GRADE 3

Mathematics

Teacher Toolkit:
CAPS Aligned Lesson Plans

TERM 4

A MESSAGE FROM THE NECT

NATIONAL EDUCATION COLLABORATION TRUST (NECT)

Dear Teachers

This learning programme and training is provided by the National Education Collaboration Trust (NECT) on behalf of the Department of Basic Education (DBE)! We hope that this programme provides you with additional skills, methodologies and content knowledge that you can use to teach your learners more effectively.

What is NECT?
In 2012 our government launched the National Development Plan (NDP) as a way to eliminate poverty and reduce inequality by the year 2030. Improving education is an important goal in the NDP which states that 90% of learners will pass Maths, Science and languages with at least 50% by 2030. This is a very ambitious goal for the DBE to achieve on its own, so the NECT was established in 2015 to assist in improving education.

The NECT has successfully brought together groups of people interested in education so that we can work collaboratively to improve education. These groups include the teacher unions, businesses, religious groups, trusts, foundations and NGOs.

What are the learning programmes?

One of the programmes that the NECT implements on behalf of the DBE is the 'District Development Programme'. This programme works directly with district officials, principals, teachers, parents and learners; you are all part of this programme! The programme began in 2015 with a small group of schools called the Fresh Start Schools (FSS). Curriculum learning programmes were developed for Maths, Science and Language teachers in FSS who received training and support on their implementation. The FSS teachers remain part of the programme, and we encourage them to mentor and share their experience with other teachers.

The FSS helped the DBE trial the NECT learning programmes so that they could be improved and used by many more teachers. NECT has already begun this scale-up process in its Universalisation Programme and in its Provincialisation Programme.

Everyone using the learning programmes comes from one of these groups; but you are now brought together in the spirit of collaboration that defines the manner in which the NECT works. Teachers with more experience using the learning programmes will deepen their knowledge and understanding, while some teachers will be experiencing the learning programmes for the first time.

Let's work together constructively in the spirit of collaboration so that we can help South Africa eliminate poverty and improve education!

CONTENTS

About the Lesson Plans and Resources 2

Lesson Plan Outline 5

Week 1 8

- Lesson 1: Numbers up to 999 – place value 8
- Lesson 2: Numbers up to 999 – place value 11
- Lesson 3: Numbers up to 999 – decomposition 14
- Lesson 4: Numbers up to 999 – rounding off to tens 17
- Lesson 5: Addition and subtraction – building up and breaking down 20

Week 2 23

- Lesson 6: Addition and subtraction – building up and breaking down 23
- Lesson 7: Addition using doubles 26
- Lesson 8: Addition using near doubles 29
- Lesson 9: Addition and subtraction – money 32
- Lesson 10: Addition and subtraction – money 35

Week 3 38

- Lesson 11: Problem solving – using number lines 38
- Lesson 12: Problem solving – double operations 41
- Lesson 13: Problem solving – double operations 44
- Lesson 14: Symmetry 47
- Lesson 15: Symmetry 50

Week 4 53

- Lesson 16: 3-D objects 53
- Lesson 17: Area 56
- Lesson 18: Area and perimeter 59
- Lesson 19: Time 62
- Lesson 20: Time 65

Week 5 68

- Lesson 21: Number patterns 68
- Lesson 22: Number and shape patterns 71
- Lesson 23: Geometric patterns 74
- Lesson 24: Mass 77
- Lesson 25: Capacity 80

Week 6 83

- Lesson 26: Data 83
- Lesson 27: Data 86
- Lesson 28: Division – grouping and sharing 89
- Lesson 29: Division – revise sharing 92
- Lesson 30: Division – word problems 95

Week 7 98

- Lesson 31: Multiplication and division – inverse operations 98
- Lesson 32: Division strategies 101
- Lesson 33: Multiplication and division – consolidation 104
- Lesson 34: Division – consolidation 107

Week 8 110

- Lesson 35: Sharing leading to fractions 110
- Lesson 36: Sharing leading to fractions 113
- Lesson 37: Fraction problems with unitary and non-unitary solutions 116
- Lesson 38: Putting fractions together 119

ABOUT THE LESSON PLANS AND RESOURCES

The lesson plans and resources are part of the Teacher Toolkit for Mathematics Grade 3 Term 4. The other documents in the toolkit are:

- a CAPS Aligned Planner, Tracker and Assessment Resources

A variety of printable resources that you can copy for yourself and/or your learners are included in a separate Resource Pack. They include:

a) **Resource sheets:** These comprise a variety of teaching and learning aids that are needed in certain lessons. The specific resource sheet, and the number of copies needed, is noted in the relevant lesson plan and in the tracker so that you can prepare them in advance.
b) **Mental mathematics challenge cards:** A pack of eight mental mathematics challenge cards (solutions are provided) is included to allow for routine weekly mental mathematics activities that you can record.
c) **Enrichment activity cards:** A pack of 32 enrichment activity cards (solutions are provided) are included for learners who complete the day's classwork activities ahead of the class.

About the lesson plans

The lesson plans give detailed information about how to teach a CAPS-aligned lesson every day. By following the lesson plans, you will ensure that you cover the content and assessment tasks specified in the curriculum and give your learners the best possible chance of developing the knowledge and skills required for Mathematics in this grade.

1. Curriculum alignment

The lessons are sequenced according to the topics in the CAPS and weighted according to requirements given there, and the programme of assessment is accommodated. Every lesson shows the CAPS content and skill being focussed on in the lesson.

2. Links to the DBE workbooks

Links are given in the lessons to all appropriate DBE worksheets. Note that the pages referred to are all from the 2017 edition of the DBE workbook. This changes very little from year to year, but if you use a different edition of the workbook, you should check that the worksheet on the same page in this different edition is still appropriate for your purpose.

Bilingual learner material is provided in the LoLT of the school in accordance with the Foundation Phase language policy.

3. Broad overview of the content of the lesson plans

Each lesson plan provides a set of steps to guide you in delivering the lesson. In addition, it contains learner activities that will help learners develop the concepts and skills set for the lesson. These include the required daily mental mathematics activity, whole class oral activities led by the teacher, classwork and homework activities, as well as answers for these. All the classwork and homework activities are given in the lesson plans, learners must either copy these into their books or teachers can photocopy the activity.

4. Assessment

The programme of assessment suggested in the lesson plans and tracker is adaptable and can be adjusted to comply with the CAPS as amended by Circular S1 of 2017 and provincial responses to this. The lesson plans and tracker provide a number of resources to support both formal and informal assessment in this programme, as noted below:

- Oral and practical activities which you can use to assess learners as you observe and interact with them in class are provided in the tracker. Rubrics and checklists with criteria for this assessment are provided in the tracker, at the end of the table for the week in which the assessment is suggested.
- There is an item bank of written assessment

questions, with marking memos in the tracker. Items that are relevant to a specific lesson are noted in the resources column for the lesson in the tracker.

- A complete overview of the programme of assessment for the term is given in the tracker. This shows you when it is suggested you carry out both formal (and informal) assessment tasks which are oral, practical and written. This will assist you in planning and monitoring your assessment programme.
- There is also recommended mark record sheet in the tracker. This has been drawn up to assist you as you record your marks on SA-SAMS.

5. Managing the lesson programme

A set of orientation activities on eight different topics aligned with the CAPS baseline assessment requirements is provided for the start of the term. You should use all or a selection of these activities in the first week of term before the formal teaching of the numbered lesson plans begins.

The formal curriculum for Term 4 of Grade 3 is covered in a set of 38 numbered, fully developed lesson plans, paced to cover a 40-day teaching term. There are two consolidation lessons in the term – one in Week 7 and one in Week 8. You can use this time to catch up, remediate or consolidate the content covered in the term's formal lessons. Learners could complete the worksheets from the DBE workbook related to topics taught in the term if they did not manage to do them in the course of the term.

Each lesson is designed to last 90 minutes. If your school's timetable has different period lengths, you will have to adjust the amount of work done in each lesson to accommodate this. However, each school should allow seven hours for Mathematics each week, and it should be possible to fit in all the work for the week, even if the lengths of periods are not the same as in the lesson plans.

6. Sequence adherence and pacing

Each lesson and its contents have been carefully sequenced. It is therefore important that lessons are not skipped. Should you miss a Mathematics lesson for any reason, you should continue the next day from where you last left off. Do not leave a lesson out. You may need to speed up the pace of delivery to catch up a missed lesson by covering the lesson concept content of two consecutive days in one day. To do this you could cut out or cut back on some of the routine activities like mental mathematics or homework reflection to save time until you are back on track with the expected delivery of the plans. You need to prepare very well as this will help you to manage the full set of lessons at the appropriate pace.

7. Lesson preparation

The lesson plans provide a detailed lesson design for you to follow. However, to deliver the lessons successfully **you must do the necessary preparation yourself**. The information below outlines some key aspects of preparation.

a) **Term focus:** Start by looking at the CAPS document and **orientating** yourself to the CAPS content focus for the term. It is important that you are clear about the content focus, as this will frame everything you do in your Mathematics lessons during the term.

b) **Prepare resources:** The resources needed for each lesson are listed in each lesson plan and in the tracker. It is very important that you check what is required for each lesson ahead of time, so that you have all your resources ready for use every day (e.g. counters, number boards, paper cut-outs, examples of shapes, etc.).
   - **Your lessons will not succeed if you have not prepared properly for them.**
   - If you do not have all the necessary resources readily available, see how best you can improvise, e.g. get learners to collect bottle tops or small stones to be used for counting, or make your own flard cards/number boards using pieces of cardboard and a marker pen.
   - Collect empty cool drink cans, cereal boxes, washing powder boxes, plastic bottles, etc. for the **shop activity** in the week long in advance, so that you have all the necessary goods to stock your shop.

- Use newspapers and magazines to cut out pictures that could be used in your teaching. If you have access to the internet, search for and print out pictures that you may need to use as illustrations in your lessons.

c) **Prepare for the written classwork and homework activities:** When preparing your lessons, check the lesson activity requirements. In some instances you will need to write information or draw some diagrams on the board that you will use while you do the interactive whole-class-teaching component of the lesson. Also mark the homework activities as often as you can, so that you can give useful feedback to the learners each day, and be aware of any difficulties learners are having as soon as they become apparent.

d) **Prepare to teach the concepts and skills associated with the lesson topic:** Think carefully about what it is that you will teach your learners in the lesson. Prepare a short introduction to the topic, so that you can explain it in simple terms to your learners. Make sure you have prepared for the teaching of the concepts before you teach – you need to be able to explain new Mathematics content and skills to the learners. Be sure you have gone through the oral teaching activities provided in the lesson plans. Also make sure that you have thought about how to use the resources in the lesson effectively. This preparation needs to be done in advance, so that you do not waste time during the lesson. Be sure you are familiar with the sequence of activities in the lesson plan. Prepare yourself to assist learners with any questions they might have during the lesson. Also give some thought to how you will accommodate learners with barriers to learning.

e) **Lesson pace:** Think about how much time you will spend on each activity. It is important to plan how you will manage the pace of the lesson carefully; otherwise you will not manage to cover all the lesson content. Not all learners work at the same pace. You need to determine the pace – be guided by the average learner and the recommendations in the lesson plans. Be careful not to slow down to the pace of the slowest learners as this will disadvantage the other learners.

f) **Organisation of learners:** Think about how you will organise learners when they do the classwork activities. Will they work alone, in pairs or in small groups? How will you organise the pairs or groups if you choose to use them? You need to organise the learners quickly at the beginning of the lesson, so that you do not waste too much time on this.

g) **Inclusive education:** Consider the needs of any learners with barriers to learning in your class, and how best you can support them. The DBE has published some excellent materials to support you in working with learners with learning barriers. Two such publications are:

- Directorate Inclusive Education, Department of Basic Education (2011) *Guidelines for Responding to Learner Diversity in the Classroom Through Curriculum and Assessment Policy Statements*. Pretoria. www.education.gov.za, www.thutong.doe.gov.za/InclusiveEducation.
- Directorate Inclusive Education, Department of Basic Education (2010) *Guidelines for Inclusive Teaching and Learning. Education White Paper 6. Special needs education: Building an inclusive education and training system*. Pretoria. www.education.gov.za, www.thutong.doe.gov.za/InclusiveEducation.

LESSON PLAN OUTLINE

Lesson Plan Outline	
Each lesson plan has several components. Information about each is given in the table below. This information tells you how to use each of the components of the lesson plans and how they fit together to create a well-paced and properly scaffolded Mathematics lesson each day. You need to read this outline as you prepare each lesson until you are fully familiar with the general lesson plan components, pace and structure.	
Lesson topic	Each lesson has a topic with specific detail about the day's lesson.
CAPS topics	The CAPS content related to the day's lesson is given here, together with the reference number for this content in the expansion of content section in the CAPS document for this term. You are encouraged to look at the CAPS to read about the selected curricular topics for the day.
Lesson vocabulary	A list of all mathematical terms used in the lesson is given here. Go through the lesson vocabulary each day as you prepare for the lesson. These terms are important, as they are the language of Mathematics that each learner needs to learn and understand in order to build a solid foundation and understanding of this subject. It is important to explain these words to your learners and to practise using them with your learners during the lesson.
Prior knowledge and lesson concept	The prior knowledge and lesson concept section gives information about content that learners should have learnt in earlier grades that will be built on in this lesson. • You need to read through this section when you do your lesson preparation. • No time is allocated to this part of the plan because it does not form part of the teaching of the day's lesson. • The information about prior knowledge may help you to assist learners who struggle to understand the content of the lesson because there are gaps in the prior knowledge on which the lesson is based. You can use the information about prior knowledge to help you identify such gaps and to diagnose learners' needs in relation to content they do not yet know that may be preventing them from understanding the day's lesson. • Remediation may be needed on prior knowledge that you notice is not properly in place.
Assessment	A reminder to refer to the tracker for the formal oral, practical or written assessment activity for the day is given here. • On-going informal and formal oral and practical assessment should be done virtually every day in your class. This means you will record a mark for a few learners for a certain criterion from the curriculum each day. Decide how many learners to assess every day, so that you assess your whole class in the time allocated to each assessment activity. • Rubrics and checklists to guide you in giving ratings for the oral and practical assessments are given in the tracker at the end of the tracker table for each week. Each day you need to use the appropriate rubric or checklist for the assessment activity of that day. • Written test items and their memos are provided in the tracker. Links to these items are given in the resources column of the tracker to show you in which lesson they should best be used. • A *Suggested Assessment Record Sheet* that you can use to record your term marks is given in the tracker. This sheet aligns with the SA-SAMS.
Remediation	***Optional as required.*** You could use these activities to assist slower learners. You need to decide, based on your observation of the learners while you are teaching the lesson content, whether to use this content and with which learners. It will be done with a smaller group of learners/individual learners while the rest of the class is working through the classwork activity.

Lesson Plan Outline	
Enrichment	***Optional as required.*** You could use these activities as extra work for fast learners or others interested in doing them. Activities that you can use for enrichment opportunities for learners who have completed the lesson activities are provided in a set of enrichment activity cards at the end of the lesson plan set. Ideally, you should photocopy the enrichment cards, paste them onto cardboard and laminate them, so that they can be used as a resource, not only this year, but in the future as well. Learners should work on these cards independently or with their peers who have also completed the classwork. They may work through the cards in any order. You may need to explain some of the activities to the learners who use them. You should tell them to ask questions it they have any. All learners who show an interest in the enrichment activities should be encouraged to work through the cards.
Mental mathematics **(15 minutes)**	This is the first component of the lesson. We recommend that you take at most 15 minutes to do the mental mathematics activity. There are two parts to the mental mathematics activity, a counting activity and a set of questions to drill number facts and basic mathematical strategies. Mental mathematics is not a concrete activity (as the title suggests). However, if there are learners who need concrete aids to complete the mental mathematics activities, we suggest that you allow them to use their fingers to count on. • Observe which learners struggle with mental activities, and make sure you spend time to assist them to reach the required level of competence by offering remediation activities using concrete aids. • The answers to the ten mental mathematics questions are given in the answer column in the lesson plans. • It would be far better to do all ten questions per day, but if you find that your learners struggle to finish these in ten minutes, do a minimum of five questions. There is a set of mental mathematics challenge cards at the end of the lesson plans. Learners write the answers to the questions given on these cards. We recommend that learners only do written mental mathematics once a week and oral mental mathematics on all the other days. You can use this work to obtain a mental mathematics activity mark each week.
Correction/reflection on homework **(15 minutes)**	This is the second component of the lesson. We recommend that you take 15 minutes to remediate and correct the previous day's homework. Read out answers to all of the homework questions. Let learners/peers mark the work. Also try to check homework yourself as often as you can. Choose one or two activities that you realise were problematic to work through in full with the whole class. In this part of the lesson you may reflect on the previous day's work. Allow learners the opportunity to write corrections as needed.

Lesson Plan Outline	
Lesson content – concept development **(30 minutes)**	This is the third component of the lesson. It is the body of the lesson, in which learners are introduced to the new work planned for the day. We recommend that you actively teach your class for 30 minutes – going through the activities interactively with your learners. • Activities on the content that you will teach with worked examples and suggested explanations are given. These activities have been carefully sequenced and scaffolded so that they support the teaching of the concepts for the day. You should work through each of these with your class. • It is important to manage the pace of the lesson carefully, otherwise you will not manage to cover all the lesson content. Once you have introduced the new concept, work through Activity 1 of the lesson with the whole class (or with learners in groups). Then immediately move on to the next activity, and provide a reasonable time for the learners to complete Activity 2, but do not wait for the last learner to finish before moving on. If there are further activities, continue pacing yourself in this way, so that you work through all of the activities in each lesson. A few activities are marked as *optional* – these need only be done if you have sufficient time.
Classwork activity **(25 minutes)**	This is the fourth component of the lesson. We recommend that you allocate 25 minutes to classwork. You could go over one or two of the classwork activities orally with the whole class before allowing the class to complete the activities independently (individually or in groups). • Learners do most of the activities in their Mathematics books (an exercise book for learner Mathematics writing activities). Some activities are done in the DBE workbook. • You should allow the learners opportunities to do these activities alone, in pairs and in groups so that they experience working alone as well as with their peers. • Wrap up the lesson each day by giving the learners the answers to the classwork, and allow time for corrections to be written if and when necessary.
Homework activity **(5 minutes)**	This is the fifth and final component of the lesson. We have allocated five minutes to give you time to tell the learners about the homework each day. Here you find a set of activities on the day's content that you can set for your class to do for homework. This is to consolidate the Mathematics that you have taught them that day. Homework also promotes learner writing and development of their mathematical knowledge.
Reflection	Each day there is a reminder to note your thoughts about the day's lesson. You will use these notes as you plan and prepare for your teaching.

WEEK 1

LESSON 1: NUMBERS UP TO 999 – PLACE VALUE

Teacher's notes

CAPS topics: 1.1 Count objects, 1.2 Count forwards and backwards, 1.16 Mental Mathematics, 1.3 Number symbols and number names, 1.4 Describe, order and compare numbers, 1.5 Place value, 1.6 Problem solving techniques.

Lesson vocabulary: Forwards, backwards, number names, biggest, smallest, place value, hundreds, tens, units, identify, recognise, describe, order, compare, number symbol, number name, number line, breaking down, bigger than, smaller than, 3-digit, digit.

Prior knowledge: Learners should have been taught how to:
- Identify, recognise, read and write number symbols and number names 0 to 600.
- Describe, compare and order numbers to 600.
- Recognise place value of numbers 0 to 600.
- Use apparatus like counters, number lines and techniques like breaking down of numbers when solving problems.

Concepts:
- Identify, recognise, read and write number symbols and number names 0 to 1 000.
- Describe, compare and order numbers to 999.
- Recognise place value of numbers to 999.
- Use apparatus like counters and techniques like breaking down of numbers when solving problems.

Resources: 701–800 number grid (*Printable Resources* Term 3), counters, whiteboards/scrap paper, base ten blocks (*Printable Resources* Term 1).

DBE workbook activities relevant to this lesson:
- DBE Worksheet 98 (pp. 70 and 71).

Assessment: Refer to the tracker for today's formal/informal oral, practical or written assessment activity.

Remediation: Ask the learners to place a counter on the 789 on the number grid. Ask the learners to show you a number that is bigger than 789 and one that is smaller than 789. Ask them to show you 789 using the base ten blocks.

Enrichment: See enrichment activity cards.

1. Mental mathematics

1.1 Counting (5 minutes)

- Count forwards and backwards in 10s from any number between 0 and 800, e.g. 712, 722, 732…

1.2 Mental mathematics activity (10 minutes)

	Answer the following:	Answer
1.	What is 1 more than 736?	737
2.	What is 1 less than 702?	701
3.	What is 2 more than 636?	638
4.	What is 2 less than 502?	500
5.	What is 3 more than 736?	739

	Answer the following:	Answer
6.	What is 3 less than 702?	699
7.	What is 4 more than 636?	640
8.	What is 4 less than 782?	778
9.	What is 10 more than 696?	706
10.	What is 10 less than 799?	789

2. Correction/reflection on homework (15 minutes)

Reflection/remediation based on previous day's work/homework.

3. Lesson content – concept development (30 minutes)

This is the first of four lessons which focus on place value and further extend the range of numbers that learners work with to 999 to give them experience with all 3-digit numbers and to prepare them for working with 4-digit (and higher) numbers in Grade 4. As in Term 3, you will use base ten blocks, flard cards, number lines and number grids while you work with numbers. Concrete work will help learners consolidate their understanding of number concept. This will be strengthened if you model the consistent use of good mathematical language.

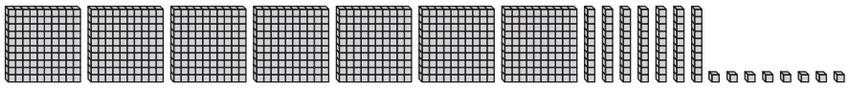
This series of four lessons also gives learners opportunities to compare numbers and to use the mathematical vocabulary of comparison between numbers (e.g. more than and less than). Remember to allow all learners to use this vocabulary in discussion and in response to your questions. If you don't have base ten blocks you should draw the base ten block representations on the board clearly for learners to see.

Activity 1: Learners work in groups

- Give each group of learners a 701–800 number grid and some counters. Learners should work on their whiteboards/scrap paper in this activity.
- Call out the following numbers: 777, 776, 773, 778.
- Each learner gets a chance to put their counter on one of the numbers that are called out.
- As soon as all the numbers have counters, ask the learners to write the number names for all the numbers on their whiteboards/scrap paper. (Seven hundred and seventy-seven, seven hundred and seventy-six, seven hundred and seventy-three, seven hundred and seventy-eight.)

Activity 2: Learners work in groups

- Give each group of learners some base ten blocks.
- Ask the learners to write the numbers from Activity 1, from the smallest to the greatest number, on their whiteboards/scrap paper. (773, 776, 777, 778.)
- Ask them to build each number using their base ten blocks, starting from the biggest to the smallest number. (778)



- After they have built each number, e.g. 788, ask the following questions:
- *How many hundreds are there in this number)?* (7)
- *How many tens are there in this number?* (7)
- *How many units are there in this number?* (8)
- Ask similar questions for the other numbers (777, 776, 773). While the learners answer, observe if they are able to speak about place value in 3-digit numbers.
- Use other examples of 3-digit numbers in the range 700–800 to discuss place value.
- Learners should be able to tell you the place value of each digit. (E.g. in the number 795, the digit 7 is in the hundreds place and it is worth 700, the digit 9 is in the tens place and it is worth 90, the digit 5 is in the units place and it is worth 5.)

4. Classwork activity from LAB (25 minutes) (See next page)

5. Homework activity from LAB (5 minutes) (See next page)

6. Reflection on lesson

Term 4 Lesson 1: Numbers up to 999 – place value

Classwork

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	880
871	872	873	874	875	876	877	878	879	870
881	882	883	884	885	886	887	888	889	890
891	892	893	894	895	896	897	898	899	900

1. Write down any five numbers that are less than 871 and bigger than 861.
   (Any numbers between 862 and 870)

2. Put a cross on five numbers that are more than 888.
   (Any numbers between 889 and 900)

3. Write these numbers from the smallest to the biggest: 818, 888, 808, 881, 880.
   (808, 818, 880, 881, 888)

4. Draw and complete a number line from 830 to 840.
   (830, 831, 832, 833, 834, 835, 836, 837,838, 839, 840)
   a) Circle the number that is 2 more than 832. (834)
   b) Circle the number that is 3 less than to 836. (833)

Homework

1. Write these numbers from the biggest to the smallest: 899, 809, 819, 890, 801.
   (899, 890, 819, 809, 801)

2. Draw and complete a number line from 630 to 640.
   (630, 631, 632, 633, 634, 635, 636, 637,638, 639, 640)
   a) Circle the number that is 5 more than 632. (637)
   b) Circle the number that is 4 less than to 636. (632)
   c) Put a cross on the biggest and the smallest numbers. (640, 630)

LESSON 2: NUMBERS UP TO 999 – PLACE VALUE

Teacher's notes

CAPS topics: 1.1 Count objects, 1.2 Count forwards and backwards, 1.16 Mental Mathematics, 1.3 Number symbols and number names, 1.4 Describe, order and compare numbers, 1.5 Place value, 1.6 Problem solving techniques.

Lesson vocabulary: Forwards, backwards, hundreds, tens, units, number lines, intervals, identify, recognise, describe, order, compare, number symbol, number name, number line, breaking down, bigger than, smaller than, 3-digit, digit.

Prior knowledge: Learners should have been taught how to:
- Identify, recognise, read and write numbers symbols and names 0 to 800.
- Describe, compare and order numbers to 800.
- Recognise place value of numbers 0 to 800.
- Use apparatus like counters, number lines and techniques like breaking down of numbers when solving problems.

Concepts:
- Identify, recognise, read and write number symbols and number names 0 to 1 000.
- Describe, compare and order numbers to 999.
- Recognise place value of numbers to 999.

Resources: Whiteboards/scrap paper, base ten blocks (*Printable Resources* Term 1).

DBE workbook activities relevant to this lesson:
- Worksheet 99 (pp. 72 and 73).

Assessment: Refer to the tracker for today's formal/informal oral, practical or written assessment activity.

Remediation: Ask the learners to place a counter on the 842 on the number grid. Ask the learners to show you the number that is 1 more than 842 (843) and the one that is 3 less than 842 (839). Ask them to show you 842 using the base ten blocks.

Enrichment: See enrichment activity cards.

1. Mental mathematics

1.1 Counting (5 minutes)

- Count forwards and backwards in 10s from any number between 0 and 800, e.g. 743, 733, 723 ...

1.2 Mental mathematics activity (10 minutes)

	Give the number between:	Answer
1.	753 and 755	754
2.	120 and 122	121
3.	445 and 447	446
4.	154 and 156	155
5.	170 and 172	171

	Give the number between:	Answer
6.	730 and 732	731
7.	456 and 458	457
8.	114 and 116	115
9.	102 and 104	103
10.	510 and 512	511

2. Correction/reflection on homework (15 minutes)

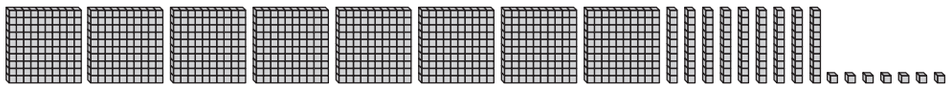
Reflection/remediation based on previous day's work/homework.

3. Lesson content – concept development (30 minutes)

This is the second lesson in which you focus on numbers and place value of numbers up to 999. If you don't have base ten blocks, do drawings on the board like those shown in the lesson plan and explain to the class what the drawings show.

Activity 1: Learners work in groups

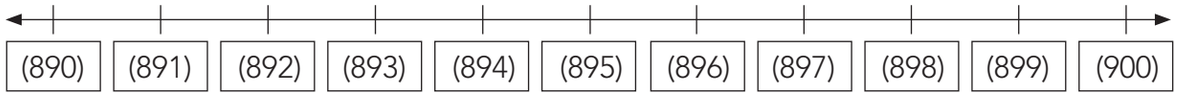
- Give each group of learners some base ten blocks. Learners should work on their whiteboards/scrap paper in this activity.
- Write the following on the board: 8 hundreds + 9 tens + 7 units.
- Ask them to build it using their base ten blocks.



- Ask them to write the number on their whiteboards/scrap paper. (897)
- Repeat (here are two examples, other numbers can also be used to allow more practice):
  - 9 hundreds + 8 units + 5 tens. (958)
  - 7 units + 9 hundreds + 3 tens. (937)

Activity 2: Whole class activity

- Draw a number line on the board labelled with tens intervals from 890 to 900.
- Ask the learners to copy it onto their whiteboards/scrap paper and fill in the following numbers on the number line:



- Discuss the following with your learners, with reference to the number line as you answer each question:
- *What is the biggest number represented on this number line?* (900)
- *What is the smallest number represented on this number line?* (890)
- *What is the number that is three more than 891?* (894)
- *What is the number that is 5 less than 900?* (895)
- *What is the number after 895?* (896)
- *What is the number before 900?* (899)
- *What is the number before 894?* (893)
- *What is the number between 891 and 893?* (892)
- *What two numbers have we not yet mentioned that are also labelled on the number line?* (897, 898)

4. Classwork activity from LAB (25 minutes) (See next page)

5. Homework activity from LAB (5 minutes) (See next page)

6. Reflection on lesson

Term 4 Lesson 2: Numbers up to 999 – place value

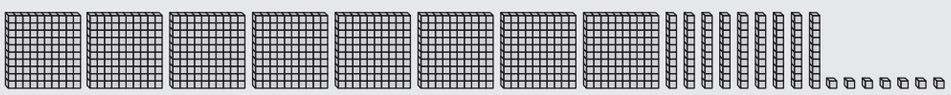
Classwork

Draw a number line from 870 to 880 in your maths book.

