

MATHEMATICS
Grade 4
TERM 3 2020
Lesson
Plans



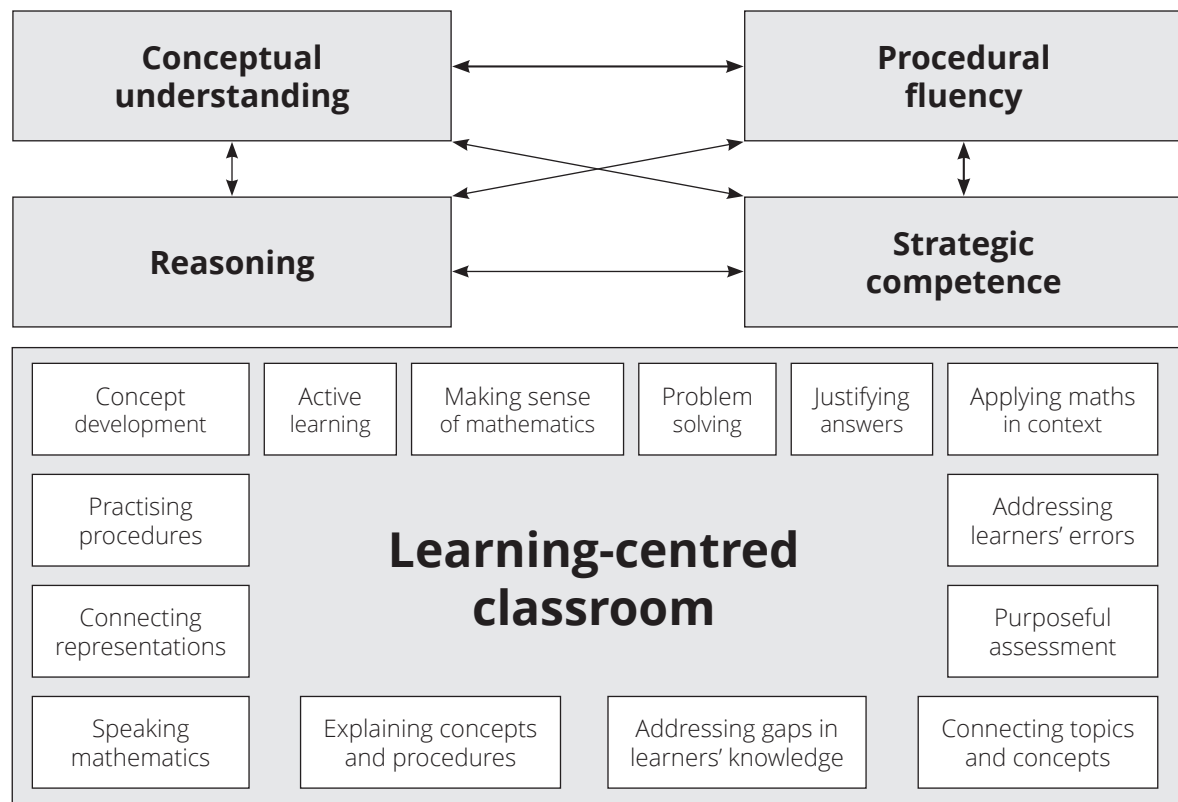
Contents

Teaching mathematics for Understanding (TMU)	1
Summary of Mathematics Teaching Approaches	3
I. CPA (Concrete-Pictorial-Abstract) APPROACH	3
II. PROBLEM SOLVING	8
Glossary of important terms used in the TMU lesson plans	14
Calculation Terms	14
Representation Terms	16
Resources Terms	19
Assessment for learning	22
About the Lesson Plans	24
Preparing to teach a lesson	26
Grade 4 Time Allocation Per Topic	29
Lesson Plan Outline	31
Teacher's notes	31
Unit 1: Multiplication	35
INTRODUCTION	35
Mathematical vocabulary for this unit	36
Further practice for learners	37
UNIT PLAN AND OVERVIEW FOR UNIT 1: Multiplication	38
Lesson 1: Multiplication properties (1)	40
Lesson 2: Multiplication properties (2)	48
Lesson 3: Multiplication using the column method	54
Lesson 4: Multiplying a 2-digit number by a 1-digit number	63
Lesson 5: Multiplying by a 2-digit number (1)	68
Lesson 6: Multiplying by a 2-digit number (2)	73
Lesson 7: Multiplying by a 2-digit number (3)	80
Lesson 8: Multiplying by a 2-digit number (4)	84
Lesson 9: Consolidation	89
Unit 2: Area and perimeter	93
INTRODUCTION	93
Mathematical vocabulary for this unit	94
Further practice for learners	96
UNIT PLAN AND OVERVIEW FOR UNIT 2: Area and perimeter	97
Lesson 10: Area	99
Lesson 11: Using square units to measure area	107
Lesson 12: Calculating area (1)	113
Lesson 13: Calculating area (2)	121
Lesson 14: Calculating area (3)	128
Lesson 15: Calculating area (4)	136

Lesson 16: Consolidation	144
Lesson 17: Perimeter (1)	150
Lesson 18: Perimeter (2)	157
Lesson 19: Relationships between area and perimeter	163
Lesson 20: Consolidation	169
Unit 3: Division	173
INTRODUCTION	173
Mathematical vocabulary for this unit	174
Further practice for learners	175
UNIT PLAN AND OVERVIEW FOR UNIT 3: Division	176
Lesson 21: Grouping and sharing	178
Lesson 22: Division with remainders	186
Lesson 23: Dividing 0 by a number	192
Lesson 24: More division	198
Lesson 25: Finding length and breadth of rectangles and squares	204
Lesson 26: Long division	210
Lesson 27: Long division with a remainder	216
Lesson 28: Long division with and without a remainder	222
Lesson 29: Consolidation	230
Unit 4: Decimal fractions	234
INTRODUCTION	234
Mathematical vocabulary for this unit	235
Further practice for learners	236
UNIT PLAN AND OVERVIEW FOR UNIT 4: Decimal fractions	237
Lesson 30: Common fractions and decimal fractions	239
Lesson 31: Counting in decimal fractions	244
Lesson 32: Which decimal fraction is bigger?	249
Lesson 33: Compare decimal fractions and common fractions	253
Lesson 34: Adding decimal fractions (1)	258
Lesson 35: Adding decimal fractions (2)	264
Lesson 36: Subtracting decimal fractions (1)	270
Lesson 37: Subtracting decimal fractions (2)	276
Lesson 38: Consolidation	282
Unit 5: Capacity and volume	285
INTRODUCTION	285
Mathematical vocabulary for this unit	286
Further practice for learners	286
UNIT PLAN AND OVERVIEW FOR UNIT 5: Capacity and volume	287
Lesson 39: Millilitres and litres	288
Lesson 40: Capacity and volume in everyday life (1)	297
Lesson 41: Capacity and volume in everyday life (2)	303
Lesson 42: Consolidation	311

Teaching mathematics for Understanding (TMU)

You are participating in the pilot implementation of the Mathematic Framework – which calls for *Teaching Mathematics for Understanding*. Diagrammatically the framework is represented as shown below.



The Framework proposes the steps that should be taken to bring about the transformation of mathematics teaching in South Africa. Mathematical examples of the dimensions of the framework can be found in the TMU Framework Document.

At the start of each unit, we provide examples of how the four dimensions of the framework are included in the lesson plans.

Teachers should strive to:	Brief description of what learners should do:	Explanation
- teach mathematics for conceptual understanding	Understand	Involves the learners' comprehension and understanding of mathematical concepts, operations, and relations
- teach so that learners develop procedural fluency	Follow steps	Involves developing learners' skill in carrying out procedures flexibly, accurately, efficiently, and appropriately
- develop learners' strategic competence	Choose how to do it	Involves the learners' ability to formulate, represent, and decide on appropriate strategies to solve mathematical problems
- develop learners' mathematical reasoning skills	Think in mathematical ways	Involves providing multiple and varied opportunities for learners to – the capacity for logical thought, reflection, explanation and justification

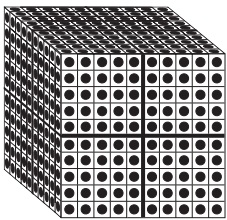
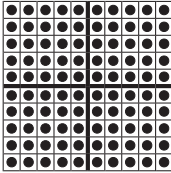


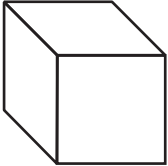



At the start of each unit, we provide examples of how the four dimensions of the framework are included in the lesson plans.

Summary of Mathematics Teaching Approaches

I. CPA (Concrete-Pictorial-Abstract) APPROACH

The Concrete-Pictorial-Abstract (CPA) approach helps learners to develop the concepts of numbers. The CPA approach uses several different representations for the concepts of numbers 1, 10, 100 and 1 000. For instance, the number '5' can be represented by 5 bottle tops (concrete objects), 5 circles (pictorial representations) and the number symbol '5' (abstract). By the time learners reach the Intermediate Phase, most should be able to work without the support of concrete objects or pictorial representations and should be working with abstract representations most of the time.

The following table shows the materials used in the TMU lesson plans. It is important to connect each representation to the other representations.

Number symbol	1 000	100	10	1
Number name	thousand	hundred	Ten	one
Base ten kit (manipulatives)				
Simplified pictorials (drawings) of the Base ten kit				

In the CPA approach, the following methods are important:

a. Column method using a base ten kit [CONCRETE OBJECTS] (Grade 2, 3, 4)

It is critical to show the connection between the place value table and the column method. In Grades 2 and 3, learners used base ten kits on a place value table.

1) $45 + 12$

Step 1. Add bottle tops in each place.

Use base ten kits →

Add 1 ten to 4 tens

Add 2 ones to 5 ones

	T	O
	4	5
+	1	2
	5	7

5 tens 7 ones

57

Step 2. Write numbers in each place.

Step 3. Write the answer.

2) $42 - 19$

Step 1. Exchange 1 ten for 10 ones.

Use base ten kits →

Step 2. Remove bottle tops from each place.

Remove 1 ten

Remove 9 ones

Use base ten kits →

	T	O
	3	12
-	1	9
	2	3

2 tens 3 ones

23

Step 3. Write numbers in each place.

Step 4. Write the answer.

















































































































































b. Column method using simplified pictorials [PICTORIAL REPRESENTATION]

(Grade 3, 4)

In Grade 3, learners used simplified pictorials. Although Grade 4 learners should be working with abstract representations, you might have some learners who still need pictorial representations, particularly in the first term of Grade 4.

In the following diagrams, all the steps can be drawn as follows:

1) $1\ 384 + 2\ 139$

<p>Step 1. Draw 1 384 and 2 139 vertically.</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <th style="width: 25%;">Th</th> <th style="width: 25%;">H</th> <th style="width: 25%;">T</th> <th style="width: 25%;">O</th> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Th	H	T	O									<p>Step 2. Since $4 + 9$ in the ones place exceeds 10, exchange 10 ones for 1 ten (carrying).</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <th style="width: 25%;">Th</th> <th style="width: 25%;">H</th> <th style="width: 25%;">T</th> <th style="width: 25%;">O</th> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Th	H	T	O												
Th	H	T	O																										
																													
																													
Th	H	T	O																										
																													
																													
<p>Step 3. Since $8 + 4$ in the tens place exceeds 10, exchange 10 tens for 1 hundred (carrying).</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <th style="width: 25%;">Th</th> <th style="width: 25%;">H</th> <th style="width: 25%;">T</th> <th style="width: 25%;">O</th> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Th	H	T	O									<p>Step 4. Since $3 + 2$ in the hundreds place does not exceed 10, there is no need to exchange (carry).</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <th style="width: 25%;">Th</th> <th style="width: 25%;">H</th> <th style="width: 25%;">T</th> <th style="width: 25%;">O</th> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Th	H	T	O												
Th	H	T	O																										
																													
																													
Th	H	T	O																										
																													
																													
<p>Step 5. Since $1 + 2$ in the thousands place does not exceed 10, there it no need to exchange (carry).</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <th style="width: 25%;">Th</th> <th style="width: 25%;">H</th> <th style="width: 25%;">T</th> <th style="width: 25%;">O</th> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Th	H	T	O									<p>Step 6. Write the answer</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <th style="width: 25%;">Th</th> <th style="width: 25%;">H</th> <th style="width: 25%;">T</th> <th style="width: 25%;">O</th> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>3</td> <td>5</td> <td>2</td> <td>3</td> </tr> </table> <p>The answer is 3 523</p>	Th	H	T	O									3	5	2	3
Th	H	T	O																										
																													
																													
Th	H	T	O																										
																													
																													
3	5	2	3																										

We write this:

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

2) 4 367 – 2 278

<p>Step 1. Draw 4 367</p> <table border="1" style="width: 100%; text-align: center; border-collapse: collapse;"> <tr> <td style="width: 25%;">Th</td> <td style="width: 25%;">H</td> <td style="width: 25%;">T</td> <td style="width: 25%;">O</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Th	H	T	O					<p>Step 2. Start in the ones place. Since we can't do 7 – 8, exchange 1 ten for 10 ones (borrowing).</p> <table border="1" style="width: 100%; text-align: center; border-collapse: collapse;"> <tr> <td style="width: 25%;">Th</td> <td style="width: 25%;">H</td> <td style="width: 25%;">T</td> <td style="width: 25%;">O</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Th	H	T	O								
Th	H	T	O																		
Th	H	T	O																		
<p>Step 3. 17 – 8 = 9 in the ones place.</p> <table border="1" style="width: 100%; text-align: center; border-collapse: collapse;"> <tr> <td style="width: 25%;">Th</td> <td style="width: 25%;">H</td> <td style="width: 25%;">T</td> <td style="width: 25%;">O</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Th	H	T	O					<p>Step 4. Since we can't do 5 – 7 in the tens place, exchange 1 hundred for 10 tens (borrowing)</p> <table border="1" style="width: 100%; text-align: center; border-collapse: collapse;"> <tr> <td style="width: 25%;">Th</td> <td style="width: 25%;">H</td> <td style="width: 25%;">T</td> <td style="width: 25%;">O</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Th	H	T	O								
Th	H	T	O																		
Th	H	T	O																		
<p>Step 5. 15 – 7 = 8 in the tens place.</p> <table border="1" style="width: 100%; text-align: center; border-collapse: collapse;"> <tr> <td style="width: 25%;">Th</td> <td style="width: 25%;">H</td> <td style="width: 25%;">T</td> <td style="width: 25%;">O</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Th	H	T	O					<p>Step 6. We can do 2 – 2 in the hundreds place, so we do not need to exchange (borrow).</p> <table border="1" style="width: 100%; text-align: center; border-collapse: collapse;"> <tr> <td style="width: 25%;">Th</td> <td style="width: 25%;">H</td> <td style="width: 25%;">T</td> <td style="width: 25%;">O</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Th	H	T	O								
Th	H	T	O																		
Th	H	T	O																		
<p>Step 7. 2 – 2 = 0 in the hundreds place.</p> <table border="1" style="width: 100%; text-align: center; border-collapse: collapse;"> <tr> <td style="width: 25%;">Th</td> <td style="width: 25%;">H</td> <td style="width: 25%;">T</td> <td style="width: 25%;">O</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Th	H	T	O					<p>Step 8. We can do 4 – 2 in the thousands place, so we do not need to exchange (borrow).</p> <table border="1" style="width: 100%; text-align: center; border-collapse: collapse;"> <tr> <td style="width: 25%;">Th</td> <td style="width: 25%;">H</td> <td style="width: 25%;">T</td> <td style="width: 25%;">O</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Th	H	T	O								
Th	H	T	O																		
Th	H	T	O																		
<p>Step 9. 4 – 2 = 2 in the thousands place.</p> <table border="1" style="width: 100%; text-align: center; border-collapse: collapse;"> <tr> <td style="width: 25%;">Th</td> <td style="width: 25%;">H</td> <td style="width: 25%;">T</td> <td style="width: 25%;">O</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Th	H	T	O					<p>Step 10. Write the answer</p> <table border="1" style="width: 100%; text-align: center; border-collapse: collapse;"> <tr> <td style="width: 25%;">Th</td> <td style="width: 25%;">H</td> <td style="width: 25%;">T</td> <td style="width: 25%;">O</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>0</td> <td>8</td> <td>9</td> </tr> </table> <p>The answer is 2 089</p>	Th	H	T	O					2	0	8	9
Th	H	T	O																		
Th	H	T	O																		
2	0	8	9																		

We write this:

	Th	H	T	U
	4	3	6	7
–	2	2	7	8
	2	0	8	9

c. Column method [ABSTRACT REPRESENTATION] (Grade 2, 3, 4)

In Grade 2, learners are shown how to write the column method using two rows. Each row shows the number place of ones and tens.

Grade 2

1) $45 + 12$

	T	O	
	4	5	
+	1	2	
		7	O: $5 + 2 = 7$
	5	0	T: $40 + 10 = 50$
	5	7	

2) $42 - 19$

	T	O	
	4	2	
-	1	9	
		3	O: $12 - 9 = 3$
	2	0	T: $30 - 10 = 20$
	2	3	

In Grade 3 and 4, learners can use one row.

Grade 3

3) $26 + 38$

	H	O	
	2	6	
+	3	8	
	6	4	

4) $81 - 47$

	T	O	
	8	1	
-	4	7	
	3	4	

5) $384 + 139$

	H	T	O	
	3	8	4	
+	1	3	9	
	5	2	3	

6) $367 - 78$

	H	T	O	
	3	6	7	
-		7	8	
	2	8	9	

Grade 4

7) $1\ 249 + 3\ 856$

	Th	H	T	O
	1	2	4	9
+	3	8	5	6
	5	1	0	5

8) $4\ 321 - 2\ 463$

	Th	H	T	O
	4	3	2	1
-	2	4	6	3
	1	8	5	8

II. PROBLEM SOLVING

WORD PROBLEMS BY PROBLEM TYPE

- These problem types are given to guide the teacher. Learners do not need to know the names of the problem types, nor do they need to be able to identify the problem type. Learners do not need to know operation terms such as multiplier or product.
- There are different problem types for addition, subtraction, multiplication and division word problems. Since Grade 1, learners have been exposed to word problems involving a variety of problem types. It is important for you, the teacher, to be aware of the different problem types and to present these repeatedly so that learners become familiar with all of them and are able to work with all of them.
- It is important that learners learn to solve all these different types of problems. Being able to do so will help them acquire a full understanding of the meaning of all four operations.
- All problem types discussed below are addressed in the Grade 4 Lesson Plans and Learner Activity Books.

1. TYPES OF ADDITION AND SUBTRACTION WORD PROBLEM

A. COMBINE WORD PROBLEMS (OR 'ADD TO')

The change amount is added to the start amount to give the result.

There are three quantities involved in join word problems:

- the **start amount** or original amount
- a **change amount** (the amount being added or joined)
- the **result** (the total amount after the change takes place).

Start amount	Change amount
Result	

$$\text{Start} + \text{Change} = \text{Result}$$

Any of these three quantities can be the unknown in a combine problem.

a Result is the unknown

Zandile has 8 books.
Justice gave her 4 books.
How many books does Zandile have altogether?

8 books	4 books
? books	

$$8 + 4 = ?$$

b Change is the unknown

Zandile has 8 books.
Justice gave her some more books.
Now Zandile has 12 books.
How many books did Justice give her?

8 books	? books
12 books	

$$8 + ? = 12 \text{ or } 12 - ? = 8$$

c) Start is the unknown

Zandile had some books.
Justice gave her 4 books.
Now Zandile has 12 books.
How many books did Zandile have to start with?

? books	4 books
12 books	

$$? + 4 = 12 \text{ or } 12 - 4 = ?$$

B. CHANGE WORD PROBLEMS (OR 'TAKE FROM')

The opposite of joining is **separating**. The change amount is subtracted from the start amount to give the result.

There are three quantities involved:

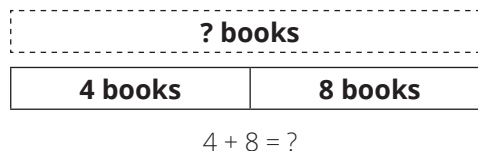
- The **start amount** or **original amount**.
- a **change amount** (the amount being removed from the original)
- the **end amount** or **result** (the total amount after the change has taken place).

Start amount	
Change	Result

Any of these three quantities can be the unknown in a change word problem.

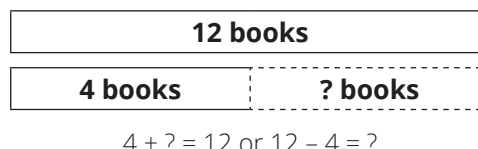
a Start is the unknown

Zandile had some books.
 She gave 4 books to Justice.
 Zandile has 8 books left.
 How many books did Zandile have to start with?



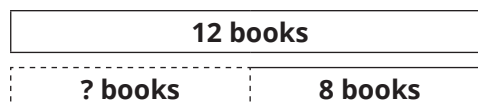
b Result is the unknown

Zandile has 12 books.
 She gave 4 books to Justice.
 How many books does Zandile have now?



c) Change is the unknown

Zandile has 12 books.
 She gave some books to Justice.
 Now she has 8 books.
 How many books did she give to Justice?



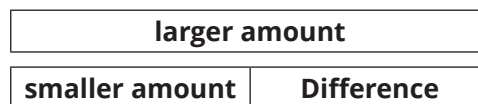
With both the Combine and the Change word problem types, the 'finding the Result' is easiest and 'finding the Start amount' is the most difficult problem type.

C. COMPARE WORD PROBLEMS

COMPARE Word Problems involve the comparison of two quantities. The third amount is the difference between the two parts.

There are three quantities involved:

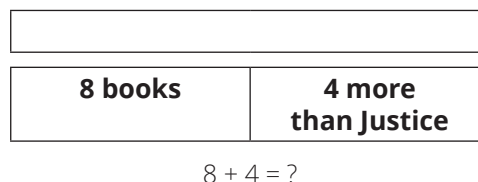
- The **larger amount**
- The **smaller amount**
- The **difference**.



Any of these three quantities can be the unknown in a compare word problem.

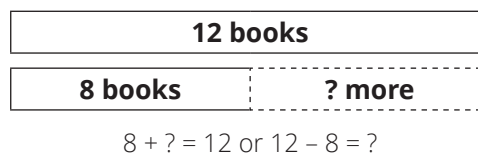
a Larger amount is the unknown

Justice has 8 books.
 Zandile has 4 more books than Justice.
 How many book does Zandile have?



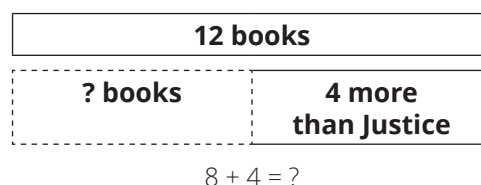
b Difference is the unknown

Zandile has 12 books.
 Justice has 8 books.
 How many more books does Zandile have than Justice?



c) Smaller amount is the unknown

Zandile has 12 books.
 Zandile has 4 more books than Justice.
 How many books does Justice have?



With Compare word problems, the 'finding the Larger Amount' is easiest and 'finding the Smaller amount' is the most difficult.

WHEN MORE DOES NOT MEAN ADD

Learners look for verbal cues when solving word problems. "More" usually (but not always) suggests addition and "less" usually (but not always) suggests subtraction. Learners should be made aware of problems where these words suggest the opposite of what they usually do.

For example: Smangi has 14 books which is 2 more than Yvonne. How many books does Yvonne have?

Learners who can write this as $14 - 2 = ?$ are well on their way to understanding addition and subtraction.

2. TYPES OF MULTIPLICATION AND DIVISION WORD PROBLEM

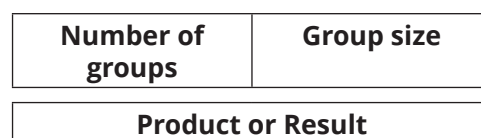
In multiplication and division problems:

- one number or *factor* counts **how many groups** or parts of equal size are involved
- the other factor tells the **size of each group** or part
- the third number in each of these two structures is the *result* or *product* and is the total of all of the parts.

A. MULTIPLICATION AND DIVISION WORD PROBLEMS

The three quantities involved are:

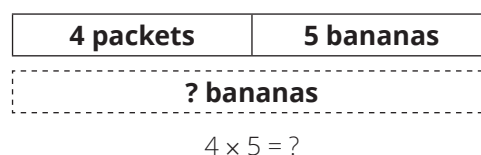
- The **number of groups**
- The **group size**
- The **product or result**



Any of these three quantities can be the unknown in a problem.

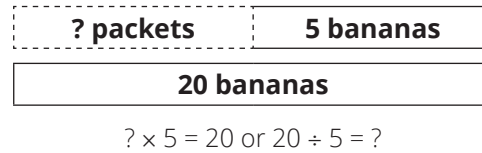
a Product or result is unknown

Patience has 4 packets of bananas.
 There are 5 bananas in each packet.
 How many bananas does Patience have?



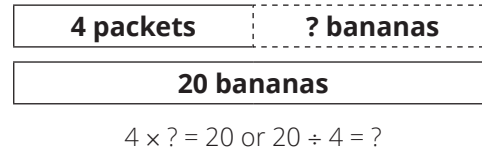
b Number of groups is unknown

Patience has 20 bananas.
She puts them in packets with 5 bananas in each packet.
How many packets did she use?



c) Group size is unknown

Patience has 20 bananas.
She wants to share them equally among 4 packets.
How many bananas will there be in each packet?

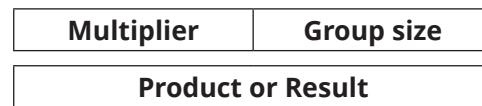


B. COMPARISON WORD PROBLEMS

Comparison problems involve the comparison of two quantities where one quantity is described in terms of how many times larger it is than the other. Larger can also mean longer, wider, taller or faster.

There are three quantities involved:

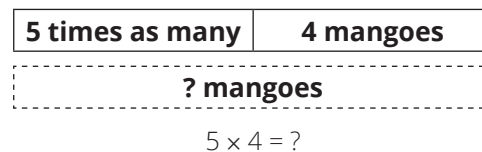
- The **multiplier** which tells you how many times bigger the product is than the set size.
- The **group size**
- The **product** or **result**.



Any of these three quantities can be the unknown in a problem.

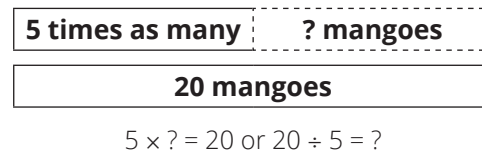
a Product or result is unknown

Sipho picked 4 mangoes.
Siza picked 5 times as many.
How many mangoes did Siza pick?



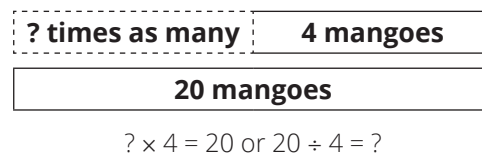
b Group size is unknown

Sipho picked 20 mangoes.
He picked 5 times as many as Siza.
How many mangoes did Siza pick?



c) Multiplier is unknown

Sipho picked 20 mangoes.
Siza picked 4 mangoes.
How many times as many mangoes did Sipho pick than Siza?



2. GENERAL PROCEDURE TO FOLLOW WHEN SOLVING WORD PROBLEMS

The hardest part of any word problem is deciding which operation to use. There can be so many details included in a word problem that the question being asked gets lost in the whole situation. Taking time to identify what is important, and what is not, is essential. Remember, if you don't know what is being asked, it will be very difficult to know if you have a reasonable answer.

