94 The distance around

Content links: 13, 40, 97
Grade 2 links: 10, 40, 119
Grade 1 links: 12a-12b, 74, 96

Objectives
- Find the perimeter around a two-dimensional shape
- Answer questions about perimeter
- Plan own garden
- Measure circles in pairs

Resources
Teacher: A set of rectangular shapes, string
Learner: Workbook page 60, Cut-out 7, scissors, piece of paper

Dictionary
Perimeter: the distance around a two-dimensional shape

Teach mathematics

60

Concrete - Representational
Cut out rectangles and give one rectangle to each group. Ask the learners how they would be able to work out the distance around the shape. Explain to the learners that we add the sides measurements together to work out the perimeter.

Draw the rectangle on the board and label the sides - Let the pairs work to calculate the perimeter. Do a few examples like this

Concrete - Representational
As a class discuss how we can measure the perimeter (distance around an object) of a circle. We can use a piece of string. Draw a circle on the board and demonstrate to the learners how one learner can hold the string and the other learners place the string around the circle until it meets at the starting point. That is the circumference of the circle. Now show the learners the diameter of the circle (measuring the diameter of the circle is an extra activity).
You can also use a flat plate as the circle to measure.

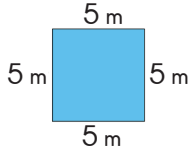
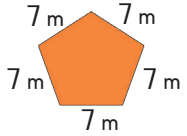
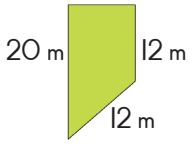
Circumference

Diameter

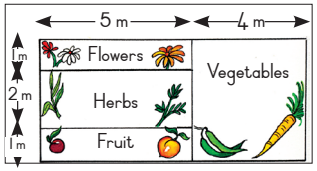
94 The distance around *continued*

Content links: 13, 40, 97
Grade 2 links: 10, 40, 119
Grade 1 links: 12a-12b, 74, 96

Ask the learners to find these perimeters.

		
5 m + 5 m + 5 m + 5 m = 20 m	***7 m + 7 m + 7 m + 7 m + 7 m = 35 m***	***10 m + 20 m + 12 m + 12 m = 54 m***

Tell the learners that Veronica draws a diagram of the garden she wants to plant.



a) What is the perimeter of the area where she plants her herbs?
Answer: 2 m + 5 m + 2 m + 5 m = 14 m
b. Which two sections have the same perimeter? What is their perimeter?
Answer: Flowers and fruit both have a perimeter of 12 m.
c) She needs a fence around the whole garden. The fencing costs R50 per meter. How much will the fence cost?
Answer: 4 m + 9 m + 4 m + 9 m = 26 m. So 26 x R50 = R1 300 for the fence

Ask the learners to plan their own garden and draw it on the grid paper from Cut-out 7. They must show the measurements and the crops or flowers they will plant in it.
Answer: Learners' own diagrams.

Tell the learners that they should work with a partner.
Materials: 10 circular objects of different sizes like a plate, a glass, sticky tape roll, a bottle cap, string and scissors.

1. Choose one of the round objects to measure with the string.
2. Cut a piece of string the exact length that just reaches around the object.
3. Now take the same string and stretch it across the circle. Count how many times it reaches across.
4. Do the same with other circular objects.
5. Write what you notice.

Answer: They may notice that the length of string that fitted exactly around the perimeter fitted a little bit more than three times across the diameter (3,14 to be exact!).

Reflection questions

Can the learners do the following?

- Find the perimeter around a two-dimensional shape
- Answer questions about perimeter
- Plan own garden
- Measure circles in pairs

95a Trading money

Content links: 8, 26, 56, 107
Grade 2 links: 6, 25-26, 78-79, 108-109
Grade 1 links: 60a-62, 75-76, 107-108

Objectives
- Add up to R100
- Subtract from R100 to R0
- Addition and subtraction to R1 000
- Add up to R1
- Subtract cents

Resources
Teacher: Dice
Learner: Workbook page 62, Money Board from Cut-out 8, Paper money from Cut-out 9, scissors

Dictionary
Money: A current medium of exchange in the form of coins and banknotes; coins and banknotes collectively.

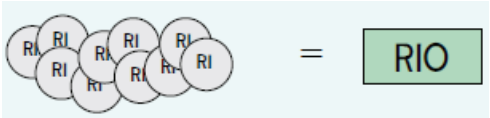
Teach mathematics

62

Concrete - Representational
Get the learners to cut out the paper money from Cut-out 9 and then count the R1 coins and the R10 notes. Ask them how much money they have? Ask the learners to count the R10 notes and ask how much money they have? Show the learners ten R1 coins and ask how much money is in your hand. Ask if they had a choice would they rather have a R10 note or ten R1 coins. Ask for reasons for both options. Now ask the learners if they had R50 and went to the shops and bought a pie and cold drink for R15 - would they prefer to get thirty five coins or banks notes with a few coins?

Concrete - Representational
Ask the learner: How many cents in R1.
How can we make R1 using coins?
Write 10 sums on the board and have the learners copy the sums onto the piece of paper to try to work out the answers.

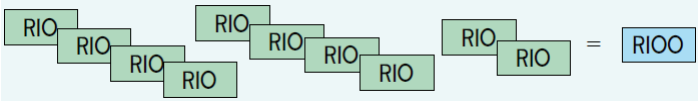
Tell the learners that we are going to add up to 100 Rand.
1. Each player takes a turn to roll a dice. Add the two numbers together.
2. Take that number of R1 coins and place them in the R1 section of your board.
3. As soon as you have ten R1 coins you must trade them for an R10 note.



95a Trading money *continued*

Content links: 8, 26, 56, 107
Grade 2 links: 6, 25-26, 78-79, 108-109
Grade 1 links: 60a-62, 75-76, 107-108

4. The one who is first to collect ten R10 notes and trade them for an R100 note is the winner.



5. Penalties: If a player finishes the turn and forgets to trade ten R1 coins for one R10 note, and the other player catches the mistake, the penalty is R1.
If a player forgets to trade ten R10 notes for one R100 note, he or she must pay R10 to the other player.

Tell the learners that we are going subtract from R100 to R0. Play the same game, except start with ten R10 notes, and subtract the sum of the numbers on the dice. The player who gets to R0 first is the winner.

Tell the learners that we are going to do addition and subtraction to R1 000.

Add the sum of the dice on each turn, and take that number of R10 notes. The first one to reach R1 000 is the winner. Or, start with R1 000, and on each turn subtract.

The first player to reach R0 wins.

Tell the learners that we are adding up to R1.

R100s	R10s	R1s	10c	1c

Tell the learners that we are going to subtract cents. Start with R1, and subtract on each play. The first to get to 0 cents is the winner.

Reflection questions

Can the learners do the following?

- Add up to R100
- Subtract from R100 to R0
- Addition and subtraction to R1 000
- Add cents up to R1
- Subtract cents

Common errors

Make notes of common errors made by the learners.

95b Let's go shopping!

Content links: 8, 26, 56, 107
Grade 2 links: 6, 25-26, 78-79, 108-109
Grade 1 links: 60a-62, 75-76, 107-108

Objectives
- Add up to R600
- Repeat addition up to 840

Resources
Teacher: 5 objects
Learner: Workbook page 64, Paper money from Cut-out 9, scissors, pencil, piece of paper

Dictionary
Money: a current medium of exchange in the form of coins and banknotes; coins and banknotes collectively

Teach mathematics

Concrete-Representational
Draw a table on the board and in the first column write the name of the object and the price. Your objects prices can be R1, R2, R5, R10 and R20. The learners work in groups and each group needs at least 6 of each coin and note.

As a class work out how much 5 pens will cost. Show the learners how you would write it in the table. Do a few of each example with the learners.

Pen R1	R1 + R1 + R1 + R1 + R1 = R5
Toy car R2	
Teddy bear R5	
Hat R10	
Soccer ball R20	

Representational
This time give the learners a total amount and they must work out how many of the object can be bought.
Example: You have R26 - How many Teddy bears can you buy?
R5 + R5 = R10 (Two teddy bears)
R5 + R5 + R5 + R5 = R20 (Four teddy bears)
R5 + R5 + R5 + R5 + R5 = R25 (Five teddy bears)

Tell the learners that the shop sells hats for 5 different prices.
a. Find the value of the hats in each row.
Answer:
a. R120
b. R150
c. R300
d. R450
e. R600

b. Mazondo buys 1 of each kind of hat. How much does she pay altogether?
Answer: R270

c. Buti spends R450 altogether. He buys 1 hat for R100. What other hats does he buy? Show 2 possible answers.
Answer: Many answers are possible, e.g. R100, R100, R100, R75, R50, R25 or R100, R100, R100, R100, R50

95b Let's go shopping! *continued*

Content links: 8, 26, 56, 107
Grade 2 links: 6, 25-26, 78-79, 108-109
Grade 1 links: 60a-62, 75-76, 107-108

Tell the learners that Musa uses this recipe to make a sponge cake.

a) Work out how much Musa needs to bake up to 6 cakes.

Answer:

Cake	Flour	Eggs	Sugar	Cream
1	40 g	3	50 g	140 ml
2	***80 g***	***6***	***100 g***	280 ml
3	***120 g***	***9***	***150 g***	420 ml
4	***160 g***	***12***	***200 g***	560 ml
5	***200 g***	***15***	***250 g***	700 ml
6	***240 g***	***18***	***300 g***	840 ml

b) How many cakes can Musa make from this packet?

Answer:

c) Tick (✔) the correct answer.

1 litre of cream can fill about: 10 cakes; 7 cakes; 8 cakes

Answer: 7 cakes ✔

Ask the learners the following quick sums.

Answer:

10 x 7 = ***70***	10 x 70 = ***700***	5 x 7 = ***35***	5 x 70 = ***350***	70 x 2 = ***140***
12 x 4 = ***48***	12 x 8 = ***96***	6 x 16 = ***96***	5 x 9 = ***45***	50 x 9 = ***450***
15 x 3 = ***45***	15 x 6 = ***90***	10 x 4 = ***40***	8 x 4 = ***32***	18 x 4 = ***72***

Reflection questions

Can the learners do the following?

- Add up to R600
- Complete repeated addition sums up to 840

Common errors

Make notes of common errors made by the learners.

96 More about data

Content links: 16, 22, 36
Grade 2 links: 15-16, 64, 71, 93, 96, 107
Grade 1 links: 44, 78-79, 124-125

Objectives
- Answer questions using table
- Read and interpret graphs

Resources
Teacher: A table of information, a pictograph
Learner: Workbook page 66

Dictionary
Data: a collection or set of pieces of information, such as counts, values or measurements

Concrete-Representational
The teacher can draw a table on the board that displays such as:

Names	Red	Blue	Yellow
Steve	✔		
Sam		✔	
Mpho			✔
Sibu	✔		
Rajesh		✔	

Ask the learners: Who likes Red? Who likes Blue? Who likes Yellow? What is the least favourite colour? Tell the learners that there are 40 children in the class. Ask the learners if they think that you can draw a graph from the table showing the class's favourite colours. (No, because only 5 children were asked and not all 40)

66

At the police station.
Tell the learners that five policemen do different jobs. Where are they now?

Names	At the desk	On patrol	In court
Serufe			✘
Maria	✘		
Sam	✘		
Amos		✘	
Dudu			✘

Ask the learners to write the names of who is:
At the desk? ***Answer: Maria and Sam***
On patrol? ***Answer: Amos***
In court? ***Answer: Serufe and Dudu***

Tell learners that five schools compete to see who can plant the most trees on Arbor Day. Ask the learners how many trees does each school plant? ***Answer:***

Klipspruit	Mthonjeni	Sonskyn	Thuthong	Mosiba
80	60	90	40	70

How many trees do the schools plant altogether?
Answer: 340 trees

96 More about data *continued*

Content links: 16, 22, 36
Grade 2 links: 15-16, 64, 71, 93, 96, 107
Grade 1 links: 44, 78-79, 124-125

Ask the learners what kind of roof?
The Grade 3 class do a survey in their village.
They want to find out about the kinds of roofs on different houses. They show their results in this block graph.
They draw 1 tick (✔) for each house of they see.

Tiles	✓	✓	✓	✓	✓	✓					
Thatch	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Wood	✓	✓	✓	✓	✓	✓	✓	✓			
Iron	✓	✓	✓	✓	✓	✓	✓	✓	✓		

How many of each kind of roof do they see?
Tiles ***Answer: 6***
Thatch ***Answer: 11***
Wood ***Answer: 8***
Iron ***Answer: 9***
Which is the most popular kind of roof? ***Answer: Thatch***
How many roofs do they count altogether? ***Answer: 34***

Tell the learners that the boys at Juma school wear school caps. The caps come in sizes 2, 3 and 4.

Count how many learners wear each size of cap.
2 ***Answer: 25***
3 ***Answer: 19***
4 ***Answer: 15***
Which is the most common size? ***Answer: 2***

Reflection questions
Can the learners do the following?
- Answer questions using table
- Read and interpret graphs

Common errors
Make notes of common errors made by the learners.

97 Working in centimetres

Content links: 13, 40, 94
Grade 2 links: 10, 40, 119
Grade 1 links: 12a-12b, 74, 96

Objectives
- Estimate, measure and record lengths in centimetres using a ruler

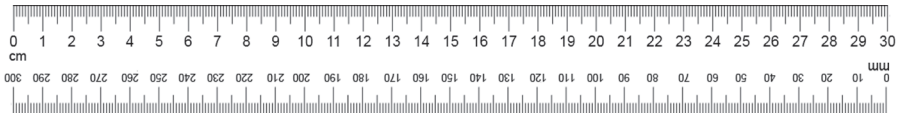
Resources
Teacher: Large ruler, sheets with lines to measure
Learner: Learner workbook page 68, ruler

Dictionary
Distance: the amount of space between two points or places

Teach mathematics

68

Concrete - Representational
Revise with the learners how to use a ruler and encourage them to practice by given them a page with lines on, to measure small distances.



Complete the first line as an example.

Do not forget to remind the learners how important 0 is and where the 0 should be placed on the line.

The next part of the activity is to add centimetres together. An important fact to include is that we add the same units together and indicate the unit of measurement at the end (in this case centimetres abbreviated as cm).

Then tell them that for measuring large distances we measure in kilometres.

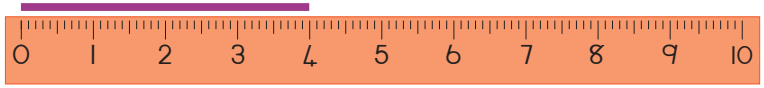
Do this example as a class:

87 km + 128 km + 373 km = ☐

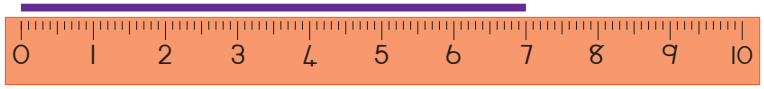
97 Working in centimetres *continued*

Content links: 13, 40, 94
Grade 2 links: 10, 40, 119
Grade 1 links: 12a-12b, 74, 96

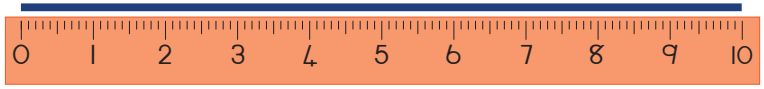
Tell the learners they are to work in centimetres. Ask them how long is the coloured line? ***Answer:***



4 cm



7 cm



10 cm

Ask the learners to first estimate and then measure the lines. Complete the table. ***Answer: Estimates will vary***

Line	Estimation	Measurement	Difference between estimation and measurement
	5 cm	***3 cm***	***2 cm***
	7 cm	***5 cm***	***2 cm***
	2 cm	***2 cm***	***0 cm***
	3 cm	***3 cm***	***0 cm***

Use a ruler to draw the following lines.
Answer: Learners draw own lines. Discuss their answers with them and let them explain to each other in pairs how they did the measurements. This will help them to see if they can use these methods to measure distances.

Say if you will measure the following in metres or centimetres.
Answer: Learners own distances measured in
a. cm
b. m
c. cm
d. cm
e. cm

During the year you used your ten colouring pencils. The length of your pencils were 15cm before you used them.
Answer:
a. blue
b. white
c. 5 cm, 6 cm, 7 cm, 8 cm, 9 cm, 11 cm, 12 cm, 13 cm, 14 cm, 15 cm

Reflection questions
Can the learners do the following?
- Estimate, measure and record lengths in centimetres using a ruler

98 Numbers 700 to 800

Content links: 3a-3b, 23, 33, 41, 43, 45, 65-67, 69-71, 99-101, 103-104
Grade 2 links: 4, 18, 35, 65-66, 69-70, 97-98, 100
Grade 1 links: None

Objectives
- Count from 700 to 800
- Fill in missing numbers up to 800
- Complete number lines up to 800
- Write number symbols and number names up to 800
- Describe, compare and order numbers up to 800

Resources
Teacher: 701-800 number board, prepared 701 to 800 number boards with missing numbers (see second board illustration below), counters
Learner: Learner workbook page 70, piece of paper

Dictionary
Counting: to name or list (the units of a group or collection) one by one in order to determine a total; number.

Teach mathematics

Concrete - Representational
As a class work out which numbers are being covered by the counters. Ask the learners to work in groups. They cover random groups of numbers and then work out which numbers are covered. Take off the counters and count in 2s starting from 701. Then count in 5s.

701	702	703	704	705	706	707	708	709	
711	712	713		715	716	717	718	719	720
721	722	723	724	725	726	727	728	729	730
731		733	734	735	736	737	738	739	740
741	742	743	744	745	746	747	748	749	750
751	752	753	754	755	756		758	759	760
761	762	763	764	765	766	767	768	769	770
771	772	773	774	775	776	777	778	779	780
781		783	784	785	786	787	788	789	
791	792	793	794	795	796	797	798	799	800

Concrete - Representational
In pairs the learners complete the missing numbers on the prepared number boards. They can count in 2s and 5s to help them.

701		703		705		707		709	
711		713		715		717		719	
721		723		725		727		729	
731		733		735		737		739	
741		743		745		747		749	
751		753				757		759	
761		763	764			767		769	
771		773	774			777		779	
781		783	784			787		789	
791		793	794			797		799	

a. Ask the learners to use the number board on page 70 to do the activity of counting out aloud the numbers from 700 to 800. ***Answer:***

701	702	703	704	705	706	707	708	709	710
711	712	713	714	715	716	717	718	719	720
721	722	723	724	725	726	727	728	729	730
731	732	733	734	735	736	737	738	739	740
741	742	743	744	745	746	747	748	749	750
751	752	753	754	755	756	757	758	759	760
761	762	763	764	765	766	767	768	769	770
771	772	773	774	775	776	777	778	779	780
781	782	783	784	785	786	787	788	789	790
791	792	793	794	795	796	797	798	799	800

b. Ask the learners to write the missing numbers in the grid above.
Answer: See missing numbers above.