1. What is the biggest number represented on this number line? (880)
2. What is the smallest number represented on this number line? (870)
3. What is the number that is three more than 871? (874)
4. What is the number that is 5 less than 880? (875)
5. What is the number after 875? (876)
6. What is the number before 880? (879)
7. What is the number before 874? (873)
8. What is the number between 871 and 873? (872)
9. What two numbers have we not yet mentioned that are also labelled on the number line? (877, 878)

Homework

1. What number does the following display represent? (897)



2. Write the numbers as hundreds, tens and units:
   a) 456 = (4 hundreds, 5 tens, 6 units)
   b) 307 = (3 hundreds, 0 tens, 7 units)
   c) 919 = (9 hundreds, 1 ten, 9 units)

LESSON 3: NUMBERS UP TO 999 – DECOMPOSITION

Teacher's notes
CAPS topics: 1.1 Count objects, 1.2 Count forwards and backwards, 1.16 Mental Mathematics, 1.3 Number symbols and number names, 1.4 Describe, order and compare numbers, 1.5 Place value, 1.6 Problem solving techniques. **Lesson vocabulary:** Forwards, backwards, describe, order, compare, decompose, multiples, identify, recognise, number symbol, number name, number line, breaking down, bigger than, smaller than, 3-digit, digit, place value, hundreds, tens, units, largest, smallest. **Prior knowledge:** Learners should have been taught how to: • Identify, recognise, read and write number symbols 0 to 999. • Identify, recognise, read and write number names 0 to 999. • Describe, compare and order numbers to 999. • Recognise place value of numbers 11 to 999. • Use techniques like counters, number lines and breaking down of numbers when solving problems. **Concepts:** • Identify, recognise, read and write number symbols 0 to 1 000. • Identify, recognise, read and write number names 0 to 1 000. • Decompose three-digit numbers up to 999 into multiples of hundreds, tens and ones/units. • Identify and state the value of each digit. • Use techniques like breaking down of numbers when solving problems. **Resources:** Whiteboards/scrap paper, flard cards, base ten blocks (*Printable Resources* Term 1). **DBE workbook activities relevant to this lesson:** • DBE Worksheet 100 (pp. 74 and 75); DBE Worksheet 101 (pp. 76 and 77). **Assessment:** Refer to the tracker for today's formal/informal oral, practical or written assessment activity.
Remediation: Give the learners base ten blocks to count up to 90 in tens: 10, 20, 30, 40, 50, 60, 70, 80, 90. Count up to 800 using base ten blocks: 100, 200, 300, 400, 500, 600, 700, 800. Learners use base ten blocks to show you 763. **Enrichment:** See enrichment activity cards.

1. Mental mathematics

1.1 Counting (5 minutes)

- Count forwards and backwards in 10s from any number between 0 and 800, e.g. 719, 709, 699…

1.2 Mental mathematics activity (10 minutes)

	Answer the following:	Answer
1.	What is 10 more than 521?	531
2.	What is 20 more than 521?	541
3.	What is 30 more than 521?	551
4.	What is 40 more than 521?	561
5.	What is 50 more than 521?	571

	Answer the following:	Answer
6.	What is 10 less than 521?	511
7.	What is 20 less than 521?	501
8.	What is 30 less than 521?	491
9.	What is 40 less than 521?	481
10.	What is 50 less than 521?	471

2. Correction/reflection on homework (15 minutes)

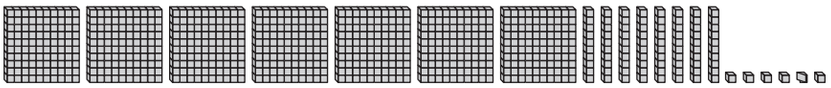
Reflection/remediation based on previous day's work/homework.

3. Lesson content – concept development (30 minutes)

This is the third lesson in which you focus on numbers and place value of numbers up to 999. If you don't have flard cards and base ten blocks, do drawings on the board like those shown in the lesson plan and explain to the class what the drawings show.

Activity 1: Learners work in groups

- Give each group of learners some base ten blocks and flard cards. Learners should work on their whiteboards/scrap paper in this activity.
- Write the number name seven hundred and eighty-six on the board.
- Ask the learners to write the number symbol on their whiteboards/scrap paper. (786)
- The group then shows the number using their base ten blocks and flard cards.
  Base ten block display:



  Flard card display:

- Repeat using these numbers: 812, 799, 856.
- Talk about the place value, face value and total value of the digits in the numbers.
- Remember:
  - **Place value** is given by the position of the digit in the number. The first place is units (1s), the second place is tens (10s), and the third place is hundreds (100s).
  - **Face value** is what you see. The value of the digit as you see it. E.g. the face values of the digits in the number 786 are 7, 8 and 6.
  - **Total value** is the value of the number/digit(s) according to place and face value. E.g. the total value of the 7 in the hundreds place is 700.

Activity 2: Whole class activity

- Write the following numbers on the board: 823, 789, 968.
- Explain to the learners that they are going to break down the numbers into hundreds, tens and units.
- Do this example: 823 = 800 + 20 + 3 or we can write it as: 823 = 8 hundreds + 2 tens + 3 units.
- Allow the learners to do the other two numbers on their own using both methods.
  - 789 = ___ (700 + 80 + 9) and (789 = 7 hundreds + 8 tens + 9 units)
  - 968 = ___ (900 + 60 + 8) and (968 = 9 hundreds + 6 tens + 8 units)
- Repeat using other numbers if learners need more practice.
- Talk about what you can learn about numbers and their values by doing an exercise like this. (*You get used to naming place, face and total values. You are able to read number names with meaning, knowing what they represent.*)

4. Classwork activity from LAB (25 minutes) (See next page)

5. Homework activity from LAB (5 minutes) (See next page)

6. Reflection on lesson

Term 4 Lesson 3: Numbers up to 999 – decomposition

Give learners base ten blocks to use when they do this activity. You should use the printable version of the blocks if you do not have plastic/wooden base ten blocks in your storeroom.

Classwork

1. Draw base 10 blocks to represent these numbers. (Learners will draw the base ten blocks – drawings are not shown here. They can also use the base ten blocks that you give them to make displays of the numbers.)
   a) 111
   b) 370
   c) 307
   d) 900

2. Write the numbers as hundreds, tens and units:
   a) 111 = (1 hundred + 1 tens + 1 unit)
   b) 409 = (4 hundreds + 0 tens + 9 units)
   c) 899 = (8 hundreds + 9 tens + 9 units)
   d) 376 = (3 hundreds + 7 tens + 6 units)

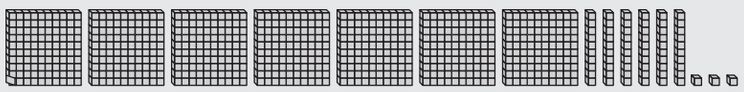
3. Write in words:
   a) 593 (five hundred and ninety-three)
   b) b. 705 (seven hundred and five)
   c) 111 (one hundred and eleven)
   d) 311 (three hundred and eleven)

4. Arrange these numbers from largest to smallest:
   a) 124, 142, 185 (185, 142, 124)
   b) 800, 900, 500 (900, 800, 500)

5. Arrange these numbers from smallest to largest:
   a) 882, 784, 683 (683, 784, 882)
   b) 879, 1 000, 698 (698, 879, 1 000)

Homework

1. What number does the following display represent? (763)



2. Write the numbers as hundreds, tens and units:
   a) 560 = (5 hundreds + 6 tens + 0 units)
   b) 711 = (7 hundreds + 1 ten + 1 unit)
   c) 901 = (9 hundreds + 0 tens + 1 unit)

3. Write in words:
   a) 643 (six hundred and forty–three)
   b) 801 (eight hundred and one)

LESSON 4: NUMBERS UP TO 999 – ROUNDING OFF TO TENS

Teacher's notes

CAPS topics: 1.1 Count objects, 1.2 Count forwards and backwards, 1.16 Mental Mathematics, 1.6 Problem solving techniques.

Lesson vocabulary: Forwards, backwards, rounding off, problem solving, techniques, nearest ten, building up, breaking down, doubling, halving, number line, tens, units.

Prior knowledge: Learners should have been taught how to:
- Use apparatus and appropriate techniques when solving problems and explain solutions to problems.
- Use drawings or concrete apparatus and techniques like building up and breaking down of numbers, doubling and halving, number lines when solving problems.

Concepts:
- Use techniques when solving problems and explain solutions to problems.
- Rounding off in tens using number lines.

Resources: Whiteboards/scrap paper.

DBE workbook activities relevant to this lesson:
- DBE Worksheet 112 (pp. 100 and 101).

Assessment: Refer to the tracker for today's formal/informal oral, practical or written assessment activity.

Remediation: Ask the learners to draw a 80 to 90 number line on their whiteboards/scrap paper. Point to 82. When we round it off it will become 80. *Why?* (Because it ends on a 2.) Draw an arrow to show this. Point to 86. When we round it off it will become 90. *Why?* (Because it ends on a 6.) Draw an arrow to show this. Round off 83, 84, 85, 88 and 89 using the number line.

Enrichment: See enrichment activity cards.

1. Mental mathematics

1.1 Counting (5 minutes)

- Count forwards and backwards in 10s from any number between 0 and 900, e.g. 615, 605, 595 ...

1.2 Mental mathematics activity (10 minutes)

	Calculate:	Answer
1.	What is 2 more than 700?	702
2.	What is 2 less than 700?	698
3.	What is 4 more than 700?	704
4.	What is 4 less than 700?	696
5.	What is 5 more than 700?	705

	Calculate:	Answer
6.	What is 5 less than 700?	695
7.	What is 10 more than 700?	710
8.	What is 10 less than 700?	690
9.	What is 20 more than 700?	720
10.	What is 20 less than 700?	680

2. Correction/reflection on homework (15 minutes)

Reflection/remediation based on previous day's work/homework.

3. Lesson content – concept development (30 minutes)

In this lesson the focus is rounding off – but this activity in the context of 3-digit numbers up to 999 further consolidates learners' understanding of number concept in the Grade 3 number range.

Activity 1: Whole class activity

- Revise the rule for rounding off numbers:
  - When we round off numbers ending in a units digit that is a 1, 2, 3 or 4, we round down to the previous ten. So 81, 82, 83 and 84 will become 80.
  - When we round off numbers ending in a units digit that is a 5, 6, 7, 8 or 9, we round up to the next higher ten, so 85, 86, 87, 88 and 89 will become 90.
- Write the following numbers on the board:

80	81	82	83	84	85	86	87	88	89	90

- Ask the learners which numbers will round down to 80 when we round off.

81	82	83	84

- Ask the learners which number will round up to 90 when we round off.

85	86	87	88	89

Activity 2: Whole class activity

- Ask the learners to draw a 90–100 number line on their whiteboards/scrap paper.
- Ask them to circle the numbers that will round down to 90 when we round off. (91, 92, 93, 94)
- Ask the learners to cross out the numbers that will round up to hundred when we round off. (95, 96, 97, 98, 99)

Activity 3: Whole class activity

- Write this problem on the board. Solve it together with the class.
- Ask learners to work this problem out in pairs.
- Mandla has R20,00. The pack of cards he collects costs R3,95. *How many packs of cards can he buy?*
- We can round off R3, 95 to the nearest rand, which is R4,00. We know that 4 x 5 = 20 so this means that Mandla has enough money to buy 5 packs R4 x 5 = R20.
- Discuss the use of rounding to estimate whether or not Mandla has enough money.
- Make up other word problems that would use rounding in a similar way. Ask the learners to help you make up contexts as this helps them to consolidate their understanding very effectively.

4. Classwork activity from LAB (25 minutes) (See next page)

5. Homework activity from LAB (5 minutes) (See next page)

6. Reflection on lesson

Term 4 Lesson 4: Numbers up to 999 – rounding off to tens

Classwork

1. Draw number lines to help you round off the following numbers to the nearest ten:
   a) 73 ___ (70)
   b) 47 ___ (50)
   c) 59 ___ (60)
   d) 95 ___ (100)

2. Write these numbers from the smallest to the biggest: 133, 132, 130 (130, 132, 133)

3. Write the following numbers from biggest to smallest: 445, 554, 454 (554, 454, 445)

4. Mandla has R50,00. The pack of cards costs R4,90. How many packs of cards can he buy?
   (We can round off R4,90 to the nearest rand, which is R5,00.
   We know that 10 x 5 = 20 so this means that Mandla has enough
   money to buy 10 packs 10 x R5 = R50.)

Homework

1. Draw number lines to help you round off the following numbers to the nearest ten:
   a) 84 ___ (80)
   b) 96 ___ (100)
   c) 23 ___ (20)
   d) 55 ___ (60)

2. Write these numbers from the smallest to the biggest:
   a) 145, 457, 45 (45, 145, 457)

3. Write the following numbers from biggest to smallest:
   a) 130, 310, 301 (310, 301, 130)

LESSON 5: ADDITION AND SUBTRACTION – BUILDING UP AND BREAKING DOWN

Teacher's notes

CAPS topics: 1.2 Count forwards and backwards, 1.16 Mental Mathematics,1.6 Problem solving techniques, 1.13 Addition and subtraction.

Lesson vocabulary: Forwards, backwards, addition, subtraction, breaking down, building up, calculate, add, subtract, 3-digit, 2-digit, hundreds, tens, units.

Prior knowledge: Learners should have been taught how to:
- Use techniques when solving problems and explain solutions to problems: building up and breaking down of numbers.
- Add to 99, subtract from 99.
- Use appropriate symbols: +, –, =, ☐.

Concepts:
- Use techniques when solving problems and explain solutions to problems: building up and breaking down of numbers.
- Add to 999, subtract from 999.
- Use appropriate symbols: +, –, =, ☐.

Resources: Base ten blocks (*Printable Resources* Term 1).

DBE workbook activities relevant to this lesson:
- DBE Worksheet 103 (pp. 82 and 83).

Assessment: Refer to the tracker for today's formal/informal oral, practical or written assessment activity.

Remediation: Give the learners base ten blocks to do the same examples that were done during the class activity. The base ten blocks will help them to follow the breaking down of the numbers in a concrete way.

Enrichment: See enrichment activity cards.

1. Mental mathematics

1.1 Counting (5 minutes)

- Count forwards and backwards in 10s from any number between 0 and 900, e.g. 789, 779, 769..

1.2 Mental mathematics activity (10 minutes)

	Calculate:	Answer
1.	What is 10 more than 750?	760
2.	What is 11 more than 750?	761
3.	What is 10 less than 750?	740
4.	What is 9 less than 750?	741
5.	What is 11less than 750?	739

	Calculate:	Answer
6.	What is 20 more than 750?	770
7.	What is 100 more than 750?	850
8.	What is 110 more than 750?	860
9.	What is 120 more than 750?	870
10.	What is 130 more than 750?	880

2. Correction/reflection on homework (15 minutes)

Reflection/remediation based on previous day's work/homework.

3. Lesson content – concept development (30 minutes)

This is the first of six lessons that consolidate learners understanding of addition and subtraction. Learners are shown a few different strategies to use when adding and subtracting, such as building up and breaking down, rounding and using number lines. You should continue to encourage learners to record accurate working when they add and subtract. They can use any method to record their working which is mathematically correct.

Encourage learners to speak about their working using the language of place value (hundreds, tens and units) as this links closely to all numeric calculation strategies they might use.

Activity 1: Whole class activity

- This activity is about addition: adding three-digit and two/three-digit numbers.
- Do the following example on the board.
- While you do the working, explain to the learners how you add the hundreds to the hundreds, the tens to the tens and the units to the units.
- Explain to the learners how you are using the brackets to pair up and group the numbers so that you make it clear which numbers will be worked on and in what order.
- Explain to learners that mathematicians use brackets to make it clear to each other the order in which they are working on numbers when there is a long string of numbers. It is good for learners to show correct mathematical working right from the beginning!
- 323 + 436 = ☐
  = (300 + 20 + 3) + (400 + 30 + 6) (break down the numbers into hundreds, tens and units)
  = (300 + 400) + (20 + 30) + (3 + 6) (pair the numbers using place value – hundreds, tens and units)
  = 700 + 50 + 9
  = 759
- Remember to explain the use of brackets. Here is another example and in this example the tens create a new hundreds digit when they are added:
  524 + 82 = ☐
  = (500 + 20 + 4) + (80 + 2) (break down the numbers into hundreds, tens and units)
  = 500 + (20 + 80) + (4 + 2) (pair the numbers according to place value – hundreds, tens and units)
  = (500 + 100) + 6
  = 600 + 6
  = 606
- Other examples – learners do them on their whiteboards/scrap paper using the same method:
  - 626 + 32 = ☐ (658)
  - 626 + 142 = ☐ (768

Activity 2: Whole class activity

- This activity is about subtraction: subtracting three-digit numbers from three-digit numbers.
- Do the following example on the board. Remind the learners to take the hundreds away from the hundreds, the tens away from the tens and the units away from the units.
- The brackets here are very important because the example is of subtraction. Make sure that you understand the use of the brackets and can explain them to your class.
- 889 – 137 = ☐
  = (800 + 80 + 9) – (100 + 30 + 7) (break down the numbers into hundreds, tens and units)
  = (800 – 100) + (80 – 30) + (9 – 7) (pair the numbers using place value – hundreds, tens and units)
  = 700 + 50 + 2
  = 752
- Another example – learners do it on their whiteboards/scrap paper using the same method:
  - 786 – 142 = (644) ☐

4. Classwork activity from LAB (25 minutes) (See next page)

5. Homework activity from LAB (5 minutes) (See next page)

6. Reflection on lesson

Term 4 Lesson 5: Addition and subtraction – building up and breaking down

Note that for this activity some suggested working is shown. Learners might do different calculations – you should check their work carefully and allow all correct working.

Classwork

Calculate the following using building up or breaking down strategies:

1. Add 437 and 82. (437 + 82 = ___
   = (400 + 30 + 7) + (80 + 2)
   = 400 + (30 + 80) + (7 + 2)
   = (400 + 110) + 9
   = (400 +100) +10 +9
   = 500 +10 +9
   = 510 + 9
   = 519)

2. Add 106 and 628. (106 + 628 = ___
   = (100 + 0 + 6) + (600 + 20 + 8)
   = (100 + 600) + (0 + 20) + (6 + 8)
   = (100 + 600) + (0 + 20) + 14
   = 700 + 20 + 10 + 4
   = 7 + 30 + 4
   = 734)

3. 467 take away 132. (467 – 132 = ___
   = (400 + 60 + 7) – (100 + 30 +2)
   = (400 – 100) + (60 – 30) + (7 – 2)
   = 300 + 30 + 5
   = 335)

4. 516 + 353 = (869)
5. 466 + 312 = (778)
6. 378 – 217 = (161)
7. 678 – 233 = (445)
8. 199 – 74 = (125)

Homework

Calculate the following using building up or breaking down strategies:

1. 236 + 123 = (359)
2. 421 + 217 = (638)
3. 582 – 401 = (181)
4. 657 – 333 = (324)

WEEK 2

LESSON 6: ADDITION AND SUBTRACTION – BUILDING UP AND BREAKING DOWN

Teacher's notes

CAPS topics: 1.1 Count objects, 1.2 Count forwards and backwards, 1.16 Mental Mathematics, 1.13 Addition and subtraction.

Lesson vocabulary: Forwards, backwards, add, subtract, plus, take away, building up, breaking down, two-digit (or 2-digit), three-digit (or 3-digit), addition, subtraction, hundreds, tens, units.

Prior knowledge: Learners should have been taught how to:

- Solve word problems in context and explain own solutions to problems involving addition and subtraction with answers up to 99.
- Add to 99, subtract from 99.
- Use appropriate symbols: +, –, =, ☐.

Concepts:

- Use techniques when solving problems and explain solutions to problems: building up and breaking down of numbers.
- Add to 999, subtract from 999.
- Use appropriate symbols: +, –, =, ☐.

Resources: Base ten blocks (*Printable Resources* Term 1).

DBE workbook activities relevant to this lesson:

- DBE Worksheet 104 (pp. 84 and 85).

Assessment: Refer to the tracker for today's formal/informal oral, practical or written assessment activity.

Remediation: Use base ten blocks to explain the same examples as were done in the class activity.

Enrichment: See enrichment activity cards.

1. Mental mathematics

1.1 Counting (5 minutes)

- Count forwards and backwards in 100s from any given number between 0 and 800, e.g. 611, 711, 811…

1.2 Mental mathematics activity (10 minutes)

	Which number is the biggest?	Answer
1.	145, 154, 150	154
2.	120, 122, 102	122
3.	800, 700, 600	800
4.	321, 312, 333	333
5.	102, 103, 101	103

	Which number is the smallest?	Answer
6.	154, 120, 145	120
7.	130, 152, 153	130
8.	848, 747, 346	346
9.	998, 987, 989	987
10.	100, 102, 105	100

2. Correction/reflection on homework (15 minutes)

Reflection/remediation based on previous day's work/homework.

3. Lesson content – concept development (30 minutes)

There are many different ways in which numbers can be broken down in order to add or subtract. In this lesson the strategy of keeping the first number intact is shown. The second number is broken down and added to/subtracted from the first number in steps.

Activity 1: Whole class activity

- Adding three-digit and two-digit numbers – keeping the first number intact.
- Do the following examples on the board. While you do the working explain that you are counting on 80 from 524 done by counting in 10s and then adding the units.
  NOTE that when you do the examples in today's lesson, once again you need to explain how brackets help you to make the pairing of numbers so that you know which pairs to work on.
- 524 + 82 = □
  = 524 + (80 + 2) (break down the numbers into hundreds, tens and units)
  = 524 + 80 + 2 (add to the first number, starting with the tens)
  = 604 + 2
  = 606
- Another example: ask learners to do the following sum on their whiteboards.
  743 + 51 = □ (794)

Activity 2: Whole class activity

- Adding three-digit and three-digit numbers – keeping the first number intact.
- Do the following example on the board. Explain that this time you count on the hundreds, then the tens and then the units.
- 327 + 436 = □
  = 327 + (400 + 30 + 6) (break down the numbers into hundreds, tens and units)
  = (327 + 400)+ 30 + 6 (add to the first number, starting with the hundreds)
  = (727) + 30 + 6
  = 757 + 6
  = 763 (Note that 6 + 7 = 13 and so the final answer is 763)
- Another example: ask learners to do the following sum on their whiteboards.
  433 + 452 = □ (885)

Activity 3: Whole class activity

- Subtracting by breaking down the second number.
- Do the following example on the board. In this example you first take away the hundreds, then the tens and then the units.
- 889 – 137 = □
  = 889 – (100 + 30 + 7) (break down the numbers into hundreds, tens and units)
  = (889 – 100) – (30 + 7) (subtract from the first number, starting with the hundreds)
  = 789 – 30 – (7) (subtract the tens)
  = 759 – 7 (lastly, subtract the units)
  = 752
- Another example: ask learners to do the following sum on their whiteboards.
  789 – 246 = □ (543)
-

4. Classwork activity from LAB (25 minutes) (See next page)

5. Homework activity from LAB (5 minutes) (See next page)

6. Reflection on lesson

Term 4 Lesson 6: Addition and subtraction – building up and breaking down

The working is not shown in the solutions for this activity. Learners should use breaking down and brackets, or other methods of their choice. They could even use vertical working if they know how to explain correctly how they are working with the hundreds, tens and units and breaking down/building up as they do so.

Classwork

Calculate the following using building up or breaking down strategies:

1. 524 + 123 = □ (647)

2. 475 + 312 = □ (787)

3. 679 – 247 = □ (432)

4. 459 – 235 = □ (224)

Homework

Calculate the following using building up or breaking down strategies:

1. 724 + 121 = (845)

2. 878 – 555 = (323)

LESSON 7: ADDITION USING DOUBLES

Teacher's notes

CAPS topics: 1.1 Count objects, 1.2 Count forwards and backwards, 1.16 Mental Mathematics, 1.13 Addition and subtraction.

Lesson vocabulary: Double, near doubles, forwards, backwards, add, subtract, plus, take away, building up, breaking down, hundreds, tens, units, double, addition, subtraction, between.

Prior knowledge: Learners should have been taught how to:

- Solve word problems in context and explain own solutions to problems involving addition and subtraction with answers up to 99.
- Add to 99, subtract from 99.
- Use appropriate symbols: +, –, =, ☐.

Concepts:

- Using doubles and near doubles to solve problems involving addition and subtraction with answers up to 999.
- Use appropriate symbols: +, –, =, ☐.

Resources: Base ten blocks (*Printable Resources* Term 1).

DBE workbook activities relevant to this lesson:

- DBE Worksheet 105 (p. 86).

Assessment: Refer to the tracker for today's formal/informal oral, practical or written assessment activity.

Remediation: Use base ten blocks to work through and explain the same examples that were done during the class activity. Check that learners remember what it means to double a number and how to recognise doubles in the context of calculations.

Enrichment: See enrichment activity cards.

1. Mental mathematics

1.1 Counting (5 minutes)

- Count forwards and backwards in 100s from any given multiple between 0 and 1 000, e.g. 435, 535, 635…

1.2 Mental mathematics activity (10 minutes)

	Give the number between:	Answer
1.	165 and 167	166
2.	450 and 452	451
3.	125 and 127	126
4.	778 and 780	779
5.	854 and 856	855

	Give the number between:	Answer
6.	138 and 140	139
7.	202 and 204	203
8.	198 and 200	199
9.	55 and 57	56
10.	911 and 913	912

2. Correction/reflection on homework (15 minutes)

Reflection/remediation based on previous day's work/homework.

3. Lesson content – concept development (30 minutes)

This lesson extends the use of doubling as an addition strategy. In order to use doubles, learners need to be shown that they should look for doubles in a sum.

Activity 1: Whole class activity

- Write the following examples on the board:
  - 20 + 20 =
  - 32 + 32 =
  - 37 + 37 =
  - 200 + 200 =
  - 350 + 350 =
  - 243 + 243 =
- Ask learners: *What do you notice about all of the sums I just wrote on the board?* (They are all sums of doubles – addition of the same number twice.)
- Ask: *What strategy can we use to make it easier to add these numbers?* (We use doubling.)
- Ask different learners to come up and show working that uses doubling to add the pairs of numbers. Encourage learners to use mental arithmetic whenever possible.
  - 20 + 20 = 40
  - 32 + 32 = 64 (Double the tens digit and double the units digit.)
  - 37 + 37 = 74 (Double the tens and double the units. But when I double the units I get 14, so I have to add one ten onto the doubled tens digit.)
  - 200 + 200 = 400 (Double the hundreds digit. The other digits in the number are zero.)
  - 350 + 350 = 700 (Double the hundreds and double the tens. But when I double the tens I get 100, so I have to add one hundred onto the doubled hundreds digit.)
  - 243 + 243 = 486 (Double the hundreds digit, double the tens digit and double the units digit.)
- Each time we double each digit, we regroup if we get more than ten units or ten tens in the usual way.

Activity 2: Whole class activity

- Addition using doubles – but showing your working.
- Do the following examples on the board:
- 432 + 432 =
  = (400 + 30 +2) + (400 + 30 +2) (Break down the numbers into hundreds, tens and units.)
  = double 400 + double 30 + double 2 (Identify doubles and add.)
  = (400 + 400) + (30 + 30) + (2 + 2)
  = (800) + (60) + (4)
  = 800 + 60 + 4
  = 864
- 672 + 72 =
  Discuss this example: Ask: Is the whole number being doubled? (NO only the 72.)
  = 600 + 72 + 72
  = 600 + 70 + 2 + 70 + 2
  = 600 + 140 + 4 = 764 (Double 70 is 140. I have an extra 100 to add to the hundreds.)
- Another example: Ask learners to do the following example on their whiteboards.
  334 + 334 = (This one is easy – no regrouping needed.)

4. Classwork activity from LAB (25 minutes) (See next page)

5. Homework activity from LAB (5 minutes) (See next page)

6. Reflection on lesson

Term 4 Lesson 7: Addition using doubles

Encourage learners to use mental arithmetic when they do this activity, especially for the doubles that should be easy for them to add.

