Foundations For Learning

Intermediate Phase Mathematics Lesson plans

Fourth term

Grade 5

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FOURTH TERM OVERVIEW OF LESSON PLANS: GRADE 5 MATHEMATICS

	LO 1: NUMBERS, OPERATIONS AND RELATIONSHIPS	LO2: PATTERNS, FUNCTIONS AND ALGEBRA	LO 3: SPACE AND SHAPE	LO 4: MEASUREMENT	LO 5: DATA HANDLING
	MENTAL STRATEGIES ARE DONE EVERY LESSON				
WEEK 1	**AS 4:** Recognise the place value of digits in whole numbers to a minimum of 6-digit numbers **AS 10:** Use a range of techniques to perform written and mental calculations with whole numbers including: - building up and breaking down numbers - rounding off and compensating		**AS 6:** Recognise and describe 2-dimensional shapes, 3-dimensional objects and patterns in terms of geometric properties		
WEEK 2	**AS 8:** Estimate and calculate by selecting and using appropriate operations to solve problems that involve addition and subtraction of whole numbers with at least 6 digits **AS 10:** Use a range of techniques to perform written and mental calculations with whole numbers including using a calculator **AS 11:** Use a range of strategies to check solutions and judge the reasonableness of solutions	**AS 4:** Write number sentences to describe a problem situation within a context			**AS 7:** Compare, classify and order events from daily life on a scale from "certain that they will happen" to "certain that they will not happen"
WEEK 3	**AS 8**: Estimate and calculate by selecting and using operations appropriate to solve problems that involve: - Rounding off to the nearest 5, 10, 100 and 1 000 - Addition and subtraction of whole numbers with at least 6 digits - Multiplication of at least 3-digit by 2-digit numbers - Division of at least 3-digit by 2-digit numbers - Equivalent fractions **AS 12:** Recognise, describe and use the reciprocal relations between multiplication and division	**AS 4:** Write number sentences to describe a problem situation within a context.			

WEEK 4					**AS 8:** List possible outcomes for simple experiments (including tossing a coin, rolling a de and spinning a spinner) **AS 9:** Count the frequency of actual outcomes for a series of trials **AS 5:** Draw graphs and interpret data: pictographs and bar graphs
WEEK 5	**AS 10:** Use a range of techniques to perform written and mental calculations with whole numbers including adding and subtracting in columns **AS 8:** Estimate and calculate by selecting and using operations appropriate to solve problems that involve: - Addition and subtraction of whole numbers with at least 6 digits - Multiplication of at least whole 3-digit by 2-digit numbers - Division of at least 3-digit by 2-digit numbers	**AS 1:** Write number sentences to describe a problem situation within a context			
WEEK 6	**AS 10:** Use a range of techniques to perform written and mental calculations with whole numbers including adding and subtracting in columns and building up and breaking down of numbers **AS 8:** Estimate and calculate by selecting and using operations appropriate to solve problems that involve equivalent fractions **AS 12:** Recognise, describe and use the equivalence of division and fractions		**AS 8:** Locate positions on a coded grid including maps and traces a path between positions from verbal and written instructions		
WEEK 7	**AS 12:** Recognise, describe and use the commutative, associative and distributive properties with whole numbers **AS 10:** Use a range of techniques to perform written and mental calculations with whole numbers including adding and subtracting in columns		**AS 8:** Locate positions on a coded (labelled) grid including maps and traces a path between positions from verbal and written instructions		

WEEK 8	**AS 7:** Solve problems involving comparing two or more quantities of different kinds (rate)			**AS 9:** Recognise and describe right angles in 2-dimensional shapes and 3-dimensional objects and the environment	
WEEK 9				**AS 8 (revision):** Investigate and approximate perimeter using rulers or measuring tapes; and area of polygons to develop an understanding of square units (Revision); investigate and approximate volume/capacity of 3-dimensional objects in order to develop an understanding of cubic units	**AS 1, 3, 4, 5 (revision)**: Pose simple questions about home and family environment; organise and record data using tallies and tables; draw graphs and interpret data: pictographs and bar graphs
WEEK 10	REVISION	REVISION	REVISION	REVISION	REVISION

THE ASSESSMENT FRAMEWORK: TERM 4 - GRADE 5 MATHEMATICS

	INFORMAL ASSESSMENT TAKES PLACE ON A REGULAR BASIS THROUGHOUT THE TERM				
FORMAL: WEEK	**LO 1: NUMBERS, OPERATIONS AND RELATIONSHIPS**	**LO2: PATTERNS, FUNCTIONS AND ALGEBRA**	**LO 3: SPACE AND SHAPE**	**LO 4: MEASUREMENT**	**LO 5: DATA HANDLING**
1	NO FORMAL ASSESSMENT				
2					**AS 7:** Compare, classify and order events from daily life on a scale from "certain that they will happen" to "certain that they will not happen"
3	**AS 8:** Estimate and calculate by selecting and using appropriate operations to solve problems that involve rounding off to the nearest 5, 10, 100 or 1 000	**AS 4:** Write number sentences to describe a problem situation within a context			
4	**AS 10:** Use a range of techniques to perform written and mental calculations with whole numbers including doubling and halving **AS 12:** Recognise, describe and use the reciprocal relationship between multiplication and division				**AS 8:** List possible outcomes for simple experiments. From the learners' group work, you will be able to assess whether they are able to list possible outcomes for simple experiments **AS 9:** Count the frequency of actual outcomes for a series of trials. From observing the learners while they worked in groups, you can assess whether they can count outcomes for a series of trials
ASSESSMENT TASK 1 COMPLETED					
5	NO FORMAL ASSESSMENT				

6	**AS 10:** use a range of techniques to perform written and mental calculations with whole numbers including building up and breaking down numbers **AS 8:** Estimate and calculate by selecting and using operations appropriate to solve problems that involve equivalent fractions **AS 12:** Recognise, describe and use the equivalence of division and fractions **AS 12:** Recognise, describe and use the reciprocal relationship between multiplication and division				
7	**AS 12:** Recognise, describe and use the commutative, associative and distributive properties with whole numbers				
8	**AS 10:** use a range of techniques to perform written and mental calculations with whole numbers including adding and subtracting in columns **AS 8:** Estimate and calculate by selecting and using operations appropriate to solve problems that involve: - addition and subtraction of whole numbers with at least 6 digits - Multiplication of at least whole 3-digit numbers by 2-digit numbers - Division of at least 3-digit numbers by 2-digit numbers **AS 7:** Solve problems involving comparing two or more quantities of different kinds (rate)		**AS 8:** Locate positions on a coded grid including maps and trace a path between positions from verbal and written instructions	**AS 9:** Recognise and describe right angles in 2-dimensional shapes and 3-dimensional objects and the environment	
ASSESSMENT TASK 2 COMPLETED					
9	NO FORMAL ASSESSMENT				
10	NO FORMAL ASSESSMENT				

GRADE 5: WEEK 1 OVERVIEW

Hours: 5	**Number of Periods: 5**
Mathematics **LO 1 AS 4** **LO 1 AS 10** **LO 3 AS 6**	**Milestones:** • Recognise the place value of digits in whole numbers to a minimum of 6-digit numbers. • Use a range of techniques to perform written and mental calculations with whole numbers including: - building up and breaking down numbers; - rounding off and compensating. • Recognise and describe 2-dimensional shapes, 3-dimensional objects and patterns in terms of geometric properties.

Mental Strategies: Mental strategies are done with the whole class every day. The time should be used to develop skills and to build number sense.

	Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
Content Focus:	Place Value	Place Value	Compensating and rounding off	Compensating and rounding off	2-d shapes and 3-d objects: properties and patterns
Resources:	Chalkboard, worksheets, Place Value Bingo cards (see Addendum Mental Strategies)	Chalkboard, worksheets	Chalkboard, worksheets, matchsticks (or other plentiful small items to count)	Chalkboard, worksheets, matchsticks (or other plentiful small items to count)	Chalkboard, worksheets, textbook

WEEK 1: DAY 1	
Notes to the teacher: • The first two lessons of the fourth term will be devoted to place value of 6-digit numbers. • Even if you feel your learners are competent in recognising the value of digits in 6-digit numbers, it is important to keep revising this concept. Without thorough understanding of the value of digits, learners will not be able to do mathematical calculations properly. **Resources:** Chalkboard, worksheets, Place Value Bingo cards (see Addendum Mental Strategies).	
DAILY ACTIVITIES	
Oral and Mental Activity (10 minutes) • Do some "Running Maths" (see Term 2 Addendum Mental Strategies for instructions). • Ask 10 to 15 random multiplication and division questions. Learners write down the answers only. Afterwards, they can swop books and mark each other's work.	
Concept Development (20 minutes) • Write a 6-digit number, 486 263 on the board. Ask a few learners to read the number. Ask a few random questions about the place value of the digits in the number, e.g. "What is the value of the 8?" "Which digit is in the hundred thousands place?" • Play "Place Value Bingo" (see Addendum Mental Strategies for instructions). It is difficult to predict how long this takes, as it depends on what numbers the learners have written down and which numbers are drawn. If it goes quickly, play it twice.	
Consolidation (15 minutes) • Write an exercise on the board (or make a worksheet) for the learners to complete. Do not include expanded notation today. Examples you can give (a few of each where possible): - Write down the place value of the underlined digit in numbers. - Write down the place value of a specific digit (e.g. 5) in different numbers (make sure the 5 is in a different place in each number). - Write down the largest 6-digit number using different digits. - Write down the smallest 6-digit number using different digits (0 cannot be the first number). - Write down the number that is, for example, 2 000 more than/less than 123 547.	
Problem Solving (15 minutes) • The learners can solve 4 to 6 problems based on the third term's work. Examples: - The ratio of white paint to blue paint is 1:3. If I mixed 4 litres 800 ml of paint, how much was white paint? - The sum of two numbers is 43 568. One of the numbers is 28 765. What is the other number? - Each teacher in the school was allocated 30 reams of 500 sheets of paper. How many sheets did each teacher receive?	
ASSESSMENT	**Informal:** Assess from the learners' written work whether they are competent in recognising place value of digits in 6-digit numbers.

WEEK 1: DAY 2

Notes to the teacher:

- In today's lesson, we will continue revising place value of digits in 6-digit numbers. We will focus more on building up numbers and writing numbers in expanded notation, including many numbers containing 0.

Resources: Chalkboard, worksheets.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- Practise multiplication tables. Focus on the 7x and 8x tables. Let individual learners, groups of learners or the whole class recite the tables forwards and backwards twice. After that, do some "Clock multiplication" (see Term 2 Addendum mental Strategies for instructions).

Concept Development (20 minutes)

- Divide the lower part of your board into five or six equal columns to give five or six learners a space to work in. Write a 6-digit number on the board and choose five or six learners to come and write the number in expanded notation. See who can do it the quickest. Example:
  - 306 125. Learners write: (3x100 000)+(6x1 000)+(1x100)+(2x10)+(5x1).

    It is NOT necessary to write (0x10 000). If any of the learners did so, tell them they did not need to. Congratulate the learners who did not write it.
  - Repeat with two or three more numbers containing 0. Give different learners a chance to do the work on the board. Each time, learners must say the number in words.
  - Now write an expanded number, in random order, on the board. Make sure you write this in random order. For example: (5x100)+(8x100 000)+(2x10)+(8x1 000). Learners will write: 808 510. Check that all the digits are written in the correct place and that the number built up contains the necessary 0s. Ask one or two learners to say the number in words.
  - Write two or three similar numbers on the board, each time choosing different learners to build up the numbers on the board.
  - Write a 4-digit number in expanded notation and ask learners to build up the number. For example: (5x1)+(2x1 000)+(3x10)+(4x100). Learners must NOT write 0s in the HTh and TTh places, but must write: 2 435.

Consolidation (15 minutes)

- Give the learners examples such as the following to complete, individually, in their workbooks:
  - Write five or more 6-digit numbers to write in expanded notation. Include some numbers with 0s in different places.
  - Build up five or more numbers from expanded notation. Include numbers containing 4, 5 and 6 digits.

Problem Solving (15 minutes) • Make a worksheet or write six or more problems entailing place value, addition, subtraction and multiplication on the board. Learners must complete these in their workbooks. Examples: - Find the sum of the largest 4-digit number and the largest 4-digit number using different digits (i.e. 9 999+9 876). - Find the product of the largest 2-digit number (using different digits) and the smallest 3-digit number (using different digits) (i.e. 98x102). - Find the difference between the largest and smallest 5-digit numbers (i.e. 99 999-10 000).	
ASSESSMENT	**Informal:** From the learners' work on the board, participation in class and their written work, you will be able to assess whether they can build numbers (especially numbers containing 0) up from expanded notation and break them down into expanded notation.

WEEK 1: DAY 3

Notes to the teacher:

- The focus of the next two lessons will be on compensating. This is a skill which makes calculations easier and, although it is being dealt with specifically in this lesson, it needs to be constantly practised and applied when adding and subtracting.
- Compensating is closely linked to rounding off. Compensating means rounding off one number to the nearest 10 or 100 (and larger numbers later on) by adding onto a number. Whatever number is added on to the one number in an addition calculation is subtracted from the other number. This means that to add 9+7, we +1 to 9 to round it off to 10. Having added 1 to one of the numbers, we subtract it from the other: 7-1=6. Therefore 9+7=10+6=16.
- We can also do the opposite: if we round a number down by subtracting, we must add the same number onto the other number: 12+12=**10** (12-2) **+ 14** (12+2) = **24**
- In today's lesson, we will only use compensation in addition calculations. We will start with a practical activity.
- The learners do not need to know the word "compensating". They need only to know how to apply it to make addition easier.

Resources: Chalkboard, worksheets, matchsticks (or buttons, counters, small stones) for learners to work with in groups.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- The learners can complete a rounding off activity. Give them a table such as the following (with at least ten rows) to complete:

Number:	Round off to the nearest 10	Round off to the nearest 100
27		
351		
428		

Concept Development (30 minutes)

- Hand out 9 matches to each group of learners. Ask them to count them and tell you how many matches they have. Hand out another 7 matches to each group, tell them to keep them separate from the first matches you handed out
  - Ask the learners to tell you how many matches they have altogether:
    | | | | | | | | | **+** | | | | | | | 9+7=16
  - Ask the learners what 9 is rounded off to the nearest 10. It is 10. Ask them how much you added onto the 9 to obtain 10. You added on 1.
  - Tell them to take one match from the group of 7, and move it to the group of 9:
    | | | | | | | | | | | | | | | 10+6=16
  - Ask the learners if the total number of matches is different. No it is not. So we can conclude that 9+7=10+6=16.
- Tell the learners to rearrange their matches to make a group containing 8 matches and another group containing 5 matches. Tell them to try to rearrange them in a way that will make adding them together easier. See which group comes up with the solution first, and ask a member of that group to explain by coming to the board and writing what they did:

  8 ≈10. Add 2 to 8 to make 10.

  5-2=3. Because we added 2 to 8, we subtract 2 from 5.

  10+3=13.

- Give each group of learners more matches and repeat the above several times, using different numbers, for example:
  - 17+15 (=20+12)
  - 19+9 (=20+8)
- Tell the learners that so far, we have only been rounding up. We can also round one of the numbers down. Ask them to arrange their matches in two groups, one containing 22 matches and the other containing 16 matches. Ask them what 22 is, rounded off to the nearest 10. It is 20. Ask them what we do if we round 22 off to 20: we subtract 2. They can then take 2 matches from the 22. They will need to add them to the 16 matches in the other group.

  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 22+16

  = | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 20+18 = 38

  - Repeat two or three times with different numbers entailing rounding down one of the numbers.
- Write two larger numbers, 98+57 on the board. Ask the learners if they can apply what they have learnt to these numbers to make addition easier. Choose a learner who raised his/her hand to come to the board to explain and write down what he/she thinks. They must write and explain (with your help) as follows:

  98 ≈100. Explain: Add 2 to 98 to make 100.

  57-2=55. Because we added 2 to 98, we subtract 2 from 57.

  100+57=157.

  - Repeat with two or three more numbers where rounding up and down to the nearest 100 is involved. Each time, choose a different learner to write what he/she did on the board and give the explanation.

Consolidation (20 minutes)

- The learners can complete 20 addition calculations entailing compensation. Make a worksheet or write the calculations on the board. Vary these by using numbers to be rounded up to the nearest 10 or 100, and rounded down to the nearest 10 or 100. In each calculation, the learners must write down step-by-step what they did. For example:
  - 48+56

    48≈50

    50+54=104

ASSESSMENT	**Informal:** From the learners' participation in class and from their written work, you will be able to assess whether they can use compensation to make an addition calculation easier.

WEEK 1: DAY 4

Notes to the teacher:

- As a follow-up to the previous lesson, today we will use compensation to make subtraction easier.
- When using compensation in subtraction, we round the number being subtracted to the nearest 10 or 100. We then subtract the rounded off number, and afterwards add again. For example, 28-19. Round 19 off to 20 (+1). 28-20=8. We now add 1 to the answer because we have subtracted 1 too much: 8+1=9.
- As learners do practical examples using matches, this will become clear. Number lines are also a useful way to get this concept across.
- Learners do not need to know the word "compensation". It is a useful skill to be mastered and used in every day calculations.

Resources: Chalkboard, worksheets, matchsticks.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

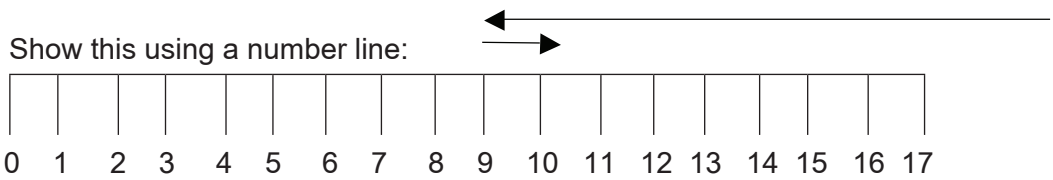
- Give the learners an addition speed test entailing compensation to complete. Write the sums on the board, if you cannot prepare a worksheet, and, on your signal, the learners must start. After a certain time, stop the learners and see who obtained the most correct answers in that time. Have 20 prepared addition calculations, such as:
  - 48+53 27+34 59+18 62+17

Concept Development (25 minutes)

- Learners can work in pairs.
  - Give one learner (Learner A) in each pair 17 matches. Tell that learner to give his partner 9 matches. How many does he have left? He has 8 left. Write this mathematically on the board: 17-9=8
  - Learner A must now get all the matches back. Tell Learner A in each group to give his partner 10 matches. The partner must then give 1 match back to learner A, who must add it to the matches he has. Ask Learner A in each group to count his matches now. How many does he have? He has 9. See if any learners think they can write what they did mathematically on the board. Choose a learner to come and do it:

    17-9
    =17-10+1
    =8

  - Show this using a number line:



    17-10=7
    7+1=8

  - Repeat the above three or four more times, using different numbers of matches. Each time, let a learner show you by means of a number line, what they did, and ask another learner to write the mathematical process on the board. Example:

    27-18
    =27-20+2
    =9

- Move on to larger numbers. Write a calculation such as the following on the board: 587-99. Ask the learners if they can apply what they have just learnt to work this calculation out more easily. Choose four or five learners to come to the board and do the calculation (each in their own workspace). Check that they did this:

  $99 \approx 100$ (99 =100 -1)

  587-99

  = 587-100+1

  = 487+1

  = 488
- Repeat with three or four subtraction sums where numbers such as 99, 98 or 97 are subtracted from a 3-digit number. Each time choose different learners to come and show the working on the board, and afterwards, explain what they did.

Consolidation (25 minutes)

- Make a worksheet comprising 20 subtraction sums entailing compensation for the learners to complete individually in their workbooks. While they are busy, walk around and help any learners who are having difficulty with this concept. If you cannot make a worksheet, write calculations on the board. Include:
  - Calculations subtracting 9 from a number. Learners can draw a number line to show what they did in each case.
  - Calculations entailing subtracting 19, 29, 39 etc from a 2-digit number.
  - Calculations entailing subtracting 99, 98, 97 from a 3-digit number.
  - Include a few addition calculations entailing compensation as well.

ASSESSMENT	**Informal:** Assess from the learners' participation in class, their verbal responses and their class work, whether they understand the concept of making subtraction easier by compensating.

WEEK 1: DAY 5

Notes to the teacher:

- 2-d shapes and 3-d objects and their properties were revised in the last week of the third term.
- To give the learners a change from number work, today's lesson will be revision of 2-d shapes and 3-d objects in terms of their properties and patterns.
- Learners will also solve a few problems entailing ratio.

Resources: Chalkboard, worksheet.

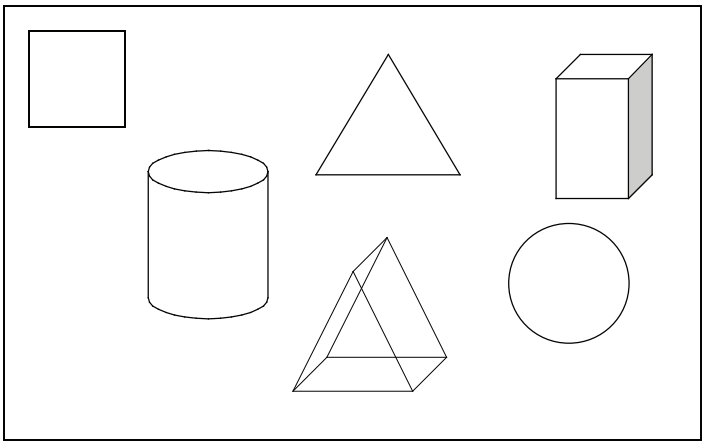
DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- The learners can complete twenty mixed addition and subtraction calculations which entail compensating. Examples:
  - 19+17 18+16 99+87 39+45
  - 125-99 446-98 35-19 74-29

Concept Development (20 minutes)

- Draw a few 2D shapes and 3D objects on the board.