98 Numbers 700 to 800 *continued*

Content links: 3a-3b, 23, 33, 41, 43, 45, 65-67, 69-71, 99-101, 103-104
Grade 2 links: 4, 18, 35, 65-66, 69-70, 97-98, 100
Grade 1 links: None

c. Ask the learners to write the 10 numbers that come after 750.
Answer: 751; 752; 753; 754; 755; 756; 757; 758; 759; 760
d.Ask the learners to write the next 8 numbers in the 2s pattern
Answer: 768; 770; 772; 774; 776; 778; 780, 782
e. Ask the learners to write all the numbers in 2s pattern from 751 to 773
Answer: 751; 753; 755; 757; 759; 761; 763; 765; 767; 769; 771, 773.
f. Ask the learners to write the next 8 numbers in the 5s pattern
Answer: 766; 771; 776; 781; 786; 791; 796; 801

Ask the learners how many blocks do they count?
Answer: 770

Ask the learners how did they count the blocks.
Answer: They can say: Seven 100s = 700, six 10s = 60 and ten 1s = 10. So 700 + 60 + 10 = 770
Or they can say: 100 x 7 = 700, 10 x 6 = 60 and 10 x 1 = 10
So 700 + 60 + 10 = 770

Ask the learners to complete the three number lines. ***Answer:***

750	***751***	***752***	753	***754***	***755***	***756***	757	***758***	759	***760***
796	***795***	***794***	***793***	***792***	***791***	***790***	789	788	787	***786***
738	***741***	***744***	***747***	***750***	753	756	759	***762***	***765***	***768***

Ask the learners to complete the table.
Answer:

776, 772, 779, 770, 778	***779, 778, 776, 772, 770***	***779, 778, 776, 772, 770***
736, 703, 730, 713, 703	***703, 703, 713, 730, 736***	***736, 730, 713, 703, 703***

Ask the learners to write the following in words.
Answer:

788	***Seven hundred and eighty-eight***

Reflection questions

Can the learners do the following?

- Count from 700 to 800
- Fill in missing numbers up to 800
- Complete number lines up to 800
- Write number symbols and number names up to 800
- Describe, compare and order numbers up to 800

Common errors

Make notes of common errors made by the learners.

99 More numbers 700 to 800

Content links: 3a-3b, 23, 33, 41, 43, 45, 65-67, 69-71, 98, 100-101, 103-104
Grade 2 links: 4, 18, 35, 65-66, 69-70, 97-98, 100
Grade 1 links: None

Objectives
- Count from 700 to 800
- Fill in missing numbers up to 800
- Complete number lines up to 800
- Write number names up to 800
- Describe, compare and order numbers to 800
- Recognise the place value of numbers to 800

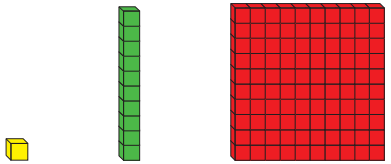
Resources
Teacher: Base ten blocks, place value cards
Learner: Learner workbook page 72, piece of paper

Dictionary
Counting: to name or list (the units of a group or collection) one by one in order to determine a total; number.
Place Value: the value of where the digit is in the number, such as units, tens, hundreds, etc.

Teach mathematics

72

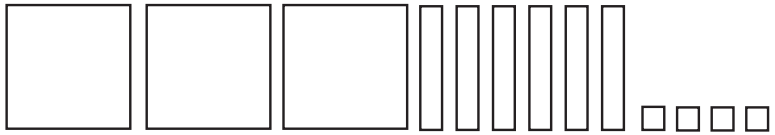
Concrete and Representational
Recap with the learners what each of the following represents:



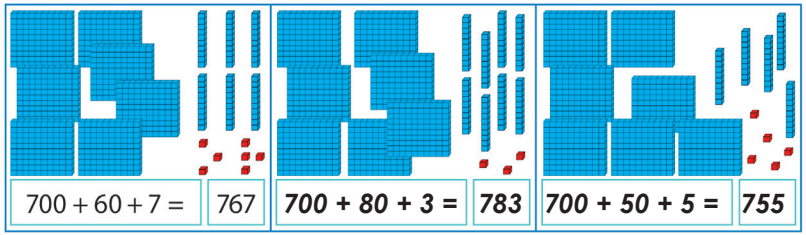
Draw a simpler version of the base ten blocks on the board and the learners must set out the place value cards for the number drawn on the board. - Your numbers should be between 700 and 800.

Concrete and Representational
On the board write 5 numbers. The learners must draw pictures of base ten blocks on a piece of paper. You can do this as an easier example with the learners.

364



Ask the learners to write a number sentence and then the answer. ***Answer:***



99 More numbers 700 to 800 *continued*

Content links: 3a-3b, 23, 33, 41, 43, 45, 65-67, 69-71, 98, 100-101, 103-104
Grade 2 links: 4, 18, 35, 65-66, 69-70, 97-98, 100
Grade 1 links: None

Ask the learners to write a number sentence and then the answer. ***Answer:***

7 0 0 + 9 0 + 9	5 0 0 + 5 0	6 0 + 5
700 + 90 + 9	***500 + 50***	***60 + 5***
= ***799***	***= 550***	***= 65***

Ask the learners to complete the number line.
Answer:

Ask the learners to give you all the numbers smaller than 795.
Answer: 794, 793, 792, 791, 790, 789

Ask the learners to give you all the numbers bigger than 795.
Answer: 796, 797, 798, 799

Ask the learners to fill in <, > or =.
Answer: a. 799 > 766 b. 745 < 750 c. 700 + 90 + 7 > 767

Ask the learners to break up their number. Ask them to build each number with their cards. Ask them to write the value for each digit.
Answer:

790	7 0 0	9 0	790 700 + 90
689	6 0 0	8 0 9	689 600 + 80 + 9
699	6 0 0	9 0 9	699 600 + 90 + 9
755	7 0 0	5 0 5	755 700 + 50 + 5
690	6 0 0	9 0	690 700 + 90

Ask the learners to write the number names of each.
Answer:

668	***Six hundred and sixty-eight***
757	***Seven hundred and fifty-seven***
799	***Seven hundred and ninety-nine***
742	***Seven hundred and forty-two***
691	***Six hundred and ninety-one***

Reflection questions

Can the learners do the following?

- Count from 700 to 800
- Fill in missing numbers up to 1 000
- Complete number lines up to 1 000
- Write number names up to 1 000
- Describe, compare and order numbers to 800
- Recognise the place value of numbers to 800

100 Numbers 800 to 900

Content links: 3a-3b, 23, 33, 41, 43, 45, 65-67, 69-71, 98-99, 101, 103-104
Grade 2 links: 4, 18, 35, 65-66, 69-70, 97-98, 100
Grade 1 links: None

Objectives
- Count from 800 to 900
- Fill in missing numbers up to 900
- Complete number lines up to 900
- Write number symbols and number names up to 900
- Describe, compare and order numbers up to 900

Resources
Teacher: Counters, 801 - 900 number board, sheets with number board 801 - 900 with missing numbers (see second number board illustration below)
Learner: Learner workbook page 75, piece of paper

Dictionary
Counting: to name or list (the units of a group or collection) one by one in order to determine a total; number.
Place Value: the value of where the digit is in the number, such as units, tens, hundreds, etc.

Teach mathematics

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Concrete and Representational

801	802	803	804	805	806	807	808	809	810
811	812	813	814	815	816	817	818	819	820
821	822	823	824	825	826	827	828	829	830
831	832	833	834	835	836	837	838	839	840
841	842	843	844	845	846	847	848	849	850
851	852	853	854	855	856	857	858	859	860
861	862	863	864	865	866	867	868	869	870
871	872	873	874	875	876	877	878	879	880
881	882	883	884	885	886	887	888	889	890
891	892	893	894	895	896	897	898	899	900

As a class work out which numbers are covered by the counters. In groups the learners can cover any numbers. They cover random groups of numbers and then work out which numbers are covered. Count from 800 to 900 in 5s and then 2s as a class. Remember to include counting from any number - example count in 2s from 811 to 825

Let the learners work in pairs to complete the missing numbers on this number board. They can count in 2s and 5s to help them.

801		803	804		806	807		809	
811		813	814		816	817		819	
821		823	824		826	827		829	
831		833	834		836	837		839	
841		843	844			847		849	
851		853				857		859	
861		863				867	868	869	
871	872	873		875		877	878	879	
881	882	883		885		887	888	889	
891	892	893		895		897	898	899	

a. Ask the learners to use the number board to do the activity.
Answer:

801	802	803	804	805	806	807	808	809	810
811	812	813	814	815	816	817	818	819	820
821	822	823	824	825	826	827	828	829	830
831	832	833	834	835	836	837	838	839	840
841	842	843	844	845	846	847	848	849	850
851	852	853	854	855	856	857	858	859	860
861	862	863	864	865	866	867	868	869	870
871	872	873	874	875	876	877	878	879	880
881	882	883	884	885	886	887	888	889	890
891	892	893	894	895	896	897	898	899	900

Ask the learners to write the missing numbers in the grid above.
b. Answer: See missing numbers above.
c. Ask the learners to write the 10 numbers that come after 800.
Answer: 801; 802; 803; 804; 805; 806; 807; 808; 809; 810

100 Numbers 800 to 900 *continued*

Content links: 3a-3b, 23, 33, 41, 43, 45, 65-67, 69-71, 98-99, 101, 103-104
Grade 2 links: 4, 18, 35, 65-66, 69-70, 97-98, 100
Grade 1 links: None

d. Ask the learners to write the next 8 numbers in the 2s pattern.
Answer: 852; 854; 856; 858; 860; 862; 864; 866; 868; 870; 872
e. Ask the learners to write all the numbers in 2s pattern from 807 to 829.
Answer: 807; 809; 811; 813; 815; 817; 819; 821; 823; 825; 827; 829
f. Ask the learners to write the next 8 numbers in the 5s pattern
Answer: 834; 839; 844; 849; 854; 859; 864; 869; 874; 879; 884

Ask the learners how many blocks do they count?
Answer: 864

Ask the learners how did they count the blocks
Answer: They can say: 100 x 8 = 800, 10 x 5 = 50 and 1 x 14 = 14
So 800 + 50 + 10 + 4 = 864

Ask the learners to complete the number lines.
Answer:

830	***831***	***832***	833	***834***	***835***	***836***	837	838	***839***	***840***
841	***846***	***851***	***856***	***861***	***866***	***871***	876	881	886	***891***
828	***831***	***834***	***837***	***840***	843	846	849	***852***	***855***	***858***

Ask the learners to complete the table.
Answer:

856, 853, 855, 851, 857	***851, 853, 855, 856, 857***	***857, 856, 855, 853, 851***
898, 801, 810, 819, 891	***801, 810, 819, 891, 898***	***898, 891, 819, 810, 801***

Ask the learners to write the following in words.
Answer:

845	***Eight hundred and forty-five***

Reflection questions

Can the learners do the following?

- Count from 800 to 900
- Fill in missing numbers up to 900
- Complete number lines up to 900
- Write number symbols and number names up to 900
- Describe, compare and order numbers up to 900

Common errors

Make notes of common errors made by the learners.

101 More numbers 800 to 900

Content links: 3a-3b, 23, 33, 41, 43, 45, 65-67, 69-71, 98-100, 103-104
Grade 2 links: 4, 18, 35, 65-66, 69-70, 97-98, 100
Grade 1 links: None

Objectives
- Describe, compare and order numbers to 900
- Recognise the place value of numbers to 900
- Write number names to 900

Resources
Teacher: 801-900 number board, blank number boards, counters, place-value cards
Learner: Learner workbook page 76

Dictionary
Counting: to name or list (the units of a group or collection) one by one in order to determine a total; number
Place Value: the value of where the digit is in the number, such as units, tens, hundreds, etc.

Teach mathematics

Concrete and Representational
The learners work in pairs. Let one learner cover five numbers on the number board using counters. His or her partner must then set out the covered numbers (one at a time) using place value cards.

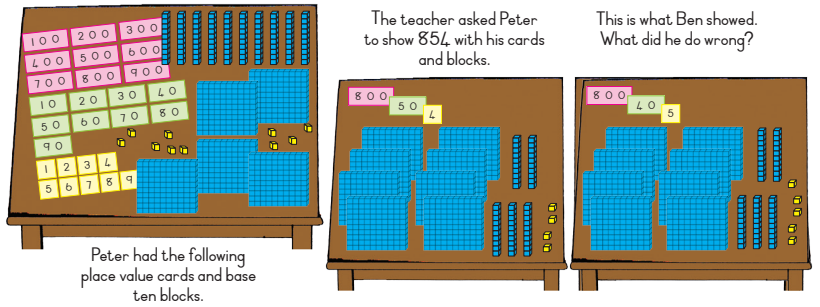
801	802	803	804	805	806	807	808	809	810
811	812	813	814	815	816	817	818	819	820
821	822	823	824	825	826	827	828	829	830
831	832	833	834	835	836	837	838	839	840
841	842	843	844	845	846	847	848	849	850
851	852	853	854	855	856	857	858	859	860
861	862	863	864	865	866	867	868	869	870
871	872	873	874	875	876	877	878	879	880
881	882	883	884	885	886	887	888	889	890
891	892	893	894	895	896	897	898	899	900

Example: 800 60 5

Then the learners work independently to write the numbers from 801 - 900 onto a blank number board.

76

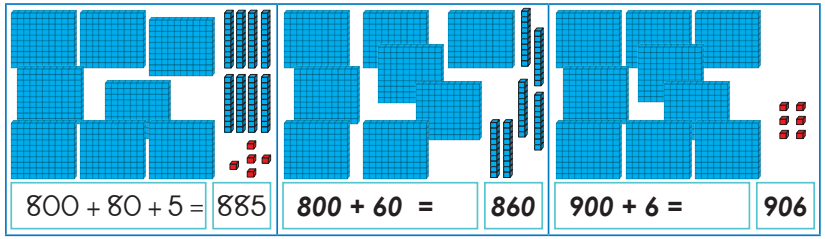
Discuss the two answers with the learners. Ben's answer is wrong because he counted the number of tens rods wrongly.



101 More numbers 800 to 900 *cont...*

Content links: 3a-3b, 23, 33, 41, 43, 45, 65-67, 69-71, 98-100, 103-104
Grade 2 links: 4, 18, 35, 65-66, 69-70, 97-98, 100
Grade 1 links: None

Write a number sentence and then the answer. ***Answer:***

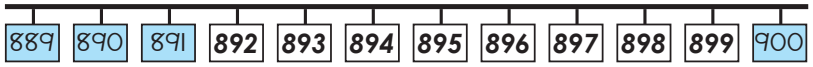


800 + 80 + 5 =	885	***800 + 60 =***	***860***	***900 + 6 =***	***906***

Write a number sentence and then the answer. ***Answer:***

800 + 50 + 2	***800 + 90 + 7***	***800 + 3***
= ***897***	***= 897***	***= 803***

Complete the number line. ***Answer:***



Write all the numbers smaller than 894.
Answer: 893, 892, 891, 890, 889

Write all the numbers bigger than 894.
Answer: 895, 896, 897, 898, 899, 900

Fill in <, > or =.
Answer: a. 899 > 898 b. 802 < 820 c. 900 + 70 + 5 > 785

Build each number with your cards.Write the value for each digit. ***Answer:***

890	***800 + 90***	***8 0 0***	***9 0***	
889	***800 + 80 + 9***	***8 0 0***	***8 0***	***9***
802	***800 + 2***	***8 0 0***	***9***	
855	***800 + 50 + 5***	***8 0 0***	***5 0***	***9***
840	***800 + 40***	***8 0 0***	***4 0***	

Write the number names of each. ***Answer:***

889	***Eight hundred and eighty-nine***
825	***Eight hundred and twenty-five***
803	***Eight hundred and three***
830	***Eight hundred and three***
899	***Eight hundred and ninety-nine***

Reflection questions
Can the learners do the following?
- describe, compare and order numbers to 900
- recognise the place value of numbers to 900
- write number names to 900

102a Weighing things

Content links: 15, 44
Grade 2 links: 11, 43, 120
Grade 1 links: 121

78

Objectives
- Read pictures of products with their mass written on them
- Read pictures of kitchen or bathroom scales where the needle points to numbered gradation lines

Resources
Teacher: Kitchen or bathroom scale or a balance scale, familiar objects to weigh
Learner: Learner workbook page 78

Dictionary
Mass: a measure of how much matter is in an object. Mass always stays the same.
Weight: a measure of the force of gravity pulling on that matter. Weight can change depending on where you are and how powerful the force of gravity is. Gravity is less on the moon so things weigh less on the moon than on earth.
Weighing objects: mass is commonly measured by how much something weighs (because on earth for everyday practical purposes mass and weight are the same). Note that a spring scale (most kitchen and bathroom scales are spring scales) measures weight (not mass). For practical everyday purposes a spring scale and a balance scale (which measures mass) give us the same results. When teaching about mass ideally you should correctly only use a balance scale.

Teach mathematics

Concrete - Representational
Display all the objects the learners are going to weigh and set up the scale or scales.

Demonstrate how to weigh an object and to read its weight or mass. Discuss the scale with the learners and show them how they will use the scale to measure the weight of the given objects. Remember to give them tips to help them measure as accurately as possible.

Discuss with the learners the objects they are going to weigh. As a class discuss each item and ask the learners to order the objects from lightest to heaviest.

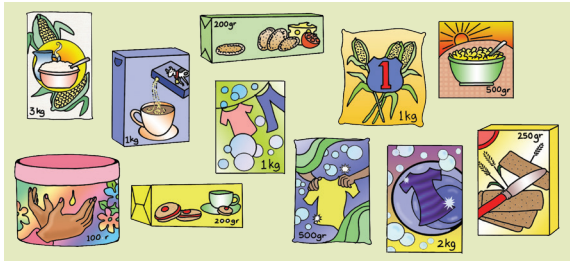
Select the five objects you are going to use for Question 5. You may want to have all the learners complete the estimation section in Question 5 now.

As the class starts working through the worksheet you can get one group at a rime to come up to the front of the class to complete the measurement section of question 5. Assist the learners where possible and address any problems the learners face when using the scale.

102a Number patterns: Threes to 800 *continued*

Content links: 15, 44
Grade 2 links: 11, 43, 120
Grade 1 links: 121

Look at the following pictures and answer the questions.

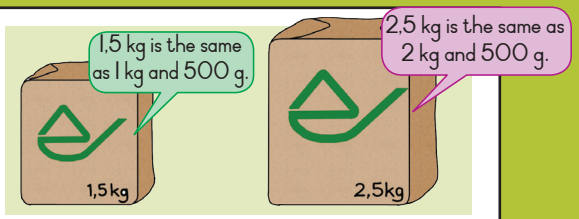


a. Is the 1 kg washing powder lighter of heavier that the 2 kg washing powder? ***Answer: a. It is lighter***
b. Which is lighter: The 500 g breakfast cereal or the 200 g of biscuits? ***Answer: The 200 g biscuits***
c. Which is heavier: The 100 g skin care cream or the 1 kg packet of samp? ***Answer: The 1 kg***

How much do we weigh all together? I weigh 25 kg, my friend 29 kg and my brother 45 kg.
Answer: 25 kg + 29 kg + 45 kg = 99 kg

How much do the products weigh together? The first product weighs 1 kg 500 g, the second product 3 kg 500 g and the last product 2 kg 500 g.
Answer: 1 kg 500 g + 3 kg 500 g + 2 kg 500 g = 7 kg 500 g or 7,5 kg

Look at the pictures and answer the questions. How can I write 3,5 kg as kilograms and grams?
Answer: 3 kg and 500 g



Complete the table. The learners have to estimate the weight of five objects. Estimate their weight and then measure it. What is the difference between the estimate and the measurement?
Answer: Depends on the objects that are give to the learners.