Following this procedure will help the learners understand what is required of them:

THE FOUR STEPS TO FOLLOW WHEN SOLVING WORD PROBLEMS	
<p>Step 1: Understand the problem</p> <ol style="list-style-type: none"> 1 Write the word problem on the chalkboard 2 Read the problem. 3 Let learners read the problem until they read it fluently. 4 Underline the numbers. 5 Underline the question with a wavy line. 6 Let learners reproduce the story with manipulatives or diagrams. 	<p>For example:</p> <p>Thoko has ran <u>1 273</u> metres.</p> <p>Silo ran <u>432</u> metres further (more) than Thoko.</p> <p><u>How far did Silo run?</u></p> <p>Solution:</p>
<p>Step 2: Devise a plan</p> <ol style="list-style-type: none"> 1 Determine the operation. (+; -; ×; ÷) 2 Write a number sentence. 	<p>We have to add.</p> <p>$1\ 273 + 432 = \square$</p>
<p>Step 3: Carry out the plan</p> <ol style="list-style-type: none"> 1 Do the calculation 2 Find the answer to the number sentence. 	<p>$1\ 273 + 432 = 1\ 705$</p> <p>Silo ran 1 705 metres.</p>
<p>Step 4: Look back</p> <ol style="list-style-type: none"> 1 Compare learners' solutions. 2 Do the corrections. 3 Let learners record the work in their books. 	

Glossary of important terms used in the TMU lesson plans

The following terms are used in the TMU lesson plans for Grade 4. Some of the terms also appear in CAPS. This glossary has been prepared for Grade 4. Terms used in the TMU that expand on the CAPS repertoire are indicated.

Calculation Terms

ADDITION WITH CARRYING (TMU)

The type of addition which occurs when we need to bridge a ten, hundred, thousand, ten thousand or hundred thousand in calculations.

Examples: $197 + 4$; $157 + 149$; and $10\,984 + 19\,499$.

The term 'carrying' is used since the terminology is familiar to teachers.

Example: when we 'carry' 1 hundred in order to bridge the hundred, and end up with 10 hundreds, numbers are 'exchanged' to make 1 thousand.

SUBTRACTION WITH BORROWING (TMU)

The type of subtraction which occurs when the units involved in the subtraction create an *impasse* (a temporary hurdle).

Examples: $526 - 137$; $423 - 397$ and $10\,204 - 9\,429$. The units do not allow for subtraction 'on their own'.

The term 'borrowing' is used since the terminology is familiar to teachers.

Example: when we 'borrow' 1 thousand, we 'exchange' it for 10 hundreds in order to overcome the *impasse* so that the subtraction can be done. We then group the 10 hundreds with the other hundreds in the question.

BASE-TEN NUMBER SYSTEM

The base-ten number system is the most commonly used number system across the world. The base-ten number system uses a base of ten which means that it involves grouping in tens.

Examples: There are 10 ones in 1 ten, 10 tens in 1 hundred, 10 hundreds in 1 thousand, 10 thousands in 1 ten thousand and 10 ten thousands in 1 hundred thousand.

Each digit in a number has a value according to its position in the number. The only digits we need to represent a number of any size are the digits 0 to 9. One focus of the TMU framework is to move from mathematics based on counting methods to methods governed by the base-ten number system.

COLUMN METHOD

The column method is a calculation technique used in addition and subtraction that helps to reinforce number concept or number sense. The column method is also known as the vertical algorithm or vertical method. This structured method consolidates learners' understanding of place value because it is structured using place value. This structuring should help learners to understand the concept of place value and to work meaningfully with numbers (rather than making tallies and counting).

EXPANDED NOTATION

Expanded notation is a representation of a number made by writing it out using place value. Expanded notation' and 'building up and breaking down of numbers' are used interchangeably in CAPS. By the end of Grade 4, learners should be able to write a number using expanded notation in order to show the place value of each of the digits in a number up to 1 000 000.

Example: 943 567 is written in expanded notation as:

$$943\,567 = 900\,000 + 40\,000 + 3\,000 + 500 + 60 + 7$$

OR $943\,567 = 9 \text{ hundred thousand} + 4 \text{ ten thousand} + 3 \text{ thousand} + 5 \text{ hundred} + 6 \text{ tens} + 7 \text{ ones}$

OR $943\,567 = 9 \text{ HTh} + 4 \text{ TTh} + 3 \text{ Th} + 5 \text{ H} + 6 \text{ T} + 7 \text{ O}$

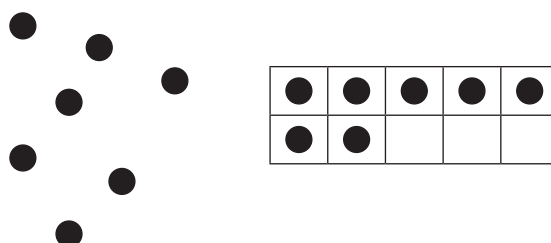
SUBITISING

Subitising is 'an instant recognition of the number of objects in a group of objects'.

This skill should have been acquired by learners in the Foundation Phase and can then be used in the Intermediate Phase.

A ten frame is a useful tool to help learners to subitise objects.

In the example below, it is easier to recognise the number of dots by putting them in a ten frame.

**JUMPING STRATEGIES ON A NUMBER LINE**

When we solve addition or subtraction with number line, we use 'jump' strategies. This strategy builds on learners' knowledge of numbers and can also help reinforce number concept or number sense.

There are many ways in which ‘jumps’ can be made on a number line, but efficient jumps (such as jumping to the next ten or jumping in tens, hundreds or thousands) make calculation easier.

Choosing these ‘efficient jumps’ develops learners’ number sense.



Representation Terms

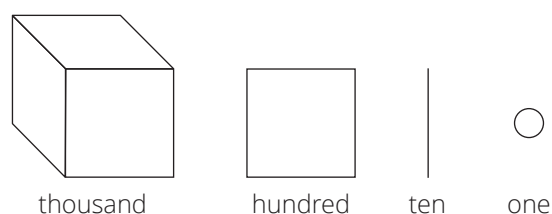
CONCRETE-PICTORIAL-ABSTRACT (CPA) APPROACH (ALSO KNOWN AS THE CRA APPROACH)

The Concrete-Pictorial-Abstract (CPA) approach helps learners develop the concepts of numbers. The CPA approach uses several different representations for the concept of the numbers 1, 10 and 100.

- **Concrete** objects are any materials that can be touched. In TMU, bottle tops are recommended as concrete objects.
- **Pictorial** representations are drawings that represent concrete objects.
- **Abstract** representations consist of number symbols such as 1, 2 and 3; and symbols such as ‘+’, ‘-’, ‘×’, ‘÷’.

SIMPLIFIED PICTORIALS (OF THE TMU BASE TEN KIT WHICH IS SIMILAR TO DIENES BLOCKS)

A simplified pictorial representation of thousands, hundreds, tens and ones is used to depict numbers on paper.



By using simplified pictorials, a large amount of time can be saved writing compared to drawing, for example, tallies and circles.

Simplified pictorials are more effective than tallies.

Tallies should not be drawn beyond a maximum of 20 items and preferably for not more than ten items.

PLACE VALUE TABLE (GR 2, 3, 4)

A place value table is diagram showing a number using a display of concrete/semi-concrete objects and abstract representations (numbers and number names).

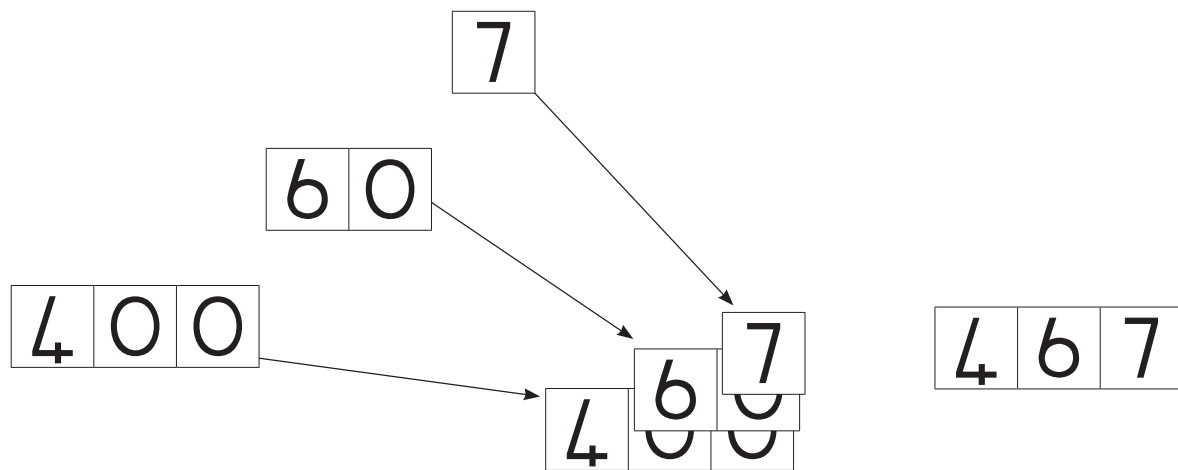
Example of the number 5 137 469 shown in a place value table:

M	HTh	TTh	Th	H	T	O
5	1	3	7	4	6	9

PLACE VALUE CARDS

Place Value Cards (also called Flard Cards) are a set of cards which learners can use to 'build' numbers. The cards for each place value are different lengths, with the highest place value being the longest card.

The diagram below shows how the number 467 is built using Place Value cards.



Place Value cards are particularly useful for building the concept of place value, as well as for expanded notation. The way in which learners use their Place Value cards also provides valuable feedback for the teacher.

For example, a learner who represents the number 467 using the ones cards only may not understand the concept of place value.

To find whether this learner understands the concept of place value, you could ask the learner to SAY the number to you or ask them to tell you what each digit in the number represents.



NUMBER LINES

A number line is a straight line divided into sections, called intervals. The numbering can start and end at any number and the size of the intervals can vary from one number line to another. The numbers on a number line increase as you move to the right.

The mid-line between the marked intervals helps the learners to avoid counting all the small intervals to read a number. If the mid-line is 5, we could find 7 by adding 2 onto 5 ($5 + 2 = 7$); we could find 4 by subtracting 1 from 5 ($5 - 1 = 4$).

In this number line, the big intervals are 10 000 and the small intervals are 1 000.



Midway between 50 000 and 60 000 is 55 000 and midway between 80 000 and 90 000 is 85 000.

ARRAY DIAGRAM (GR 2, 3, 4)

The following is the array diagram of 2 groups of 4 or 2×4 . The order of multiplication is important when showing it in an array.



MULTIPLICATION TABLES (GR 2, 3, 4)

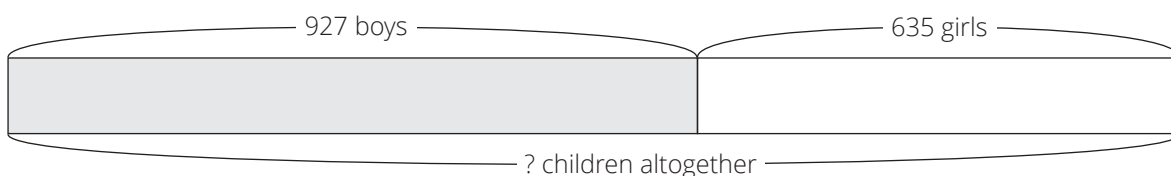
Multiplication tables show the multiples of numbers – the answers to the multiplication of several 1-digit multiplications, depending on the number of the multiplication table.

For example, the 5 times table is $\square \times 5$ and will show all the multiples of 5 by the numbers 1 to 10.

Learners must memorise the multiplication tables, because once learners master the multiplication tables, they will be able to use their knowledge of multiplication to do division.

ILLUSTRATIVE DIAGRAM

A diagram representing the relationships of numbers in word problems. The following is an example of an illustrative diagram showing addition (combining).



Resources Terms

MANIPULATIVES

Manipulatives are concrete apparatus such as counters, printed tens frames, printed hundreds frames, 2-D shapes and 3D objects that can be manipulated (handled) by learners.

COUNTERS

These are any (loose) concrete objects that learners can manipulate when counting. In the TMU, bottle tops are recommended since they are freely available but other counters can also be used such as interlocking cubes (example: Unifix cubes). Teachers are expected to use concrete counters such as bottle tops on a big ten frame to help learners to develop their number concept as they learn how to count and work with numbers, starting from the number 1.

An abacus can also be used for counting. In the lesson plans, all counters are referred to as bottle tops.

TEN FRAMES (GRADE 1, TERMS 1 AND 2)

Learners in the Foundation Phase used a variety of ten frames, ten frame cards and counters (bottle tops) to support the development of concepts related to the decimal system. Ten frames are limited to ones and tens which, by Grade 4, learners should be fully conversant with.

If any of your Grade 4 learners need support provided by ten frames, ask a colleague in the Foundation Phase, particularly Grade 1, for advice on the use of ten frames.

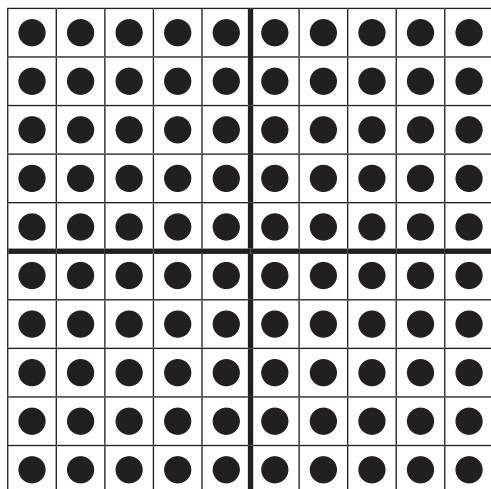
PRINTED TENS (GRADE 1, 2, 3, 4)

A printed ten is a printed version of a group of 10 ones. Call them 'ten(s)' when you use them in a lesson.



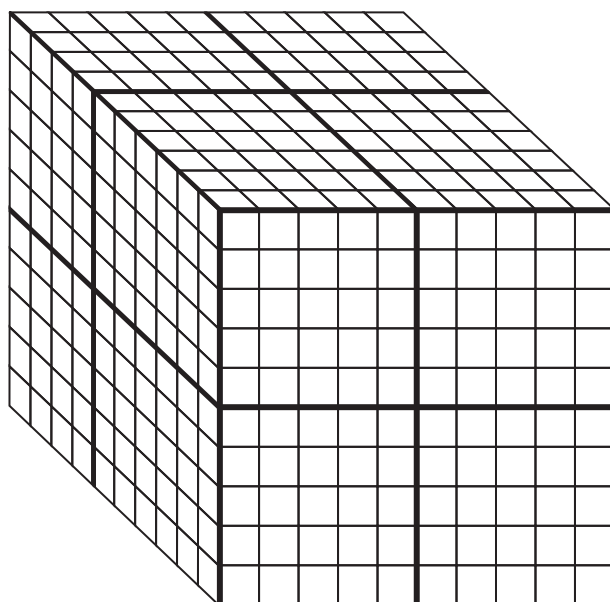
PRINTED HUNDREDS (GRADE 3, 4)

A printed hundred is a printed version of a group of 10 tens. Call them ‘hundred(s)’ when you use them in a lesson.



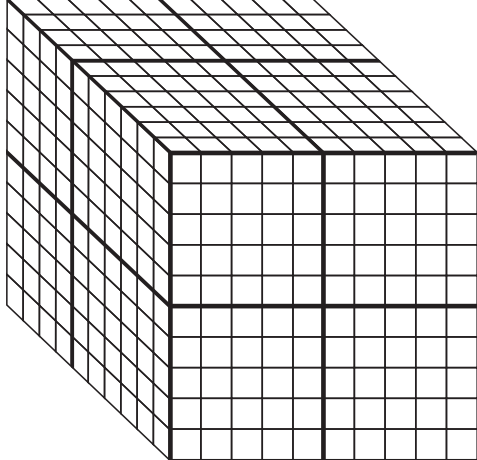
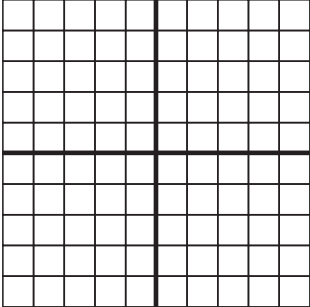


PRINTED THOUSANDS (GRADE 4)

A printed thousand is a printed version of a group of 10 hundreds. Call them ‘thousand(s)’ when you use them in a lesson.



BASE 10 KITS (GR 1,2,3,4)

Base 10 kits are the concrete number representations used in the TMU lesson plans as ‘counters’ for ones, tens, hundreds and thousands. Bottle tops are used as single counters (to count ones), printed tens are used to count tens, printed hundreds are used to count hundreds and printed thousands are used to count thousands.

1 000	100	10	1
thousand	hundred	ten	one
			

PLACE VALUE CARDS

Place Value cards are the concrete number representations used in the TMU lesson plans to build the concepts of place value and expanded notation.

Examples of Place Value cards for millions and hundred thousand.



Nine million



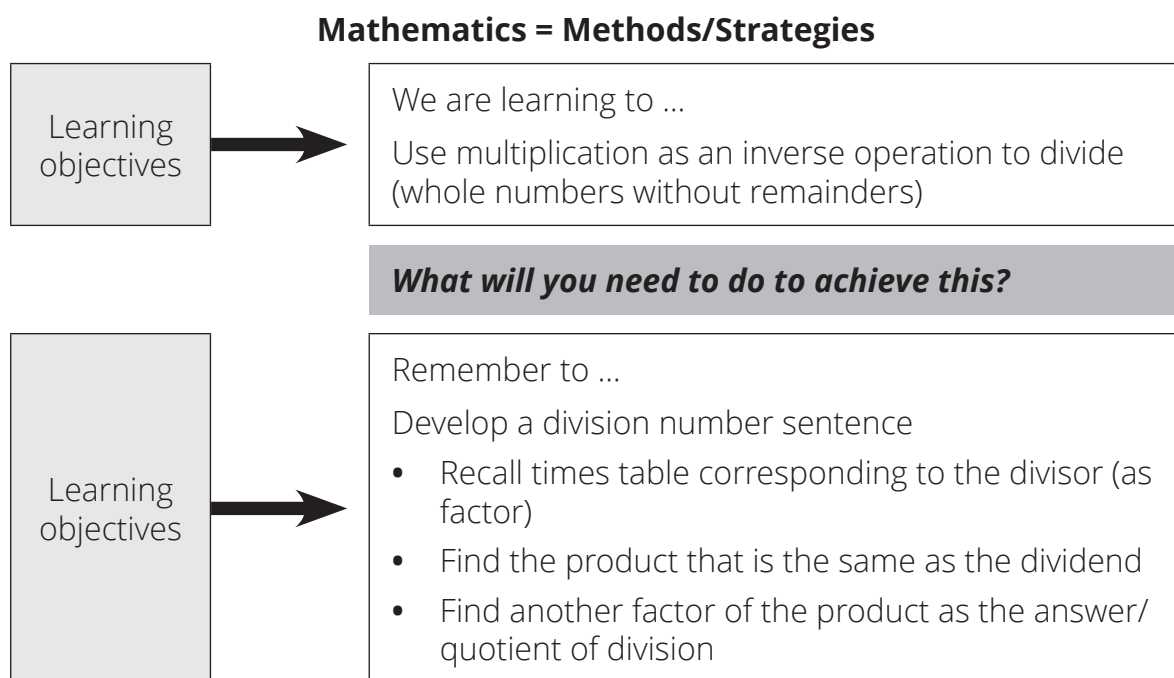
Two hundred thousand

Assessment for learning

Teaching is an engagement with learners that is ongoing. The engagement should be planned so that it can lead to the achievement of learning goals in a meaningful way. As in the Foundation Phase, teaching and assessment in the Intermediate Phase should be closely aligned so that teachers draw on knowledge and skills gained through assessment to inform and enrich their classroom activities. This is **assessment for learning**. The TMU pilot has planned assessment activities. Use these activities to find out what has been learned in your class and what you need to do to take this learning further. The planned lesson activities also provide opportunities for you to listen to your learners while you teach and to think diagnostically about learners' responses in discussions. You can then build on what you have learned through this activity to deepen the learning that takes place in your class.

The teachers' notes in the TMU lesson plans indicate daily objectives.

For example, for division:



An important thing you can do as a teacher is to focus on classroom activities; in other words on discussions that make a difference to learning in the classroom.

Your task is to make sense of the TMU lesson plans so that you can strive to enact better quality teaching and learning in your classroom. Lesson plans provide useful information, but you need to make good sense of the lesson plans in order to use them well and extend their possibilities.

- The lesson plans and resources in this book are part of the Grade 4 Term 1 Teacher Toolkit for the pilot implementation of the mathematics framework. It includes a bilingual Dictionary of Mathematical Terms.

The other documents in the toolkit are:

- a Learner Activity Book (LAB) and a set of printable resources for the learners to cut out and use
- a Teacher Resource Pack which includes a set of teacher printable resources as well as printable assessment activities.

About the Lesson Plans

The lesson plans give detailed information about how to teach a CAPS-aligned lesson every day. By following the lesson plans, you will ensure that you cover the content and assessment tasks specified in the curriculum and give your learners the best possible chance of developing the knowledge and skills required for mathematics in Grade 4.

1 CURRICULUM ALIGNMENT

The lessons are sequenced according to a reorganised CAPS unit planner. The content is CAPS-aligned (all topics are covered, and the CAPS weighting has been adhered to), but it covers a slightly different sequence to the regular CAPS. Your school has been given permission by the Minister to follow this resequenced curriculum. Lesson plans show each lesson's links to the CAPS content and skills being focussed on in the lesson.

2 DBE WORKBOOKS

Pilot implementation schools have been given permission **NOT** to use the DBE workbooks. You should use the CAPS- and lesson plan-aligned Learner Activity Books (LABs) instead. The LAB has been designed to include activities from the DBE workbook wherever possible. The DBE workbook could be used for extension or additional activities if you have time and wish to do so.

3 BROAD OVERVIEW OF THE CONTENT OF THE LESSON PLANS

Each lesson plan provides a set of steps to guide you in delivering the lesson.

In addition, the lesson plans contain:

- Mental maths activities
- Whole class activities led by the teacher that will help learners to develop the concepts and skills set for the lesson
- Classwork activities
- Homework activities.

The answers for the mental maths activities and the classwork and homework activities are included in the lesson plans.

The classwork and homework activities form the content of the LAB which is provided in workbook format.

4 ASSESSMENT

Assessment opportunities are provided in the Teacher Resource Pack and are discussed in the sequence of lessons.

The programme of assessment suggested in the lesson plans complies with the CAPS.

Photocopy the assessment activities for the learners. In the LAB, on the day that an assessment is done, there is a page provided which provides a space for learners to write corrections or do additional problems that the teacher may want them to solve after going over the written task with the class.

5 MANAGING YOUR TEACHING USING THE LESSON PLAN

The formal curriculum for Term 3 of Grade 4 is covered in a set of 49 numbered lesson plans, paced to cover a 53-day teaching term. This includes 36 fully planned lessons, 7 assessment lessons and 6 consolidation lessons.

Each of the lessons is designed to last 60 minutes. If your school's timetable has different period lengths, you will need to adjust the amount of work done in each lesson to accommodate this. Each school should allow six hours for Mathematics each week so it should be possible to fit in all the work for the week, even if the lengths of periods are not the same as in the lesson plans.

6 SEQUENCE ADHERENCE AND PACING

Each fully planned lesson and its contents has been carefully sequenced. You should not skip any of these lessons. Should you miss a school day for any reason, rather skip a consolidation lesson near to the lesson that you are teaching. You might choose to speed up the pace of delivery to catch up a missed lesson by covering the lesson concept contents of two consecutive days in one day. To do this, you could cut out or cut back on some of the routine activities like mental mathematics or homework reflection to save time until you are back on track with the expected delivery of the plans.

7 UNIT PLAN AND OVERVIEW

Each unit is introduced with a description of the unit content. Links to the four framework dimensions are included in the introduction to the unit. The unit plan and overview gives a tabulated summary of the lessons contained in the unit. The lesson objectives and the resources required for each lesson are included in the table. There is also a column provided for you to use to keep a record of your teaching progress.

It is a good idea to reflect on your teaching. You could write about what went well, or not so well, when you taught the lessons and how you would teach the lessons again the next time. Use the space provided at the end of each unit plan and overview to record your thoughts. Some questions are provided to guide your reflection.

Reflect on the following as you prepare lessons that follow the CPA approach

Learners need to make the move from concrete to abstract, but this does not happen suddenly or in one move. Learners may need to go backwards and forwards between representations in the CPA method many times until they have fully achieved abstraction. As soon as a learner shows he/she can work abstractly, do not hold them back, allow them to work abstractly. When learners need the support of concrete/pictorial material, offer it to them again.

Preparing to teach a lesson

The lesson plans provide a detailed lesson design for you to follow. However, to deliver the lessons successfully **you must do the necessary preparation yourself**.

Before you get started, **study the Grade 4 TMU Time Allocation Per Topic**. This will give you an overview of the mathematics content you will cover during the term.

The information below outlines some key aspects of the preparation required before you teach the lessons.

- a** Your lessons will not succeed if you have not prepared properly ahead of time. Where possible, prepare more than one lesson at a time. Ideally, you should prepare lessons for a whole week or unit so that you have a sound knowledge of what is to be done.
- b Prepare resources:** The resources needed for each lesson are listed in each lesson plan and in the tracker. Check what is required for each lesson ahead of time, so that you have all your resources ready for use every day (examples: bottle tops, number grids, paper cut-outs, examples of 2-D shapes and 3D objects).

If you do not have all the necessary resources readily available, see how best you can improvise, for example get learners to collect bottle tops or small stones to be used for counting, or make your own number grids or arrays using pieces of cardboard and a marker pen.

Start collecting resources well in advance. Collect empty cool drink cans, cereal boxes, washing powder boxes and plastic bottles for use when dealing with 2-D shapes, 3D objects and capacity. Use newspapers and magazines to cut out pictures that could be used in your teaching. If you have access to the internet, search for and print out pictures that you may need to use as illustrations in your lessons.

- c Prepare for the written classwork and homework activities:** When preparing your lessons, check the lesson activity requirements. In some instances, you will need to write information or draw some diagrams on the board for use when you do the interactive whole-class-teaching component of the lesson. Mark classwork activities immediately after the learners have finished them so that you can give useful feedback to the learners each day and become aware of any difficulties the learners are having as soon as they become apparent.
- d Prepare to teach the concepts and skills associated with the lesson topic:** Think carefully about what you will teach your learners in the lesson:
 - Be sure that you are familiar with the sequence of activities in the lesson plan.
 - Prepare a short introduction to the topic so that you can explain it in simple terms to your learners.
 - Prepare for the teaching of the new vocabulary and concepts before you teach – you need to be able to explain new mathematics content and skills to the learners.
 - Go through the oral teaching activities provided in the lesson plans and in the Learner Activity Book (LAB).