- Ask the learners how they would sort the shapes and objects into different groups. They might have different ideas. Some might say put all the 3-d objects in one group and the 2-d shapes in another group. Other learners might think it better to put the triangle and triangular prism together, the circle and cylinder together, and make a third group containing the square and the rectangular prism. Both of these classifications are right, because the shapes or objects that have been grouped together have something in common.
- Ask some questions about the shapes and objects. For example: How many triangular faces does the triangular prism have? What shape are its other faces? How many faces of that shape are there? How many faces does it have altogether? How many vertices does the rectangular prism have? Which shapes or objects have right angles? Point out that we could also have classified the shapes and objects according to those that have right angles and those that do not.

- A few learners in turn can draw different shapes or objects on the board. For example, tell a learner to draw a shape which has 6 sides. Ask what it is called. You can tell another learner to draw a square based pyramid.

Consolidation (20 minutes)

- The learners must complete a task in which they need to recognise and describe 2-d shapes and 3-d objects and patterns in terms of geometric properties. Some suggestions to include:
  - Learners can group different shapes drawn on a worksheet or on the board according to given criteria, e.g. those that have right angles; those which have three sides; those which have no straight sides (e.g. oval, circle);
  - Learners can name objects, drawn on a worksheet or on the board, according to instructions: Which objects have 6 faces? Which objects have one or more round faces? How many vertices does the triangular based pyramid have?
  - Learners can extend geometric patterns.

Problem Solving (10 minutes)

- Learners can solve two problems, entailing ratio. They can work alone to solve the problems. Example:
  - There are 88 apples in a box. The ratio of red apples to green apples is 3:5. How many of each colour apples are there?

ASSESSMENT	**Informal:** Assess from the learners' participation in class and their class work, whether they can recognise the properties of 2-d shapes and 3-d objects.

GRADE 5: WEEK 2 OVERVIEW

Hours: 5	**Number of Periods: 5**
Mathematics **LO 1 AS 8** **LO 1 AS 10** **LO 1 AS 11** **LO 2 AS 1** **LO 5 AS 7**	**Milestones:** • Estimate and calculate by selecting and using appropriate operations to solve problems that involve addition and subtraction of whole numbers with at least 6 digits. • Use a range of techniques to perform written and mental calculations with whole numbers including using a calculator. • Use a range of strategies to check solutions and judge the reasonableness of solutions. • Write number sentences to describe a problem situation within a context. • Compare, classify and order events from daily life on a scale from “certain that they will happen” to “certain that they will not happen”.

Mental Strategies: Mental strategies are done with the whole class every day. The time should be used to develop skills and to build number sense.

	Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
Content Focus:	Using a calculator	Addition of 6-digit numbers	Subtraction of 6-digit numbers	Number sentences, addition and subtraction problems	Compare, classify and order events from daily life from “certain they will happen” to “certain they will not happen”
Resources	Chalkboard, worksheets, calculators	Chalkboard, textbooks, worksheets	Chalkboard, textbooks, worksheets	Chalkboard, textbooks, worksheets	Chalkboard, textbooks, worksheets (list of daily events)

WEEK 2: DAY 1

Notes to the teacher:

- The learners will spend today's lesson using their calculators to perform calculations.
- Learners have used their calculators on many occasions to check answers. However, to be efficient in the use of the calculator, learners need to know the functions of some of the calculator keys. Today they will learn how to use the AC (All clear) and C or CE (Clear or Clear Entry) keys and how to correct entering the incorrect operation.
- As pocket calculators differ slightly, learners must become familiar with the keys on the calculator they use.
- Learners must never rely entirely on their calculators. They must estimate the answer to the calculation. It is very easy to enter an incorrect number on the calculator, resulting in an incorrect answer.

Resources: Chalkboard, worksheets, calculators.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- Practise multiplication tables using playing cards (see Addendum Mental Strategies). If you do not have playing cards in your classroom, practise multiplication tables by having a round or two of Tables King or Tables Challenge (see Addendum Mental Strategies).

Concept Development (25 minutes)

- Ask the learners to take out their pocket calculators. Get different learners to come to the board and draw the layout of the number keys:

7	8	9
4	5	6
1	2	3
0		

Calculator number keys are arranged with 1, 2 and 3 in the bottom row. This differs from telephones where these numbers are on the top row.

- Write down the operation keys (these will be arranged differently on each calculator): + - x ÷ =
- Write on the board what other keys they see. Depending on the calculators, these might differ slightly, but will perform the same function. As each learner draws a key he/she sees, discuss its use, check that all the learners can see that key on their calculators, and explain that we will not be using some of the keys at this stage:

Key	Alternative	Function	Need it now?
%		percent	no
$\sqrt{}$		Square root	no
M		Memory	no
C	CE	Clear entry	yes
AC	CA	All clear	yes
M+		Add to memory	no
M-		Subtract from memory	no
MR	RCM/MRC	Recall memory	no
•		Decimal point	no
On/off		On/off	yes

- Ask the learners to show you the display screen on their calculators.

- Write a calculation on the board: 48+52+89+27+12. Ask the learners how they will do that calculation on their calculators. What they must enter and how they obtain the answer? They enter everything exactly as it is written on the board and then push the = key. Let the learners do the calculation using their calculator. Check that they all get the correct answer: 228.
  - The learners must now subtract 59. They do not need to re-enter the answer, they must enter -59= to obtain the answer 169.
  - The learners must leave 169 on their calculators and not do anything while you write the next operation on the board. +100. Ask the learners what the answer will be: 269. Tell them to push the x key only. But this is wrong, we were supposed to addL Luckily it is not a big mistake, all we need to do is push the correct, i.e. +, key, enter 100 and =. Let them try this and see that they all obtain the correct answer, 269.
  - Repeat a few times making similar mistakes with the operator keys and rectify them so that learners know how to correct a mistake where they enter the incorrect operator.
  - Tell the learners we are going to start a new calculation. Which key must they use to clear everything? They push the AC key. Ask them what they see on the display screen? They will see a 0.
- Now that the learners know how to correct an incorrect operation being entered, move on to showing them how to correct an incorrect entry. Write a sum on the board such as 25+50+20. Ask the learners to work out the answer: 95.
  - Do not let any learners rush ahead of you, as this has to be done together. Enter: 25+50+25... entering 25 at the end is incorrectL Ask the learners what they think you must do. You do not want to clear everything and start all over, because you might make another mistake and take a long time to do a calculation. Luckily, the calculator has a key to help: Push the CE key, enter the correct number and then =. Check that the answer is 95.

- Do more calculations with the learners. Make an error by entering an incorrect number at some stage of the calculation. Correct it by using the CE key, and continue.

Consolidation (15 minutes)

- Learners can practise using their calculators by doing several calculations involving all four operations and mixed operations. Tell them to sometimes make a deliberate mistake to practise correcting it. The learners can work in pairs to check each other's answers. If they disagree, they must both re-do the calculation.

Problem Solving (15 minutes)

- The learners can do four problems, each entailing a different operation, at the level done so far. For each problem, they must:
  - write a number sentence;
  - estimate the answer by rounding off;
  - do the calculation;
  - check their answers by using their calculators. They must write down what they entered into the calculator and the answer the calculator gave.
  - Make sure their answers are complete.

ASSESSMENT	**Informal:** You can assess the learners' ability to use the calculator from their participation in class and problem solving.

WEEK 2: DAY 2

Notes to the teacher:

- During this and the next two lessons, the focus will be on adding and subtracting 6-digit numbers.
- During the third term, learners had a great deal of practice in adding and subtracting 5-digit numbers, so to extend this concept to 6-digit numbers is not difficult.
- The learners were also introduced to adding and subtracting in columns at the end of the third term. However, they are not required to use this method to add or subtract 6-digit numbers. You might have a few learners who are competent and feel confident to add 6-digit numbers in columns and they can use this method if they wish. However, do not let learners subtract large numbers in columns until they have had a lot more practice, which they will get later this term.
- Learners should be given as much practice as possible in adding numbers comprising different numbers of digits.

Resources: Chalkboard, textbook, worksheets.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- Do some counting activities. See Addendum Mental Strategies on ideas on how to vary this.
- Say 10 problems for learners to solve and they write down the answers only. Use any concepts that they learners have been taught. Examples:
  - There are 4 dozen eggs in the basket. $\frac{1}{6}$ of them are speckled. How many eggs are speckled?
  - I saw 10 birds on the grass. How many legs and wings were there?
  - How many cups of 200 ml can be filled from a 2 litre bottle of orange drink?

Concept Development (25 minutes)

- In their groups, give learners a problem such as the following to solve: *There were 634 517 people living in Gauteng cities in 1999. By 2009, another 163 421 people had moved to the cities. What was the total population of the Gauteng cities by 2009?*
  - When the learners have finished the calculation, ask learners whose groups perhaps used different methods to come to the board and show what they did. (If all the learners used the same method, that is fine. Let two or three learners do their calculations on the board.)

634 517 = 600 000+30 000+4 000+500+10+7

163 421 = 100 000+60 000+3 000+400+20+1

600 000+100 000+30 000+60 000+4 000+3 000+500+400+10+20+7+1

Learners might not need to do the above step.

= 700 000+90 000+7 000+900+30+8

= 797 938 people altogether.

If any learners used another method and obtained the correct answer, let them continue using their method. If any learners managed to add in columns and did the calculation correctly, let them use that method. Do not be prescriptive about a particular method. Try to refine the learners' methods.

- Give the learners another problem entailing adding two 6-digit numbers to solve in their groups. Let different learners come to the board afterwards to show their methods.

- The learners can solve a problem in pairs or in groups entailing adding a 6-digit number and a 5-digit number. After that, they can solve a problem entailing adding a 6-digit number, a 5-digit number and a 4-digit number together. Each time, let different learners show their methods on the board.

Problem Solving (25 minutes)

- The learners can solve *at least* five problems entailing addition of 6-digit numbers. These must be done individually in their workbooks. If you cannot find any suitable problems in the textbook, make a worksheet or write the problems on the board. You can include one or two problems that entail adding different size numbers. For each problem, the learners must:
  - write a number sentence;
  - do the calculation;
  - check their calculation (they can use a calculator);
  - make sure they write a complete answer

ASSESSMENT	**Informal:** Assess from the learners' participation in class and their written work whether they are able to add 6-digit numbers.

WEEK 2: DAY 3

Notes to the teacher:

- Today the learners will subtract 6-digit numbers. They can use any method that works, but do not let them use the column method at this stage, as they have only been introduced to it very briefly.
- Involve the learners at all stages of the lesson. Avoid doing all the talking.

Resources: Chalkboard, textbooks, worksheets.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- The learners can complete the following number square. Each column, row and diagonal must add up to the same total. If they cannot find the total (which they should be adding up the four numbers that are given in a row), give them the total, 64.

	29		7
23	11	13	17
15			9
25	5		

  - If there is still time, ask random questions using the numbers in the square, e.g. What is the sum of 29 and 23 (learners should get this answer quickly if they use compensation)? What is the sum of all the single-digit numbers in the square? What is the difference between 31 and 17?

Concept Development (20 minutes)

- Divide the lower part of your board into five or six columns to give five or six learners a space to work in. Write a problem such as the following on the board, and choose learners who think they know how to work it out, to come and do so on the board in the space provided: *The capacity of one dam is 526 457 litres. The other dam can hold 423 246 litres. What is the difference in capacity between the two dams?*
  - Learners might use one of the following methods:
    Adding on from the smaller number to the larger number (their numbers may differ):

423 246→424 000=	754
424 000→500 000=	76 000
500 000→526 000=	26 000
526 000→526 457=	457
	754+76 000+26 000+457 (learners will expand this to add) = 103 211

    Continual subtraction:

526 457→526 000=	457
526 000→500 000=	26 000
500 000→424 000=	76 000
424 000→423 246=	754
	754+76 000+26 000+457 (learners will expand this to add) = 103 211

- Give the learners another subtraction calculation entailing subtracting 6-digit numbers to do in pairs or groups. Walk around and observe their methods and help any learners who are having difficulty. Afterwards, check their answers by letting different learners tell you the answer they obtained.	
Problem Solving (15 minutes) • Learners can solve two or three subtraction problems, individually in their workbooks. As this subtraction is quite a lengthy process, rather give the learners a few problems to solve correctly than put them under pressure with too much work. They will have plenty more practice in this concept during the rest of the term.	
Consolidation (15 minutes) • Give the learners three or four subtraction calculations which can be completed for homework. You can include some with a 6-digit number minus a 5-digit number.	
ASSESSMENT	**Informal:** Assess from the learners' written work whether they are able to subtract 6-digit numbers.

WEEK 2: DAY 4

Notes to the teacher:

- In today's lesson, learners will get the opportunity to practise solving problems entailing addition and subtraction of 6-digit numbers.
- It is important that you observe the learners as they work to see who is struggling with this work and help them. Some learners might need help in refining their methods.
- Give the learners problems to solve hat entail previously taught concepts, e.g. financial (profit, loss, budgets), SI units.

Resources: Chalkboard, textbooks, worksheets.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- Give the learners 20 addition calculations, which are made easier by compensating, to complete. Challenge the learners to finish as quickly (and accurately) as possible. Afterwards, learners can swop books and mark each other's work. Examples:
  - 456+19 237+99 387+98 63+29

Concept Development (10 minutes)

- Write an addition calculation on the board. The two numbers to be added must each have 6 digits. The learners must complete the calculation individually. Walk around and observe their methods. If you notice, from this and from the work completed in the previous lessons, any general error that is being made, rectify it by explaining to the whole class.
  - Repeat with a subtraction calculation entailing subtracting two 6-digit numbers. When the learners have completed the subtraction calculation, ask them how we can check the answer. We can check it by adding (they have done this before). Ask two or three learners to do the addition calculation on the board. For example, if the subtraction calculation was: 523 616-489 367=34 249, check by adding 34 249+489 367 = 523 616.

Problem Solving (40 minutes)

- If you cannot find suitable problems in the textbook, make a worksheet or write problems on the board. It is important that there are addition and subtraction problems in random order to give the learners practise in identifying which operation to use. While the learners are busy, help learners individually or in small groups who are having difficulty or whose methods need refining. For each problem, learners must:
  - write a number sentence;
  - do the calculation;
  - check their answers. Learners can check their subtraction calculations by addition. This gives them extra practice in addition. They can also use their calculators to check their answers.
  - Make sure their answers are complete.

ASSESSMENT	**Informal:** You will be able to assess the learners' ability to solve problems involving addition and subtraction of 6-digit numbers from their completed class work.

WEEK 2: DAY 5

Notes to the teacher:

- As part of Data Handling, learners need to be able to order events in daily life from "certain that they will happen" to "certain that they will not happen." This introduction to classifying events will lead on to predicting outcomes of experiments such as tossing a coin, throwing a die, etc, where predictions are more scientifically based.
- In everyday life, people need to predict the likelihood of certain events occurring to enable them to take precautions against them. For example, if one lives in an earthquake area, one must build one's house to withstand an earthquake. If there is a good chance of an avalanche, one would not build one's house in its path. We are affected by the weather and will not plan an outing to the river in the middle of winter when the weather is too cold to enable us to enjoy the river.

Resources: Chalkboard, textbook, list of events in daily life applicable to the learners.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- Learners can practise adding and subtracting 2-digit numbers in columns. Write 10 subtraction sums horizontally on the board, learners must re-write them in columns and subtract. For each subtraction calculation, they must do an addition calculation to check their answers. Examples:
  - 48-27 36-22 91-38 72-26

Concept Development (20 minutes)

- Tell the learners a short story such as the following: *The little boy had been sleeping soundly in his bed. A sudden noise in the middle of the night woke him up. He lay, still as a mouse, listening. He then heard his mother in the kitchen, sweeping up a broken glass that she had knocked over.*
  - Ask the learners if they think that is a reasonable ending to the story, if that could happen. They should decide it is possible.
  - Tell the same story, but with a different ending: *The little boy had been sleeping soundly in his bed. A sudden noise in the middle of the night woke him up. He lay, still as a mouse, listening. He saw five green aliens come into his room. They all had one eye and three tentacles for arms. They told him, in English, that their spaceship had landed on the roof, and they were sorry about the noise. They had come to do his homework for him as they knew he had not done it and would be in trouble at school.* Ask the learners if they think that there was a chance of that happening. They will agree that it certainly could not happen.

- Draw columns on the board with the following categories:

Certain it will happen	Probably will / could happen	Might happen	Probably will not/ could not happen	Certain it will not happen

- Tell the learners things happen in the world and in our daily lives all the time. Some things might happen, other things will definitely not happen. Ask them to look at the categories you have written and then think about the two stories you told them. Which description will they use to categorise the first story? They will probably decide on the second category, "Could happen". Where would they categorise the second story? In the last category.
- Give some examples of events, and ask learners how they would categorise them. Examples: It will snow on Christmas Day. We will come to school on Sunday. We will come to school on Monday. We will get homework today.
- Go round the class and ask learners to think of an event from daily life. The rest of the learners can decide on the likelihood of it happening or not happening.

Consolidation (20 minutes)

- Write a list of twenty or more daily events on the board. Learners must order them on a scale similar to the one above. You might find suitable exercises to use in the textbook.
- Learners can compile their own list containing five daily events, one for each of the above categories.

Problem Solving (10 minutes)

- Give the learners one addition and one subtraction (6-digit numbers) problem to solve.

ASSESSMENT	**Formal:** LO 5 AS 7: Compare, classify and order events from daily life. From the learners' participation in class, verbal responses and written work, you will be able to assess whether they can compare, classify and order events from daily life on a scale from "certain that they will happen" to "certain that they will not happen".

GRADE 5: WEEK 3 OVERVIEW

Hours: 5	**Number of Periods: 5**
Mathematics **LO 1 AS 8** **LO 1 AS 12** **LO 2 AS 4**	**Milestones:** • Estimate and calculate by selecting and using operations appropriate to solve problems that involve: - Rounding off to the nearest 5, 10, 100 and 1 000; - Addition and subtraction of whole numbers with at least 6 digits; - Multiplication of at least 3-digit by 2-digit numbers; - Division of at least 3-digit by 2-digit numbers; - Equivalent fractions. • Recognise, describe and use the reciprocal relations between multiplication and division. • Write number sentences to describe a problem situation within a context.

Mental Strategies: Mental strategies are done with the whole class every day. The time should be used to develop skills and to build number sense.

	Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
Content Focus:	Equivalent fractions	Multiplication of 3-digit by 2-digit numbers	Division: 3-digit by 2-digit numbers	Problems entailing multiplication and division; recognizing that the reciprocal of multiplication is division and vice versa	Problems entailing the four operations
Resources:	Chalkboard, textbook, worksheets	Chalkboard, textbook, worksheets	Chalkboard, textbook, worksheets	Chalkboard, textbook, worksheets Prepared Assessment Task	Chalkboard, textbook, worksheets Prepared Assessment Task.

WEEK 3: DAY 1

Notes to the teacher:

- The focus of today's lesson is on equivalent fractions. The word equivalent means of equal value. Learners have been aware that fractions have the same value, e.g. $^1/_2 = ^2/_4$ but have not been taught the word 'equivalent' or how to make equivalent fractions.
- Start with a practical activity and then progress to the mathematical method of creating equivalent fractions.

Resources: Chalkboard, textbook, worksheets.

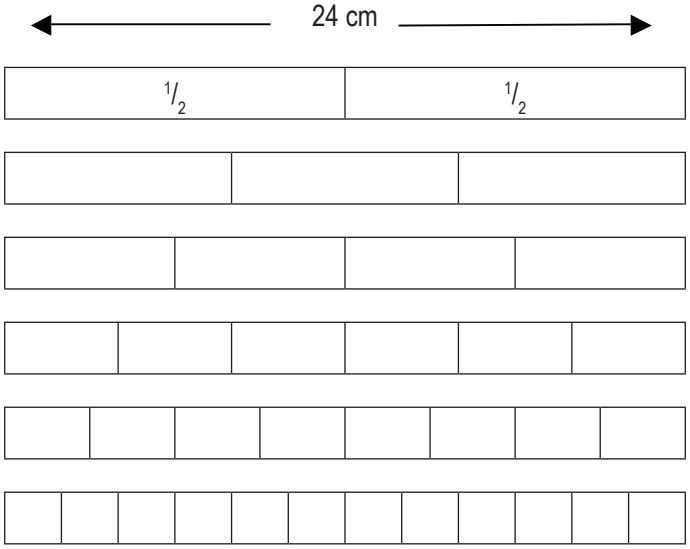
DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- Revise multiples. Start by doing counting activities entailing multiples. See Addendum Mental Strategies for ideas on how to vary counting activities. Examples:
  - Count in multiples of 4 from 52.
  - Count backwards in multiples of 6 from 96.
  - Count forwards in multiples of 9 from 27.
- Give the learners a written activity entailing multiples. For example:
  - Write down the fifth multiple of 7.
  - Write down the multiples of 5 from 40 to 65.
  - Write down the multiples of 3 and 4 up to 45 and circle the common multiples.