How much do the products weigh together? The first product weights 2 kg 500 g, the second product 1 kg 500 g and the last product 3 kg 500 g.
Answer: 2 kg 500 g + 1 kg 500 g + 3 kg 500 g = 7 kg 500 g or 7,5 kg

Reflection questions

Can the learners do the following?

- Read pictures of products with mass written on them
- Read pictures of bathroom scales where the needle points to numbered gradation lines

102b Let's weigh some more

Content links: 15, 44
Grade 2 links: 11, 43, 120
Grade 1 links: 121

Objectives

- Read pictures of products with mass written on them
- Read pictures of bathroom scales where the needle points to numbered gradation lines

Resources

Teacher: Kitchen or bathroom scale or a balance scale, familiar objects to weigh
Learner: Learner workbook page 80

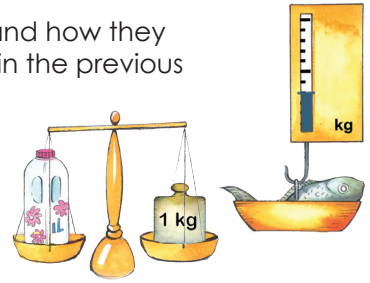
Dictionary

Mass: a measure of how much matter is in an object. Mass always stays the same.
Weight: a measure of the force of gravity pulling on that matter. Weight can change depending on where you are and how powerful the force of gravity is. Gravity is less on the moon so things weigh less on the moon than on earth.
Weighing objects: mass is commonly measured by how much something weighs (because on earth for everyday practical purposes mass and weight are the same). Note that a spring scale (most kitchen and bathroom scales are spring scales) measures weight (not mass). For practical everyday purposes a spring scale and a balance scale (which measures mass) give us the same results. When teaching about mass ideally you should correctly only use a balance scale.

Teach mathematics

Concrete - Representational

Discuss with learners how we measure mass and how they worked with the scales to answer Question 5 in the previous worksheet.

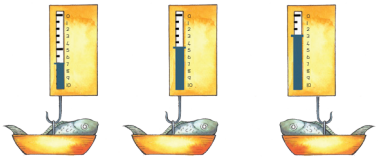


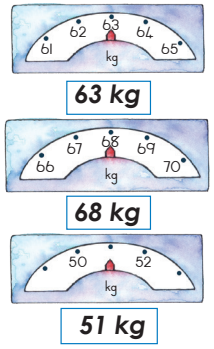
Recap with the learners that 1000 g = 1 kg.
Write the following on the board:
500 g + 500 g = 1000 g (1Kg)
250 g + 250 g + _____ = 1 000 g (1Kg)
250 g + 250 g + _____ + _____ = 1 000 g (1Kg)

Learners work in pairs to try to find other combinations that make up 1 Kg. Have the learners report back and then writes a few of their combinations on the board to check.

80

Find their mass. Write the mass in kg shown on each of these spring scales.
Answer:



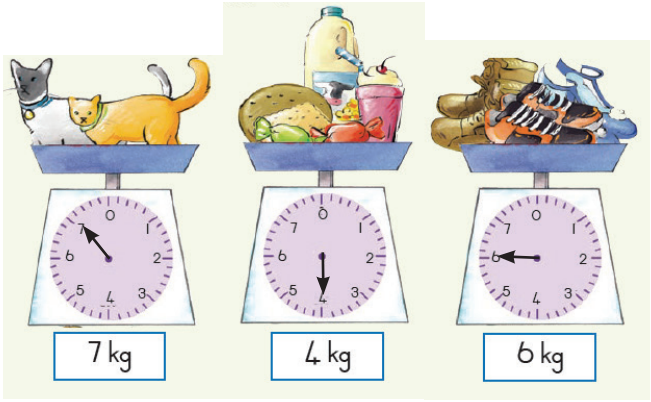


102b Let's weigh some more

Content links: 15, 44
Grade 2 links: 11, 43, 120
Grade 1 links: 121

How much do they weigh? Draw where the arrow on the scale must go each time.

Answer:



Add on to make 1 kg (1 000 g).

Answer:

a. 125 g + 250 g + 125 g + ***500*** g = 1 000 g (1 kg)

b. 50 g + 30 g + 240 g + 60 g + 100 g + ***520 g*** = 1 kg

c. 57 g + 46 g + 243 g + 334 g + ***320 g*** = 1 000 g (1 kg)

d. 50 g + 90 g + 160 g + ***700 g*** = 1 000 g (1 kg)

Reflection questions

Can the learners do the following?

- Read pictures of products with mass written on them
- Read pictures of bathroom scales where the needle points to numbered gradation lines

Common errors

Make notes of common errors made by the learners.

103 Numbers 900 to 1 000

Content links: 3a-3b, 23, 33, 41, 43, 45, 65-67, 69-71, 98-101, 104
Grade 2 links: 4, 18, 35, 65-66, 69-70, 97-98, 100
Grade 1 links: None

Objectives
- Describe, compare and order numbers to 1 000
- Recognise the place value of numbers to 1 000
- Write number names to 1 000

Resources
Teacher: Number boards 901 - 1 000, Counters, prepared number lines sheets
Learner: Learner workbook page 82

Dictionary
Place value: the value of where the digit is in the number. E.g. units, tens, hundreds, etc.

Teach mathematics

Concrete and Representative
Learners work in pairs. Give each pair 10 counters. The first learners calls out a number from the number board and the second learner must cover it using a counter.

After all 10 counters have been placed on the board, the learners read all the numbers including the covered numbers.

The learners swop and repeat the activity.

Give the learners a sheet with empty number lines and let them fill in some of the number lines, using the number board.

Then ask the learners to complete the remaining number lines without using the number board.

a. Count on from 900 to 1 000
Answer:

901	902	903	904	905	906	907	908	920	910
911	912	913	914	915	916	917	918	919	920
921	922	923	924	925	926	927	928	929	930
931	932	933	934	935	936	937	938	939	940
941	942	943	944	945	946	947	948	949	950
951	952	953	954	955	956	957	958	959	960
961	962	963	964	965	966	967	968	969	970
971	972	973	974	975	976	977	978	979	980
981	982	983	984	985	986	987	988	989	990
991	992	993	994	995	996	997	998	999	920

103 Numbers 900 to 1 000 *cont...*

Content links: 3a-3b, 23, 33, 41, 43, 45, 65-67, 69-71, 98-101, 104
Grade 2 links: 4, 18, 35, 65-66, 69-70, 97-98, 100
Grade 1 links: None

b. Write the missing numbers in the grid above.
Answer: See missing numbers above.
c. Write the 10 numbers that come after 900.
Answer: 901; 902; 903; 904; 905; 906; 907; 908; 909; 910
d. Write the next 8 numbers in the 2s pattern.
Answer: 952; 954; 956; 958, 960; 962; 964; 966
e. Write all the numbers in the 2s pattern from 945 to 967.
Answer: 945; 947; 949; 951; 953; 955; 957; 959; 961; 963; 965; 967
f. Write the next 8 numbers in the 5s pattern.
Answer: 936; 941; 946; 951; 956; 961; 966; 971; 976; 981; 986

How many blocks do you count?
Answer: 934
How did you count the blocks?
Answer: They can say: 100 x 8 = 800, 10 x 12 = 120 and 1 x 14 = 14
So 800 + 120 + 14 = 934

Complete the number lines. ***Answer:***

950	***951***	***952***	953	***954***	***955***	***956***	957	958	***959***	***960***
921	***926***	***931***	***936***	***941***	***946***	***951***	956	961	966	***971***
888	***891***	***894***	***897***	***900***	903	906	909	***912***	***915***	***918***

Complete the table.
Answer:

936, 933, 935, 931, 937	***931, 933, 935, 936, 937***	***937, 936, 935, 933, 931***
978, 907, 970, 917, 971	***907, 917, 970, 971, 978***	***978, 971, 970, 917, 907***

Write the following in words.
Answer: 695: Six hundred and ninety-five

Reflection questions
Can the learners do the following?
- Describe, compare and order numbers to 1 000
- Recognise the place value of numbers to 1 000
- Write number names to 1 000

Common errors
Make notes of common errors made by the learners.

Content links: 3a-3b, 23, 33, 41, 43, 45, 65-67, 69-71, 98-101, 103
Grade 2 links: 4, 18, 35, 65-66, 69-70, 97-98, 100
Grade 1 links: None

104 More numbers 900 to 1 000

Objectives
- Count forwards and backwards in 1s to 1 000
- Describe, compare and order numbers to 1 000
- Recognise the place value of numbers to 1 000
- Write number names to 1 000

Resources
Teacher: Number board 901 - 1 000, base 10 blocks, place value cards, prepared number boards with missing numbers (as in the illustration below)
Learner: Learner workbook page 84

Dictionary
Counting: to name or list (the units of a group or collection) one by one in order to determine a total; number
Place Value: the value of where the digit is in the number, such as units, tens, hundreds, etc.

84

Teach mathematics

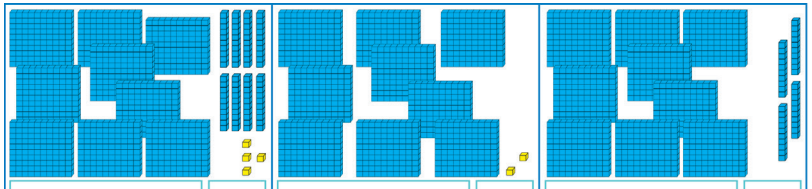
Concrete - Representational
Ask the class to count in the following:
- ones from 901 to 915
- twos from 920 to 940
- fives from 920 to 980
- tens from 910 to 1 000

Get the learners to form pairs. Call out numbers and each pair of learners represents the numbers using place value cards and base ten blocks. The learners then check each others' representations.

Representational
Let the learners work in pairs to complete the missing numbers in the number board.

901	902	903	904	905	906	907	908	920	910
911	912	913	914	915	916	917			
921		923			926			929	
931		933	934			937	938	939	940
941		943	944	945	946	947		949	950
951	952						958	959	960
961	962			965	966	967	968	969	970
971	972			975	976	977			
981			984	985	986	987			
991	992	993	994	995	996	997			100

Write a number sentence and then the answer. ***Answer:***



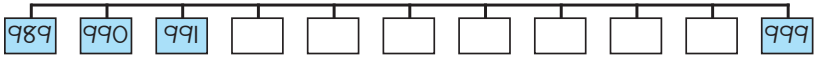
104 More numbers 900 to 1 000 *continued*

Content links: 3a-3b, 23, 33, 41, 43, 45, 65-67, 69-71, 98-101, 103
Grade 2 links: 4, 18, 35, 65-66, 69-70, 97-98, 100
Grade 1 links: None

Write a number sentence and then the answer. ***Answer:***

900 + 90 + 9	900 + 20	900 + 8
= **999**	**= 920**	**= 908**

Complete the number line. ***Answer:***



Give all the numbers that are smaller than 995.
Answer: 994, 993, 992, 991, 990, 989

Give all the numbers that are bigger than 995.
Answer: 996, 997, 998, 999

Fill in a <, > or =.
Answer: a. 999 < 7998 b. 957 < 975 c. 900 + 60 + 1 = 961

a. Build each number with your cards.
b. Write the value for each digit.
Answer:

922	***Nine hundred and twenty-two***	900	20	2
959	***Nine hundred and fifty-nine***	900	50	9
980	***Nine hundred and eighty***	900	80	
907	***Nine hundred and seven***	900		7
931	***Nine hundred and thirty-one***	900	30	1

Write the number names. ***Answer:***

976	***Nine hundred and seventy-six***
905	***Nine hundred and five***
950	***Nine hundred and fifty***
821	***Eight hundred and twenty-one***
909	***Nine hundred and nine***

Reflection questions
Can the learners do the following?
- Count forwards and backwards in 1s to 1 000
- Describe, compare and order numbers to 1 000
- Recognise the place value of numbers to 1 000
- Write number names to 1 000

105 Addition and subtraction to 999

Content links: 5, 37a-37b, 42, 46, 73-75, 108-109
Grade 2 links: 5, 21, 23a-23b, 37-38, 73-74, 77, 101-102, 104-105, 109
Grade 1 links: 15, 21-22, 73, 77, 104

Objectives

- Add up to 999
- Subtract from 999
- Use appropriate symbols (+, –, =)
- Recognise ☐ as the placeholder for a missing number or value
- Use doubles or near doubles to add

Resources

Teacher: Base 10 blocks, place value cards
Learner: Learner workbook page 86

86

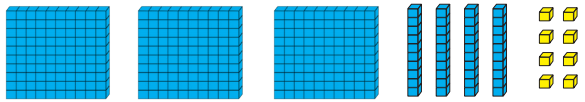
Dictionary

Double: make twice as big, multiply by 2

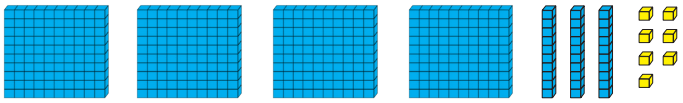
Concrete - Representational

Learners lay out the following numbers, one at a time, using base ten blocks.

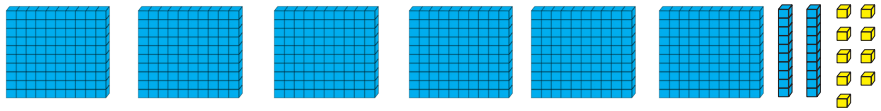
348



437



629



Learners then set out the same numbers using place value cards.
Then write the following on the board and have the class fill in the missing numbers.

348 = ☐ + 40 + 8
437 = 400 + ☐ + 7
629 = ☐ + ☐ + ☐

Representational

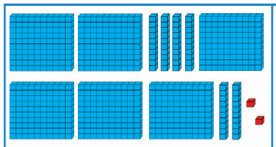
In pairs both learners set out the number 321 using their place value cards. They have now doubled the number > get them to add the hundreds together, the tens together and the units together.

\+ 20 + 1 = 321
300 + 20 + 1 = 321
300 + 300 + 20 + 20 + 1 + 1 = 600 + 40 + 2 = 642

Do a few more similar examples with the learners.

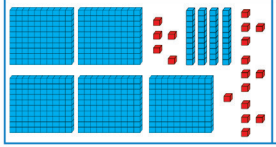
Write a number sentence for.

Answer:



Explain how you counted the blocks.

100 x 5 = 500, 10 x 4 = 40 and 1 x 18 = 18 500 + 40 + 18 = 558



Explain how you counted the blocks.

100 x 6 = 600, 10 x 6 = 60 and 1 x 2 = 2 600 + 60 + 2 = 662

105 Addition and subtraction to 999 *cont...*

Content links: 5, 37a-37b, 42, 46, 73-75, 108-109
Grade 2 links: 5, 21, 23a-23b, 37-38, 73-74, 77, 101-102, 104-105, 109
Grade 1 links: 15, 21-22, 73, 77, 104

Use the examples to guide you.
Answer:

5 0	5 0	double 50 is 100	3 0 0	3 0 0	***Double 300 is 600***
2 0 0	2 0 0	***Double 200 is 400***	3	3	***Double 3 is 6***

Use near doubles to solve the following. Use the example to guide you.
Answer:

a. 43 + 44 =	double 43 + 1	43 + 43 + 1 = 87
b. 81 + 82 =	***Double 81 + 1***	***81+ 81 + 1 = 163***
c. 40 + 41 =	***Double 40 + 1***	***40 + 40 + 1 = 81***
d. 66 + 67 =	***Double 66 + 1***	***66 + 66 + 1 = 133***

Use doubles or near doubles to solve the following. Use the example to guide you.
Answer:

c. 470 + 470
= Double 470
= 400 + 400 + 70 + 70
= 800 + 140
= 940

d. 461 + 462
= Double 461 + 1
= 400 + 400 + 61 + 61 + 1
= 800 + 122 + 1
= 923

Complete the word problem. The grade 2s have a collection of 360 marbles. The Grade 3s have 216 fewer marbles than the Grade 2s. How many marbles do the Grade 3s have?
Answer: 360 – 216 = 144
The Grade 3s have 144 marbles.

Reflection questions

Can the learners do the following?

- Add up to 999
- Subtract from 999
- Use appropriate symbols (+, –, =)
- Recognise ☐ as the placeholder for a missing number or value
- Use doubles or near doubles to add

Common errors

Make notes of common errors made by the learners.

106 About the house

Content links: 12, 14, 32, 54, 80, 128a-128b
Grade 2 links: 12-14, 22, 49, 55, 57a-57b, 67-68, 81a-81b, 85a-85b, 111, 116a-116b
Grade 1 links: 7, 16, 32

Objectives
- Calculate lengths of time and the passing of time
- Add and subtract millilitres
- Add and subtract litres

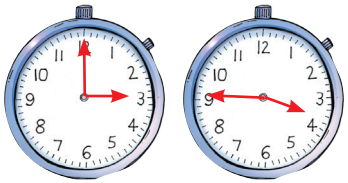
Resources
Teacher: Analogue clock, digital clock (or a cell phone)
Learner: Learner workbook page 88

Dictionary
Time: time is the on going sequence of events taking place – the past, present and future.We measure time using seconds, minutes, hours, days, weeks, months and years.

Teach mathematics

Concrete-Representational
Revise with the learners what an analogue clock is and how we use it. Ask the learners to tell you what a digital clock is and how we use it (Note that most cell phones also function as digital clocks.)

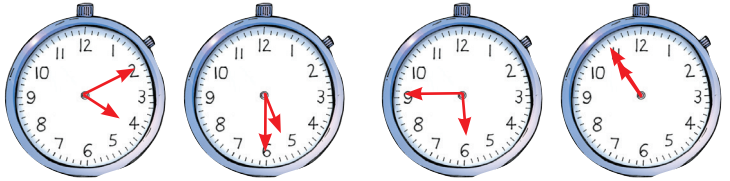
Draw these two clock faces on the board:



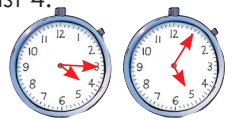
Ask the learners in pairs to read the time on both clocks. Let one learner discuss how to work out how much time has passed and let the second learner do the actual calculation.

Then discuss as a class how you could have worked out how much time has passed. You can discuss more than one calculation.

Then draw these pairs of clock faces and ask the learners to work out how much time has passed for each pair.



Aunt Phindi bakes bread in her oven. Show the time on these watches. She put the bread in at quarter past 4. She took the bread out at five past five.



How long does the bread take to bake?
Answer: 50 minutes.