- Make sure that you have thought about how to use the resources in the lesson effectively. This preparation needs to be done in advance, so that you do not waste time during the lesson.
 - Prepare yourself to assist learners with any questions they might have during the lesson.
 - Think about how you will accommodate learners with barriers to learning.
- e Lesson pace:** Think about how much time you will spend on each activity. Plan how you will manage the pace of the lesson carefully; otherwise you might not manage to cover all the lesson content. Not all learners work at the same pace. You need to determine the pace – be guided by the average learner and the recommendations in the lesson plans. Be careful not to slow down to the pace of the slowest learners as this will disadvantage the other learners.
- f Organisation of learners:** Think about how you will organise learners when they do the classwork activities. Will they work alone, in pairs or in small groups? How will you organise the pairs or groups if you choose to use them? You need to organise the learners quickly at the beginning of the lesson so that you do not waste too much time on this.
- g Inclusive education:** Consider the needs of any learners with barriers to learning in your class, and how best you can support them. The DBE has published some excellent materials to support you in working with learners with learning barriers. Two such publications are:
- i** Directorate Inclusive Education, Department of Basic Education (2011) *Guidelines for Responding to Learner Diversity in the Classroom Through Curriculum and Assessment Policy Statements*. Pretoria. www.education.gov.za, www.thutong.doe.gov.za/InclusiveEducation.
 - ii** Directorate Inclusive Education, Department of Basic Education (2010) *Guidelines for Inclusive Teaching and Learning. Education White Paper 6. Special needs education: Building an inclusive education and training system*. Pretoria. www.education.gov.za, www.thutong.doe.gov.za/InclusiveEducation.

You can make the learning and teaching of mathematics more effective by remembering a few simple DOs and DON'Ts:

- **Always** teach with a SMILE
- **Always** give learners enough time to think/struggle and discover something on their own and keep quiet while they are thinking/working individually. **Do not** explain everything
- **Always** plan the lesson with enough time to let learners deepen their own thinking and be patient. **Do not** rush learners into saying/doing something by saying 'quick, quick, quick'.
- **Always** share a variety of answers/thinking with all the learners and let them compare, think and explain which ones are OK/not OK and why. **And always** discuss important errors so that everyone can learn from them. **Do not** erase/remove incorrect answers.

Preparing to teach a lesson

- **Always** ask the learners ‘why did you think so’, regardless of whether their answer is correct or incorrect. **And always** assist learners to discover where and why they made mistakes. Use other learners as well to explain why something is not correct. **Do not** say ‘No’, ‘Wrong’, ‘Next’, ‘Right’, ‘Yes’, ‘Correct’, etc. immediately after learners give you their answers.
- **DO NOT** answer or use your phone during the lesson.

Note:

The four terms in a year are not always the same length, or you might not have the planned number of teaching and learning weeks available.

You will need to adjust the pace at which you work to complete the work in the time available or make other plans to stay on track.

Grade 4 Time Allocation Per Topic

TMU: TIME ALLOCATION PER TOPIC: GRADE 4							
TERM 1		TERM 2		TERM 3		TERM 4	
Topic	Time	Topic	Time	Topic	Time	Topic	Time
Whole Numbers Counting, ordering, comparing, representing, place value (up to 1 million)	11 h	2-D Shapes Classification, investigations, drawing, tessellations, location	13 h	Whole Numbers Multiplication of 2-digit by 2-digit	9 h	Decimal Fractions Calculations with decimal fractions; solving problems; equivalent forms	6 h
Whole Numbers Addition and subtraction using column method up to 6-digit numbers	12 h	Common Fractions Describe and order fractions; calculations with fractions; solving problems; equivalent forms	10 h	Area and Perimeter Calculating perimeter of shapes; calculating area of squares and rectangles	12 h	Time Read time in different formats; read calendars; calculations and problem solving; conversions with time	5 h
Whole Numbers Approximating numbers and calculations	10 h	Data Handling Collecting and organising data; representing data; analysing, interpreting and reporting data	15 h	Capacity and Volume Estimate capacity; practically measure and record the capacity / volume; calculate the volume of solid objects	10 h	Length Estimate the length; practically measure and record length; solve problems in context; conversions	5 h
Numeric and Geometric Patterns and Number Sentences	15 h	Whole Numbers Multiplication of multiples of 10 up to 100 000 by 1-digit number; solve problems in context with whole numbers	7 h	Whole Numbers Division of 3- by 1-digit with/without a remainder	12 h	Mass Estimate mass; practically measure, record and compare the mass of objects; solve problems in contexts; conversions	5 h
				Decimal Fractions Recognise, order and place value of decimal fractions;	4 h	Properties of 3D Objects Including position and views	12 h
Revision	10 h	Revision	12 h	Revision	11 h	Revision	19 h
Assessment	2 h	Assessment	3 h	Assessment	2 h	Assessment	2 h
TOTAL: 60 HOURS		TOTAL: 60 HOURS		TOTAL: 60 HOURS		TOTAL: 54 HOURS	

Grade 4 Time Allocation Per Topic

CAPS: TIME ALLOCATION PER TOPIC: GRADE 4 (page 34 in CAPS)							
TERM 1		TERM 2		TERM 3		TERM 4	
Topic	Time	Topic	Time	Topic	Time	Topic	Time
Mental Mathematics (10 minutes daily)	8 h	Mental Mathematics (10 minutes daily)	7 h	Mental Mathematics (10 minutes daily)	8 h	Mental Mathematics (10 minutes daily)	7 h
Whole Numbers: Counting, ordering, comparing and place value (3-digit numbers)	2 h	Whole Numbers: Counting, ordering, comparing and place value (4-digit numbers)	1 h	Capacity/volume	6 h	Whole Numbers: Counting, ordering, comparing and place value (4-digit numbers)	1 h
Number sentences	3 h	Whole Numbers: Addition and Subtraction (4-digit numbers)	4 h	Common Fractions	5 h	Whole Numbers: Addition and Subtraction (4-digit numbers)	4 h
Whole Numbers: Addition and Subtraction (3-digit numbers)	8 h	Common Fractions	6 h	Whole Numbers: Counting, ordering, comparing and place value (4-digit numbers)	1 h	Mass	6 h
Numeric patterns	4 h	Length	7 h	Whole Numbers: Addition and Subtraction (4-digit numbers)	4 h	Properties of 3D objects	4 h
Whole Numbers: Multiplication and Division (1-digit by 1 digit)	4 h	Whole Numbers: Multiplication (2-digits by 2 digits)	6 h	Viewing objects	2 h	Common Fractions	5 h
Time	6 h	Properties of 3D objects	5 h	Properties of 2-D shapes	4 h	Whole Numbers: Division (3-digit by 1 digit)	3 h
Data handling	10 h	Geometric patterns	4 h	Data handling	7 h	Perimeter, Area & Volume	7 h
Properties of 2-D shapes	5 h	Symmetry	2 h	Numeric patterns	4 h	Position and Movement	2 h
Whole Numbers: Multiplication and Division (2-digits by 1 digit)	5 h	Whole Numbers: Addition and Subtraction (4-digit numbers)	4 h	Whole Numbers: Addition and Subtraction (4-digit numbers)	4 h	Transformations	3 h
		Whole Numbers: Division (3-digit by 1 digit)	4 h	Whole Numbers: Multiplication (2-digits by 2 digits)	5 h	Geometric patterns	2 h
				Number sentences	3 h	Whole Numbers: Addition and Subtraction (4-digit numbers)	3 h
				Transformations	3 h	Probability	2 h
Revision	5 h	Revision	4 h	Revision	4 h	Revision	5 h
		Assessment (all subjects)	6 h			Assessment (all subjects)	6 h
TOTAL: 60 HOURS		TOTAL: 60 HOURS		TOTAL: 60 HOURS		TOTAL: 60 HOURS	

Lesson Plan Outline

Each lesson plan has several components. Information about each component is discussed below. This information tells you how to use each of the components of the lesson plan and how they fit together to create a well-paced and properly scaffolded mathematics lesson each day.

Read this outline as you prepare each lesson until you are fully familiar with the general lesson plan components, pace and structure.

Teacher's notes

- a** Teacher's notes include information for the teacher about the **CAPS content** to be covered in the lesson and the learning objective for the lesson.
- b** A list of the **lesson vocabulary** is included in the teacher's notes. This list indicates the important mathematical vocabulary used in the lesson. The vocabulary, with explanations and diagrams, is also provided at the beginning of each unit and in the bilingual dictionary that is part of your TMU Toolkit. Go through the lesson vocabulary each day as you prepare for the lesson. These terms are important as they are the language of mathematics that each learner needs to learn and understand in order to build a solid foundation and understanding of this subject. It is important to explain these words to your learners and encourage learners to use them as well. If you have learners in your class who are not yet comfortable in the Language of Learning and Teaching (LoLT), try to explain the word in a language they understand. Use gestures, pictures or enlist the help of another learner who is familiar with the home language of the learner who is struggling with a language barrier.
- c** The **resources** that you should prepare for the day's lesson are listed. Check which resources you need in advance for each lesson so that you are ready to teach the lesson each day.

1. MENTAL MATHEMATICS (5 MINUTES)

This is the first active component of the lesson and should last only 5 minutes.

Mental mathematics can be both an **oral** or a **written** activity that consist of a set of questions which drill number facts and basic mathematical strategies that are linked to the day's lesson.

The mental mathematics activities for each day are given both in the Daily Lesson Plans and in the Learner Activity Book, but they could also be written on the board or asked orally by the teacher. The answers to the mental mathematics questions are given in the answer column in the Daily Lesson Plans.

We suggest that the learners see the answers written down so they can reflect where they made a mistake, how many they got right and how many they got wrong.

- Observe which learners struggle with mental maths activities. Make sure to spend time later to help them reach the required level of competence by offering remediation activities, which may involve using concrete or pictorial aids. Mental mathematics is not meant to be an activity using concrete material to scaffold the learning, but, if there are learners who need concrete aids to complete the mental mathematics activities, allow them to do so.
- Try to complete all of each day's mental mathematics questions, but if you find that your learners struggle to finish these in five minutes, reduce the number of questions.

2. LINK TO PREVIOUS LESSON (5 MINUTES)

This part of the lesson provides an opportunity to quickly revise the main concept dealt with in the previous lesson. It provides an opportunity for you to informally assess learners' understanding of the concept/s.

3. CORRECT HOMEWORK ACTIVITY (5 MINUTES)

Work through the homework from the previous lesson. This will provide you and the learners an opportunity to gauge the learners' knowledge and skills.

Take a minute or two to reflect on the homework with the learners. You might read out answers to all of the homework questions or get the learners to read the answers out in turn, allowing learners/peers to mark the work. Try to check the homework yourself as often as you can. If you notice a question that many learners struggled with, especially if it is important for today's lesson, you could work through it in full with the whole class. Allow learners the opportunity to write corrections as needed.

4. LESSON CONTENT – CONCEPT DEVELOPMENT. CORRECT CLASSWORK ACTIVITIES (35 MINUTES)

This is the body of the lesson. Activities on the content that you will teach with worked examples and suggested explanations are provided. These activities have been carefully sequenced and scaffolded so that they support the teaching of the concepts for that day. You should work through each of these with your class.

The Activities that the learners should do are provided in in their Learner Activity Books (LABs). They work on the Activities, either on their own, with a partner, or with their group.

Note that individual work is important. Sometimes, in group work, only one or very few learners lead the group: they do all the work and present it to the class for the group. Group work does not guarantee every learner's learning and understanding. Some of the group members may have been left behind without knowing exactly what has been done. Learners should first work individually and then discuss what they have done with the rest of the group, based on what they have in their classwork books or worksheets.

Manage the pace of the lesson carefully; otherwise, you might not manage to cover all the lesson content. Once you have introduced the new concept, work through Activity 1 of the lesson with the whole class (or with learners in groups). Then, immediately move on to the next activity, and provide a reasonable time for the learners to complete Activity 2.

Do not wait for the last learner to finish before proceeding. If there are further activities, continue pacing yourself in this way, so that you work through all of the activities in each lesson. Occasionally a few activities are marked as optional – these need only be done if you have sufficient time.

5. HOMEWORK ACTIVITY (5 MINUTES)

Take about five minutes to tell the learners about the homework each day.

Homework consolidates the content that you have taught each day. Homework also promotes learner writing and the development of their mathematical knowledge.

As part of their homework, learners should complete classwork activities as necessary.

The daily homework activities are provided in the LAB.

6. REFLECTION AND SUMMARY OF LESSON (5 MINUTES)

Wrap up each day's lesson by focussing learners on the content covered and the concepts they should have learned.

Contents

Unit 1: Multiplication

INTRODUCTION

This unit focuses on multiplication of 2-digit numbers by 2-digit numbers.

In this unit, we focus on the four framework dimensions in the following ways:

Framework dimension	How the framework dimension is developed in this unit
Conceptual understanding	Arrays (pictorial representations) are used to develop the concepts of the commutative and distributive properties of multiplication.
Procedural fluency	Learners repeatedly use the same process when solving different word problems.
Strategic competence	Learners make sensible decisions on what strategies to use when solving problems involving multiplication.
Reasoning	Pictorial representations are used to help learners work out the place value structure in the column method algorithm.


In this unit, we build a **learning centred classroom** by paying attention to:

		Examples
Concept development	✓	Done in every lesson.
Speaking mathematics	✓	Learners discuss with their partner and the whole class how to use the column method to multiply.
Making sense of mathematics	✓	Learners use array diagrams to discover the commutative and distributive properties of multiplication.
Practising procedures	✓	Learners practise how to use the column method when multiplying numbers.
Problem solving	✓	Word problems involving multiplication are included in activities.
Explaining concepts and procedures	✓	Learners do not mechanically work through the procedure of multiplying 2-digit by 2-digit numbers – they explain what they are doing in each step of the procedure.
Addressing gaps in learners' knowledge	✓	The questions in 'Link to previous lesson' and consolidation lessons are designed to help teachers and learners identify and address gaps in learners' knowledge.
Addressing learners' errors	✓	
Applying maths in context	✓	The context in the word problems are relevant and familiar.

Mathematical vocabulary for this unit

Be sure to teach and use the following vocabulary at the appropriate place in the unit. It is a good idea to make flashcards of words and their meanings and to display these in the classroom at appropriate times.

Refer to the bilingual dictionary where necessary.

Term	Explanation / diagram
altogether	Take everything together
array	<p>A way to represent multiplication and division using rows and columns.</p> <p>The row represents the number of group.</p> <p>Columns represent the number or the size of each group</p> <p>Example: Use an array to find the answer to $3 \times 7 = \square$</p>  <p>3 rows of 7 circles equals 21 circles.</p> <p>$3 \times 7 = 21$</p>
associative property of multiplication	<p>The property that states that you can multiply regardless of how the numbers are grouped. You group the numbers using brackets.</p> <p>Example: $(4 \times 3) \times 2 = 24$ and $4 \times (3 \times 2) = 24$</p>
brackets ()	Symbols that are used to create groups or indicate order of operations
column	Vertical arrangement of items
column method	<p>Way of calculating in which digits are arranged in columns</p> <p>Also called the vertical method/algorithm</p>
commutative property of multiplication	<p>The property that says that you can multiply numbers in any order and the answer will always be the same.</p> <p>Example: $4 \times 7 = 28$ and $7 \times 4 = 28$</p>
compare	To look for similarities and differences
conclusion	Decision reached by reasoning
digit	<p>A single symbol used to make a numeral.</p> <p>0, 1, 2, 3, 4, 5, 6, 7, 8 and 9 are digits.</p> <p>Examples: 25 is a 2-digit number. 356 is a 3-digit number.</p>
distributive property of multiplication	<p>The property that says that if a number is multiplied by the sum of two or more numbers, it is equal to the sum of that number multiplied by each of the numbers separately</p> <p>Example: $3 \times (2 + 4) = (3 \times 2) + (3 \times 4)$</p>
method	Way of doing something. Also referred to as a technique

Term	Explanation / diagram
multiply	To add a number to itself a particular number of times
row	Horizontal arrangement of items
solve	Find the answer to
total	The sum of numbers

Further practice for learners

This table references other sources (including textbooks) if you need additional activities.

	Fabulous	Oxford Headstart	Oxford Successful	Platinum	Premier	Sasol Inzalo	Solutions for All	Study & Master	Viva
LB	51-56	46-52	37-41,	30-32	18-28	60-74	27-37	43-47	19-22
	121-123	77-80	66-68,	48-51	44-48	161-172	154-160	91-97	51-52
	190-191	1390-136	104-110,	80-85	79-83	275-280	221-228	141-148	156-158
		232-235	233-238	144-147	158-161			232-235	
TG	32-35	69-73	59-67	24-25	10-13	64-77	23-32	11-15	16-20
	84-86	77-82	80-83	39-42	20-22	177-186	86-94	69-75	32-35
	156-158	163-171	106-112	66-67	37-39	315-321	179-187	186-196	81-82
		271-272	160-162	112-114	81-83			310-314	

UNIT PLAN AND OVERVIEW FOR UNIT 1: Multiplication

LP	Lesson objective	Lesson Resources	Date completed
	Learners will be able to:	Learners need classwork books, LABs, writing materials, rulers and scissors for all lessons.	
1	recognise and use the commutative and associative properties for multiplication.	Teacher: A3 10×10 array diagram; 2 sheets of blank paper; A3 10×10 multiplication table Learner: 1 sheet of blank paper torn in half	
2	recognise and use the distributive property when doing multiplication calculations.	Teacher: A3 10×10 multiplication table	
3	multiply a 2-digit number by a 1-digit number with no carrying.	Teacher: Base Ten kit, Place Value cards (flard cards) (See the Printable Resources in Term 1 Teacher Resources.)	
4	multiply a 2-digit number by a 1-digit number with carrying in the Ten's column.	None	
5	use the column method to multiply a 2-digit number by a 2-digit number which is a multiple of ten.	None	
6	use the column method to multiply a 2-digit number by any 2-digit number.	Teacher: Base Ten kit Learner: Base Ten kit	
7	use the column method to multiply a 2-digit number by any 2-digit number when carrying happens twice.	None	
8	use the multiplication facts they know and a method of their choice to multiply a 2-digit number by a 2-digit number.	None	
9	consolidate and revise the multiplication of a 2-digit number by a 2-digit number.	Teacher: Textbook/s (if available) Learner: Textbook/s (if available)	

Assessment for learning

Use the template provided at the beginning of this guide to think deeply about at least one of the lessons in this unit.

Reflection

Think about and make a note of: *What went well? What did not go well? What did the learners find difficult or easy to understand or do? What will you do to support or extend learners? Did you complete all the work set for the unit? If not, how will you get back on track?*

What will you change next time? Why?

Lesson 1: Multiplication properties (1)

Teacher's notes

This lesson is one of the fully planned lessons to be used to cover the Term 3 curriculum.

CAPS topics: 1.1 Multiplication: Whole numbers

Lesson Objective: Learners will be able to recognise and use the commutative and associative properties for multiplication.

Lesson Vocabulary: array, row, column, solve, compare, conclusion, brackets, commutative property of multiplication; associative property of multiplication

Teacher Resources: A3 10 × 10 array diagram; two sheets of blank paper; A3 10 × 10 multiplication table

Learner Resources: One sheet of blank paper torn in half.

Date:

Week

Day

1 MENTAL MATHS (5 MINUTES)

		Answer			Answer
1	$2 \times 7 =$	14	6	$3 \times 7 =$	21
2	$5 \times 7 =$	35	7	$9 \times 7 =$	63
3	$8 \times 7 =$	56	8	$1 \times 7 =$	7
4	$6 \times 7 =$	42	9	$7 \times 7 =$	49
5	$10 \times 7 =$	70	10	$4 \times 7 =$	28

2 LINK TO PREVIOUS LESSON (5 MINUTES)

Note to the teacher:

You can find the answer to basic multiplication facts by drawing an **array**.

An array is a group of symbols arranged in straight rows and columns.

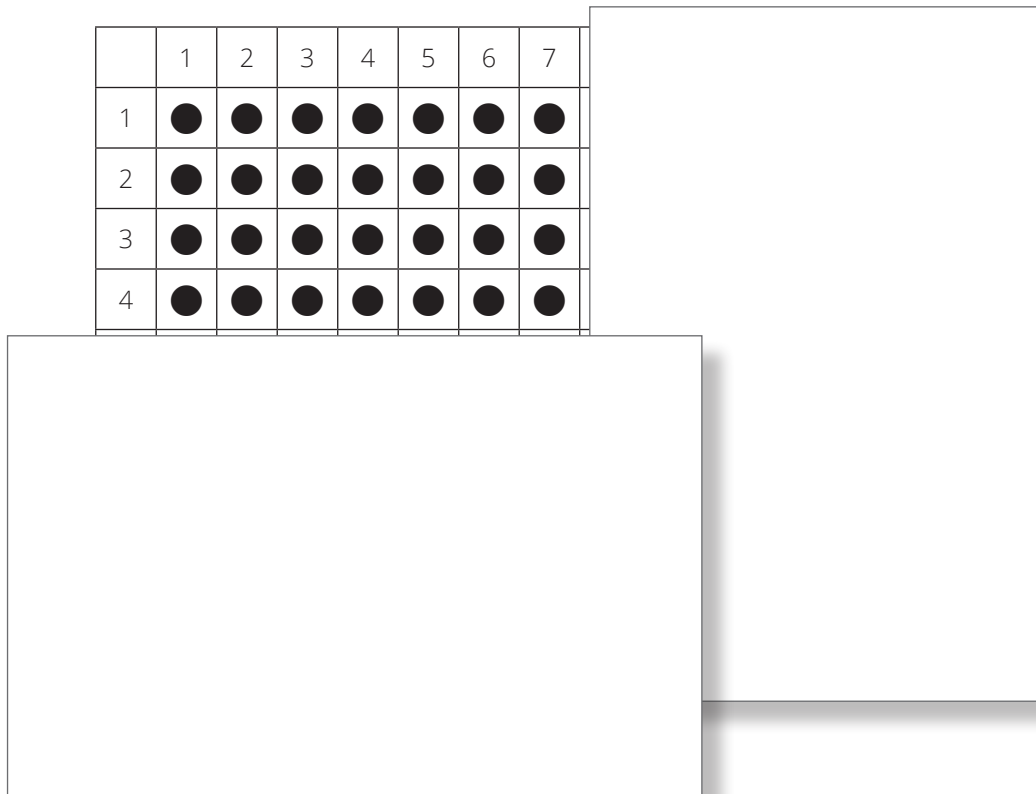
To find the answer we count the number of symbols.

- Say: **In Grades 2 and 3 you used an *array* to solve multiplication problems.**

- Put the A3 10 × 10 array diagram on the board and refer the learners to the array in their LAB.

Write the following multiplication sentence on the board: $4 \times 7 = \square$

You and the learners use your pieces of paper to cover up the part of the array that is not needed like this:



- Select a learner to come to the board and show the class how they used the array diagram to find the answer.
- Encourage learners to verbalise that the number on the left end column (that is, 4) counts the number of rows or groups and the number on the top row (that is, 7) counts the size of the group or number of dots in a row or a row) so altogether we have 28 dots. So, $4 \times 7 = 28$.

3 CORRECT HOMEWORK ACTIVITY

As this is the first lesson in this unit, and the first lesson of Term 3, there is no homework to correct.

4 LESSON CONTENT - CONCEPT DEVELOPMENT (40 MINUTES)

- In this lesson learners recognise and use the commutative and associative properties for multiplication.

- Note that learners do not need to know the names of these properties of operations, but they need to know when and how to use the properties to make calculations simpler.
- Word problems, pictorial representations of array diagrams and a 10×10 multiplication table are used to support concept development.
- Say: **Today we are revising and learning more facts about multiplication.**

Activity 1: Whole class activity and learners work in pairs

1. You and the learners should set 5×7 on the array diagram.

Do this by putting the 10×10 array on the board and referring the learners to the array in their LAB.

You and the learners use your pieces of paper to cover up the part of the array that is not needed like this:

	1	2	3	4	5	6	7
1	●	●	●	●	●	●	●
2	●	●	●	●	●	●	●
3	●	●	●	●	●	●	●
4	●	●	●	●	●	●	●
5	●	●	●	●	●	●	●

- a. Ask: **How many counters in this array?** (35)
- b. **Write the number sentence and answer for this array.** ($5 \times 7 = 35$ NOT $7 \times 5 = 35$)

2. You and the learners should set 7×5 on the array diagrams like this:

	1	2	3	4	5
1	●	●	●	●	●
2	●	●	●	●	●
3	●	●	●	●	●
4	●	●	●	●	●
5	●	●	●	●	●
6	●	●	●	●	●
7	●	●	●	●	●

- a. Ask: **How many counters in this array?** (35)
- b. Say: **Write the number sentence and answer for this array.**
($7 \times 5 = 35$ NOT $5 \times 7 = 35$)

3. Ask: Compare the two answers: What do you notice?

Discuss the answer with the learners. They should end up with the conclusion that the answers are the same.

4. Say: Use your array diagram to show your partner that the answer to 3×7 is the same as the answer to 7×3 (Answer to both is 21)**5. Write a conclusion by crossing out the part that is not true:**

When we multiply two numbers, the order does / does not matter.

(Answer: When we multiply two numbers, the order does not matter)

Say: **Complete question 6 in Activity 1 in your LAB.**

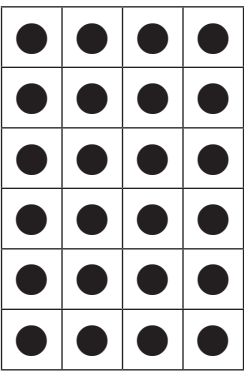
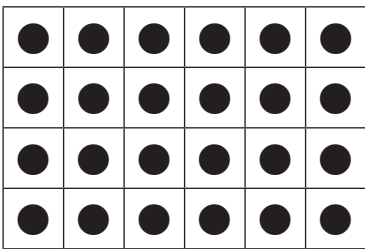
- Walk around the classroom to support learners as needed.
- Correct question 6 in Activity 1 with learners so that they can receive immediate feedback.
- Answers are given.

6. Prudence and Joe are planting tomatoes.

Prudence planted her tomatoes in six rows of four tomatoes.

Joe planted his tomatoes in four rows of six tomatoes.

- a.** Draw an array to show each person's vegetable garden

Prudence's vegetable garden	Joe's vegetable garden
ANSWER: 	ANSWER: 
$(6 \times 4 = 24)$	$(4 \times 6 = 24)$
(24 tomatoes)	(24 tomatoes)

- b.** Write a number sentence to show how to work out how many tomatoes they each have planted.

- c.** How many tomatoes did each person plant?

- d.** Explain why the answers in c. are the same.
(When we multiply two numbers, the order does not matter)

Activity 2: Learners work on their own

Say: Complete Activity 2 in your LAB.

- Walk around the classroom to support learners as needed.
- Correct Activity 2 with learners so that they can receive immediate feedback.
- Answers are given in brackets.