Concept Development (30 minutes)

- Ask the learners if they can think of the number that is the lowest multiple of 2, 3, 4, 6, 8 and 12. It is 24. The learners must take out their workbooks, rulers and pencils and do this activity with you. They will have to turn their books sideways (landscape) to do this task:
  - Using their rulers and pencils, they must draw six rectangles, measuring 24 cm by 3 cm. The rectangles can be drawn with or without gaps between them.
  - Ask the learners to work out what the perimeter of each rectangle is.
  - They must then measure accurately and divide each rectangle respectively into halves, thirds, quarters, sixths, eighths and twelfths, to look like the diagram below. After that, they must write the correct fraction in each block (the first one is done as an example):



- The learners can use the rectangles that they have drawn to answer at least 8 questions such as:
  - How many twelfths are the same as three quarters? Write on the board: $\frac{?}{12}=\frac{3}{4}$. The learners can count the twelfths to find that $\frac{9}{12}=\frac{3}{4}$.
- Move on to the mathematical way to find equivalent fractions. Write the following on the board: $\frac{1}{3}=\frac{?}{12}$. Ask the learners what has been done to the denominator in the first fraction to obtain the denominator in the second fraction. We have multiplied by 4: 3x4=12. Whatever we do the denominator, we must do to the numerator: 1x4=4. Therefore $\frac{1}{3}=\frac{4}{12}$. Let the learners check on the rectangles that they drew.
  - Repeat with at least six more examples, checking each time on the rectangles. Make sure that you emphasise that whatever we do to the numerator, we must do to the denominator (and vice versa). Sometimes the numerator and denominator need to be divided by the same number. For example: $\frac{3}{6}=\frac{?}{2}$. Divide the denominator 6 by 3 to obtain 2. Therefore, we must divide 3 (the numerator) by 3 as well: 3÷3=1. Therefore $\frac{3}{6}=\frac{1}{2}$.
- Do some examples with fractions whose denominators are 5 and 10.

Consolidation (20 minutes)

- There should be suitable exercises to practise making equivalent fractions in the textbook. If there are not, make a worksheet or write work on the board. You can include several examples of each of the following kinds of questions:
  - Write down equivalent fractions to $\frac{1}{2}$ with denominators: 4, 8, 10, 12.
  - Circle the equivalent fractions: $\frac{1}{4}$; $\frac{3}{8}$; $\frac{3}{12}$; $\frac{2}{8}$; $\frac{1}{6}$.
  - Write two equivalent fractions for $\frac{2}{3}$.

ASSESSMENT	**Informal:** Assess from the learners' verbal responses and their class work whether they understand the concept of equivalent fractions and how to make equivalent fractions.

WEEK 3: DAY 2

Notes to the teacher:

- Today we will revise multiplication of a 3-digit by a 2-digit number. Even though the learners have had a fair amount of practice in this, it is important that previously taught concepts be constantly revisited. It is also a requirement of Assessment Task 2 that the learners can solve problems involving multiplication of a 3-digit by a 2-digit number.
- Learners also need to be able to recognise and use the reciprocal relationship between multiplication and division (if 4x8=32, 32÷8=4). The learners have had some exposure to this during the third term, but we will now use division to check a multiplication calculation and vice versa.

Resources: Chalkboard, textbook, worksheets, calculators.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- Practise multiplication tables. Do "Clock multiplication" (see Addendum Mental strategies for instructions).
- The learners can complete a table, containing 8 rows, such as the following to practise multiplying by multiples of 10 and 100:

	X10	X30	X40	X60	X300	X500
5						
20						
6						

Concept Development (20 minutes)

- Give the learners a problem entailing multiplication of a 3-digit by a 2-digit number to solve in pairs or groups, for example: *325 busloads carried 34 passengers each from the airport to the football match. How many people were transported by bus?*
  - Before they start solving the problem, ask them what they estimate the answer to be. 325 ≈300 and 34 ≈30. 300x30=9 000. Seeing as we rounded both numbers down, our answer should be more than 9 000.
  - Walk around and observe the learners' methods. When they have finished, let two or three learners come to the board to show what they did:

    325x34
    = (300+20+5)x(30+4)
    = (300x30)+(20x30)+(5x30)+(300x4)+(20x4)+(5x4)
    = 9 000+600+150+1 200+80+20
    = 11 050 people

    Make sure there are 6 multiplication calculations.
    Learners are using the distributive property, which will be focused on later this term.
  - Ask the learners how they can check their answers. The answer was close enough to the estimated answer but there is another way to check. Remind them that they have checked subtraction by doing an addition calculation, so what operation can they use to check multiplication? They can use division. Division is the reciprocal of multiplication.
  - Let them use their calculators to check by doing division: divide the answer by one of the two numbers that were multiplied and we should obtain the other number that was multiplied, 11 050÷34=325 and 11 050÷325=34. Therefore, our calculation is correct.

- Give the learners another problem entailing multiplying a 3-digit number by a 2-digit number. Afterwards, they must check on their calculators by using the reciprocal operation and write down what they entered in their calculators. You do not have to let learners show their methods on the board this time. Walk around and check on them while they are working.

Problem Solving (30 minutes)

- If you cannot find suitable problems in the textbook, make a worksheet or write 6 to 8 problems entailing multiplication of a 3-digit number by a 2-digit number on the board. For each problem, the learners must:
  - write a number sentence;
  - estimate the answer by rounding off;
  - do the calculation;
  - check their answers on the calculator by dividing. They must write down what they entered in the calculator.
  - Make sure their answers are complete.

ASSESSMENT	**Informal:** From the learners' problem solving, you will be able to assess whether they can multiply a 3-digit number by a 2-digit number and recognise that the reciprocal of multiplication is division.

WEEK 3: DAY 3

Notes to the teacher:

- In today's lesson, the focus will be on division of a 3-digit number by a 2-digit number. Learners will also practise using the reciprocal, multiplication, to check their answers.
- Learners have had quite a lot of practice doing this kind of division, so this is not a new concept to them. It is important that they know division is repeated subtraction and that they try to make their calculations as short as possible by subtracting as large a number as possible each time.

Resources: Chalkboard, textbooks, worksheets.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- Give the learners a table, containing ten or more rows, such as the following to complete. Afterwards, they can swop books and mark each other's work.

5x7= x	7x5= x	x ÷7=	x ÷5=
9x8= x	8x9= x	x ÷9=	x ÷8=
6x4= x	4x6= x	x ÷6=	x÷4=

Concept Development (20 minutes)

- Write a problem such as the following on the board: *966 mm of rain fell over a period of 23 weeks. How much rain on average fell each week?* Ask the learners what operation you will use. When they tell you divide, make a "clue board" on the board with their input and involvement:

Clue board
23x2=46
23x4=92 (double the above)
23x10=230
23x5=115 (halve the above)
23x20=460 (double 23x10)
23x40=920 (double the above)

- Choose five or six learners to come and do the calculation on the board. Give them their own working space by dividing the lower part of your board into columns. Encourage them to look at the clue board and subtract the largest possible number each time. They might have to add more numbers to the clue board as they go. Their calculations will look something like this:

966-**920**=46	**X40**
46-**46**=0	**X2**
	40+2=42 mm each week.

- Ask the learners if they remember how to check the answer to a division calculation (they did this during the third term. If they do not remember, they should be able to work it out from the previous lesson and from today's Mental Activity). They must multiply the answer, 42, by the number being divided by (the divisor) to obtain the number being divided into: 42x23=966. Let them check on their calculators.

Problem Solving (30 minutes)

- The learners can solve 8 to 10 problems entailing dividing at least a 3-digit number by a 2-digit number. If there are no suitable problems in the textbook, make a worksheet or write problems on the board. Do not include any problems which contain remainders today. Although the learners have learnt this, it will be revised in the next lesson. For each problem, the learners must:
  - write a number sentence;
  - make a clue board;
  - do the calculation;
  - check their answer by doing multiplication (they can use their calculators but must write down what they entered in the calculator and the answer);
  - make sure their answers are complete.

ASSESSMENT	**Informal:** From the learners' problem solving, you will be able to assess whether they can divide a 3-digit number by a 2-digit number and recognise that the reciprocal of division is multiplication.

WEEK 3: DAY 4

Notes to the teacher:

- Today, rounding off to the nearest 5, 10, 100 and 1 000 will be revised before proceeding to problem solving entailing multiplication and division.
- It is important to give the learners as much practice as possible in solving problems in which they have to identify which operation to use as many learners have difficulty with this.
- During this lesson, you can assess the learners' ability to add and subtract using rounding off and compensating, to use a calculator and to make equivalent fractions.

Resources: Chalkboard, textbook, worksheets, Prepared Assessment Task.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- Do some "Running Maths". Include all four operations and doubling and halving.
- Give the learners ten 2-digit and 3-digit numbers to double and halve. They can draw three columns in their workbooks as follows:

Number	Double	Halve
256		

Revision (10 minutes)

- Divide the class into two teams. Give a member of each team in turn a number to round off to the nearest 5, 10, 100 or 1 000. Each time, write the number to be rounded off on the board. The rounded off number must be written next to it, either by the learner you are asking or by you if the learners say the answer orally. If you ask a learner to round 237 off to the nearest 100, this must be written on the board: 237≈200. Keep the score and give the winning team a reward, e.g. extra time at break.

Problem Solving (20 minutes)

- The learners can solve six or more problems entailing multiplication of a 3-digit by a 2-digit number and division of a 3-digit by a 2-digit number. For each problem, the learners must go through all the steps of estimation, calculating and checking, as done previously.

Assessment Task (20 minutes)

- Give the learners calculations to complete which will enable you to assess their ability to:
  - Use compensation to do addition and subtraction calculations.
  - Use a calculator.
  - Use equivalent fractions.

ASSESSMENT	**Informal:** Assess from the learners' written work whether they are able to recognise and select the correct operation to solve problems that involve multiplication and division of 3-digit by 2-digit numbers.

ASSESSMENT	**Formal, recorded Assessment Task :** • LO 1 AS 10: Use a range of techniques to perform written and mental calculations with whole numbers including rounding off and compensating and using a calculator. • LO 1 AS 8: Estimate and calculate by selecting and using operations appropriate to solve problems that involve equivalent fractions.

WEEK 3: DAY 5

Notes to the teacher:

- The whole of today's lesson can be spent solving problems entailing all four operations to the level learnt so far.
- Use this opportunity to help learners who are having difficulty in recognising which operation to use or in doing the calculations.
- Assess the learners' ability to write number sentences and to round off to the nearest 5, 10, 100 or 1 000. Each time they have done problem solving, they have been required to write a number sentence and estimate by rounding off which means they have had a good deal of practice in these skills.

Resources: Chalkboard, worksheet containing mixed problems.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- Do a round of "Tables King" (see Addendum Mental Strategies for instructions).
- Give the learners ten problems to solve. Say the problem and the learners write down the answer in their workbooks. Afterwards they can swop books and mark each other's work. Examples:
  - I went to the shops with three R20 notes. I bought five packets of sweets which cost R7 each. How much money did I have left?
  - There are 25 cows in the shed. How many legs are there?
  - $\frac{3}{4}$ of the class of 32 learners walk to school. How many learners do not walk to school?

Problem Solving (50 minutes)

- Give the learners at least 10 to 12 problems to solve that entail addition and subtraction of 6-digit numbers, multiplication of 3-digit by 2-digit numbers and division of 3-digit numbers by 2-digit numbers. Help learners individually or in small groups who are having difficulty with any aspect of problem solving. For each problem, learners must:
  - write a number sentence (assess this);
  - estimate by rounding off (assess this);
  - do the calculation;
  - check their answers;
  - round off their answers to the nearest 1 000 (assess this);
  - make sure their answers are complete.

ASSESSMENT	**Informal:** Assess the learners' ability to select and use the four operations (to the level learnt so far) to solve problems.

ASSESSMENT	**Formal, recorded Assessment Task 1:** • LO 1 AS 8: Estimate and calculate by selecting and using operations appropriate to solve problems that involve rounding off to the nearest 5, 10, 100 or 1 000. • LO 2 AS 4: Write number sentences to describe a problem situation within a context.

GRADE 5: WEEK 4 OVERVIEW

Hours: 5	**Number of Periods: 5**
Mathematics **LO 5 AS 8, 9, 5**	**Milestones:** • List possible outcomes for simple experiments (including tossing a coin, rolling a die and spinning a spinner). • Count the frequency of actual outcomes for a series of trials. • Draw graphs and interpret data: pictographs and bar graphs.

Mental Strategies: Mental strategies are done with the whole class every day. The time should be used to develop skills and to build number sense.

	Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
Content Focus:	Outcomes for simple experiments: make spinners.	List outcomes for simple experiments	Count frequency of outcomes for a series of trials.	Pictograph and Bar graph: revise drawing	Recognise the equivalence of division and fractions.
Resources	Cardboard, templates of square, triangle, hexagon; two different coloured items Prepared Assessment Task	Playing cards, spinner, dice, coin, chalkboard, worksheet	Playing cards, spinner, dice, coins, chalkboard, worksheet Prepared Assessment Task	Chalkboard	Chalkboard, worksheets, strips of paper (12x2-3 cm, four per learner), cm^2 paper for each learners

WEEK 4: DAY 1

Notes to the teacher:

- During this and the next three lessons, we will be focussing on listing outcomes for simple experiments and counting actually outcomes of simple experiments.
- In preparation for this, the learners will spend today's lesson making spinners.
- After doing experiments using the spinners, dice and playing cards, we will revise drawing pictographs and bar graphs to display the results of the experiments.
- At the end of today's lesson, there will be time for you to assess the learners' ability to double and halve numbers.

Resources: Cardboard (you can use old cereal or similar), cm^2 paper, chalkboard, container, white and yellow (or any two different coloured) items (e.g. pieces of chalk, pencil crayons, pieces of cloth, counters)

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

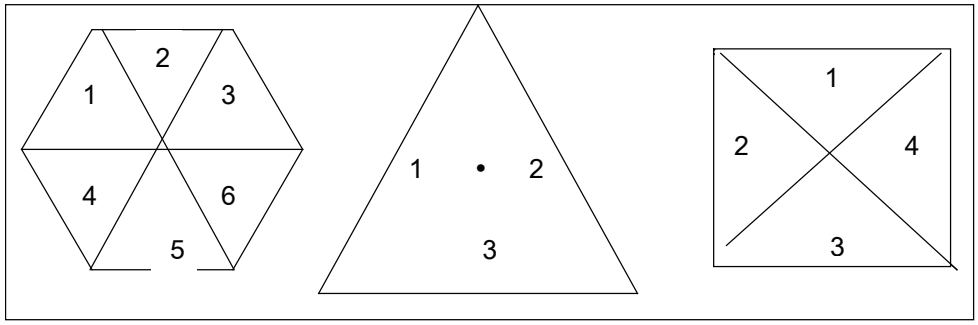
- Practise multiplication tables. Focus on the 7, 8 and 9 times tables. Ask learners in turn to recite part of each table, forwards and backwards. After that, do some random testing of multiplication tables by asking the learners to write down the answers to 15 multiplication sums that you ask them. Afterwards they can swop books and mark each other's work.

Concept Development (10 minutes)

- In a container, place a piece of white and a piece of yellow chalk (or any two different coloured items). Tell the learners what you have in the container. Ask them, "What are the chances of me taking out a white piece of chalk?" The chances are the same as taking out a yellow piece. We talk of an "even" chance or 50-50 chance.
  - Now put two yellow pieces of chalk and one white piece of chalk. Ask the learners what colour you have the greater chance of taking out? It would be of taking out a yellow piece.
  - Repeat with different combinations of the coloured chalks, e.g. 1 white and 5 yellow pieces, 2 yellow and 8 white.

Practical work (25 minutes)

- Tell the learners that over the next two days, they will be listing and counting outcomes for simple experiments. Today they are going to make spinners to use in some of the experiments.
  - Learners can work in groups of 3. Give each group a template of a square (sides 5-6 cm), a triangle with equal sides (5-6 cm each) and a hexagon (sides 5cm). Mark the centre of the triangle for them.
  - They must divide the square into four equal triangles and the hexagon into 6 equal triangles. The dividing lines will cross at the centre of these two shapes.



- They must trace the shapes onto paper, glue the shapes onto cardboard and cut out round the cardboard.
- Each shape must be numbered as above.
- Help them make a hole in the middle of each shape. They must insert a pencil through the hole with the sharp end down and not too much of the pencil pushed through the hole. They must try spinning the shape (by twisting and releasing the top of the pencil with the pencil point on the desk) to ensure it balances properly. When it stops spinning, it will land with one of the numbered parts lying on the desk.
- They can complete their spinners by colouring in each segment (remove the pencil to do this).
- The learners must keep the spinners in a safe place for the next lesson.

Assessment Task (15 minutes)

- Give the learners fifteen 2-digit and 3-digit (or even larger) numbers to double and halve. They must work individually in their workbooks.

ASSESSMENT	**Informal:** Assess the learners' abilities to follow instructions.
ASSESSMENT	**Formal, recorded Assessment Task 1:** • LO 1 AS 10: Use a range of techniques to perform written and mental calculations with whole numbers including doubling and halving.

WEEK 4: DAY 2

Notes to the teacher:

- Today the learners are going to work in their groups of three to list possible outcomes for simple experiments, e.g. spinning their spinners.
- In a previous lesson, learners ordered events from daily life from certain they will happen to certain they will not happen. If we toss a coin, we can be certain it will either land on heads or on tails. It probably will not land on heads the first toss, and then tails the second toss, etc, but after many tosses of the coin, the chances are that it will land on heads and tails approximately the same number of times. We have an even (50-50) chance of the coin landing on heads and tails.
- If we roll a die, there are six numbers on which it could land. The first six rolls will not result in each number being displayed, but after many rolls, each number will probably come up approximately the same number of times. We have a one in six chance of obtaining any number on a die.

Resources: Spinners, a coin, dice (one die per group), a pack of playing cards per group.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- Revise factors. Remind the learners that a factor of a number is a number that divides exactly into the number and that factors always have a partner. With the learners, list the factors of 12: 1, 2, 3, 4, 6, and 12. In their workbooks, they can write down the factors of six or more 2-digit numbers. Afterwards, ask them questions such as:
  - Find the sum of all the factors of 24.
  - Find the difference between the largest factor of 99 and the largest factor of 32.

Concept Development (20 minutes)

- Tell the learners that in the previous lesson, you spoke about chances of taking a particular coloured piece of chalk from the container and the chances of taking out a colour changed according to how many pieces of each colour there were in the container. Hold a coin and show the learners there are two sides, one called heads and the other one called tails.

> You can spend a bit of time talking about heads and tails on our coins. Heads is the South African coat of arms, and the tails side of each coin has a different picture or emblem, e.g. the 5 cent coin has the blue crane (our national bird) on it. See if your learners know what pictures appear on different coins. In a country such as England, where there is a monarchy, the monarch's portrait appears on the heads side of the coins.

  - Ask the learners if they know why we "toss a coin". It is to decide on something, e.g. in cricket, which team will bat first. Tell the learners you are now going to toss the coin. Ask them to put up their hands if they think the coin will land on heads. See who thinks it will land on tails.
  - Toss the coin and show the learners what the result was. Now ask them what it will land on if you toss it again. Most of the learners will probably predict the other side from the first toss. Toss it and see what happens.
  - Repeat until you have tossed the coin ten or twelve times. See if it has landed on heads and tails about the same number of times. We can conclude that we have one chance in two of landing on heads or tails. We can represent this as a fraction: $\frac{1}{2}$.

Consolidation (30 minutes)

- Make sure that each group has a die, their spinners and a pack of playing cards. They are not going to use them today, merely study them in order to make and list predictions. In their groups, the learners can discuss and write down their possible outcomes for experiments. Give them a worksheet or write a task such as the following on the board for the learners to copy and complete (include more examples if time allows). Walk around and listen to the learners' discussions. When they have all finished, spend some time discussing their predictions and what they wrote down. The first row is filled in as an example:

If I….	What are the chances of …	Definite	Very likely	Very unlikely	Impossible
Toss a coin	It landing on heads It landing on tails It landing on either heads or tails.	 √	√ √		
Toss a die	Getting a 6 Getting a 1 Getting a 3 Getting a 7				
Take a card out of a pack	Getting a 9 Getting a red card Getting a black card Getting the King of hearts Getting a 2,3, 4 or 5 Getting an Ace, jack, Queen or King.				
Take 10 cards out of a pack	One of them will be an Ace At least one of them will be a 1-9				
Spin my square spinner	Getting an even number Getting an odd number Getting a 3				
Spin my triangular spinner	Getting an odd number Getting a 2 Getting a 1, 2 or 3				
Spin my hexagonal spinner	Getting a number smaller than 7 Getting an even number Getting an odd number Getting a number smaller than 4.				

ASSESSMENT	**Formal:** LO 5 AS 8: List possible outcomes for simple experiments**.** From the learners' group work, you will be able to assess whether they are able to list possible outcomes for simple experiments.

WEEK 4: DAY 3

Notes to the teacher:

- In the previous lesson, the learners made predictions about the possible outcomes of simple experiments. Today the learners will conduct different simple experiments and record the results.
- They can continue working in groups to count the outcomes. The best way to record the results will be on tally tables.
- This could be quite a noisy lesson. Ensure that the learners are actively involved in the activities and not using the opportunity to play the fool.

Resources: Spinners, a coin, dice, pack of playing cards per group, Prepared Assessment Task.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- Give the learners a table containing twenty rows to formally assess the learners' ability to recognise the reciprocal relationship multiplication and division. Example:

5x9= x	x ÷9=	7x8= x	x ÷8=
4x6= x	x ÷4=	5x4= x	x÷5=

Practical Activity (40 minutes)

- In their groups, the learners must conduct experiments according to your instructions, and record the results on tally tables. Examples
  - Toss the coin 40 times and record the results:

	Tally	Total
Heads		
Tails		

  - Spin the hexagonal spinner 60 times (or throw the die) and record the results:

	Tally	Total
1		
2		
3		
4		
5		
6		

  - Spin the square spinner 32 times and record the results:

	Tally	Total
1		
2		
3		
4		

- Spin the triangular spinner 30 times and record the results:

	Tally	Total
Odd number		
Even number		

- Take a card at a time out of the pack of cards. After recording what it is, replace it and draw again. Take out 30 cards in this way and record the results:

	Tally	Total
1-9		
Red card		
King		
Ace of Spades		

Consolidation (10 minutes)

- Use the learners' recordings to collate some of the results of their experiments, for example, total how many times a tossed coin landed on heads and how many times it landed on tails. These totals will probably be very close. Also add up how many times the die or hexagonal spinner landed on each number 1-6. Discuss the results with the learners.