88

Ann's mother uses a microwave oven. She thinks it is much quicker. It is now 16:30. Look at the cooking time set on the microwave oven dial. When will the bread be ready?
Answer: 16:55 (25 minutes after 16:30).
How much quicker is the microwave oven than the other oven?
Answer: 25 minutes

106 About the house *continued*

Content links: 12, 14, 32, 54, 80, 128a-128b
Grade 2 links: 12-14, 22, 49, 55, 57a-57b, 67-68, 81a-81b, 85a-85b, 111, 116a-116b
Grade 1 links: 7, 16, 32

On Saturday morning Musa and Palesa help their mother in the house. How long does each task take? ***Answer:***

	Start	End	How long?
Make breakfast	6:15	6:40	***25 minutes***
Wash dishes	7:20	8:05	***45 minutes***
Clean the kitchen	8:20	9:15	***55 minutes***
Clean the bathroom	10:00	10:25	***25 minutes***
Clean the bedrooms	11:30	12:15	***45 minutes***

A hosepipe can use up to 30 litres of water in 1 minute! How many litres of water can a hosepipe use in:

2 minutes ___***60***___ litres.

$2\frac{1}{2}$ minutes ___***75***___ litres

5 minutes ___***150***___ litres

10 minutes ___***300***___ litres.

Babu's father makes and sells curry. In one week, he uses 750 ml of oil. He writes down how much oil he uses each day.

Mon	Tues	Wed	Thurs	Friday	Sat	Sun
98 ml	122 ml	108 ml	117 ml	109 ml	135 ml	?

a. How many ml of oil does he use from Monday to Saturday?
Answer: 689 ml
b. How many millilitres (ml) of oil does he use on Sunday?
Answer: 61 ml (750 ml – 689 ml)
b. One 750 ml bottle of oil costs R18,50. How much do 4 bottles cost?
Answer: R74.

Reflection questions
Can the learners do the following?
- Calculate lengths of time and passing time
- Add millilitres
- Add litres

Common errors
Make notes of common errors made by the learners.

107 Working with money

Content links: 8, 26, 95a-95b
Grade 2 links: 6, 25-26, 78-79, 108-109
Grade 1 links: 60a-62, 75-76, 107-108

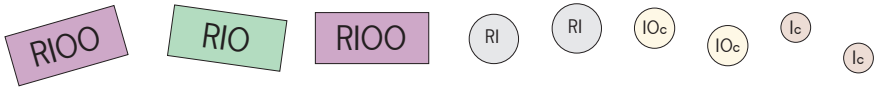
Objectives
- Solve money problems involving totals and change in rands or cents
- Convert between rands and cents

Resources
Teacher: Play money
Learner: Learner workbook page 90, play money from Cut-out 9

Dictionary
Estimate: a rough or approximate calculation of a the value or number or quantity or size of something that we can use for practical purposes. It is not a wild guess as some thought or calculation involved and we make use of the information we already know.

Teach mathematics

Concrete- Representational
Put some play money (which can be from Cut-out 9) including both notes and coins on a table in the front of the class. Ask some learners to come up and count the amount, one by one.

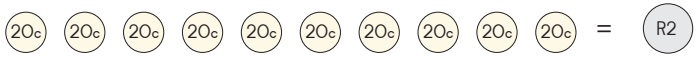


Teach mathematics

After a few learners have had a chance, ask the learners what they have noticed about how we count the money. They should be able to identify that we count the coins and notes separately and then add the totals together. Show the learners on the board how they can write these totals as sums.

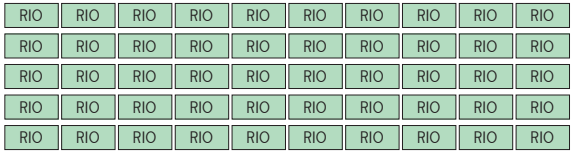
Revise with the learners that 100 cents = 1 rand.
If I have ten 10 cent coins that means
10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 = 100 cents = R1

Do the following examples with your learners?
Ten 20 cent coins = R _____



Twenty 50 cent coins = R _____

What happens if we say
Fifty R10 notes = R ___



107 Working with money *continued*

Content links: 8, 26, 95a-95b
Grade 2 links: 6, 25-26, 78-79, 108-109
Grade 1 links: 60a-62, 75-76, 107-108

90

Count the coins and notes. ***Answer:***

10 × 10c = R1	20 × 10c = R ***2***	50 × 10c = R ***5***
10 × 20c = R ***2***	20 × 20c = R ***4***	50 × 20c = R ***10***
10 × 50c = R ***5***	20 × 50c = R ***10***	50 × 50c = R ***25***
10 × R1 = R ***10***	20 × R1 = R ***20***	50 × R1 = R ***50***
10 × R10 = R ***100***	20 × R10 = R ***200***	50 × R10 = R ***500***

100 × 10c = R ***10***	100 × 50c = R ***50***	100 × R10 = R***1000***
100 × 20c = R ***20***	100 × R1 = R ***100***	

Ask the learners what is the price of 1 ticket? Tick (✔) for the correct answer:
Answer: a. R90 _____ b. R320 _____ c. R80 ✔ d. R45,50 _____

Sandile keeps a record of his earnings in a table. First he estimates, and then he calculates his daily income.
Income is the money we earn or receive.
Help Sandile to complete his calculations.
Write your answers in the table:

		Estimate	Total
Monday	R50 + R75 + R200 + R350 + R25	***own answers***	***R700***
Tuesday	R25 + R175 + R50 + R320 + R90	***own answers***	***R660***
Wednesday	R50 + R75 + R200 + R350 + R25	***own answers***	***R700***
Thursday	R120 + R55 + R180 + R245 + R25	***own answers***	***R625***
Friday	R60 + R150 + R140 + R200 + R125	***own answers***	***R675***
Saturday	R50 + R75 + R200 + R350 + R25	***own answers***	***R700***
Sunday			

Work out the change. Add on from what the things cost to how much money in notes you hand over. Use number lines to help you work out the change. ***Answer:***

Cost: R229,40 Pay with: 	R250,00 – R229,40 = R20,60
Cost: R305,60 Pay with: 	R310,00 – R305,60 = R4,40

Reflection questions
Can the learners do the following?
- Solve money problems involving totals and change in rands or cents
- Convert between rands and cents

Content links: 5, 37a-37b, 42, 46, 73-75, 105, 109
Grade 2 links: 5, 21, 23a-23b, 37-38, 73, 75, 77, 101-102, 104-105, 109
Grade 1 links: 15, 21-22, 73, 77, 104

108 More addition and subtraction to 999

Objectives
- Add up to 999
- Subtract from 999
- Use appropriate symbols (+, -, =)

Resources
Teacher: Base ten blocks, paper
Learner: Learner workbook page 92

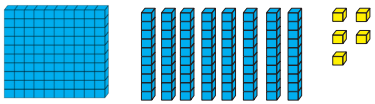
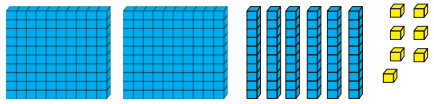
Dictionary
Subtraction: Subtraction is the removing of objects from a collection. In mathematics it is the operation of taking away one number or amount from another number or amount. This operation is used to find out what is left when you take one number away from another number (which is the called the **difference** between the two numbers).

Subtraction is signified by the minus symbol **−**.

Teach mathematics

92

Concrete - Representational
In groups give the learners base ten blocks and paper.
Ask them to use the base ten blocks to set out the following numbers:

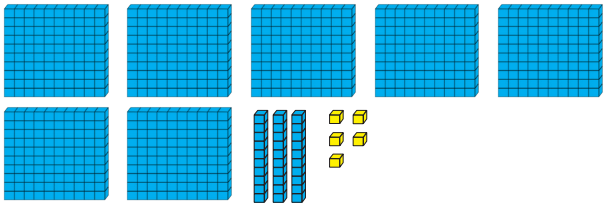
185  **267** 

Ask them to add the two numbers, using the base ten blocks.

Do the same with the following two numbers: 786, 453. This time they must subtract the smaller number from the bigger number.

Give the learners two more examples to add and subtract, but instead of using base ten blocks, they draw the base ten blocks on a piece of paper to find the answers.

Gugu collected 234 stickers. Mandla gave her 501 more stickers. How many stickers does she have now? ***Answer: 735***
Use the number in the problem to solve it using the methods that you have learnt so far. ***Answer: Method***



108 More addition and subtraction to 999 *cont...*

Method 1
= 100 + 100 + 10 + 10 + 10 + 1 + 1
+ 1 + 1 + 100 + 100 +100 + 100
+ 100 + 1
= 100 + 100 + 100 + 100 + 100 +
100 + 100 + 10 + 10 + 10 + 1 + 1
+ 1 + 1 + 1
= 700 + 30 + 5
= 735

Method 2:
234 + 501
= 200 + 500 + 30 + 4 + 1
= 700 + 30 + 5
= 735

Thembi collects items for the schools recycling projects. She collected 624 plastic bottles and 268 tin cans. How many items has she collected? ***Answer:***
What is the question? ***How many items has she collected***

What are the numbers?	What is the key word? Tick the correct answer. The key word tells us to:
624 and 268	Add ✔ Subtract
Make a drawing. ***Learner's own drawing***	Use your own method to solve the problem. ***624 + 268*** ***= 600 + 200 + 20 + 60 + 4 + 8*** ***= 800 + 80 + 10 + 2*** ***= 800 + 90 + 2*** ***= 892*** ***Or other suitable method***

The shop has 900 packets of sugar. After selling some packets, they had 659 packets of sugar left. How many packets did they sell? ***Answer:***
What is the question? ***How many packets did they sell***

What are the numbers?	What is the key word? Tick the correct answer. The key word tells us to:
900 and 659	Add Subtract ✔
Make a drawing. ***Learner's own drawing***	Use your own method to solve the problem. ***900 – 659*** ***= 900 – 600 – 50 – 9*** ***= 900 – 600 – 59*** ***= 300 – 59*** ***= 200 + 100 – 59*** ***= 200 + 41*** ***= 241*** ***Or other suitable method***

Reflection questions

Can the learners do the following?

- Add up to 999
- Subtract from 999
- Use appropriate symbols (+, – , =)

109 Addition and subtraction to 999 again

Content links: 5, 37a-37b, 42, 46, 73-75, 105, 108
Grade 2 links: 5, 21, 23a-23b, 37-38, 73-74, 77, 101-102, 104-105, 109
Grade 1 links: 15, 21-22, 73, 77, 104

Objectives
- Add up to 999
- Subtract from 999
- Use appropriate symbols (+, -, =)

Resources
Teacher: Place value cards
Learner: Learner workbook page 94

Dictionary
Addition: Addition is a mathematical operation that represents the total amount of objects together in a collection.

It is signified by the symbol **+** .

94

Teach mathematics

Concrete-Representational
Learners use the place value cards to set out the following numbers:

234	2 0 0	3 0	2
377	3 0 0	7 0	7
725	7 0 0	2 0	5
275	2 0 0	7 0	5

Learners read the numbers aloud.
Ask the learners to double 234 and 377.
They must remember to add the hundreds together, the tens together and then the units together.
Add 725 and 275 to show the learners how we find out what to do to make 1 000. We start with the units.
725 + 5 = 730
730 + 70 = 800
800 + 200 = 1 000
So 725 + 275 = 1 000

Complete the questions. ***Answer:***

a. 446	***b. 320***	***c. 230***	***d. 530***
e. 234	***f. 900***	***g. 112***	***h. 116***

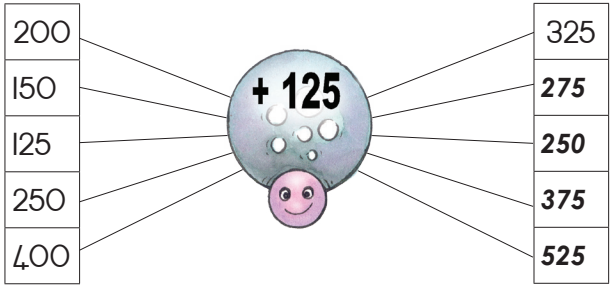
Write the numbers. ***Answer:***

a. 535	***b. 525***	***c. 596***	***d. 530***
e. 508	***f. 150***	***g. 840***	***h. 300***

Content links: 5, 37a-37b, 42, 46, 73-75, 105, 108
Grade 2 links: 5, 21, 23a-23b, 37-38, 73-74, 77, 101-102, 104-105, 109
Grade 1 links: 15, 21-22, 73, 77, 104

109 Addition and subtraction to 999 again *cont...*

Complete the spider diagram. ***Answer:***



What is added to makes a thousand? ***Answer:***

a.	200 + 150 + 50 + **600** = 1 000	e.	25 + **75** + 900 = 1 000
b.	1 000 = 560 + **40** + 400	f.	**250** + 700 + 50 = 1 000
c.	670 + **330** = 1 000	g.	1 000 = 420 + **80** + 500
d.	910 + 40 + **50** = 1 000	h.	**70** + 30 + 900 = 1 000

Find the + and – number families. ***Answer:***

123 + 77 = **200**	**200** – 77 = 123	**200** – 123 = 77
650 + **150** = 800	800 – 650 = **150**	**150** + 650 = 800
1 000 – 250 = **750**	1 000 – **750** = 250	250 + **750** = 1 000
56 + **244** = 300	300 – **244** = 56	**244** + 56 = **300**
820 + **180** = 1 000	1 000 – **180** = 820	1 000 – 820 = **180**

Add and take away tens and hundreds.
a. Tens and hundreds ***Answer:***

78 + 10 = ***88***	149 + 10 = ***159***	456 + 100 = ***556***	987 + 10 = ***997***
636 + 100 = ***736***	801 + 100 = ***901***	727 + 100 = ***827***	612 + 10 = ***622***
456 – 10 = ***446***	749 – 100 = ***649***	829 – 100 = ***729***	987 – 10 = ***977***
875 + 10 = ***885***	709 – 100 = ***609***	815 + 10 = ***825***	903 – 100 = ***803***

b. Whole tens (Multiples of 10). ***Answer:***

150 – 30 = ***120***	190 – 60 = ***130***	175 – 50 = ***125***	990 – 80 = ***910***
210 + 90 = ***300***	335 + 60 = ***395***	660 + 50 = ***710***	812 + 60 = ***872***
256 – 50 = ***206***	320 – 30 = ***290***	785 – 60 = ***725***	999 – 90 = ***909***
567 + 37 = ***604***	671 + 90 = ***761***	832 + 80 = ***912***	928 + 80 = ***1 008***

Solve the following problems. ***Answer:***
925 + 53 = ***978*** 786 + 75 = ***861***
571 + 202 = ***773*** 903 + 95 = ***998***

Reflection questions
Can the learners do the following?
- Add up to 999
- Subtract from 999
- Use appropriate symbols (+, -, =)

110 Measurement puzzles

Content links: 11-14, 32, 52, 54
Grade 2 links: 8-9, 32, 67-68, 92, 106, 111
Grade 1 links: 109

Objectives
- Use tile shapes to cover a surface area
- Fill containers with varying quantities of liquid
- Estimate the passage of time
- Count the faces on cubes

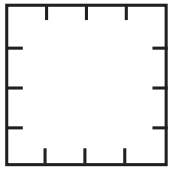
Resources
Teacher: Paper, square shapes 1 cm and 4 cm square made of plastic or board, cubes
Learner: Learner workbook page 96

Dictionary
Area: the size the surface of a flat, two dimensional shape takes up, measured in square units

Teach mathematics

96

Concrete - Representational
Give pairs of learners a 1 cm square and a 4 cm square. Ask them to work out how many of the small squares cover the big square.
The learners should suggest tracing the square or marking the big square as illustrated on the right.



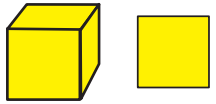
As the square shapes will not cover an A4 sheet of paper exactly, the learners must take this into account and say that the area is more than so may squares but less than so many squares.

Let learners tile the same area with different shapes and similar shapes of different sizes.

This will allow learners to see that
- the smaller the shape, the more of them will fit onto a surface; and
- the shape you choose will affect the l answer you get.

Concrete
Distribute cubes to the class. Discuss the difference between a square (2-D) and a cube (3-D).

When the learners do questions 3 and 4 they can use the cubes to help them.

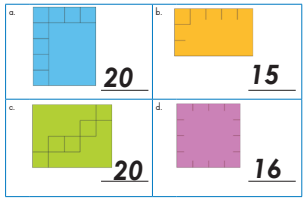


110 Measurement puzzles *continued*

Content links: 11-14, 32, 52, 54
Grade 2 links: 8-9, 32, 67-68, 92, 106, 111
Grade 1 links: 109

How many squares do you need to cover each figure. Use your own way to work it out. You can draw squares to help you work it out.

Answer:



You want to measure out exactly 4 litres of water. But you only have 2 containers: one holds 3 litres and the other 5 litres. How do you do it? Clue: there are at least two possible ways.

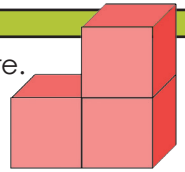
Answer:

First way: Fill the 5 litre container. From the 5 litre container fill the 3 litre container leaving 2 litres in the 5 litre container. Pour out the contents of the 3 litre container and fill the 3 litre container with the remaining 2 litres from the 5 litre container leaving 2 litres in the 3 litre container. Refill the 5 litre container and from it fill the remaining 1 litre space in the 3 litre container. This leaves 4 litres in the 5 litre container.

Second way: Fill the 3 litre container. Empty the contents of the 3 litre container into the 5 litre container. Fill the 3 litre container again. From the 3 litre container now fill the 5 litre container leaving the 5 litre container full and 1 litre in the 3 litre container. Empty the 5 litre container. Pour the 1 litre from the 3 litre container into the 5 litre container. Fill the 3 litre container and pour all of it into the 5 litre container. This leaves 4 litres in the 5 litre container.

Three blocks are glued together as in this picture. If you pick up the joined together blocks how many squares do you count on the outside?

Answer: 14



Count the cubes. How many cubes make up this shape?

Answer: 14 cubes

You have two sand timers. One measures exactly 7 minutes and the other measures exactly 11 minutes. How can you use the timers to find out when exactly 15 minutes has passed?

Answer:

Start the 2 timers together. When the 7 minute timer finishes, turn it over. When the 11 minute timer finishes, turn the 7 minute timer over again. When the 7 minute timer finishes the 15 minutes will be up.

Explanation: At 11 minutes the second round of the 7 minute timer will have only done 4 minutes. When it is turned over it will run for 4 minutes. Eleven minutes plus four minutes = 15 minutes.

Reflection questions

Can the learners do the following?

- Use tile shapes to cover a surface area
- Fill containers with varying quantities of liquid
- Estimate the passage of time
- Count the faces on cubes

111 Number patterns: Tens up to 900

Content links: 9, 29, 47, 64, 76, 79, 82, 86, 88, 114, 116, 119, 121
Grade 2 links: 44, 51, 53, 56, 80, 89, 112, 117
Grade 1 links: None

Objectives
- Copy, extend and describe simple number sequences to at least 1 000
- Count sequentially forwards and backwards in 10s to at least 1 000

Resources
Teacher: Sticks or matchsticks, number board 801-900, counters
Learner: Learner workbook page 98

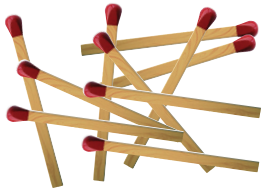
Dictionary
Sequence: A sequence is an ordered list of numbers or objects.
Pattern: A pattern is a sequence that follows certain rules.
Number pattern: This is a special sequence of numbers arranged in order according to a rule (for example, by adding or subtracting some value each time).