1. Complete the 10×10 multiplication table.

×	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

2. On the multiplication table, shade the block showing the answer to $6 \times 9 = \square$
 On the multiplication table, shade the block showing the answer to $9 \times 6 = \square$
 What do you notice? Why?
 (The answers are the same. When we multiply numbers, the order does not matter)
3. On the multiplication table, draw a dark line around the block showing the answer to $8 \times 5 = \square$
 On the multiplication table, draw a dark line around the block showing the answer to $5 \times 8 = \square$
 What do you notice? Why?
 (The answers are the same. When we multiply numbers, the order does not matter)

Activity 3: Whole class activity and learners work in pairs

- Write this number sentence on the board: $7 \times 5 \times 2 = \square$
- Say: **Work with your partner to find the answer.**
Do not rush to show learners what to do or to give the answer.
Give learners time to think about a strategy for finding the answer.
Walk around and observe their work.
- Ask: **Which group would like to come to the board to show us how they found the answer?**
(Option 1: $7 \times 5 \times 2 = 35 \times 2 = 70$)
(Option 2: $7 \times 5 \times 2 = 7 \times 10 = 70$)
- Ask: **Which group used the first method to find the answer?**
Which group used the second method to find the answer?
- Let a different group explain how they found the answer.
(Option 1: We did 7×5 first and got 35; we then then doubled 35 and got 70)
(Option 2: Because we know the order does not matter when we multiply numbers, we did 5×2 first and got 10; we then multiplied 7 and 10, and got 70)
- Say: **Compare the two answers. What do you notice?** (The answers are the same.)
- Ask: **Which calculation is easier?**
(The second calculation is easier because we multiplied 7 by 10.)
- Ask: **What do we need to do this multiplication to help us know that we have to use the second method to multiply?** (We need brackets)
Ask: How can we use brackets? ($7 \times (5 \times 2) = \square$)
- Let all learners write down a. and b. in their classwork book.
 - $7 \times 5 \times 2 = 35 \times 2 = 70$
 - $7 \times (5 \times 2) = 7 \times 10 = 70$
- Ask: **What is the answer when we change the order of numbers to $2 \times 7 \times 5 = ?$**
($(2 \times 7) \times 5 = 14 \times 5 = 70$ gives the same answer).
Say: **The order doesn't matter when we multiply three numbers.**

Say: **Complete Activity 3 in your LAB.**

- Walk around the classroom to support learners as needed.
- Correct Activity 3 with learners so that they can receive immediate feedback.
- Answers are given.

Use brackets to show how you will group the numbers to make the calculation easier.

Then calculate each answer.

1 $8 \times 5 \times 2 = \square$

2 $9 \times 50 \times 2 = \square$

3 $6 \times 4 \times 25 = \square$

4 $13 \times 5 \times 2 = \square$

5 $25 \times 19 \times 4 = \square$

ANSWERS

$$\begin{aligned} &8 \times (5 \times 2) \\ &= (8 \times 10) \\ &= (80) \end{aligned}$$

$$\begin{aligned} &9 \times (50 \times 2) \\ &= (9 \times 100) \\ &= (900) \end{aligned}$$

$$\begin{aligned} &6 \times (4 \times 25) \\ &= (6 \times 100) \\ &= (600) \end{aligned}$$

$$\begin{aligned} &13 \times (5 \times 2) \\ &= (13 \times 10) \\ &= (130) \end{aligned}$$

$$\begin{aligned} &25 \times 19 \times 4 \\ &= (25 \times 4) \times 19 \\ &= 100 \times 19 \\ &= 1\,900 \end{aligned}$$

5 HOMEWORK ACTIVITY (5 MINUTES)

- Explain what learners need to do for homework.
- Read the questions in the LAB with learners. Make sure all the learners understand what to do.
- Answers in brackets.

1 Fill in the missing numbers to make each number sentence true.

a. $3 \times 6 = (6) \times 3$

b. $(8) \times 7 = 7 \times 8$

c. $(9) \times 100 = 100 \times 9$

2 Use brackets to show how you will group the numbers to make the calculation easier.

Calculate each answer.

a. $17 \times 2 \times 5 = \square$; Answer: $(17 \times (2 \times 5)) = 17 \times 10 = 170$

b. $23 \times 4 \times 25 = \square$; Answer: $(23 \times (4 \times 25)) = 23 \times 100 = 2\,300$

6 REFLECTION AND SUMMARY OF LESSON (5 MINUTES)

Call the whole class to attention and summarise the key concepts of the lesson.

Say: **Today we have learned that when we multiply:**

- **the order of the numbers does not matter**
- **three or more numbers, we can group the numbers in any way.**

Lesson 2: Multiplication properties (2)

Teacher's notes

This lesson is one of the fully planned lessons to be used to cover the Term 3 curriculum.

CAPS topics: 1.1 Multiplication: Whole numbers

Lesson Objective: Learners will be able to recognise and use the distributive property when doing multiplication calculations.

Lesson Vocabulary: altogether, total, bracket, compare; distributive property of multiplication

Teacher Resources: A3 10 × 10 multiplication table

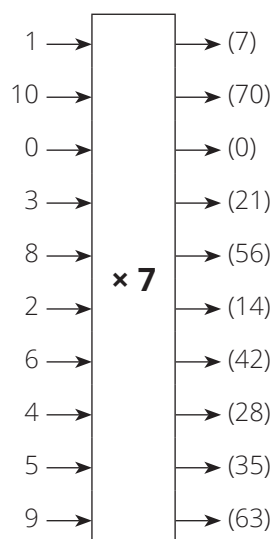
Date:

Week

Day

1 MENTAL MATHS (10 MINUTES)

Complete this flow diagram.



2 LINK TO PREVIOUS LESSON (5 MINUTES)

- Place your 10 × 10 multiplication table on the board.
Say: **Find the 10 × 10 multiplication table in Lesson 1 Activity 2 in your LAB.**

It should look like this:

×	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

Say: **Draw a line through the answer to 9×7 (63) and through the answer to 7×9 (63)**

Ask: **What do you notice?** (The answers are the same / the answers are both 63)

Ask: **Is it true to say that order does not matter when we multiply?** (Yes)

- Say, as you write the calculation on the board:

Find an easy way to find the answer to:

$$14 \times 50 \times 2 = \square$$

Ask: **Who would like to explain how they did the calculation and why it made the calculation easier?**

(We first multiply 50 and 2 to get to 100; we can then multiply 14 by 100 to get 1 400.)

Write the following on the board: $14 \times 50 \times 2$

$$= 14 \times (50 \times 2)$$

$$= 14 \times 100 = 1\,400$$

3 CORRECT HOMEWORK ACTIVITY (5 MINUTES)

The answers to the Homework Activity for Lesson 1 are provided in Lesson 1.

Use this time to purposefully address gaps in learners' knowledge and to identify and address learner errors.

4 LESSON CONTENT - CONCEPT DEVELOPMENT (35 MINUTES)

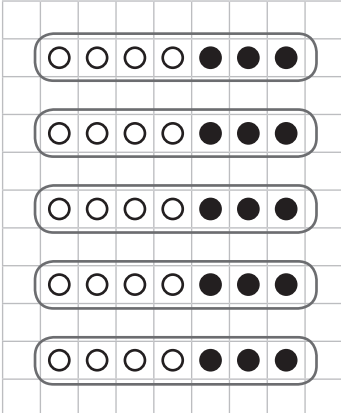
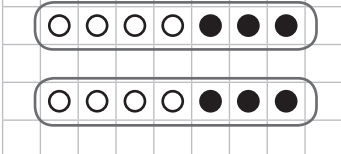
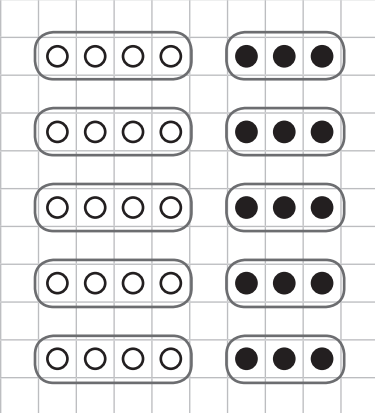

- In today's lesson learners investigate the distributive property of multiplication.

- The distributive law says that multiplying a number by a group of numbers added together is the same as doing each multiplication separately, for example, that $9 \times (5 + 2)$ is equal to $(9 \times 5) + (9 \times 2)$.
- Once again, learners do not need to know the name of the property, but they need to know how to use it.

Say: **Today we are revising another property of multiplication.**

Activity 1: Learners work in groups

- Write this word problem on the board. The problem must be written on separate lines as shown.
This helps learners to identify the numbers and critical information needed to solve the problem.
There are 5 boxes.
Each box contains 4 pieces of white chalk and 3 pieces of yellow chalk.
How many pieces of chalk are there?
- Read the problem aloud to the learners.
Let learners read the problem until they read it fluently.
Follow the process of solving word problems which, by now, learners should be familiar with:
 - Underline the numbers (5, 4 and 3: note that you can call on one or more learners to do the underlining.)
 - Use a wavy line to underline the question / what you want to find out, so the word problem looks like this:
There are 5 boxes.
Each box contains 4 pieces of white chalk and 3 pieces of yellow chalk.
How many pieces of chalk are there?
- Say: **Let's work through Activity 1 in the LAB together.**
- Say: **We are going to find out how many pieces of chalk there are in two different ways.**
 - 1) FIRST WAY:**
Find the number of pieces of chalk in each box; then find out the total number of pieces of chalk.
 - 2) SECOND WAY**
Find out how many pieces of white chalk there are altogether, find out how many pieces of yellow chalk there are altogether and then find out the total number of pieces of chalk.

	Array diagram	Working out
1 FIRST WAY a Find the number of pieces of chalk in each box.		Number of pieces of chalk in each box $= (4 \text{ pieces of white chalk and } 3 \text{ pieces of yellow chalk})$ $= (7)$
b Then find the total number of pieces of chalk.		Total number of pieces of chalk $= (5 \times 7)$ $= (35)$
2 SECOND WAY a Find the total number of pieces of each colour chalk.		Number of pieces of white chalk in the 5 boxes $= (5 \times 4)$ $= (20)$ Number of pieces of yellow chalk in the 5 boxes $= (5 \times 3)$ $= (15)$
b Find the total number of pieces of chalk		Total number of pieces of chalk $= (20 + 15)$ $= (35)$

- Ask: **What do you notice about the two answers?**
(They are the same; the answers to both ways are 35 pieces of chalk.)
- Ask: **Can we write the first way like this: $5 \times (4 + 3)$?** (Yes)
Ask: **Can we write the second way like this: $(5 \times 4) + (5 \times 3)$?** (Yes)
Say: **Because both the answers are 35, we can now say that**
 $5 \times (4 + 3) = (5 \times 4) + (5 \times 3)$

- Say: **Let's check if it is true on the multiplication table.**
 - On the table shade the answers to 5×4 and 5×3 .
 - Draw a dark line around the block showing the answer to 5×7 .

x	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60

- Ask: **What do you notice?** ($3 + 4 = 7$, $15 + 20 = 35$, and the answer to 5×7 is also 35)
Ask: **Can you see that all three answers are found on the 5 row?**
- Ask: **When do you think you can use this property?**
(When I can't remember the answer to 5×7 , but I remember the answers to 5×4 and 5×3 , I just add two answers to get the answer of 5×7 .)

Activity 2: Learners work in pairs

Say: **Complete Activity 2 in your LAB.**

- Walk around the classroom to support learners as needed.
- Correct Activity 2 with learners so that they can receive immediate feedback.
- Answers in brackets.

1. What do the brackets in a number sentence tell us?
(The order in which we should do the calculation)
2. Find the answers to the first number sentence and the second number sentence.
Then compare the answers.

	1st number sentence	Answer to 1st number sentence	2nd number sentence	Answer to 2nd number sentence	Two answers the same or different?
a	$4 \times (3 + 5) = \square$	$(4 \times 8 = 32)$	$(4 \times 3) + (4 \times 5) = \square$	$(12 + 20 = 32)$	Same
b	$6 \times (4 + 1) = \square$	$(6 \times 5 = 30)$	$(6 \times 4) + (6 \times 1) = \square$	$(24 + 6 = 30)$	Same
c	$(8 \times 3) + (8 \times 4) = \square$	$(24 + 32 = 56)$	$8 \times (3 + 4) = \square$	$(8 \times 7 = 56)$	Same
d	$(7 \times 4) + (7 \times 5) = \square$	$(28 + 35 = 63)$	$7 \times (4 + 5) = \square$	$(7 \times 9 = 63)$	Same

Activity 3: Learners work on their own

Say: **Complete Activity 3 in your LAB.**

- Walk around the classroom to support learners as needed.
- Correct Activity 3 with learners so that they can receive immediate feedback.
- Answers in brackets.

Fill in the missing numbers to make each number sentence true.

1. $3 \times (2 + 4) = ((3) \times 2) + ((3) \times 4) = (6 + 12 = 18)$
2. $7 \times (3 + 5) = (7 \times (3)) + (7 \times (5)) = (21 + 35 = 56)$
3. $(9 \times 4) + (9 \times 5) = (9) \times (4 + 5) = (9) \times 9 = (81)$
4. $(8 \times 2) + (8 \times 6) = (8) \times (2 + 6) = (8) \times 8 = (64)$

5 HOMEWORK ACTIVITY (5 MINUTES)

- Explain what learners need to do for homework.
- Read the questions in the LAB with learners. Make sure all the learners understand what to do.
- Answers in brackets.

Match the calculation in the first column with the calculation that would give the same answer in the second column.

$9 \times (5 + 2)$		$(9 + 5) \times (9 + 2)$
		$4 + (3 \times 6)$
$(4 \times 3) + (4 \times 6)$		$(9 \times 5) + (9 \times 2)$
		$4 \times (3 + 6)$

6 REFLECTION AND SUMMARY OF LESSON (5 MINUTES)

Call the whole class to attention and summarise the key concepts of the lesson.

Say: **Today we have learned that:**

- **Multiplying a number by two numbers added together is the same as doing each multiplication separately.**

Lesson 3: Multiplication using the column method

Teacher's notes

This lesson is one of the fully planned lessons to be used to cover the Term 3 curriculum.

CAPS topics: 1.1 Multiplication: Whole numbers

Lesson Objective: Learners will be able to multiply a 2-digit number by a 1-digit number with no carrying.

Lesson Vocabulary: column method

Teacher Resources: Base Ten kit, Place Value cards (flard cards) (See the Printable Resources in Term 1 Teacher Resources.)

Date:

Week

Day

1 MENTAL MATHS (5 MINUTES)

		Answer			Answer
1	$3 \times 7 =$	21	6	$1 \times 7 =$	7
2	$6 \times 7 =$	42	7	$5 \times 7 =$	35
3	$7 \times 7 =$	49	8	$9 \times 7 =$	63
4	$4 \times 7 =$	28	9	$2 \times 7 =$	14
5	$0 \times 7 =$	0	10	$10 \times 7 =$	70

2 LINK TO PREVIOUS LESSON (5 MINUTES)

- Write the word problem on the board before the lesson:
There are 6 families.
Each family has 4 cows and 3 goats.
How many animals are there altogether?
- Work together with the learners to underline the numbers in the word problem and draw a wavy line under the question asked.
There are 6 families.
Each family has 4 cows and 3 goats.
How many animals are there altogether?

Say: **Draw diagrams in your LAB to show how you find the answers.**

	$6 \times (4 + 3) = 6 \times 7 = 42$ animals
--	--

OR

	$(6 \times 4) + (6 \times 3) = 24 + 18 = 42$ animals
--	--

3 CORRECT HOMEWORK ACTIVITY (5 MINUTES)

The answers to the Homework Activity for Lesson 2 are provided in Lesson 2.

Use this time to purposefully address gaps in learners' knowledge and to identify and address learner errors.

4 LESSON CONTENT - CONCEPT DEVELOPMENT (35 MINUTES)

In this lesson learners revise the 2-digit by 1-digit multiplication they did in Term 2. To add relevance to the mathematical procedure, we start with word problems which require the operation of multiplication.

Say: **Today we are going to find answers to word problems.**

Activity 1: Whole class activity and learners work in pairs

- Write the number sentence on the board:
There are 13 boxes of mangoes.
There are 3 mangoes in each box.
What is the total number of mangoes?

- Say: **Write the number sentence in your classwork book.** ($13 \times 3 = \square$)

Ask: **Explain the reason why you think it is multiplication?**

- When I draw a diagram, it would be 3 3 3 313 boxes. This is a repeated addition, so it is a multiplication.
- Because I understand the story as 13 groups of 3 mangoes, so it is a multiplication.
- When I draw a table, the number of mangoes increases by 3. It is multiplication.

Number of boxes	1	2	3	4	5	6
Number of mangoes	3	6	9	12	15	

- Say: **Remember how you can use the column method find the answer. Discuss how to do it with your partner. Write your calculations in your classwork book.**

- Allow learners time to think about and discuss how to write the multiplication in columns. Do not rush to show them what to do.

If learners struggle to get started, support them by writing place values in columns on the board.

Once all learners have written the numbers in columns, ask:

Who would like to come to the board to show us what you wrote?

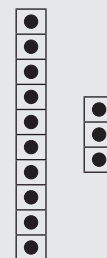
- Follow carefully what learners say and write.
Make sure that all digits are written in the appropriate place columns.
Note: learners must not forget to write the multiplication sign.

	T	O
	1	3
x		3
<hr/>		

- Use the Base Ten kit. Represent the number 13 above the calculation.

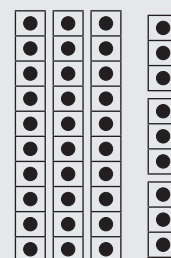
- Ask: **How did we multiply 13 by 3 before?**

(First, we worked out $3 \times 3 = 9$;
and then we worked out $3 \times 10 = 30$
then we worked out $30 + 9 = 39$)



- As the learners explain how to multiply, place 3 Tens and 3 lots of 3 Ones under the multiplication.

	T	O
	1	3
x		3
<hr/>		



- Say: **We can write numbers in the columns instead of using the Base Ten kit.**

Say: **Remember that we always start in the One's place.**

Talk about what you are doing as you do each step:

	T	O
	1	3
×		3
<hr/>		
		9
+	3	0
<hr/>		
	3	9

Ones: $3 \times 3 = 9$

Tens: $3 \times 10 = 30$

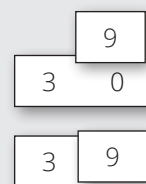
Add the 9 and the 30 to get 39

- Say: **As we did for addition and subtraction, we can write the answer in one row using Place Value Cards (Flard Cards) like this.**

	T	O
	1	3
×		3
<hr/>		
+		
<hr/>		

	T	O
	1	3
×		3
<hr/>		
		9
+		
<hr/>		

	T	O
	1	3
×		3
<hr/>		
		9
+	3	0
<hr/>		
	3	9



- Say: **There are 39 mangoes in total.**

Let learners complete their columns and write the answer in their classwork books.

Leave the example and explanation on the board so that learners can refer to it while they do Activity 2.

Activity 2: Learners work in pairs

- Walk around the classroom to support learners as needed.
- If learners get stuck, remind them of the example on the board.
- Correct Activity 2 with learners so that they can receive immediate feedback.

Say: **Use the column method to find the answer:**

Note:

- In all calculations, it is fine in the beginning if learners calculate and record the Ones and Tens separately and then add.*
- We must prepare learners to do 2-digit number \times 2-digit number. It is better to write the answer in one row, saying 4 is written in One's place and for 20, 2 is written in Ten's place and 0 is in One's place, but we know $4 + 0 = 4$, so we don't need to change anything in the One's place.*

1. $12 \times 2 = \square$

	H	T	O

2. $32 \times 3 = \square$

	H	T	O

3. $63 \times 3 = \square$

	H	T	O

4. $20 \times 4 = \square$

	H	T	O

Answers

	H	T	O
		1	2
×			2
<hr/>			
		2	4

	H	T	O
		3	2
×			3
<hr/>			
		9	6

	H	T	O
		6	3
×			3
<hr/>			
	1	8	9

Note: It is fine in the beginning if learners calculate and record the Ones and Tens separately and then add as $3 \times 3 = 9$ and $3 \times 60 = 180$.

Use the flard cards to explain how to write the answer in one row.

	H	T	O
		2	0
×			4
<hr/>			
		8	0

Watch out for multiplication by 0

5. $32 \times 4 = \square$

	H	T	O

6. $21 \times 5 = \square$

	H	T	O

Answers

	H	T	O
		3	2
x			4
	1	2	8

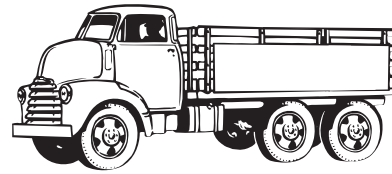
	H	T	O
		2	1
x			5
	1	0	5

Activity 3: Learners work on their own

Say: **Complete Activity 3 in your LAB.**

- Read the word problems with learners. Make sure they understand what they need to do.
- Walk around the classroom to support learners as needed.
- Correct Activity 3 with learners so that they can receive immediate feedback.
- Answers are given in brackets.

1. There are 11 trucks.
 Each truck has 6 wheels.
How many wheels are there altogether?

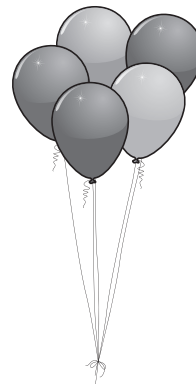


- a. Write the number sentence.
 ($11 \times 6 = \square$)
- b. Do the calculation. Use the column method.
 Answer:

	T	O
	1	1
×		6
	6	6

- c. Write the answer:
 There are (66) wheels altogether.

2. Zami bought 31 packets of balloons for a party.
 There were 5 balloons in each packet.
How many balloons did Zami buy?



- a. Write the number sentence.
 ($31 \times 5 = \square$)
- b. Do the calculation.
 Answer:

	H	T	O
		3	1
×			5
	1	5	5

- c. Write the answer:
 Zami bought (155) balloons.

5 HOMEWORK ACTIVITY (5 MINUTES)

- Explain what learners need to do for homework.
- Read the questions in the LAB with learners. Make sure all the learners understand what to do.
- Say: Use the column method to calculate the answers.

<p>1 $22 \times 3 = \square$</p> <table style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td style="width: 20%;"></td> <td style="width: 20%; text-align: center;">H</td> <td style="width: 20%; text-align: center;">T</td> <td style="width: 20%; text-align: center;">O</td> </tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td></tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td></tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td></tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td></tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td></tr> </table> <p>2 $42 \times 3 = \square$</p> <table style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td style="width: 20%;"></td> <td style="width: 20%; text-align: center;">H</td> <td style="width: 20%; text-align: center;">T</td> <td style="width: 20%; text-align: center;">O</td> </tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td></tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td></tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td></tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td></tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td></tr> </table> <p>3 $30 \times 3 = \square$</p> <table style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td style="width: 20%;"></td> <td style="width: 20%; text-align: center;">H</td> <td style="width: 20%; text-align: center;">T</td> <td style="width: 20%; text-align: center;">O</td> </tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td></tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td></tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td></tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td></tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td></tr> </table> <p>4 $43 \times 2 = \square$</p> <table style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td style="width: 20%;"></td> <td style="width: 20%; text-align: center;">H</td> <td style="width: 20%; text-align: center;">T</td> <td style="width: 20%; text-align: center;">O</td> </tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td></tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td></tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td></tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td></tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td></tr> </table>		H	T	O																						H	T	O																						H	T	O																						H	T	O																					<p>Answers</p> <table style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td style="width: 20%;"></td> <td style="width: 20%; text-align: center;">H</td> <td style="width: 20%; text-align: center;">T</td> <td style="width: 20%; text-align: center;">O</td> </tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td></tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black; text-align: center;">2</td><td style="border-top: 1px dashed black; text-align: center;">2</td></tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td></tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black; text-align: center;">3</td></tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td></tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black; text-align: center;">6</td><td style="border-top: 1px dashed black; text-align: center;">6</td></tr> </table> <table style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td style="width: 20%;"></td> <td style="width: 20%; text-align: center;">H</td> <td style="width: 20%; text-align: center;">T</td> <td style="width: 20%; text-align: center;">O</td> </tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td></tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black; text-align: center;">4</td><td style="border-top: 1px dashed black; text-align: center;">2</td></tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td></tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black; text-align: center;">3</td></tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td></tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black; text-align: center;">1</td><td style="border-top: 1px dashed black; text-align: center;">2</td><td style="border-top: 1px dashed black; text-align: center;">6</td></tr> </table> <table style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td style="width: 20%;"></td> <td style="width: 20%; text-align: center;">H</td> <td style="width: 20%; text-align: center;">T</td> <td style="width: 20%; text-align: center;">O</td> </tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td></tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black; text-align: center;">3</td><td style="border-top: 1px dashed black; text-align: center;">0</td></tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td></tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black; text-align: center;">3</td></tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td></tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black; text-align: center;">9</td><td style="border-top: 1px dashed black; text-align: center;">0</td></tr> </table> <table style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td style="width: 20%;"></td> <td style="width: 20%; text-align: center;">H</td> <td style="width: 20%; text-align: center;">T</td> <td style="width: 20%; text-align: center;">O</td> </tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td></tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black; text-align: center;">4</td><td style="border-top: 1px dashed black; text-align: center;">3</td></tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td></tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black; text-align: center;">2</td></tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td></tr> <tr><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black;"></td><td style="border-top: 1px dashed black; text-align: center;">8</td><td style="border-top: 1px dashed black; text-align: center;">6</td></tr> </table>		H	T	O							2	2								3							6	6		H	T	O							4	2								3						1	2	6		H	T	O							3	0								3							9	0		H	T	O							4	3								2							8	6
	H	T	O																																																																																																																																																																																																														
	H	T	O																																																																																																																																																																																																														
	H	T	O																																																																																																																																																																																																														
	H	T	O																																																																																																																																																																																																														
	H	T	O																																																																																																																																																																																																														
		2	2																																																																																																																																																																																																														
			3																																																																																																																																																																																																														
		6	6																																																																																																																																																																																																														
	H	T	O																																																																																																																																																																																																														
		4	2																																																																																																																																																																																																														
			3																																																																																																																																																																																																														
	1	2	6																																																																																																																																																																																																														
	H	T	O																																																																																																																																																																																																														
		3	0																																																																																																																																																																																																														
			3																																																																																																																																																																																																														
		9	0																																																																																																																																																																																																														
	H	T	O																																																																																																																																																																																																														
		4	3																																																																																																																																																																																																														
			2																																																																																																																																																																																																														
		8	6																																																																																																																																																																																																														

6 REFLECTION AND SUMMARY OF LESSON (5 MINUTES)

Call the whole class to attention and summarise the key concepts of the lesson.

Say: **Today we have revised multiplying using the column method.**

Lesson 4: Multiplying a 2-digit number by a 1-digit number

Teacher's notes

This lesson is one of the fully planned lessons to be used to cover the Term 3 curriculum.

CAPS topics: 1.1 Multiplication: Whole numbers

Lesson Objective: Learners will be able to multiply a 2-digit number by a 1-digit number with carrying in the Tens column.

Lesson Vocabulary: column method

Teacher and Learner Resources: None

Date:

Week

Day

1 MENTAL MATHS (5 MINUTES)

		Answer			Answer
1	$3 \times 8 =$	24	6	$1 \times 8 =$	8
2	$6 \times 8 =$	48	7	$8 \times 8 =$	64
3	$9 \times 8 =$	72	8	$2 \times 8 =$	16
4	$4 \times 8 =$	32	9	$10 \times 8 =$	80
5	$7 \times 8 =$	56	10	$5 \times 8 =$	40

2 LINK TO PREVIOUS LESSON (5 MINUTES)

- Write this calculation on the board before the lesson begins: $31 \times 4 = \square$

- Say: **Do this calculation in your LAB.**

Answer:

	H	T	O
		3	1
\times			4
	1	2	4

NOTE: you must check whether

- learners can write numbers in the correct positions
- learners do not forget to write multiplication sign
- learners are familiar with writing the answer in one row.