Classwork

1. Complete the following:
   a. Double 30 = _____ (30 + 30 = 60)
   b. Double 33 = _____ (33 + 33 = 66)
   c. Double 333 = _____ (333 + 333 = 666)

2. Use doubles to add the following:
   a. 25 + 25 = _____ (25 + 25 = 50)
   b. 200 + 200 = _____ (200 + 200 = 400)
   c. 412 + 12 = _____ (400 + 12 + 12 = 400 + 24 = 424)
   d. 925 + 25 = _____ (900 + 25 + 25 = 900 + 50 = 950)

3. Busi buys two pairs of boots for R100 each. How much did she pay? (Double R100 = R200)

4. The school needs 25 juices for the sports teams for one match. How many juices do they need for two matches? (Double 25 = 50)

Homework

1. Complete the following:
   a. Double 15 = _____ (15 + 15 = 30)
   b. Double 100 = _____ (100 + 100 = 200)
   c. Double 240 = _____ (240 + 240 = 480)
   d. Double 411 = _____ (411 + 411 = 822)

LESSON 8: ADDITION USING NEAR DOUBLES

Teacher's notes

CAPS topics: 1.1 Count objects, 1.2 Count forwards and backwards, 1.16 Mental Mathematics, 1.13 Addition and subtraction.

Lesson vocabulary: Double, near doubles, forwards, backwards, add, subtract, plus, take away, building up, breaking down, hundreds, tens, units, double, addition, subtraction.

Prior knowledge: Learners should have been taught how to:

- Solve word problems in context and explain own solutions to problems involving addition and subtraction with answers up to 99.
- Add to 99, subtract from 99.
- Use appropriate symbols: +, –, =, ☐.

Concepts:

- Using doubles and near doubles to solve problems involving addition and subtraction with answers up to 999.
- Use appropriate symbols: +, –, =, ☐.

Resources: Base ten blocks (*Printable Resources* Term 1).

DBE workbook activities relevant to this lesson:

- DBE Worksheet 105 (p. 87).

Assessment: Refer to the tracker for today's formal/informal oral, practical or written assessment activity.

Remediation: Use base ten blocks to work through and explain the same examples that were done during the class activity. Make up other similar questions to do with the learners that need more practice with the method.

Enrichment: See enrichment activity cards.

1. Mental mathematics

1.1 Counting (5 minutes)

- Count forwards in 100s from any given multiple between 0 and 1 000, e.g. 435, 535, 635…

1.2 Mental mathematics activity (10 minutes)

	Give the number between:	Answer
1.	145 and 147	146
2.	350 and 352	351
3.	123 and 125	124
4.	788 and 790	789
5.	654 and 656	655

	Give the number between:	Answer
6.	130 and 132	131
7.	102 and 104	103
8.	98 and 100	99
9.	555 and 557	556
10.	111 and 113	112

2. Correction/reflection on homework (15 minutes)

Reflection/remediation based on previous day's work/homework.

3. Lesson content – concept development (30 minutes)

This lesson extends learners calculation strategies to include the recognition of 'near doubles'. This builds on the previous lesson in which doubles were used when adding.

Activity 1: Whole class activity

- Recap the recognition of doubles in a sum:
- Write the following examples on the board:
  - 25 + 25 =
  - 82 + 82 =
  - 407 + 407 =
  - 313 + 313 =
- Ask learners: *What do you notice about all of the sums I have just written on the board?* (They are all sums of doubles – addition of the same number twice.)
- Ask: *What strategy can we use to make it easier to add these numbers?* (We use doubling.)
- Ask different learners to come up and show working that uses doubling to add the pairs of numbers. Encourage learners to use mental arithmetic whenever possible.
  - 25 + 25 = 50
  - 82 + 82 = 164
  - 407 + 407 = 814
  - 313 + 313 = 626
- Each time we doubled each digit, we regrouped if we got more than ten units or ten tens in the usual way.
- Say: *Now we are going to do addition where the numbers are not quite doubles of each other, but they are very close. We call these numbers* ***near doubles****.*

Activity 2: Whole class activity

- Write the following sums on the board:
  - 25 + 26 =
  - 150 + 149 =
  - 83 + 82 =
  - 400 + 401 =
  - 407 + 406 =
  - 314 + 313 =
- Discuss: *How are these sums similar/different to the first four sums we just did?* (They are very similar – just in each case one of the numbers is one more or one less.)
- Explain: *We call these pairs of numbers* ***near doubles****.* We add them using doubles and then we 'plus' or 'minus' one – to make up for the slight difference between the two numbers being added.
- Write the calculation showing some steps like this:
- 25 + 26 = 25 + 25 + 1 = double 25 plus 1 = 50 + 1 = 51
- *Why do you think we add 1 in this example?* (Because 26 is 1 bigger than 25.)
- 150 + 149 = 150 + 150 – 1 = double 150 minus 1 = 300 – 1 = 299
- Why do you think we subtract 1 in this example? (Because 149 is 1 smaller than 150.)
- Etc. Discuss the working of each of the examples that you have written on the board.
  - 83 + 82 = 82 + 82 – 1 = 164 – 1 = 163
  - 400 + 401 = 400 + 400 + 1 = 800 + 1 = 801
  - 407 + 406 = 406 + 406 + 1 = 812 + 1 = 813
  - 314 + 313 = 313 + 313 + 1 = 626 + 1 = 627
- Give learners some more examples to do if they need more practice. Encourage them to make up their own examples. This will enable you to check if they have understood how to choose a pair of near doubles to add.

4. Classwork activity from LAB (25 minutes) (See next page)

5. Homework activity from LAB (5 minutes) (See next page)

6. Reflection on lesson

Term 4 Lesson 8: Addition using near doubles

Classwork

1. Complete the following:
   a) Double 123 = ___ (123 + 123 = 246)
   b) Double 244 = ___ (244 + 244 = 488)
   c) Double 204 = ___ (204 + 204 = 408)

2. Use near doubles to add the following.
   a) 925 + 26 = ___ (900 + 25 + 25 + 1 = 950 + 1 = 951)
   b) 200 + 201 = ___ (200 + 200 +1 = 401)
   c) 130 + 129 = ___ (130 + 130 – 1 = 259)
   d) 230 + 29 = _____ (200 + 30 + 30 – 1 = 260 – 1 = 259)

3. Busi buys two pairs of boots for R200 each. How much did she pay?
   (Double R200 = R400)

4. The school needs 53 juices for the sports teams for one match.
   How many juices do they need for two matches? (Double 53 = 106)

Homework

1. Complete the following:
   a) Double 124 = ___ (124 + 124 = 248)
   b) Double 243 = ___ (243 + 243 = 486)
   c) Double 306 = ___ (306 + 306 = 612)

2. Use near doubles to add the following.
   a) 252 + 52 = ___ (200 + 52 + 52 = 200 + 104 = 304)
   b) 119 + 20 = ___ (100 + 20 + 20 – 1 = 140 – 1 = 139)

LESSON 9: ADDITION AND SUBTRACTION – MONEY

Teacher's notes

CAPS topics: 1.1 Count objects, 1.2 Count forwards and backwards, 1.16 Mental Mathematics, 1.13 Addition and subtraction, 1.11 Money.

Lesson vocabulary: Money, rands, cents, combinations, change, add, subtract, backwards, forwards, plus, take away, building up, breaking down, hundreds, tens, units, addition, subtraction.

Prior knowledge: Learners should have been taught how to:

Solve word problems in context and explain own solutions to problems involving addition and subtraction with answers up to 99.

Solve money problems involving totals and change in cents up to 90c and rands to R99.

Use appropriate symbols: +, –, =, ☐.

Concepts:
- Solve word problems in context and explain own solutions to problems involving addition and subtraction with answers up to 999.
- Solve money problems involving totals and change in cents and rands.
- Use appropriate symbols: +, –, =, ☐.

Resources: Cut-out coins and notes (*Printable Resources* Term 3).

DBE workbook activities relevant to this lesson:
- N/A

Assessment: Refer to the tracker for today's formal/informal oral, practical or written assessment activity.

Remediation: Sipho bought two books for R70 each. He paid with two R100 notes. How much change did he get? *What is the question? How much change did he get? What are the numbers?* 2 books for R70 each and 2 times R100. *What is the key word?* Change. *What is the basic operation?* Subtract. Write a number sentence. R200 – R140 = .

Enrichment: See enrichment activity cards.

1. Mental mathematics

1.1 Counting (5 minutes)

- Count backwards in 100s from any given number between 0 and 1 000, e.g. 958, 858, 758…

1.2 Mental mathematics activity (10 minutes)

	What is the smallest number?	Answer
1.	120, 125, 110	110
2.	130, 135, 145	130
3.	248, 284, 482	248
4.	122, 102, 110	102
5.	211, 102, 112	102

	What is the smallest number?	Answer
6.	105, 155, 515	105
7.	231, 312, 132	132
8.	252, 245, 265	245
9.	110, 100, 101	100
10.	365, 635, 536	365

2. Correction/reflection on homework (15 minutes)

Reflection/remediation based on previous day's work/homework.

3. Lesson content – concept development (30 minutes)

In the first activity of this lesson, learners work with monetary amounts to find totals of their own. This prepares them for the operational work involved in the word problems in the second lesson activity. You can give the learners printed money to help them do their calculations in these activities. This will also enable them to familiarise themselves with the SA money (coins and notes).

Activity 1: Learners work in groups

- Give the learners cut-out money – rands and cents.
- Ask the groups to use their coins (rands and cents) to make two combinations that total less than R5.
- For example: R2,70 and R1,40. This will give you R4,10. (There will be several different combinations. Allow learners to share their ideas and correct them where necessary.)
- Do the same for:
  - R10,20
  - R24,50
  - R50,90

Activity 2: Learners work in groups

- Give the groups the following word problem to solve.
- Damon bought 5 books for R59,90 each. How much change will he get if he pays with R300?
- Ask the learners:
  - *What is the question?* How much change will he get?
  - *What are the numbers?* 5 books, at R59,90 each.
  - *How much is that?* R299,50 (You could estimate first – 60 x 5 = 300)
  - *You could estimate first by using the strategy of rounding off.*
  - *What can you round R59, 90 to?* (R60, 00)
  - *How much did you add to make R59, 90 become R60, 00?* (You added 10c.)
  - *Let us say we have 5 books at R60, 00. This means R60 x 5 = R300. This is the estimated answer but not the actual answer.*
  - *To get the actual answer, must you add or subtract from the estimated answer?* (You must subtract.)
  - *How much must you subtract to the estimated answer. (50c)*
  - *Why will you subtract 50c from R300? (*Because, for each book we added 10c, so for 5 books we added 50c altogether. Now we must subtract this amount from R300. The actual answer is R299, 50.)
  - *What is the key word?* (Change.)
  - *What is the basic operation?* (Subtract.)
  - *Write a number sentence.* (R300 – R299,50 = R0,50)
- Follow the steps above to solve the next problem.
- Bongani saved R250,80. How much more does he need to buy a bicycle which costs R480,90. (R30,10)
- Discuss the different strategies children used to get the answer.

4. Classwork activity from LAB (25 minutes) (See next page)

5. Homework activity from LAB (5 minutes) (See next page)

6. Reflection on lesson

Term 4 Lesson 9: Addition and subtraction – money

Classwork

1. Draw two different ways in which you can get 80c.
   (Several different possibilities, e.g. 20c + 20c + 20c + 20c/50c + 10c + 10c + 10c)

2. Draw two different ways in which you can get R55.
   (Several different possibilities, e.g. (50 + R5/R20 + R20 + R10 + R2 + R2 + R1)

3. Pedro's granny gave him R5. Which 3 sweets can he buy? The sweets cost:

Choc chuckle	R2,70
Gums	R1,80
Sour worms	R1,40
Peach treats	R1,60
Magic mints	R2,20
Toffees	R1,20

   (Several different possibilities which total R5 or less, e.g. 2 x gums + toffees = R1,80 + R1,80 + R1,20 = R4,80)

Homework

1. Peter bought 5 books for R80 each. How much change will he get from R500? (R100)

2. Romy bought 4 ice creams at R1,70 each. How much change will she get from R10? (R3,20)

LESSON 10: ADDITION AND SUBTRACTION – MONEY

Teacher's notes

CAPS topics: 1.1 Count objects, 1.2 Count forwards and backwards, 1.16 Mental Mathematics, 1.13 Addition and subtraction, 1.11 Money.

Lesson vocabulary: Forwards, backwards, rands, cents, convert, add, subtract, plus, take away, building up, breaking down, hundreds, tens, units, double, addition, subtraction.

Prior knowledge: Learners should have been taught how to:

- Solve word problems in context and explain own solutions to problems involving addition and subtraction with answers up to 99.
- Solve money problems involving totals and change in cents up to 90c and rands to R99.
- Use appropriate symbols: +, –, =, ☐.

Concepts:

- Solve word problems in context and explain own solutions to problems involving addition and subtraction with answers up to 999.
- Solve money problems involving totals and change in cents and rands.
- Convert between rands and cents.
- Use appropriate symbols: +, –, =, ☐.

Resources: Cut-out coins and notes (*Printable Resources* Term 3), whiteboards/scrap paper.

DBE workbook activities relevant to this lesson:

- N/A

Assessment: Refer to the tracker for today's formal/informal oral, practical or written assessment activity.

Remediation: Caryn has a 50c piece and five 20c pieces. She buys a lollipop for R1,30. How much money will she have left? *What is the question?* How much money will she have left? *What are the numbers?* 50c, 20c, 20c, 20c, 20c, 20c and R1,30. *What is the key word?* Left. *What operation will I use?* Subtract. Write a number sentence. 50c + 20c + 20c + 20c + 20c + 20c = R1,50. R1,50 – R1,30 = R0,20. Draw a picture to check your answer.

Enrichment: See enrichment activity cards.

1. Mental mathematics

1.1 Counting (5 minutes)

- Count forwards and backwards in 5s between 0 and 800, e.g. 705, 710, 715…

1.2 Mental mathematics activity (10 minutes)

	What is the biggest number?	Answer
1.	120, 125, 110	125
2.	130, 135, 145	145
3.	248, 489, 698	698
4.	122, 578, 10	578
5.	689, 102, 487	689

	What is the biggest number?	Answer
6.	105, 213, 578	578
7.	487, 458, 132	487
8.	252, 245, 265	265
9.	102, 104, 101	104
10.	301, 105, 605	605

2. Correction/reflection on homework (15 minutes)

Reflection/remediation based on previous day's work/homework.

3. Lesson content – concept development (30 minutes)

In this lesson learners continue to work with money and do addition and subtraction problems.

Activity 1: Whole class activity

- Draw/show the learners the following:

- Ask the learners to write the total in cents. (980c)
- Ask the learners to write the total in rands and cents using numbers. (R9,80)

Activity 2: Whole class activity

- Draw/show the learners the following:

- Ask the learners to write the total in cents. (1420c)
- Ask them to write the total in rands and cent using numbers. (R14,20)

Activity 3: Whole class activity

- Ask learners to solve the following problems on their whiteboards.
- Travis has a 50c piece and four 20c pieces. Toffees cost R1,20.
  How much change will he get if he pays with all his money? (10c)
- Packets with 5 mints in each cost 40c each. Mr King wants 85 mints. How many packets should he buy?
  How much will he need to pay? (85 ÷ 5 = 17 packets, 17 x 40c = R6,80)

4. Classwork activity from LAB (25 minutes) (See next page)

5. Homework activity from LAB (5 minutes) (See next page)

6. Reflection on lesson

Term 4 Lesson 10: Addition and subtraction – money

Classwork

1. How much money is there?

2. Sean has two 50c pieces and four 20c pieces. Chocolates cost R1,50.
   How much change will he get if he pays with all his money? (30c)

3. Packets with 2 biscuits in each packet cost 30c. Daniel wants 20 biscuits for a school tea.
   a) How many packets should he buy? (10)
   b) How much will he need to pay? (R3,00)

4. Nathan buys 5 ice creams for R2,50 each. How much will he have to pay for the ice creams? (R12,50)

5. Write the following numbers from biggest to smallest:
   a) R120, R125, R110 (R125, R120, R110)
   b) R130, R135, R145 (R145, R135, R130)
   c) 240c, 480c, 690c (690c, 480c, 240c)

Homework

1. How much money is there? (R2,60)

2. Draw coins to make up R12,50.

3. Justin buys 4 ice creams for R2,50 each. How much will he have to pay for the ice creams? (R10,00)

WEEK 3

LESSON 11: PROBLEM SOLVING – USING NUMBER LINES

Teacher's notes
CAPS topics: 1.1 Count objects, 1.12 Rounding off, 1.2 Count forwards and backwards, 1.16 Mental Mathematics, 1.6 Problem solving techniques. **Lesson vocabulary:** Forwards, backwards, rounding off, building up, breaking down, number line, nearest ten, addition, subtraction, difference, doubling, halving. **Prior knowledge:** Learners should have been taught how to: • Use apparatus and appropriate techniques when solving problems and explain solutions to problems: Drawings or concrete apparatus and using techniques like building up and breaking down of numbers, doubling and halving, number lines. **Concepts:** • Use the following techniques when solving problems and explain solutions to problems: Building up or breaking down numbers; Number lines; Rounding off in tens. • Use techniques when solving problems and explain solutions to problems. **Resources:** Whiteboards/scrap paper, blank number lines *(Printable Resources)*, base ten blocks (*Printable Resources* Term 1). **DBE workbook activities relevant to this lesson:** DBE Worksheet 108 (pp. 92 and 93). **Assessment:** Refer to the tracker for today's formal/informal oral, practical or written assessment activity.
Remediation: Do the same activity using base ten blocks. **Enrichment:** See enrichment activity cards.

1. Mental mathematics

1.1 Counting (5 minutes)

- Count backwards and forwards in 10s and 100s from any given number between 0 and 900, e.g. 456, 466, 476.../456, 556, 656 ...

1.2 Mental mathematics activity (10 minutes)

	Calculate:	Answer
1.	97 + 5 =	103
2.	88 + 4 =	92
3.	72 + 3 =	75
4.	2 + 89 =	91
5.	7 + 112 =	119

	Calculate:	Answer
6.	97 – 5 =	92
7.	88 – 4 =	84
8.	72 – 3 =	69
9.	89 – 2 =	87
10.	112 – 7 =	105

2. Correction/reflection on homework (15 minutes)

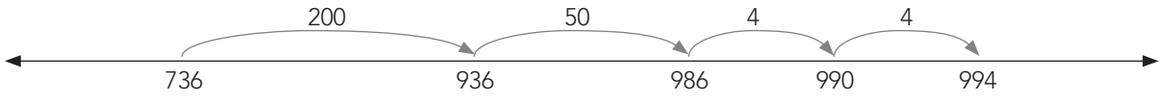
Reflection/remediation based on previous day's work/homework.

3. Lesson content – concept development (30 minutes)

The next three lessons build the learners operation skills while developing learners' ability to read and interpret word problems.

Activity 1: Whole class activity

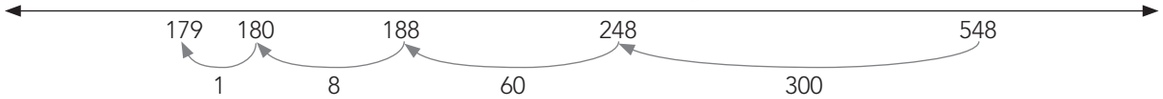
- Explain to the class that you have shown them lots of ways to add/subtract. Today you are going to show them how to use number lines when adding/subtracting.
- Write the following word problem on the board. Demonstrate on an open number line as you explain. This is an example of addition of two 3-digit numbers.
- *Mary has 736 buttons and Thomas has 258 buttons. How many buttons do they have altogether?*
- Ask: *What is the question?* (How many buttons do they have altogether?)
- *What is the operation?* (Addition)
- *What are the numbers?* (736 and 258)
- *How do we work this out?* (Add 736 to 258)
- *What is the number sentence?* (736 + 258 =___)
- *If we break down the second number what do we get?* 736 + 200 + 50 + 8 = ___
- Draw an open number line on the board.
- You can demonstrate the following using the number line: 736 + 200 takes us to 936. If we then add the tens we get to 986. We need to add another 8. We can do this in two steps of 4 plus 4 to get us to the final answer of 994.



- Allow the learners to try out some other similar examples on their whiteboards. Remember that learners might not follow exactly the same steps as you do. Always check that their working is mathematically correct.
  - 424 + 249 = ___ [424 + 249 = (424 + 200) + 40 + 9 = (624 + 40) + 9 = (664 + 6) + 3 = 670 + 3 = 673]
  - 398 + 527 = ___ [398 + 527 = (398 + 500) + 20 + 7 = (898 + 20) + 7 = (918 + 2) + 5 = 920 + 5 = 925]
  - Fifi has 419 shells. Thomas has 136 shells. How many shells do they have altogether? (They have 555 shells altogether.)

Activity 2: Whole class activity

- Write the following word problem on the board. Demonstrate on an open number line as you explain. This is an example of subtraction of two 3-digit numbers.
- *Mary has 548 buttons. She gave John 369 buttons. How many does she have now?*
- Use the same kind of questions as those above to speak about the use of the number line to demonstrate the subtraction.
- Draw an open number line on the board. Talk the learners through the steps in the subtraction as above.



- Again allow learners to try out some other examples on their whiteboards/scrap paper. Remember that learners might not use the number line in exactly the same way. Check all working to see that it is correct.
  - 424 – 249 =___ [424 – 249 = (424 – 200) – 40 – 9 = (224 – 40) – 9 = (184 – 4) – 5 = 180 – 5 = 175]
  - 814 – 527 =___ [814 – 527 = (814 – 500) – 20 – 7 = (314 – 20) – 7 = (294 – 4) – 3 = 290 – 3 = 287]
  - Mary has R816. She buys a set of books for R333. How much money does she have left? (R483)

4. Classwork activity from LAB (25 minutes) (See next page)

5. Homework activity from LAB (5 minutes) (See next page)

6. Reflection on lesson

Term 4 Lesson 11: Problem solving – using number lines

Classwork

Use number lines to calculate:

1. What must be added to 567 to get 856? (299)

2. Mary has R508. She buys a set of books for R379. How much money does she have left? (R129)

3. Today is the 278th day of the year. How many more days until the end of the year? (87 or 88 in a leap year.)

4. The baker sells 844 loaves of bread each day. He already sold 758 loaves.
   How many more loaves does he still need to sell? (86 loaves.)

5. Pamela bought 800 tiles for her house. She used 691 tiles. How many are left over? (109 tiles.)

6. The distance between Durban and Johannesburg is 588 km. Mum has driven 299 km.
   How much further does she still need to drive? (289 km)

Homework

Use number lines to calculate.

1. What is 200 more than 50? (250)

2. By how much is 200 more than 50? (150)

3. Margaret needs R914 for a train ticket. She has R589. How much more does she need? (R325)

4. Fifi has 219 shells. Thomas has 291 shells. Who has more? How many more?
   (Thomas has 72 shells more than Fifi.)

LESSON 12: PROBLEM SOLVING – DOUBLE OPERATIONS

Teacher's notes

CAPS topics: 1.1 Count objects, 1.12 Rounding off, 1.2 Count forwards and backwards, 1.16 Mental Mathematics, 1.6 Problem solving techniques.

Lesson vocabulary: Forwards, backwards, rounding off, breaking down, number line, nearest ten, addition, subtraction, difference.

Prior knowledge: Learners should have been taught how to:

- Use apparatus and appropriate techniques when solving problems and explain solutions to problems: Drawings or concrete apparatus, techniques like building up and breaking down of numbers, doubling and halving, number lines.

Concepts:

- Use the following techniques when solving problems and explain solutions to problems: building up or breaking down numbers; number lines; rounding off in tens.
- Use techniques when solving problems and explain solutions to problems.

Resources: Whiteboards/scrap paper, blank number lines *(Printable Resources)*, base ten blocks (*Printable Resources* Term 1).

DBE workbook activities relevant to this lesson:

- N/A

Assessment: Refer to the tracker for today's formal/informal oral, practical or written assessment activity.

Remediation: Do the same activity using base ten blocks.

Enrichment: See enrichment activity cards.

1. Mental mathematics

1.1 Counting (5 minutes)

- Count backwards and forwards in 10s and 100s from any given number between 0 and 900.

1.2 Mental mathematics activity (10 minutes)

	Calculate:	Answer
1.	97 + 50 =	147
2.	88 + 40 =	128
3.	72 + 30 =	102
4.	20 + 89 =	109
5.	70 + 112 =	182

	Calculate:	Answer
6.	97 – 50 =	47
7.	88 – 40 =	58
8.	72 – 30 =	42
9.	89 – 20 =	69
10.	112 – 110 =	2

2. Correction/reflection on homework (15 minutes)

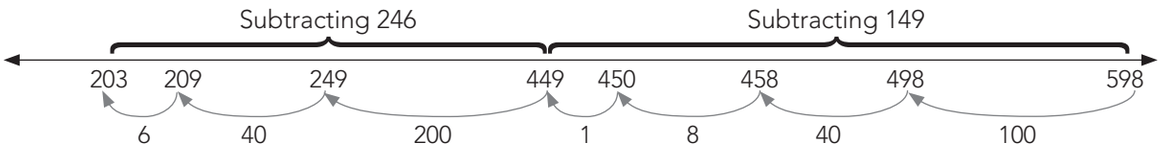
Reflection/remediation based on previous day's work/homework.

3. Lesson content – concept development (30 minutes)

There are two lessons on double operations. In this lesson there are questions that involve double subtraction and double addition.

Activity 1: Whole class activity

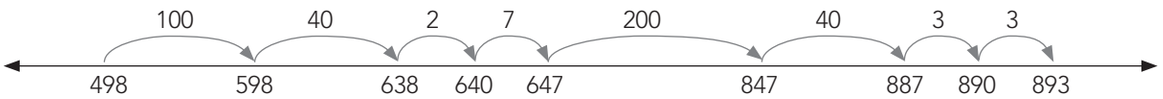
- Write this word problem on the board. Demonstrate on an open number line as you explain.
  - *Mary has 598 buttons. She gave John 149 buttons and lost 246 buttons. How many buttons does Mary have now?*
  - Ask: *What is the question?* (How many buttons does Mary now have?) *What is the operation?* (Subtraction) *What are the numbers?* (598, 149, 246) *How do we work this out?* (From 598 subtract 149 then subtract another 246.)
  - Write the number sentence on the board. Guide the class through the steps as you have done in the previous lessons.
  - 598 – 149 – 246 = ___ (203). Mary now has 203 buttons.



- Write these word problems on the board and ask learners to solve them on their whiteboards:
  - Mary has R816. She buys a set of books for R333 and a skirt for R89. How much money does she have left? (R394)
  - Mary has R904. She buys a set of books for R289 a skirt for R206. How much money does she have left? (R409)
- Mary has R726. She buys a set of books for R589 and saves R110 in the bank. How much money does she have left? (R27)

Activity 2: Whole class activity

- Write this word problem on the board. Demonstrate on an open number line as you explain.
  - *Mary has 498 buttons. John gave her 149 buttons and she bought 246 buttons. How many buttons does Mary have now?*
  - Ask: *What is the question?* (How many buttons does Mary now have?) *What is the operation?* (Addition) *What are the numbers?* (498, 149, 246) *How do we work this out?* (Add 498, 149 and 246.)
  - Write the number sentence on the board. Guide the class through the steps as you have done in the previous lessons.
  - 498 + 149 + 246 = ___ (893). Mary now has 893 buttons.



- Ask learners to do the following calculations on their whiteboards/scrap paper. After each calculation ask them to hold up their whiteboards/scrap paper for you to check before proceeding with the next calculation.
  - Mary has 397 pink buttons, 209 silver buttons and 383 gold buttons. How many buttons does she have altogether? (989)
  - Mary has 184 green stickers, 246 silver stickers and 453 gold stickers. How many stickers does she have altogether? (883)

4. Classwork activity from LAB (25 minutes) (See next page)

5. Homework activity from LAB (5 minutes) (See next page)

6. Reflection on lesson

Term 4 Lesson 12: Problem solving – double operations

Classwork

Use any strategy to calculate:

1. There are 965 learners in a school. If 145 learners travel by bus, 394 learners travel by car and the rest walk.
   How many walk? (426)

2. Mum saved R475, Dad saved R450 and I saved R46.
   How much have we saved altogether? (R971)

3. There are 350 people at a wedding. If 70 are men and 143 are women.
   How many are children? (137 children)

4. In Gauteng we have hot, cold and mild weather. Last year there were 139 hot days and 120 cold days.
   How many days were mild? (106 or 107 in a leap year.)

5. The sum of three numbers is 579. Two of the numbers are 267 and 147.
   What is the third number? (165)

Homework

Use any strategy to calculate:

1. A baker sells bread rolls, cakes and buns. He sells 745 items in a week.
   If he sells 387 cakes and 340 buns, how many bread rolls does he sell? (18)

2. A farmer has 178 cows, 82 sheep and 444 pigs.
   How many animals does he have altogether? (704)

LESSON 13: PROBLEM SOLVING – DOUBLE OPERATIONS

Teacher's notes

CAPS topics: 1.1 Count objects, 1.12 Rounding off, 1.2 Count forwards and backwards, 1.16 Mental Mathematics, 1.6 Problem solving techniques.

Lesson vocabulary: Forwards, backwards, rounding off, breaking down, number line, nearest ten, addition, subtraction, difference.

Prior knowledge: Learners should have been taught how to:

- Use apparatus and appropriate techniques when solving problems and explain solutions to problems: Drawings or concrete apparatus and using techniques like building up and breaking down of numbers, doubling and halving, number lines.