98

Teach mathematics

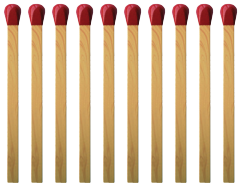
Concrete - Representational

Place a large number of small sticks or matchsticks on a table and ask the learners if any of them know how many sticks are on the table.



Ask the learners if there is an easier way to count the sticks without having to count them one by one?

The learners should tell you that we can group the sticks. Show the learners how we can do this activity much easier by grouping ten sticks, then setting them out in bundles in rows, etc.



As a class count different numbers of sticks, using these methods.

Use the number boards to show learners that we can start on any number and still count in tens.
For example: they start with 821.
Place a counter on each tenth number, 831, 841, 851, etc.
Ask the learners to explain to each other in pairs which pattern they see.
Let the learners do a few examples of counting in tens from any number.

801	802	803	804	805	806	807	808	809	810
811	812	813	814	815	816	817	818	819	820
821	822	823	824	825	826	827	828	829	830
831	832	833	834	835	836	837	838	839	840
841	842	843	844	845	846	847	848	849	850
851	852	853	854	855	856	857	858	859	860
861	862	863	864	865	866	867	868	869	870
871	872	873	874	875	876	877	878	879	880
881	882	883	884	885	886	887	888	889	890
891	892	893	894	895	896	897	898	899	900

111 Number patterns: Tens up to 900 *continued*

Content links: 9, 29, 47, 64, 76, 79, 82, 86, 88, 114, 116, 119, 121
Grade 2 links: 44, 51, 53, 56, 80, 89, 112, 117
Grade 1 links: None

What patterns do the circled numbers show us?

801	802	803	804	805	806	807	808	809	810
811	812	813	814	815	816	817	818	819	820
821	822	823	824	825	826	827	828	829	830
831	832	833	834	835	836	837	838	839	840
841	842	843	844	845	846	847	848	849	850
851	852	853	854	855	856	857	858	859	860
861	862	863	864	865	866	867	868	869	870
871	872	873	874	875	876	877	878	879	880
881	882	883	884	885	886	887	888	889	890
891	892	893	894	895	896	897	898	899	900

Answer:

Circled in red: Counting in ***10s***	Write down the pattern: ***803, 813, 823, 833, 843, 853, 863, 873, 883, 893***
Circled in green: Counting in ***10s***	Write down the pattern: ***807, 817, 827, 837, 847, 857, 867, 877, 887, 897***

Calculate the following:
Answer:

a. 874 + 10 + 10 + 10 = ***904***	b. 858 − 10 − 10 − 10 − 10 = ***818***
c. 845 + 10 + 10 = ***865***	d. 858 − 10 − 10 − 10 = ***828***
e. 836 + 10 = ***846***	f. 866 − 10 − 10 = ***846***
g. 892 + 10 + 10 + 10 = ***922***	h. 87 − 10 − 10 − 10 = ***57***
i. 880 + 10 + 10 = ***900***	j. 855 − 10 = ***845***

How many sticks are there if there are 10 sticks in a bundle?
Answer:

1	= ***10***	sticks	10	= ***100***	sticks
2	= ***20***	sticks	20	= ***200***	sticks
3	= ***30***	sticks	30	= ***300***	sticks
4	= ***40***	sticks	40	= ***400***	sticks
5	= ***50***	sticks	50	= ***500***	sticks
6	= ***60***	sticks	60	= ***600***	sticks
7	= ***70***	sticks	70	= ***700***	sticks
8	= ***80***	sticks	80	= ***800***	sticks
9	= ***90***	sticks	90	= ***900***	sticks
10	= ***100***	sticks	100	= ***1 000***	sticks

Say how many sticks are there. ***Answer:***
2 rows of 10 bundles = 200 sticks ***20 x 10 = 200***
4 rows of 10 bundles = 400 sticks ***40 x 10 = 400***
10 rows of 10 bundles = 1 000 sticks ***100 x 10 = 1 000***

How many bundles could you make? ***Answer:***
700 sticks make 70 bundles.
900 sticks make 90 bundles.
1 000 sticks make 100 bundles.

Reflection questions
Can the learners do the following?
- Copy, extend and describe simple number sequences to at least 1 000
- Count sequentially forwards and backwards in 10s to at least 1 000

112 Rounding off to the nearest 10

Content links: 77
Grade 2 links: None
Grade 1 links: None

Objectives
- Rounds off in tens
- Use number lines

Resources
Teacher: Sheets with number lines
Learner: Learner workbook page 100

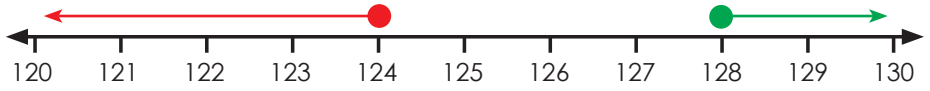
Dictionary
Rounding off: Change a number (reducing or increasing its value) to another number which is less accurate but more convenient to use. You round up by choosing the nearest highest number that ends in zero. A number ending in 5 is always rounded up. You round down by choosing the nearest number ending in zero.

100

Teach mathematics

Concrete-Representational
Revise rounding off to the nearest 10 with the learners. Draw a number line on the board and remind them that if the number ends with a 1, 2, 3 or 4 then the number is rounded down to the left. If the number ends with a 5, 6, 7, 8 or 9 then it is round up to the ten on the right.

Do these examples: **124** rounded off to the nearest ten is 120.



128 rounded off to the nearest ten is 130.

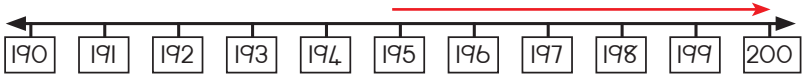
Write the following numbers on the board:

233	482
476	847
139	198

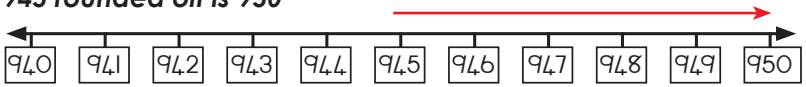
Ask the learners to use the empty number line sheet to round off these numbers to the nearest 10.

Round off the numbers off to the nearest 10.
Answer:
114 rounded off is 110
117 rounded off is 120
159 rounded off is 160
151 rounded off is 150

Round off the numbers to the nearest 10 and then draw a number line.
Answer:
195 rounded off is 200



945 rounded off is 950

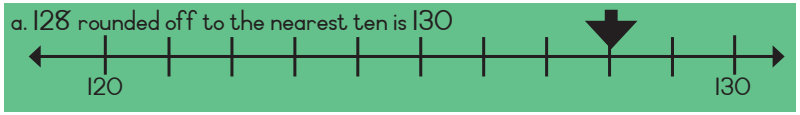


112 Rounding off to the nearest 10 *continued*

Content links: 77
Grade 2 links: None
Grade 1 links: None

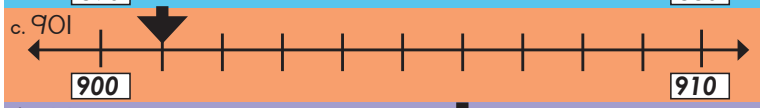
Round off to the nearest 10. Write down between which two tens the number to be rounded off is and show with an arrow where the number to be rounded off is on the number line.

a. 128 rounded off to the nearest ten is 130

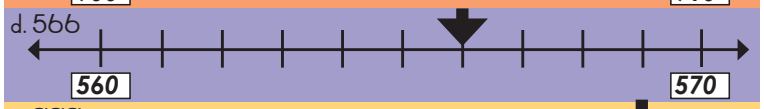


b. 877

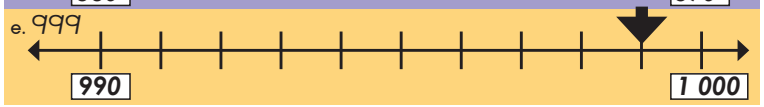
c. 901



d. 566



e. 999



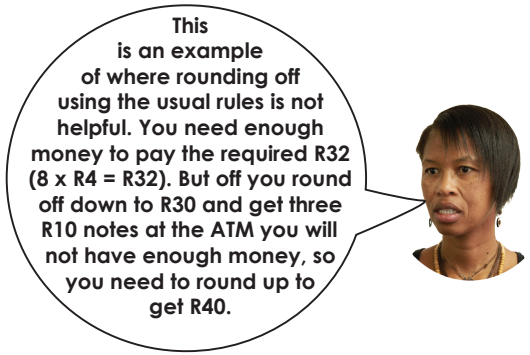
Round the numbers off to the nearest 10.

Answer:

a. 160	***b. 580***	***c. 420***	***d. 850***	***e. 610***
f. 230	***g. 330***	***h. 990***	***i. 530***	***j. 750***

Mbali and her 8 friends are going to the school's fun day. The fun day costs R4 per person. Mbali saved money and offered to pay for her friends. She went to the ATM to withdraw money. The ATM only gives notes. How many R10 notes does she need?

Answer: 4



Reflection questions

Can the learners do the following?

- Round off in tens
- Use number lines

Common errors

Make notes of common errors made by the learners.

113 Multiplication and division: fives up to 100

Content links: 50, 78, 81, 83-85, 87, 89,117-118, 120
Grade 2 links: 30, 80, 82-83, 114-115
Grade 1 links: 56, 58, 81-84, 114-115

Objectives
- Multiply 2, 3, 4, 5, and 10 to a total of 100
- Divide numbers to 99 by 2, 3, 4, 5, and 10
- Uses appropriate symbols (x, ÷, =)

Resources
Teacher: Place value cards
Learner: Learner workbook page 102

Dictionary
Multiplication: a mathematical operation where a number is added to itself a number of times

Teach mathematics

Concrete - Representational
Ask the learners to set out some two digit numbers using the place value cards. 1 0 5

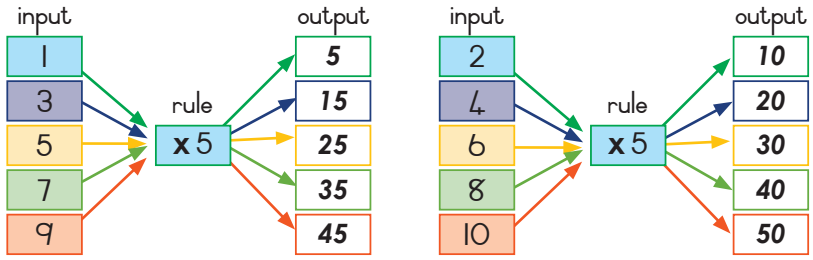
Then show them how to multiply the number.
For example:
15 x 5
= (10 x 5) + (5 x 5)
= 50 + 25
= 75

Do the following
26 x 5 = ☐
38 x 5 = ☐
Then revise how to divide.
The learners set out the number to be divided using the place value cards.

For example:
56 ÷ 5
= (50 + 6) ÷ 5
= (50 ÷ 5) + (6 ÷ 5)
= 10 + 1 rem 1
= 11 rem 1

Do a few more examples.

Complete the flow diagrams.
Answer:



113 Multiplication and division: fives up to 100 *cont...*

Complete the table. ***Answer:***

×	1	2	3	4	5	6	7	8	9	10
5	***5***	***10***	***15***	***20***	***25***	***30***	***35***	***40***	***45***	***50***

Ask the learners to calculate the answers. ***Answer:***

12 × 5 = (10 + 2) × 5 = 50 + 10 = 60	11 × 5 ***= (10 + 1) x 5*** ***= 50 + 5*** ***= 55***
13 × 5 = (10 + 3) × 5 = 50 + 15 = 50 + 10 + 5 = 65	14 × 5 ***= (10 + 4) x 5*** ***= 50 + 20*** ***= 70***
45 ÷ 5 = (40 + 5) ÷ 5 = (45 ÷ 5) + (5 ÷ 5) = 8 + 1 = 9	75 ÷ 5 ***= (70 + 5) ÷ 5*** ***= (70 ÷ 5) + (5 ÷ 5)*** ***= 14 + 1*** ***= 15***

48 ÷ 5 = (40 + 8) ÷ 5 = (40 ÷ 5) + (8 ÷ 5) = 8 + 1 rem 3 = 9 rem 3	13 ÷ 5 ***= (10 + 3) ÷ 5*** ***= (10 ÷ 5) + (3 ÷ 5)*** ***= 2 + rem 3*** ***= 2 rem 3***

Solve the word problems.
Answer:
70 plants ÷ 14 rows = 5 plants in each row
85 oranges ÷ 5 = 15 bags

Reflection questions
Can the learners do the following?
- Copy, extend and describe simple number sequences to at least 1 000
- Count sequentially forwards and backwards in 10s to at least 1 000

Common errors
Make notes of common errors made by the learners.

114 Number patterns: Fives up to 1 000

Content links: 9, 29, 47, 64, 76, 79, 82, 86, 88, 111, 116, 119, 121
Grade 2 links: 30, 80, 82-83, 114-115 80, 117
Grade 1 links: 58, 80-84, 115

Objectives
- Copy, extend and describe simple number sequences to at least 1 000
- Count sequentially forwards and backwards in 10s to at least 1 000

Resources
Teacher: Number boards 801 to 900, number boards 901 to 1 000, counters
Learner: Learner workbook page 104, number boards on pages 104 and 105

Dictionary
Sequence: A sequence is an ordered list of numbers or objects.
Pattern: A pattern is a sequence that follows certain rules.
Number pattern: This is a special sequence of numbers arranged in order according to a rule (for example, by adding or subtracting some value each time).

Teach mathematics

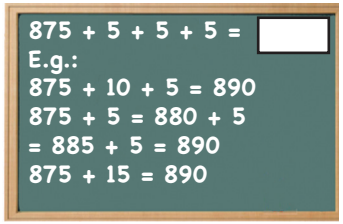
Concrete - Representational
Learners count in fives using the number board 801 - 900 (on page 104) starting from 805. Each number they call out can should then be covered by a counter.

Then get the learners to do the same for counting in tens from 810 and 900 using the number boards on pages 104 and 105.

801	802	803	804	805	806	807	808	809	810
811	812	813	814	815	816	817	818	819	820
821	822	823	824	825	826	827	828	829	830
831	832	833	834	835	836	837	838	839	840
841	842	843	844	845	846	847	848	849	850
851	852	853	854	855	856	857	858	859	860
861	862	863	864	865	866	867	868	869	870
871	872	873	874	875	876	877	878	879	880
881	882	883	884	885	886	887	888	889	890
891	892	893	894	895	896	897	898	899	900

Ask the learners to count in tens from 802 to reinforce that we can count on in any multiple starting from any number.

Write the following sum on the board: Ask the learners to discuss with their partner how they could calculate the answer. Ask the learners to tell you how they worked it out.
Show different methods of doing it on the board.



What patterns do the circled numbers show. ***Answer:***

Circled in blue:	Counting in ***10s*** .
Write down the pattern:	***803, 813, 823, 833, 843, 853, 863, 873, 883, 893***
Circled in purple:	Counting in ***10s*** .
Write down the pattern:	***808, 818, 828, 838, 848, 858, 868, 878, 888, 898***

114 Number patterns: Fives up to 1 000 *cont...*

Content links: 9, 29, 47, 64, 76, 79, 82, 86, 88, 111, 116, 119, 121
Grade 2 links: 30, 80, 82-83, 114-115 80, 117
Grade 1 links: 58, 80-84, 115

Calculate the sums.
Answer:

a. 890	***b. 835***	***c. 855***
d. 815	***e. 891***	***f. 836***
g. 817	***h. 796***	***i. 838***

Fill in the missing numbers on the 901 to 1 000 number board.
Answer:

901	***902***	903	904	905	906	***907***	908	909	910
911	***912***	913	914	915	916	***917***	918	919	920
921	***922***	923	924	925	926	***927***	928	929	930
931	***932***	933	934	935	936	***937***	938	939	940
941	***942***	943	944	945	946	***947***	948	949	950
951	***952***	953	954	955	956	***957***	958	959	960
961	***962***	963	964	965	966	***967***	968	969	990
971	***972***	973	974	975	976	***977***	978	979	990
981	***982***	983	984	985	986	***987***	988	989	990
991	***992***	993	994	995	996	***997***	998	999	1 000

What is the difference between the green and purple numbers in the same row?
Answer: The difference is 5

First complete the patterns and then describe the pattern.
Answer:

Do you notice the pattern?	Describe it.
963, 968, 973, 978, 983, ***984***	***Plus 5***
944, 949, 954, 959, 964, ***969***	***Plus 5***
921, 926, 931, 936, 941, ***946***	***Plus 5***
956, 951, 946, 941, 936, ***931***	***Minus 5***
982, 987, 992, 997, ***1 002***	***Plus 5***
927, 922, 917, 912, 907, ***902***	***Minus 5***

Reflection questions
Can the learners do the following?
- Copy, extend and describe simple number sequences to at least 1 000
- Count sequentially forwards and backwards in 10s to at least 1 000

Common errors
Make notes of common errors made by the learners.

115 More about symmetry

Content links: 9, 29, 47, 64, 76, 79, 82, 86, 88, 111, 116, 119, 121
Grade 2 links: 30, 80, 82-83, 114-115 80, 117
Grade 1 links: 58, 80-84, 115

Objectives
- Recognise and draw line of symmetry in 2-D geometrical shapes
- Recognise that the line of symmetry is not always a vertical line
- Recognise that there can be more than one line of symmetry in a shape or object

Resources
Teacher: Large tangram
Learner: Learner workbook page 106, Cut-out 10, piece of paper

Dictionary
Symmetry: Symmetry is when one shape becomes exactly like another if you flip, slide or turn it.
Line of symmetry: The line of symmetry is the imaginary line where you could fold a shape and have both halves match exactly.

Teach mathematics

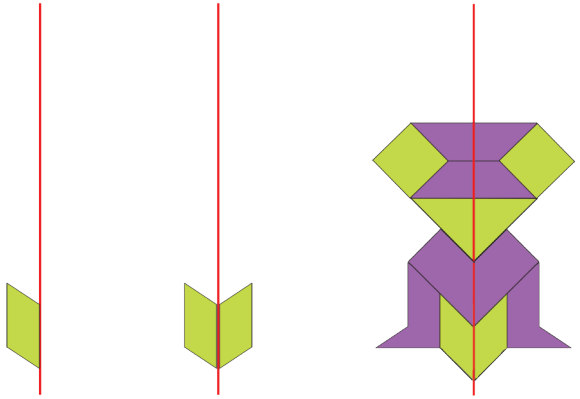
Teach mathematics

Concrete- Representational
Recap symmetry with the learners.

Draw "half" shapes on the board. The learners copy the shapes from the board and then draw the other half of the shape.

Another activity could include drawing shapes on the board and ask learners to come to the board and draw in the lines of symmetry.