3 CORRECT HOMEWORK ACTIVITY (5 MINUTES)

The answers to the Homework Activity for Lesson 3 are provided in Lesson 3. Use this time to purposefully address gaps in learners' knowledge and to identify and address learner errors.

4 LESSON CONTENT - CONCEPT DEVELOPMENT (35 MINUTES)

This lesson is a continuation of Lesson 3 (multiplication of 2-digit numbers by 1-digit numbers). The calculations require more carrying, both in the multiplication and addition stages of the multiplication process.

Say: **Today we are practising using the column method to multiply.**

Activity 1: Whole class activity and learners work in pairs

- Refer learners to the calculation in Activity 1 in the LAB.

Say: **Work with your partner. Do the calculation.**

	H	T	O
		4	5
×			3
<hr/>			

- Allow learners to discuss what they are doing with their partner. Do not rush to tell them what to do. Give them time to strategise and work out how to deal with the carrying (exchange) required to do the calculation.
- Ask: **Who would like to come to the board and show us how you did the calculation?**

Ask questions to guide learners' thinking:

	H	T	O
		1	
		4	5
×			3
<hr/>			
	1	3	5

Ask: **How did we get this 5?** (3×5 Ones = 15, which is 5 Ones and 1 Ten.

We wrote the 5 Ones in the Ones column.

We carried the 1 Ten to the Tens column)

Ask: **How did we get this 3?**

(3×4 Tens = 12 Tens, we added the carried 1 Ten to get 13 Tens, which is 3 Tens and 1 Hundred.

We wrote the 3 Tens in the Tens Column.

We carried the 1 Hundred to the Hundreds column)

Ask: **How did we get this 1?**

(It is the 1 Hundred carried from the Tens Column after we exchanged 10 Tens for 1 Hundred)

- Let learners complete or correct the calculation in their classwork books.
- Leave the example and explanation on the board so that learners can refer to it while they do Activity 2.

Activity 2: Learners work in pairs

Say: **Complete Activity 2 in your LAB.**

- Walk around the classroom to support learners as needed.
- If learners get stuck, remind them of the example on the board.
- Correct Activity 2 with learners so that they can receive immediate feedback.

Use the column method to find the answers.

1. $13 \times 5 = \square$

	H	T	O
		1	
		1	3
x			5
		6	5

2. $70 \times 6 = \square$

	H	T	O
		7	0
x			6
	4	2	0

3. $32 \times 8 = \square$

	H	T	O
		3	2
x			8
	2	5	6

4. $52 \times 9 = \square$

	H	T	O
		5	2
x			9
	4	6	8

5. $56 \times 8 = \square$

	H	T	O
		5	6
x			8
	4	4	8

6. $16 \times 7 = \square$

	H	T	O
		1	6
x			7
	1	1	2

7. $46 \times 9 = \square$

	H	T	O
		5	
		4	6
x			9
	4	1	4

8. $67 \times 8 = \square$

	H	T	O
		5	
		6	7
x			8
	5	3	6

Activity 3: Learners work on their own

Say: **Complete Activity 3 in your LAB.**

- Walk around the classroom to support learners as needed. They should still follow the word solving process they are accustomed to which is
 - underline the numbers using a straight line
 - underline the question using a wavy line
 - write the number sentence
 - do the calculation.
- Correct Activity 3 with learners so that they can receive immediate feedback.
- Answers are given in brackets or in the calculations.

1 There are 7 players in a netball team.

How many players are there in 23 netball teams?

Number sentence: $(23 \times 7 = \square)$

	H	T	O
		2	
		2	3
x			7
	1	6	1

Answer: There are (161) players in 23 teams.

- 2 Thapelo sells potatoes for R26 per bag.
How much money will he have if he sells 9 bags of potatoes?

Number sentence: $(9 \times R26 = \square)$

	H	T	O
		5	
		2	6
x			9
	2	3	4

Answer: Thapelo will have R (234).

5 HOMEWORK ACTIVITY (5 MINUTES)

- Explain what learners need to do for homework.
- Read the questions in the LAB with learners. Make sure all the learners understand what to do.
- Answers are given in the calculations.

Use the column method to find the answers.

1. $23 \times 4 = \square$

	H	T	O
		1	
		2	3
x			4
		9	2

2. $34 \times 6 = \square$

	H	T	O
		2	
		2	4
x			6
	1	4	4

3. $71 \times 8 = \square$

	H	T	O
		7	1
x			8
	5	6	8

4. $45 \times 7 = \square$

	H	T	O
		3	
		4	5
x			7
	3	1	5

6 REFLECTION AND SUMMARY OF LESSON (5 MINUTES)

Call the whole class to attention and summarise the key concepts of the lesson.
 Say: **Today we have practised using the column method to multiply.**

Lesson 5: Multiplying by a 2-digit number (1)

Teacher's notes

This lesson is one of the fully planned lessons to be used to cover the Term 3 curriculum.

CAPS topics: 1.1 Multiplication: Whole numbers

Lesson Objective: Learners will be able to use the column method to multiply a 2-digit number by a 2-digit number which is a multiple of ten.

Lesson Vocabulary: brackets

Teacher and Learner Resources: None

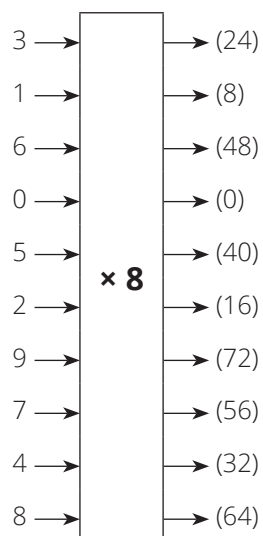
Date:

Week

Day

1 MENTAL MATHS (5 MINUTES)

Complete this flow diagram.



2 LINK TO PREVIOUS LESSON (5 MINUTES)

- Write this calculation on the board before the lesson begins:

	H	T	O
		7	9
×			8

- Say: **Do this calculation in your LAB.**

Answer:

	H	T	O
		7	
		7	9
×			8
	6	3	2

- Check that learners are able to ‘carry’ correctly.

3 CORRECT HOMEWORK ACTIVITY (5 MINUTES)

The answers to the Homework Activity for Lesson 4 are provided in Lesson 4.

Use this time to purposefully address gaps in learners’ knowledge and to identify and address learner errors.

4 LESSON CONTENT – CONCEPT DEVELOPMENT (35 MINUTES)

- In Lessons 5, 6, 7 and 8 learners multiply a 2-digit number by a 2-digit number.
- In Lesson 5, the multiplier is a 2-digit number which is a multiple of ten. Learners are familiar with multiplying by multiples of ten, but what is new in this lesson is that they develop a written record using the column method.

Say: **Today we are learning to multiply a 2-digit number by a 2-digit number.**

Activity 1: Whole class activity and learners work in pairs

Say: **Complete Activity 1 in your LAB.**

- Work through Activity 1 step-by-step with learners.
- As you go along, write the answers on the board so that learners can refer to them while doing Activity 2.
- Answers are given in brackets.

Work with your partner to find the answers.

You buy bananas at 15 cents each

1. If you buy 4 bananas, how much will it cost?

Write a number sentence to show how you work this out:

$$(4 \times 15 = \square \text{ cents})$$

Do the calculation:

	H	T	O
		2	
		1	5
×			4
<hr/>			
		(6	0)

Write down the answer: 4 bananas will cost (60) cents)

2. If you buy 40 bananas, how much will it cost?

Write a number sentence to show how you work this out: $(40 \times 15 = \square \text{ cents})$

Do the calculation:

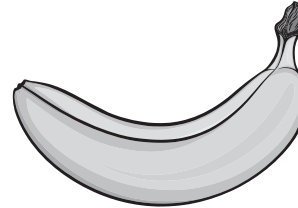
40×15 can be solved by like this: $(4 \times 15) \times 10$, because $40 = 4 \times 10$

$$\text{So, } 40 \times 15 = (4 \times 15) \times 10$$

$$= (60) \times 10$$

$$= (600)$$

Write down the answer: 40 bananas will cost (600) cents)



Activity 2: Learners work in pairs

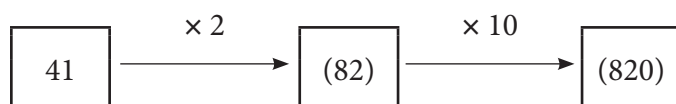
Say: **Complete Activity 2 in your LAB.**

- Walk around the classroom to support learners as needed.
- Remind learners that there is an example on the board.
- Correct Activity 2 with learners so that they can receive immediate feedback.
- Answers are given in brackets.

NOTE: If learners can do multiplication mentally, they don't need the columns.
Learners may use the columns when they cannot multiply mentally.

1. Calculate: $41 \times 20 = \square$

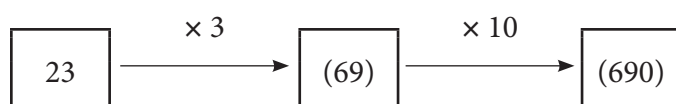
$$41 \times 20 = (41 \times (2)) \times 10$$



So, $41 \times 20 = (820)$

2. Calculate: $23 \times 30 = \square$

$$23 \times 30 = (23 \times (3)) \times 10$$

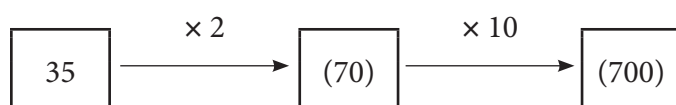


So, $23 \times 30 = (690)$

	H	T	O
		2	3
x			3
		(6	9)

3. Calculate: $35 \times 20 = \square$

$$35 \times 20 \text{ can be solved like this: } (35 \times (2)) \times 10$$

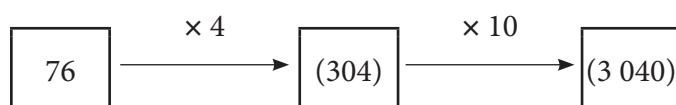


So, $35 \times 20 = (700)$

	H	T	O
		1	
		3	5
x			2
		(7	0)

4. Calculate: $76 \times 40 = \square$

$$76 \times 40 \text{ can be solved like this: } (76 \times (4)) \times 10$$



So, $76 \times 40 = (3\ 040)$

	H	T	O
		2	
		7	6
x			4
	3	0	4

5 HOMEWORK ACTIVITY (5 MINUTES)

- Explain what learners need to do for homework.
- Read the questions in the LAB with learners. Make sure all the learners understand what to do.
- Answers are given in brackets.

1. Calculate: $15 \times 30 = \square$

15×30 can be solved like this: $(15 \times (3)) \times 10$

15	$\times 3$	(45)	$\times 10$	(450)
----	------------	------	-------------	-------

So, $15 \times 30 = (450)$

	H	T	O
		1	
		1	5
×			3
		(4	5)

2. Calculate: $46 \times 20 = \square$

46×20 can be solved like this: $(46 \times (2)) \times 10$

46	$\times 2$	(92)	$\times 10$	(920)
----	------------	------	-------------	-------

So, $46 \times 20 = (920)$

	H	T	O
		1	
		4	6
×			2
		9	2

6 REFLECTION AND SUMMARY OF LESSON (5 MINUTES)

Call the whole class to attention and summarise the key concepts of the lesson.

Say: **Today we have learned to multiply a 2-digit number by a multiple of 10.**

Lesson 6: Multiplying by a 2-digit number (2)

Teacher's notes

This lesson is one of the fully planned lessons to be used to cover the Term 3 curriculum.

CAPS topics: 1.1 Multiplication: Whole numbers

Lesson Objective: Learners will be able to use the column method to multiply a 2-digit number by any 2-digit number.

Lesson Vocabulary: column method, digit

Teacher Resources: Base Ten kit

Learner Resources: Base Ten kit

Date:

Week

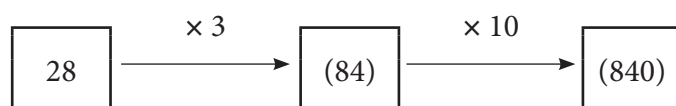
Day

1 MENTAL MATHS (5 MINUTES)

		Answer			Answer
1	$0 \times 8 =$	0	6	$10 \times 8 =$	80
2	$2 \times 8 =$	16	7	$9 \times 8 =$	72
3	$4 \times 8 =$	32	8	$3 \times 8 =$	24
4	$6 \times 8 =$	48	9	$5 \times 8 =$	40
5	$8 \times 8 =$	64	10	$7 \times 8 =$	56

2 LINK TO PREVIOUS LESSON (5 MINUTES)

- Say: Turn to your LAB where you will find the next thing you have to do.
- Say: Calculate $28 \times 30 = \square$.



	H	T	O
		2	
		2	8
x			3
		8	4

3 CORRECT HOMEWORK ACTIVITY (5 MINUTES)

The answers to the Homework Activity for Lesson 5 are provided in Lesson 5.

Use this time to purposefully address gaps in learners' knowledge and to identify and address learner errors.

4 LESSON CONTENT – CONCEPT DEVELOPMENT (35 MINUTES)

- In Lesson 6 learners continue to use the column method to multiply a 2-digit number by a 2-digit number.
- The procedure is much the same as when multiplying a 2-digit number by a 1-digit number which, by now, learners should have had a lot of practice with.
- As the numbers get bigger it becomes more difficult to use concrete and pictorial representations, but the first example shows how this can be done – particularly to support learners who are struggling to grasp the concept.
- In Activity 1, do the worked example slowly and thoroughly with the learners. Take time to discuss each step in the process, paying particular attention to the use of clear, concise language. Leave the example on the board so that learners can refer to it as they do Activities 2 and 3.

Say: **Today we are going to use the column method.**

Activity 1: Whole class activity and learners work in pairs

- Write the word problem on the board:
There are 23 boxes of eggs.
There are 12 eggs in each box.
How many eggs are there altogether?
- Read through the word problem with the learners several times until they can read it fluently.
- Ask: **Who would like to come to the board to underline the numbers for us?**
There are 23 boxes of eggs.
There are 12 eggs in each box.
- Ask: **Who would like to come to the board to underline the question for us?**
How many eggs are there altogether?
- Say: **Write the number sentence in your classwork book.** ($23 \times 12 = \square$)
- Ask: **Explain why you think we must use multiplication to get the answer.**
 - When I draw a diagram, it would be $\boxed{12} \boxed{12} \boxed{12} \boxed{12} \dots\dots\dots 23$ boxes. This is a repeated addition, so it is a multiplication.
 - Because I understand the story as 23 groups of 12 eggs, it is a multiplication.
 - When I draw a table, the number of eggs increases by 12. It is multiplication.

Number of boxes	1	2	3	4	5	6
Number of eggs	12	24	36	48	60	

- Say: **Think about how you can use the column method find the answer.**
Discuss with your partner.

Write your calculations in your classwork book.

Allow learners time to think about and discuss how to write the multiplication in columns. Do not rush to show them what to do.

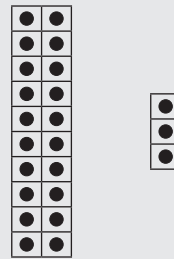
If learners struggle to get started, support them by writing place values in columns on the board.

Once all learners have written the numbers in columns, ask:

Who would like to come to the board to show us what you wrote?

- Follow carefully what learners say and write.
Make sure that all digits are written in the appropriate place columns.
Note: learners must not forget to write the multiplication sign.

	H	T	O
		2	3
×		1	2
<hr/>			

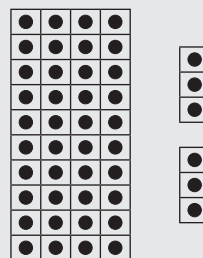


	H	T	O
		2	3
×		1	2
<hr/>			
		4	6
+	2	3	0
<hr/>			
	2	7	6

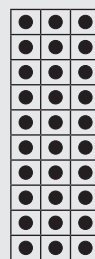
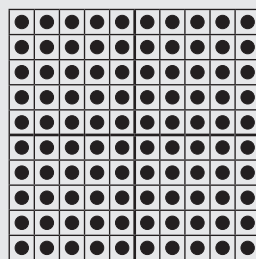
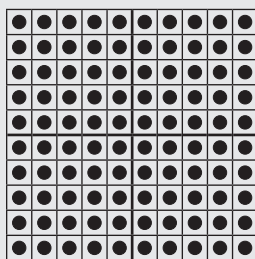
← this is $2 \times 23 = 46$

← this is $10 \times 23 = 230$

← this is $46 + 230 = 276$



← this is $2 \times 23 = 46$



← this is $10 \times 23 = 230$

- Ask: **What number do we have to multiply 23 by? (2)**

Ask: **Who would like to show us how to do this?**

As the learner explains how to multiply,

- place 2 lots of 3 Ones under the multiplication. ($2 \times 3 = 6$)
- place 4 Tens under the multiplication. ($2 \times 20 = 40$)

- Ask: **Now what number do we have to multiply 23 by? (10)**

Ask: **Who would like to show us how to do this?**

- As the learner explains how to multiply 3 by 10, place 3 Tens under the multiplication.
($10 \times 3 = 30$)
- As the learner explains how to multiply 20 by 10, place 2 Hundreds under the multiplication.
($10 \times 20 = 200$)

- Say: **We can write numbers in the columns instead of using the Base Ten kit.**

Say: **Remember that we always start in the One's place.**

Talk about what you are doing:

	T	O	
	2	3	
x	1	2	← You can separate 12 into 10 and 2.
	4	6	← $23 \times 2 = 46$
	2	3	0
	2	7	6
			← $46 + 230 = 276$

- Say: As we did for addition and subtraction, we can write the answer in one row for each number we are multiplying by (in this case 2 and 10) like this.

	T	O	
	2	3	
x	1	2	
		6	

	T	O	
	2	3	
x	1	2	
	4	6	

	T	O	
	2	3	
x	1	2	
	4	6	
	3	0	

	T	O	
	2	3	
x	1	2	
	4	6	
+	2	3	0
	2	7	6

- Say: **There are 276 eggs altogether.**

- Let learners complete their columns in their classwork books.

Leave the example and explanation on the board so that learners can refer to it while they do Activity 2.

Activity 2: Learners work in pairs

Say: Complete Activity 2 in your LAB.

- Walk around the classroom to support learners as needed.
- If learners get stuck, remind them of the example on the board. If you find that several learners need additional support, work with a small group and use a Base 10 kit. Use small numbers, for example: $14 \times 12 = \square$
- Correct Activity 2 with learners so that they can receive immediate feedback.

Use the column method to find the answers.

1. $21 \times 13 = \square$

	H	T	O
		2	1
×		1	3
		6	3
+	2	1	0
	2	7	3

2. $12 \times 17 = \square$

	H	T	O
		1	
		1	2
×		1	7
	1	8	4
+	1	2	0
	2	0	4

In all calculations, allow learners to do as many steps as necessary to get the correct answer.

3. $42 \times 15 = \square$

	H	T	O
		1	
		4	2
×		1	5
	2	1	0
+	4	2	0
	6	3	0

4. $28 \times 21 = \square$

	H	T	O
		1	
		2	8
×		2	1
		2	8
+	5	6	0
	5	8	8

5. $69 \times 11 = \square$

	H	T	O
		6	9
×		1	1
	1	6	9
+	6	9	0
	7	5	9

6. $32 \times 23 = \square$

	H	T	O
		3	2
×		2	3
	1	9	6
+	6	4	0
	7	3	6

Activity 3: Learners work on their own

Say: Complete Activity 3 in your LAB.

- Read the word problems with learners. Make sure they understand what they need to do.
- Walk around the classroom to support learners as needed.
- Correct Activity 3 with learners so that they can receive immediate feedback.
- Answers are given in brackets.

1. There are 12 cows.

Each cow produces 15 litres of milk per day.

How many litres are produced altogether?



a. Write the number sentence.

$$(12 \times 15 = \square)$$

b. Do the calculation. Use the column method.

Answer:

	H	T	O
		1	
		1	2
×		1	5
		6	0
	1	2	0
	1	8	0

c. Write the answer:

(180) litres of milk are produced altogether.

2. Mrs Ndlovu sells cupcakes for R12 each.

How much money will she get if she sells 25 cupcakes?



- a. Write the number sentence.

$$(25 \times R12 = \square)$$

- b. Do the calculation.

Answer:

	H	T	O
		1	
		2	5
x		1	2
	1	5	0
	2	5	0
	3	0	0

- c. Write the answer:

Mrs Ndlovu will get (R300)

5 HOMEWORK ACTIVITY (5 MINUTES)

- Explain what learners need to do for homework.
- Read the questions in the LAB with learners. Make sure all the learners understand what to do.
- The answers are given.

Use the column method to find the answers.

1. $35 \times 21 = \square$

	H	T	O
		1	
		3	5
x		2	1
		3	5
+	7	0	0
	7	3	5

2. $22 \times 13 = \square$

	H	T	O
		2	2
x		1	3
		6	6
+	2	2	0
	2	8	6

6 REFLECTION AND SUMMARY OF LESSON (5 MINUTES)

Call the whole class to attention and summarise the key concepts of the lesson.

Say: **Today we have learned to multiply a 2-digit number by a 2-digit number.**

Lesson 7: Multiplying by a 2-digit number (3)

Teacher's notes

This lesson is one of the fully planned lessons to be used to cover the Term 3 curriculum.

CAPS topics: 1.1 Multiplication: Whole numbers

Lesson Objective: Learners will be able to use the column method to multiply a 2-digit number by any 2-digit number when carrying happens twice.

Lesson Vocabulary: column method, digit

Teacher and Learner Resources: None

Date:

Week

Day

1 MENTAL MATHS (5 MINUTES)

		Answer			Answer
1	$10 \times 9 =$	90	6	$1 \times 9 =$	9
2	$6 \times 9 =$	54	7	$9 \times 9 =$	81
3	$4 \times 9 =$	36	8	$5 \times 9 =$	45
4	$0 \times 9 =$	0	9	$8 \times 9 =$	72
5	$7 \times 9 =$	63	10	$3 \times 9 =$	27

2 LINK TO PREVIOUS LESSON (5 MINUTES)

- Say: Refer to the question in the LAB. Calculate $28 \times 31 = \square$.
- Ask: Who would like to come to the board to show how they did the calculation?

Answer:

	H	T	O
		2	
		2	8
\times		3	1
		2	8
	8	4	0
	8	6	8

3 CORRECT HOMEWORK ACTIVITY (5 MINUTES)

The answers to the Homework Activity for Lesson 6 are provided in Lesson 6.

Use this time to purposefully address gaps in learners' knowledge and to identify and address learner errors.

4 LESSON CONTENT - CONCEPT DEVELOPMENT (45 MINUTES)

- In Lessons 5, 6, 7 and 8 learners multiply a 2-digit number by a 2-digit number. In Lesson 7, the multiplier is any 2-digit number.
- In Lesson 7, learners continue to develop the knowledge and skills required to use the column method to multiply.

Say: **Today we are learning to multiply a 2-digit number by a 2-digit number.**

Activity 1: Whole class activity and Learners work in pairs

Say: **Complete Activity 1 in your LAB.**

- Work through Activity 1 step-by-step with learners.
- As you go along, write the answers on the board so that learners can refer to them while doing Activity 2.
- Walk around the classroom to support learners as needed.
- Correct Activity 1 with learners so that they can receive immediate feedback.
- Answers are given in brackets.

Maria buys 18 airtime bundles to sell in her shop.

Each bundle costs R48.

How much must Maria pay?

Let's find a way of calculating this:

- Divide the airtime bundles into 10 bundles and 8 bundles.
 - 10 airtime bundles will cost: $10 \times 48 = (480)$
 - 8 airtime bundles will cost: $8 \times 48 = (384)$
- Total (864)

Maria must pay R(864)

Let's see how we can do this in one calculation:

	H	T	O	
		6		
		4	8	
×		1	8	
	1			
	3	8	4	← 48 × 8
	4	8	0	← 48 × 10
	8	6	4	← Total

For calculating:

	H	T	O
		6	
		4	8
×			8
	3	8	4

Activity 2: Learners work in pairs

Say: Complete Activity 2 in your LAB.

- Walk around the classroom to support learners as needed.
- Remind learners that there is an example on the board.
- Correct Activity 2 with learners so that they can receive immediate feedback.

Use the column method to do each calculation.

1. $20 \times 78 = \square$

	Th	H	T	O
			2	0
x			7	8
<hr/>				
		1	6	0
+	1	4	0	0
<hr/>				
	1	5	6	0

2. $83 \times 50 = \square$

Learners can use either ① or ②.

They must be informed that when they multiply by 0, they can skip the row where they would write 00.

①	Th	H	T	O	②	Th	H	T	O
			8	3				8	3
x			5	0	x			5	0
<hr/>					<hr/>				
			0	0		4	1	5	0
+	4	1	5	0					
<hr/>									
	4	1	5	0					

3. $31 \times 49 = \square$

	Th	H	T	O
			3	1
x			4	9
<hr/>				
		1		
		2	7	9
+	1	2	4	0
<hr/>				
	1	5	1	9

4. $64 \times 57 = \square$

	Th	H	T	O
			2	
			6	4
x			5	7
<hr/>				
		4	4	8
+	3	2	0	0
<hr/>				
	3	6	4	8

5. $35 \times 29 = \square$

	Th	H	T	O
			1	
			4	
			3	5
x			2	9
<hr/>				
		3	1	5
+		7	0	0
<hr/>				
	1	0	1	5

6. $47 \times 48 = \square$

	Th	H	T	O
			2	
			5	
			4	7
x			4	8
<hr/>				
	1	1		
		3	7	6
+	1	8	8	0
<hr/>				
	2	2	5	6

7. $26 \times 98 = \square$

	Th	H	T	O
			5 4	
			2	6
x			9	8
<hr/>				
		2	0	8
+	2	3	4	0
<hr/>				
	2	5	4	8

8. $94 \times 75 = \square$

	Th	H	T	O
			2	
			9	4
x			7	5
<hr/>				
	1	1		
		4	7	0
+	6	5	8	0
<hr/>				
	7	0	5	0

5 HOMEWORK ACTIVITY (5 MINUTES)

- Explain what learners need to do for homework.
- Read the questions in the LAB with learners. Make sure all the learners understand what to do.
- Answers are given.

Use the column method to do each calculation

1.

	Th	H	T	O
			4	1
x			4	9
<hr/>				
	1	1		
		3	6	9
+	1	6	4	0
<hr/>				
	2	0	0	9

2.

	Th	H	T	O
			3 1	
			3	7
x			5	2
<hr/>				
		1		
			7	4
+	1	8	5	0
<hr/>				
	1	9	2	4

6 REFLECTION AND SUMMARY OF LESSON (5 MINUTES)

Call the whole class to attention and summarise the key concepts of the lesson.

Say: **Today we have learned to multiply a 2-digit number by a 2-digit number.**

Lesson 8: Multiplying by a 2-digit number (4)

Teacher's notes

This lesson is one of the fully planned lessons to be used to cover the Term 3 curriculum.

CAPS topics: 1.1 Multiplication: Whole numbers

Lesson Objective: Learners will be able to use the multiplication facts they know and a method of their choice to multiply a 2-digit number by a 2-digit number.