ASSESSMENT	**Formal:** LO 5 AS 9: Count the frequency of actual outcomes for a series of trials. From observing the learners while they worked in groups, you can assess whether they can count outcomes for a series of trials.
ASSESSMENT	**Formal, recorded Assessment Task 1:** • LO 1 AS 12: Recognise, describe and use the reciprocal relationship between multiplication and division.

WEEK 4: DAY 4

Notes to the teacher:

- During the previous lesson, the learners recorded data (experiment results) in tally tables. Today, they can present their findings in a neatly labelled, accurate pictographs and bar graph.
- Learners learnt how to draw bar graphs in the third term. It is always good to revisit previously learnt concepts.

Resources: Chalkboard, tally tables from previous lesson.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- Do some "Running Maths" (see Addendum Mental Strategies).
- Revise fractions by giving the learners some calculations which they can do mentally. They must write down only the answers to 10 calculations. Afterwards, they can swop books and mark each other's work. Examples:
  - $\frac{5}{8}+\frac{3}{8}$
  - $\frac{11}{12}-\frac{3}{12}$
  - $\frac{3}{10}$ of 50
  - $\frac{3}{4}=\frac{?}{12}$

Concept Development (20 minutes)

- Choose a topic from the previous lesson's experiments to draw a quick and simple pictograph on the board. Involve the learners by asking them questions and getting their input.
  - Tell the learners that a coin was tossed and it landed 20 times on heads and 24 times on tails. If we draw a pictograph, we have to choose a symbol to represent many items of the data. A suitable symbol could be ○. How many tosses of the coin can be represented by the symbol? 2 or 4 would work, 4 would be better. (Sometimes we have to use half or a third of the symbol).
  - How do we let the person looking at the pictograph know that how many tosses are represented by the symbol? We have a key.
  - Let learners come to the board one at a time to complete the pictograph. Remind them to include a heading:

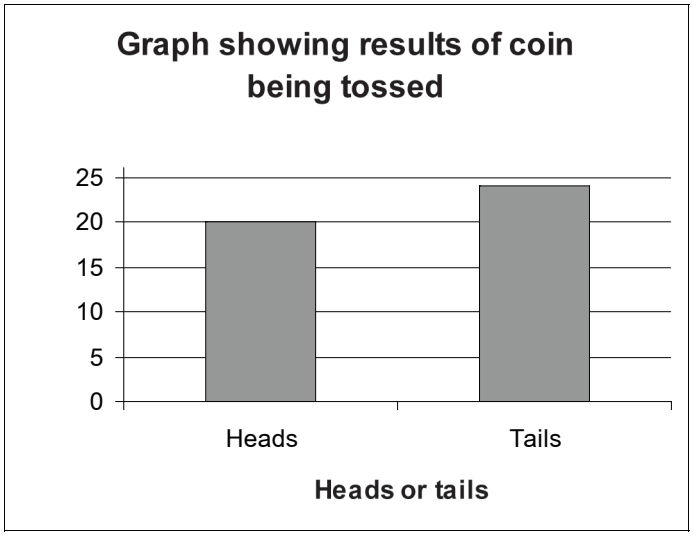
Pictograph showing tosses of a coin

Landed on heads	○○○○○
Landed on tails	○○○○○○

KEY:
○ = 4 tosses

- Use the same information to draw a bar graph. This is revision, so you do not need to go into lengthy discussions. Involve the learners by letting them tell you what to do next. Key things to remember are:

- the graph must have a heading and the axes must be labelled;
- the columns must be the same width and the same width apart;
- the scale on the vertical axis must be suitable to ensure that the graph is not too small on the page nor too large to fit on the page. The completed graph will be similar to this:



Consolidation (20 minutes)

- The learners can draw a pictograph and bar graph to display the number of times a die (or hexagonal spinner) landed on each number on the die or spinner. If they do not finish during class, they can complete the task for homework.

Problem Solving (10 minutes)

- Give the learners two or three problems (entailing any of the operations to the level learned so far) to solve. Each time, they must:
  - write a number sentence;
  - estimate by rounding off;
  - do the calculation;
  - check their answer;
  - make sure their answer is complete.

ASSESSMENT	**Informal:** From the learners' participation in class and from their completed graphs you will be able to assess whether they can draw these types of graphs to display data.

WEEK 4: DAY 5

Notes to the teacher:

- In today's lesson, learners will be led to discover the equivalence of division and fractions, e.g. $^1/_2$ =1÷2.
- Involve the learners by teaching this concept in a practical way before showing them mathematically.

Resources: Chalkboard, worksheets, strips of paper 12 cm by 2-3 cm. (four for each learner), cm^2 paper.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- Do some counting. See Addendum Mental Strategies for ideas on how to vary this. Count forwards and backward in whole numbers and fractions. Do not always start at 0.
- Give the learners ten problems to solve. Read the problems out loud and the learners can write the answers only in their workbooks. Afterwards they can swop books and mark each other's work. Examples:
  - Two teams of 11 players in each, one referee and two linesmen are on the field. How many people are on the field?
  - There are 35 learners in the class. How many fingers, toes and ears are there?

Concept Development (20 minutes)

- Give each learner four strips of paper measuring 12 cm by 2-3 cm. Ask them to cut the strip into 2 equal pieces. How much of the original strip is each piece? It is a half. Write on the board: $1 \div 2 = \frac{1}{2}$. Ask the learners if what you wrote is true. So, we can say that "one divided by two is equivalent to a half". The learners can paste the pieces of paper into their books and write $1 \div 2 = \frac{1}{2}$ next to it.
  - Ask the learners to divide the next strip into 3 pieces. Ask a learner to write mathematically on the board what he/she has done: $1 \div 3 = \frac{1}{3}$. Let the learners paste the second strip into their workbooks and write the equation from the board next to it.
  - Repeat by dividing the next strip into four pieces and the last strip into six pieces.
  - Write a fraction on the board, e.g. $\frac{3}{4}$. Choose a learner to write its division equivalence on the board: 3÷4. Do several more examples with different numerators and denominators.
  - Write division sums on the board and ask learners in turn to write their fraction equivalents.

Consolidation (15 minutes)

- Give the learners a table such as the following to complete in their workbooks. Include fractions with denominators up to twelfths (or x ÷12) and different numerators.

Division sum	Fraction equivalent
1÷8	
	$\frac{7}{10}$

Revision (15 minutes)

- The learners can draw five or six rectangles and squares on the cm^2 paper, according to dimensions you give them. For each shape, they must:
  - Calculate the perimeter
  - Count the squares to work out the area.

ASSESSMENT	**Informal:** Assess from the learners' participation in class, their verbal responses and their completed class work whether they can recognise the equivalence of division and fractions.

GRADE 5: WEEK 5 OVERVIEW

Hours: 5	**Number of Periods: 5**
Mathematics **LO 1 AS 10, 8** **LO 2 AS 1**	**Milestones:** • Use a range of techniques to perform written and mental calculations with whole numbers including adding and subtracting in columns. • Estimate and calculate by selecting and using appropriate operations to solve problems that involve: - Addition and subtraction of whole numbers with at least 6 digits. - Multiplication of at least whole 3-digit by 2-digit numbers. - Division of at least 3-digit by 2-digit numbers. • Write number sentences to describe a problem situation within a context.

Mental Strategies: Mental strategies are done with the whole class every day. The time should be used to develop skills and to build number sense.

	Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
Content Focus:	Adding in columns	Adding in columns	Subtracting in columns	Subtracting in columns	Revise problem solving entailing four operations
Resources:	Chalkboard, textbooks, worksheets	Chalkboard, textbooks, worksheets	Chalkboard, textbooks, worksheets	Chalkboard, textbooks, worksheets	Chalkboard, textbooks, worksheets

WEEK 5: DAY 1

Notes to the teacher:

- In the third term, learners started adding in columns. During this and the next lesson, this will be extended to larger numbers and include calculations with further "carrying over".
- Addition in columns means showing the learners an algorithm. This does not mean that you must stand and do all the talking and the learners become passive listeners. Involve them by asking questions and getting them to do parts of the calculations on the board.
- Learners must be constantly reminded that addition is commutative, i.e. 5+6=6+5. They do not need to know the name of this property of addition, but must be able to use it.

Resources: Chalkboard, textbook, worksheets.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- Draw two groups of dots on the board: ••••• •••••••. Ask the learners to add the dots. They will say 5+7=12. Draw the dots the other way around: ••••••• •••••. Ask them to add the dots now: 7+5=12. Ask them if they can see that 5+7=7+5. Go round the class randomly, giving each learner a chance to complete an addition sum. Give an example of how the learners must respond:
  - You say: 8+3 equals? The learner says: 3+8, which equals 11. (8+3=3+8=11)

Concept Development (25 minutes)

- Divide the lower part of your chalkboard into 5 or 6 columns to give a working space for 5 or 6 learners to do some calculations. Write an addition calculation on the board (with no carrying over) and choose learners to come and do the calculation on the board. Tell them they must work in columns. You write: 53+44. The learners will do this:

	T	U
	5	3
+	4	4
	9	7

Ensure that the learners line the units up under each other and add the units first. They then go left, to the Tens column.

  - Encourage the learners to check by adding again. We usually add from top to bottom, so check by adding from the bottom to the top, e.g. in the Units, we first add 3+4=7. Check by adding 4+3=7.
  - Give another five or six learners a chance to add two 3-digit numbers together. Do not have any carrying over, for example: 234+363. Each time, they must check by adding again.
  - Now write a 3-digit and a 2-digit number to be added, without carrying over, e.g. 434+64. Choose different learners to do this calculation. Ensure learners line the units up under each other and add the units first. Check by adding again.
  - Revise a calculation with carrying over to the Tens column. You can include adding Hundreds, e.g.

	H	T	U
	2	$^{2+}3$	7
		1	9
+	3	3	8
	5	9	4

Starting with the Units: 7+9+8=24. Remind the learners that we cannot write 24 in the units column. 24=20+4=(2x10)+ (4x1). Carry the 2 Tens over to the Tens column.

- Show the learners how to do an addition calculation carrying over to the Tens and then the Hundreds column. Involve them by asking them to do the addition and for their suggestions on what you must do next.

	H	T	U
	$^{1+}3$	$^{2+}4$	5
	1	7	9
+	4	2	6
	9	5	0

Adding the units and carrying over is the same as the example above. When we add the numbers in the Tens column, they total 150. 150=100+50=(1x100)+(5x10). Write the 5 Tens in the Tens columns, carry the 1 Hundred to the Hundreds column.

- Write a similar calculation on the board, e.g. 645+287. All the learners can do the calculation in their workbooks. Walk around and check that they are doing it correctly. After enough time, ask a few learners what answer they obtained. If any learner did not obtain the correct answer, work with them while the rest of the class is doing written work.

Consolidation (25 minutes)

- Find an exercise in the textbook to give the learners practice in adding in columns to the level learned so far. If there are not suitable exercises, make a worksheet or write addition calculations on the board. Write the calculation horizontally, i.e. 123+452+15, to ensure that the learners line the digits up correctly in columns. The main focus must be on adding with carrying over to the hundreds column, but give the learners a variety of combinations of 2-digit and 3-digit numbers to be added, some calculations to include carrying over and some not. Learners should be able to complete at least 20 calculations.

ASSESSMENT	**Informal:** Assess from the learners' participation in class and their written work whether they are able to add in columns.

WEEK 5: DAY 2

Notes to the teacher:

- In today's lesson, we will continue adding in columns. We will extend this to adding Thousands and carrying over from the Hundreds to the Thousands column.
- The Assessment Standards do not prescribe what size numbers must be added in columns. However, once the concepts of lining up the numbers starting with the Units column, starting adding the Units and then working left, and carrying over to the next column are grasped, learners should be able to add any size number in columns. At this stage, we will not go beyond 4-digit numbers.
- Keep the learners actively involved throughout the lesson. Do not do all the talking and let them be passive listeners.

Resources: Chalkboard, worksheets, textbook.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- Write 20 calculations on the board, such as the examples below. Learners must copy and complete them by doing the calculation each side of the *, and then replacing the * with >, < or =. Remind the learners that the > is like a crocodile's mouth, and the open mouth always faces the larger number: 5>4 or 4<5. Examples:
  - 7x5*30+6
  - 8+4*4+8
  - $1 \div 6 * \frac{1}{6}$
  - 56÷7*12-5

Concept Development (15 minutes)

- Learners can work in pairs or groups of 3 today.
  - Let the learners write the following in columns and complete the calculation: 4 582+1 239. Check that they line all the digits up correctly, carry numbers over correctly and obtain the answer: 5 821.
  - Give them two 4-digit numbers to add, which entail carrying over to the Thousands column. Walk around and check on them and rectify any mistakes you see being made. You have not shown them how to carry over to the Thousands column, but they will hopefully be able to apply what they know about carrying over. If you see the majority of the learners are not managing, do an example or two on the board with them.
  - Give the learners 3 different size numbers to add, e.g. 48+1 235+449. Walk around and check the learners' work, especially that the numbers are lined up correctly:

	Th	H	T	U
		1+	2+4	8
	1	2	3	5
+		4	4	9
	1	7	3	2

Some people prefer to arrange the numbers with the largest number on the top and the smallest on the bottom. There is nothing wrong in doing that, but it is not necessary as long as the digits are correctly lined up, starting with the units.

  - Repeat with two or three more addition sums containing different size numbers. Each time check what the learners are doing and encourage them to check their answers by adding again.

Consolidation (20 minutes) • Learners can do at least 15 addition calculations containing 2-, 3- and 4-digit numbers. If there are no suitable exercises in the textbook, make a worksheet or write questions on the board.	
Problem Solving (15 minutes) • The learners can solve four or five problems which entail adding in columns, for example: - When the train left Station A, there were 74 people on board. At the next station, 128 people boarded the train and at the next stop 89 people boarded. How many people were on the train altogether? - The farmer picked the following numbers of peaches on consecutive days: 584, 1 230, 888 and 46. How many peaches did he pick altogether?	
ASSESSMENT	**Informal:** Assess from the learners' class work whether they are able to add in columns.

WEEK 5: DAY 3

Notes to the teacher:

- The focus of the next two lessons is on subtracting in columns. Two lessons were spent on this concept during the third term, so this is not entirely new to the learners.
- The Assessment Standards do not stipulate what size numbers must be subtracted in columns. The most important thing is not the size of the numbers, but that the learners understand the process and especially the concept of "borrowing". Therefore, we will not proceed beyond 3-digit numbers.
- Subtraction is not commutative, i.e. 10-3≠3-10. When subtracting in columns, learners often forget to borrow and merely subtract the smaller digit from the larger digit, even though the larger digit is written under the smaller digit. They need to borrow. Look out for this error.

Resources: Chalkboard, textbooks, worksheets.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- Do some "Running Maths" (see Addendum Mental Strategies for instructions).
- Ask the learners ten random calculations. They must write down only the answers. Afterwards, they can swop books and mark each other's work. Examples:
  - What is the difference between 20 and 6 times 5?
  - What must be added to 45 to make 98?
  - How much greater than 56 is 72?

Concept Development (25 minutes)

- Write a subtraction sum on the board and ask the learners who can work it out by subtracting in columns. Choose a few learners to come and do the calculation on the board, each in their own space. For example:

	T	U
	8	7
-	4	5
	4	2

Ensure that the learners line the units up under each other and subtract the units first. They then go left to the Tens column.

  - Write another subtraction sum on the board, this time each number must contain 3 digits. Make sure all the digits in the larger number are larger than the corresponding digits in the smaller number, e.g. 876-453. Let different learners come to the board and do this calculation.
  - Ask them how they can check their answer? They can check it by adding the answer to the smaller number to obtain the larger number.
  - Now write a subtraction sum entailing subtracting a 3-digit number minus a 2-digit number, without borrowing, on the board. Choose more learners to do the calculation. Make sure they line the units up under each other and start subtracting with the units:

	H	T	U
	6	8	9
-		5	7
	6	3	2

- Move on to a number where it is necessary to borrow. Do the calculation on the board, involving the learners by asking them questions.

	H	T	U
	5	~~7~~6	10+2
-	3	4	8
	2	2	4

Start with the Units. We cannot subtract 8 from 2. Learners will want to turn it around and say 8-2. They cannot do this, they must borrow a 10 from the Tens column.
70-10=60. Cross out the 7 and write a 6 in the T column.
Add 10 to the 2 in the Units column: 10+2=12.
12-8=4

- Check by adding: 224+348=572.
- Do another similar calculation on the board with input from the learners.
- Write another subtraction calculation on the board which entails borrowing from the Tens. Choose 4 or 5 learners to come and do the calculation on the board, each in their own work space. Ask different learners to come and check the subtraction calculations by adding.
- Repeat as often as you feel necessary to ensure that the learners understand the concept of borrowing from the Tens column.

Consolidation (25 minutes)

- Individually in their workbooks, the learners can complete ten or more subtraction calculations in columns where borrowing from the tens column is necessary. If any learners are unsure of this concept, help them in small groups. Each subtraction calculation must be checked by doing an addition calculation.

ASSESSMENT	**Informal:** From the learners' work on the board, their verbal responses and their class work, you will be able to assess whether they can subtract 3-digit numbers in columns.

WEEK 5: DAY 4

Notes to the teacher:

- Today we will continue subtracting up to 3-digit numbers in columns. This will be extended to borrowing from the Hundreds column.
- Be on the look out for learners forgetting about borrowing and merely subtracting the smaller digit from the larger digit.

Resources: Chalkboard, textbook, worksheets.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- Practise multiplication tables. Do some "Clock Multiplication" (see Term 2 Addendum Mental Strategies for instructions). After giving a few learners a turn, ask the learners 10 random multiplication sums. They must write down the answers only in their workbooks. Let them swop books to mark each other's work.

Concept Development (15 minutes)

- Write a 3-digit subtraction sum (in which borrowing from the Hundreds column is necessary) on the board: 723-486. Involve the learners by asking them questions as you do the calculation on the board:

	H	T	U
	7	~~2~~1	$^{10+}$3
-	4	8	6
			7

Start and proceed in the same way as in the previous lesson.
In the Tens column, we cannot subtract 8 from 1 (80 from 10).

	H	T	U
	~~7~~6	~~2~~$^{10+}$1	$^{10+}$3
-	4	8	6
	2	3	7

We borrow a hundred from the Hundreds column, so we are left with 6 (x100).
Add 1 (x100) to the 1 in the T column to make 11 (x10).
110-80=30 (although we think 11-8=3).

- Check by adding: 237+486=723.
- Write another similar calculation on the board and let 5 or 6 learners come and complete it on the board in their own working space.
- Let all the learners do a similar calculation in pairs. Walk around and check they are working correctly.

Consolidation (35 minutes)

- Learners can work individually in their workbooks to complete a textbook exercise (or a worksheet or work from the board) containing at lest 15 calculations entailing:
  - Subtracting a 3-digit number from a 3-digit number with borrowing in the T and/or H columns;
  - Subtracting a 2-digit number from a 3-digit number with borrowing in the T and/or H columns;
  - Subtracting up to a 3-digit number from a 3-digit number without borrowing.
  - Adding two or more numbers containing up to 4 digits.

WEEK 5: DAY 5

Notes to the teacher:

- In today's lesson we will revise problem solving entailing adding and subtracting 6-digit numbers, multiplying a 3-digit number by a 2-digit number and division of a 3-digit number by a 2-digit number.
- Some learners may be able to add 6-digit numbers in columns and other learners might prefer to use their traditional methods. Do not be prescriptive about a method. The learners are not required to add large numbers in columns.

Resources: Chalkboard, textbook, worksheets.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- The learners will be doing plenty of written work today, so do oral activities such as:
  - Tables King or Tables Challenge;
  - Running Maths;
  - Times tables using playing cards;
  - Counting. (See Addendum Mental Strategies for ideas and instructions.)

Revision (20 minutes)

- Write a problem entailing adding 6-digit numbers on the board: *236 853 people live in Durban and 326 862 people live in Cape Town. How many people live in these two cities altogether?* Ask the learners what operation you will use to work this out and choose a learner to write the number sentence on the board. Choose three or four learners to come to the board and do the calculation in their own working space.
- Repeat with a subtraction (two 6-digit numbers), multiplication (3-digit by 2-digit numbers) and division (3-digit by a 2-digit number) problem.

Problem Solving (30 minutes)

- The learners must solve at least 8 problems entailing the four operations in their workbooks. If there are not suitable problems in the textbook, make a worksheet or write problems on the board. You can include more than one operation in a problem, e.g. *There were 8 456 pine trees in the forest. Another 24 rows of 185 trees were planted. How many trees were there altogether?* For each problem, the learners must:
  - write a number sentence;
  - do the calculation;
  - check their answer by using the inverse operation (they can do this on the calculator but must show what they entered into the calculator);
  - make sure their answers are complete.

ASSESSMENT	**Informal:** Assess from the learners' written work whether they can write number sentences and solve problems entailing the four operations to the level required.