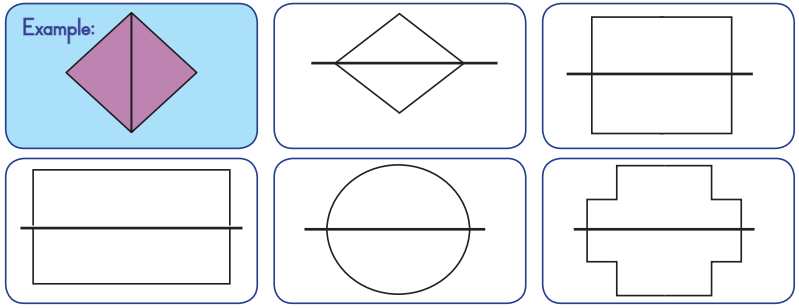
The learners use Cut-out 10. Go through Question 1 (explaining all the instructions carefully) and have the learners play the game - mirror, mirror.



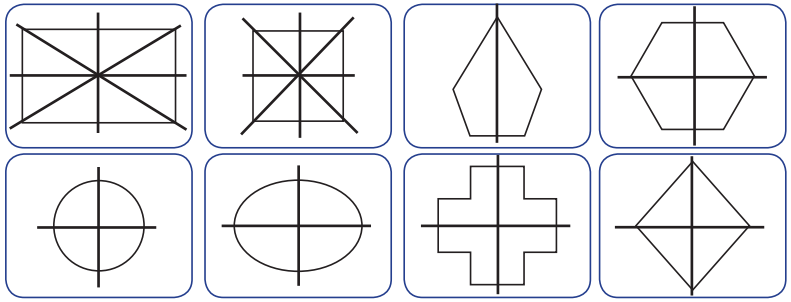
115 More about symmetry *continued*

Content links: 9, 29, 47, 64, 76, 79, 82, 86, 88, 111, 116, 119, 121
Grade 2 links: 30, 80, 82-83, 114-115 80, 117
Grade 1 links: 58, 80-84, 115

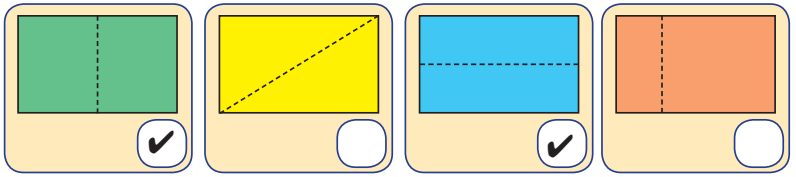
Ask the learners to draw the other side of the shape and show the line of symmetry.
Answer: (Note that in all except the circle there are four possible lines of symmetry.)



Ask the learners to draw (all the) the lines of symmetry on the following shapes. ***Answer:***



Tick the shapes that have the correct line of symmetry
Answer:



Reflection questions
Can the learners do the following?
- Recognise and draw line of symmetry in 2-D geometrical shapes
- Recognise that the line of symmetry is not always a vertical line
- Recognise that there can be more than one line of symmetry in a shape or object

Common errors
Make notes of common errors made by the learners.

116 Number patterns: twos up to 900

Content links: 9, 29, 47, 64, 76, 79, 82, 86, 88, 111, 114, 119, 121
Grade 2 links: 44, 117
Grade 1 links: 51, 90-93, 119-120

Objectives
- Copy, extend and describe simple number sequences to at least 1 000
- Count sequentially forwards and backwards in 10s to at least 1 000

Resources
Teacher: Number board 801 – 900, counters, blank number boards
Learner: Learner workbook page 108

Dictionary
Odd: any number that is not divisible by 2. Odd numbers end with 1, 3, 5, 7 or 9.
Even: any number that is divisible by 2. Even numbers end with 2, 4, 6, 8 or 0.

Teach mathematics

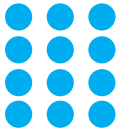
Concrete and Representational
The learners work in pairs and each gets 5 counters to cover any 5 numbers on the number board. They then take turns counting in ones, including the numbers covered. They then move their counters on to any even numbers. The learners then count in twos from 802 to 900 in the same way.

Then ask the learners to fill in all the numbers on the blank number board sheet from 801 to 900. When they have completed the board, they can check each other's work. Discuss with the learners what even and odd numbers are and ask them to colour even numbers in green and odd numbers in red.

801	802	803	804	805	806	807	808	809	810
811	812	813	814	815	816	817	818	819	820
821	822	823	824	825	826	827	828	829	830
831	832	833	834	835	836	837	838	839	840
841	842	843	844	845	846	847	848	849	850
851	852	853	854	855	856	857	858	859	860
861	862	863	864	865	866	867	868	869	870
871	872	873	874	875	876	877	878	879	880
881	882	883	884	885	886	887	888	889	890
891	892	893	894	895	896	897	898	899	900

Revise with the learners the concept of rows and how we can use them to calculate multiplication and division sums.

Draw the following on the board:



Show the learners that there are 4 rows of circles and in each row there are 3 circles. (4 rows of 3 circles = 12) Ask them to work in pairs to think of how else we can lay out the circles.

See how many different arrangements they can suggest.

116 Number patterns: twos up to 900 *continued*

Content links: 9, 29, 47, 64, 76, 79, 82, 86, 88, 111, 114, 119, 121
Grade 2 links: 44, 117
Grade 1 links: 51, 90-93, 119-120

What patterns do the circled and shaded numbers show us?
Answer:

Circled in blue:	Counting in ***2s*** .
Write down the pattern:	***801, 803, 805, 807, 809, 811, 813, 815, 817, 819, ...***
Circled in purple:	Counting in ***2s*** .
Write down the pattern:	***802, 804, 806, 808, 810, 812, 814, 816, 818, 820, ...***

Calculate the following.
Answer:

a. 872 + 2 + 2 + 2 = ***878***	b. 820 − 2 − 2 − 2 = ***814***	c. 844 + 2 + 2 = ***848***
d. 832 − 2 − 2 − 2 − 2 = ***824***	e. 883 + 2 = ***885***	f. 842 − 2 − 2 = ***838***
g. 801 + 2 + 2 + 2 + 2 = ***807***	h. 815 − 2 = ***813***	i. 846 − 2 − 2 − 2 = ***840***

a. Draw a ✖ next to the odd numbers and a ✔ next to the even numbers.
Answer:

914 ✔ 923 ✖ 916 ✔ 907 ✖ 929 ✖ 912 ✔ 911 ✖ 915 ✖
908 ✔ 917 ✖ 925 ✖ 931 ✖ 930 ✔ 910 ✔ 909 ✖ 922 ✔ 933 ✖

b. Answer even or odd. Add two odd numbers. You get an even number. Add two even numbers. You get an even number. When you add three odd numbers. You get an odd number.

Count the rows and the trees in each picture below and write an x and a ÷ number sentence to match.
Answer:
a. 6 x 8 = 48 (6 rows of 8 trees = 48); 48 ÷ 6 = 8
b. 3 x 12 = 36 (3 rows of 12 trees = 36); 36 ÷ 3 = 12
c. 3 x 15 = 45 (3 rows of 15 trees = 45); 45 ÷ 3 = 15
d. Find another way to plant 48 trees in rows.
4 x 12 = 48 (4 rows of 12 trees = 48); 48 ÷ 4 = 12
e. Find another way to plant 48 trees in rows.
2 x 24 = 48 (2 rows of 24 trees = 48); 48 ÷ 2 = 24

Reflection questions

Can the learners do the following?

- Copy, extend and describe simple number sequences to at least 1 000
- Count sequentially forwards and backwards in 10s to at least 1 000

Common errors

Make notes of common errors made by the learners.

Content links: 50, 78, 81, 83-85, 87, 89, 113, 118, 120
Grade 2 links: 29, 45-48, 54, 58, 62-63, 82, 84, 86-88, 110, 114-115
Grade 1 links: 26, 47, 49-51, 90-92, 117-120, 122

117 Multiplication and division: twos up to 100

Objectives
- Multiply numbers by 2 up to a total of 100
- Divide numbers up to 100 by 2
- Use appropriate symbols (x, ÷, =)

Resources
Teacher: Place value cards
Learner: Learner workbook page 110

Dictionary
Division: sharing out a quantity into a number of equal sized portions

Teach mathematics

Concrete and Representational
Use only two digit numbers and ask the learners to set out these numbers out using the place value cards. 1 0 5

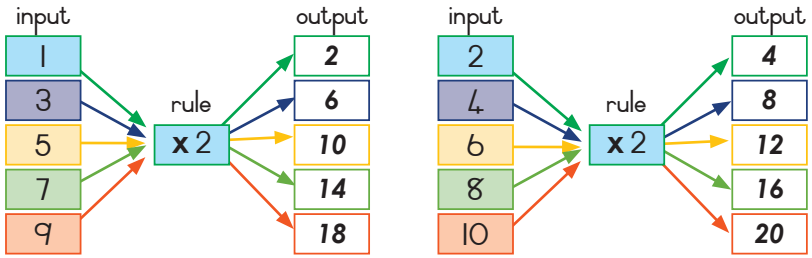
Once the learners have laid out the number using the place value cards, show the learners how to multiply the number. For example:
15 x 2
= (10 x 2) + (5 x 2)
= 20 + 10
= 30

Do the following
25 x 2 = ☐
33 x 2 = ☐

Then revise how to divide. Ask the learners to set out the number to be divided using the place value cards. 4 0 8
For example:
48 ÷ 2
= (40 + 8) ÷ 2
= (40 ÷ 2) + (8 ÷ 2)
= 20 + 4
= 24

Do a few more examples.

Complete the flow diagrams.
Answer:



Content links: 50, 78, 81, 83-85, 87, 89, 113, 118, 120
Grade 2 links: 29, 45-48, 54, 58, 62-63, 82, 84, 86-88, 110, 114-115
Grade 1 links: 26, 47, 49-51, 90-92, 117-120, 122

117 Multiplication and division: twos up to 100 *continued*

Complete the table. ***Answer:***

×	1	2	3	4	5	6	7	8	9	10
2	***2***	***4***	***6***	***8***	***10***	***12***	***14***	***16***	***18***	***20***

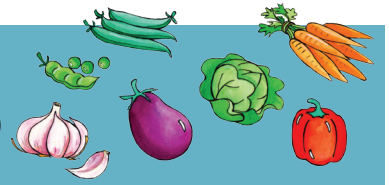
Calculate the following. ***Answers:***

12 × 2 = (10 + 2) × 2 = 20 + 4 = 24	11 × 2 ***= (10 + 1) x 2*** ***= 20 + 2*** ***= 22***
18 × 2 = (10 + 8) × 2 = 20 + 16 = 20 + 10 + 6 = 36	22 × 2 ***= (20 + 2) x 2*** ***= 40 + 4*** ***= 44***
46 ÷ 2 = (40 + 6) ÷ 2 = (40 ÷ 2) + (6 ÷ 2) = 20 + 3 = 23	74 ÷ 2 ***= (70 + 4) ÷ 2*** ***= (70 ÷ 2) + (4 ÷ 2)*** ***= 35 + 2*** ***= 37***

47 ÷ 2 = (40 + 7) ÷ 2 = (40 ÷ 2) + (7 ÷ 2) = 20 + 3 rem 1 = 23 rem 1	75 ÷ 2 ***= (70 + 5) ÷ 2*** ***= (70 ÷ 2) + (5 ÷ 2)*** ***= 35 + 2 rem 1*** ***= 37 rem 1***

Solve the following problems:
A vegetable garden has 32 rows of plants. Each row has 2 plants. How many plants are there in the garden?
Answer: 32 x 2 = 64 plants

A vegetable garden has 40 rows of plants. Every row has the same number of plants. If there are a total of 80 plants, how many plants are there in each row?
Answer: 80 ÷ 40 = 2 plants



Reflection questions
Can the learners do the following?
- Multiply numbers by 2 up to a total of 100
- Divide numbers up to 100 by 2
- Use appropriate symbols (x, ÷, =)

Content links: 50, 78, 81, 83-85, 87, 89, 113, 117, 120
Grade 2 links: 50-51, 54, 113-115
Grade 1 links: 52-53

118 Multiplication and division: threes up to 100

Objectives
- Multiply numbers by 3 up to a total of 99
- Divide numbers up to 99 by 3
- Use appropriate symbols (x, ÷, =)

Resources
Teacher: Place value cards
Learner: Learner workbook page 112

Dictionary
Division: sharing or grouping a number in equal parts.

Teach mathematics

Concrete - Representational
Use only two digit numbers and get the learners to lay out these numbers using the place value cards. Once the learners have set out the number using place value cards, show them how to multiply the number. For example: 1 0 5

15 x 3
= (10 x 3) + (5 x 3)
= 30 + 15
= 45

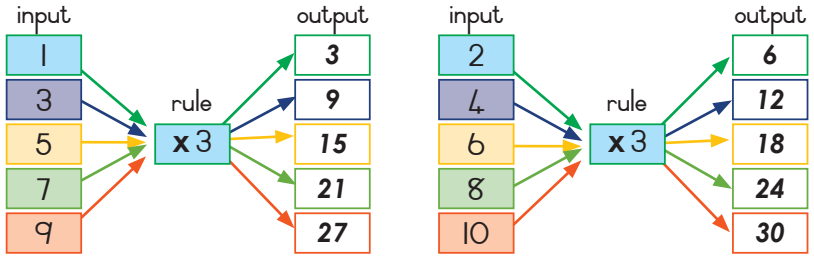
Do the following:
22 x 3 = ☐
32 x 3 = ☐

Then revise how to divide. Get the learners to set out the number to be divided using the place value cards. For example: 9 0 4

94 ÷ 3
=(90 + 4) ÷ 3
= (90 ÷ 3) + (4 ÷ 3)
= 30 + 1 rem 1
= 31 rem1

Do a few more examples.

Complete the flow diagram.
Answer:



Content links: 50, 78, 81, 83-85, 87, 89, 113, 117, 120
Grade 2 links: 50-51, 54, 113-115
Grade 1 links: 52-53

118 Multiplication and division: threes up to 100 *continued*

Complete the table. ***Answer:***

×	1	2	3	4	5	6	7	8	9	10
3	***3***	***6***	***9***	***12***	***15***	***18***	***21***	***24***	***27***	***30***

Calculate the following. ***Answer:***

12 × 3 = (10 + 2) × 3 = 30 + 6 = 36	11 × 3 ***= (10 + 1) x 3*** ***= 30 + 3*** ***= 33***
17 × 3 = (10 + 7) × 3 = 30 + 21 = 30 + 20 + 1 = 51	19 × 3 ***= (10 + 9) x 3*** ***= 30 + 27*** ***= 30 + 20 + 7*** ***= 50 + 7*** ***= 57***
63 ÷ 3 = (60 + 3) ÷ 3 = (60 ÷ 3) + (3 ÷ 3) = 20 + 1 = 21	96 ÷ 3 ***= (90 + 6) ÷ 3*** ***= (90 ÷ 3) + (6 ÷ 2)*** ***= 30 + 2*** ***= 32***
65 ÷ 3 = (60 + 5) ÷ 3 = (60 ÷ 3) + (5 ÷ 3) = 20 + 1 rem 2 = 21 rem 2	98 ÷ 3 ***= (90 + 8) ÷ 3*** ***= (90 ÷ 3) + (8 ÷ 3)*** ***= 30 + 2 rem 2*** ***= 32 rem 2***

Solve the following problems. Marlene has 30 sweets. This is ten times as many as Jacob has. How many sweets does Jacob have?
Answer: 3

A vegetable garden has 29 rows of plants. Each row has 3 plants. How many plants are there in the garden?
Answer: 87 plants

Reflection questions
Can the learners do the following?
- Multiply numbers by 3 up to a total of 99
- Divide numbers up to 99 by 3
- Use appropriate symbols (x, ÷, =)

Common errors
Make notes of common errors made by the learners.

119 Number patterns: threes up to 1 000

Content links: 9, 29, 47, 64, 76, 79, 82, 86, 88, 111, 114, 116, 121
Grade 2 links: 50-51, 54, 112-115, 117
Grade 1 links: 52-53

Objectives
- Copy, extend and describe simple number sequences to at least 1 000
- Count sequentially forwards and backwards in 3s to at least 1 000

Resources
Teacher: Number board 801- 900, blank number board sheets
Learner: Learner workbook page 114, piece of paper

Dictionary
Sequence: A sequence is an ordered list of numbers or objects.
Pattern: A pattern is a sequence that follows certain rules.
Number pattern: This is a special sequence of numbers arranged in order according to a rule (for example, by adding or subtracting some value each time).

Teach mathematics

Concrete and Representational
The learners work in pairs using the number board at the top of page 114.

They read out the numbers when counting in threes from 803 to 899.

		803			806			809	
	812			815			818		
821			824			827			830
		833			836			839	
	842			845			848		
851			854			857			860
		863			866			869	
	872			875			878		
881			884			887			890
		893			896			899	

Concrete - Representational
They then cover the illustration with a piece of paper and call out the numbers in threes starting at 803 but without seeing them.

Discuss with the learners that when we count in threes we don't have to always start at the same number.

Ask the learners to fill in the blank number board from 801 - 900. When they have completed the board, they can check each other's work. The learners then use red to colour the numbers when counting in threes from 803 and use blue when counting in threes from 801.

What patterns do the circled numbers show us? ***Answer:***

801	802	803	804	805	806	807	808	809	810
811	812	813	814	815	816	817	818	819	820
821	822	823	824	825	826	827	828	829	830
831	832	833	834	835	836	837	838	839	840
841	842	843	844	845	846	847	848	849	850
851	852	853	854	855	856	857	858	859	860
861	862	863	864	865	866	867	868	869	870
871	872	873	874	875	876	877	878	879	880
881	882	883	884	885	886	887	888	889	890
891	892	893	894	895	896	897	898	899	900

119 Number patterns: threes up to 1 000 *cont...*

Content links: 9, 29, 47, 64, 76, 79, 82, 86, 88, 111, 114, 116, 121
Grade 2 links: 50-51, 54, 112-115, 117
Grade 1 links: 52-53

Circled in orange:	Counting in ***3s***
Write down the pattern:	***801, 804, 807, 810, 813, 816, 819, ...***
Circled in green:	Counting in ***3s***
Write down the pattern:	***802, 805, 808, 811, 814, 817, 820, ...***

Calculate the following. ***Answer:***

a. 873 + 3 + 3 + 3 = ***882***	b. 824 − 3 − 3 − 3 = ***815***	c. 841 + 3 + 3 = ***847***
d. 837 − 3 − 3 − 3 − 3 = ***825***	e. 889 + 3 = ***892***	f. 846 − 3 − 3 = ***840***
g. 802 + 3 + 3 + 2 = ***810***	h. 819 − 3 = ***816***	i. 880 − 3 − 3 − 3 = ***871***

Fill in the missing numbers. Colour the missing number blocks green. Colour the white blocks red. What pattern do you see? ***Answer: Counting in 3s***

901		903	904		906	907		909	910
	912	913		915	916		918	919	
921	922		924	925		927	928		930
931		933	934		936	937		939	940
	942	943		945	946		948	949	
951	952		954	955		957	958		960
961		963	964		966	967		969	990
	972	973		975	976		978	979	
981	982		984	985		987	988		990
991		993	994		996	997		999	1 000

Calculate the following.

a. Add 4 threes to 981.
Answer: 984, 987, 990, 993

b. Add 5 threes to 973.
Answer: 976, 979, 982, 985, 988

c. Subtract 4 threes from 975.
Answer: 972, 969, 966, 963

d. Subtract 3 threes from 947.
Answer: 944, 941, 938

e. Add 2 threes to 932.
Answer: 935, 938

Reflection questions

Can the learners do the following?