Lesson Vocabulary: method

Teacher and Learner Resources: None

Date:

Week

Day

1 MENTAL MATHS (5 MINUTES)

		Answer			Answer
1	$5 \times 9 =$	45	6	$4 \times 9 =$	36
2	$10 \times 9 =$	90	7	$1 \times 9 =$	9
3	$2 \times 9 =$	18	8	$6 \times 9 =$	54
4	$9 \times 9 =$	81	9	$7 \times 9 =$	63
5	$3 \times 9 =$	27	10	$8 \times 9 =$	72

2 LINK TO PREVIOUS LESSON (5 MINUTES)

- Say: **Turn to your LAB. Calculate $49 \times 23 = \square$**
- Ask: **Who would like to come to the board to show how they did the calculation?**

	Th	H	T	O
			$\begin{array}{c} 1 \\ 2 \end{array}$	
			4	9
x			2	3
	1	1		
		1	4	7
+		9	8	0
	1	1	2	7

3 CORRECT HOMEWORK (5 MINUTES)

The answers to the Homework Activity for Lesson 7 are provided in Lesson 7.

Use this time to purposefully address gaps in learners' knowledge and to identify and address learner errors.

4 LESSON CONTENT - CONCEPT DEVELOPMENT (35 MINUTES)

The activities in today's lesson give learners the opportunity to use a strategy of their choice solve 2-digit by 2-digit multiplication problems. This help develop learners' strategic competence.

Say: Today we are practising multiplication. You can choose which method to use to find the answers.

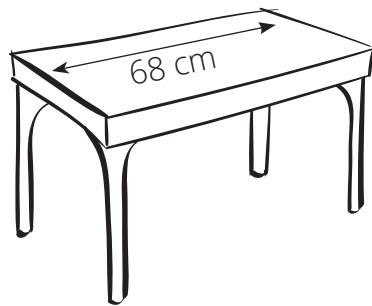
Activity 1: Learners work in pairs

Say: Complete Activity 1 in your LAB.

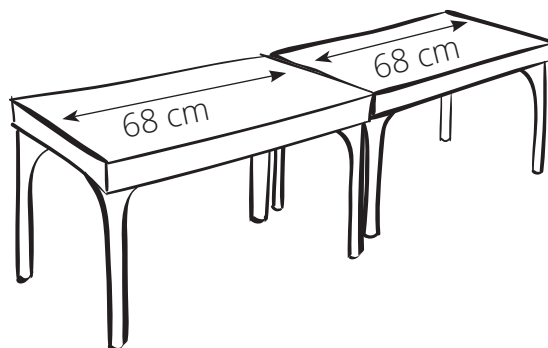
- Read through the word problem carefully with the learners to ensure that they understand what is given and what is required.
- Walk around the classroom to support learners as needed.
- Check that the strategy chosen by learners is appropriate and that learners use the strategy correctly.
- Correct Activity 1 with learners so that they can receive immediate feedback. You will be guided by the strategies used by the learners and could ask specific learners to explain show how they got the answer.
- Answers are given in brackets.

1. Use any method.

One desk measures 68 cm across.



How much will it measure if 12 desks are placed together like this:



a. Write the number sentence:

$$(12 \times 68 = \square)$$

b. Do the calculation

Possible strategies:

	Th	H	T	O
			1	
			6	8
×			1	2
<hr/>				
		1		
		1	3	6
+		6	8	0
<hr/>				
		8	1	6

$$\begin{aligned}
 &12 \times 68 \\
 &= (10 + 2) \times 68 \\
 &= (10 \times 68) + (2 \times 68) \\
 &= 680 + 136 \\
 &= 816 \text{ cm}
 \end{aligned}$$

$$\begin{aligned}
 &12 \times 68 \\
 &= 12 \times (60 + 8) \\
 &= (12 \times 60) + (12 \times 8) \\
 &= (12 \times 6 \times 10) + 96 \\
 &= 720 + 96 \\
 &= 816 \text{ cm}
 \end{aligned}$$

$$\begin{aligned}
 &12 \times 68 \\
 &= 12 \times (30 + 30 + 8) \\
 &= (12 \times 30) + (12 \times 30) + (12 \times 8) \\
 &= 360 + 360 + 96 \\
 &= 720 + 96 \\
 &= 816 \text{ cm}
 \end{aligned}$$

$$\begin{aligned}
 &12 \times 68 \\
 &= 68 + 68 + 68 + 68 + 68 + 68 + 68 \\
 &\quad + 68 + 68 + 68 + 68 + 68 \\
 &= 816 \text{ cm}
 \end{aligned}$$

2. Use any method to calculate the following

a. $38 \times 20 = (760)$

(One possible solution to **a** is $38 \times 20 = (40 - 2) \times 20$
 $= (40 \times 20) - (2 \times 20)$
 $= 800 - 40$
 $= 760$)

b. $46 \times 18 = (828)$

c. $28 \times 32 = (896)$

d. $99 \times 60 = (5\,940)$

(One possible solution to **d** is $99 \times 60 = (100 - 1) \times 60$
 $= (100 \times 60) - (1 \times 60)$
 $= 6\,000 - 60$
 $= 5\,940$)

Activity 2: Learners work on their own

Say: **Complete Activity 2 in your LAB.**

- Read through the word problem carefully with the learners to ensure that they understand what is given and what is required.
- Walk around the classroom to support learners as needed.
- Check that the strategy chosen by learners is appropriate and that learners use the strategy correctly.
- Correct Activity 2 with the learners so that they can receive immediate feedback. You should be guided by the strategies used by the learners and could ask specific learners to explain show how they got the answer.
- Answers are given in brackets.

Use any method to find the answers.

1. There are 18 books in a box.

One book costs R25.

- a. How much will one box of books cost?

$$(18 \times 25 = R450)$$

- b. What will four boxes of books cost?

$$(4 \times 450 = R1\ 800)$$



18 books in a box

2. A farmer packed seeds in packets.

Each packet contains 18 seeds.

- a. How many seeds are there in 32 packets?

$$(32 \times 18 = 576 \text{ seeds})$$

- b. Each packet of seeds costs R25.

How much money will the farmer have if she sells all the packets of seeds?

$$(32 \times 25 = R800)$$

(One possible solution to **b** is

$$32 \times 25 = 8 \times 4 \times 25 = 8 \times (4 \times 25) = 8 \times 100 = R800)$$



18 seeds in each packet

3. There are 96 pages in one book.

a. How many pages will there be in 12 books?

$$(12 \times 96 = 1\ 152 \text{ pages})$$

b. How many pages will there be in 120 books?

$$(120 \times 96 = 11\ 520 \text{ pages})$$

(One possible solution to **b** is

$$\begin{aligned} 120 \times 96 &= 10 \times 12 \times 96 \\ &= 10 \times (12 \times 96) \\ &= 10 \times 1\ 152 \quad \leftarrow \text{from a} \\ &= 11\ 520 \end{aligned}$$



96 pages in each book

5 HOMEWORK ACTIVITY (5 MINUTES)

- Explain what learners need to do for homework.
- Read the questions in the LAB with learners. Make sure all the learners understand what to do.
- Check that learners have used their chosen strategy correctly
- Answers in brackets.

Use any method to calculate.

1. $42 \times 23 = (966)$

2. $56 \times 34 = (1\ 904)$

6 REFLECTION AND SUMMARY OF LESSON (5 MINUTES)

Call the whole class to attention and summarise the key concepts of the lesson.

Say: **Today we have learned to choose a method to multiply and then to multiply correctly.**

Lesson 9: Consolidation

Teacher's notes

This lesson allows for consolidation of the previous weeks' lesson content.

CAPS topics: 1.1 Multiplication: Whole numbers

Lesson Objective: Learners will consolidate and revise the multiplication of a 2-digit number by a 2-digit number.

Lesson Vocabulary: multiply, digit, column method, total, altogether, methods

Resources: Textbook/s (if available)

Date:

Week

Day

1 NOTES FOR THE TEACHER RELATING TO THIS WEEK'S WORK

The main topics in this unit were using a variety of strategies, especially the column method, to multiply a 2-digit number by a 2-digit number.

2. POSSIBLE MISCONCEPTIONS LINKED TO THE WEEK'S WORK

- Many learners struggle with multiplying by zero.
- Many learners struggle to keep digits in the correct place value columns. Encourage learners to draw vertical lines to form columns if a grid or grid paper is not provided.
- Many learners still want to do calculations by drawing dots or lines and counting in ones, or skip counting. While this is not a misconception *per se*, Grade 4 learners should move beyond counting in ones and skip counting to knowing multiplication facts by heart and to being able to develop a written record in an algorithm such as the vertical algorithm (column method).

3 CORRECT HOMEWORK ACTIVITY (5 MINUTES)

The answers to the Homework Activity for Lesson 8 are provided in Lesson 8.

Use this time to purposefully address gaps in learners' knowledge and to identify and address learner errors.

4 LESSON CONTENT - CONCEPT DEVELOPMENT (45 MINUTES)

- Today we are going over what we learned in this unit. We will practise our multiplication facts and multiplying a 2-digit number by a 2-digit number.
- You could use this time for learners to complete classwork or homework activities as necessary.
- You could use the Additional Activities from textbooks that you have or use the Consolidation Activity given.

Additional activities for consolidation

Refer to the table. Select additional activities from the textbook/s you have.

Use the answers given in the Teacher’s Guide to mark the work.

	Fabulous	Oxford Headstart	Oxford Successful	Platinum	Premier	Sasol Inzalo	Solutions for All	Study & Master	Viva
LB	51-56	46-52	37-41,	30-33	18-28	60-74	27-37	43-47	19-22
	121-123	77-80	66-68,	48-51	44-48	161-172	154-160	91-97	51-52
	190-191	130-136	104-110,	80-85	79-83	275-280	221-228	141-148	156-158
		232-235	233-238	144-147	158-161			232-235	
TG	32-35	69-73	59-67	24-25	10-13	64-77	23-32	11-15	16-20
	84-86	77-82	80-83	39-42	20-22	177-186	86-94	69-75	32-35
	156-158	163-171	106-112	66-67	37-39	315-321	179-187	186-196	81-82
		271-272	160-162	112-114	81-83			310-314	

OR, learners could complete the Consolidation Activity in their LAB.

Consolidation Activity

1 Fill in the multiplication facts:

×	2	5	4	8	3	1	6	10	9	7
7	(14)	(35)	(28)	(56)	(21)	(7)	(42)	(70)	(63)	(49)
9	(18)	(45)	(36)	(72)	(27)	(9)	(54)	(90)	(81)	(63)
8	(16)	(40)	(32)	(64)	(24)	(8)	(48)	(80)	(72)	(56)

2 There are 7 rows with 10 dots in this array diagram.

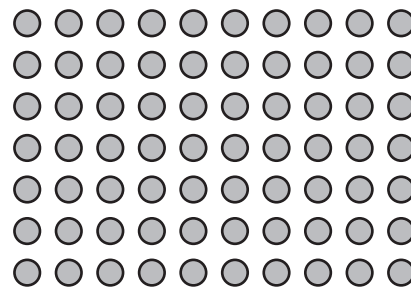
Draw a circle around the number sentence you would use to find how many dots there are altogether.

a $10 + 7 = \square$

b $7 \times 8 = \square$

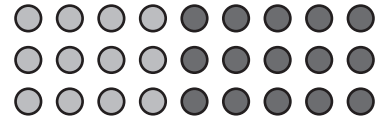
c $7 \times 10 = \square$

d $7 \times 9 = \square$



3 I have 3 bunches of flowers.
 In each bundle there are 4 white flowers and 5 yellow flowers.
 How many flowers do I have altogether?

a. Draw a diagram to show the multiplication.



b. Write down a number sentence and use it to calculate the total number of flowers.

$$(3 \times 4 = 12)$$

$$(3 \times 5 = 15)$$

$$(12 + 15 = 27 \text{ flowers})$$

OR

$$3 \times (4 + 5)$$

$$= 3 \times 9 = 27 \text{ flowers}$$

4 Calculate:

a

	Th	H	T	O
			$\begin{smallmatrix} 2 \\ 6 \end{smallmatrix}$	
			2	9
x			3	7
<hr/>				
	1			
		2	0	3
+		8	7	0
<hr/>				
	1	0	7	3

b

	Th	H	T	O
			1	
			4	7
x			2	2
<hr/>				
		1		
			9	4
+		9	4	0
<hr/>				
	1	0	3	4

c

	Th	H	T	O
			4	
			1	8
x			5	0
<hr/>				
		9	0	0

d

	Th	H	T	O
			1	
			6	3
x			4	5
<hr/>				
		3	1	5
+	2	5	2	0
<hr/>				
	2	8	3	5

e

	Th	H	T	O
			1	
			7	2
x			5	7
<hr/>				
	1			
		5	0	4
+	3	6	0	0
<hr/>				
	4	1	0	4

f

	Th	H	T	O
			$\begin{smallmatrix} 2 \\ 1 \end{smallmatrix}$	
			8	8
x			3	2
<hr/>				
		1		
		1	7	6
+	2	6	4	0
<hr/>				
	2	8	1	6

5. Use any method. Calculate:

(Check that learners have used their chosen strategy correctly)

a $31 \times 23 = (713)$

b $25 \times 47 = (1\ 175)$

c $37 \times 20 = (740)$

d $73 \times 50 = (3\ 650)$

5 REFLECTION AND SUMMARY OF LESSON

Call the whole class to attention and summarise the key concepts of the lesson.

Say: **Today we have revised multiplication facts and how to multiply a 2-digit number by a 2-digit number.**

Unit 2: Area and perimeter

INTRODUCTION

This unit focuses on area and perimeter. While learners were introduced to the concepts of area and perimeter in Grade 3, this unit extends their knowledge and skills to the use of simple formulae for calculating the area and perimeter of squares and rectangles.

In this unit, we focus on the four framework dimensions in the following ways:

Framework dimension	How the dimension is developed in this unit
Conceptual understanding	Learners do a variety of structured activities in order to bridge the gap between counting squares or units and using a formula to determine the area or perimeter of a polygon.
Procedural fluency	The learners are presented with a variety of activities in order to build on their knowledge of area and perimeter from Grade 3 and also to recognise when one strategy or procedure is more appropriate to apply than another.
Strategic competence	Learners make their own decisions on how to find the area of complex polygons which can be divided into rectangles.
Reasoning	Learners are encouraged to justify and explain how they worked out the area and perimeter of shapes.

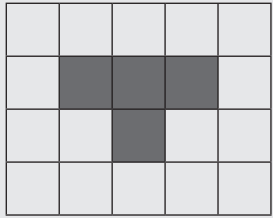
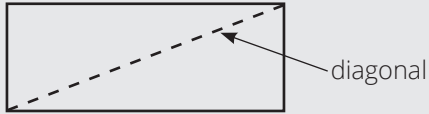
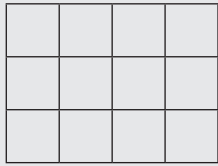
In this unit, we build a **learning centred classroom** by paying attention to:


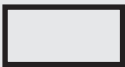



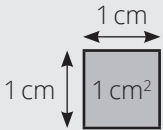
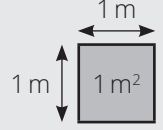
		Examples
Concept development	✓	Done in every lesson
Speaking mathematics	✓	Learners use the language of area and perimeter (example: square centimetre)
Making sense of mathematics	✓	Learners investigate relationships between area and perimeter
Practising procedures	✓	Learners practise the sequence of actions required to find the area and perimeter of 2-D shapes
Addressing learners' errors	✓	Learner answers in this unit might expose learner errors regarding the measurement of length
Active learning	✓	Learners develop a sense of the size of a square centimetre and a square metre by 'constructing' these using rulers and newspaper
Applying maths in context	✓	Learners solve problems in school, home and community contexts. For example: the most cost-effective design of fields

Mathematical vocabulary for this unit

Be sure to teach and use the following vocabulary at the appropriate place in the unit. It is a good idea to make flashcards of words and their meanings and to display these in the classroom at appropriate times.

Refer to the bilingual dictionary where necessary.

Term	Explanation / diagram
area	<p>The amount of surface enclosed by the perimeter of a 2-D shape</p>  <p>The area of this shape is 4 blocks</p>
brackets ()	<p>Symbols that are used to create groups or indicate order of operations</p> <p>These symbols () are brackets</p>
breadth	<p>The distance across or from side to side. It is sometimes called the width.</p>
diagonal	<p>A straight line that joins any two vertices of a polygon that are not next to one another</p> 
grid	<p>A pattern of straight lines that cross at right angles</p> <p>Most grids are squares but they can also be rectangles or triangles</p> 
horizontal	<p>From side to side</p>
length	<p>The measurement of "how long" something is</p> <p>It is also the distance between two or more points</p>
measure	<p>To find the size or amount of something</p> <p>This can only be done for things that can be measured</p> <p>Examples: you can measure the length, mass, capacity and volume of objects</p>
overlap	<p>If you have two pieces of something, and one covers a part of another, then they overlap</p>

Term	Explanation / diagram
perimeter	The total length around a shape Example: The perimeter of the square with sides of 2 cm $= 2\text{ cm} + 2\text{ cm} + 2\text{ cm} + 2\text{ cm} = 8\text{ cm}$
quadrilateral	Any polygon with four straight sides The sides do not need to be the same length Example:  A square and a rectangle are both quadrilaterals
rectangle	A quadrilateral (polygon) with two pairs of opposite sides of equal length and four right angles Example: 
regular hexagon	A polygon with six straight sides of the same length Example: 
regular pentagon	A polygon with five straight sides of the same length Example: 
square	A quadrilateral (polygon) with four straight sides of equal length and four right angles Example: 
square centimetre (cm ²)	The area of a square that is 1 centimetre long on each side 
square metre (m ²)	The area of a square that is 1 metre long on each side 
square unit	The area equal to a square that is 1 unit long on each side
vertical	Upright, going up and down or from top to bottom

Further practice for learners

This table references the page numbers of other sources (including textbooks) if you need additional activities.

	Fabulous	Oxford Headstart	Oxford Successful	Platinum	Premier	Sasol Inzalo	Solutions for All	Study & Master	Viva
LB	232-236	282-288	239-245	182-185	201-207	318-325	288-295	275-280	200-202
TG	192-195	328-333	190-193	143-145	105-108	372-380	192-195	371-375	100-102

UNIT PLAN AND OVERVIEW FOR UNIT 2: Area and perimeter

LP	Lesson objective Learners will be able to:	Lesson Resources	Date completed
		Learners need classwork books, LABs, writing materials, rulers and scissors for all lessons.	
10	Explain what area is and how to measure it in squares or tiles.	Teacher: Shapes X, Y and Z; two A4 grids showing Nomsa's vegetable garden; shapes A, B, C, D and E; and an extra C and E (with dotted lines and shading) Learner: Grid showing Nomsa's vegetable garden from the back of the LAB	
11	Use square units (cm ²) to measure area.	Teacher: Square divided into two parts A and B, a square measuring 1 cm by 1 cm	
12	Use formulae to calculate the area of rectangles and squares.	Teacher: flashcards (cm ² , square centimetre or centimetre squared; A3 poster: Measurements of a rectangle)	
13	Know what a square metre is and will be able to solve problems involving square metres.	Teacher: 4 × 1 metre-sticks (or 4 sticks cut to a metre length, or 4 pieces of string that are each 1 m long); chalk; flashcards: square metre, m ² , A3 poster: Measurements of a rectangle	
14	Calculate the area of L-shapes by dividing them into rectangles and / or squares.	Teacher and learners: None	
15	Calculate the area of U-shapes and other shapes by dividing them into rectangles and / or squares.	Teacher and learners: None	
16	Consolidate and revise area.	Teacher: Metre sticks or string cut into metre lengths Learners: Textbook/s (if available); old newspapers, sticky tape or stapler	
17	Explain what perimeter is and measure and calculate the perimeter of rectangles and squares.	Teacher and learners: None	
18	Solve problems involving perimeter.	Teacher and learners: None	
19	Investigate relationships between perimeter and area of squares and rectangles.	Teacher and learners: None	
20	Consolidate and revise area and perimeter.	Teacher and learners: Textbook/s (if available)	

Assessment for learning

Use the template provided at the beginning of this guide to think deeply about at least one of the lessons in this unit.

Reflection

Think about and make a note of: *What went well? What did not go well? What did the learners find difficult or easy to understand or do? What will you do to support or extend learners? Did you complete all the work set for this unit? If not, how will you get back on track?*

What will you change next time? Why?

Lesson 10: Area

Teacher's notes

This lesson is one of the fully planned lessons to be used to cover the Term 3 curriculum.

CAPS topics: 4.6: Perimeter, area, and volume

Lesson Objective: Learners will be able to explain what area is and how to measure it in squares or tiles.

Lesson Vocabulary: area, diagonal, grid, overlap, square, tile

Teacher Resources: Shapes X, Y and Z.

2 A4 grids showing Nomsa's vegetable garden

Shapes A, B, C, D and E; and an extra C and E (with dotted lines and shading)

Learner Resources: Grid showing Nomsa's vegetable garden from the back of the LAB

Date:

Week

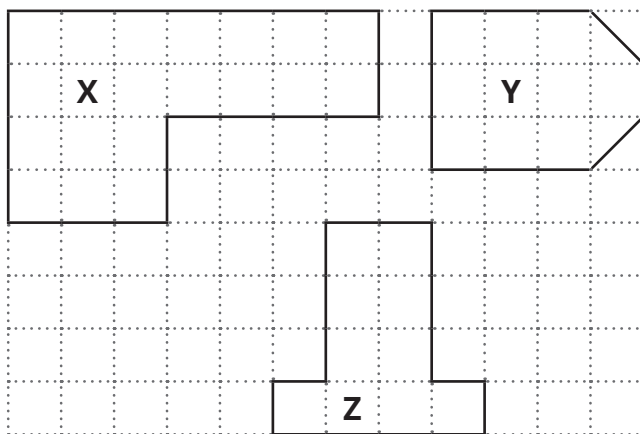
Day

1 MENTAL MATHS (5 MINUTES)

		Answer			Answer
1	$7 \times 2 =$	14	6	$9 \times 7 =$	63
2	$2 \times 3 =$	6	7	$7 \times 8 =$	56
3	$9 \times 4 =$	36	8	$4 \times 10 =$	40
4	$6 \times 5 =$	30	9	$9 \times 0 =$	0
5	$8 \times 6 =$	42	10	$8 \times 1 =$	8

2 LINK TO GRADE 3 WORK ON AREA (5 MINUTES)

- Refer learners to the shapes on the grid in the LAB.



- Say: **We want to work out the *area* of each shape. The answers must be given in number of squares inside the shape.**

- Ask: **Who would like to come to the board to count the squares and tell us the area of shape A?** (20 squares)

- Say: **Explain how you found the area.**

(Possible answers:

- Learners can count squares one-by-one
- $7 + 7 + 3 + 3 = 20$ squares
- $2 \times 7 + 2 \times 3 = 2 \times (7 + 3) = 2 \times 10 = 20$ squares
- $4 \times 3 + 2 \times 4 = 12 + 8 = 20$ squares)

Note: Encourage learners to use multiplication, rather than counting squares one by one.

- Ask: **Who would like to come to the board to count the squares and tell us the area of shape B?**

(Possible answers:

Learners can count squares one-by-one

$$3 + 4 + 3 + \frac{1}{2} + \frac{1}{2} = 11 \text{ squares}$$

$$3 \times 3 + 1 + \frac{1}{2} + \frac{1}{2} = 9 + 2 = 11 \text{ squares})$$

Check that learners have counted two half squares as one whole square.

Remind learners that a triangle or a square with a diagonal is counted as half a square.

- Ask: **Who would like to come to the board to count the squares and tell us the area of shape C?**

(Possible answers:

Learners can count squares one-by-one

$$2 + 2 + 2 + 2 + 1 + 1 = 10 \text{ squares}$$

$$4 \times 2 + (1 + 1) = 5 \times 2 = 10 \text{ squares}$$

$$3 \times 2 + 4 = 6 + 4 = 10 \text{ squares})$$

- **Note:** there are many ways to divide a polygon to find the area. Ask different learners to show how to find the number of squares in a polygon as many different ways as possible.

- Ask: **What is area?**

(Area is the amount of surface enclosed by the perimeter of a 2-D shape.)

Listen carefully to learners' answers – they do not have to use the same words, as long as they have the basic concept correct.)

3 CORRECT HOMEWORK ACTIVITY (5 MINUTES)

This is the first unit lesson in this activity. There is no homework to correct.

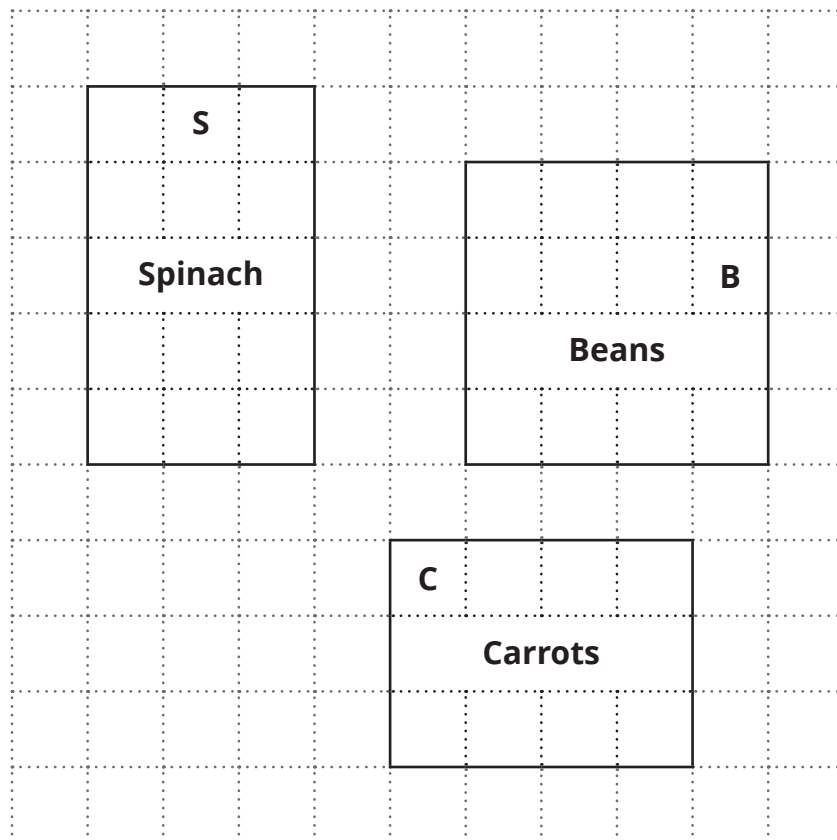
4 LESSON CONTENT - CONCEPT DEVELOPMENT (35 MINUTES)

- In this lesson learners revise the Grade 3 work on area.
- As with the development of any concepts of measurement, we start with comparison activities and then move on to the use of standardised units for the measurement of area and perimeter.
- Learners count the number of squares, or tiles, in order to compare different areas. As in Grade 3, learners count whole squares as a whole or 1, and half squares or right-angled triangles as $\frac{1}{2}$. This is done in preparation for Lesson 11 where learners will start using standard units for measuring area.

Say: **Today we will use squares to measure area.**

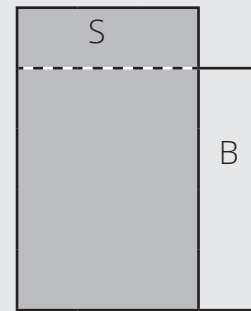
Activity 1: Whole class activity and learners work in pairs**Nomsa's vegetable garden**

Nomsa has planted a bed of spinach, a bed of beans and a bed of carrots.