Concepts:

- Use the following techniques when solving problems and explain solutions to problems: Building up or breaking down numbers; number lines; rounding off in tens.
- Use techniques when solving problems and explain solutions to problems.

Resources: Whiteboards/scrap paper, blank number lines *(Printable Resources)*, base ten blocks (*Printable Resources* Term 1).

DBE workbook activities relevant to this lesson:

- N/A

Assessment: Refer to the tracker for today's formal/informal oral, practical or written assessment activity.

Remediation: Do the same activity using base ten blocks.

Enrichment: See enrichment activity cards.

1. Mental mathematics

1.1 Counting (5 minutes)

- Count backwards and forwards in 10s and 100s from any given number between 0 and 900.

1.2 Mental mathematics activity (10 minutes)

	Calculate:	Answer
1.	57 + 50 =	107
2.	188 + 40 =	228
3.	172 + 30 =	202
4.	20 + 189 =	209
5.	70 + 212 =	282

	Calculate:	Answer
6.	197 – 50 =	147
7.	188 – 40 =	158
8.	172 – 30 =	142
9.	189 – 20 =	169
10.	112 – 102 =	10

2. Correction/reflection on homework (15 minutes)

Reflection/remediation based on previous day's work/homework.

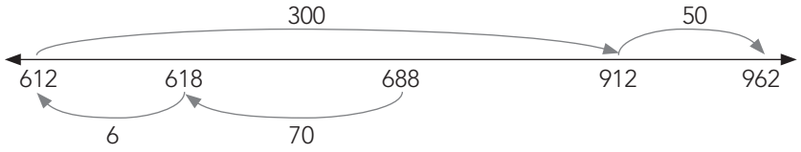
3. Lesson content – concept development (30 minutes)

This is the second lesson on double operations. In this lesson there are questions that involve addition followed by subtraction, and subtraction followed by addition. The suggested working is shown using an open number line but learners should be allowed to use alternative strategies when they work individually if they prefer.

Activity 1: Whole class activity

- Write this word problem on the board. Demonstrate on an open number line as you explain.
  - *Mary had 350 coins in her money box. Gogo gave her another 39 coins but then she lost 42 coins. How many coins does she have now?*
  - Ask: *What is the question?* (How many coins does Mary have now?) *What are the numbers?* (350, 39, 42) *What is the operation?* (Addition and subtraction.) *How do we work this out?* (From 350 subtract 39 then add 42.)
  - Write the number sentence on the board: 350 + 39 – 42 = ___
  - Explain: When we work this out on a number line, we start at 350, add 30 to get 380 and 9 to get 389. We then subtract 40 to get 349 and 2 to get 347.

  - So Mary has (350 + 30) + 9 = 380 + 9 = (389 – 40) – 2 = 349 – 2 = 347
- Here is another example: Write this word problem on the board. Demonstrate on an open number line as you explain.
  - *Mary had 688 buttons. She gave John 76 buttons then Gogo gave her another 350 buttons. How many buttons does she now have?*
  - Ask: *What is the question?* (How many buttons does Mary now have?) *What are the numbers?* (688, 76, 350) *What is the operation?* (Subtraction and addition.) *How do we work this out?* (From 688 subtract 76, then add 350.)
  - Write the number sentence on the board: 688 – 76 + 350 = ___
  - When we work this out on a number line, we start at 688, subtract 70 to get 618, subtract the 6 to get 612. Then, to 612 we add 300 to get 912 and 50 to get 962.



  - So Mary has (688 – 70) – 6 = (618– 6) = (612 + 300) + 50 = (912 + 50) = 962

Activity 2: Whole class activity

- Ask learners to do the following calculations on their whiteboards/scrap paper. After each calculation ask them to hold up their answers for you to check before proceeding with the next calculation.
  - Mary had 598 buttons. John gave her 49 buttons. She lost 59 buttons. How many does she have now? (588)
  - Mary had 397 buttons. She lost 302 and John gave her 501 buttons. How many does she have now? (596)
  - Mary had 397 buttons. She lost 302 buttons then she gave 40 to John. Gogo gave her 501 buttons. How many does she have now? (556)

4. Classwork activity from LAB (25 minutes) (See next page)

5. Homework activity from LAB (5 minutes) (See next page)

6. Reflection on lesson

Term 4 Lesson 13: Problem solving – double operations

Classwork

Use any strategy to calculate:

1. Twins, Maia and Sarika got 255 sheets of paper each for their birthdays.
   They wrote on 142 sheets of paper. How many sheets of paper do they have left?
   (255 + 255 – 142 = 368)

2. Gogo bought fruit for R245 and vegetables for R178 for her granddaughter's wedding.
   It was Gogo's 60th birthday so the cashier gave her R21 discount. How much did Gogo have to pay?
   (R245 +R178 – R21 = 402)

3. Buhle had 711 coins in her money box. She spent 142 coins. Then Gogo gave her another 353 coins.
   How many coins does Buhle have now?
   (711 – 142 + 353 = 922)

4. There are 769 people at the stadium. 433 people leave and 201 people come in.
   How many people are there at the stadium now?
   (769 – 433 + 201 = 537)

Homework

Use any strategy to calculate:

1. Mary had 743 coins in her money box. She spent 139 coins. Then Gogo gave her another 142 coins.
   How many coins does Mary have now?
   (743 – 139 + 142 = 746)

2. A farmer collected 367 eggs on Saturday and 409 eggs on Sunday. 77 eggs broke.
   How many eggs are not broken?
   (367 + 409 – 77 = 699)

LESSON 14: SYMMETRY

Teacher's notes

CAPS topics: 1.1 Count objects, 1.2 Count forwards and backwards, 1.16 Mental Mathematics, 3.4 Symmetry.

Lesson vocabulary: Forwards, backwards, symmetry, 2-D, geometrical, non-geometrical shapes, vertical line, horizontal line, diagonal line, predict, recognise, line of symmetry, symmetrical shape, whole, half, square, rectangle.

Prior knowledge: Learners should have been taught how to:

- Recognise and draw line of symmetry in 2-D geometrical and non-geometrical shapes.

Concepts:

- Recognise and draw line of symmetry in 2-D geometrical and non-geometrical shapes.
- Written exercises should include examples where the line of symmetry is not always a vertical line and there is more than one line of symmetry in the shape or object.

Resources: Scrap paper cut into squares and rectangles, shape cut-outs *(Printable Resources)*.

DBE workbook activities relevant to this lesson:

- DBE Worksheet 115 (pp. 106 and 107).

Assessment: Refer to the tracker for today's formal/informal oral, practical or written assessment activity.

Remediation: Let learners work with paper folding and a mirror to test for symmetry. The mirror is placed exactly on the fold line. If the reflection in the mirror is exactly the same as the image that is covered, then that is a line of symmetry.

Enrichment: See enrichment activity cards.

1. Mental mathematics

1.1 Counting (5 minutes)

- Count backwards in 100s from any given number between 0 and 1 000, e.g. 916, 816, 716…

1.2 Mental mathematics activity (10 minutes)

	What is the smallest number?	Answer
1.	784, 874, 478	478
2.	511, 115, 151	115
3.	123, 312, 213	123
4.	702, 207, 720	207
5.	987, 978, 789	789

	What is the biggest number?	Answer
6.	478, 784, 874	874
7.	511, 115, 151	511
8.	123, 312, 213	312
9.	207, 702, 720	720
10.	987, 789, 978	987

2. Correction/reflection on homework (15 minutes)

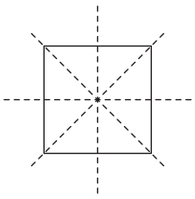
Reflection/remediation based on previous day's work/homework.

3. Lesson content – concept development (30 minutes)

There are two lessons this term to consolidate learners' knowledge and understanding of the concept of symmetry. Paper folding is a very valuable activity when looking for lines of symmetry. Mirrors are useful, but you might not have enough for all of the learners. You should definitely allow learners to do the paper folding using scrap paper – remember to prepare enough square pieces of paper for each group.

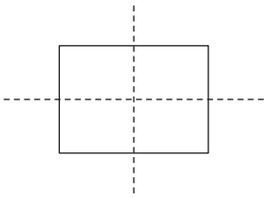
Activity 1: Learners work in groups

- Give each group of learners a paper square cut out of scrap paper.
- Ask the learners to fold the paper square to show the line of symmetry, using a vertical line.
- Unfold and trace over the fold with a red pencil.
- Use the same square, but use a horizontal line to show the line of symmetry. Trace the fold with a blue pencil.
- Ask the learners if there is another line of symmetry that you can fold. (Yes, diagonal.)
- Draw the line using a green pencil.
- Ask the learners if there is another line of symmetry that you can fold. (Yes, another diagonal.)
- Draw the line using a purple pencil.
- Ask the learners if there is another line of symmetry that you can fold. (No.)
- How many lines of symmetry altogether? (Four.)



Activity 2: Learners work in groups

- Repeat the steps above with a rectangle cut out of scrap paper. (You will find two lines of symmetry.)
- Encourage the learners to investigate if the diagonals of the rectangle are lines of symmetry – this will show them concretely that the rectangle only has two lines of symmetry.



4. Classwork activity from LAB (25 minutes) (See next page)

5. Homework activity from LAB (5 minutes) (See next page)

6. Reflection on lesson

Term 4 Lesson 14: Symmetry

Explain to the learners that predicting the lines of symmetry is important. They should try to predict before they use paper folding to find the lines of symmetry.

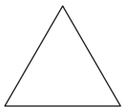
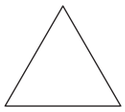
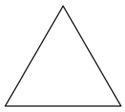
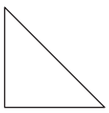
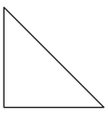
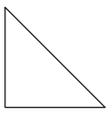
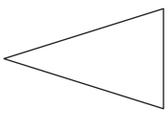
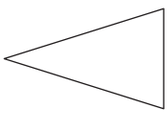
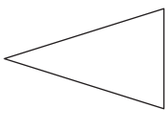
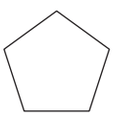
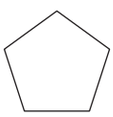
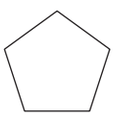
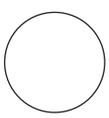
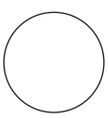
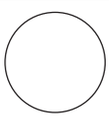
Classwork

For each shape in the table below:

1. Predict the number and draw the lines of symmetry.
   Write these answers in the *We predict* column.

2. Cut out the shape and fold it to find all the lines of symmetry.
   Draw and write your answers in the *We found* column.

3. When you have completed the worksheet discuss with another pair what you predicted and what you found.

Shape	**Lines of symmetry**	
	We predict	*We found*
		
		
		
		
		

Homework

1. Draw a square.

2. Draw a design inside the square so that the square is still symmetrical.

LESSON 15: SYMMETRY

Teacher's notes

CAPS topics: 1.1 Count objects, 1.2 Count forwards and backwards, 1.16 Mental Mathematics, 3.4 Symmetry.

Lesson vocabulary: Forwards, backwards, line of symmetry, horizontal, vertical, geometric shapes, non-geometric shapes, symmetry, symmetrical shape, infinite, whole, half, circle, square, rectangle, triangle.

Prior knowledge: Learners should have been taught how to:

- Recognise and draw line of symmetry in 2-D geometrical and non-geometrical shapes.

Concepts:

- Recognise and draw line of symmetry in 2-D geometrical and non-geometrical shapes.
- Written exercises should include examples where the line of symmetry is not always a vertical line and there is more than one line of symmetry in the shape or object.

Resources: One large cut-out paper circle, square, rectangle and triangle (for demonstration).

DBE workbook activities relevant to this lesson:

- N/A

Assessment: Refer to the tracker for today's formal/informal oral, practical or written assessment activity.

Remediation: Draw half shapes on block paper. Let learners use a mirror to determine the reflection and draw the whole shape on the block paper. Let learners draw symmetrical shapes of their own and investigate the symmetry of the shapes using mirrors.

Enrichment: See enrichment activity cards.

1. Mental mathematics

1.1 Counting (5 minutes)

- Count forwards and backwards in 10s between 0 and 800, e.g. 901, 911, 921…

1.2 Mental mathematics activity (10 minutes)

	Answer the following:	Answer
1.	What is 1 more than 799?	800
2.	What is 1 less than 642?	641
3.	What is 2 more than 658?	660
4.	What is 2 less than 789?	787
5.	What is 3 more than 456?	459

	Answer the following:	Answer
6.	What is 3 less than 785?	782
7.	What is 4 more than 487?	491
8.	What is 4 less than 800?	796
9.	What is 10 more than 755?	765
10.	What is 10 less than 723?	713

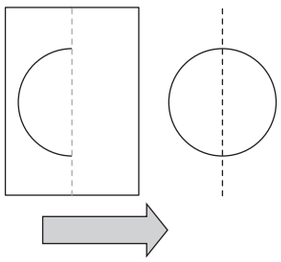
2. Correction/reflection on homework (15 minutes)

Reflection/remediation based on previous day's work/homework.

3. Lesson content – concept development (30 minutes)

Activity 1: Whole class activity

- You need a large cut-out circle for this activity – for demonstration purposes.
- Show learners a large circle and explain that you are going to fold it to find the line of symmetry.
- Fold the circle perfectly in half, so that the fold will be in the place of a line of symmetry for the circle.
- Ask the learners to predict what it will look like when you open the shape up, i.e. *How would you do a drawing of the shape with its line of symmetry?*
- Unfold the circle and examine the fold line that represents a line of symmetry.
- Once you have worked with the concrete shape, do the drawings.
- On the drawings mark the lines of symmetry.



- On the board draw a picture of the folded shape and the unfolded shape with the line of symmetry in its place.
- Ask: *Could I fold the shape in another place to find a different line of symmetry?* (Yes, I could fold it many ways and find a line of symmetry. Demonstrate.)

Activity 2: Whole class activity

- Repeat the following sequence of steps using other shapes – to demonstrate finding lines of symmetry. Allow learners to come to the front and participate in the demonstration is possible.
- Ask the learners to predict what it will look like when you open the shape up, i.e. *What do you think this shape will look like if you drew it with its line of symmetry?*
- Each time, show the original shape first, then show it folded, then unfold it and examine the fold line that represents a line of symmetry.
- Once you have worked with the concrete shape, do the drawings.
- On the drawings mark the lines of symmetry.
- Do all of these steps with the shapes below. Interact with the learners while you do this, allowing them to predict the fold lines/lines of symmetry. Allow some learners to come and do the drawings on the board if time allows.
  - Square (4 lines of symmetry)
  - Rectangle (2 lines of symmetry)
  - Triangle (Various lines of symmetry, depending on the triangle)
  - Circle (MANY lines of symmetry – an infinite number)

4. Classwork activity from LAB (25 minutes) (See next page)

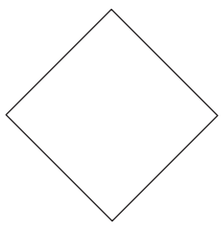
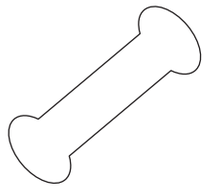
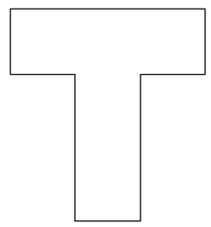
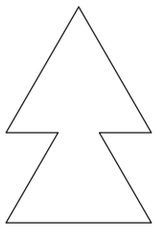
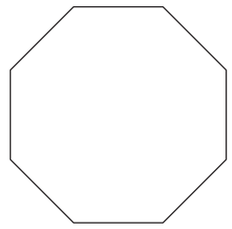
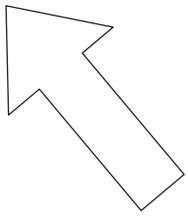
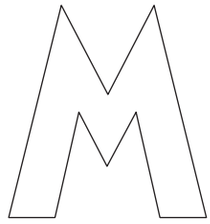
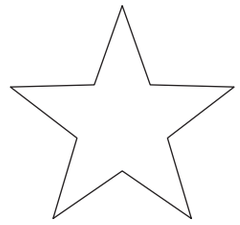
5. Homework activity from LAB (5 minutes) (See next page)

6. Reflection on lesson

Term 4 Lesson 15: Symmetry

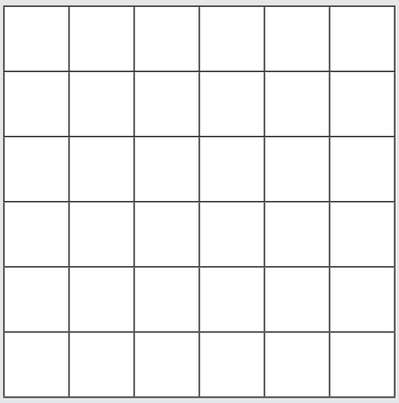
Classwork

1. Draw the lines of symmetry into the following shapes:

a) 	b) 	c) 
d) 	e) 	f) 
g) 	h) 	i) 

Homework

Draw a symmetrical pattern in this grid. The pattern must have at least 2 lines of symmetry. (Various answers possible.)



WEEK 4

LESSON 16: 3-D OBJECTS

Teacher's notes
CAPS topics: 1.1 Count objects, 1.2 Count forwards and backwards, 1.16 Mental Mathematics, 3-D objects. **Lesson vocabulary:** Forwards, backwards, 2-D shapes, 3-D objects, face, geometric solids, flat surface, curved surface, ball shapes, box shapes, sphere, prism, cylinder, pyramid, cube, roll, slide, face. **Prior knowledge:** Learners should have been taught how to: • Recognise and name 3-D objects in the classroom and in pictures: ball shapes (spheres), box shapes (prisms), cylinders. • Describe, sort and compare 3-D objects in terms of size, objects that can roll and objects that can slide. **Concepts:** • Describe, sort and compare 3-D objects in terms of 2-D shapes that make up the faces of 3-D objects, flat or curved surfaces. **Resources:** 3-D geometric solids (collect old containers), pictures of the 3-D objects and 2-D shapes *(Printable Resources)*, sticky tape. **DBE workbook activities relevant to this lesson:** • DBE Worksheet 124 (pp. 124 and 125). **Assessment:** Refer to the tracker for today's formal/informal oral, practical or written assessment activity.
Remediation: After having matched the 2-D shapes with the 3-D objects, the learners use the 2-D shapes to make the 3-D objects. **Enrichment:** See enrichment activity cards.

1. Mental mathematics

1.1 Counting (5 minutes)

- Count forwards and backwards in 3s from any given multiple between 0 and 900, e.g. 513, 516, 519…

1.2 Mental mathematics activity (10 minutes)

	Calculate:	Answer
1.	115 – __ = 12	103
2.	114 – __ = 4	110
3.	113 – __ = 12	101
4.	120 – __ = 13	107
5.	101 – __ = 1	100

	Calculate:	Answer
6.	104 – __ = 1	103
7.	112 – __ = 6	106
8.	120 – __ = 15	105
9.	114 – __ = 6	108
10.	115 – __ = 10	105

2. Correction/reflection on homework (15 minutes)

Reflection/remediation based on previous day's work/homework.

3. Lesson content – concept development (30 minutes)

This is the last lesson on 3-D objects for the year. Remember to use the models of 3-D objects that you have used in all of your lessons on 3-D objects so that learners can look at the concrete examples of the shapes you will talk about. You should keep collecting these objects to build your collection so that you have enough to give some to each group in the class.

Activity 1: Whole class activity

- Give each group of learners as many of the following 3-D geometric solids as you can (or give them pictures):
  - cubes
  - pyramids
  - balls
  - cones
  - cylinders
  - spheres.
- Draw 2-D shapes – circles, squares and triangles on the board.
- Ask the learners to identify the 2-D shapes they can see on the faces of the 3-D objects that they have collected:
  - cones: circles, parts of a circle – looks like a triangle but with a curved edge
  - cylinders: circles, rectangles (but curved)
  - cubes and prisms: squares, rectangles, triangles
  - pyramids: triangles, squares, rectangles.

Activity 2: Whole class activity

- Discuss these questions with your learners. Learners can give the name of the shape or draw it when they answer the questions. Ask:
- *The faces of a pyramid are* ____ (1 square and four triangles).
- *The faces of a prism are* ____ (6 rectangles).
- *A* ____ (sphere/ball shape) *has only one round surface.*
- Explain to learners that in mathematics we use the word **face** when we talk about the sides of a 3-D object.
- *Sam* (use the name of one of your learners) has one of each of these objects: a triangular prism, a rectangular prism, a cube, a triangular-based pyramid and a square-based pyramid.
- Write the names of the shapes on the board, then discuss the following with your class:
  - You are looking at one object. Altogether it has four triangular sides/faces.
  - *What objects are you looking at?* (A triangular-based pyramid.)
  - You are looking at two objects. Altogether they have twelve sides/faces.
  - *What objects are you looking at?* (A cube and a rectangular prism.)
  - You are looking at two objects. Both have five sides/faces.
  - *What objects are you looking at?* (A triangular prism and a square based pyramid.)
- Etc. Make up other questions that call on learners to visualise 3-D objects about which they should know.

4. Classwork activity from LAB (25 minutes) (See next page)

5. Homework activity from LAB (5 minutes) (See next page)

6. Reflection on lesson

Term 4 Lesson 16: 3-D objects

Classwork

1. Draw a cone.
   a) Draw the shapes that make up a cone. (Semicircle, circle.)
   b) Are the shapes curved or flat? (Flat with round or curved sides.)

2. Draw a cube.
   a) Draw the shapes that make up a cube. (Six squares.)
   b) Are the shapes flat or curved? (Flat with straight sides.)
   c) Draw decorations onto the cube to make it look like a container for sweets.

Homework

1. Draw a cylinder.

2. Draw the shapes that make up a cylinder. (2 circles and 1 rectangle.)

3. Draw decorations onto the cylinder to make it look like a container for biscuits.

LESSON 17: AREA

Teacher's notes
CAPS topics: 1.1 Count objects, 1.2 Count forwards and backwards, 1.16 Mental Mathematics, 4.6 Area. **Lesson vocabulary:** Forwards, backwards, area, estimate, investigate, estimate, tiling, squares, measurement. **Prior knowledge:** Learners should have been taught how to: • Investigate the distance around 2-D shapes and 3-D objects using direct comparisons or informal units. **Concepts:** • Investigate the area using tiling. **Resources:** Squares template (*Printable Resources*; keep cut-outs to use again in Lesson 14), grid paper for homework. **DBE workbook activities relevant to this lesson:** • DBE Worksheet 110 (pp. 96 and 97). **Assessment:** Refer to the tracker for today's formal/informal oral, practical or written assessment activity.
Remediation: Let the learners use their cut-out squares. Give them different size squares and rectangles. Ask them to pack the cut-out squares on the shapes to see what the area of each shape is. Remind learners that they have to tile the surface carefully, leaving no gaps and making no overlaps. **Enrichment:** See enrichment activity cards.

1. Mental mathematics

1.1 Counting (5 minutes)

- Count forwards and backwards in 50s between 0 and 1 000, e.g. 350, 400, 450…

1.2 Mental mathematics activity (10 minutes)

	Calculate the following:	Answer
1.	18 – 8 – 5 =	5
2.	17 – 7 – 5 =	5
3.	16 – 6 – 5 =	5
4.	15 – 5 – 5 =	5
5.	14 – 4 – 5 =	5

	Calculate the following:	Answer
6.	13 – 3 – 5 =	5
7.	12 – 2 – 5 =	5
8.	11 – 1 – 5 =	5
9.	10 – 1 – 5 =	4
10.	9 – 1 – 5 =	3

2. Correction/reflection on homework (15 minutes)

Reflection/remediation based on previous day's work/homework.

3. Lesson content – concept development (30 minutes)

Learners are introduced to the concept of area in this lesson. This mathematical concept will be used throughout their schooling. In this lesson you establish the ***concept – area means the amount of surface covered***. You should not start talking about the formula for area of an shape. That will be learned in the years to come.

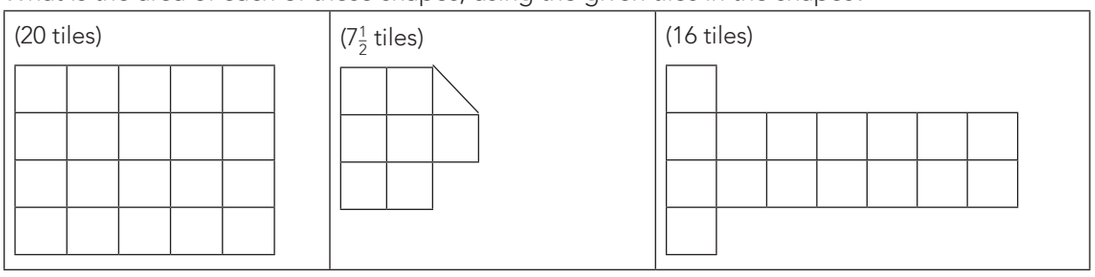
NOTE: To save time you could give learners a copy of the squares template and let them cut out all the squares before this lesson.

Activity 1: Learners work in groups

- Ask learners to place the pile of squares that they have cut out in front of them.
- Ask learners where they have seen tiles before (bathroom/kitchen walls, floors, etc.).
- Tell them that before someone tiles a wall or floor they need to estimate the number of tiles they will need so that they buy enough.
- Learners will now pretend that the squares they have cut are tiles for a floor. They can pretend that the cover of their DBE Workbook is a floor that they must tile.
- Ask each learner to estimate how many squares would cover the floor (i.e. DBE Workbook cover). Each learner writes down their estimate.
- Ask pairs of learners to pack out the squares on the DBE Workbook cover. Ensure that there are no gaps or overlaps.
- Discuss the differences between the estimates and the measurements. Ask: *Whose estimation was closer?* (Discuss. Estimates that are close are fine. Estimates that are way out are not good enough – learners must take care to make good estimates.)
- Explain that when we measure the surface of a space we call this the **area**. Write the word on the board and get the children to say it after you.
- Ask a few learners to explain to you what area means. Encourage them to speak about concrete examples as they give their explanations. ***(Area = The amount of a flat surface that is covered.)***

Activity 2: Whole class activity

- Before the lesson draw grids on the board with all the blocks the same size.
- Ask learners to help you to count the number of squares/tiles in each drawing.
- What is the area of each of these shapes, using the given tiles in the shapes?



4. Classwork activity from LAB (25 minutes) (See next page)

5. Homework activity from LAB (5 minutes) (See next page)

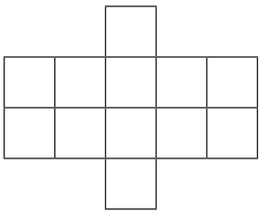
6. Reflection on lesson

Term 4 Lesson 17: Area

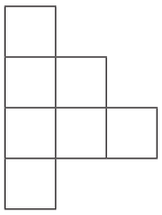
Classwork

1. What is the area of these shapes?

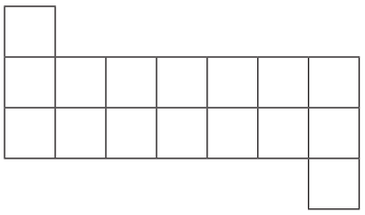
a) (12 tiles)



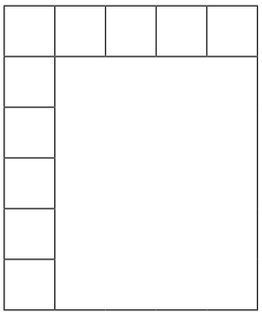
b) (7 tiles)



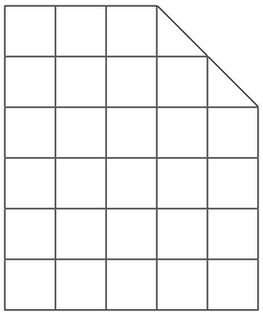
c) (16 tiles)



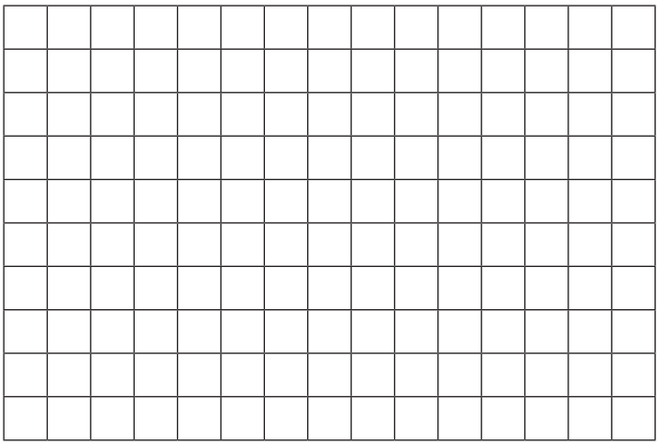
d) (30 tiles)



e) (28 tiles)



2. Use squares ☐ and half squares ◺ to draw three figures on the grid paper below. Each figure should have an area of 12 squares. (Responses will vary.)



Homework

Draw three shapes each with an area of 10 blocks on a sheet of grid paper.

LESSON 18: AREA AND PERIMETER

Teacher's notes

CAPS topics: 1.1 Count objects, 1.2 Count forwards and backwards, 1.16 Mental Mathematics, 4.6 Area.