- Match the columns
- Complete the table
- Link grouping to multiplication
- Link sharing to division
- Complete flow diagrams
- Copy, extend and describe simple number sequences to at least 1 000
- Count sequentially forwards and backwards in 3s to at least 1 000

Content links: 50, 78, 81, 83-85, 87, 89,113, 117-118
Grade 2 links: 52-54, 58-63, 88, 110, 114-115
Grade 1 links: 54-55

120 Multiplication and division: fours up to 100

Objectives
- Multiply numbers by 4 up to a total of 100
- Divide numbers up to 100 by 4
- Use appropriate symbols (x, ÷, =)

Resources
Teacher: Place value cards
Learner: learner workbook page 116

Dictionary
Division: sharing or grouping a number in equal parts
Multiplication: a mathematical operation where a number is added to itself a number of times

Teach mathematics

Concrete - Representational
Use only two digit numbers and let the learners set out these numbers using place value cards. Once the learners have set out the number using their place value cards, show the learners how to multiply the number.
For example: 1 0 9
19 x 4
= (10 x 4) + (9 x 4)
= 40 + 36
= 76

Concrete - Representative
Do the following

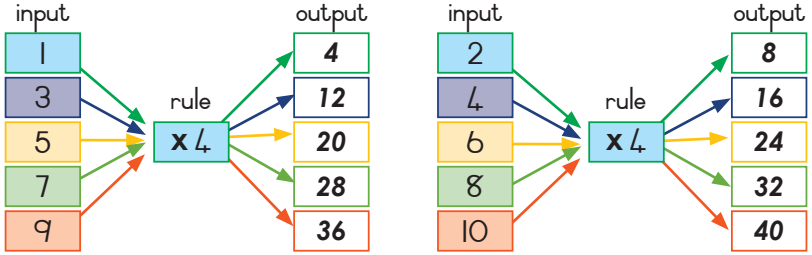
16 x 4 = ☐
24 x 4 = ☐

Then revise division and get the learners to set out the number to be divided using their place value cards. For example: 8 0 4

84 ÷ 4
=(80 + 4) ÷ 4
= (80 ÷ 4) + (4 ÷ 4)
= 20 + 1
= 21

Do a few more examples.

Complete the flow diagram. ***Answer:***



Content links: 50, 78, 81, 83-85, 87, 89,113, 117-118
Grade 2 links: 52-54, 58-63, 88, 110, 114-115
Grade 1 links: 54-55

120 Multiplication and division: fours up to 100 *cont..*

Complete the table. ***Answer:***

×	1	2	3	4	5	6	7	8	9	10
4	**4**	**8**	**12**	**16**	**20**	**24**	**28**	**32**	**36**	**40**

Calculate the following. ***Answer:***

12 × 4 = (10 + 2) × 4 = 40 + 8 = 45	11 × 4 **= (10 + 1) x 4** **= 40 + 4** **= 44**
13 × 4 = (10 + 3) × 4 = 40 + 12 = 40 + 10 + 2 = 50 + 2 = 52	15 × 3 **= (10 + 5) x 4** **= 40 + 20** **= 60**
48 ÷ 4 = (40 + 8) ÷ 4 = (40 ÷ 4) + (8 ÷ 4) = 10 + 2 = 12	64 ÷ 4 **= (60 + 4) ÷ 4** **= (60 ÷ 4) + (4 ÷ 4)** **= 15 + 1** **= 16**
45 ÷ 4 = (40 + 5) ÷ 4 = (40 ÷ 4) + (5 ÷ 4) = 10 + 1 rem 1 = 11 rem 1	49 ÷ 4 **= (40 + 9) ÷ 4** **= (40 ÷ 4) + (9 ÷ 4)** **= 10 + 2 rem 1** **= 12 rem 1**

Solve the following problems:Tony has 36 sweets. He eats 4 sweets every day. For how many days can he eat sweets
Answer: 9

David sells packets with four oranges each. He has 88 oranges. How many packets can he fill?
Answer: 22

Reflection questions

Can the learners do the following?

- Multiply numbers by 4 up to a total of 100
- Divide numbers up to 100 by 4
- Use appropriate symbols (x, ÷, =)

Common errors

Make notes of common errors made by the learners.

121 Number patterns: fours up to 1 000

Content links: 9, 29, 47, 64, 76, 79, 82, 86, 88, 111, 114, 116, 119
Grade 2 links: 53, 80, 88-89, 110, 112, 114-115, 117
Grade 1 links: 54-53

Objectives
- Copy, extend and describe simple number sequences to at least 1 000
- Count sequentially forwards and backwards in 4s to at least 1 000

Resources
Teacher: Number board 801 – 900, blank number board sheets
Learner: Learner workbook page 118

Dictionary
Division: sharing or grouping a number in equal parts.
Multiplication: a mathematical operation where a number is added to itself a number of times.

Teach mathematics

Concrete - Representational
The learners work in pairs using the number board at the top of page 118. They read out the numbers when counting in fours from 804 to 900.

801	802	803	804	805	806	807	808	809	810
811	812	813	814	815	816	817	818	819	820
821	822	823	824	825	826	827	828	829	830
831	832	833	834	835	836	837	838	839	840
841	842	843	844	845	846	847	848	849	850
851	852	853	854	855	856	857	858	859	860
861	862	863	864	865	866	867	868	869	870
871	872	873	874	875	876	877	878	879	880
881	882	883	884	885	886	887	888	889	890
891	892	893	894	895	896	897	898	899	900

They then cover the illustration with a piece of paper and call out the numbers in fours starting at 802 but without seeing them.

Discuss with the learners that when we count in fours we don't have to always start at the same number.

Ask the learners to fill in the blank number board sheets from 801 - 900. When they have completed the board, they can check each other's work. The learners then use red to colour the numbers when counting in fours from 804 and use blue when counting in fours from 802.

What patterns do the circled numbers show us?
Answer:

	802		804		806		808		810
	812		814		816		818		820
	822		824		826		828		830
	832		834		836		838		840
	842		844		846		848		850
	852		854		856		858		860
	862		864		866		868		870
	872		874		876		878		880
	882		884		886		888		890
	892		894		896		898		900

121 Number patterns: fours up to 1 000 *cont...*

Content links: 9, 29, 47, 64, 76, 79, 82, 86, 88, 111, 114, 116, 119
Grade 2 links: 53, 80, 88-89, 110, 112, 114-115, 117
Grade 1 links: 54-53

Circled in green:	Counting in ***4s***
Write down the pattern:	***803, 807, 811, 815, 819, ...***
Circled in purple:	Counting in ***4s***
Write down the pattern:	***805, 809, 813, 817, 821, ...***

Calculate the following. ***Answer:***

a. 872 + 4 + 4 + 4 = ***884***	b. 821 − 4 − 4 − 4 = ***809***	c. 840 + 4 + 4 = ***848***
d. 836 − 4 − 4 − 4 − 4 = ***820***	e. 885 + 4 = ***889***	f. 845 − 4 − 4 = ***837***
g. 803 + 4 + 4 + 4 = ***815***	h. 813 − 4 = ***809***	i. 850 − 4 − 4 − 4 = ***838***

Fill in the missing numbers. Colour the missing number blocks green. Colour the white blocks with numbers in them red. What pattern do you see?
Answer:
Counting in 4s

901		903	904	905		907	908	909	
911	912	913		915	916	917		919	920
921		923	924	925		927	928	927	
931	932	933		935	936	937		939	940
941		943	944	945		947	948	949	
951	952	953		955	956	957		959	960
961		963	964	965		967	968	969	
971	972	973		975	976	977		979	980
981		983	984	985		987	988	989	
991	992	993		995	996	997		999	1 000

Calculate the following:
a. Add 4 fours to 980.
Answer: 984, 988, 992, 996

b. Add 5 fours to 971.
Answer: 975, 979, 983, 987, 991

c. Subtract 4 fours from 963.
Answer: 959, 955, 951, 947

d. Subtract 3 fours from 927.
Answer: 923, 919, 915

e. Add 2 fours to 938.
Answer: 942, 946

Reflection questions

Can the learners do the following?

- Copy, extend and describe simple number sequences to at least 1 000
- Count sequentially forwards and backwards in 4s to at least 1 000

Common errors

Make notes of common errors made by the learners.

122 Equal parts of a whole

Content links: 7, 31, 57-59, 91-93, 123, 125
Grade 2 links: 90-91, 94a-94b, 123, 126
Grade 1 links: None

Objectives

- Use and name unit and non-unit fractions including halves, quarters, eighths, thirds, sixths, and fifths
- Recognise fractions in diagrammatic form
- Recognise that two halves or three thirds make one whole and that one half and two quarters are equivalent fractions
- Write fractions as one half, one third, two thirds, etc.

Resources

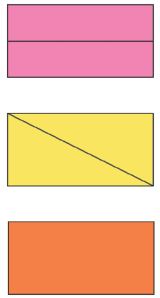
Teacher: Four rectangles cut from cardboard, unifix cubes, coloured paper
Learner: Learner workbook page 120, Cut-out 11, coloured paper, scissors, ruler

Dictionary

Fraction: a fraction is part of a whole
Unit fraction: a unit or unitary fraction is a number written as a fraction where the top number (the numerator) is 1.
Equivalent fractions: fractions that have the same value but are different in form. E.g. half a cake is the same size as two quarters of a cake.
Diagonal: a straight line drawn between two corner points of a two-dimensional shape that are not next to each other.

Concrete - Representational

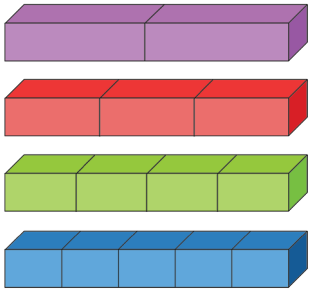
Work through Question 1 with the learners.



The learners should work in pairs . Remember to encourage the learners to follow the instructions and to work as accurately as possible. The learners must first fold the paper and then cut it if they are happy that the shape is being divided into two equal parts.

Explain that a fraction is a part of a whole and to work with halves mean that there are two pieces.

Demonstrate the following: halves, thirds, quarters, and fifths with unifix blocks or similar aids.



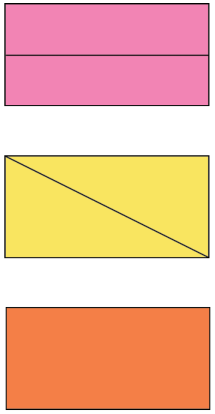
Remember that whatever object or diagram you use to show the learners, that the pieces are the same size.
If you are comparing different sizes of fractions (halves, thirds, fourths, etc.) make sure that the wholes being compared are the same size.

122 Equal parts of a whole *continued*

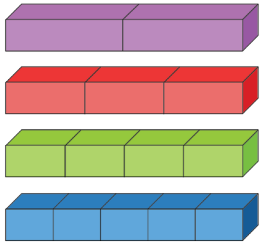
Content links: 7, 31, 57-59, 91-93, 123, 125
Grade 2 links: 90-91, 94a-94b, 123, 126
Grade 1 links: None

Cut out some rectangles from coloured paper.Explore some different ways to make one-half.

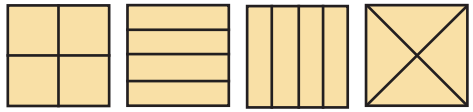
1. Fold a paper rectangle in half lengthwise. Cut the paper in half on the fold. Each of these pieces is exactly the same size. Each piece is one-half ($\frac{1}{2}$) of the original rectangle.
2. Fold another paper rectangle in half on the diagonal. Cut the paper in half on the fold. Each of these pieces is exactly the same size. Each piece is one-half of the original piece of paper.
3. What is another way to divide the paper into two equal parts? Explore with paper and scissors, and then sketch in the line where you fold and cut.



Learners must read this.When we divide something into 2 equal parts we call the parts halves.When we divide something into 3 equal parts we call the parts thirds. When we divide something into 4 equal parts we call the parts fourths.When we divide something into 5 equal parts we call the parts fifths.

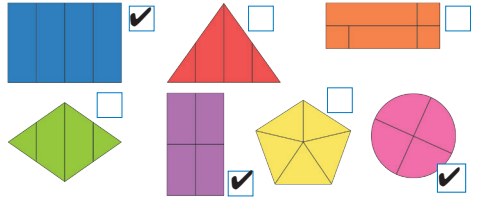


Thabo and his 3 friends make lots of sandwiches for lunch. They cut them up into fourths or quarters. This means they cut them into 4 equal size pieces. Here is one way. Show 3 other ways they can do this.



When we cut something into quarters ($\frac{1}{4}$s), we divide them into 4 equal parts. Tick (✔) the pictures below that show quarters or fourths.

Answer:



Reflection questions

Can the learners do the following?

- Use and name unit and non-unit fractions including halves, quarters, eighths, thirds, sixths, and fifths
- Recognise fractions in diagrammatic form
- Recognise that two halves or three thirds make one whole and that one half and two quarters are equivalent fractions
- Write fractions as one half, one third, two thirds, etc.

123 Fraction problems

Content links: 7, 31, 57-59, 91-93, 122, 125
Grade 2 links: 90-91, 94a-94b, 118, 121-122, 126
Grade 1 links: None

Objectives

- Use and name unit and non-unit fractions including halves, quarters, eighths, thirds, sixths, fifths
- Recognise fractions in diagrammatic form
- Recognise that two halves or three thirds make one whole and that one half and two quarters are equivalent fractions
- Writes fractions as one half, two thirds, etc.

Resources

Teacher: Fraction pictures
Learner: Learner workbook page 122, piece of paper

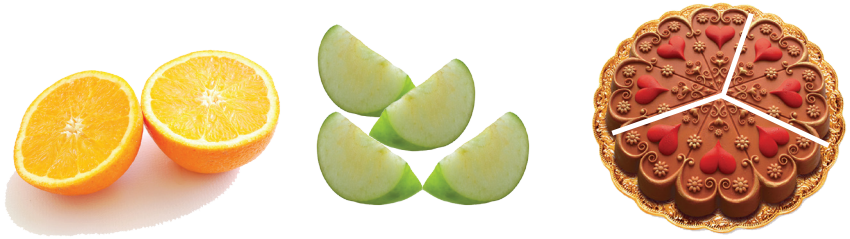
Dictionary

Fraction: a fraction is part of a whole
Unit fraction: a unit or unitary fraction is a number written as a fraction where the top number (the numerator) is 1.
Equivalent fractions: fractions that have the same value but are different in form. E.g. half a cake is the same size as two quarters of a cake.
Diagonal: a straight line drawn between two corner points of a two-dimensional shape that are not next to each other.

Concrete - Representational
Discuss the fraction pictures in Question 1 as a class.

Remind the class that size of the pieces of the whole and the number of pieces of a whole are important.
Ask the learners make a drawing to represent parts (fractions) of some everyday object.

Ask the learners to use 2-D shapes to draw the fractions so that the pieces are the same size and look the same.

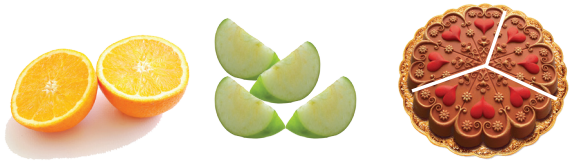


Read through question 2 with the learners and let them highlight the important information. Go step by step go through the process of solving a fraction problem.

123 Fraction problems *continued*

Content links: 7, 31, 57-59, 91-93, 122, 125
Grade 2 links: 90-91, 94a-94b, 118, 121-122, 126
Grade 1 links: None

Discuss the pictures in question 1 on page 122.



Solve the following problems by answering the questions and making drawings.a. The netball coach gives half an orange to each player. There are 14 players.

a. How many oranges does she need? ***Answer 7***
What is the question? ***Answer: How many (whole) oranges do you need?***
What are the numbers or fractions in the problem?
Answer: half (an orange) and 14 (players)
What is the key word?
Answer: half
Draw a picture.
Answer: Learner's own picture
What is the answer? ***Answer: 7 oranges***

The key word is the word that will help me to choose the correct operation.

b. My mother gives me and my 11 friends each an quarter of an apple. How many apples does she need?
What is the question? ***Answer: How many apples does she need?***
What are the numbers or fractions in the problem?
Answer: 1 (me) + 11 (friends) and a quarter (apple)
What is the key word? ***Answer: a quarter***
Draw a picture. ***Answer Learner's own picture***
What is the answer? ***Answer: 3 apples***

c. At the school fete they sold cakes cut up into three pieces each. They sold pieces of cake to 24 people. How many cakes did they sell?
What is the question? ***Answer: How many cakes did they sell?***
What are the numbers or fractions in the problem?
Answer: one third (of a cake) and 24 people
What is the key word? ***Answer: One third***
Draw a picture. ***Answer: Learner's own picture***
What is the answer? ***Answer: 8 cakes***

Reflection questions

Can the learners do the following?

- Use and name unit and non-unit fractions including halves, quarters, eighths, thirds, sixths, fifths
- Recognise fractions in diagrammatic form
- Recognise that two halves or three thirds make one whole and that one half and two quarters are equivalent fractions
- Writes fractions as one half, two thirds, etc.

124 3-D objects

Content links: 10, 60, 90
Grade 2 links: 9, 32, 75-76, 106
Grade 1 links: 87-88

Objectives

- Recognise and name 3-D objects in the classroom and pictures – balls, boxes, cylinders, pyramids, cones
- Describe, sort and compare 3-D objects in terms of 2-D shapes that make up the faces of 3-D objects, and flat or curved surfaces
- Identify how certain objects roll

Resources

Teacher: Balls, spheres, cylinders, cones and boxes, magazines
Learner: Learner workbook page 124, piece of paper

Dictionary

3-D object: an object that has height, width and depth, like any object in the real world
Cylinder: a solid object with two identical flat ends that are circular or elliptical and one curved side

124

Teach mathematics

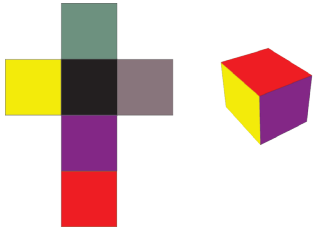
Concrete - Representational
Divide the class into groups and give each group a set of objects made up of balls, boxes and cylinders. Ask them to sort the objects into three groups: ball, box and cylinder shaped objects.

Ask the learners to point to the group they think is ball, cylinder or box and discuss the straight and curved faces of the objects in each of the groups. Ask the learners to look in magazines to find two examples of each kind of object. This they will need for Question 1.

Then ask them to regroup the objects into those that roll, slide and roll or slide only.

Concrete - Representational
Ask the learners to work in groups. Ask them to see if they can draw a flat shape that shows all the parts that are used to make a box.