- Ask: **Which bed of vegetables covers the least space?**
(Answers will vary: C Carrot, because C is smaller than S and C is smaller than B.)
- Ask: **Does S or B cover the most space?**
(Answers will vary – do not correct answers as the aim of the question is to show that this is not an efficient method. Will be discussed later.)
- Say: **Find the picture of Nomsa’s vegetable garden at the back of your LAB.
Cut out the bed of spinach, the bed of beans and the bed of carrots.**

Say: **Put S on top of B. Is this a good way to find out the amount of space covered by S and B?**



(No. There are some places where there are overlaps and there some places where there are gaps)

Say: **Complete Activity 1 in your LAB.**

- Work through each step in the activity with the learners.
- Correct and discuss answers as you go along so that learners can receive immediate feedback.
- Answers are given in brackets.

1. Count the number of squares in each vegetable bed:

How many squares are there in the bed of spinach? (There are $5 \times 3 = 15$ squares)
(Encourage learners to multiply)

How many squares are there in the bed of beans? (There are $4 \times 4 = 16$ squares)

How many squares are there in the bed of carrots? (There are $4 \times 3 = 12$ squares)

2. Write the vegetables in order from biggest area (space) to smallest area.

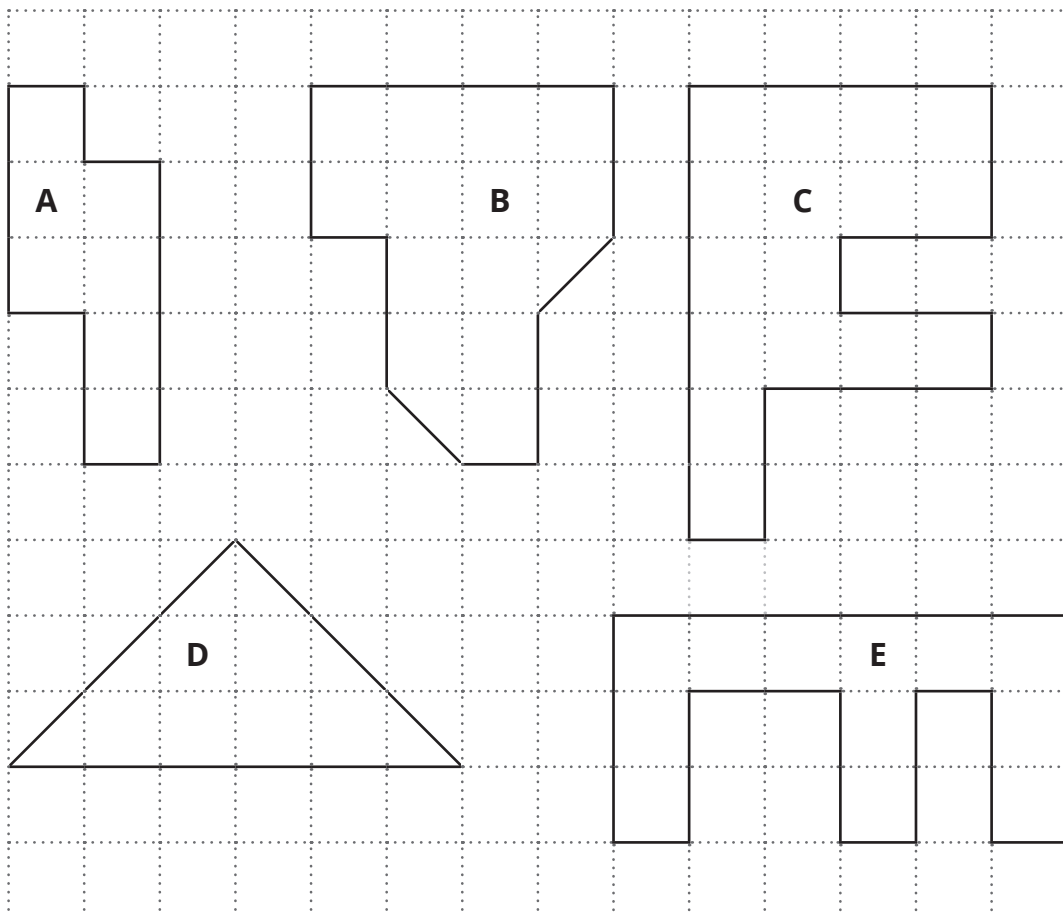
(Beans, spinach, carrots)

3. Which method do you think is the most accurate: guessing, overlapping or finding the number of squares? Explain your answer.

(Finding the number of squares gives an exact amount which we can compare.
Overlapping cannot always compare the size exactly.)

Activity 2: Whole class activity and learners work on their own

- Say: When we count the number of squares in each shape, we have been working out the *area* of that shape.
- Place the 5 sheets showing Shapes A, B, C, D and E from the Teacher Resource on the board.
- Say: Turn to your LAB. Find the area of each of the polygons by counting the squares.



Area of A = (7) squares

Area of B = (14) squares

Area of C = (16) squares

Area of D = (9) squares

Area of E = (12) squares

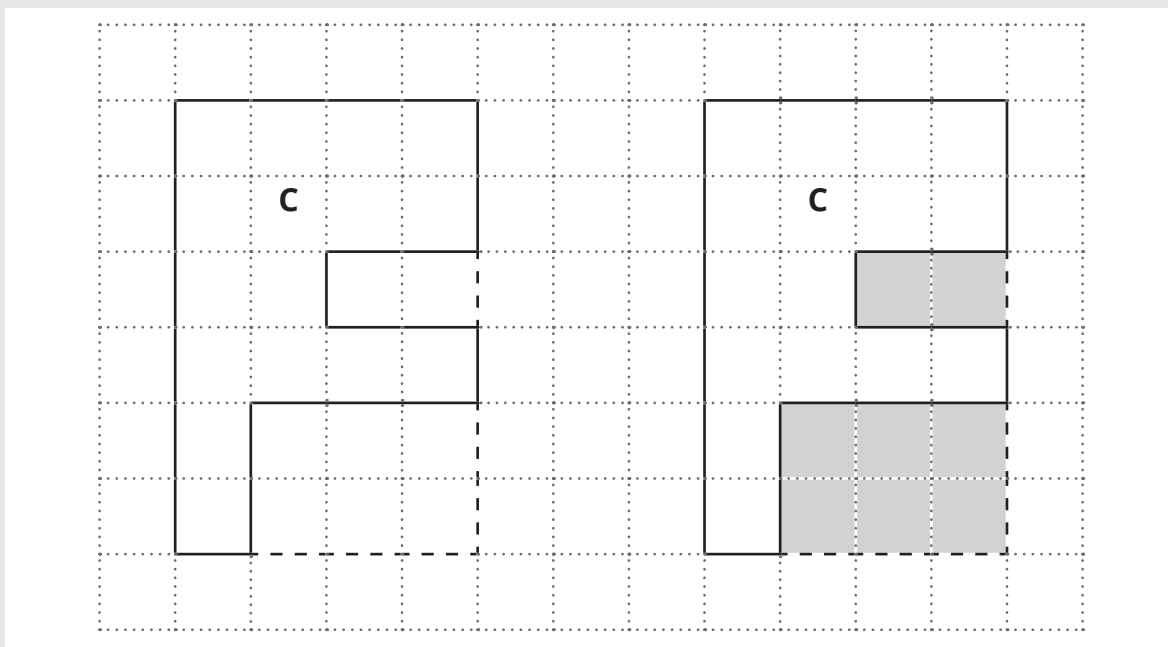
- Ask five different learners to come up and write their answers on the board. Each time ask the rest of the class if they agree with the answer.

If anyone disagrees with the answer (even if the first answer is correct), ask that learner to explain how they got their answer.

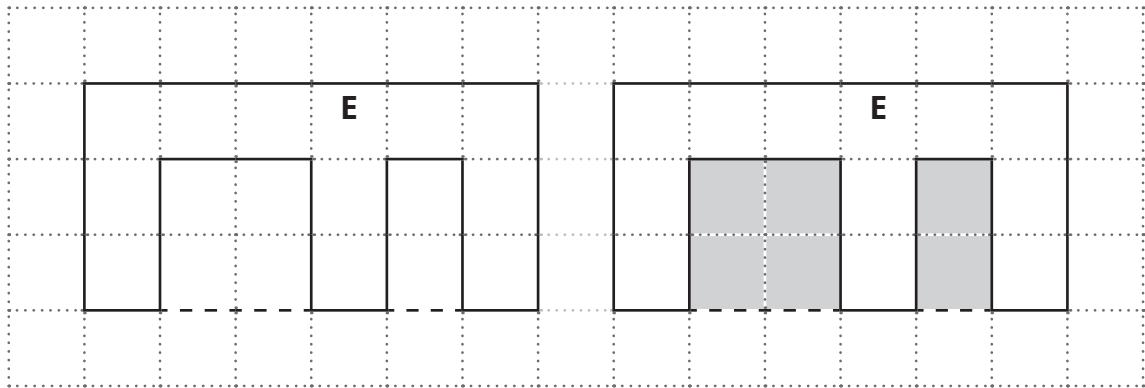
In that way you can ensure that all the learners end up with the correct answer.

- Ask: **Which polygon has the biggest area? (C)**
Which polygon has the smallest area? (A)
- Say: **We are now going to find the area of C and D in a different way.**
Stick up the second poster of C in the Teacher Resource Pack
- Show the learners that when you draw in the dotted lines as shown below, they end up with a rectangle whose length is 6 and whose breadth is 4.

The shaded in part of the diagram shows the parts that have to be removed from the rectangle to give C.



- Ask: **How can we use the area of the rectangle and the area of the shaded parts to find the area of C?**
Let the learners come to the board and explain how to find the area of C
(Possible answer: Area of C = $(6 \times 4) - 2 - (3 \times 2) = 24 - 2 - 6 = 16$)
- Ask: **Is this the same answer that you got when you counted the squares? (Yes)**
- Say: **Find the area of E in your LAB in the same way as we found the area of C.**



(Area of E = $(6 \times 3) - (2 \times 2) - 2 = 18 - 4 - 2 = 12$)

- Ask: Is this the same answer that you got when you counted the squares? (Yes)

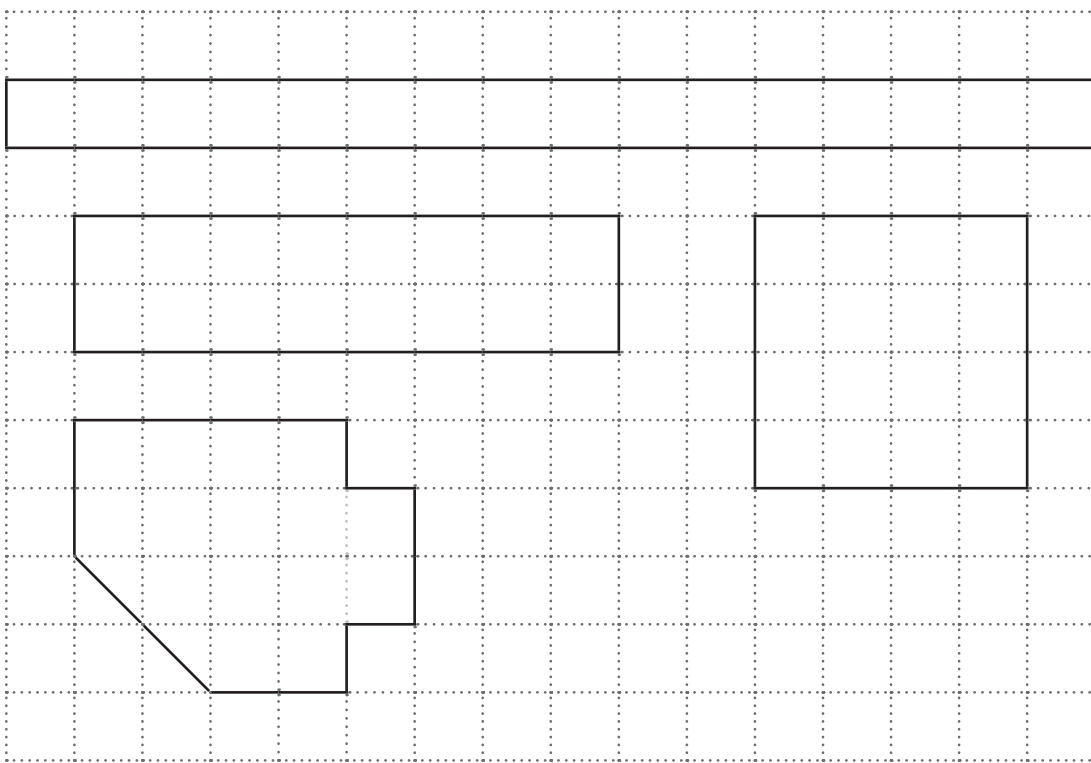
Activity 3: Learners work on their own

Say: Complete Activity 3 in your LAB.

- Walk around the classroom to support learners as needed.
- Correct Activity 3 with learners so that they can receive immediate feedback.
- Some possible answers are given.

Draw three different shapes on the grid paper below that have an area of 16 squares. You may use whole squares and half squares.

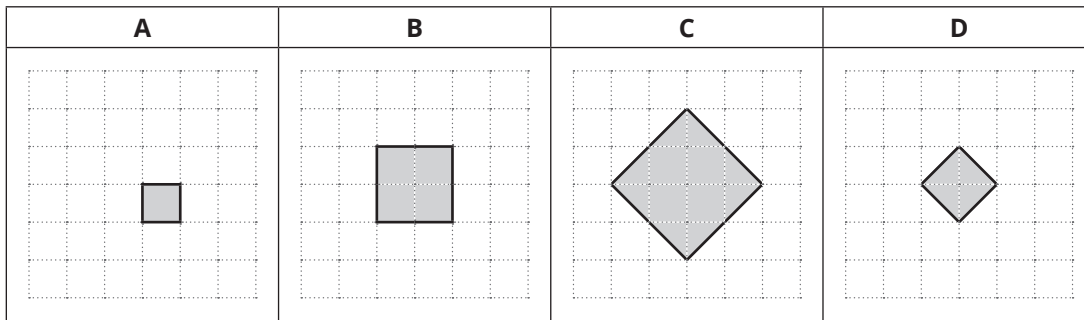
(There are many possible answers. Here are some possibilities.)



5 HOMEWORK ACTIVITY (5 MINUTES)

- Read the questions in the LAB with learners. Make sure all the learners understand what to do.
- Answers are given in brackets.

1 Find the area of shapes A, B, C and D.



Area of A = (1) square

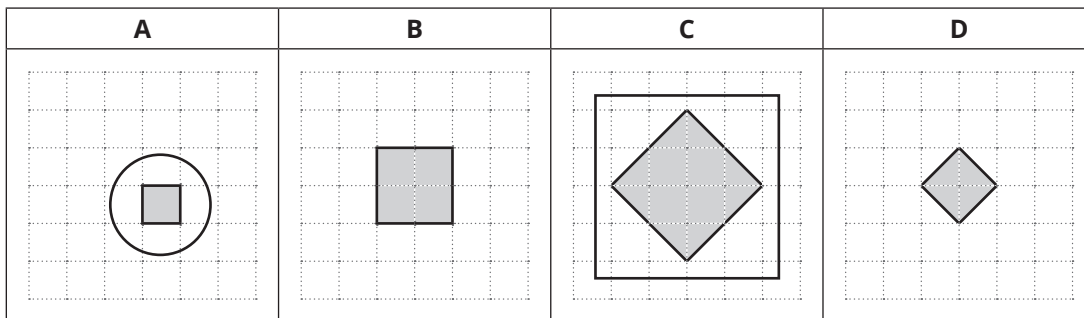
Area of B = (4) squares

Area of C = $(4 + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} = 4 + 4 = 8)$ squares

Area of D = $(\frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} = 2)$ squares

2 Draw a circle around the shape with the smallest area.

3 Draw a square around shape with the biggest area.



6 REFLECTION AND SUMMARY OF LESSON (5 MINUTES)

Call the whole class to attention and summarise the key concepts of the lesson.

Say: **Today we found the area of shapes by finding the number of squares or tiles.**

Lesson 11: Using square units to measure area

Teacher's notes

This lesson is one of the fully planned lessons to be used to cover the Term 3 curriculum.

CAPS topics: 4.6: Perimeter, area, and volume

Lesson Objective: Learners will be able to use square units (cm²) to measure area.

Lesson Vocabulary: centimetre, diagonal, grid, measure, rectangle, square, square unit, square centimetre or centimetre squared (cm²)

Teacher Resources: Square divided into two parts A and B; a square measuring 1 cm by 1 cm

Date:

Week

Day

1 MENTAL MATHS (5 MINUTES)

		Answer			Answer
1	$8 \times 5 =$	40	6	$6 \times 4 =$	24
2	$7 \times 9 =$	63	7	$4 \times 7 =$	28
3	$8 \times 8 =$	64	8	$9 \times 2 =$	18
4	$2 \times 10 =$	20	9	$8 \times 6 =$	48
5	$8 \times 3 =$	24	10	$10 \times 1 =$	10

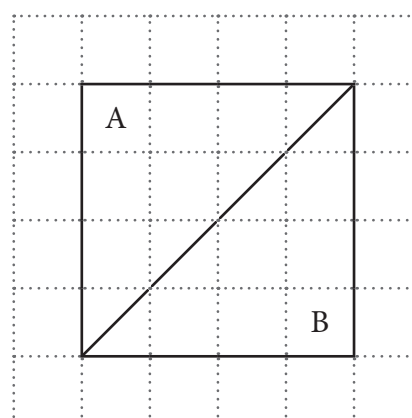
2 LINK TO PREVIOUS LESSON (5 MINUTES)

- Say, as you stick your square on the board: **Look at the square in your LAB.**
- Say: **The square has been divided into two parts. Do the two parts have the same area?**

Give a reason for your answer.

(Answers will vary. Some possible answers are:

- They have the same area because the two parts overlap exactly.
- They have the same area because I counted, and each part has an area of 8 squares or tiles)



3 CORRECT HOMEWORK ACTIVITY (5 MINUTES)

The answers to the Homework Activity for Lesson 10 are provided in Lesson 10.

Use this time to purposefully address gaps in learners' knowledge and to identify and address learner errors.

4 LESSON CONTENT - CONCEPT DEVELOPMENT (35 MINUTES)

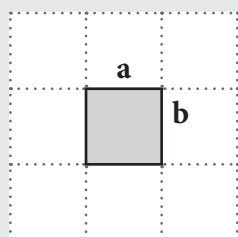
In this lesson learners use square units to measure area.

They start with square centimetres as it is easy to draw square centimetres to scale (actual size).

Say: **Today we are learning to use square units to measure area.**

Activity 1: Whole class activity / learners work in pairs

- Say: **We have measured area using squares or tiles.**
Let us look at some other ways of measuring area.
- Say: **Turn to Activity 1 in your LAB.**
Work through the activity step-by-step with the learners.
- Say: **Use your ruler. Measure the sides of the shaded square.**
Write the measurement (in cm) on sides a and b.



(a = 1 cm and b = 1 cm)

- Say: **Look at the shaded shape. Is it a square?** (Yes)
Say: **Give a reason for your answer.**
(All four sides are equal in length and 4 vertices or corners right angled)
- Say: **The area of a square with each side measuring 1 cm is 1 square centimetre or 1 centimetre squared. We write this 1 cm².**
Say: **We write 'cm' first and small 2 on the upper right side of the 'cm'.**
Let learners write '1 cm²' in their classwork books several times.
Say: **We read and say one square centimetre and we write 1 cm².**
- Write the following on the board and read them with the learners:
 - 5 cm² (5 square centimetres or 5 centimetres squared)

- 10 cm^2 (10 square centimetres or 10 centimetres squared)
- 12 cm^2 (12 square centimetres or 12 centimetres squared)
- 100 cm^2 (100 square centimetres or 100 centimetres squared)

- Say: **We can easily fit a 1 centimetre square on our thumb.**
Look at the picture.

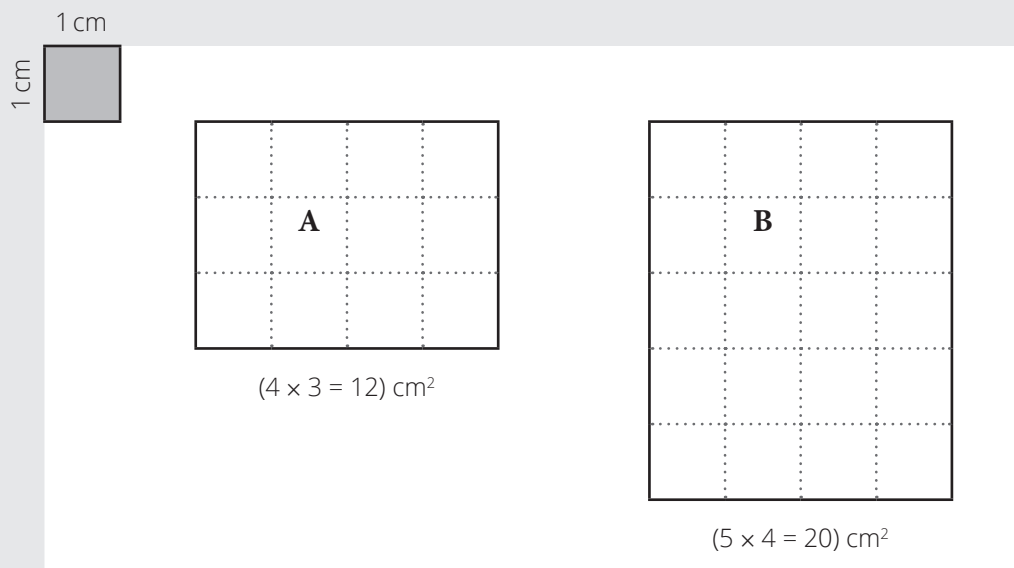
- Take your square that is 1 cm by 1 cm and put it on your finger as an illustration.



(Note that it is important that the learners get a feeling for the size of a unit. For instance, the width of your baby finger is approximately 1 cm.)



- Say: **Look at the two rectangles in your LAB.**
What is the area of rectangle A and what is the area of rectangle B in square centimetres (cm^2)?



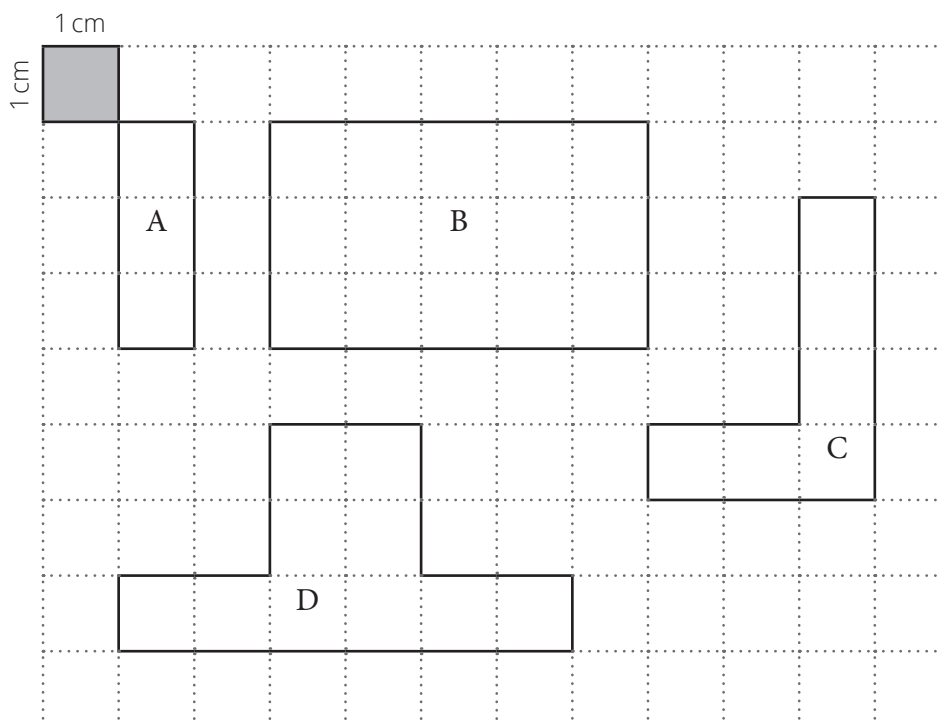
- Ask: **Which rectangle is bigger?** (Rectangle B)
Ask: **How many squares is it bigger than the other rectangle?** (8 squares bigger)

Activity 2: Whole class activity and learners work on their own

Say: Complete Activity 2 in your LAB.

- Walk around the classroom to support learners as needed.
- Correct Activity 2 with learners so that they can receive immediate feedback.
- Answers are given in brackets.

1 What is the area of each shape in cm^2 ?



The area of:

Shape A = (3) cm^2

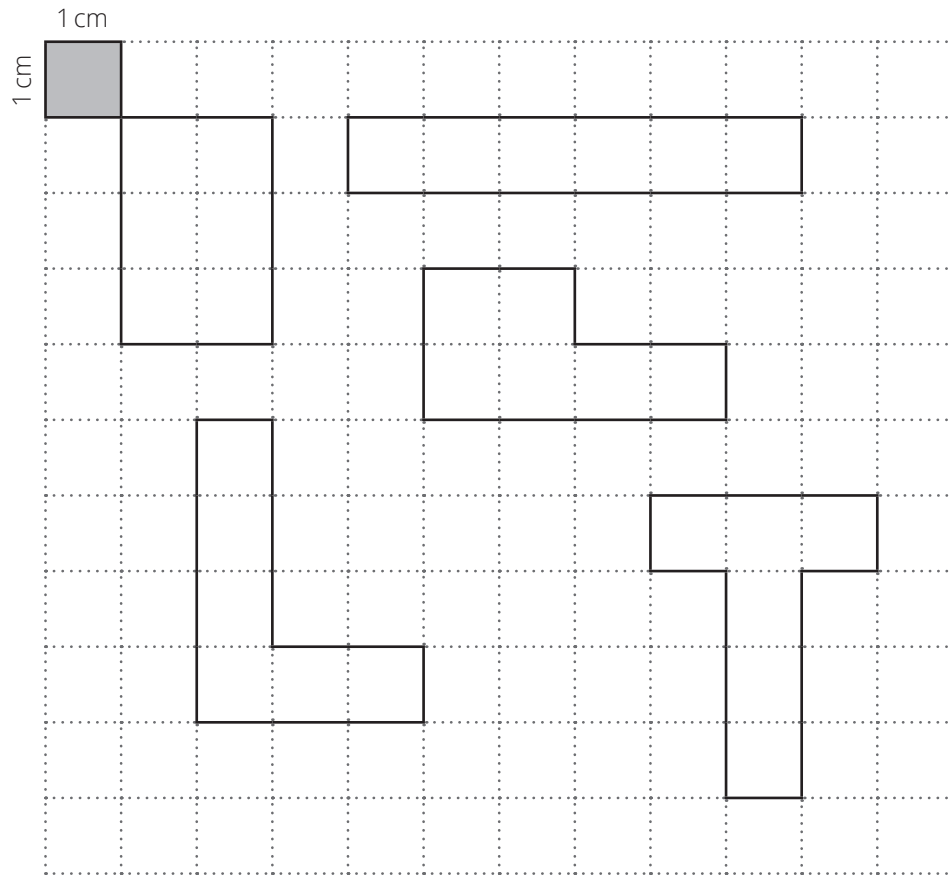
Shape B = (15) cm^2

Shape C = (6) cm^2

Shape D = (10) cm^2

2 Draw four different polygons. Each polygon should have an area of 6 cm^2 .

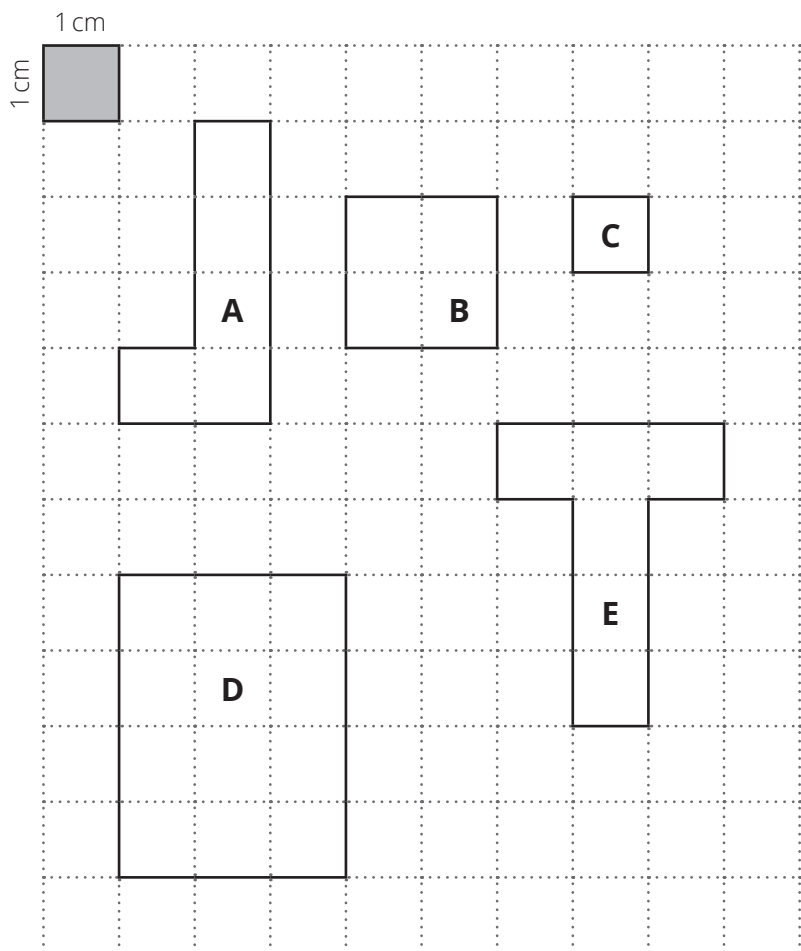
Some possible answers:



5 HOMEWORK ACTIVITY (5 MINUTES)

- Explain what learners need to do for homework.
- Read the questions in the LAB with learners. Make sure all the learners understand what to do.
- Answers are given in brackets.