Lesson vocabulary: Forwards, backwards, perimeter, area, distance, comparisons, formal units, 2-D shapes, 3-D objects, investigate, measurement, unit.

Prior knowledge: Learners should have been taught how to:

- Investigate the distance around 2-D shapes and 3-D objects using direct comparisons or informal units.

Concepts:

- Investigate the distance around 2-D shapes and 3-D objects using direct comparisons or informal units.
- Investigate the area using tiling.

Resources: Square and rectangular shaped objects from the classroom preferably with exact dimensions in cm, whiteboards/scrap paper, square cut-outs, rectangular shapes *(Printable Resources)*.

DBE workbook activities relevant to this lesson:

- N/A

Assessment: Refer to the tracker for today's formal/informal oral, practical or written assessment activity.

Remediation: Let the learners use their cut-out squares. Give them different size squares and rectangles. Ask them to pack the cut-out squares on the shapes to see what the area of each shape is.

Enrichment: See enrichment activity cards.

1. Mental mathematics

1.1 Counting (5 minutes)

- Count forwards and backwards in 50s between 0 and 1 000, e.g. 750, 700, 650…

1.2 Mental mathematics activity (10 minutes)

	Calculate the following:	Answer
1.	20 – 6 + 5 =	19
2.	16 – 6 + 5 =	15
3.	12 – 6 + 5 =	11
4.	9 – 6 + 5 =	8
5.	18 – 6 + 5 =	17

	Calculate the following:	Answer
6.	19 + 5 – 6 =	18
7.	13 + 5 – 6 =	12
8.	17 + 5 – 6 =	16
9.	20 + 5 – 6 =	19
10.	25 + 5 – 6 =	24

2. Correction/reflection on homework (15 minutes)

Reflection/remediation based on previous day's work/homework.

3. Lesson content – concept development (30 minutes)

In this lesson you revise the concept of perimeter that you worked on last term with learners and you work again with the concept of area.

Activity 1: Whole class activity

- Remind learners that the ***perimeter*** *is the measurement of the length around a shape.*
- Show some examples on the board. (Learners need this to do the classwork activity that follows.)
- Example: Length is 4 cm and breadth is 3 cm.

Perimeter will be 4 cm + 3 cm + 4 cm + 3 cm = 14 cm.

Activity 2: Learners work in groups

- Give each group of learners four objects from the classroom that resemble squares, triangles and rectangles.
- Ask the learners to use their rulers to measure the perimeter of the objects. To find the perimeter they need to measure the lengths of all of the sides of the shape.
- Learners should know how to measure length using a ruler (in centimetres) as they should have learned about it when doing length. Revise how to use a ruler if necessary. (Start with zero aligned to the starting point of the edge.)
- They can write the name of the object and their measurements on their whiteboards/scrap paper.
- Swop the objects between members of the group.
- When all the members of the group have had a chance to measure the lengths of the sides of all the objects, let the members compare their answers.

Activity 3: Learners work in groups

- Use the square cut-outs from Lesson 17.
- Give the groups different size cut-out shapes. They must estimate and then find the area of the shapes. They need to follow all the steps below in the correct order.
  1. Each person in the group needs to estimate the area of one of the cut-out shapes and write the estimate on their whiteboards/scrap paper.
  2. Use the paper tiles to measure the area of the cut-out shape. *(Lay out the tiles on the shapes and count how many tiles it takes to cover the shape completely. There should be no gaps between the tiles and no overlapping. If a tile does not fully fit on the shape you can decide to count a half a tile.)*
  3. Compare the measured tile amounts with the estimates and discuss.
  4. Repeat Steps 1–3 with the next cut-out shape.
- Discuss with learners – we can find the **area** and the **perimeter** of 2-D shapes. Discuss the difference between area and perimeter. Learners should not confuse these two concepts.

4. Classwork activity from LAB (25 minutes) (See next page)

5. Homework activity from LAB (5 minutes) (See next page)

6. Reflection on lesson

Term 4 Lesson 18: Area and perimeter

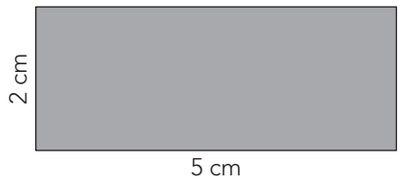
Classwork

1. What is the perimeter of the shapes?

a)

(Perimeter = 18 cm)

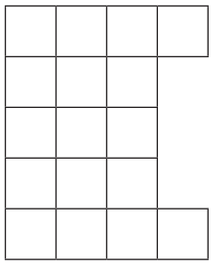
b)



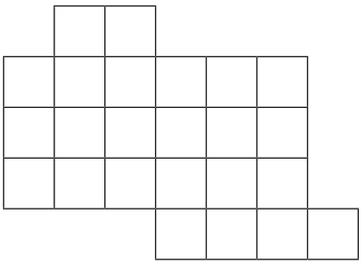
(Perimeter = 14 cm)

2. What is the area of these figures? Use the tiles to count the units.

a) (17 tiles)



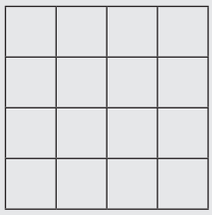
b) (24 tiles)



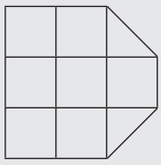
Homework

What is the area of these figures? Use the tiles to count the units.

a) (16 tiles)



b) (8 tiles)



LESSON 19: TIME

Teacher's notes
CAPS topics: 1.1 Count objects, 1.2 Count forwards and backwards, 1.16 Mental Mathematics, 4.1 Time. **Lesson vocabulary:** Forwards, backwards, time, o'clock, quarter, past/to, half hour, hour, quarter hour, length of time, minutes, analogue clock, digital clock, days, weeks, months, time passed, early, late. **Prior knowledge:** Learners should have been taught how to: • Ask 12-hour time in hours, half hours and quarter hours on analogue clocks. • Use clocks to calculate length of time in hours or half hours. **Concepts:** • Ask 12-hour time in hours, half hours, quarter hours and minutes on analogue clocks and digital clocks and other digital instruments that show the time, e.g. cell phones. • Use clocks to calculate length of time in hours or half hours. • Convert time between days, weeks and months. **Resources:** Draw the analogue clocks on the board before the lesson commences. **DBE workbook activities relevant to this lesson:** • N/A **Assessment:** Refer to the tracker for today's formal/informal oral, practical or written assessment activity.
Remediation: Draw clocks on the board with the times filled in on both the clocks. Give the children the sentence, e.g. *I wake up at seven o'clock and eat breakfast at half past seven.* Let them look at the hands on the clock. Ask them how long it is from seven o'clock to half past seven. **Enrichment:** See enrichment activity cards.

1. Mental mathematics

1.1 Counting (5 minutes)

- Count forwards and backwards in 25s from any multiple between 0 and 1 000, e.g. 400, 425, 450…

1.2 Mental mathematics activity (10 minutes)

	Calculate the following:	Answer
1.	30 ÷ 10 =	3
2.	70 ÷ 10 =	7
3.	20 ÷ 10 =	2
4.	80 ÷ 10 =	8
5.	40 ÷ 10 =	4

	Calculate the following:	Answer
6.	10 ÷ 10 =	1
7.	50 ÷ 10 =	5
8.	100 ÷ 10 =	10
9.	60 ÷ 10 =	6
10.	0 ÷ 10 =	0

2. Correction/reflection on homework (15 minutes)

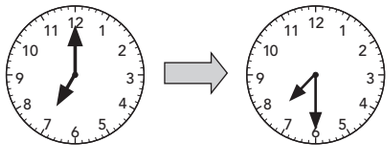
Reflection/remediation based on previous day's work/homework.

3. Lesson content – concept development (30 minutes)

There are two lessons on time this term. Learners will continue to consolidate their knowledge of telling the time and calculating time passed. In this lesson analogue clocks and digital clocks are used.

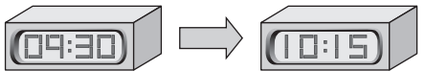
Activity 1: Whole class activity

- Use the clocks to work out the time passed. Use analogue and digital clocks.
- If necessary, revise how to tell the time either before or as you do the calculations.
- Draw clocks on the board to show the following:
- I woke up at seven o'clock and had breakfast at half past seven.



How much time passed between when I woke up and when I had breakfast? (30 min)

- I left home at half past nine. I got back home at 10:15.



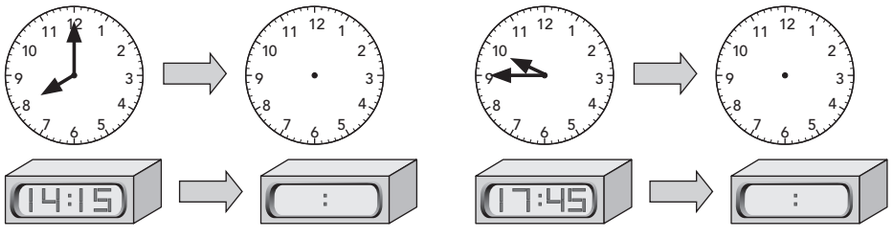
How much time passed while I was out? (45 min)

Activity 2: Whole class activity

Draw clocks on the board and ask the learners to give you a sentence to describe what happened between two given times, e.g.

- *We went to the shops at eight o'clock. We got home at ___.*
- *First break started at quarter to ten and finished at _____.*

Do other examples showing different lengths of time. Use analogue and digital clocks.



4. Classwork activity from LAB (25 minutes) (See next page)

5. Homework activity from LAB (5 minutes) (See next page)

6. Reflection on lesson

Term 4 Lesson 19: Time

Classwork

1. What is the time on the analogue clock? Write it as a digital time.

a)  (11:15)

b)  (09:30)

c)  (06:18)

2. Show the given digital times on an analogue clock:
   a) 10:40
   b) 11:45
   c) 03:53
   d) 06:33

3. Draw clocks to show 3 o'clock and half past four in the afternoon and ask a story to go with these times. (Various answers.)

4. How much time passed between 3 o'clock and half past four in the afternoon? (one and a half hours.)

5. My birthday is exactly 10 weeks from now. How many days until my birthday? (70 days.)

6. How many days are there in the shortest month? (28 days and 29 days in a leap year.)

Homework

1. Our maths class started at eight o'clock and finished at quarter to ten.
   a) Show both of the times on an analogue and a digital clock.
   b) How long is the maths class? (one and 3 quarters of an hour.)

2. Draw digital clocks to show 10:15 and 11:00 and ask a story to go with them. (Various answers.)

3. How much time passed between 10:15 and 11:00? (45 minutes.)

LESSON 20: TIME

Teacher's notes

CAPS topics: 1.1 Count objects, 1.2 Count forwards and backwards, 1.16 Mental Mathematics, 4.1 Time.

Lesson vocabulary: Forwards, backwards, time, half an hour, quarter of an hour, difference in time, analogue clock, digital clock, days, weeks, months, years, time passed.

Prior knowledge: Learners should have been taught how to:

- Ask 12-hour time in hours, half hours and quarter hours on analogue clocks.
- Use clocks to calculate length of time in hours or half hours.

Concepts:

- Ask 12-hour time in hours, half hours, quarter hours and minutes on analogue clocks and digital clocks and other digital instruments that show the time, e.g. cell phones.
- Use clocks to calculate length of time in hours or half hours.

Resources: Whiteboards/scrap paper, analogue and digital clocks (for demonstration).

DBE workbook activities relevant to this lesson:

- N/A

Assessment: Refer to the tracker for today's formal/informal oral, practical or written assessment activity.

Remediation: Draw two clocks with different times on them and ask: *Look at the two clocks. What is the difference in time?* Make your own word sum that will go with each. E.g. half past eight and nine o'clock – We started with our mathematics worksheet at half past eight and completed it by nine o'clock. (It took us half an hour.)

Enrichment: See enrichment activity cards.

1. Mental mathematics

1.1 Counting (5 minutes)

- Count forwards and backwards in 25s from any multiple between 0 and 1 000, e.g. 875, 850, 825…
- Count forwards in 25s 5/3/10 steps from 200. How far did you count?

1.2 Mental mathematics activity (10 minutes)

	Calculate the following:	Answer
1.	__ ÷ 10 = 9	90
2.	__ ÷ 10 = 2	20
3.	__ ÷ 10 = 1	10
4.	__ ÷ 10 = 6	60
5.	__ ÷ 10 = 0	0

	Calculate the following:	Answer
6.	__ ÷ 10 = 5	50
7.	__ ÷ 10 = 7	70
8.	__ ÷ 10 = 3	30
9.	__ ÷ 10 = 8	80
10.	__ ÷ 10 = 10	100

2. Correction/reflection on homework (15 minutes)

Reflection/remediation based on previous day's work/homework.

3. Lesson content – concept development (30 minutes)

Activity 1: Whole class activity

- Give each learner a whiteboards/scrap paper. Draw a clock showing 10 o'clock on the board.
- Ask the learners to draw a clock showing a quarter of an hour before ten o'clock.
- As soon as they are done, let them hold up their whiteboards/scrap paper to show their answer.
- Ask one of the learners to come to the board and draw the correct answer for the other learners to check their answers.
- Do the same for the following:
- Half past ten. Pay particular attention to the position of the hour hand which should not be on the ten or the eleven but half way between the ten and eleven.
- A quarter to eleven. Pay particular attention to the position of the hour hand which should not be on the ten or the eleven but three quarters of the way between the ten and eleven.
- Discuss the following questions with the class:
  - *What is the time half an hour before ten o'clock?* (half past 9)
  - *What is the time a quarter of an hour after ten o'clock?* (quarter past 10)
  - *What is the time a half an hour after ten o'clock?* (half past 10)

Activity 2: Whole class activity

- Ask learners to write the following **digital times** on their whiteboards:
  - *What is the time if it is half an hour before ten o'clock?* (09:30)
  - *What is the time if it is a quarter of an hour after ten o'clock?* (10:15)
  - *What is the time if it is a half an hour after ten o'clock?* (10:30)
  - *What is the time if it is one and a half hour after 10:45?* (12:15)
  - *What is the time if it is one and a quarter hours after 06:45?* (08:00)

Activity 3: Whole class activity

- Work through the following word problems as a whole class:
  - *I get home at 3 o' clock. It takes me 1 hour to do my homework. What time will I be finished my homework?* (4 o'clock)
  - *School starts at 8 am and finishes at 2 pm. How long is the school day?* (6 hours)
  - *The time is 3.30 pm. I go out to play with my friends. I can play with them for 1 hour and 30 minutes. What time will I need to come back home?* (5 pm)
- Make up other similar word problems if there is time.

4. Classwork activity from LAB (25 minutes) (See next page)

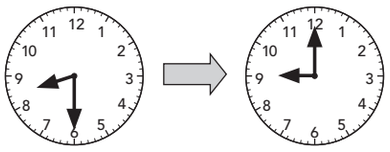
5. Homework activity from LAB (5 minutes) (See next page)

6. Reflection on lesson

Term 4 Lesson 20: Time

Classwork

1. Look at the two clocks. What is the difference in time? Make your own story that will go with each.

a) 

(half an hour. Stories will vary.)

b) 

(half an hour. Stories will vary.)

2. I left school at 10:15. I arrived home at 10:45. How long did it take me to get home? (30 minutes.)

3. Mary reads one page in 15 minutes. How many pages will she read in two hours? (8 pages.)

4. What was the time half an hour before 7 o'clock? (half past 6.)

5. What was the time quarter of an hour after one o'clock? (quarter past 1.)

6. What was the time half an hour after 4 o'clock? (half past 4.)

7. Mary reads one book in four days. How many books will she read in four weeks?
   (7 books – if she reads at the same pace.)

8. **Challenge:** Mary reads three books in one month. How many years will she take to read 72 books?
   (2 years – if she reads at the same pace for all that time.)

Homework

1. I left home at 06:15. I arrived at school at 07:10. How long did it take me to get to school?
   (55 minutes.)

2. Mary reads three pages in 15 minutes. How many pages will she read in one hour? (12 pages.)

3. What was the time 15 minutes before 7 o'clock? (quarter to 7.)

4. What was the time quarter of an hour after three o'clock? (quarter past 3.)

WEEK 5

LESSON 21: NUMBER PATTERNS

Teacher's notes
CAPS topics: 1.1 Count objects, 1.2 Count forwards and backwards, 1.16 Mental Mathematics, 2.2 Number patterns. **Lesson vocabulary:** Forwards, backwards, number patterns, multiples, forwards, backwards, sequence, extend. **Prior knowledge:** Learners should have been taught how to: • Copy, extend and describe simple number sequences to at least 200. • Sequences should show counting forwards and backwards in 1s from any number and 2s, 3s, 4s, 5s and 10s from any multiple between 0 and 200. **Concepts:** • Copy, extend and describe simple number sequences to at least 1 000. • Sequences should show counting forwards and backwards in 1s from any number and in 2s, 3s, 4s, 5s and 10s from any multiple between 0 and 200. • Counting forwards and backwards in 20s, 25s, 50s, 100s to at least 1 000. **Resources:** 901–1 000 number grid *(Printable Resources)*, counters. **DBE workbook activities relevant to this lesson:** • DBE Worksheet 114 (pp. 104 and 105). **Assessment:** Refer to the tracker for today's formal/informal oral, practical or written assessment activity.
Remediation: Draw number lines on the board. Make hoops (jumps) while counting in twos. Ask the learners what number is between 900 and 902, 902 and 904, etc. **Enrichment:** See enrichment activity cards.

1. Mental mathematics

1.1 Counting (5 minutes)

- Count forwards and backwards in 20s from any multiple between 0 and 1 000.

1.2 Mental mathematics activity (10 minutes)

	Calculate the following:	Answer
1.	__ x 10 = 70	7
2.	0 x 10 =	0
3.	9 x __ = 45	5
4.	__ ÷ 3 = 11	33
5.	28 ÷ 4 =	7

	Calculate the following:	Answer
6.	__ x 10 = 50	5
7.	__ x 3 = 0	0
8.	6 x __ = 24	4
9.	__ ÷ 5 = 8	40
10.	36 ÷ 4 =	9

2. Correction/reflection on homework (15 minutes)

Reflection/remediation based on previous day's work/homework.

3. Lesson content – concept development (30 minutes)

There are two lessons on number patterns this term. In these lessons you will work with counting patterns (such as the multiples of 2, 5, 50 and so on) but also with counting patterns that are not multiples (such as the pattern made by adding 5s, starting at 11). While you work with the patterns, you must be sure to show learners how they can recognise the rule that generates each pattern. Learners need to be able to recognise the rule for a pattern because they need to use these rules to find missing terms in given sequences and to extend patterns, using the rule.

The last activity of this lesson is quite challenging. It gives you an opportunity to discuss random patterns, making sure that learners realise it does not matter where you start, if you know the rule, you can generate the pattern.

Activity 1: Whole class activity

- Give each learner a 901–1 000 number grid and counters.
- Ask them to use their counters to show the patterns made by counting on in fives on their number grid, starting at 901. *(901, 906, 911, 916, 921, 926, …)*
- Ask: *Can you see a pattern in the numbers?* (The numbers end in a 1 or a 6 each time.)
- Ask: *How did this pattern grow?* (By adding 5 each time. The rule for this pattern is to add 5.)
- Show the patterns made by counting on in fours, starting at 903. *(903, 907, 911, 915, 919, 923, 927, 931, …)*
- Ask if they can see the pattern. *(The last digits form a pattern that repeats – 3, 7, 1, 5, 9, 3, 7, 1…)*
- Ask: *How did this pattern grow?* (By adding 4 each time. The rule for this pattern is to add 4.)
- Show the patterns made by counting on in threes, starting at 902. *(902, 905, 908, 911, 914, 917, 920, 923, 926, 929, 932 ...)*
- Ask if they can see the pattern. *(The last digit has a cycle of ten numbers before it repeats 2, 5, 8, 1, 4, 7, 0, 6, 9, 2, … There might be some learners who are able to spot this. Do not pressurise them to do so – this is quite complicated.)*
- Ask: *How did this pattern grow?* (By adding 3 each time. The rule for this pattern is to add 3.)

Activity 2: Learners work in groups

- Write these patterns on the board:
  - 110, 112, 114, 116, 118, 120, … *(Counting forwards in 2s starting at 110.)*
  - 563, 573, 583, 593, 603, 613, … *(Counting forwards in 10s starting at 563.)*
  - 213, 210, 207, 205, 203, … *(Counting backwards in 2s starting at 213.)*
- Ask learners to think about ways they could describe the patterns.
- Allow different learners to come up and explain their answers to the class. (They should explain the rule they have found for each pattern.)

Activity 3: Whole class activity

- Discuss the different answers that are possible for the following patterns:
  - Counting in 2s starting at a number greater than 50.
    (For example – I could start at 52 – the pattern would be 52, 54, 56, … But if I start at 60, which is also greater than 50, the pattern would be 60, 62, 64, ... The patterns are different but the rule is the same – add 2 each time.)
  - Counting in 20s starting at a number greater than 100. (You can start at any number greater than 100. But the rule will be the same – add 20 each time.)
  - Counting in 25s starting at a number greater than 500. (You can start at any number greater than 500. But the rule will be the same – add 25 each time.)
  - Counting in 50s starting at a number less than 500. (You can start at any number greater than 500. But the rule will be the same – add 50 each time.)
  - Counting in 100s starting at a number less than 1 000. (You can start at any number less than 1 000. But the rule will be the same – add 100 each time.)

4. Classwork activity from LAB (25 minutes) (See next page)

5. Homework activity from LAB (5 minutes) (See next page)

6. Reflection on lesson

Term 4 Lesson 21: Number patterns

Classwork

1. Describe these patterns:
   a) 10, 12, 14, 16, 18, 20, … (Counting forwards in 2s starting at 10.)
   b) 60, 70, 80, 90, 100, 110, … (Counting forwards in 10s starting at 60.)
   c) 201, 204, 207, 210, 213, … (Counting forwards in 3s starting at 201.)

2. Extend these patterns:
   a) 499, 494, 489, ___, ___, ___ (484, 479, 474)
   b) 980, 960, 940, ___, ___, ___ (920, 900, 880)
   c) 300, 304, 308, ___, ___, ___ (312, 316, 320)

3. Make your own patterns: (Answers will vary.)
   a) Counting in 2s starting at a number greater than 50.
   b) Counting in 20s starting at a number greater than 100.
   c) Counting in 25s starting at a number greater than 500.
   d) Counting in 50s starting at a number less than 500.
   e) Counting in 100s starting at a number less than 1 000.

Homework

1. Describe these patterns:
   a) 100, 102, 104, 106, 108, … (Counting forwards in 2s starting at 100.)
   b) 760, 770, 790, 800, 810, … (Counting forwards in 10s starting at 760.)
   c) 404, 407, 410, 413, … (Counting forwards in 3s starting at 404.)

2. Extend these patterns:
   a) 599, 699, 799, ___, ___ (899, 999)
   b) 580, 560, 540, ___, ___, ___ (520, 500, 480)
   c) 450, 500, 550, ___, ___, ___ (600, 650, 700)

LESSON 22: NUMBER AND SHAPE PATTERNS

Teacher's notes

CAPS topics: 1.1 Count objects, 1.2 Count forwards and backwards, 1.16 Mental Mathematics, 2.1 Number patterns.

Lesson vocabulary: Forwards, backwards, number pattern, family, predictable, increasing, multiple, regular pattern, copy, extend, describe, before, after, left, right, sequence.

Prior knowledge: Learners should have been taught how to:

- Build-up 2, 3, 4, 5, 10x tables
- Recognise multiples 0, 2, 3, 4, 5, 10.

Concepts:

- Copy, extend and describe simple number sequences to at least 1 000.
- Sequences should show counting forwards and backwards in 1s from any number and in 2s, 3s, 4s, 5s and 10s from any multiple between 0 and 200.

Resources: Counters (for remediation).

DBE workbook activities relevant to this lesson:

- N/A

Assessment: Refer to the tracker for today's formal/informal oral, practical or written assessment activity.

Remediation: Let learners construct the patterns with concrete apparatus, e.g. counters. Let them build the next two or three shapes. Ask them to describe the number of counters they are using (more each time). How many more? Write the numbers down and then establish the pattern.

Enrichment: See enrichment activity cards.

1. Mental mathematics

1.1 Counting (5 minutes)

- Count forwards and backwards in 10s and 20s between 0 and 1 000.

1.2 Mental mathematics activity (10 minutes)

	Calculate the following:	Answer
1.	36 + 20 =	46
2.	36 + 30 =	66
3.	36 + 50 =	86
4.	136 + 20 =	156
5.	536 + 20 =	556

	Calculate the following:	Answer
6.	58 – 10 =	48
7.	58 – 20 =	38
8.	58 – 28 =	30
9.	158 – 28 =	130
10.	758 – 28 =	730

2. Correction/reflection on homework (15 minutes)

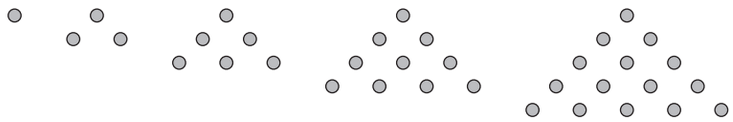
Reflection/remediation based on previous day's work/homework.

3. Lesson content – concept development (30 minutes)

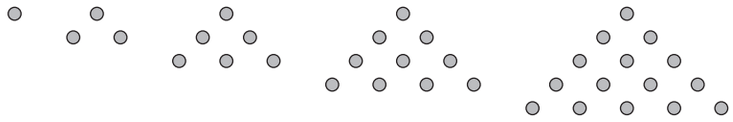
The patterns in this lesson involve shapes and numbers.

Activity 1: Whole class activity

- Draw the following sequence on the board.
- Ask *What do you notice about the shapes in the pattern?*
- Each set looks like a triangle. The number of dots in each triangle is as follows:
- 1st triangle: 1 dot, 2nd triangle: 3 dots, 3rd triangle: 6 dots, 4th triangle: 10 dots, 5th triangle: 15 dots.
- Discuss the pattern with the class and how the new shapes in the pattern grow each time.

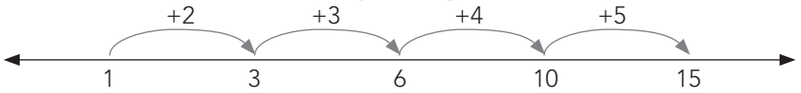


- Write the number of dots on the board below each triangle.



1 3 6 10 15

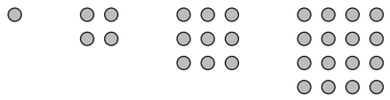
- Ask learners to look at the number pattern (taken from the number of dots in the pattern above).
- *What do you notice about the numbers in the pattern?*
- The number of dots in each triangle increases by 1 more than the number of dots in the bottom row of the previous triangle.
- The number that follows is made by adding on one more than was added to the previous number.



- Ask *How would you work out the next number?* (Add 6 to 15 to get 21.)
- *And the number after that*? (Add 7 to 21 to get 28.)
- *And the number after that*? (Add 8 to 28 to get 38.)

Activity 2: Whole class activity

- Follow the steps in Activity 1 to find the next two numbers based on this shape pattern.



- Ask:
  - *What are the numbers in the pattern?* (1, 4, 9, 16, …)
  - *How can you work them out?* (1 x 1 = 1, 2 x 2 = 4, 3 x 3 = 9, 4 x 4 = 16)
  - *How would you work out the next number?* (5 x 5 = 25)
  - *And the number after that*? (6 x 6 = 36)

4. Classwork activity from LAB (25 minutes) (See next page)

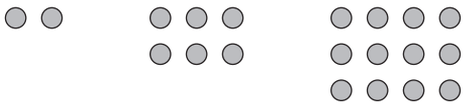
5. Homework activity from LAB (5 minutes) (See next page)

6. Reflection on lesson

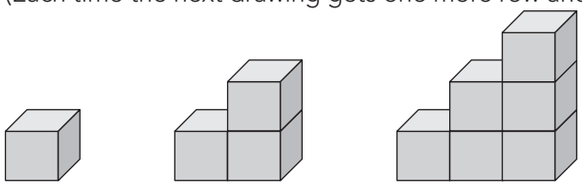
Term 4 Lesson 22: Number and shape patterns

Classwork

1. Work in pairs. Take turns to describe these patterns and how to extend them.

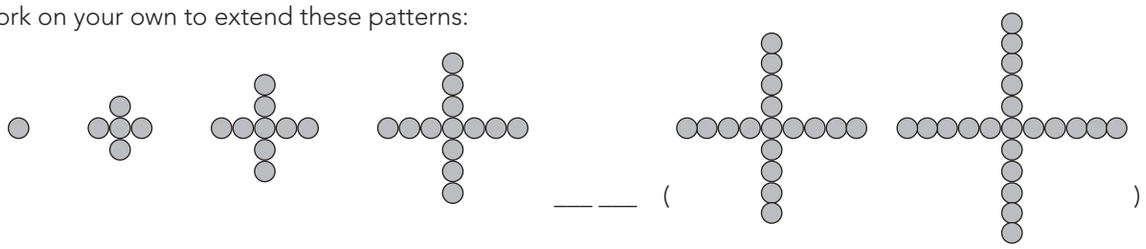
   a) 

   (Each time the next drawing gets one more row and one more column. Explanations may vary.)

   b) 

   (Each time the next drawing gets the number of blocks in the bottom row plus one more. OR
   Each time the next shape gets a column of blocks added that is one taller than the previous column.
   Explanations may vary.)