GRADE 5: WEEK 6 OVERVIEW

Hours: 5	**Number of Periods: 5**
Mathematics **LO 1 AS 10, 8, 12** **LO 3 AS 8**	**Milestones:** • Use a range of techniques to perform written and mental calculations with whole numbers including adding and subtracting in columns and building up and breaking down of numbers. • Estimate and calculate by selecting and using appropriate operations to solve problems that involve equivalent fractions. • Recognise, describe and use the equivalence of division and fractions. • Locate positions on a coded grid including maps and trace a path between positions from verbal and written instructions.

Mental Strategies: Mental strategies are done with the whole class every day. The time should be used to develop skills and to build number sense.

	Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
Content Focus:	Place value: 6-digit numbers	Revise equivalent fractions, adding mixed numbers and equivalence of division and fractions	Subtraction in columns	Locate positions on a coded grid	Locate positions on a coded grid
Resources:	Chalkboard, textbook, worksheet	Chalkboard, textbook, worksheet Prepared Assessment Task	Chalkboard, textbook, worksheet Prepared Assessment Task	Chalkboard, textbook, worksheet Prepared Assessment Task	Chalkboard, textbook, worksheet

WEEK 6: DAY 1

Notes to the teacher:

- In today's lesson, we will revise Place Value of 6-digit numbers with particular focus on building up and breaking down numbers.

Resources: Chalkboard, worksheets, textbook.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- Give the learners a multiplication tables speed test to complete. The speed test should contain 15 to 20 random multiplication tables, up to 10x10 and including multiplying by 0. Have a prepared test on paper for each learner, otherwise write the sums on the board but keep them covered so that all the learners can start at the same time, on your signal. After two to three minutes, tell the learners to stop. Learners can swop books and mark each other's work.

Revision (20 minutes)

- Have a competition between groups. Ask 10 to 15 questions about place value in 6-digit numbers. Each group can discuss the answers and write down the answers. Afterwards, see which group obtained the most correct answers. Questions you could ask include:
  - Write down the largest 6-digit number using different digits.
  - Write down the smallest 6-digit number.
  - Write down a 6-digit number with a 4 in the Hundred Thousands place and a 2 in the Hundreds place.
  - Write down the smallest 6-digit number using these digits: 0, 2, 4, 6, 8 and 9.
- Write a 6-digit number on the board. Ask a few learners, in turn, to read it. Choose five or six learners to come to the board and write it in expanded notation. Repeat two or three times.
- Write an expanded number on the board (in random order), e.g. (5x100)+(2x100 000)+(8) +(9x10 000)+(2x10). Choose a few learners to write the number formed on the board. They must then read the number. Repeat this a few times.

Consolidation (15 minutes)

- If there are no suitable exercises in the textbook, make a worksheet or write work on the board to revise place value. This should include:
  - building up numbers;
  - writing numbers in expanded notation;
  - writing the place value of underlined digits;
  - writing numbers in words;
  - write in numbers, e.g. five hundred and twenty three thousand, six hundred and seventy two.

Problem Solving (15 minutes) • Give the learners a few problems to solve entailing adding and subtracting whole numbers, finding fractions of a whole number and ratio. For each problem, the learners must: - write a number sentence; - do the calculation; - check their answer; - make sure their answer is complete.	
ASSESSMENT	**Informal:** The learners' class work and verbal responses will enable you to assess whether they can recognise the place value of digits in a 6-digit number.

WEEK 6: DAY 2

Notes to the teacher:

- Today we will revise equivalent fractions, adding and subtracting mixed numbers (done in Term 3) and the equivalence of division and fractions.
- The learners will also complete an Assessment Task to assess their ability to build up and break down 6-digit numbers.

Resources: Chalkboard, textbook, worksheets, Prepared Assessment Task.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- The learners can complete 6 flow diagrams as follows:
  - One entailing addition.
  - One entailing subtraction.
  - One entailing multiplication.
  - One entailing division.
  - Two double flow charts with two different operators.
  - In each flow chart, leave out one or two output numbers so that learners have to work in reverse to obtain the input number.

Revision (20 minutes)

- Divide the class into two teams. Ask learners in turn from each team to come to the board and write the answers to questions you ask about equivalent fractions, adding and subtracting mixed numbers and the equivalence of division and fractions. Give everybody in the class a chance to answer at least one question. Keep the score and give the winning team a reward. Examples of questions:
  - $1 \div 6 = \frac{?}{?}$
  - Write an equivalent fraction with denominator 12 for $\frac{2}{3}$.
  - What is the sum of $1\frac{2}{5}$ and $2\frac{1}{5}$?
  - $\frac{5}{?} = 5 \div 6$
  - What is the difference between $\frac{1}{12}$ and $\frac{5}{12}$?
  - Write down an equivalent fraction of $\frac{3}{4}$.

Assessment Task (20 minutes)

- Assess the learners' ability to build up and break down 6-digit numbers. The task should include:
  - at least five 6-digit numbers to be written in expanded notation;
  - at least 5 numbers, written in expanded notation, from which the learners must build up numbers. Write the expanded notation in random order.

Consolidation (10 minutes) • Make a worksheet or write work on the board to give learners practice in making and identifying equivalent fractions, recognizing the equivalence of division and fractions and adding and subtracting mixed numbers with the same denominators. Give them similar examples to those asked in the quiz.	
ASSESSMENT	**Informal:** From the learners' participation in class and their written work, you will be able to assess whether they can make equivalent fractions and recognise the equivalence of division and fractions.
ASSESSMENT	**Formal, recorded Assessment Task 2:** • LO 1 AS 10: use a range of techniques to perform written and mental calculations with whole numbers including building up and breaking down numbers.

WEEK 6: DAY 3

Notes to the teacher:

- The focus of today's lesson is on subtraction in columns.
- Learners have learnt to subtract 3-digit numbers in columns with borrowing. Today, the focus will be on numbers with a 0 in the Tens column, which will entail borrowing from the Hundreds column, passing through the Tens column, to the Units column.
- Learners will also complete an Assessment Task on equivalent fractions and the equivalence of division and fractions.

Resources: Chalkboard, textbook, worksheets, Prepared Assessment Task.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- Count in fractions and whole numbers. See Addendum Mental Strategies for ideas on how to vary this activity.
- Learners can double and halve ten 2-digit and 3-digit numbers. Focus on uneven numbers. First give the learners two or three examples of how to halve an uneven number, e.g. half of 7 = $3\frac{1}{2}$; half of 23 = $11\frac{1}{2}$. They can complete this activity individually in their workbooks. Afterwards they can swop books and mark each other's work.

Concept Development (20 minutes)

- Revise subtraction of two 3-digit numbers with borrowing by doing an example, with input from the learners, on the board.
- Write the following on the board: 803-256. Show the learners, step by step, how to complete this calculation. Involve them by asking questions.

	$\cancel{8}^{7}$	$^{10+}0^{9}$	3
-	2	5	6

Start as always with the units. We cannot subtract 6 from 3.
We normally borrow from the Tens column, but that contains a 0, so we go to the Hundreds column.
8 (x100) becomes 7(x100). Pass the 1 (x100) to the Tens column.

	$\cancel{8}^{7}$	$\cancel{^{10+}0}^{9}$	$^{10+}3$
-	2	5	6
	5	4	7

Now the Units can borrow from the Tens.
We have 10 (x10) in the Tens column.
Take one away to give to the Units, it becomes 9.
Add 1 (x10) to the Units to total 13.
13-6=7. Continue as usual.

- Check by adding.
- Do another example, with the learners' involvement, on the board.
- Divide the board into 5 or 6 columns to give 5 or 6 learners a working space to do a calculation similar to the above.
- Repeat, giving 5 or 6 different learners a chance to do a subtraction calculation on the board.

Assessment Task (15 minutes) • The learners must complete an Assessment Task to assess their ability to: - use equivalent fractions; - recognise the equivalence of division and fractions.	
Consolidation (15 minutes) • Learners can complete 6 to 8 subtraction calculations where it is necessary to borrow from the Hundreds column and pass the number through the Tens column to the Units column. They must check each calculation by addition. Work with any learners who are having difficulty with this concept.	
ASSESSMENT	**Informal:** Assess the learners' ability to subtract in columns with the necessary borrowing from their completed class work.
ASSESSMENT	**Formal, recorded Assessment Task 2:** • LO 1 AS 8: Estimate and calculate by selecting and using operations appropriate to solve problems that involve equivalent fractions. • LO 1 AS 12: Recognise, describe and use the equivalence of division and fractions.

WEEK 6: DAY 4

Notes to the teacher:

- During the next three lessons, the focus will be on locating positions on a coded grid and tracing a path between positions from instructions.
- This integrates with Social Sciences (Geography) and is an important part of map reading. The world is divided into grids. We call these lines of latitude (horizontal lines parallel to the equator) and lines of longitude (vertical lines from the North Pole to the South Pole). Each place on earth has its own co-ordinates (N/S and W/E) which tell us its unique position.
- These days, many people use a GPS (Global Positioning System), a device which enables them to locate a place and be directed there from entering the place's co-ordinates.

Resources: Chalkboard, textbooks, worksheets, labelled grids or cm^2 paper for Battleships.

DAILY ACTIVITIES

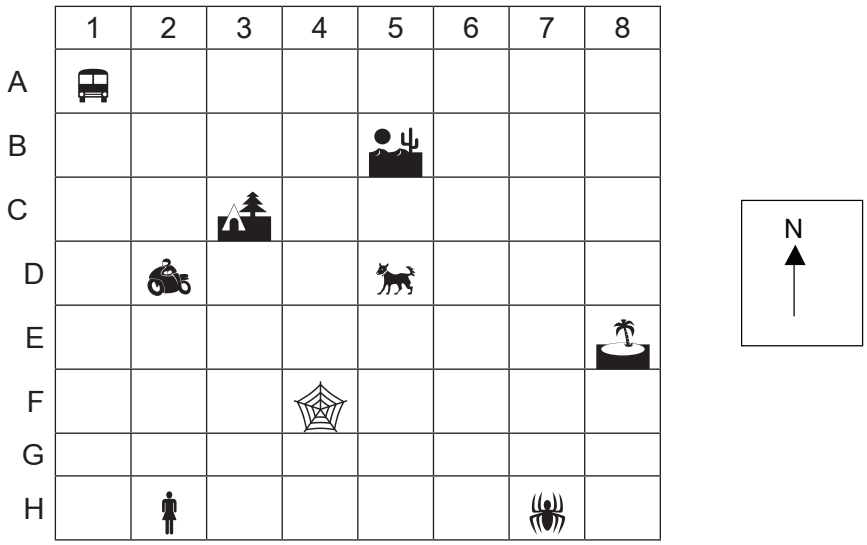
Oral and Mental Activity (10 minutes)

- Do some "Running Maths" (see Addendum Mental Strategies).
- Learners can complete a table to practise recognising the reciprocal relationship between multiplication and division. You can use this as a Formal Assessment Task. Learners can complete at least 10 rows of calculations such as the following:

9x8=	8x9=	x÷9=	x ÷8=

Concept Development (20 minutes)

- Using your board ruler, draw an 8x8 grid with pictures or different shapes in random squares. Write the numbers 1 to 8 at the top of each column and the letters A to H next to each row. Draw an arrow showing North (to the top)



- Give the learners a minute or two to study what you have drawn. On a world map, or any map from an atlas that you have in the school, show the learners that the map is divided into squares, similar to the drawing on the board. Ask them if they know why this is done. It is to enable us to find a place in the world. Each place has its own unique position and co-ordinates to tell us its position.

- Explain what is meant by co-ordinates. The co-ordinates of the bus, in the above grid, are A,1. The bus can be found in row A, column 1.
- Ask a learner to come to the board and put his finger on row D. Choose another learner to come to the board and put his finger on column 5. The first learner must then move his finger along the row, while the second learner moves his finger down the column until their fingers meet. They have found the square whose co-ordinates are D,5. The picture in D,5 is the dog.
- Choose 2 different learners to find what is in E,8.
- Repeat a few times, giving different learners a chance to find a grid location on the board.
- Choose another learner to come to the board and point to the spider. Ask him what the co-ordinates of the spider are? He must see, by going along the row and up the column, that the co-ordinates of the spider are H,7.
- Ask different learners to tell you the co-ordinates of different pictures or shapes in the grid.
- Give a few learners a turn to carry out instructions such as: draw a wheel in F,1; draw a hexagon in C,7.

Consolidation (30 minutes)

- The game Battleships is an excellent way to practise co-ordinates. The learners can find a partner to play it. See Addendum Battleships for instructions. Note the following:
  - If you cannot photocopy grids, learners can make their own, using cm^2 paper. They can even draw an 8x8 square grid using their rulers and pencils.
  - Some learners take a while to understand the game. Explain clearly and make sure each learner is following your instructions.
  - If the learners do not finish their game today, they can continue in another lesson when all their work is complete.

ASSESSMENT	**Informal:** From the learners' verbal responses and their ability to play Battleships, you will be able to assess whether they can locate a position on a coded grid.
ASSESSMENT	**Formal, recorded Assessment Task 2:** • LO 1 AS 12: Recognise, describe and use the reciprocal relationship between multiplication and division.

WEEK 6: DAY 5

Notes to the teacher:

- In today's lesson we will continue with grid locations. Today the learners will learn to trace a path between positions.
- This integrates with Geography. Learners need to know the cardinal directions, north, south, west and east, to be able to trace a path between positions.

Resources: Chalkboard, worksheets, textbook.

DAILY ACTIVITIES

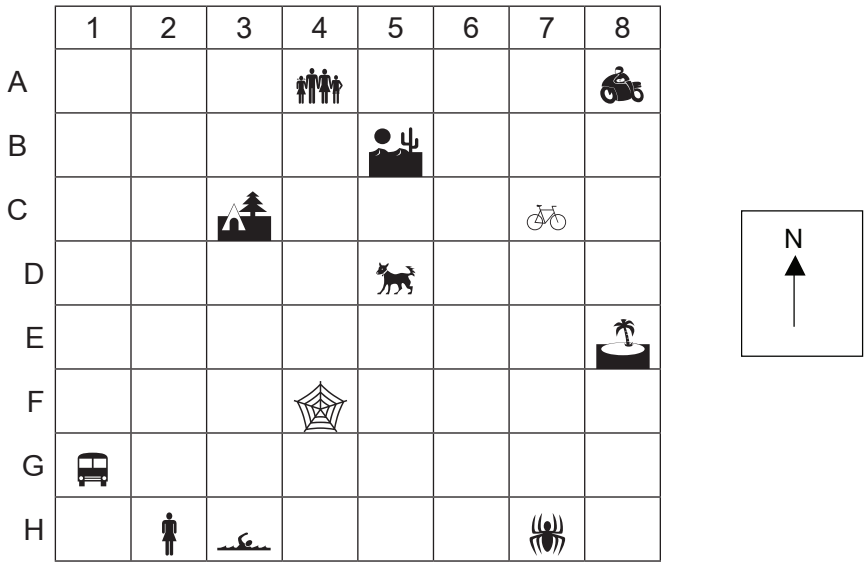
Oral and Mental Activity (10 minutes)

- Give the learners addition calculations which entail compensating. Give them 20 or more calculations to complete as quickly as possible. Afterwards, they can swop books and mark each other's work. Examples:

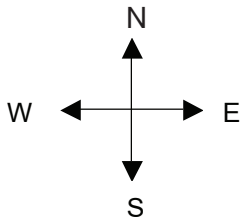
58+19 247+99 583+98 68+29

Concept Development (20 minutes)

- Draw a coded grid containing 8 rows and 8 columns on the board. Write the numbers 1 to 8 above the columns and the letters A to H next to the rows. Draw in some simple pictures, shapes or symbols. Include an arrow indicating north:



- Show the learners the arrow pointing north. Ask learners in turn to come and write the cardinal points on the board. Make sure the learners all know the four points. They sometimes get confused which is west and which is east. Give them a tip: the first letters spell the word WE.



- Ask the learners how the spider can get to its web. It can only more vertically or horizontally, not diagonally. Choose a learner to tell you it moves two blocks north and then three blocks west.
- How does the spider get from its web, back to where it was? It will move three blocks east and then two blocks south.
- Choose a learner to come to the board. Ask him to put his finger on the bus and tell you its grid location. Tell him to then move four blocks north and put his finger on the square. How must the bus now move to get to the campsite (picture of the tent)? It must move two blocks east.
- Ask another learner to find the man swimming. Ask him the grid location. How did the man get from the bus to start his swim? He went one block south and then two blocks east.
- The man is participating in a biathlon. He has to swim to his bicycle. Ask another learner to tell you the grid location of the bicycle and then describe the path he takes to get to the bicycle (four blocks east and then five blocks north).
- Tell the learners that he cycles two blocks north and three blocks west. Where is he? Choose a learner whose hand is up to tell you that he is at the crowd of people.
- Repeat by giving instructions for the learners to follow and ask them the grid location of where they have arrived and by letting them give directions of how to get from one position on the grid to another. Give as many learners as possible a chance to follow the instructions.

Consolidation (30 minutes)

- Find an exercise in the textbook or make a worksheet to give the learners practice in tracing a path between positions on a coded grid. See Addendum Grid Locations for an example of the type of activity to give the learners.
- Learners can draw their own treasure map. They must:
  - draw an 8x8 labeled grid;
  - draw an island;
  - “bury the treasure” somewhere on the island;
  - draw traps, such as wild animals, swamps, forests, rivers;
  - write instructions of how to get to the treasure, avoiding the traps.
  - The learners can then swop maps and find each other’s treasure.

ASSESSMENT	**Informal:** From the learners’ participation in class and their completed task in their workbooks, you will be able to assess whether they are able to trace a path between positions from verbal and written instructions.

GRADE 5: WEEK 7 OVERVIEW

Hours: 5	**Number of Periods: 5**
Mathematics **LO 1 AS 10, 12** **LO 3 AS 8**	**Milestones:** • Recognise, describe and use the commutative, associative and distributive properties of whole numbers. • Use a range of techniques to perform written and mental calculations with whole numbers including adding and subtracting in columns. • Locate positions on a coded (labeled) grid including maps and traces a path between positions from verbal and written instructions.

Mental Strategies: Mental strategies are done with the whole class every day. The time should be used to develop skills and to build number sense.

	Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
Content Focus:	Locate positions on a map	Properties of numbers: Commutative property	Properties of numbers: Associative property	Properties of numbers: Distributive property	Revise addition and subtraction in columns Assessment Task: properties of numbers
Resources:	Town map (see Addendum town map)	Chalkboard, textbook, worksheets	Chalkboard, textbook, worksheets	Chalkboard, textbook, worksheets	Chalkboard, textbook, worksheets Prepared Assessment Task

WEEK 7: DAY 1

Notes to the teacher:

- Continuing with the concept of locating positions on a grid, the focus today will be on locating positions on a map.
- This integrates with Geography.
- Show the learners a world map or globe so that they can see the world is divided into a grid by the lines of latitude and longitude. However, do not go into too much detail.

Resources: Chalkboard, textbooks, worksheets, world globe, atlases.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- Learners must complete some number bonds calculations, for example:
  - =50: 27+x; 32+ x; 16+ x; 36+ x; 22+ x. Learners write 27+23=50, etc.
  - =100 (give 5 calculations).
  - =500 (give 5 calculations).
  - =1 000 (give 5 calculations).

Concept Development (20 minutes)

- Show the learners on the world globe or on a world map how the world is divided by lines of latitude (running parallel to the equator) and lines of longitude (running from the North Pole to the South Pole). Explain that these lines are measured in degrees, not numbered like we have been using, but they have the purpose of dividing the world into a grid. Explain that the equator divides the world into north and south (show the learners on the globe or world map). We live in the southern half of the world. Similarly, there is the line of longitude, 0^0 and 180^0, which divides the world into east and west. Show the learners this line. We are in the eastern hemisphere.
- In the atlas, turn to a map of South Africa and ask the learners in their groups to find the approximate location of a few places in South Africa.
- Give each pair of learners a town map. There is a map of Stellenbosch in the Addendum which you can use and on which the examples in this lesson is based. If you can get a similar map of your town, or a town that is familiar to your learners, use that. The learners must study the map and answer questions that you ask. Ask one question at a time, and discuss each answer. Examples:
  - Choose learners in turn to come and draw the symbols for: a hospital, railway station, post office, petrol station on the board.
  - The learners can count the number of Public Parking areas on the map.
  - If you were to travel from the van der Stel Sports Club to the university, along which road and in what direction would you travel?
  - In which grid location do Bird Streets and Merriman Avenue intersect (cross)?
  - Explain how you would get from Eikestad Primary School to the University.

Consolidation (15 minutes) • Use the map of Stellenbosch in the Addendum, or the map you found of your town, and set questions similar to those asked while the learners worked in groups. You might find a suitable, similar exercise in the textbook.	
Problem Solving (15 minutes) • Give the learners 4 or more problems to solve entailing finding a fraction of a whole number\ ratio. For each problem, they must: - write a number sentence; - do the calculation; - check their answer; - make sure they write a complete answer.	
ASSESSMENT	**Informal:** Assess from the learners' verbal responses and class work whether they are able to locate positions on a map.

WEEK 7: DAY 2

Notes to the teacher:

- During the next three lessons, we will focus on the properties of whole numbers.
- There are three properties that the learners need to know how to use. They do not need to know what they are called. These properties, along with rounding off and compensation, are important tools in making calculations easier for the learners.
- Learners have been using these properties without realising it for quite some time.
- Today we will focus on the commutative property, which means changing the order of the numbers. Commute means to move (a commuter travels to work and back). This property applies to addition and multiplication and can be summed up in this example: 4+8=8+4. Subtraction is not commutative, i.e. 10-8≠8-10. Division is also not commutative because 20÷4≠4÷20.