Tell them that we call this the Net of the object. A Net is a flat shape that can fold up to make a solid figure.



124 3-D objects *continued*

Which group shows balls, cylinders and boxes? ***Answer:***

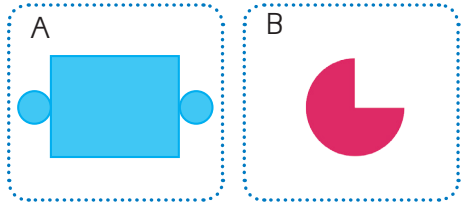
Find two pictures each of balls, boxes and cylinders and paste them in the blocks below.
Answer: learner's own pictures

Say if the following is a ball, box or cylinder.
Answer:
A tomato is a ball shape
A drinking glass is a cylinder shape
A book is a box shape

Read and discuss question 4 with the learners. What things in everyday life are cylinders, cones and balls?

Answer the questions about the 3 objects.
Answer:
Which one can not roll very far? ***Cone***
Which one can only roll in a straight line? ***Cylinder***
Which one can roll in any direction? ***Ball***

Answer the questions.
Answer:
Write the letter of the net that can fold up to make a cone. ***B***
Write the letter of the net that can fold up to make a cylinder. ***A***



Reflection questions

Can the learners do the following?

- Recognise and name 3-D objects in the classroom and pictures - ball shapes, box shapes, cylinders, pyramids, cones
- Describe, sort and compare 3-D objects in terms of 2-D shapes that make up the faces of 3-D objects, and flat or curved surfaces
- Identify how certain objects roll

Common errors

Make notes of common errors made by the learners.

125 More fractions

Content links: 7, 31, 57-59, 91-93, 122-123, 126
Grade 2 links: 90-91, 94a-94b, 118, 121-123, 125-126
Grade 1 links: None

Objectives

- Use and name unit and non-unit fractions including halves, quarters, eighths, thirds, sixths, fifths
- Recognise fractions in diagrammatic form
- Recognise that two halves or three thirds make one whole and that one half and two quarters are equivalent fractions
- Writes fractions as one half, two thirds, etc.
- Recognise fractions in diagrammatic form
- Recognise that two halves or three thirds make one whole and that one half and two quarters are equivalent fractions
- Writes fractions as one half, two thirds, etc.

Resources

Teacher: Large Fraction wall
Learner: Learner workbook page 126, piece of paper

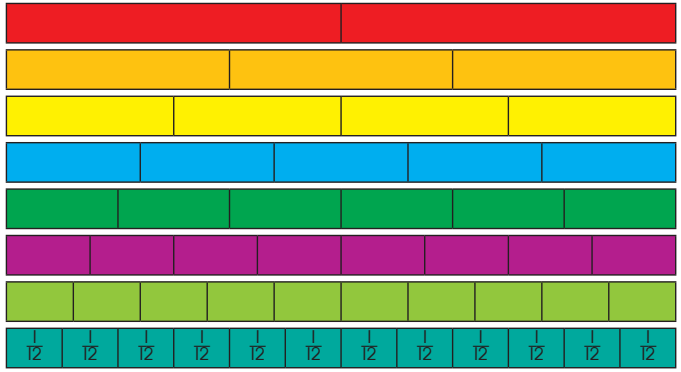
Dictionary

Fraction: a fraction is part of a whole
Unit fraction: a unit or unitary fraction is a number written as a fraction where the top number (the numerator) is 1
Equivalent fractions: fractions that have the same value but are different in form, e.g. half a cake is the same size as two quarters of a cake

Teach mathematics

Concrete - Representational

Revise with the learners what a fraction is and ask them to draw an example. Now introduce the learners to the fraction wall (as on page 127). Ideally this should also be as a large display on a classroom wall.



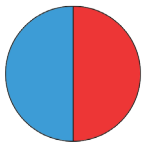
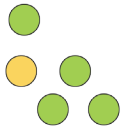
Let the learners work in pairs to label all the fractions on the fraction wall. Show the learners how they can use the ruler to help them find which fractions are equal.

Draw some simple fraction walls on the board and demonstrate to the learners how to find equivalent fractions. Give them the example of half a cake being the same size as two quarters of a cake.

125 More fractions *continued*

Content links: 7, 31, 57-59, 91-93, 122-123, 126
Grade 2 links: 90-91, 94a-94b, 118, 121-123, 125-126
Grade 1 links: None

Write the fractions for the pictures below.

	
a. What fraction is red? $\frac{1}{2}$ ***one half***	b. What fraction is green? $\frac{4}{5}$ ***four fifths***
	
c. What fraction is blue? $\frac{1}{3}$ ***one third***	d. What fraction is yellow? $\frac{2}{4}$ ***one half or two quarters***

Answer the questions.

a. Sizwe has four pieces of chocolate. He gives one piece to his friend. What fraction of the chocolates does he have left?
Answer: three quarters

b. Yasmin has two oranges. She shares one with Ann. What fraction does she have left?
Answer: one half

c. Maria buys 5 chocolate bars. She keeps 1 for herself, gives 2 to Mohamed, and 2 to her brother. What fraction does Mary keep for herself?
Answer: one fifth

From the fraction wall, find all the different ways to make:

Answer:

one half $(\frac{1}{2})$: $\frac{2}{4}, \frac{4}{8}, \frac{6}{12}$

one whole (1): $\frac{2}{2}, \frac{3}{3}, \frac{4}{4}, \frac{5}{5}, \frac{6}{6}, \frac{8}{8}, \frac{9}{9}, \frac{12}{12}$

three quarters $(\frac{3}{4})$: $\frac{6}{8}, \frac{9}{12}$

Reflection questions

Can the learners do the following?

- Use and name unit and non-unit fractions including halves, quarters, eighths, thirds, sixths, fifths
- Recognise fractions in diagrammatic form
- Recognise that two halves or three thirds make one whole and that one half and two quarters are equivalent fractions
- Writes fractions as one half, two thirds, etc.

126 More grouping and sharing

Content links: 7, 31, 57-59, 91-93, 122-123, 125
Grade 2 links: 58-61, 110
Grade 1 links: 29-30, 49, 52, 54, 56, 80-84, 90-92, 112-113, 117, 120

Objectives
- Solve number problems in context
- Explain own solutions to problems that involve equal sharing and grouping up to 100 with answers that may include remainders

Resources
Teacher: Slab of chocolate, sugar sticks
Learner: Learner workbook page 128, piece of paper

Dictionary
Sharing: separating a number of items into equal parts or groups which are then given to people

Teach mathematics

Concrete - Representational
A simple approach to division is "sharing". You present problems to the learners that involve sharing a number of objects between a number of people.

Ask the learners how they would share 3 sweets equally between 2 children. Ask them if it would make sense to cut all the sweets in half and then each gets a piece. Or each child gets a sweet and the left over sweet is cut or broken in half and each child gets a half.

Ask them to draw this on a piece of paper and go round and see what the learners have drawn. Remind the learners about size and that the half sweets should look exactly the same.

Let the learners work in pairs to share 13 sweets between 6 friends. Encourage learners to draw pictures to help them.

126 More grouping and sharing *contin*

Content links: 7, 31, 57-59, 91-93, 122-123, 125
Grade 2 links: 58-61, 110
Grade 1 links: 29-30, 49, 52, 54, 56, 80-84, 90-92, 112-113, 117, 120

Ask the learners to do the following quick calculations and look for links.
Answer:

30 ÷ 3 = ***10***	15 ÷ 3 = ***5***	60 ÷ 3 = ***20***	600 ÷ 3 = ***200***
150 ÷ 3 = ***50***	24 ÷ 4 = ***3***	24 ÷ 8 = ***3***	240 ÷ 4 = ***60***
120 ÷ 4 = ***30***	12 ÷ 4 = ***4***	40 ÷ 10 = ***4***	40 ÷ 5 = ***8***
400 ÷ 10 = ***40***	400 ÷ 5 = ***40***	200 ÷ 5 = ***40***	18 ÷ 2 = ***9***
36 ÷ 2 = ***18***	72 ÷ 2 = ***36***	72 ÷ 4 = ***18***	72 ÷ 8 = ***9***

Ask learners to share out what is left. Jabu and Lebo want to share 13 chocolate pieces. How many pieces do they each get?
Answer: Each get 6 and a half pieces.

a. At a party 25 sugar strips are shared between 10 children. Share out exactly! Draw a picture to help you.

Answer: Each child gets 2 and a half strips.

b. Share 37 strips between 4 children.
Answer: Each one gets 9 and one quarter strips.

c. Share 48 strips between 5 children.
Answer: Each one gets 9 and 3 fifth strips.

d. Share 73 strips between 10 children.
Answer: Each one gets 7 and 3 tenth strips.

Reflection questions
Can the learners do the following?
- Solve number problems in context
- Explain own solutions to problems that involve equal sharing and grouping up to 100 with answers that may include remainders

127 Tangram fractions

Content links: 11, 72
Grade 2 links: 8, 36, 99, 103
Grade 1 links: 48a-48b, 109-111

Objectives
- Use and name unit and non-unit fractions including halves, quarters, eighths, thirds, sixths, and fifths
- Recognise fractions in diagrammatic form

Resources
Teacher: Tangram
Learner: Learner workbook page 130, the tangram pieces from Cut-out 12, piece of white paper

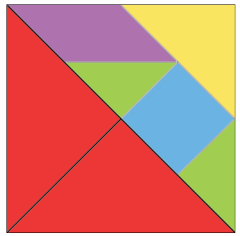
Dictionary
Sharing: separating a number of items into equal parts or groups which are then given to people

Teach mathematics

Concrete - Representational
Ask the learners to cut out the tangram pieces (from Cut-out 12) and to write their name on each of the pieces.

Ask them to use the pieces to create pictures and let them show each other their pictures. As a class work through question 1 and discuss with the learners how to identify the fractions in a tangram.

For example:



What fraction of the whole square is each of the two large triangles? (each is $\frac{1}{4}$ of the whole)

They can then label each piece with the right fraction (as instructed to do in Question 2).

127 Tangram fractions *continued*

Content links: 11, 72
Grade 2 links: 8, 36, 99, 103
Grade 1 links: 48a-48b, 109-111

Fractions in the tangram.

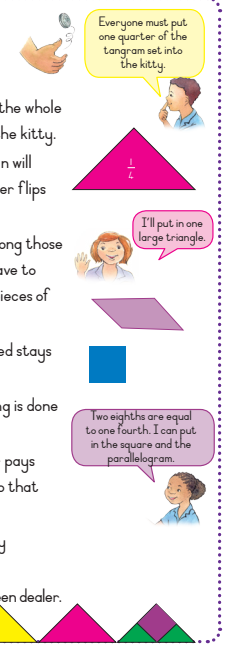
	Look at the tangram puzzle. What fraction of the whole square is each of the two large triangles? (Pink in this picture.)	$\frac{1}{4}$
	If you fold one of the large triangles into two equal pieces, each piece is the same size as the medium size triangle (yellow in the picture). What fraction of the whole square is the medium triangle?	$\frac{1}{8}$
	If you fold the medium triangle into two equal pieces, each piece is the same size as the two small triangles. (green in the picture.) What fraction of the whole square is each small triangle?	$\frac{1}{16}$
	You can put two small triangles together to make the small square. What fraction of the whole square is the small square (blue in the picture)?	$\frac{1}{8}$
	You can put two small triangles together to make the parallelogram. What fraction of the whole square is the parallelogram?	$\frac{1}{8}$

If they have not already done so, ask the learners to cut out the shapes in Cut-out 12 and label each piece with its fraction of the whole square. Also ask them to put their name on the back of each piece, so they can get their own pieces back at the end of the game they will play.

Ask the learners to play the fair share fraction game.

Play with 4 (or 8) players using your tangram pieces.

1. Players take turns being the dealer.
2. The dealer decides what fraction of the whole tangram each player must put into the kitty.
3. Each player guesses whether the coin will come up heads or tails, then the dealer flips the coin.
4. The dealer then shares the kitty among those who guessed right. (He or she may have to trade one or more pieces for other pieces of equal value.)
5. Any remainder that cannot be shared stays in the kitty for the next round.
6. All players check to see if the sharing is done correctly.
7. If a player finds an error, the dealer pays a penalty of $\frac{1}{8}$ of the whole square to that player.
8. A player with no pieces may take any remainder from the kitty.
9. Play continues until each player has been dealer.



Reflection questions

Can the learners do the following?

- Use and name unit and non-unit fractions including halves, quarters, eighths, thirds, sixths, and fifths
- Recognise fractions in diagrammatic form

128a Measuring capacity

Content links: 14
Grade 2 links: 12, 49, 67-68, 111
Grade 1 links: 37, 40, 126

Objectives
- Compare, order and record the capacity of commercially packaged objects in litres and millilitres

Resources
Teacher: measuring jug and cups, water
Learner: learner workbook page 132

Dictionary
Capacity: the amount of space in a container to hold something
Volume: the amount of space actually occupied or filled by an object, gas or liquid

Teach mathematics

Concrete-Representational
Revise with the learners how we use measuring jugs and cups to measure capacity and volume. Either show the learners pictures or fill three jugs at different levels and ask which is almost empty, full and almost full.

Explain that 1 litre = 1 000 m

Ask the learners if they can think of how we can make up a litre of liquid, using measuring cups.

For example:

500 m + 500 m = 1 000 m
250 m + 250 m + 250 m + 250 m = 1 000 m

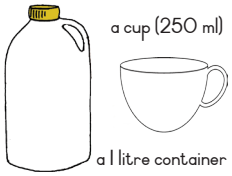
Let the learners work in pairs to complete a few more examples like this one.

128a Measuring capacity *continued*

Content links: 14
Grade 2 links: 12, 49, 67-68, 111
Grade 1 links: 37, 40, 126

Ask the learners to use a plastic bottle container and a cup. Ask the learners how many cups do they think will fill this container?

Answer: 250 ml x 4 = 1 000 ml (1 litre)



Ask the learners to find a way to make up a litre using different amounts of liquid. Write a number sentence for each different way.

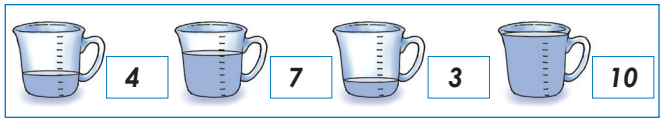
Answer: These are possible answers.

a. 250 ml + 250 ml + 250 ml + 250 ml = 1 000 ml (1 l)
b. 150 ml + 250 ml + 100 ml + 500 ml = 1 000 ml (1 l)
c. 500 ml + 250 ml + 250 ml = 1 000 ml (1 l)
d. 200 ml + 200 ml + 200 ml + 200 ml + 200 ml = 1 000ml (1 l)

When we write metric symbols, we leave a small space between the last digit and the symbol. For example we write 3 *l* not 3*l*; 299 g not 299g; 15 km not 15km.

Ask the learners "What is the volume of liquid in each cup (that have a capacity of 10)?"

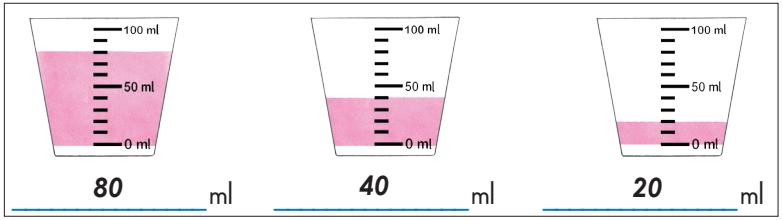
Answer:



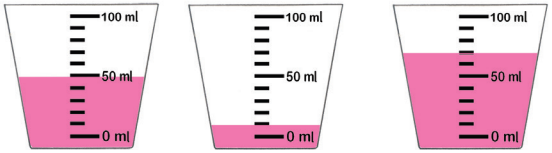
Ask the learners to read this information.

Ask the learners how many ml of liquid are in each jug?

Answer:



Ask the learners to shade the medicine cups to show the amount in each one. ***Answer:***



Reflection questions

Can the learners do the following?

- Compare, order and record the capacity of commercially packaged objects in litres and millilitres

128b Measure and pour

Content links: 14
Grade 2 links: 12, 49, 67-68, 111
Grade 1 links: 37, 40, 126

Objectives
- Compare, order and record the capacity of commercially packaged objects in litres and millilitres

Resources
Teacher: Magazines
Learner: Learner workbook page 134, magazines

Dictionary
Capacity: the amount of space in a container to hold something
Volume: the amount of space actually occupied or filled by an object, gas or liquid

Concrete-Representational
In groups ask the learners to find and cut out pictures of items that show litres and millilitres.


Give the learners a measurement, e.g. $2\frac{1}{2}$ litres, and ask them to use different pictures to make up that specific measurement.

Use more examples like this.

Learners choose one of the pictures of a container that they have cut out from a magazine, which can hold a volume of more than 1 litre. Ask them how much of that liquid they need to throw out to get to 250 ml.

Do more examples like this.

128b Measure and pour

Content links: 14
Grade 2 links: 12, 49, 67-68, 111
Grade 1 links: 37, 40, 126

At half time each player drinks $\frac{1}{4}$ of a litre of juice.

a. How many players can share?

1 litre ***4*** 4 litres ***16*** 2 $\frac{1}{2}$ litres ***10***

b. How much juice do they need for?

8 players ***2 litres*** 9 players ***2 l, 250 ml*** 12 players ***3 litres***

Litres and millilitres (ml).

1 litre = 1 000 ml $\frac{1}{2}$ a litre = ***500*** ml $\frac{1}{4}$ of a litre = ***250*** ml

125 ml = ***$\frac{1}{4}$*** of a litre 50 ml = ***$\frac{1}{20}$*** of a litre

Tick (✔)the three amounts that add up to half a litre.
Answer:

120 ml	140 ml	160 ml	28 ml	240 ml
120 ml ✔	140 ml ✔	160 ml	28 ml	240 ml ✔

Share 4 litres of milk between: ***Answer:***

a. 8 children Each child gets ***$\frac{1}{2}$*** litres

b. 16 children Each child gets ***$\frac{1}{4}$*** litres

c. 12 children Each child gets ***$\frac{1}{3}$*** litres

For 1 jug Bongi uses one quarter of a cup of juice and 2 cups of water. Work out how much juice and water Bongi uses for up to 5 jugs of juice. ***Answer:***

Jugs	1	2	3	4	5
Cups of Juice	One quarter ($\frac{1}{4}$)	***$\frac{1}{4}$***	***$\frac{1}{2}$***	***$\frac{3}{4}$***	***1 $\frac{1}{4}$***
Cups of water	2	***4***	***6***	***8***	***10***

Make a litre using the different volumes of liquid in the containers. How many of each do you need to make a litre?
Answers:
a. 10 ***b. 5*** ***c. 4*** ***d. 2*** ***e.20***

Thandi's party is over. There are drinks left over. ***Answer:***

How much yellow juice is left? ***1 $\frac{1}{2}$***

How much purple juice is left? ***1 $\frac{1}{2}$***

How many full jugs can she fill? ***3***

Reflection questions

Can the learners do the following?

- Compare, order and record the capacity of commercially packaged objects in litres and millilitres

Teacher's notes

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