2. Work on your own to extend these patterns:

   a) 

   b) 

   c) 

3. Make your own patterns:
   a) Using shapes that are repeated. (Answers will vary.)
   b) Using shapes that get bigger. (Answers will vary.)
   c) Using shapes that get smaller. (Answers will vary.)

Homework

1. Create two of your own pattern by using these shapes. (Answers will vary.)

2. Write a sentence to describe the pattern.
   (Answers will vary – check that they relate correctly to the given patterns.)

LESSON 23: GEOMETRIC PATTERNS

Teacher's notes

CAPS topics: 1.1 Count objects, 1.2 Count forwards and backwards, 1.16 Mental Mathematics, 2.1 Geometric patterns.

Lesson vocabulary: Forwards, backwards, geometric pattern, physical objects, predictable, increasing patterns, copy, extend, describe, size, shapes, predictable, regular pattern.

Prior knowledge: Learners should have been taught how to:

- Count objects reliably to 200.
- Count forwards and backwards from 0–200.
- Identify, describe in words and copy geometric patterns in nature, from modern everyday life and from our cultural heritage.

Concepts:

- Copy, extend and describe in words, and create own simple patterns made with drawings of lines, shapes or objects.
- Simple patterns where the number or size of shapes in each stage changes in a predictable way, i.e. regular increasing patterns.

Resources: Empty boxes, old books, newspapers, magazines (for remediation).

DBE workbook activities relevant to this lesson:

- N/A

Assessment: Refer to the tracker for today's formal/informal oral, practical or written assessment activity.

Remediation: Concrete: Find real life objects that are similar to the ones on the geometric patterns illustrated in the lesson. Show the first step of the pattern. Ask the learners to copy this pattern using the objects you have collected for this purpose. Extend your pattern. Make a new pattern, copy it and extend it. Use other real life objects (e.g. empty boxes, old books, newspapers, magazines) to lay out other patterns and discuss them.

Enrichment: See enrichment activity cards.

1. Mental mathematics

1.1 Counting (5 minutes)

- Count forwards and backwards in 100s between 0 and 800, e.g. 150, 250, 350…

1.2 Mental mathematics activity (10 minutes)

	Calculate the following:	Answer
1.	5 + __ = 13	8
2.	2 + __ = 16	14
3.	9 + __ = 18	9
4.	0 +__ = 20	20
5.	3 + __ = 18	15

	Calculate the following:	Answer
6.	12 + __ = 18	6
7.	11 + __ = 20	9
8.	10 + __ = 18	8
9.	15 + __ = 19	4
10.	13 + __ = 20	7

2. Correction/reflection on homework (15 minutes)

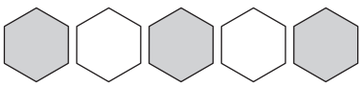
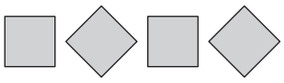
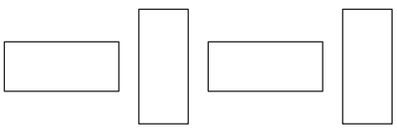
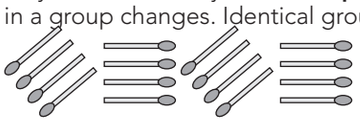
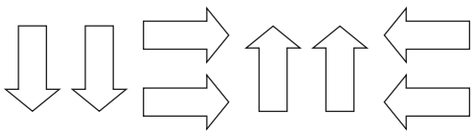
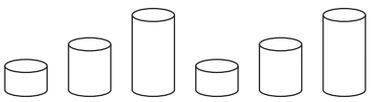
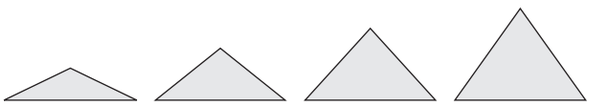
Reflection/remediation based on previous day's work/homework.

3. Lesson content – concept development (30 minutes)

Geometric patterns are different from number patterns because they involve shapes. But they are related to number patterns because to see the rule for a geometric pattern you usually need to use counting in some way.

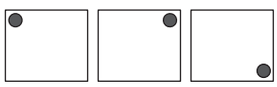
Activity 1: Whole class activity

- Draw the patterns given in the table below on your board before the lesson starts. You will need to refer to these drawings when you explain the different kinds of patterns. You don't have to write the explanations – you will talk about these.
- Use the table below, which provides three different types of patterns, to teach learners how to
  - Identify
  - Describe
  - Extend and
  - Develop their own patterns.

Type of pattern and examples	
Patterns with one shape/object, but the **colours** of the shape or object changes in a regular way. 	
Patterns can be made by using one shape or object, but having the **position** of the shape or object change in a regular way. 	
Patterns with identical groups, where each group has only one kind of object but the **position** of the object in a group changes. Identical groups are repeated. 	
Patterns with a single kind of shape, that **increases** or **decreases** in size. 	

Questions or Instructions to learners

- Make your own pattern with a different shape and your own colours.
- Describe the pattern. What will the next three shapes look like? Draw them.
- For example:



- *Describe the pattern.* (A square with a circle inside. The circle is at the top left, top right, bottom right.)
- *What will the next three shapes look like?* (The circle will be at the bottom left, then top left, then top right.)
- *Draw them.*

4. Classwork activity from LAB (25 minutes) (See next page)

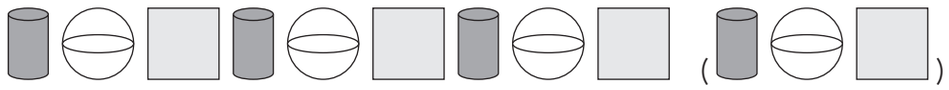
5. Homework activity from LAB (5 minutes) (See next page)

6. Reflection on lesson

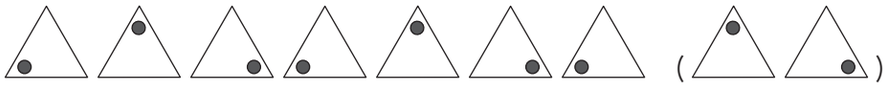
Term 4 Lesson 23: Geometric patterns

Classwork

1. Extend the patterns:

a) 

b) 

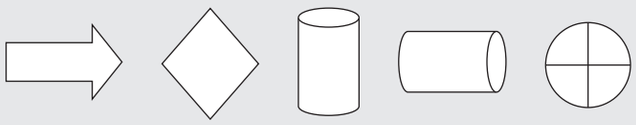
c) 

2. Cut and paste pictures from a magazine to make your own pattern. Describe the pattern. (Answers will vary.)

Homework

Use any of these shapes to make two different patterns. You also have to describe your patterns.

You don't have to use all the shapes in your two patterns.



(Answers will vary.)

LESSON 24: MASS

Teacher's notes

CAPS topics: 1.1 Count objects, 1.2 Count forwards and backwards, 1.16 Mental Mathematics, 4.3 Mass.

Lesson vocabulary: Forwards, backwards, mass, grams, kilograms, heavier, lighter, scale, compare, order, record.

Prior knowledge: Learners should have been taught how to:

- Compare, order and record the mass of commercially packaged objects which have their mass stated in kilograms.
- Read mass on bathroom scales.

Concepts:

- Compare, order and record the mass of commercially packaged objects which have their mass stated in kilograms.
- Read mass on bathroom scales.

Resources: Bathroom scale, a range of products with a mass of 1 kg, 2 kg, 3 kg, and products with masses in grams (you will need to source your own products).

DBE workbook activities relevant to this lesson:

- DBE Worksheet 102a (pp. 78 and 79); DBE Worksheet 102b (pp. 80 and 81).

Assessment: Refer to the tracker for today's formal/informal oral, practical or written assessment activity.

Remediation: Give the learners a bathroom scale to find the mass of items in the class, like book bags. First show them the scale. Show learners how it works by pressing on the scale so that the dial moves. Make sure learners understand where zero is.

Enrichment: See enrichment activity cards.

1. Mental mathematics

1.1 Counting (5 minutes)

- Count forwards and backwards in 25s from a multiple between 0 and 1 000, e.g. 750, 725, 700 ...

1.2 Mental mathematics activity (10 minutes)

	Calculate the following:	Answer
1.	__ ÷ 10 = 8	80
2.	__ ÷ 10 = 4	40
3.	__ ÷ 10 = 9	90
4.	__ ÷ 10 = 5	50
5.	__ ÷ 10 = 3	30

	Calculate the following:	Answer
6.	__ ÷ 10 = 1	10
7.	__ ÷ 10 = 7	70
8.	__ ÷ 10 = 2	20
9.	__ ÷ 10 = 10	100
10.	__ ÷ 10 = 6	60

2. Correction/reflection on homework (15 minutes)

Reflection/remediation based on previous day's work/homework.

3. Lesson content – concept development (30 minutes)

There is one lesson this term on the topic of mass. In this lesson standard units are used. Learners should know the standard units of mass (kilogram and gram) and be able to read and understand approximately what they represent. Remember to refer to the Jika iMfundo Dictionary of Mathematical Terms if necessary to find explanations and examples of the mathematical terminology of mass.

Activity 1: Whole class activity

- Show the learners the bathroom scale that you have brought from home.
- What types of mass you can measure using a bathroom scale. Remember to explain the mathematical terminology to the class and make sure that they know this terminology well.
- Let the learners look around the class and see what items they could find the mass of using the bathroom scale, e.g. a heavy school suit bag, a pile of maths books. (Items must be able to balance on the scale and not cover the mass meter.)
- Discuss which items one could not find the mass of using the bathroom scale.
- Ask: *Why not?* (e.g. Light items, such as a book, since the bathroom scale measures in kilograms.)

Activity 2: Whole class activity

- Place a range of products that have a mass of 1 kg, 2 kg or 3 kg and some products that have a mass measured in grams on a table in front of the class. For example:

- Hold up a 1 kg product and a product with a mass of less than 1 kg, e.g. 1 kg Skip and 500 g Omo.
- Show and read the mass to the class. Ask *Which is lighter – 500 g Omo or 1 kg Skip?* Invite a few learners to hold the items and feel the mass.
- Ask *Why is the 500 g lighter than the 1 kg?* (Even though the number 500 is a bigger number than 1, grams are much smaller than kilograms. 1 000 grams make 1 kg. Therefore 500 g is less than 1 000 g which is the same as 1 kg.)
- Do the same with various other options and combinations, e.g. Provita and Red Label biscuits.
- Ask learners to come up with suggestions of items which can provide a combined mass of 1/2/3 kg. They may use single or multiple items, e.g. 8 packets of Provita have the same mass as a 2 kg packet of Skip.
- Give learners a selection of products, e.g. Red Label, Iwisa, Ace and Provita. Ask learners to place these in order from lightest to heaviest.
- Do the same with other products also ordering them from heaviest to lightest.

4. Classwork activity from LAB (25 minutes) (See next page)

5. Homework activity from LAB (5 minutes) (See next page)

6. Reflection on lesson

Term 4 Lesson 24: Mass

Classwork

1. Which is the heaviest product above? (Ace)

2. Which is the lightest product above? (Salticrax)

3. Name 2 items that have a combined mass of less than 1 kg.
   (Various answers, e.g. Pronutro and Red Label.)

4. Name 2 items that have a combined mass of 500 g.
   (Various answers, e.g. 2 packets of Provita, 2 packets of Salticrax and 1 Red Label.)

Homework

1. Use a bathroom scale to find your mass. (Answers will vary.)

2. Sort these soaps in order of mass from lightest to heaviest.
   (3rd 4th 1st 2nd)

LESSON 25: CAPACITY

Teacher's notes
CAPS topics: 1.1 Count objects, 1.2 Count forwards and backwards, 1.16 Mental Mathematics, 4.4 Capacity. **Lesson vocabulary:** Forwards, backwards, capacity, litres, millilitres, most, least, more than, less than, compare, order, record, standard cup, teaspoon. **Prior knowledge:** Learners should have been taught how to: • Estimate, measure, compare, order and record the capacity of objects by measuring in litres using bottles with a capacity of 1 litre and a measuring jug which has marker lines in litres. • Compare, order and record the capacity of commercially packaged objects whose capacity is in litres. **Concepts:** • Compare, order and record the capacity of commercially packaged objects with capacity in litres. • Know that a standard cup is 250 millilitres; know that a teaspoon is 5 millilitres. **Resources:** Pictures of products on which you can see the capacity (collect these from shop adverts beforehand), 250 ml cup, teaspoon, an empty 1litre bottle. **DBE workbook activities relevant to this lesson:** • DBE Worksheet 128a (pp. 132 and 133); DBE Worksheet 128b (pp. 134 and 135). **Assessment:** Refer to the tracker for today's formal/informal oral, practical or written assessment activity.
Remediation: Show learners a standard cup. Ask them how much it can hold. (250 ml) A standard cup can hold 250 ml. Demonstrate to learners that four standard cups will fill a 1 litre container. Empty the 1 litre container. Pour in one cup of liquid. Is the bottle almost filled up to 1 litre? (No) Pour in another cup of liquid. The 1 litre bottle is now filled halfway. Pour in another cup of liquid. Is the bottle almost filled up to 1 litre? (No – it needs one more cup.) Revise that a teaspoon holds 5 ml. **Enrichment:** See enrichment activity cards.

1. Mental mathematics

1.1 Counting (5 minutes)

- Count forwards and backwards in 25s from any multiple between 0 and 1 000

1.2 Mental mathematics activity (10 minutes)

	Calculate the following:	Answer
1.	4 x 10 =	40
2.	4 x __ = 40	10
3.	__ x 10 = 40	4
4.	40 ÷ __ = 4	10
5.	__ ÷ 10 = 4	40

	Calculate the following:	Answer
6.	40 ÷ 10 =	4
7.	40 ÷ 4 =	10
8.	10 x 4 =	40
9.	Half of 40	20
10.	Double 40	80

2. Correction/reflection on homework (15 minutes)

Reflection/remediation based on previous day's work/homework.

3. Lesson content – concept development (30 minutes)

There is one lesson this term on the topic of capacity. In this lesson standard units are used. Learners should know the standard units of capacity (litre and millilitre) and be able to read and understand approximately what they represent. Remember to refer to the Jika iMfundo Dictionary of Mathematical Terms if necessary to find explanations and examples of the mathematical terminology of capacity.

Activity 1: Learners work in groups

- Give each group of learners pictures of products on which they can see the capacity, e.g.

5 ℓ

1 ℓ

1 ℓ

2 ℓ


500 ml

340 ml

- Ask the learners to order the containers from the one that holds the least to the one that holds the most.

Activity 2: Whole class activity

- Discuss comparisons between pairs of containers (based on pictures that you have brought to class). For example:
  - *The capacity of the Sunlight Liquid container is* _____. (5 litres)
  - *The capacity of the milk container is* _____. (1 litre)
  - *The capacity of the Vanish container is* _____. (1 litre)
  - *The capacity of the Dettol container is* _____. (2 litres)
  - *The capacity of the green milkshake bottles is* _____. (500 ml)
  - *The capacity of the Fanta container is* _____. (340 ml)
  - *The capacity of the* ___ (Sunlight Liquid) *container is largest. It contains* ___ (3 litres) *more than the Dettol.*

Activity 3: Whole class activity

- Talk about filling the bigger container by pouring from the smaller container into the bigger container. When you do this work out how many times you will need to pour from the smaller one into the bigger one in order to fill it.
- Examples: (use your product pictures and measurements if they are different)
- How many milkshake bottles (500 ml) will fill:
  - *The Sunlight Liquid container?* (5 litres is 5 000 ml, need 10)
  - *The milk container?* (2)
- How many standard cups (250 ml) will fill:
  - *The Vanish container?* (4)
  - *The Dettol container?* (8)

4. Classwork activity from LAB (25 minutes) (See next page)

5. Homework activity from LAB (5 minutes) (See next page)

6. Reflection on lesson

Term 4 Lesson 25: Capacity

Classwork

1. You can fill bigger containers using smaller containers. How many times will you need to pour from the smaller one into the bigger one in order to fill it in the examples below?
   a) 500 ml into 2 litres. (4 times)
   b) 250 ml into 500 ml. (2 times)
   c) 1 ℓ into 5 ℓ. (5 times)
   d) 500 ml into 1,5 ℓ. (3 times)

2. Gogo uses 2 cups of milk to make a pudding. If she doubles the recipe, how much milk will she need?
   a) ___ cups. (4 cups)
   b) ___ millilitres. (1 000 millilitres)
   c) ___ litres. (1 litre)

3. Sort the containers below from those that can hold the most to those that can hold the least:

(2nd 1st 2nd)

Homework

One cup holds 250 ml. How many cups will fill the following containers?

1. 500 ml jug. (2 cups)
2. 1 ℓ jug. (4 cups)
3. 2 ℓ bottle. (8 cups)
4. 1,5 ℓ bottle. (6 cups)
5. 5 ℓ bucket. (20 cups)

WEEK 6

LESSON 26: DATA

Teacher's notes
CAPS topics: 1.1 Count objects, 1.2 Count forwards and backwards, 1.16 Mental Mathematics, 5.6 Analyse and interpret data. **Lesson vocabulary:** Forwards, backwards, data, pictograph, bar graph, represent, analyse, information. **Prior knowledge:** Learners should have been taught how to: • Analyse data from representations. • Represent data in a pictograph with one–to–one correspondence. **Concepts:** • Analyse data from representations. • Represent data in a pictograph with one-to-one correspondence. • Represent data in a bar graph. **Resources:** Whiteboards/scrap paper. **DBE workbook activities relevant to this lesson:** • N/A **Assessment:** Refer to the tracker for today's formal/informal oral, practical or written assessment activity.
Remediation: Go over the way in which you drew the pictograph and bar graph with the information collected in the lesson. Ask the learners questions, e.g. *What was the most popular meal? Which meal was the least popular?* **Enrichment:** See enrichment activity cards.

1. Mental mathematics

1.1 Counting (5 minutes)

- Count forwards and backwards in 20s from any multiple between 0 and 1 000

1.2 Mental mathematics activity (10 minutes)

	Calculate the following:	Answer
1.	__ x 10 = 50	5
2.	__ x 10 = 30	3
3.	__ x 2 = 12	6
4.	__ x 2 = 20	10
5.	__ x 10 = 60	6

	Calculate the following:	Answer
6.	__ x 10 = 90	9
7.	__ x 2 = 18	9
8.	__ x 2 = 14	7
9.	__ x 10 = 70	7
10.	__ x 2 = 0	0

2. Correction/reflection on homework (15 minutes)

Reflection/remediation based on previous day's work/homework.

3. Lesson content – concept development (30 minutes)

Activity 1: Whole class activity

- Write the following information on the board.
- This is what people ordered at a restaurant on Friday night:
  10 hamburgers, 5 hot dogs, 15 pap and meat, 10 rice and chicken and 20 curry pies.
- Draw a frequency table on your whiteboards/scrap paper to show this data.
- Remind learners how to use tally marks – in groups of five. For each item draw a short line – do this for four items. The fifth count is marked by crossing out the first four and making a bundle of five. Then start with a new bundle for the next five items, and so on.
- The tally table for the restaurant orders was as follows:
  (work through this with the class counting up all of the tallies)

Hamburgers	𝍸 𝍸	10
Hot dogs	𝍸	5
Pap and meat	𝍸 𝍸 𝍸	15
Rice and chicken	𝍸 𝍸	10
Curry pies	𝍸 𝍸 𝍸 𝍸	20

- Look at your table and answer these questions – and make up other similar questions if there is time:
  - *How many people chose rice and chicken?* ___ (10)
  - *How many people chose curry pie?* ___ (20)
  - *What is the most popular meal?* ___ (Curry pies)
  - *What is the least popular meal?* ___ (Hot dogs)
  - *How many meals were ordered?* ___ (60)
  - *What is the second most popular meal?* (Pap and meat)
  - *What is the difference in orders between people who chose pap and meat and people who chose hot dogs?* (10)
  - *What is the difference in orders between the most popular and the least popular meal?* (15)

Activity 2: Whole class activity

- Draw and complete a bar graph with the learners on the board. Use the information from the table on their whiteboards/scrap paper:

20					
15					
10					
5					
	Hamburger	Hotdog	Pap and meat	Rice and chicken	Curry pie

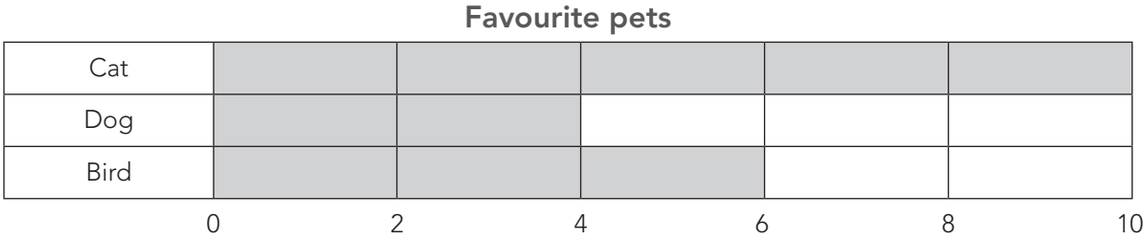
4. Classwork activity from LAB (25 minutes) (See next page)

5. Homework activity from LAB (5 minutes) (See next page)

6. Reflection on lesson

Classwork

Use the bar graph on *Favourite pets* to answer the questions that follow.



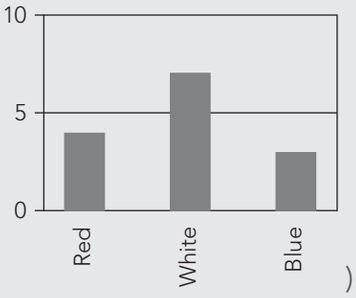
1. Which 3 pets are represented in the bar graph? (Cats, dogs and birds.)
2. Which pet is the most popular? (Cats)
3. Which pet is the least popular? (Dogs)
4. What is the difference in number between learners who like dogs and learners who like birds? (1 learner)
5. Draw a pictograph to represent the data which is in the bar graph. (Draw)

Homework

Use a bar graph to show the data in the table below. Remember to give your graph a title and to label the axes.

Car colour	Number
Red	4
White	7
Blue	3

(**Answer**:



)

Write two sentences that tell us about the data in the graph. (Various)

LESSON 27: DATA

Teacher's notes
CAPS topics: 1.1 Count objects, 1.2 Count forwards and backwards, 1.16 Mental Mathematics, 5.6 Analyse and interpret data. **Lesson vocabulary:** Forwards, backwards, data, pictograph, bar graph, represent, analyse, information. **Prior knowledge:** Learners should have been taught how to: • Analyse data from representations. • Represent data in a pictograph with one-to-one correspondence. **Concepts:** • Analyse data from representations provided (in tables and bar graphs). **Resources:** Whiteboards/scrap paper. **DBE workbook activities relevant to this lesson:** • N/A **Assessment:** Refer to the tracker for today's formal/informal oral, practical or written assessment activity.
Remediation: Discuss the vocabulary of data handling to make sure that learners who struggled were not being help back because they did not know or understand some of the terminology. Refer to the Jika iMfundo Dictionary of Mathematical Terms if necessary when you have this discussion. **Enrichment:** See enrichment activity cards.

1. Mental mathematics

1.1 Counting (5 minutes)

- Count forwards and backwards in 100s between 0 and 1 000.

1.2 Mental mathematics activity (10 minutes)

	Calculate the following:	Answer
1.	__ x 10 = 60	6
2.	__ x 10 = 40	4
3.	__ x 2 = 10	5
4.	__ x 2 = 44	22
5.	__ x 100 = 600	6

	Calculate the following:	Answer
6.	__ x 10 = 70	7
7.	__ x 2 = 18	9
8.	__ x 2 = 20	10
9.	__ x 10 = 100	10
10.	__ x 100 = 0	0

2. Correction/reflection on homework (15 minutes)

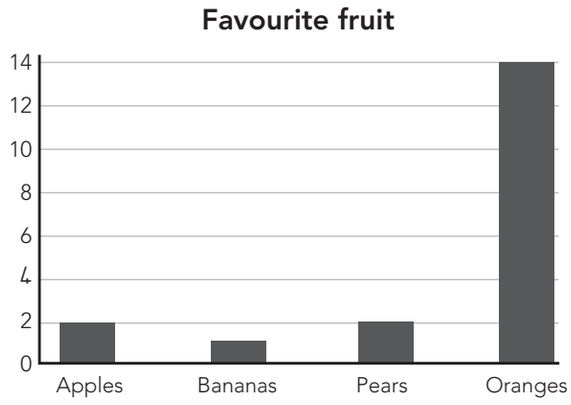
Reflection/remediation based on previous day's work/homework.

3. Lesson content – concept development (30 minutes)

This lesson gives learners an opportunity to interpret data given in a table and in a bar graph.

Activity 1: Whole class activity

- Draw the following bar graph on the board.



- Using the information presented in the graph, answer the following questions:
  - *How many people like apples?* ____ (2)
  - *How many people like bananas?* ____ (1)
  - *How many people like pears?* ____ (2)
  - *How many people like oranges?* ____ (14)
  - *What is the least favourite fruit?*_____ (Bananas.)
  - *What is the second most popular fruit?* (Apples and oranges.)
  - *What is the difference between the number of people who like oranges and the number of people who like bananas?* (13)
  - *What is the difference between the number of people who like oranges and the number of people who like apples?* (12) Etc.

Activity 2: Whole class activity

- Draw the following table on the board.

Car colour	Number
Red	22
White	65
Blue	20
Black	15

- Discuss the information in the table with the class. Ask questions such as:
  - *How many people like red cars?* ____ (22)
  - *How many people like white cars?* ____ (65)
  - *How many people like blue cars?* ____ (20)
  - *How many people like black cars?* ____ (15)
  - *What is the least favourite car colour?*_____ (black)
  - *What is the most popular car colour?* (white)
  - *What is the difference between the number of people who like white cars and the number of people who like black cars?* (50)
  - *What is the difference between the number of people who like white cars and the number of people who like red cars?* (43) Etc.

4. Classwork activity from LAB (25 minutes) (See next page)

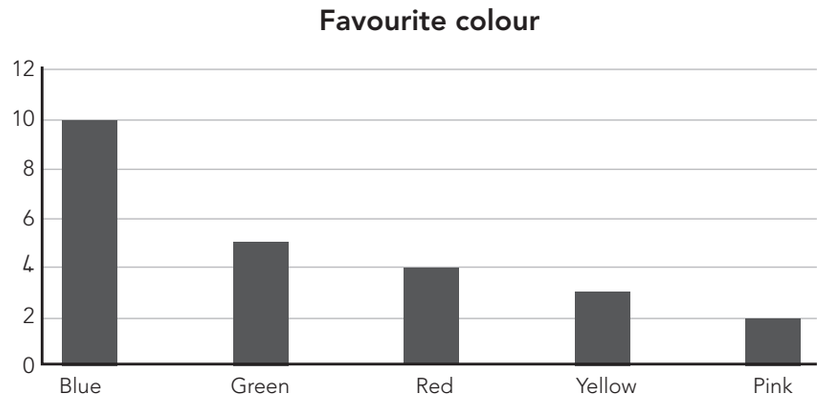
5. Homework activity from LAB (5 minutes) (See next page)

6. Reflection on lesson

Term 4 Lesson 27: Data

Classwork

Answer the questions based on the information in the bar graph.



1. What is the most favourite colour? (Blue)
2. What is the least favourite colour? (Pink)
3. What is the difference between the number of people who like green and the number of people who like red? (1)

Homework

Answer the questions based on the information in the table.

Favourite colour	Number
Red	16
Yellow	3
Blue	47
Green	39

1. What is the most favourite colour? (Blue)
2. What is the least favourite colour? (Yellow)
3. What is the difference between the number of people who like blue and the number of people who like red? (31)

LESSON 28: DIVISION – GROUPING AND SHARING

Teacher's notes

CAPS topics: 1.1 Count objects, 1.2 Count forwards and backwards, 1.16 Mental Mathematics, 1.15 Division.

Lesson vocabulary: Forwards, backwards, divide, expanded notation, share, group, sharing, grouping.

Prior knowledge: Learners should have been taught how to:

- Solve word problems in context and explain own solutions to problems that involve equal sharing and grouping up to 50 with answers that can include remainders.

Concepts:

- Divide numbers to 99 by 1, 2, 3, 4, 5, 10.
- Use appropriate symbols ÷, +,=, ☐.

Resources: Base ten blocks (*Printable Resources* Term 1).

DBE workbook activities relevant to this lesson:

- DBE Worksheet 117 (pp. 110 and 111).

Assessment: Refer to the tracker for today's formal/informal oral, practical or written assessment activity.

Remediation: Give the learners base ten blocks. Take 36 and share it among 3 children. Show them the calculation. Use the blocks to show how the sharing works. Make up other similar questions to give learners enough opportunities to understand the method. Explain the use of the brackets when you *multiply out* in this kind of example.