Resources: Chalkboard, textbook, worksheets.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- Give the learners 10 rows of numbers to add. They must first find pairs that add up to 10, add those and then add the remaining numbers, for example:
  - 5+6+7+3+5+8+4 (Learners write: 5+5+7+3+6+4+8=38).
  - 2+9+4+8+1+7+6.

Concept Development (20 minutes)

- In their pairs, give the learners addition and multiplication sums such as the following to complete:

  14+16= …….. 16+14= ……..
  45+55= …….. 55+45= ……..
  8x6= …… 6x8= ……..
  19+25= ……. 25+19= …….
  4x3= ……. 3x4= ……
  9x6= ……. 6x9= …….
  11+39= …… 39+11= ……
  3x6= …… 6x3= …….

  - When the learners have finished, ask them what they noticed. They should be able to tell you that they obtained the same answers, even though the numbers were in a different order. Do a few more examples orally and then lead the learners to sum up with a general rule: *We can change the order of numbers when we add or multiply. The answer will be the same.*
  - Give the learners an example of a subtraction sum. Ask them if 12-8=8-12. No, it does not. We can write this mathematically: 12-8≠8-12. ≠ means "does not equal". Do a few more examples, each time reaching the same conclusion. Sum up with a rule: we *cannot* change the order of the numbers when we subtract.
  - Do the same as above with division. Ask the learners if 25÷5=5÷25. No, it is not the same. Write on the board: 25÷5≠5÷25. Repeat by doing a few more examples on the board whether this is true for all division calculations. Lead the learners to establish a rule: we *cannot* change the order of the numbers when we divide.

Consolidation (20 minutes)

- Give the learners about 20 sums to complete in their workbooks to practice the commutative property (changing the order of numbers), simple addition and multiplication. Examples:
  - 35+36=36+…..=…….. (write the missing number and answer each time)
  - 19+86=86+……=……..
  - 7x9=9x…….=…….
- The learners must replace the * with = or ≠ to make the following calculations true. Give the learners at least 20 to complete. The learners can do the calculations where they fill in the = sign. Examples:
  - 48÷8*8÷48
  - 8x9*9x8
  - 14+77*77+14
  - 52-26*26-52
  - 924+429*429+924

Problem Solving (10 minutes)

- Give the learners a problem entailing division of a 3-digit number by a 2-digit number to solve. They must:
  - write a number sentence;
  - do the calculation;
  - check by doing the inverse (reciprocal/opposite) operation (i.e. multiplication);
  - make sure they write a complete answer.

ASSESSMENT	**Informal:** Assess from the learners' class work whether they can recognise and use the commutative property.

WEEK 7: DAY 3

Notes to the teacher:

- Continuing with the properties of numbers, the focus of today's lesson is on the associative property, which means re-grouping 3 or more numbers. Associative is similar to the word association, meaning a group of people.
- We can re-group when doing addition and multiplication to make calculation easier, for example: 18+37+12. Instead of working left to right, calculating 18+37=55, then 55+12=67, insert brackets around any numbers which can be added or multiplied easily, like this: (18+12)=37=30+30=67. This makes the calculation easier.
- As with the commutative property, only addition and multiplication are associative. We cannot re-group when subtracting or dividing.

Resources: Chalkboard, textbook, worksheet.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- Do some "Running Maths" (see Addendum Mental Strategies). Include all four operations, doubling and halving.
- Ask the learners 10 to 15 random calculations. They must write down the answers only. Afterwards they can swop books and mark each other's work. Examples:
  - How many 7s in 56?
  - What is the difference between 2 litres and 455 ml?
  - Write down the largest 4-digit number using the digits 1, 3, 5 and 0.

Concept Development (20 minutes)

- Give the learners a set of calculations to do in their groups. They must calculate the answers each side of the * and then replace the * with = (equals) or ≠ (does not equal). Tell the learners that the brackets show which numbers are grouped together and the calculation contained in the brackets must be done first. If there are no brackets, work from left to right:
  - 3x2x4*3x(2x4)
  - 3x4x25*(3x4)x25
  - 6+19+4*(6+4)+19
  - 4x5x2*4x(5x2)
  - Discuss with the learners what they noticed. They always replaced the * with an = sign. Ask whether they found any of the pairs of calculations easier than other. They should have found that in each case, the second calculation was easier because we had re-grouped numbers.
  - Do ten to fifteen examples on the board. Each time, ask the learners to come and regroup the numbers you have written to make the calculation easier, for example, you write 55+19+45. The learner must write (55+45)+19=100+19=119. Note that, when regrouping (using the associative property) we sometimes use the commutative property as well.
  - Explain to the learners that we can only do this with addition and multiplication and not with subtraction and division.

Consolidation (30 minutes) • The learners can complete 20 or more addition and multiplication calculations where they have to use the Associative property to make the calculation easier. Make a worksheet or write the work on the board. Examples: - 164+87+46. Learners write: (164+46)+87=287. - 8x22x5. Learners write: (8x5)x22=40x22=880.	
ASSESSMENT	**Informal:** From the learners' verbal responses and class work, you will be able to assess whether they can use the associative property of whole numbers.

WEEK 7: DAY 4

Notes to the teacher:

- The third property, which we will work with today, is the distributive property, which means we can distribute multiplication over addition, for example (2+5)x7=(2x7)+(5x7).
- Learners have used this property, particularly in multiplication. They have multiplied 27x3 by breaking up the 27 into (20+7) and then multiplying 20x3 and 7x3.

Resources: Chalkboard, textbook, worksheets.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- Learners can round off numbers to the nearest 100 and then add the rounded off numbers. Write 20 calculations on the board, learners can write down the answers. Afterwards, they can swop books and mark each other's work. Example:
  - 59+127+278. Learners write: 100+100+300=500.

Concept Development (20 minutes)

- In pairs, learners can do two calculations: 8x(3+5) and (8x3)+(8x5). When they have finished, ask them what they notice. The two answers are the same. In the first calculation, add 3+5=8 and then multiply by 8 to give us 64. In the second calculation, 8x3=24 and 8x5=40. 40+24=64.
  - Give the learners two or three similar calculations to do in pairs. Each time, they will obtain the same answer.
  - See if any learners can apply this concept to a calculation like 47x9. (They have, in fact, been using this property when doing multiplication by breaking up the number). If any learners think that they can use this concept, choose a few of them to come to the board and they should do the following on the board:

    47x9
    =(40+7)x9
    =(40x9)+(7x9)
    =360+63
    =423

Give as many learners as possible, in groups of 5 or 6 a calculation, similar to the above, to do in their own work space on the board.

Consolidation (15 minutes)

- The learners can complete 20 calculations using the distributive property of numbers in their workbooks. As they are familiar with the property (even though they do not know or need to know what it is called), give them calculations such as:
  - (7+5)x8. They must write (7x8)+(5x8)=56+40=96.
  - 23x7. They must write (20x7)+(3x7)=140+21=161.
  - 534x7. They must write (500x7)+(30x7)+(4x7)=3 500+210+28=3 738.

Problem Solving (15 minutes)

- The learners can solve three problems entailing addition and subtraction of 6-digit numbers and multiplication of 3-digit by 2-digit numbers in their workbooks. For each problem, the learners must:
  - write a number sentence;
  - do the calculation;
  - check their answers;
  - make sure their answers are complete.

ASSESSMENT	**Informal:** From the learners' participation in class and their completed written work, you will be able to assess whether they can use the distributive property of numbers.

WEEK 7: DAY 5

Notes to the teacher:

- Use today's lesson to revise addition and subtraction in columns.
- There is time in this lesson to assess the learners' ability to use the properties of numbers taught during this week.

Resources: Chalkboard, worksheets, Prepared Assessment Task.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- To a round of "Tables King" or Tables Challenge (see Term 2 Addendum Mental Strategies).
- The learners can solve ten problems. Say the problem, the learners must write down the answers only in their workbooks. Afterwards, they can swop books and mark each other's work. Examples:
  - If I divide learners into 7 groups of 8, how many learners are there?
  - A car travels 100 km in an hour. How far will it travel in three hours?
  - The temperature increased from 22° to 37°. How many degrees did the temperature rise?

Revision (20 minutes)

- Divide the class into four teams and divide the board into four columns to give each team a space in which to work.
  - Choose a learner from each group to come to the board. Write a calculation such as 456+237 on the board. The learners must add the numbers, in columns. Award the first team finished with the correct answer 4 points, the second team finished 3 points, the next team 2 points and the last team 1 point.
  - Choose another learner from each group to come to the board. Write another calculation, e.g. 568-234, and let the learners complete the calculation. Award points as above.
  - Repeat, giving a variety of adding (up to 4-digit numbers) and subtracting (including 3-digit numbers with a 0 in the 10s column) until all the learners in the class have had at least one turn.
  - Add up each team's points and give the winning team a reward (e.g. extra time at break).

Assessment Task (20 minutes)

- Assess the learners' ability to recognise, describe and use the commutative, associative and distributive properties of numbers by giving them calculations to do similar to those done in class during this week.

Consolidation (10 minutes)

- The learners can complete 4 addition and 4 subtraction calculations, using the column method. They can check each subtraction calculation by doing an addition calculation.

ASSESSMENT	**Formal, recorded Assessment Task 2:** • LO 1 AS 12: Recognise, describe and use the commutative, associative and distributive properties with whole numbers.

GRADE 5: WEEK 8 OVERVIEW

Hours: 5	**Number of Periods: 5**
Mathematics **LO 1 AS 7** **LO 4 AS 9**	**Milestones:** • Solve problems involving comparing two or more quantities of different kinds (rate). • Recognise and describe right angles in 2-dimensional shapes and 3-dimensional objects and the environment.

Mental Strategies: Mental strategies are done with the whole class every day. The time should be used to develop skills and to build number sense.

	Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
Content Focus:	Compare two or more quantities of different kinds (rate)	Compare two or more quantities of different kinds (rate) Assessment Task (adding and subtracting in columns)	Recognise and describe right angles Assessment Task: Problem solving	Recognise and describe right angles	Revise measurement: Length Assessment Task: Right angles and grid locations
Resources:	Chalkboard, textbooks, worksheets	Chalkboard, textbooks, worksheets Prepared Assessment Task	Chalkboard, textbooks, worksheets Prepared Assessment Task	Chalkboard, textbooks, worksheets	Chalkboard, textbooks, worksheets Prepared Assessment Task

WEEK 8: DAY 1

Notes to the teacher:

- In today's lesson, the learners will solve problems entailing comparing quantities of different kinds (rate).
- Examples of rate in every day life are wages per hour/day, fuel consumption in a motor car and the time it takes to travel a distance at a certain speed (time, distance, speed calculations). Today we will focus on problems entailing Time, Distance and Speed calculations.
- Although there is a formula to apply to such calculations, do not make the learners learn the formula. They must at all times be encouraged to solve problems by thinking and selecting the correct operation to use.

Resources: Chalkboard, textbook, worksheets.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- Give the learners a multiplication tables grid to complete as quickly as they can. On your signal they must start. Say how much time has elapsed every 30 seconds (after the first two minutes). See how many learners can complete the grid within 5 minutes.

x	2	3	4	5	6	7	8	9	10
2									
3									
4									
5									
6									
7									
8									
9									
10									

Concept Development (20 minutes)

- Tell the learners that they are train drivers. They are driving the train from Cape Town to Johannesburg. On the way, they have to stop at certain stations at a given time to let passengers on and off the train, to load goods and to ensure that no other trains are on the same track at the same time. This is the schedule they have to keep. Write it on the board and explain the first part so that the learners can understand how to read the schedule.
  The train leaves Cape Town at 08:00. It arrives in Beaufort West at 14:00 and leaves there at 14:30. The distance it travelled was 480 km.

Leave:		Arrive		Distance	Speed
Cape Town	08:00	Beaufort West	14:00	480 km	
Beaufort West	14:30	De Aar	16:30	180 km	
De Aar	17:30	Kimberley	21:30	440 km	
Kimberley	23:00	Johannesburg	07:00	480 km	

- In groups or pairs, learners must work out what speed the train needs to travel at to be at each station at the correct time. We talk of speed in *kilometres per hour (km/h).* So, what they need to calculate is how many kilometres the train will travel in 1 hour. Walk around and guide them as they calculate the speeds.
- When the learners have had a few minutes to work this out, ask learners in turn to come to the board and show how they worked out the speed the train travelled between the different stations. This is how they would calculate it:

  Cape Town to Beaufort West = 480 km in 6 hours (08:00 to 14:00 = 6 hours)
  480÷6=80 km in an hour. Speed = 80 km/h.

  Beaufort West to De Aar = 180 km in 2 hours
  180÷2=90 km/h

  De Aar to Kimberley = 440 km in 4 hours
  440÷4=100 km/h

  Kimberley to Johannesburg = 480 km in 8 hours
  480÷8=60 km/h

  Learners sometimes do not understand the concept of km/h. Emphasise that this means the number of kilometres travelled in one hour.

- Ask the learners which operation we used each time. It is division. We divide the distance by the time to find the speed.

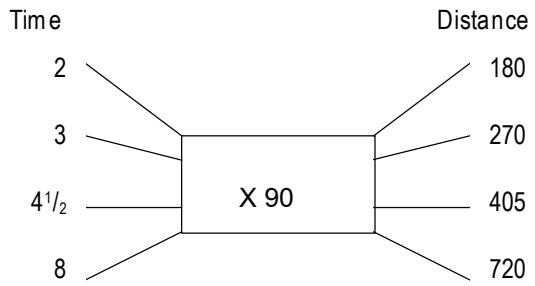
  Speed = Distance ÷Time is a mathematical rule/formula. Do not, however, expect the learners to learn it by rote. It is far preferable that they solve problems by thinking logically.

- Ask a few questions about the task the learners have just completed, e.g. between which stations did the train travel the fastest? What is the total distance that the train travelled? How many hours in total did the journey take? Why do you think the train travelled the slowest between Kimberley and Johannesburg? (Perhaps this area is busier then the rest of the route - listen to any sensible ideas, there is no correct answer.)

• Give the learners another challenge in their groups. Pose this problem (write the numbers, not the whole problem, on the board): *If the train travelled at a constant speed of 90km/h, calculate how far it would travel in: 2 hours, 3 hours, $4^1/_2$ hours and 8 hours.*

  The best way to do these calculations is by means of a flow diagram. See if any groups think of doing that. If nobody does, suggest it. Avoid telling them what to do, let them think.

- Choose a learner from a group, which solved this problem using a flow chart, to come and show his group's solution on the board:



- Ask several questions using the flow diagram that entail working backwards from distance, dividing by 90, to obtain time, for example: How long would the train take to travel 900 km at the same speed? If it had travelled 450 km, how much time did it take?

Problem Solving (30 minutes) • If you cannot find suitable problems in the textbook, make a worksheet or write problems on the board. Learners must complete these individually in their workbooks. Encourage them, each time, to check the reasonableness of their solutions. Examples: - A salesman travels 450 km in 5 hours. How fast was he travelling? - It is 5 km from home to school. It takes me 1 hour to walk. How fast am I walking? If it takes me 15 minutes to cycle that distance, how fast am I cycling? - Calculate, by means of a flow diagram, how far an aeroplane will fly in 3 hours, 5 hours, $7^1/_2$ hours and 8 hours if it flies at 1 200 km/h. - A snail crawls at 1 cm a second. How far will it crawl in a minute? - We drove for 8 hours at 80 km/h. How far had we travelled?	
ASSESSMENT	**Informal:** From the learners' group work, verbal responses and problem solving, you ill be able to assess whether they can solve problems involving rate.

WEEK 8: DAY 2

Notes to the teacher:

- Continuing from the previous lesson, today learners will solve more problems involving rate. There are many problems one can give the learners to solve, for example, on wages per hour/week, fuel consumption of motor cars, a person gaining weight at a certain number of kg per month, growth of a tree in a year.
- The learners cannot be taught to solve problems. They have to be encouraged to think, to decide what the problem is asking and to select the correct operation/s required to solve the problems. Therefore, not too much time will be spent on doing examples with the learners. It is far more beneficial for them to solve as many problems as possible on their own.
- In today's lesson, assess the learners' ability to add and subtract in columns.

Resources: Chalkboard, textbook, worksheets, Prepared Assessment Task.

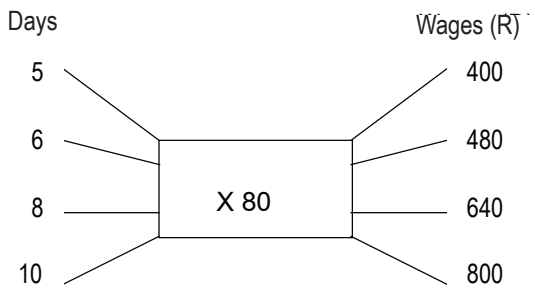
DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- Revise fractions by giving the learners some simple calculations entailing fractions to complete. Write 15 or more calculations similar to the following on the board. Learners can write only the answers in their workbooks. Afterwards, they can swop books with a partner and mark each other's work:
  - $\frac{1}{8}+\frac{3}{8}$
  - $\frac{5}{6}=\frac{?}{12}$
  - $\frac{5}{8}$ of 40=

Concept Development (10 minutes)

- Tell the learners: *Joe the builder employs labourers. He pays them R80 a day. How much will he pay them for 5 days, 6 days, 8 days and 10 days?* (Write the numbers on the board.) The learners can work this out in pairs. They will again use a flow diagram to make the calculation easier.



  - Ask a few questions such as: If he paid a labourer R240, how many days had the labourer worked? How much would a labourer earn for 20 days' work?

Assessment Task (20 minutes)

- Give the learners calculations to do that entail adding and subtracting in columns. Include:
  - Adding two or more 4-digit numbers.
  - Adding a few numbers containing different numbers of digits, e.g. 56+921+1004.
  - Subtracting up to 3-digit numbers with borrowing.
  - Subtracting up to 3-digit numbers with a 0 in the Tens column.

Problem Solving (20 minutes) • If you cannot find suitable problems involving rate in the textbook, make a worksheet or write problems on the board. Examples: - A car uses 8 litres of petrol every 100 km. How much petrol will it use to travel: 150 km, 300 km, 500 km, 1 000 km? - A pine tree grows 1 metre a month and an oak tree grows 2 metres a year. If one of each of these trees were planted at the same time and were 3 metres tall at the time of being planted, how tall would each tree be after 5 years? - It takes 5 men 8 hours to build a wall. How long will it take 10 men to build the same size wall? - Mrs Khumalo gained 1 kg in six months. If she continues gaining weight at the same rate, how much weight will she have gained after 4 years?	
ASSESSMENT	**Informal:** Assess from the learners' written work whether they are able to solve problems involving rate.
ASSESSMENT	**Formal, recorded Assessment Task 2:** • LO 1 AS 10: use a range of techniques to perform written and mental calculations with whole numbers including adding and subtracting in columns.

WEEK 8: DAY 3

Notes to the teacher:

- The focus of today's and the next lesson is on recognising right angles in 2-d shapes, 3-d objects and the environment.
- When two straight lines meet, an angle is formed. Angles are measured in degrees, up to 360°, a full revolution. A right angle is 90°, a quarter of a revolution. The corners of a page form a right angle. Where the wall meets the floor, a right angle is formed.
- Learners do not need to know about degrees but need to understand the concept of what an angle is before being able to recognise a right angle.
- In today's lesson, the learners will also complete an Assessment Task involving problem solving.

Resources: Chalkboard, textbook, worksheets, Prepared Assessment Task.

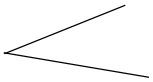
DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

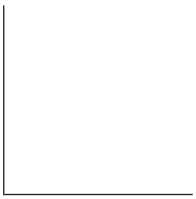
- The learners can complete a table, individually in their workbooks, entailing multiplying by multiples of 10.

	X10	X20	X40	X60	X80	X90
5						
50						
4						
40						
7						
70						
9						
90						

Concept Development (20 minutes)

- Draw two lines on the board like this:  Tell the learners that when two straight lines like this meet, an angle is formed. Ask them to look at their scissors. If they open their scissors, the two blades form an angle: . Tell the learners to look at the clock (if you do not have one in the classroom, draw one on the board). As the hands move, different angles are formed. Show the learners the angles formed where the two hands of the clock meet.
  - Ask a learner to come to the board and draw a clock showing 3 o'clock. He/she will draw this: . Tell the learners that the hands have formed a special angle. Ask the

learners if anybody can tell you what this special angle is called? It is called a right angle. Draw a right angle on the board:



- Ask another learner to draw a clock face showing 9 o'clock. He/she will draw this: . Ask the learners if they can see the right angle. Choose a learner to come and show the right angle formed by the two hands of the clock.

- Give learners three minutes to work in groups and write down all the right angles they can see in the classroom. Afterwards, find out which group wrote down the most items and ask that group to read their list. The list will probably include items such as the following, depending on your classroom:
  - books, where the wall and floor meet, desks, the windows, the cupboard doors, the door, the corners of the chalkboard, tiles on the floor, bricks on the wall.
  - If any other groups have other items to add, listen to them. Ensure that nobody has included an item that does not contain right angles.

Problem Solving/Assessment Task (30 minutes)

- The learners' ability to select and use the correct operation to solve problems needs to be assessed. Give them a random selection of problems to solve that entail:
  - Addition and subtraction of whole numbers with at least 6 digits.
  - Multiplication of at least whole 3-digit by 2-digit numbers.
  - Division of at least whole 3-digit by 2-digit numbers.
  - Comparing two or more quantities of different kinds (rate).