$36 \div 3 = \_\_\_$

$(30 + 6) \div 3$

$= (30 \div 3) + (6 \div 3)$

$= 10 + 2$

$= 12$

Enrichment: See enrichment activity cards.

1. Mental mathematics

1.1 Counting (5 minutes)

- Count in 10s from any given number between 0 and 900, e.g. 704, 714, 724…
- From 60 count on in 5s. Count 5/8/10 steps. Where are you now? (85, 100, 139)

1.2 Mental mathematics activity (10 minutes)

	What is 100 more than ...?	Answer
1.	814	914
2.	206	306
3.	54	154
4.	154	254
5.	754	854

	What is 100 more than ...?	Answer
6.	876	976
7.	867	967
8.	786	886
9.	768	868
10.	687	787

2. Correction/reflection on homework (15 minutes)

Reflection/remediation based on previous day's work/homework.

3. Lesson content – concept development (30 minutes)

Multiplication and division are inverse operations. This was spoken about in Term 3 and is consolidated in Term 4 over the next seven lessons.

In the Term 4 lessons on multiplication and division, numeric calculation strategies are discussed and explained. Connections to concrete representations of numbers are also given since this helps learners to develop their understanding of the abstract ideas being discussed. Connections to basic number bonds and multiples are also made. The basic number facts are needed for all operations on bigger numbers.

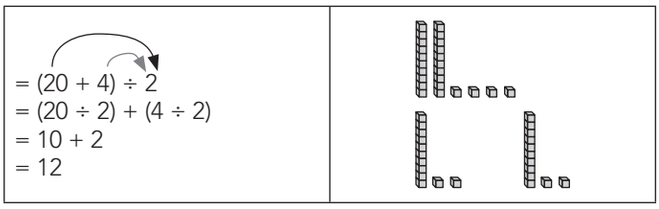
Activity 1: Whole class activity

- Revise breaking down numbers into tens and units with the learners.
- For example:

13 = 10 + 3	68 = 60 + 8
24 = 20 + 4	72 = 70 + 2
35 = 30 + 5	84 = 80 + 4
46 = 40 + 6	93 = 90 + 3
57 = 50 + 7	14 = 10 + 4

Activity 2: Whole class activity

- Do the following examples on the board:
  - Share 24 between 2. Use base ten blocks to demonstrate the sharing and record the numeric working while you explain what you are doing.
    24 ÷ 2 =___



  - Share 39 among 3. (Use blocks to demonstrate and talk about the steps in the working while you do the calculation.)
    39 ÷ 3 = ___
    = (30 + 9) ÷ 3
    = (30 ÷ 3) + (9 ÷ 3)
    = 10 + 3
    = 13

Activity 3: Whole class activity

- Ask learners to do the following examples on their whiteboards/scrap paper. Use the method used above.
  - Share 48 among 4. Use base ten blocks to demonstrate the sharing. (12)
  - Share 28 between 2. Use base ten blocks to demonstrate the sharing. (14)

4. Classwork activity from LAB (25 minutes) (See next page)

5. Homework activity from LAB (5 minutes) (See next page)

6. Reflection on lesson

Term 4 Lesson 28: Division – grouping and sharing

Classwork

1. Write in expanded notation.
   a) 19 = ___ + ___ (10 + 9)
   b) 41 = ___ + ___ (40 + 1)
   c) 24 = ___ + ___ (20 + 4)
   d) 58 = ___ + ___ (50 + 8)
   e) 63 = ___ + ___ (60 + 3)
   f) 82 = ___ + ___ (80 + 2)
   g) 76 = ___ + ___ (70 + 6)
   h) 94 = ___ + ___ (90 + 4)

2. Write the numbers in expanded notation before dividing.
   a) 39 ÷ 3 = ___ (13)
   b) 45 ÷ 5 = ___ (9)

3. Max makes 50 cakes. He puts them in bags with 5 cakes per bag. How many bags can he make? (10)

4. Grant makes small bags of gums to sell at school. He has a big bag with 80 gums.
   He puts 4 gums in a bag. How many small bags can he make? (20)

Homework

1. Write in expanded notation.
   a) 23 = ___ + ___ (20 + 3)
   b) 86 = ___ + ___ (80 + 6)

2. Divide the following by writing the numbers in expanded notation first:
   a) 48 ÷ 4 = ___ (12)
   b) 55 ÷ 5 = ___ (11)

LESSON 29: DIVISION – REVISE SHARING

Teacher's notes

CAPS topics: 1.1 Count objects, 1.2 Count forwards and backwards, 1.16 Mental Mathematics, 1.15 Division.

Lesson vocabulary: Forwards, backwards, divide, share, distributive property, sharing, grouping, remainder.

Prior knowledge: Learners should have been taught how to:

- Solve word problems in context and explain own solutions to problems that involve equal sharing and grouping up to 50 with answers that can include remainders.

Concepts:

- Solve word problems in context and explain own solutions to problems that involve equal sharing and grouping up to 100 with answers that can include remainders.
- Divide numbers to 99 by 2, 3, 4, 5, 10.
- Use appropriate symbols ÷, =, +, □.

Resources: Whiteboards/scrap paper, base ten blocks (*Printable Resources* Term 1).

DBE workbook activities relevant to this lesson:

- DBE Worksheet 89 (pp. 50 and 51).

Assessment: Refer to the tracker for today's formal/informal oral, practical or written assessment activity.

Remediation: Draw the following on the whiteboards/scrap paper. Ask the learners to share 15 counters among 4 friends. (Answer: 3 each, rem 3.) Now ask the learners to share 34 marbles among 3 children. How many marbles will be left? Do the sum with them. (30 + 4) ÷ 3 (Answer: 11 each rem 1.) Make up other similar examples to do until they understand.

Enrichment: See enrichment activity cards.

1. Mental mathematics

1.1 Counting (5 minutes)

- Count forwards and backwards in 10s between 100 and 900, e.g. 716, 706, 696…
- Count 5/8/10 steps in 5s from 100. Where are you now? (125, 140, 150)

1.2 Mental mathematics activity (10 minutes)

	What is 100 less than ...?	Answer
1.	376	276
2.	768	668
3.	321	221
4.	453	353
5.	567	467

	What is 100 less than ...?	Answer
6.	802	702
7.	971	871
8.	453	353
9.	199	99
10.	567	467

2. Correction/reflection on homework (15 minutes)

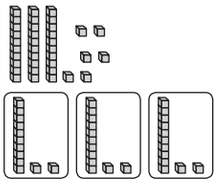
Reflection/remediation based on previous day's work/homework.

3. Lesson content – concept development (30 minutes)

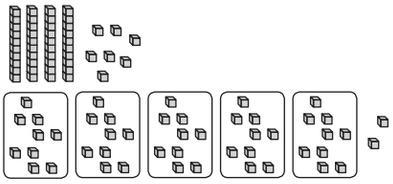
In this lesson you use the distributive property again to break up numbers and divide them in parts. Learners are not expected to know the name of the property. You should work through many examples with your class of the strategy of breaking up the number in order to divide. Learners might not all like this strategy. You should allow them to use other strategies in their classwork if they prefer to.

Activity 1: Whole class activity

- Revise the distributive property with the learners.
- Do the following examples using base 10 blocks.
- Share the tens and then the units.
- Example with no remainder:
  36 ÷ 3 = □



Example with a remainder:
47 ÷ 5 = □



- Ask how many units are left (if any). That will be a remainder (we write it *rem*).
- In the first example there is no remainder. So 36 ÷ 3 = 1 ten and 2 units = 12
- In the second example the remainder is 2. So 47 ÷ 5 = 9 rem 2 (You need to exchange 1 ten for 10 units to do this sharing.)

Activity 2: Whole class activity

- Explain to learners that we can also show the same calculations on the board as follows.
- Explain the use of the brackets when multiplying out using the distributive law. You do not have to use the term distributive law, but learners do need to understand the working and know how to write it out correctly. This method works when the broken up number can be divided completely by the divisor.

(30 + 7) ÷ 3	(40 + 7) ÷ 5
= (30 ÷ 3) + (7 ÷ 3)	= (40 ÷ 5) + (7 ÷ 5)
= (10 + 2) rem 1	= (8 + 1) rem 2
= 12 rem 1	= 9 rem 2

- Ask learners to do the following examples on their whiteboards/scrap paper. They must hold up their whiteboards/scrap paper after completing each example for you to check before proceeding with the next example.
  - 25 ÷ 5 = ___ (5)
  - 25 ÷ 4 = ___ (6 rem 1)
  - 25 ÷ 2 = ___ (12 rem 1)
  - 25 ÷ 10 = ___ (2 rem 5)
  - 25 ÷ 3 = ___ (8 rem 1)

4. Classwork activity from LAB (25 minutes) (See next page)

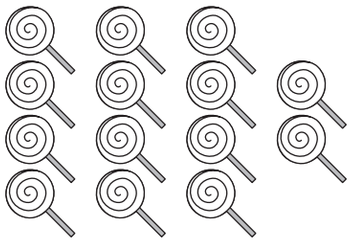
5. Homework activity from LAB (5 minutes) (See next page)

6. Reflection on lesson

Term 4 Lesson 29: Division – revise sharing

Classwork

1. Share 14 sweets among 3 children:



   a) How many sweets do they each get? (4 each)
   b) How many sweets are left over? (2 left over)

2. Share 13 sweets among 5 children. How many sweets each? How many left over?
   (2 each and 3 sweets left over)

3. Share 19 sweets among 5 children. How many sweets each? How many left over?
   (3 each and 4 sweets left over)

4. Write the numbers in expanded notation before dividing.
   a) Share 30 marbles among 4 children. How many marbles are left? (7 rem 2)
      (28 + 2 ÷ 4 = 7 rem 2, break up the number using a multiple of 4)
   b) Share 19 marbles between 2 children. How many marbles are left? (9 rem 1)
      (18 + 1 ÷ 2 = 9 rem 1, break up the number using a multiple of 2)

5. Calculate the following:
   a) 25 ÷ 5 = ___ (5)
   b) 63 ÷ 5 = ___ (12 rem 3)

Homework

Divide the following by writing the numbers in expanded notation first:

a) Share 47 marbles among 5 children. How many marbles are left? (9 rem 2)
   (45 + 2 ÷ 4 = 9 rem 2, break up the number using a multiple of 5)
b) Share 29 marbles among 4 children. How many marbles are left? (7 rem 1)
   (28 + 1 ÷ 4 = 7 rem 1, break up the number using a multiple of 4)

LESSON 30: DIVISION – WORD PROBLEMS

Teacher's notes

CAPS topics: 1.1 Count objects, 1.2 Count forwards and backwards, 1.16 Mental Mathematics, 1.9 Grouping and sharing leading to division.

Lesson vocabulary: Forwards, backwards, grouping, sharing, division, number sentence, problem, solve, share, group, remainder.

Prior knowledge: Learners should have been taught how to:

- Solve word problems in context and explain own solutions to problems that involve equal sharing and grouping up to 50 with answers that can include remainders.

Concepts:

- Solve word problems in context and explain own solutions to problems that involve equal sharing and grouping up to 100 with answers that can include remainders.

Resources: Whiteboards/scrap paper, Unifix blocks.

DBE workbook activities relevant to this lesson:

- DBE Worksheet 118 (pp. 112 and 113).

Assessment: Refer to the tracker for today's formal/informal oral, practical or written assessment activity.

Remediation: Give each learner 30 Unifix blocks. Ask them how many groups of 5 they can make? Ask them to now share the blocks among the five learners. How many blocks does each learner get? (6)

Enrichment: See enrichment activity cards.

1. Mental mathematics

1.1 Counting (5 minutes)

- Count forwards and backwards in 100s from any given number between 0 and 900, e.g. 713, 613, 513 ...
- Count 10/15/20 steps in 5s from 100. Where are you now? (150, 175, 200)

1.2 Mental mathematics activity (10 minutes)

	What is 200 more than ...?	Answer
1.	376	576
2.	768	968
3.	321	521
4.	453	653
5.	567	767

	What is 200 more than ...?	Answer
6.	265	465
7.	763	963
8.	28	228
9.	706	906
10.	219	419

2. Correction/reflection on homework (15 minutes)

Reflection/remediation based on previous day's work/homework.

3. Lesson content – concept development (30 minutes)

It is important that you spend time doing word problems in class, to model the reading and interpretation of such problems. The problems in this lesson call on division in their solution.

Activity 1: Whole class activity

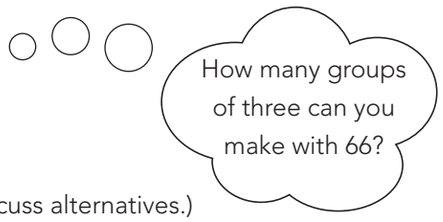
- Do the following problems with the learners.
- The farmer wants to sell apples. He sells them in bags of 3 apples. He has 66 apples. How many bags of apples can he make up?
- Use the layout shown below to illustrate on the board how you have shared the apples.

66 ÷ 3 = ___

66 = 30 + 30 + 6

↓ ↓ ↓

10 groups of 3 + 10 groups of 3 + 2 groups of 3



- He can make 10 bags + 10 bags + 2 bags ⟶ 22 bags. (Discuss alternatives.)
- *How can we write this as a division number sentence?* (66 ÷ 3 = 22)

Activity 2: Whole class activity

- Do another problem-solving example with the learners.
- Three teachers share 98 books so that they each get the same number of books for their classes. How many books does each teacher get for her class?
- Ask the learners to draw three circles (one for each teacher) on their whiteboards/scrap paper and to share the books between the circles. They should begin by thinking about all the *big* number facts they remember about their 3x tables.
- You should write out the working on the board (similarly to example in Activity 1 above).
- There may be different ways of sharing the books. Discuss various suggestions. E.g.
  30 + 30 + 30 + 8 = 98. Each gets 30 books and they share the last 8 books. Each gets 2 of those books, so they each get 32 books and there are 2 books left over.
- *How can we write this as a division number sentence?* (98 ÷ 3 = 32 rem 2)

Activity 3: Whole class activity

- Work though another example – allow time for learners to work on their whiteboards/scrap paper before discussing the solution with the class.
- Mum divides 62 eggs to use equally over 5 days. How many eggs does she have for each day? (12 rem 2)

4. Classwork activity from LAB (25 minutes) (See next page)

5. Homework activity from LAB (5 minutes) (See next page)

6. Reflection on lesson

Term 4 Lesson 30: Division – word problems

Classwork

Draw a picture and write a division number sentence and answer for these problems:

1. The baker wants to sell bread rolls. He sells them in bags of 6 each.
   He has 56 rolls. How many bags of rolls can he make up?
   (56 ÷ 6 = 9 rem 2. He can make 9 bags and he will have two rolls left over.)

2. Four children share 86 sweets so that they all get the same number of sweets.
   How many sweets does each child get?
   (86 ÷ 4 = 21 rem 2. Each child gets 21 sweets and there are 2 left over.)

3. Phetogo has 58 marbles. He wants to put them in bags of 5 each to give to his friends.
   How many bags of 5 marbles each can he make up?
   (58 ÷ 5 = 11 rem 3. He can make 11 bags and he will have 3 marbles left over.)

Homework

Solve the problem, by drawing circles and then write a number sentence:

1. Four sisters want to share R63 so that they all get the same amount of money in rands.
   How many rands will each sister get?
   (R63 ÷ 4 = R15 rem R3. Each sister will get R15 and there will be R3 left over.)

2. Six boys want to share 25 toy cars so that they all get the same number of toy cars to play with.
   (25 ÷ 6 = 4 rem 1. Each boy will get 4 cars and there will be one car left over.)

WEEK 7

LESSON 31: MULTIPLICATION AND DIVISION – INVERSE OPERATIONS

Teacher's notes

CAPS topics: 1.1 Count objects, 1.2 Count forwards and backwards, 1.16 Mental Mathematics, 1.14 Repeated addition leading to multiplication, 1.15 Division.

Lesson vocabulary: Forwards, backwards, multiplication, division, inverse operations, multiply, divide, double, halve, add, subtract.

Prior knowledge: Learners should have been taught how to:

- Solve word problems in context and explain own solutions to problems that involve equal sharing and grouping up to 50 with answers that can include remainders.

Concepts:

- Solve word problems in context and explain own solutions to problems that involve equal sharing and grouping up to 100 with answers that can include remainders.
- Divide numbers to 99 by 2, 3, 4, 5, 10.
- Use appropriate symbols ÷, x, +, =, □.
- Multiply 2, 3, 4, 5, 10 to a total of 100.

Resources: Whiteboards/scrap paper.

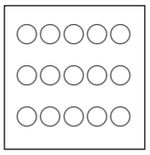
DBE workbook activities relevant to this lesson:

- DBE Worksheet 120 (pp. 116 and 117).

Assessment: Refer to the tracker for today's formal/informal oral, practical or written assessment activity.

Remediation: Use arrays (done in multiplication) first with concrete apparatus and then with drawings (multiplication) to show how division is the inverse of multiplication.

Write the number sentences.



5 x 3 = 15
15 ÷ 3 = 5

3 x 5 = 15
15 ÷ 5 = 3

Enrichment: See enrichment activity cards.

1. Mental mathematics

1.1 Counting (5 minutes)

- Count forwards and backwards in 5s from any given number between 0 and 900, e.g. 704, 709, 714…

1.2 Mental mathematics activity (10 minutes)

	Calculate the following:	Answer
1.	3 multiplied by 8	24
2.	4 times 2	8
3.	Three tens	30
4.	Double 8	16
5.	5 rows of 4	20

	Calculate the following:	Answer
6.	20 + 19 =	39
7.	3 groups of 5	15
8.	Half of 20	10
9.	20 + 21 =	41
10.	17 – 9 =	8

2. Correction/reflection on homework (15 minutes)

Reflection/remediation based on previous day's work/homework.

3. Lesson content – concept development (30 minutes)

The focus of this lesson is the inverse relationship between multiplication and division but the activities of the lesson also cover other inverse relations that learners should know about to deepen their understanding of the concept of an inverse. Although the outcome of the lesson is to teach about inverse relationships, teachers do not have to not use the term inverse, you could just speak about one operation undoing what the other one does.

Activity 1: Whole class activity

- Revise inverse additive operations - addition and subtraction with the learners.
- Ask the learners if they remember what operation undoes what addition does. (Subtraction.)
- Do some examples on the board, e.g.
  200 + 350 = 550
  (inverse operation: 550 – 350 = 200 (subtraction undoes addition)
- Say in words what the examples show: *If I add 350 to 200 I get 550. If I subtract 350 from 550 I get back to 200, where I started.*
- Ask *What does the inverse operation do?* (It undoes what the operation has done.)
- Do some more examples to illustrate addition and subtraction as inverse operations.

Activity 2: Whole class activity

- Inverse operations – doubling and halving.
- Ask the learners if they remember what the inverse operation for doubling is. (Halving.)
- Do examples on the board, e.g.
  double 20 = 20 + 20 = 40
  inverse operation: half of 40 = 20
- Ask *What does the inverse operation do?* (It undoes what the operation has done.)
- Do some more examples to illustrate doubling and halving as inverse operations.

Activity 3: Whole class activity

- Inverse operations – multiplication and division.
- Ask the learners if they know what the inverse operation for multiplication is. (Division.)
- Do examples on the board, e.g.
  4 x 5 = 20
  inverse operation: 20 ÷ 5 = 4
- Ask *What does the inverse operation do?* (It undoes what the operation has done.)
- Do some more examples to illustrate multiplication and division as inverse operations.
- For example:
  3 x 9 = 27 and 27 ÷ 9 = 3
  4 x 8 = 32 and 32 ÷ 8 = 4

4. Classwork activity from LAB (25 minutes) (See next page)

5. Homework activity from LAB (5 minutes) (See next page)

6. Reflection on lesson

Term 4 Lesson 31: Multiplication and division – inverse operations

Classwork

1. Complete the following:
   a) If 3 x 5 = 15 then 15 ÷ 5 = ___ . (3)
   b) If 8 x 3 = 24 then 24 ÷ 3 = ___ . (8)
   c) If 5 x 8 = 40 then 40 ÷ 8 = ___ . (5)
   d) If 2 x 10 = 20 then 20 ÷ 10 = ___ . (2)
   e) If 2 x 5 = 10 then 10 ÷ 5 = ___ . (2)
   f) If 4 x 6 = 24 then 24 ÷ 6 = ___ . (4)
   g) If double 15 is 30 then half of 30 is ___ . (15)
   h) If double 34 is 68 then half of 68 is ___ . (34)

2. Jabu has 99 sweets. He has three times as many sweets as Mokibelo.
   How many sweets does Mokibelo have? (99 ÷ 3 = 33)

3. A vegetable garden has 6 rows of plants. Each row has 10 plants.
   How many plants are there in the garden? (6 x 10 = 60)

Homework

1. Complete the following:
   a) If 4 x 5 = 20 then 20 ÷ 5 = ___ . (4)
   b) If 8 x 2 = 16 then 16 ÷ 2 = ___ . (8)
   c) If 5 x 4 = 20 then 20 ÷ 4 = ___. (5)
   d) If double 20 is 40 then half of 40 is ___ . (20)
   e) If double 11 is 22 then half of 22 is ___ . (11)

LESSON 32: DIVISION STRATEGIES

Teacher's notes

CAPS topics: 1.1 Count objects, 1.2 Count forwards and backwards, 1.16 Mental Mathematics, 1.14 Repeated addition leading to multiplication, 1.15 Division.

Lesson vocabulary: Forwards, backwards, multiplication, division, inverse operations, multiply, divide, sharing, grouping, remainder.

Prior knowledge: Learners should have been taught how to:

- Solve word problems in context and explain own solutions to problems that involve equal sharing and grouping up to 50 with answers that can include remainders.

Concepts:

- Solve word problems in context and explain own solutions to problems that involve equal sharing and grouping up to 100 with answers that can include remainders.
- Divide numbers to 99 by 2, 3, 4, 5, 10.
- Use appropriate symbols ÷, x, +,=, □.
- Multiply 2, 3, 4, 5, 10 to a total of 100.

Resources: Whiteboards/scrap paper.

DBE workbook activities relevant to this lesson:

- DBE Worksheet 89 (pp. 50 and 51).

Assessment: Refer to the tracker for today's formal/informal oral, practical or written assessment activity.

Remediation: Let the learners do the same on their whiteboards/scrap paper. Redo the calculations using other strategies if necessary so that learners are able to do division comfortably.

Enrichment: See enrichment activity cards.

1. Mental mathematics

1.1 Counting (5 minutes)

- Count forwards and backwards in 2s between 0 and 900, e.g. 698, 696, 694…

1.2 Mental mathematics activity (10 minutes)

	Calculate the following:	Answer
1.	24 ÷ 8 =	3
2.	__ ÷ 3 = 8	24
3.	8 x __ = 24	3
4.	How many tens in 24?	2
5.	24 – 8 =	16

	Calculate the following:	Answer
6.	3 x 8 =	24
7.	8 + 8 + __ = 24	8
8.	3 x __ = 24	8
9.	How many units in 24?	4
10.	24 + 100 =	124

2. Correction/reflection on homework (15 minutes)

Reflection/remediation based on previous day's work/homework.

3. Lesson content – concept development (30 minutes)

This lesson shows another division strategy. If your learners struggle with too many different strategies you should try to find the one they feel most comfortable with and do more examples using that strategy. You should make sure that they do not get confused by too many different strategies.

Activity 1: Whole class activity

- Ask the learners what they know about multiplication with 3 that can help them with division by 3.
- Give them the following example:
  72 ÷ 3 = ___
  Ask *What do I know?*
  10 x 3 = 30 (There are 10 threes in 30)
  30 + 30 = 60 (There are 20 [ten and ten] threes in 60)

  72 – 60 = 12
  4 x 3 = 12 (There are 4 threes in 12)

  20 threes + 4 threes = 72

  Therefore 72 ÷ 3 = 24

- Give them another example:
  84 ÷ 2 =___
  Ask the learners which multiplication tables will they be using? (2 times tables)
  Ask what they know about multiplication with 2 that can help them with division by 2.

  84 ÷ 2 =___
  Ask *What do I know?*
  10 x 2 = 20 (There are 10 twos in 20)
  20 + 20 + 20 + 20 = 80 (There are 40 [ten and ten and ten and ten] twos in 80)

  84 – 80 = 4
  2 x 2 = 4 (There are 2 twos in 4)

  40 twos + 2 twos = 42

  Therefore 84 ÷ 2 = 42

Activity 2: Whole class activity

- Ask learners to use the method used above to do this calculation on their whiteboards.
- 65 ÷ 5 = ___ (13. Discuss the way in which this could be found.)

4. Classwork activity from LAB (25 minutes) (See next page)

5. Homework activity from LAB (5 minutes) (See next page)

6. Reflection on lesson

Term 4 Lesson 32: Division strategies

Classwork

Calculate the following. Use any method that you have learned in class. Show your method.

1. 44 ÷ 4 = (11)

2. 84 ÷ 4 = (21)

3. 28 ÷ 2 = (14)

4. 40 ÷ 2 = (20)

5. 65 ÷ 5 = (13)

6. 90 ÷ 5 = (18)

Homework

Calculate the following. Use any method that you have learned in class. Show your method.

1. 20 ÷ 2 = (10)

2. 64 ÷ 4 = (16)

3. 55 ÷ 5 = (11)

LESSON 33: MULTIPLICATION AND DIVISION – CONSOLIDATION

Teacher's notes

CAPS topics: 1.1 Count objects, 1.2 Count forwards and backwards, 1.16 Mental Mathematics, 1.15 Division.

Lesson vocabulary: Forwards, backwards, divide, multiply, pattern, times table, quotient, multiplication, division.

Prior knowledge: Learners should have been taught how to:

- Solve word problems in context and explain own solutions to problems that involve equal sharing and grouping up to 50 with answers that can include remainders.

Concepts:

- Solve word problems in context and explain own solutions to problems that involve equal sharing and grouping up to 100 with answers that can include remainders.
- Divide numbers to 99 by 2, 3, 4, 5, 10.
- Multiply 2, 3, 4, 5, 10 to a total of 100.

Resources: Whiteboards/scrap paper.

DBE workbook activities relevant to this lesson:

- N/A

Assessment: Refer to the tracker for today's formal/informal oral, practical or written assessment activity.

Remediation: Let the learners draw the table from Activity 2 on their whiteboards/scrap paper. Help them to fill in the first row. Give each learner 50 counters. They can use the counters to do the division if they need to.

Enrichment: See enrichment activity cards.

1. Mental mathematics

1.1 Counting (5 minutes)

- Count forwards and backwards in 5s from any given multiple between 0 and 900, e.g. 801, 806, 811 ...
- Count 5/8/10 steps in 10s from 60. Where are you now? (110, 140, 160)

1.2 Mental mathematics activity (10 minutes)

	Calculate the following:	Answer
1.	3 multiplied by 8	24
2.	4 times 2	8
3.	Three tens	30
4.	Double 8	16
5.	5 rows of 4	20

	Calculate the following:	Answer
6.	6 x 4 =	24
7.	4 x 6 =	24
8.	24 ÷ 6 =	4
9.	24 ÷ __ = 3	8
10.	50 + __ = 70	20

2. Correction/reflection on homework (15 minutes)

Reflection/remediation based on previous day's work/homework.

3. Lesson content – concept development (30 minutes)

In this lesson the relationship between the basic facts of multiplication and division are revised and consolidated. Doubling and halving are also revised in this way.

Activity 1: Whole class activity

- Draw the following table on the board before the lesson:

x	1	2	3	4	5	6	7	8	9	10
2s	2	4	6	8	10	12	14	16	18	20
4s	4	8	12	16	20	24	28	32	36	40

- Ask the learners if they can see the pattern:
  - The first line is the 2x table.
  - The second line is the 4x table.
  - In the second line the 2x table is doubled.

Activity 2: Whole class activity

- Draw another table on the board leaving the row for the 5x table blank.
- Ask the learners if they can see the pattern in the row that you have completed.
- They should explain what they see.
  - The second line/row in the table is the 10x table.
  - The first line/row in the table will be filled with the 5x table.

x	1	2	3	4	5	6	7	8	9	10
5s	(5)	(10)	(15)	(20)	(25)	(30)	(35)	(40)	(45)	(50)
10s	10	20	30	40	50	60	70	80	90	100

  - Ask learners to fill in the 5x table in the first row on their whiteboards/scrap paper.
  - Ask: *How did you do this?* (They could do this by halving the multiples of 10.)

Activity 3: Whole class activity

- Draw another table on the board. This is a division table.
- Ask learners to complete this table on their whiteboards/scrap paper.

÷	10	20	30	40	50	60	70	80	90	100
5	(2)	(4)	(6)	(8)	(10)	(12)	(14)	(16)	(18)	(20)
10	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)

- Discuss how to complete the table by filling in quotients.
- Ask learners to complete this table on their whiteboards/scrap paper.
- When they have completed the table, discuss the answers.

4. Classwork activity from LAB (25 minutes) (See next page)

5. Homework activity from LAB (5 minutes) (See next page)

6. Reflection on lesson

Term 4 Lesson 33: Multiplication and division – consolidation

Classwork

Draw and complete the following multiplication and division tables.