ASSESSMENT	**Informal:** From the learners' group work and verbal responses, you will be able to assess whether they can recognise right angles in the environment.
ASSESSMENT	**Formal, recorded Assessment Task 2:** • LO 1 AS 8: Estimate and calculate by selecting and using operations appropriate to solve problems that involve: - addition and subtraction of whole numbers with at least 6 digits; - multiplication of at least whole 3-digit numbers by 2-digit numbers; - division of at least 3-digit numbers by 2-digit numbers. • LO 1 AS 7: Solve problems involving comparing two or more quantities of different kinds (rate)

WEEK 8: DAY 4

Notes to the teacher:

- In today's lesson, the learners will extend their knowledge of recognising right angles in the environment to being able to recognise right angles in 2-d shapes and 3-d objects.
- Sometimes learners may have difficulty recognising a right angle in a 3-d object due to the perspective from which the object is drawn. Help them by asking them what shape the face is. If it is a square or rectangular face, it will contain right angles.
- In today's lesson, the learners will do an activity to revise locating a position and tracing a path using grid locations.

Resources: Chalkboard, worksheets, textbook, 3-d objects.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

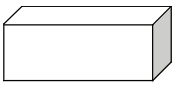
- In the previous lesson, the learners completed the multiplication grid below. Use this grid for dividing by multiples of 10. For example, 2 400÷40. Find 2 400 in the grid. It is written in the x40 column. Move across the row to 60. Therefore 2 400÷40=60. After doing a few examples orally with the learners, give them ten division (by multiples of 10) sums to complete individually in their workbooks. Afterwards, they can swop books with a partner and mark each other's work.

	X10	**X20**	**X40**	**X60**	**X80**	**X90**
5	50	100	200	300	400	450
50	500	1 000	2 000	3 000	4 000	4 500
4	40	80	160	240	320	360
40	400	800	1 600	2 400	3 200	3 600
7	70	140	280	420	560	630
70	700	1 400	2 800	4 200	5 600	6 300
9	90	180	360	540	720	810
90	900	1 800	3 600	5 400	7 200	8 100

Concept Development (20 minutes)

- Tell the learners you are going to go around the class, learner by learner, and each learner must in turn name one right angle in the classroom or anywhere in the environment. Make sure the learners know in which order you will be going around the class. They must listen properly so as not to repeat what another learner has said. See how far this can go before a learner makes a mistake.
- Draw a square on the board. Ask learners to tell you how many right angles they can see. They can see 4 right angles.
  - Repeat with a few different rectangles. Each time, the learners should see 4 right angles.
  - Repeat with other 2D shapes: triangles, hexagons, pentagons. The learners will not see any right angles in any of these 2D shapes.
  - Show the learners a sheet of paper. How many right angles do they see? Again, it is four.

- Tell the learners to look at their Maths textbook, their pencil case, their eraser, their lunchbox or any other rectangular prism that they have in their possession. Give them a minute or two to count the right angles. Ask a learner who raises his hand to tell you how many right angles he counted. He should say 24. The rectangular prism has 6 faces, each with 4 right angles. 6x4=24.

  - Draw a rectangular prism on the board.  Ask the learners how many right angles are on the rectangular prism. Even though they cannot see them all, because one cannot see the back of the drawing, there are 24 right angles. Point out that the shaded side does not look like it contains right angles because of the perspective of the drawing, but we know that the face is square, therefore contains right angles.

  - Draw a triangular prism on the board.
  - See if any learners can tell you that there are 12 right angles on the triangular prism. There are three rectangular faces, each with 4 right angles. 3x4=12.

Consolidation (15 minutes)

- If there are no suitable exercises in the textbook to give the learners practice in recognizing right angles in 2-d shapes, 3-d objects and the environment, make a worksheet or write work on the board.
  - For example, make a table such as the one below (include 10 shapes or objects, some which have right angles and some which do not have right angles). On each drawing, the learners can mark the right angles that they can see with a coloured dot or cross.

Drawing	Name	Right angles

Revision (15 minutes)

- Give the learners a coded grid. Have an arrow indicating north. They must follow written instructions to trace a path, for example:
  - Start at C,3. Move three blocks east and draw a red circle.
  - Move four blocks south and draw a blue square.
  - Move 2 blocks west and five blocks north and draw a yellow triangle.
  - Continue with 8 to10 similar instructions. The learners can write down the co-ordinates of the square where they finish.

ASSESSMENT	**Informal:** Assess from the learners' participation in class and their written activity whether they can recognise right angles in 2-d shapes and 3-d objects.

WEEK 8: DAY 5

Notes to the teacher:

- In today's lesson, the learners will complete their final Assessment Task for Grade 5, assessing their ability to recognise right angles and locate positions and trace a path on a grid.
- Before doing the Assessment Task, we will revise SI units of length in preparation for revising perimeter and area next week. Once this has been revised, we will move on to the concept of volume and understanding the concept of cubic centimetres.

Resources: Chalkboard, textbook, worksheets, Prepared Assessment Task.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- The learners can complete a table, containing at least 8 rows, entailing multiplying by multiples of 100:

	X100	X200	X300	X600	X700	X800
4						
40						

Revision (20 minutes)

- In groups, the learners can complete a task to revise SI units of measurement, length. Make a worksheet or write 25 or more questions on the board. Give the groups 10 to 15 minutes to answer as many questions as they can. Afterwards, go through the answers and give the winning group a reward (a few minutes extra break perhaps). Examples of questions you can ask:
  - Measure the width of your Maths textbook. Write down the measurement in mm and in cm and mm.
  - What unit of measurement would we use to measure: the length of the football field? The distance from our town to the next town?
  - How many mm in a cm? How many mm in a metre?
  - 5 times around the field equals one kilometre. If I have run around three and a half times, how many more metres must I run to complete a km?
  - How many cm in 3 metres?
  - Measure the width of your desk. How many cm less or more than 1 metre is it?

Assessment Task (30 minutes)

- Give the learners a task to assess their ability to:
  - Locate positions on a coded grid including maps and trace a path between positions from written instructions.
  - Recognise and describe right angles in 2-dimensional shapes and 3-dimensional objects and the environment.

ASSESSMENT	**Formal, recorded Assessment Task 2:** • LO 3 AS 8: Locate positions on a coded grid including maps and trace a path between positions from verbal and written instructions. • LO 4 AS 9: Recognise and describe right angles in 2-dimensional shapes and 3-dimensional objects and the environment.

GRADE 5: WEEK 9 OVERVIEW

Hours: 5	**Number of Periods: 5**
Mathematics **LO 4 AS 8 (revision)** **LO 5 AS 1, 3, 4, 5 (revision)**	**Milestones:** • Investigate and approximate perimeter using rulers or measuring tapes; and area of polygons to develop an understanding of square units. (Revision) • Investigate and approximate volume/capacity of 3-dimensional objects in order to develop an understanding of cubic units. • Pose simple questions about home and family environment. • Organise and record data using tallies and tables. • Draw graphs and interpret data: pictographs and bar graphs.

Mental Strategies: Mental strategies are done with the whole class every day. The time should be used to develop skills and to build number sense.

	Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
Content Focus:	Revise perimeter and area	Volume (cm^3)	Volume	Data Handling (Revision)	Data Handling (Revision)
Resources:	Chalkboards, worksheets, string, rulers, cm^2 paper	Chalkboard, textbook, cm^3 nets, sticky tape, container (glass or plastic jar, e.g. large yoghurt container), water, golf ball-size stone (or similar item)	Chalkboard, textbook, worksheets, measuring jug and container or cylinder, several different size stones or small objects, cm^3 box, ml measuring spoon	Chalkboard, paper (blank and lined) and cardboard for learners, prepared topics	Chalkboard, paper (blank and lined) for the learners, cardboard

WEEK 9: DAY 1

Notes to the teacher:

- Although all formal assessment has now been completed, there are still concepts to be taught.
- Over the next two weeks, we will also be doing a great deal of revision. It is important to keep up the momentum and not allow the learners to become lazy and lose their mathematical knowledge and skills.
- In today's lesson, we will revise perimeter, the distance around something. We will then proceed to revise area and move in a future lesson from that concept to a new concept, that of volume.

Resources: Chalkboard, textbook, worksheets, cm^2 paper, string, rulers.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- In the previous lesson, the learners completed a multiplication (by multiples of 100) grid. Today they can use it, in the same way that they used the multiples of 10 grid, for division. Give them 10 to 15 questions such as:

	X100	X200	X300	X600	X700	X800
4	400	800	1 200	2 400	2 800	3 200
40	4 000	8 000	12 000	24 000	28 000	32 000
6	600	1 200	1 800	3 600	4 200	4 800
60	6 000	12 000	18 000	36 000	42 000	48 000
8	800	1 600	2 400	4 800	5 600	6 400
80	8 000	16 000	24 000	48 000	56 000	64 000

  - How many 60s in 18 000?
  - 48 000÷600=?

Revision (25 minutes)

- Ask the learners what we mean by perimeter. Ask a few learners in turn to come and show you the perimeter of a few items in the classroom, for example, the chalkboard, your desk, a textbook. Ask what unit we use to measure perimeter (mm, cm, m, km). Repeat with area. Ensure that the learners know that we measure area in square units, e.g. cm^2, m^2.
- The learners can work in groups to complete activities entailing perimeter and area. They will need cm^2 paper. After the learners have had enough time to complete the activities, discuss and compare their answers. Examples of activities:
  - Using cm^2 paper, trace around the hand of the learner with the biggest hand and around the hand of the learner with the smallest hand. Using string, measure each perimeter. Find the difference between the perimeters of the two hands. By counting the cm^2 blocks, calculate the area of each hand. Find the difference between the two areas.
  - Draw a square with sides 4 cm. Write down its perimeter and area.
  - Draw two rectangles with length and breadth in the ratio 5:3 (hint: one can measure 5 cm by 3 cm, others can be in multiples of 5 and 3, e.g. 10 cm and 6 cm). Find the perimeter and the area of each of the rectangles. Find the difference between the perimeter and area of each rectangle.

- Find, by measuring, the perimeter of a desk. Calculate what the perimeter would be of 2 desks side by side.

Problem Solving (10 minutes)

- Find examples of problems in the textbook, make a worksheet or write 2 to 3 problems on the board such as:
  - The farmer has a field measuring 80 m by 32 m. He needs to fence it. How many metres of fencing does he need to buy if he leaves an opening 8 metres wide for the gate?

Consolidation (15 minutes)

- Make a worksheet on cm^2 paper containing different shapes. The learners must name the shapes, measure their sides to calculate their perimeters and count the cm^2s contained within the perimeters to calculate the areas of each shape.

ASSESSMENT	**Informal:** From the learners' group work, you will be able to assess whether they understand the concept of perimeter and area.

WEEK 9: DAY 2

Notes to the teacher:

- So far learners have learnt how to measure perimeter (which has one dimension, i.e. length) and area (which has two dimensions). Today, they will be introduced to volume, the measurement of a 3 dimensional space.
- The amount of space a 3-d object occupies is its volume. For example, a box occupies space. The amount of space it occupies is its volume. We measure volume in cubic units: cm^3 (cubic centimetres) and m^3 (cubic metres).
- Volume and capacity are closely linked. We talk of the volume of a container, meaning the space within a 3-d container, although this is, strictly speaking, the capacity of the container which is usually measured ml and litres. 1 cm^3 of water equals 1 ml.
- Today the learners will make a cm^3 to help them gain an understanding of the size of a cubic centimetre.

Resources: Chalkboard, textbook, cm^3 nets, sticky tape, container (glass or plastic jar, e.g. large yoghurt container), water, golf ball-size stone (or similar item).

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

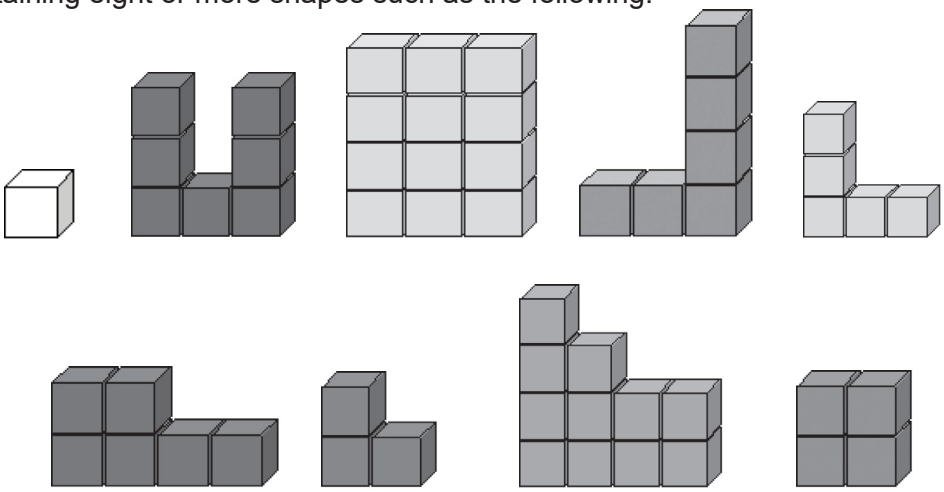
- Do a round of Tables King (see Addendum Mental Strategies).
- Give the learners a multiplication tables test consisting of 15 random tables. Say the tables, the learners must write down only the answers. Afterwards, they can swop books and mark each other's work.

Concept Development (30 minutes)

- Fill a container about half full with water. Mark off the level of the water with a felt-tipped pen. Ask a learner to put the stone into the water and observe what happens to the water level. See if any learners can tell you why the water level rose. It is because the stone occupies space. If it is in the water or lying on the ground, it occupies space. Ask learners in turn to give examples of objects that occupy space. These objects can include erasers, pencils, people, pencil cases, board erasers – anything that has three dimensions (length, breadth and height). Tell the learners that there is a word for the space something occupies. Ask if anybody knows it. It is volume. Let a few learners repeat the word.
- Tell the learners that when we measure length or perimeter, we use a special unit. Ask them what we use (mm, cm, m or km). We measure area with another unit, a square centimetre. In the same way, when we want to measure the volume of an object, we use a cubic centimetre (or cubic metre for larger objects).
- Give each learner a net of a cube, measuring 1 cm x 1 cm x 1 cm. They must cut around it carefully and make a cube. They will find this a bit fiddly but it is not too difficult if they are careful. When they have finished, tell them that they have made a cubic centimetre. Get a few learners to repeat this. Write it on the board: cm^3.
  - Hold up five cubes and ask the learners the volume of the cubes.
  - Hold up eight cubes and ask the learners the volume of the cubes.
  - Place six cubes next to each other on your desk and ask the learners the volume of the object you have made.
  - Take a container such as a chalk box and ask the learners to estimate how many cm^3 will fit into it. If possible, fill it with the cubes the learners have made to see how close their estimates were.

Consolidation (20 minutes)

- Find an exercise in the textbook to give the learners practice in calculating the volume of objects by counting the cm^3 blocks. If you cannot find a suitable exercise, make a worksheet containing eight or more shapes such as the following:



ASSESSMENT	**Informal:** Assess from the learners' participation in class, their practical work and completed class work whether they understand the concept of cubic units.

WEEK 9: DAY 3

Notes to the teacher:

- In today's lesson we will continue with the concept of volume and cm^3.
- The learners will discover that one cm^3 equals one millilitre of water. They can use this knowledge to measure the volume of an irregular object, such as a small rock. This is not a requirement of the Assessment Standards, but is interesting, educational and adds to the learners' general knowledge.
- Learners will again calculate, by counting the cubic centimetres, the volume of solids, and will revise drawing 3-d objects from different perspectives by drawing these objects from the side, front, back and top.

Resources: Chalkboard, textbook, worksheets, measuring jug and container or cylinder, several different size stones or small objects, cm^3 box, ml measuring spoon.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- Do some counting activities. See Addendum Mental Strategies for ideas of how to vary this. Give the learners instructions such as:
  - Count backwards in multiples of 8 from 64.
  - Count in multiples of 25 from 75.
  - Count backwards in 8s from 10.1
  - Count in quarters from 9.

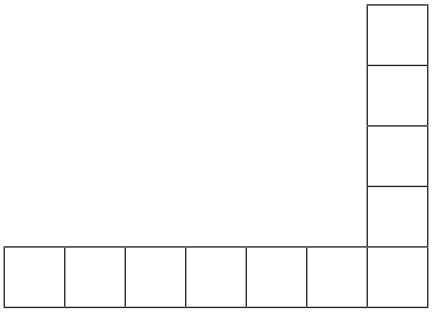
Concept Development (15 minutes)

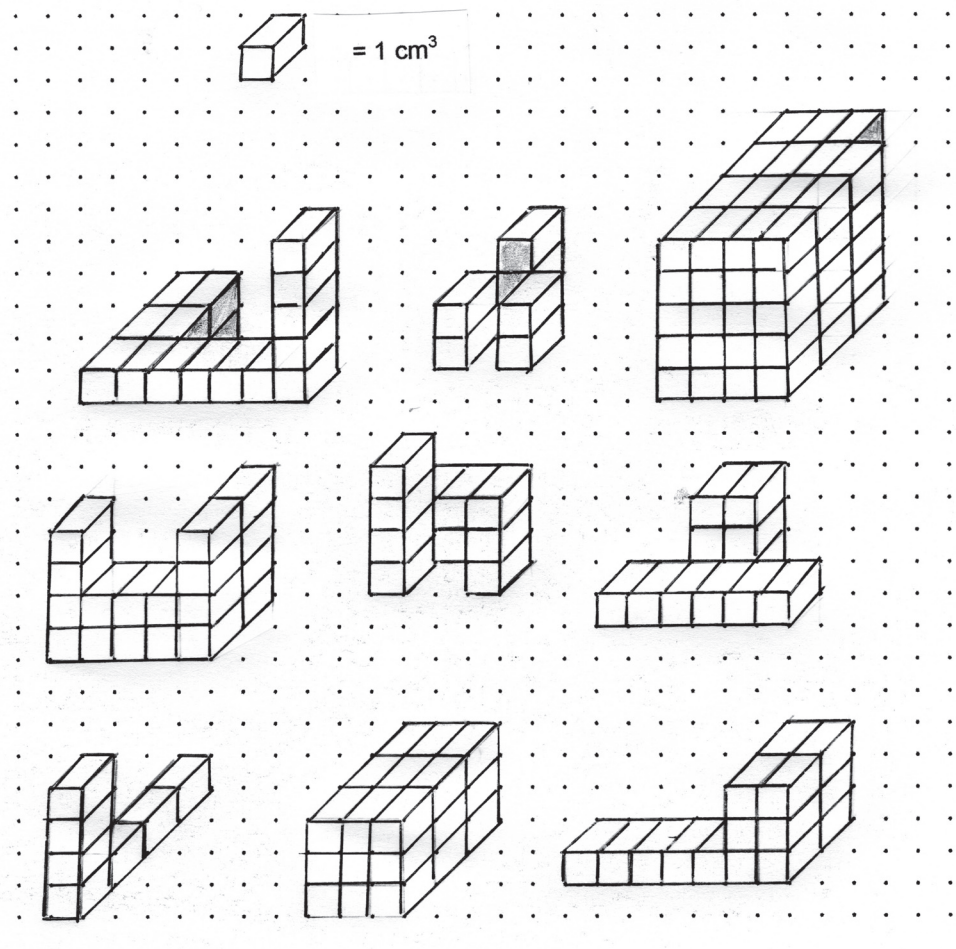
- Show the learners the cm^3 box that you have made. Fill a one ml measuring spoon with water. Pour the water into the cube. Show the learners that the cube is full. Ask the learners what they can conclude. One ml of water is equal to a cubic centimetre.
- If you have a measuring cylinder, use that for this demonstration. If not, use the container from the previous lesson filled about half full with water and mark the water level with a felt tipped pen.
  - Put a stone into the container.
  - Carefully pour the water, down to the mark you made, into a measuring cup. This water is equal to the volume of the rock.
  - Ask a learner to read how much water is in the measuring jug, e.g. it might be 20 ml.
  - Therefore, because 1 ml of water = 1 cm^3, the small rock you put into the water is equal to 20 cm^3.
  - Repeat with another different size stone or similar item.

Consolidation (35 minutes)

- The learners can do a few conversions. For example:
  - How many cm^3 are in: 1 litre, half a litre, 232 ml, 400 ml?
  - How many ml are equal to 800 cm^3?
- If there are no suitable examples in the textbook, make a worksheet containing drawings of objects made up of cubes, such as the examples below. Note that these are a bit more complicated than in the previous lesson as there are cm^3 which are not visible. The learners must:

- calculate the volume of the objects by counting the cubes;
- draw the objects, after calculating their volumes, from the front, side and top. For example, the first object will look like this from the front:





ASSESSMENT	**Informal:** Assess the learners' completed class work to ascertain whether they understand the concept of cubic units and that they can draw 3-d objects from different perspectives.

WEEK 9: DAY 4

Notes to the teacher:

- During the next two lessons, the learners will be doing a data handling assignment in groups.
- Decide on a general subject, e.g. "How we live". Each group will be given a sub-subject within the main subject, e.g. Type of dwelling. Within that sub-subject, learners must find out who lives in a free-standing house, a town house, a flat, a shack, a traditional house. The general subject you choose will depend on your learners and their environment. In a rural area, you will not do a survey to find out who has a TV set or which learners have MP3 players.
- The learners will gather this information using a tally table, firstly from their own classmates. If you are able to arrange it with your colleagues, let them get the same information from all the learners in Grade 5. Afterwards, they will draw pictographs and bar graphs to display the information for each class and then for the whole grade. They will also draw conclusions from their data (e.g. most people live in a free-standing house).
- Learners enjoy this kind of activity, working with real-life data. It provides an opportunity to revise pictographs and bar graphs.

Resources: Chalkboard, paper (blank and lined) and cardboard for learners, prepared topics.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- Do some "Running Maths" (see Term 2 Addendum Mental Strategies for instructions).
- Give the learners 10 to 15 random calculations for which they must write down the answers only. Examples:
  - Find the sum of 456 and 99.
  - How much is $\frac{3}{8}$ of 32?
  - How many 7s in 63?

Concept Development (30 minutes)

- Divide the learners into groups of 4 to 5. Tell the learners that, as a class, they are going to conduct a survey to establish how the grade 5s live. (Note, this is for example purposes only. You can choose your own topic and sub-topics.) They will present this information on a pictograph and bar graph for each grade 5 class and on a pictograph and bar graph for the entire grade. The graphs will be pasted on cardboard and the learners will have to present their findings to the rest of the class. Let a member of each group in turn, choose a topic which you have written on a piece of paper, folded and put into a container. Suggested sub-topics:
  - Type of dwelling (see Notes to the Teacher);
  - How many people in the household;
  - How many people in the household still at school;
  - How we cook (electricity, wood fire, paraffin, gas);
  - Our main means of transport (own car, taxi, bus, bicycle, walk);
  - How we light our home (candles, paraffin lamps, electricity, gas lamp).
- Give the learners a few minutes to draw a tally table for each grade 5 class. When they have finished, let two learners from each group in turn, come to the front of the class to gather the information by a show of hands for each question. They must not forget to include themselves. They must also ensure that their tally table reflects the correct number of learners in the class.

Consolidation (20 minutes) • In their groups, the learners can start drawing their pictographs and bar graphs. As only one learner can really do each graph, make sure the other learners are occupied. They can start preparing the axes, etc for the other classes' graphs, or do headings on the cardboard. If that is not enough to keep them occupied, give them some revision work to do from the textbook.	
ASSESSMENT	**Informal:** Assess how well the learners co-operate in groups.

WEEK 9: DAY 5

Notes to the teacher:

- In today's lesson the learners will continue with their data handling assignment.
- You should have organised with your colleagues that learners from your class will to their classes to gather information. Try to make this as inconvenient as possible. Send two learners from two groups at a time to another class. When the first two learners have finished asking their questions, they can return to your class and send the next two learners to the other class. Give as many different learners as possible a turn to ask questions (i.e. not the same two learners to go to all the classes).
- While group members are out of the class asking questions, the other group members can continue drawing the pictographs and graphs to display the information from your class. If there is not enough to keep them busy, write some work on the board for them to complete.

Resources: Chalkboard, paper (blank and lined) for the learners, cardboard.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- Write ten or more calculations such as the following on the board. The learners must copy and complete them by filling in the missing numbers. Example:
  - 45+99……+56……halve……÷4……+7…….÷8=……

Concept Development (30 minutes)

- The learners can go to the other grade 5 classes to conduct their surveys. Send two members from two groups at a time to each class. When the first two learners have finished asking their questions, they can return to class and send the next two learners from another group to ask their questions. Ensure that this is well controlled and that you obtained your colleagues' co-operation beforehand.

Consolidation (20 minutes)

- In their groups, learners must draw their pictographs and bar graphs to display the data obtained from the other grade 5 classes. There should be enough work to keep each group member busy, but monitor them carefully to ensure that there is proper division of labour and that one learner is not attempting to do all the work while others do nothing. If there is no work for some learners to do, write some work on the board (revision).

ASSESSMENT	**Informal:** Observe the learners as they work in groups to assess their ability to work with their peers and show responsibility in a situation like this.

GRADE 5: WEEK 10 OVERVIEW

Hours: 5	**Number of Periods: 5**
Mathematics **LO 1, 2, 3, 4, 5**	**Milestones:** • General revision of all work in all LO's done this year.

Mental Strategies: Mental strategies are done with the whole class every day. The time should be used to develop skills and to build number sense.

	Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
Content Focus:	Data Handling	Numbers, operations and relationships (LO 1)	Space and Shape (LO 3), Measurement (LO 4)	Measurement (LO 4), Data Handling (mode, chance and probability) (LO 5)	Patterns, functions and algebra (LO 2)
Resources:	Chalkboard, cardboard and paper for learners	Chalkboard, textbook, worksheets	Chalkboard, textbook, worksheets	Chalkboard, textbook, worksheets	Chalkboard, textbook, worksheets

WEEK 10: DAY 1
Notes to the teacher: • In today's lesson, the learners will complete their data handling assignment by doing pictographs and bar graphs for information pertaining to the whole grade. They will then paste all their graphs onto cardboard and present their findings to the class. • Make sure that all the learners are busy. If there is no work they can do for the assignment, write some work for them to do on the board. • During the rest of the week, the final week of the academic year, keep the learners busy by doing meaningful revision. **Resources:** Chalkboard, cardboard and paper for learners.
DAILY ACTIVITIES
Oral and Mental Activity (10 minutes) • The learners can complete a multiplication times tables speed test. If you cannot photocopy tests for the learners, write 15 sums on the board. On your signal the learners can begin (do not let the learners see the work beforehand). Stop them after 3 minutes and see who has finished all the tables. They can then swop books and mark each other's work.
Group work (30 minutes) • The learners must work in their groups to complete their data handling assignment pasted on cardboard to make posters. If there are any learners in any of the groups who cannot contribute, give them revision work to do. Walk around to each group to guide them as to the sort of findings they can present to the class and to ensure that: - they start off by doing a pictograph and a bar graph to display the data of the whole grade; - each pictograph has a key showing the number of learners represented by each symbol; - each graph has a heading, and the axes of the bar graphs are properly labeled; - the columns of the bar graphs are equal in width and equally spaced; - the learners' posters have a heading and are neatly presented.
Consolidation (20 minutes) • Each group in turn must come to the front of the class to show their posters and graphs to the rest of the class. They must give a brief summary of their findings to the class – you might have to ask them questions to guide them. For example, if the group surveyed the type of house that learners live in, they can interpret their information: - We found that, in the grade, most people live in flats and the fewest people live in traditional dwellings. - More people in grade 5 A lived in houses than in grade 5 B. - The number of people living in flats is double the number living in townhouses.

ASSESSMENT	**Informal:** Assess from the learners' completed posters whether they are able to draw pictographs and bar graphs and interpret the data.

WEEK 10: DAY 2

Notes to the teacher:

- For the rest of the week, we will revise the year's work, one LO at a time.
- Being the final week of the year, the learners might want to stop working but it is important that they keep their minds sharp and practise the concepts taught as much as possible.
- If you want to do the revision in the form of daily competitions between groups, it is up to you. You can see which group finishes first each day with most work correct and give that group a reward. A competition is often a motivating factor. However, every learner must complete all the work set in his/her own workbook.
- Alternatively, you can do some of the revision work orally (let different learners do calculations on the board) and some work can be done in the learners' workbooks.
- Today, the focus will be on LO 1: Numbers, operations and relationships.

Resources: Chalkboard, revision worksheets, textbooks.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- Do some "Running Maths" and a round or two of "Tables King" or Tables Challenge. (See Addendum Mental Strategies for instructions.)

Revision (50 minutes)

- If you want to revise one concept at a time by letting 5 to 6 different learners come to the board to solve a problem, each learner in his/her own working space, in the form of a team or group competition, that is in order. Give as many learners as possible a chance to do a calculation. Otherwise, make a revision worksheet, write work on the board, or find revision exercises in the textbooks (many textbooks have revision at the back of the book). While the learners are working, walk around and help any who are having difficulty with any of the work. Cover as many of the following concepts as possible in the form of problem solving where applicable:
  - Place value of digits in 6-digit numbers (including expanded notation and building up numbers).
  - Adding and subtracting in columns.
  - Adding and subtracting 6-digit numbers.
  - Multiplying a 3-digit by a 2-digit number
  - Division of a 3-digit number by a 2-digit number.
  - Fractions: up to twelfths; adding and subtracting mixed numbers with the same denominator; equivalent fractions; finding the fraction of a number.
  - Rounding off to the nearest 5, 10, 100 and 1 000.
  - Recognising factors of any 2-digit whole number.
  - Recognising multiples of single-digit numbers up to 100.
  - Financial: budget; profit and loss.
  - Comparing quantities (ratio and rate).

ASSESSMENT	**Informal:** This revision lesson will enable you to get an overview of any areas of weakness or gaps in your learners' knowledge.

WEEK 10: DAY 3

Notes to the teacher:

- In today's lesson, we will revise LO 3, Space and Shape and some of LO 4, Measurement.
- If you gave the learners written work only in the previous lesson, make today's lesson a competition by dividing the learners into two or more teams and asking learners in turn to complete a task on the board to gain points for their team. If you just set written work all the time, learners might become bored and poor behaviour may result. You must try to keep them motivated.

Resources: Chalkboard, textbooks, worksheets.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- Give the learners 6 flow diagrams to complete. Draw them on the board. The learners must copy and complete them in their workbooks. Include:
  - One flow diagram where the operator is +.
  - One flow diagram where the operator is –.
  - One flow diagram where the operator is x.
  - One flow diagram where the operator is ÷.
  - Two flow diagrams with two operators.
  - Calculations where the learners have to find the input number by working backwards from the given output number.

Revision (50 minutes)

- However you choose to revise today, orally by means of a competition, by giving the learners written work, or by a mixture of both, make sure that as many of the following concepts as possible are included in the revision:
  - Naming 2D shapes and 3D objects, their similarities and differences.
  - Recognising faces, vertices and edges of 3D objects.
  - Line and rotational symmetry.
  - Movement of shapes including rotations, reflections and translations.
  - Sketching views of 3D objects from different perspectives.
  - Locating places on a coded grid and tracing a path between places.
  - Conversion between different SI units: length, mass and capacity.

ASSESSMENT	**Informal:** This revision lesson will enable you to get an overview of any areas of weakness or gaps in your learners' knowledge.

WEEK 10: DAY 4

Notes to the teacher:

- Today, we will revise the rest of LO 4, Measurement.
- It is a long time since learners used some of the concepts, e.g. reading analogue, digital and 24-hour time, so give the learners practice in this.
- If you observed any learners who had difficulty with any of the revision work, i.e. do not yet understand a particular concept, spend time with them individually or in small groups to help them understand.
- Keep the learners motivated. Do not just sit back and leave them to work alone. Some form of competition or promise of a reward is always motivational.

Resources: Chalkboard, textbook, worksheets.

DAILY ACTIVITIES

Oral and Mental Activity (10 minutes)

- Do some counting activities. See Addendum Mental Strategies for ideas on how to vary these. Examples:
  - Count in multiples of 7 from 49.
  - Count in $^{3}/_{4}$s from 5.
  - Count backwards in 11s from 221.
  - Count backwards in multiples of 25 from 550.

Revision (50 minutes)

- By whatever method you feel will keep the learners busy, interested and motivated, revise as many of the following concepts as possible today:
  - Perimeter, area and volume.
  - Recognizing right angles in 2-d shapes and 3-d objects and the environment.
  - Reading analogue, digital and 24-hour time.
  - Finding the mode of ungrouped data.
  - Classify events from daily life from “certain they will happen” to “certain they will not happen”.
  - Any concepts from LO 1 not covered in the revision lesson on LO 1.

ASSESSMENT	**Informal:** By marking the learners’ written work, or observing their verbal responses if the revision was done orally, you will be able to assess whether there are any concepts the learners do not understand.

WEEK 10: DAY 5	
Notes to the teacher: • On this, the final day of the academic year, you can revise LO 2, Patterns, Functions and Algebra, as well as any concepts that you feel need more attention and practice. • Keep the learners motivated by making the revision work a competition or rewarding learners who finish quickly and accurately, with some kind of reward (e.g. extra time at break). **Resources:** Chalkboard, textbooks, worksheets.	
DAILY ACTIVITIES	
Oral and Mental Activity (10 minutes) • Do some "Clock Multiplication" and a round or two of "Tables King" or Tables Challenge (see Addendum Mental Strategies for instructions).	
Revision (50 minutes) • However you choose to do the revision today, make sure the learners are motivated and busy. Although the focus will be on revising concepts from LO 2 (Patterns, functions and algebra), if there are any concepts from other LO's that you feel need attention, give the learners practice in those. If there are no suitable revision exercises in the textbook, make a worksheet or write work on the board (or have a competition giving learners in turn the chance to do the task on the board) to cover as many of the following concepts as possible: - Extend numeric and geometric patterns looking for a rule. - Solve or complete number sentences by inspection. - Write a number sentence to solve a problem. - Represent patterns verbally, in flow diagrams and by number sentences.	
ASSESSMENT	**Informal:** Hopefully this week's revision has enabled you to see and remedy any areas of difficulty and your learners can proceed to Grade 6 with sound mathematical knowledge.

ADDENDUM

BATTLESHIPS

This game is for two players. It gives learners good practice in locating positions in a grid.

Preparation:

Each learner needs two coded grids, 8x8 squares is sufficiently large:

My ships

	1	2	3	4	5	6	7	8
A								
B								
C								
D								
E								
F								
G								
H								

My opponent's ships

	1	2	3	4	5	6	7	8
A								
B								
C								
D								
E								
F								
G								
H								

Each learner must place ships within his/her grid ("My ships"), horizontally or vertically and not touching.

1 x Aircraft carrier (6 blocks):

A	A	A	A	A	A

1 x Battleship (4 blocks)

B	B	B	B

2 x Destroyers (3 blocks)

D	D	D

D	D	D

3 x submarines (2 blocks)

S	S

S	S

S	S

My ships

	1	2	3	4	5	6	7	8
A		S	S					D
B					S	S		D
C	A							D
D	A		B	B	B	B		
E	A							
F	A				D			
G	A				D			S
H	A				D			S

My opponent's ships

	1	2	3	4	5	6	7	8
A								
B								
C								
D								
E								
F								
G								
H								

<u>To play:</u>

Learners must not see each other's grids. They take turns to call a grid location to try and hit a ship. A ship is completely sunk when all its blocks have been hit.
Each time the learner has a turn, he must mark off what he called on "My opponent's ships" grid. He can mark a miss with a dot or a cross, and a hit with the letter of whatever ship he has hit.

My ships

	1	2	3	4	5	6	7	8
A		S	S					D
B					S	S		D
C	A							D
D	A		B	B	B	B		
E	A							
F	A				D			
G	A				D			S
H	A				D			S

My opponent's ships

	1	2	3	4	5	6	7	8
A								
B		x						
C								
D		D				x		
E				x				
F								
G					S	S		
H								

He must also mark off on his own grid whatever his opponent has called.

My ships

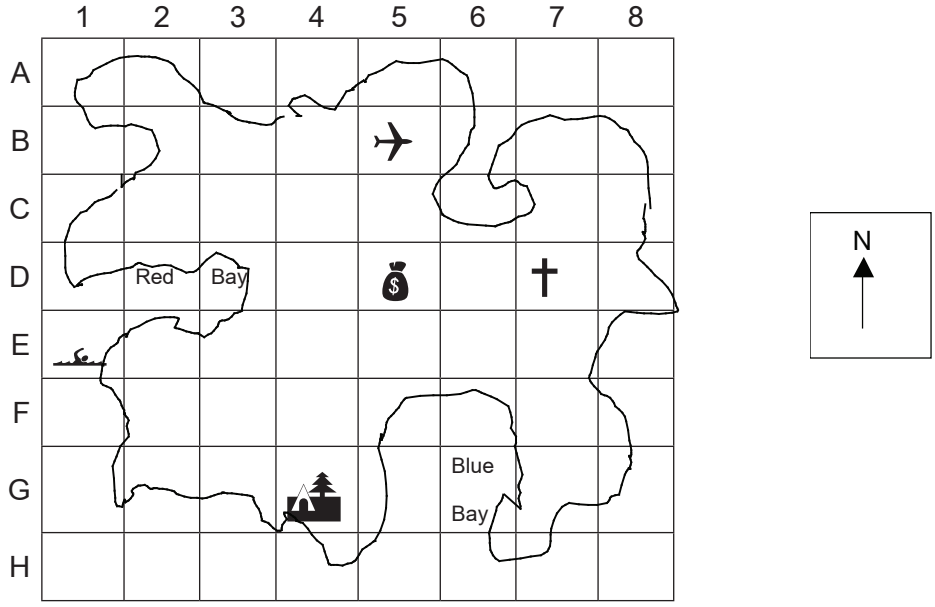
	1	2	3	4	5	6	7	8
A		S	S		x			D
B					S	S		D
C	A				x			D
D	A		B	B	B	B		
E	A		x					
F	A				D		x	
G	A				D			S
H	A				D			S

My opponent's ships

	1	2	3	4	5	6	7	8
A								
B		x						
C								
D		D				x		
E				x				
F								
G					S	S		
H								

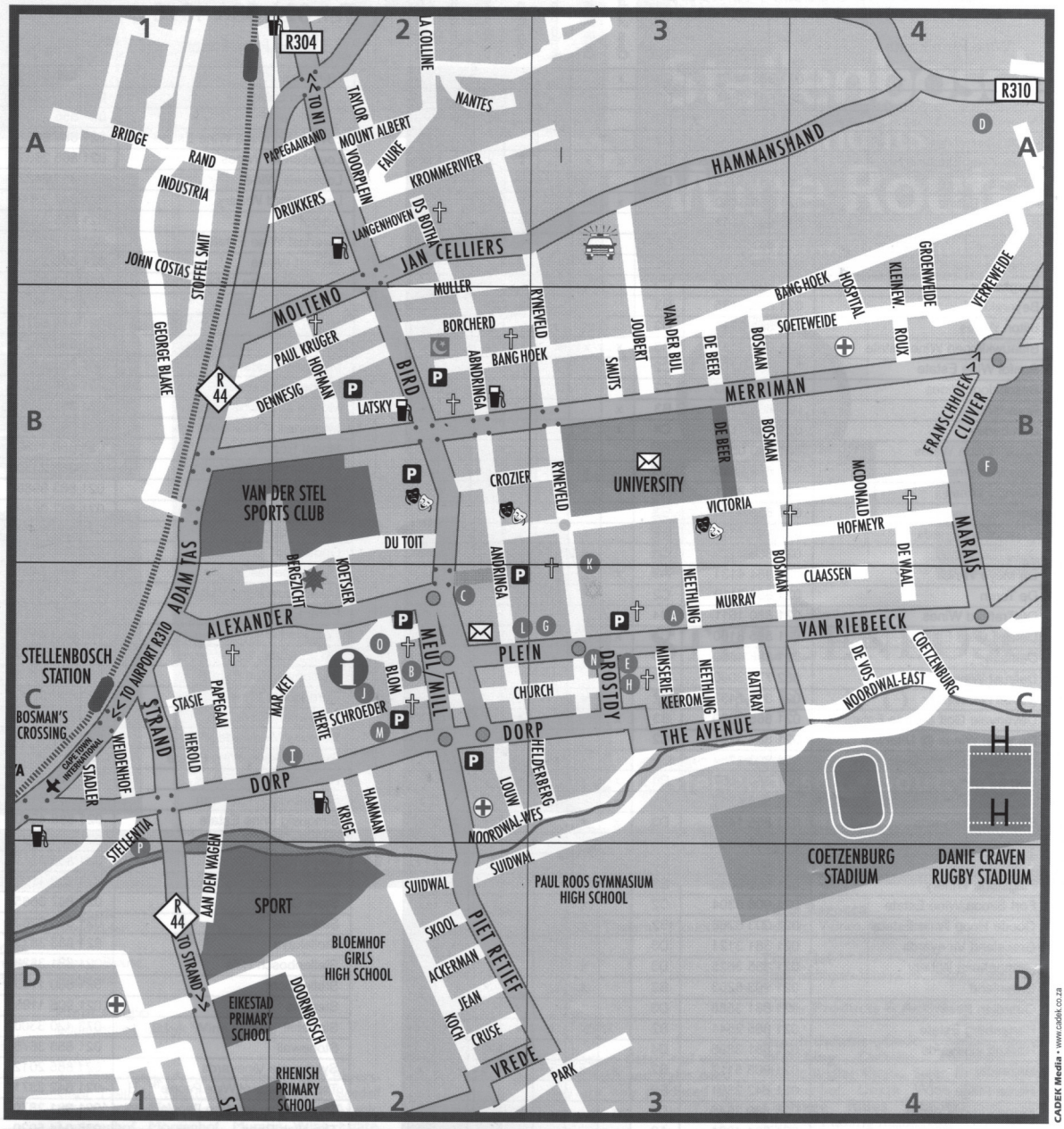
When one of the players' ships have all been sunk, the game ends.

ADDENDUM; GRID LOCATIONS, TRACING A PATH.



- You are shipwrecked. You manage to swim to an island. You land on the island at E,1.
  - Go 3 blocks east. You are at the post office. Write PO in that block.
  - From the post office, the direct you to the camp site. Which direction is that? What directions did they give you? …….
  - The next morning, you go 3 blocks east and 3 blocks north. What bay did you cross? ……What do you find? ……
  - From there you move 4 blocks west and one block north. You are at the station. Write S for Station in that block.
  - You leave the station to go to the airport. Write down the path you took to get to the airport.

STELLENBOSCH TOWN MAP



TOWN CENTRE

- Traffic Intersection
- Traffic Circle
- Railway Station
- Post Offices
- Police Station
- Traffic Department
- Mosque
- Hospitals/Health Care
- Churches/Places of Worship
- Info/Wine Route Office
- Public Parking
- Petrol Stations
- Theatres
- Synagogue

PLACES OF INTEREST

- A Botanical Gardens
- B Die Braak
- C Eikestad Mall
- D Heritage Garden
- E Grosvenor House
- F Jan Marais Nature Reserve
- G Library
- H Moederkerk/Church
- I Oom Samie se Winkel
- J Rhenish Complex
- K Sasol Art Gallery
- L Town Hall
- M Toy and Miniature Museum
- N Village Museum
- O VOC Kruithuis
- P Rupert Museum

Notes:

Notes:

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