1.

x	1	2	3	4	5	6	7	8	9	10
3	(3)	(6)	(9)	(12)	(15)	(18)	(21)	(24)	(27)	(30)
6	(6)	(12)	(18)	(24)	(30)	(36)	(42)	(48)	(54)	(60)

2.

÷	6	12	18	24	30	36	42	48	54	60
6	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
3	(2)	(4)	(6)	(8)	(10)	(12)	(14)	(16)	(18)	(20)

Homework

Draw and complete the following multiplication and division tables.

1.

x	1	2	3	4	5	6	7	8	9	10
2	(2)	(4)	(6)	(8)	(10)	(12)	(14)	(16)	(18)	(20)
4	(4)	(8)	(12)	(16)	(20)	(24)	(28)	(32)	(36)	(40)

2.

÷	10	20	30	40	50	60	70	80	90	100
5	(2)	(4)	(6)	(8)	(10)	(12)	(14)	(16)	(18)	(20)
10	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)

LESSON 34: DIVISION – CONSOLIDATION

Teacher's notes

CAPS topics: 1.1 Count objects, 1.2 Count forwards and backwards, 1.16 Mental Mathematics, 1.15 Division.

Lesson vocabulary: Forwards, backwards, divide, equal sharing, grouping, problem solving, calculate, method, multiplication, division.

Prior knowledge: Learners should have been taught how to:

- Solve word problems in context and explain own solutions to problems that involve equal sharing and grouping up to 50 with answers that can include remainders.

Concepts:

- Solve word problems in context and explain own solutions to problems that involve equal sharing and grouping up to 100 with answers that can include remainders.
- Divide numbers to 99 by 2, 3, 4, 5, 10.
- Use appropriate symbols ÷, =, □.

Resources: Whiteboards/scrap paper, counters.

DBE workbook activities relevant to this lesson:

- DBE Worksheet 121 (pp. 118 and 119).

Assessment: Refer to the tracker for today's formal/informal oral, practical or written assessment activity.

Remediation: Use counters and whiteboards/scrap paper to revise division the using different methods you have taught them over the past few days. Check which methods they are not yet familiar with. Make sure that they can all do at least one division method efficiently.

Enrichment: See enrichment activity cards.

1. Mental mathematics

1.1 Counting (5 minutes)

- Count forwards and backwards in 5s between 0 and 900, e.g. 825, 830, 835…
- Count 10/12/15 steps in 10s from 75. Where are you now? (175, 195, 225)

1.2 Mental mathematics activity (10 minutes)

	Calculate the following:	Answer
1.	29 + 30 =	59
2.	4 groups of 5	20
3.	Half of 30	15
4.	21 + 22 =	43
5.	6 multiplied by 3	18

	Calculate the following:	Answer
6.	1 x 20 =	20
7.	20 ÷ 5 =	4
8.	6 x 0 =	0
9.	10 ÷ 2 =	5
10.	5 x 3 =	15

2. Correction/reflection on homework (15 minutes)

Reflection/remediation based on previous day's work/homework.

3. Lesson content – concept development (30 minutes)

In this lesson you allow learners to choose the strategy they prefer to do the working when they solve word problems. It is important that they are able to use one method efficiently.

Activity 1: Whole class activity

- Write the following word problems on the board before the lesson:
  - Dad has 84 tools in his shed. He wants to put them into 4 drawers.
    How many tools will he have to put into one drawer?
    (84 ÷ 4 = 21)
  - I have 32 stickers. If I stick 3 stickers in each child's book, how many children can get stickers?
    (32 ÷ 3 = 10 rem 2)
  - I made 21 party packs. 7 friends are coming to my party. How many packs will each friend get?
    (21 ÷ 7 = 3)
- Do the word problems in this activity with the learners.
- This will give you the opportunity to see which method the learners are not very familiar with and to revise it with them during remediation.
- Remember that not all learners will be able to do all of the different methods as some learners are confused by too many methods. You need to make sure that each learners can do at least one method very well.
- Ask the learners do the calculations for the *first* problem on their whiteboards/scrap paper.
- Learners should use any method they choose, based on methods you have taught them over the past few days.
- Once the learners have completed the first calculation, ask them which method they used.
- Now get them to complete the next two problems that you have written up on the board.

4. Classwork activity from LAB (25 minutes) (See next page)

5. Homework activity from LAB (5 minutes) (See next page)

6. Reflection on lesson

Term 4 Lesson 34: Division – consolidation

Classwork

Calculate the following. Use any method that you have learned in class. Show your method.

1. 28 ÷ 4 = ___ (7)

2. 78 ÷ 2 = ___ (39)

3. 90 ÷ 2 = ___ (45)

4. The vendor has 63 tomatoes. He wants to sell them in packets of 3 each.
   How many packets of tomatoes will he be able to make up? (63 ÷ 3 = 21)

5. I have 55 silk worms. I want to share them between myself and my four friends.
   How many worms will we each get? (55 ÷ 5 = 11)

6. My brother has 44 toy cars. He wants to share them among himself and his 3 friends
   when they come over to play. How many cars will they each get to play with?
   (44 ÷ 4 = 11)

Homework

Calculate the following. Use any method that you have learned in class. Show your method.

1. 48 ÷ 4 = ___ (12)

2. 56 ÷ 2 = ___ (28)

3. 36 ÷ 3 = ___ (12)

WEEK 8

LESSON 35: SHARING LEADING TO FRACTIONS

Teacher's notes

CAPS topics: 1.1 Count objects, 1.2 Count forwards and backwards, 1.16 Mental Mathematics, 1.10 Sharing leading to fractions, 1.17 Fractions.

Lesson vocabulary: Forwards, backwards, fractions, fraction squares, fraction table, sharing, unitary fraction, non-unitary fraction, halves, quarters, eighths, thirds, sixths, fifths, diagrammatic form, whole, equivalent, equal.

Prior knowledge: Learners should have been taught how to:

- Solve word problems in context and explain own solutions to problems that involve equal sharing leading to solutions that include unitary fractions, e.g. $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{5}$.
- Use and name fractions including halves, quarters, thirds and fifths.
- Recognise fractions in diagrammatic form.
- Write fractions as 1 half, 2 thirds.

Concepts:

- Use and name unitary and non-unitary fractions including halves, quarters, eighths, thirds, sixths and fifths and write fractions as 1 half, 2 thirds.
- Recognise fractions in diagrammatic form.
- Begin to recognise that two halves or three thirds make one whole and that 1 half and two quarters are equivalent.

Resources: Fraction squares, fraction circles *(Printable Resources)*.

DBE workbook activities relevant to this lesson:

- DBE Worksheet 126 (pp. 128 and 129).

Assessment: Refer to the tracker for today's formal/informal oral, practical or written assessment activity.

Remediation: Give the learners fraction squares. Ask learners to place the strip that shows one whole in front of them. Ask them to place the half strips below that. You might need to guide them. Now place the thirds, then the quarters. Ask learners: Which is bigger than a half, two thirds or a quarter? (Two thirds.)

Enrichment: See enrichment activity cards.

1. Mental mathematics

1.1 Counting (5 minutes)

- Count backwards in 10s from any given number between 0 and 900, e.g. 817, 807, 797…

1.2 Mental mathematics activity (10 minutes)

	Calculate the following:	Answer
1.	1 x 1 =	1
2.	1 x 2 =	2
3.	2 x 2 =	4
4.	2 x 3 =	6
5.	3 x 4 =	12

	Calculate the following:	Answer
6.	3 x 5 =	15
7.	3 x6 =	18
8.	4 x 5 =	20
9.	5 x 1 =	5
10.	10 x 2 =	20

2. Correction/reflection on homework (15 minutes)

Reflection/remediation based on previous day's work/homework.

3. Lesson content – concept development (30 minutes)

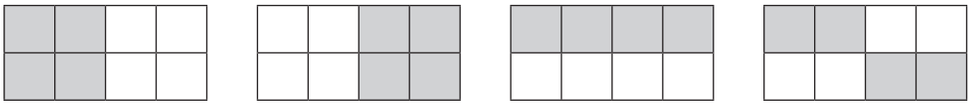
There are four lessons on fraction concept this term. They follow on from the lessons on grouping and sharing division since finding fractions involves division.

In this lesson learners work with unit wholes and work out fraction parts of the wholes.

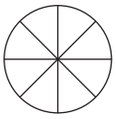
Activity 1: Whole class activity

- Draw the following shape on the board.

- Ask if anyone can come up to the board and shade half of the shape. Reproduce the shape quickly and ask if anyone else can do this differently? Here are some examples you might get.



- After 3–4 different responses draw the next shape and repeat the above steps by asking learners to come up and shade different quarters.



Activity 2: Learners work in groups

- Give each group of learners the sheet with fraction circles and fraction squares from the *Printable Resources*.
- Discuss the following questions:
  - *Is one half bigger or smaller than one quarter?* (Bigger.)
  - *Is* one *quarter bigger or smaller than one third?* (Smaller.)
  - What *can you tell me about two quarters and a half?* (They are the same size.)
  - What *can you tell me about one third and three quarters?* (One third is smaller than three quarters/three quarters is bigger than one third.)
- Help learners to realise that even though the shapes differ, the fraction parts must always be found in the same way – by sharing into equal sized parts.
- In other words a half is a half in relation to the whole.
  - If the whole is a circle, half the circle is 'half'.
  - If the whole is a square, half the square is 'half'.
  - If the whole is four blocks, half of the blocks is two blocks.
  - If the whole is 20 sweets, half of the sweets is ten sweets, and so on.
- Ask questions about eighths, thirds, sixths and fifths as well. Talk about different wholes so that learners can generalise the concept of a whole and a fraction part of a whole.

4. Classwork activity from LAB (25 minutes) (See next page)

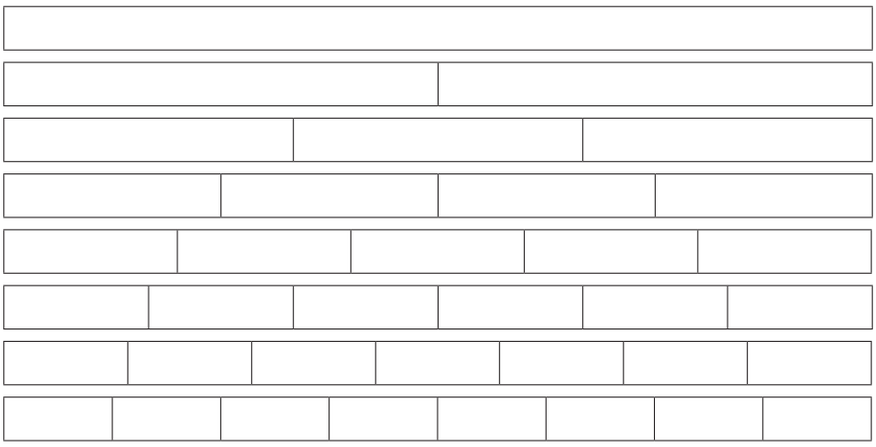
5. Homework activity from LAB (5 minutes) (See next page)

6. Reflection on lesson

Term 4 Lesson 35: Sharing leading to fractions

Classwork

1. Complete the fraction strips by filling in the fractions and then answer the questions below.



2. Fill in bigger than/smaller than/equal to:
   a) One half is _____ (smaller than) three quarters
   b) Two quarters are _____ (equal to) one half
   c) Three quarters are _____ (more than) one third
   d) Three sixths are _____ (equal to) four eighths

3. How many eighths are equal to one whole? ___ (8)

4. How many quarters are equal to three sixths? ____ (2)

Homework

1. Draw a fraction table. Show the following: whole, halves, thirds, quarters, eighths.

2. Give three examples where fractions are equal.
   (Various, e.g. two halves and one whole/two quarters and one half/six eighths and three quarters.)

LESSON 36: SHARING LEADING TO FRACTIONS

Teacher's notes

CAPS topics: 1.1 Count objects, 1.2 Count forwards and backwards, 1.16 Mental Mathematics, 1.10 Sharing leading to fractions, 1.17 Fractions.

Lesson vocabulary: Forwards, backwards, sharing, fractions, shared, unitary fraction, non-unitary fraction, halves, quarters, eighths, thirds, sixths, fifths, fraction circles, fraction squares, diagrammatic form, whole, equivalent, equal.

Prior knowledge: Learners should have been taught how to:

- Solve word problems in context and explain own solutions to problems that involve equal sharing leading to solutions that include unitary fractions, e.g. $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{5}$.
- Use and name fractions including halves, quarters, thirds and fifths.
- Recognise fractions in diagrammatic form.
- Write fractions as 1 half, 2 thirds.

Concepts:

- Use and name unitary and non-unitary fractions including halves, quarters, eighths, thirds, sixths and fifths and write fractions as 1 half, 2 thirds.
- Begin to recognise that two halves or three thirds make one whole and that 1 half and two quarters are equivalent.

Resources: Counters.

DBE workbook activities relevant to this lesson:

- DBE Worksheet 123 (pp. 122–123).

Assessment: Refer to the tracker for today's formal/informal oral, practical or written assessment activity.

Remediation: Give the learners the fraction circles or fraction squares – ask them to show you halves. Give learners six counters – ask them what one half of the counters will be. Guide them by distributing the counters on the fraction circles or squares equally. *We can say: We had six counters. One half of the counters is three. We can say one half of six is three.* Do the same with thirds and quarters.

Enrichment: See enrichment activity cards.

1. Mental mathematics

1.1 Counting (5 minutes)

- Count backwards in 10s from any given number between 0 and 900, e.g. 192, 202, 212… 942, 932, 922…

1.2 Mental mathematics activity (10 minutes)

	Calculate the following:	Answer
1.	4 x 2 =	8
2.	3 x 2 =	6
3.	5 x 2 =	10
4.	6 x 2 =	12
5.	7 x 2 =	14

	Calculate the following:	Answer
6.	1 x 20 =	20
7.	5 x 4 =	20
8.	6 x 3 =	18
9.	10 x 2 =	20
10.	5 x 3 =	15

2. Correction/reflection on homework (15 minutes)

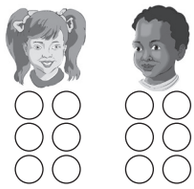
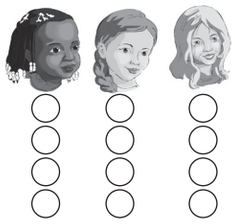
Reflection/remediation based on previous day's work/homework.

3. Lesson content – concept development (30 minutes)

In this lesson learners work with wholes that are made of groups of items and work out fraction parts of the wholes.

Activity 1: Whole class activity

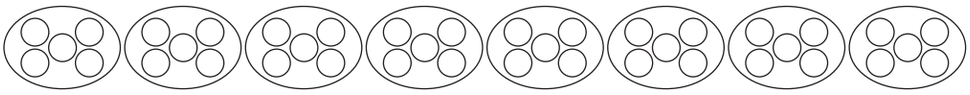
- Draw the following problems on the board.
- Repeat the activity using different numbers.
- Learners may use counters to assist them.

12 counters shared between 2 learners.		• *How many counters did each one get?* (6) • *What fraction did they get?* (1 half) • *What helped you to know that you found one half?* (Shared between 2 learners.)
12 counters shared among 3 learners.		• *How many counters did each one get?* (4) • *What fraction did each girl get?* (1 third) • *What helped you to know that you found one third?* (Shared between 3 learners.)

Activity 2: Whole class activity

Write the following problem on the board.

- Share 40 counters among 8 learners.
  Draw 8 circles then share the counters equally.



- Ask the following questions:
  - *How many counters will each one get? (5)*
  - *What fraction did they get? (1 eighth)*
  - *What is 1 eighth of 40? (5)*
  - *What is 2 eighths of 40? (10)*
  - *What is 3 eighths of 40? (15)*
  - *What is 4 eighths of 40? (20)*
  - *What is 5 eighths of 40? (25)*
  - *What is 6 eighths of 40? (30)*
  - *What is 7 eighths of 40? (35)*
  - *What is 8 eighths of 40? (40)*
  - *What is 1 half of 40? (20)*
  - *What is 1 quarter of 40? (10)*
  - *What is the whole of 40? (40)*

4. Classwork activity from LAB (25 minutes) (See next page)

5. Homework activity from LAB (5 minutes) (See next page)

6. Reflection on lesson

Term 4 Lesson 36: Sharing leading to fractions

Classwork

Calculate the following. Your answers must be written in number symbols.

1. If 15 counters are shared among 3 learners:
   a) How many counters did each one get? (5)
   b) What fraction did they get? ($\frac{1}{3}$ or 1 third)
   c) What helped you to know that you found one third? (Shared between 3 learners.)

2. If 88 counters are shared among 8 learners:
   a) How many counters did each one get? (11)
   b) What fraction did they get? ($\frac{1}{8}$ or 1 eighth)
   c) What helped you to know that you found one eighth? (Shared between 8 learners.)

3. If 15 counters are shared among 5 learners:
   a) How many counters did each one get? (3)
   b) What fraction did they get? ($\frac{1}{5}$ or 1 fifth)
   c) What is 3 fifths of 15? (9)

4. Share 30 counters into 6 groups.
   a) One sixth of 30 is ___. (5)
   b) Two sixths of 30 is ___. (10)

5. 12 is ___ of 24. ($\frac{1}{2}$ or 1 half)

6. 30 is ___ of 80. ($\frac{3}{8}$ or 3 eighths)

Homework

Complete the following. Use any way of writing fractions that you are comfortable with.

1. 10 is ___ of 15. (2 thirds or $\frac{2}{3}$)

2. 10 is ___ of 80. (1 eighth or $\frac{1}{8}$)

3. Share 24 counters into 6 groups.
   a) One sixth of 24 is ___. (4)
   b) Four sixths of 24 is ___. (16)

LESSON 37: FRACTION PROBLEMS WITH UNITARY AND NON-UNITARY SOLUTIONS

Teacher's notes

CAPS topics: 1.1 Count objects, 1.2 Count forwards and backwards, 1.16 Mental Mathematics, 1.17 Fractions.

Lesson vocabulary: Forwards, backwards, fractions, unitary fraction, non-unitary fraction, halves, quarters, eighths, thirds, sixths, fifths, diagrammatic form, dozen, whole, equal.

Prior knowledge: Learners should have been taught how to:

- Use and name fractions in familiar contexts including halves, quarters, thirds and fifths.
- Recognise fractions in diagrammatic form and write fractions as 1 half, 2 thirds.

Concepts:

- Solve and explain solutions to practical problems that involve equal sharing leading to solutions that include unitary and non–unitary fractions, e.g. $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{5}$.

Resources: Counters.

DBE workbook activities relevant to this lesson:

- DBE Worksheet 125 (pp. 126 and 127).

Assessment: Refer to the tracker for today's formal/informal oral, practical or written assessment activity.

Remediation: Do the same with: 5 chocolates shared equally among 4 children (one and one quarter each); and 6 chocolates shared equally among 5 children (one and one fifth each). Do this using drawings and counters each time.

Enrichment: See enrichment activity cards.

1. Mental mathematics

1.1 Counting (5 minutes)

- Count backwards and forwards in 10s from any given number between 0 and 900, e.g. 352, 362, 372.../722, 712, 702…

1.2 Mental mathematics activity (10 minutes)

	Calculate the following:	Answer
1.	10 x 10 =	100
2.	10 x 6 =	60
3.	10 x 8 =	80
4.	10 x 9 =	90
5.	10 x 1 =	10

	Calculate the following:	Answer
6.	10 x 0 =	0
7.	10 x 2 =	20
8.	10 x 4 =	40
9.	10 x 3 =	30
10.	10 x 5 =	50

2. Correction/reflection on homework (15 minutes)

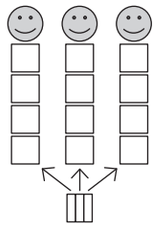
Reflection/remediation based on previous day's work/homework.

3. Lesson content – concept development (30 minutes)

In this lesson learners work with wholes that are made of groups of items and work out fraction parts of the wholes. The solutions involve mixed numbers.

Activity 1: Whole class activity

- Do the following example practically and use drawings to illustrate it on the board.
- Three boys share 13 biscuits equally. How much will each boy get? 13 ÷ 3 = 4 rem 1
- So each boy gets 4 whole biscuits, and there is one biscuit left over.
- *Can the friends share the one remaining biscuit? How?*
- We cut the remaining biscuit into three equal parts so that each friend gets one piece.
- Here is an illustration. You could show this in steps as you explain the sharing process.

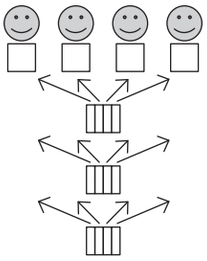


(The last biscuit has to be shared into thirds, so that each boy can get 1 third of the biscuit.)

- Now how much will each boy get? (4 and 1 third of a biscuit.)

Activity 2: Whole class activity

- Do the next example practically and use drawings to illustrate on the board.
- Four friends share 7 bars of chocolate equally. How much will each friend get? 7 ÷ 4 = 1 rem 3
- So each friend gets 1 bar of chocolate, and there are 3 bars of chocolate left over.
- Ask *Can the friends share the three remaining bar of chocolate? How?*
- We cut the remaining three bars of chocolate into four equal parts so that each friend gets one piece from each bar.



(Each friend gets one whole bar of chocolate.)

(The remaining 3 bars are divided into quarters and each friend gets one of the quarters from each bar – so each friend gets an extra 3 quarters of a bar of chocolate.)

- *Now how much will each friend get?* (Each friend will get 1 and 3 quarters of a bar of chocolate.)
- Show learners how to write 1 and three quarters (1 and 3 quarters) on the board.

Activity 3: Whole class activity

- Write the following two word problems on the board. Allow learners time to do the calculations on their whiteboards/scrap paper before they share their solutions with the whole class.
  - Mum makes three skirts with 7 meters of material. All the skirts are the same size. How many metres of material does she use for one skirt? (2 and 1 third metres of material.)
  - Eight teachers share 17 boxes of chalk. How many boxes of chalk will each teacher get? (2 and 1 eighth boxes of chalk.)

4. Classwork activity from LAB (25 minutes) (See next page)

5. Homework activity from LAB (5 minutes) (See next page)

6. Reflection on lesson

Term 4 Lesson 37: Fraction problems with unitary and non-unitary solutions

Classwork

1. Find one quarter of 21 sweets. ($5\frac{1}{4}$ or 5 and 1 quarter.)

2. Find $\frac{5}{6}$ of 30 sweets. (25 sweets.)

3. Share 9 chocolate bars among 4 friends so that they all get the same amount of chocolate and there is nothing left over. ($2\frac{1}{4}$ bars of chocolate.)

4. Grandmother gives Kiki R12. Kiki wants to save $\frac{1}{3}$ of the money. How much money should she save? (R4)

5. Four boys share 7 cakes. If they share them equally, how much cake do they each get? ($1\frac{3}{4}$ of a cake)

Homework

1. Share 16 apples equally among 5 children so that they all get the same amount of apples and there is nothing left over. ($3\frac{1}{5}$)

2. Find three quarters of 60 sweets. (45)

3. Eight boys share 7 cakes. If they share them equally, how much cake do they each get? ($\frac{7}{8}$ of a cake)

LESSON 38: PUTTING FRACTIONS TOGETHER

Teacher's notes

CAPS topics: 1.1 Count objects, 1.2 Count forwards and backwards, 1.16 Mental Mathematics, 1.10 Sharing leading to fractions, 1.17 Fractions.

Lesson vocabulary: Forwards, backwards, fractions, unitary fraction, non-unitary fraction, quarters, halves, thirds, sixths, fifths, eighths, diagrammatic form, whole, equivalent, equal.

Prior knowledge: Learners should have been taught how to:

- Solve word problems in context and explain own solutions to problems that involve equal sharing leading to solutions that include unitary fractions, e.g. $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{5}$.
- Use and name fractions including halves, quarters, thirds and fifths.
- Recognise fractions in diagrammatic form.

Concepts:

- Solve and explain solutions to practical problems that involve equal sharing leading to solutions that include unitary and non-unitary fractions, e.g. $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{5}$.

Resources: Whiteboards/scrap paper.

DBE workbook activities relevant to this lesson:

- DBE Worksheet 109 (pp. 94 and 95).

Assessment: Refer to the tracker for today's formal/informal oral, practical or written assessment activity.

Remediation: Instead of using fraction circles, use fraction squares. Do the same activities again with the learners – the different shaped wholes will give the learners another opportunity to come to grips with the work. Make sure you allow the learners to talk about what they are doing and listen to them to see if they are expressing themselves clearly and correctly.

Enrichment: See enrichment activity cards.

1. Mental mathematics

1.1 Counting (5 minutes)

- Count backwards and forwards in 10s from any given number between 0 and 900, e.g. 452, 462, 472.../522, 512, 502…

1.2 Mental mathematics activity (10 minutes)

	Calculate the following:	Answer
1.	1 x 1 =	1
2.	4 x 5 =	20
3.	5 x 2 =	10
4.	3 x 1 =	3
5.	7 x 3 =	21

	Calculate the following:	Answer
6.	3 x 4 =	12
7.	2 x 1 =	2
8.	8 x 0 =	0
9.	9 x 10 =	90
10.	6 x 5 =	30

2. Correction/reflection on homework (15 minutes)

Reflection/remediation based on previous day's work/homework.

3. Lesson content – concept development (30 minutes)

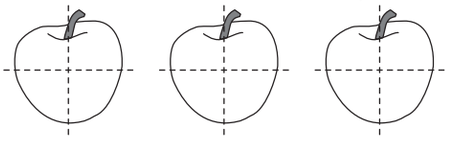
This is the last lesson on fractions for the term. The word problems that you will work through give learners an opportunity to apply their skills finding fractions of different wholes.

Activity 1: Whole class activity

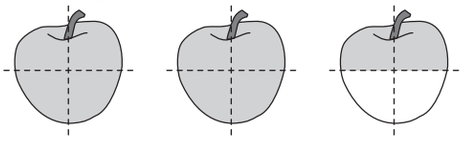
- Do the following questions practically and with drawings on the board.
- A Gogo gives half an orange to each of her grandchildren. She had 14 grandchildren. *How many oranges does she need?*
- How many grandchildren? (14) How many oranges for each child? (one half)
- Revise 1 orange can be cut into 2 halves.
- So to get 14 halves we need 7 oranges.
- Ask: *How many oranges does she need to make 14 halves?* (She needs 7 oranges.)

Activity 2: Whole class activity

- I want to bake 10 apple pies. My recipe says that each pie takes a quarter of an apple.
  How many apples do I need?
- *How many apple pies do I want to make?* (10)
- *How many apples in each?* (1 quarter)
- *How many quarters can I get from one apple?* (4)
- *How many apples do I need to get 10 quarters?*
  (I need 3 apples, but I will not use all of the third apple. I will use 2 and a half apples.)
- Draw 3 apples on the board.
- Show how to divide them into quarters.



- Work together with the class to find out how many apples are needed to get 10 quarters.



- Ten quarters can be taken from 2 and a half apples.
- *How many apples do I need?* (I need 2 and a half apples.)

Activity 3: Whole class activity

- Learners draw and solve the following problems on their whiteboards/scrap paper.
  - I drink one third of a glass of milk every day. *How much milk will I drink in two weeks?*
    (Remind learners that 1 week has 7 days. I will need 14 thirds = 4 and 2 thirds glasses of milk.)
  - The driver uses one fifth of a tank of petrol each day. *How many tanks of petrol will he use in 10 days?*
    (2 tanks.)

4. Classwork activity from LAB (25 minutes) (See next page)

5. Homework activity from LAB (5 minutes) (See next page)

6. Reflection on lesson

Term 4 Lesson 38: Putting fractions together

Classwork

Draw pictures to help you to calculate.

1. A Gogo gives a quarter orange to each of her grandchildren. She had 14 grandchildren. How many oranges does she need? (She needs 14 quarters. She needs $3\frac{1}{2}$ oranges.)

2. A Gogo gives a third of an orange to each of her grandchildren. She had 14 grandchildren. How many oranges does she need? (She needs 14 thirds. She needs $4\frac{2}{3}$ oranges.)

3. A Gogo gives a fifth of an orange to each of her grandchildren. She had 14 grandchildren. How many oranges does she need? (She needs 14 fifths. She needs $2\frac{4}{5}$ oranges.)

4. Answer the following questions:
   a) Two quarters are the same as ___ . (one half)
   b) Four sixths are the same as ___ . (two thirds)
   c) Four eighths are the same as ___ . (one half/two quarters)
   d) Six eighths are the same as ___ . (three quarters)
   e) One half is the same as ___ . (two quarters/three sixths/four eighths)

Homework

1. Label the fraction parts in the fraction wall:

<table>
<tr><td colspan="8">(1 whole)</td></tr>
<tr><td colspan="2">(1 quarter)</td><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td></tr>
<tr><td>(1 eighth)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="4">(1 half)</td><td colspan="4"></td></tr>
</table>

2. 2 quarters = ___ eighths (4)

3. 3 quarters = ___ eighths (6)

4. 1 half = ___ quarters (2)

5. 1 half = ___ eighths (4)