Find the area of each polygon. Give the answer in cm^2 .



The area of:
 Shape A = (5) cm^2
 Shape B = (4) cm^2
 Shape C = (1) cm^2
 Shape D = (12) cm^2
 Shape E = (6) cm^2

6 REFLECTION AND SUMMARY OF LESSON (5 MINUTES)

Call the whole class to attention and summarise the key concepts of the lesson.

Say: Today we have learnt what a square centimetre is, how big a square centimetre is, and how to measure area in square centimetres.

Lesson 12: Calculating area (1)

Teacher's notes

This lesson is one of the fully planned lessons to be used to cover the Term 3 curriculum.

CAPS topics: 4.6: Perimeter, area and volume

Lesson Objective: Learners will be able to use formulae to calculate the area of rectangles and squares.

Lesson Vocabulary: breadth, length, quadrilateral, rectangle, square, square centimetre

Teacher Resources: Flashcards (cm², square centimetre or centimetre squared)

A3 poster: Measurements of a rectangle

Ask learners to start bringing old newspapers to school

Date:

Week

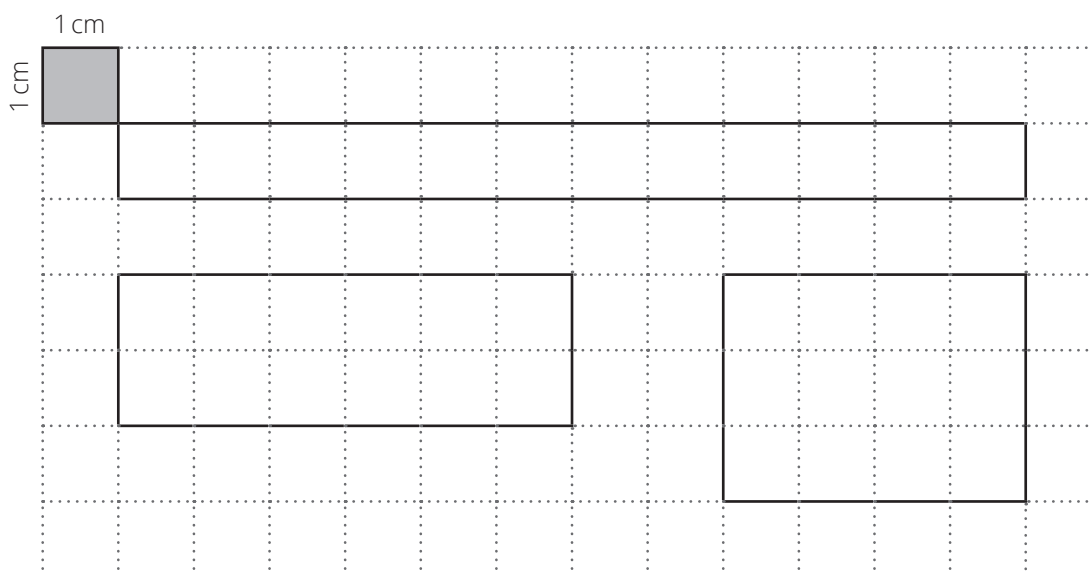
Day

1 MENTAL MATHS (5 MINUTES)

		Answer			Answer
1	$5 \times 4 =$	20	6	$9 \times 5 =$	45
2	$5 \times 9 =$	45	7	$10 \times 10 =$	100
3	$6 \times 6 =$	36	8	$8 \times 9 =$	72
4	$8 \times 0 =$	0	9	$6 \times 8 =$	48
5	$7 \times 1 =$	7	10	$3 \times 9 =$	27

2 LINK TO PREVIOUS LESSON (5 MINUTES)

- Refer learners to grid in the LAB.
- Say: **What is the area of each of the rectangles on the grid?** (12 cm^2)



3 CORRECT HOMEWORK ACTIVITY (5 MINUTES)

The answers to the Homework Activity for Lesson 11 are provided in Lesson 11. Use this time to purposefully address gaps in learners' knowledge and to identify and address learner errors.

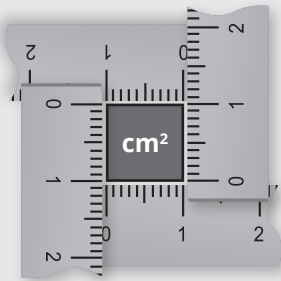
4 LESSON CONTENT - CONCEPT DEVELOPMENT (35 MINUTES)

- In this lesson learners do activities which build the concepts required to use the area formula with understanding.
- Note that we do not simply provide the formulae and get learners to apply them. Thinking that they know a formula often lets learners down in higher grades. By building the concept, we develop learners understanding so that they can apply what they have learned in different situations.

Say: **Today we are learning to calculate the area of squares and rectangles.**

Activity 1: Whole class activity and learners work in groups of four

- You will need the following flashcards from the Teacher's Resource Pack: square centimetre or centimetre squared, cm^2 .
Learners will need rulers.
- Ask, as you display the cm^2 flashcard on the board: **How do we say this?** (square centimetre or centimetre squared)
Display the flashcard on the board and get learners to repeat the words several times as you point to the two flashcards.)
- Say: **Work in a group of four. Use your rulers to build one square centimetre.**
Answer:

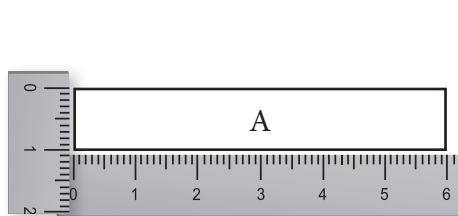


Say: **Complete Activity 1 in your LAB.**

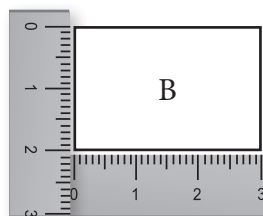
- Walk around the classroom to support learners as needed.
- Correct Activity 1 with learners so that they can receive immediate feedback.
- Answers in brackets.

Write the area of A, B and C. Give your answers in square centimetres.

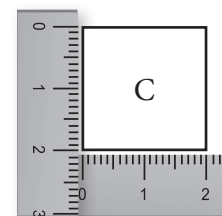
Hint: Count the number of 1 cm^2 squares in each quadrilateral.



$$\text{Area A} = (6 \times 1 = 6) \text{ cm}^2$$



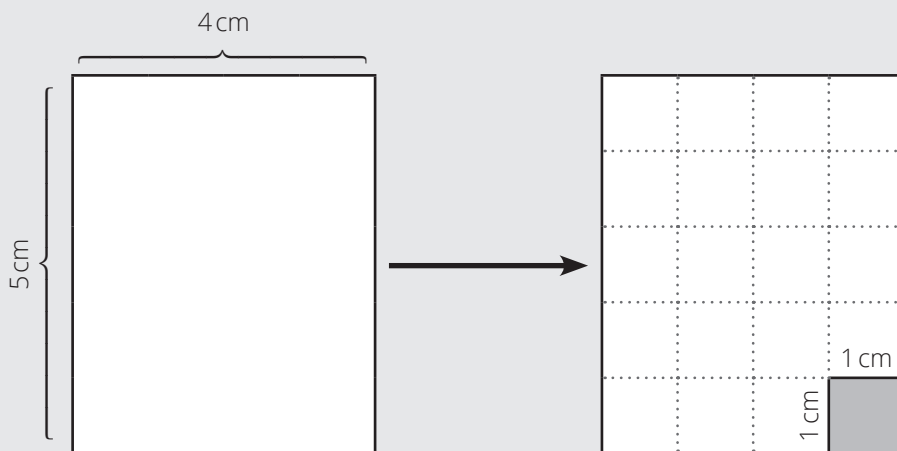
$$\text{Area B} = (3 \times 2 = 6) \text{ cm}^2$$



$$\text{Area C} = (2 \times 2 = 4) \text{ cm}^2$$

Activity 2: Whole class activity and learners work in pairs

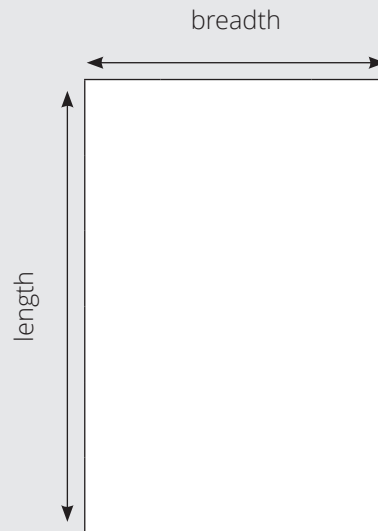
- Say: **Turn to Activity 2 in your LAB.**
Say: **We are going to find the area of a rectangle.**
The longest side is 5 cm and the shorter side is 4 cm.



- Say: **Count the number of 1 cm² squares in the rectangle.** (20) 1 cm² squares.
- Say: **In your LAB fill in the missing numbers:**
 $\text{Length of the longer side} \times \text{length of the shorter side}$
 $= (5) \text{ cm} \times (4) \text{ cm}$
 $= (20) \text{ squares}$
 $= (20) \text{ cm}^2$
- Say: **What do you notice about your two answers?** (They are both 20 cm²)
- Put the “Measurements of a rectangle” poster on the board.
Say: **The longer side of the rectangle is called the LENGTH, and the shorter side of the rectangle is called the BREADTH.**
Say: **As you have seen, we can work out the area of a rectangle by multiplying the length of the rectangle by the breadth of the rectangle.**

Measurements of a rectangle

We call the longer side of the rectangle the **LENGTH**.
We call the shorter side of the rectangle the **BREADTH**.



You can find the area of a rectangle by measuring the length and breadth of the rectangle and then multiplying the two measurements together.

$$\text{Area of a rectangle} = \text{length} \times \text{breadth}$$

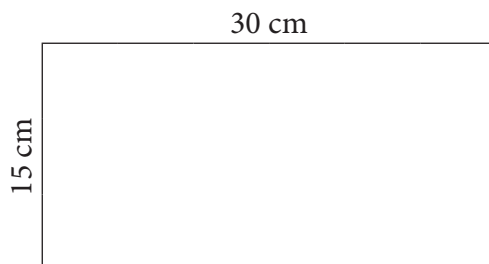
Activity 3: Learners work in pairs

Say: **Complete Activity 3 in your LAB.**

- Walk around the classroom to support learners as needed.
- Correct Activity 3 with learners so that they can receive immediate feedback.
- Answers are given in the answer column.

- 1 Calculate the area of a place mat that is 15 cm long and 30 cm wide.

- a Draw a rectangle and write the measurements on the drawing.

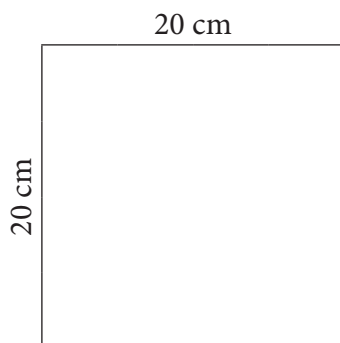


- b Calculate the area of the place mat.

$$\begin{aligned} \text{Area of placemat} \\ &= \text{length} \times \text{breadth} \\ &= (30) \times (15) \\ &= (450) \text{ cm}^2 \end{aligned}$$

- 2 Calculate the area of a square with sides that are 20 cm long.

- a Draw a square and write the measurements on the drawing.

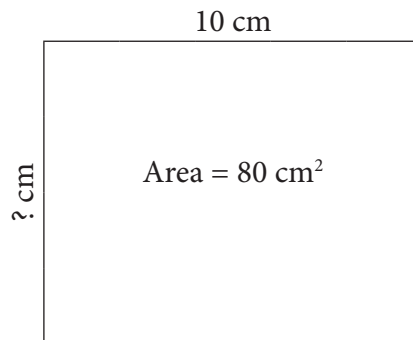


- b Calculate the area of the square.

$$\begin{aligned} \text{Area of square} \\ &= \text{length} \times \text{breadth} \\ &= (20) \times (20) \\ &= (400) \text{ cm}^2 \end{aligned}$$

- 3** The area of a rectangle is 80 cm^2 .
The length of the rectangle is 10 cm .
Find the breadth of the rectangle.

- a** Draw a rectangle and write the given measurements on the drawing.



- b** Calculate the breadth of the rectangle.
Length \times breadth = area of rectangle
 $10 \times ? = 80 \text{ cm}^2$
 $10 \times \text{what number} = 80?$ (8)
So, the breadth of the rectangle is (8) cm

5 HOMEWORK ACTIVITY (5 MINUTES)

- Explain what learners need to do for homework.
- Read the questions in the LAB with learners. Make sure all the learners understand what to do.
- Suggested answers are given below.

Draw three different rectangles each with an area of 20 cm^2 .

The diagram shows a grid with a 1 cm by 1 cm square labeled "1 cm" on the top and "1 cm" on the left. Three rectangles are drawn on the grid, each labeled "20:cm²". The first rectangle is 10 units long and 2 units high. The second rectangle is 5 units long and 4 units high. The third rectangle is 4 units long and 5 units high.

6 REFLECTION AND SUMMARY OF LESSON (5 MINUTES)

Call the whole class to attention and summarise the key concepts of the lesson.

Say: **Today we have learned to calculate the area of a rectangle and a square.**

Lesson 13: Calculating area (2)

Teacher's notes

This lesson is one of the fully planned lessons to be used to cover the Term 3 curriculum.

CAPS topics: 4.6: Perimeter, area and volume

Lesson Objective: Learners will know what a square metre is and will be able to solve problems involving square metres.

Lesson Vocabulary: square metre, quadrilateral, formula

Teacher Resources: 4 × 1 metre-sticks (or 4 sticks cut to a metre length, or at least 4 pieces of string that are each 1 m long); chalk; flashcards: square metre, m², A3 poster: Measurements of a rectangle.

Date:

Week

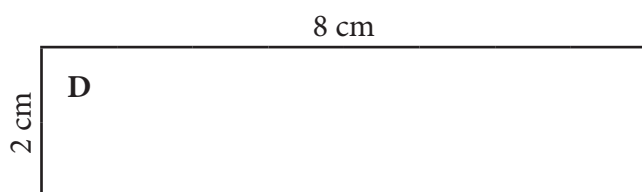
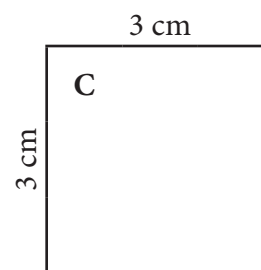
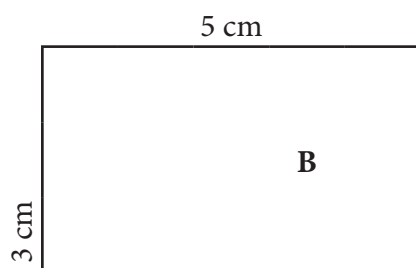
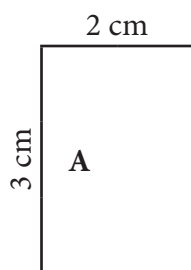
Day

1 MENTAL MATHS (5 MINUTES)

		Answer			Answer
1	$1 \times 8 =$	8	6	$7 \times 7 =$	49
2	$2 \times 5 =$	10	7	$4 \times 6 =$	24
3	$9 \times 10 =$	90	8	$7 \times 0 =$	0
4	$6 \times 1 =$	6	9	$4 \times 8 =$	32
5	$9 \times 8 =$	72	10	$7 \times 9 =$	63

2 LINK TO PREVIOUS LESSON (5 MINUTES)

- Say: **Turn to Lesson 13 in your LAB.**
Calculate the area of quadrilaterals A, B, C and D.



Area rectangle A = $(3 \times 2 = 6 \text{ cm}^2)$

Area rectangle B = $(5 \times 3 = 15 \text{ cm}^2)$

Area square C = $(3 \times 3 = 9 \text{ cm}^2)$

Area rectangle D = $(8 \times 2 = 16 \text{ cm}^2)$

3 CORRECT HOMEWORK ACTIVITY (5 MINUTES)

The answers to the Homework Activity for Lesson 12 are provided in Lesson 12. Use this time to purposefully address gaps in learners' knowledge and to identify and address learner errors.

4 LESSON CONTENT – CONCEPT DEVELOPMENT (35 MINUTES)

- In this lesson learners learn about another measure of area, namely the square metre.
- A square metre is used to measure the area of larger shapes.

Say: **Today we are learning how big a square metre is, and how to calculate area in square metres.**

Activity 1: Whole class activity

- In a previous less the learners learned how big a square centimetre is. Now they need to find out how big a square metre is. A fairly accurate square metre needs to be drawn on the ground (a square that is 1 m by 1 m). The learners then need to see how many learners can stand inside this square metre.



This should help the learners remember how big 1 square metre is.

- Here are some ideas as to how you can do this. Choose the one that suits you best.

WHERE YOU CAN DO THIS ACTIVITY:

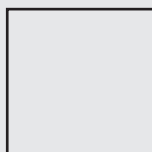
- If you have space in the classroom, move the desks out of the way so that you have a space that is 1 m by 1 m.
- If you don't have space in the classroom, you will need to take the learners outside to a space where you will not disturb other classes and where you can draw on the ground with chalk or with a stick in the ground.

WHAT YOU NEED FOR THIS ACTIVITY

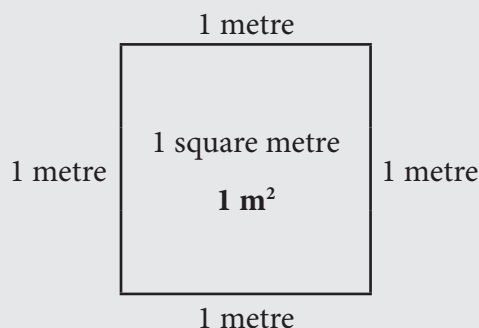
- You will need 4 metre-sticks or 4 sticks approximately 1 m long or at least four 1 m pieces of string or wool. You will also need chalk.

WHAT TO DO

- You need to draw a square that is 1 m by 1 m on the floor of the classroom or on the ground or tar outside.



- Do this by either putting four metre sticks on the ground to make the square or by giving 4 learners a piece of wool or string that is 1 m long. Let them make a square by each one holding the ends of two different pieces of string in one hand and moving apart so that the string is pulled tight.
- Once the learners have seen how many learners can fit in a square, bring the learners back to their desks, and draw a square on the board that has each side equal to 1 metre. Label it as follows:



- Ask: **What is the length of each of the sides of this square in metres?** (1 m)
Ask: **What is the area of this square in m^2** ($1\text{ m} \times 1\text{ m} = 1\text{ m}^2$)
- Say, as you display the flashcards: **We say: square metre, we write m^2 .**
Leave the flashcards displayed on the board so that learners can refer to them during the lesson.
- Ask: **What is the length of each of the sides of this square in centimetres?** (100 cm)
Ask: **What is the area of this square in cm^2** ($100\text{ cm} \times 100\text{ cm} = 10\,000\text{ cm}^2$)
- Ask: **Is a square metre bigger or smaller than a square centimetre?** (Bigger)
Ask: **Can you draw a real-size square metre in your LAB?** (No)

- Say: **We can't draw a square metre in our LAB as it is too big. We draw a smaller diagram. Each side *represents* a measurement in metres.**

Activity 2: Learners work with their partners

Say: **Complete Activity 2 in your LAB.**

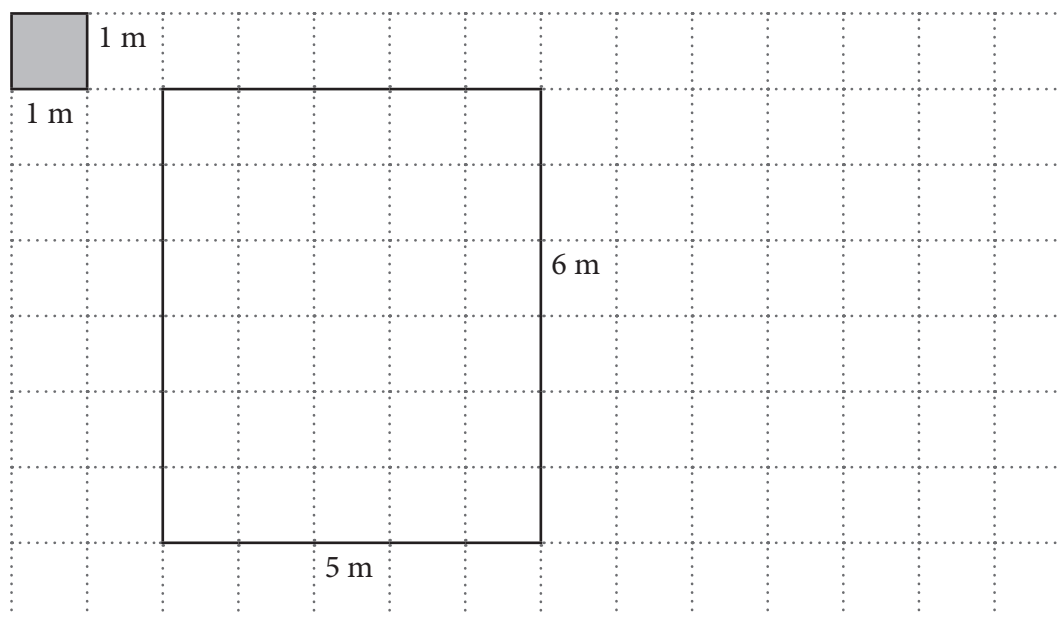
- Work through the activity, step-by-step, with learners.
- Correct Activity 2 as you go along.
- Answers are given in brackets.

1. Find the area of a school kitchen that is 6 m long and 5 m wide.

a. Each square on this grid represents a square that is 1 m by 1 m.

Draw a sketch of the kitchen on the grid.

Fill in the measurements of the square on the grid.



b. Find the area of the kitchen. Give your answer in square metres (m²).

$$\begin{aligned}
 \text{Area of the kitchen} &= \text{length} \times \text{breadth} \\
 &= (6) \text{ m} \times (5) \text{ m} \\
 &= (30) \text{ m}^2
 \end{aligned}$$

2. Which do you think is bigger, this kitchen or your classroom?
(Answers will be varied. Allow the learners time to discuss the problem and to work out a solution)
(One solution:
Learners can measure the length and breadth of the classroom with a 1 m piece of string or stick or a tape measure. The measurement could be rounded off to the nearest metre and learners could then calculate the area of the classroom.
An example of measurements:
The length of the classroom is approximately 8 m 40 cm \rightarrow 8 m
The breadth of the classroom is approximately 7 m 62 cm \rightarrow 8 m
Area of the classroom is $8 \text{ m} \times 8 \text{ m} = 64 \text{ m}^2$
(Our classroom is bigger than the kitchen.)

Activity 3: Whole class activity learners work on their own

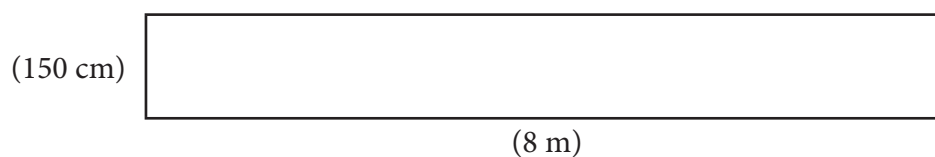
- Say: When we calculate the area of a rectangle by multiplying the length by the breadth, we are using the *formula* for calculating the area of a rectangle.

Say: Complete Activity 3 in your LAB.

- Walk around the classroom to support learners as needed.
- Correct Activity 3 with learners so that they can receive immediate feedback.
- Answers are given in brackets.

1. Use the formula to calculate the area of a wall.
The length of the wall is 8 metres. The breadth of the wall is 150 cm.

- a. Fill in the measurements on this drawing of the wall.



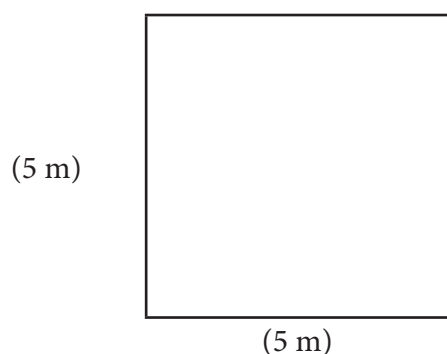
- b. Write down the formula for calculating the area of a rectangle:
Area of a rectangle = (length \times breadth)
- c. When you calculate area, the measurements of both the length and the breadth must be in the same units.
Write 8 m in cm.
 $8 \text{ m} = (800) \text{ cm}$

- d.** Calculate the area of the wall. Make sure that both measurements are the same unit.

$$\begin{aligned} \text{Area of classroom} &= \text{length} \times (\text{breadth}) \\ &= (800 \text{ cm} \times 150 \text{ cm}) \\ &= (120\,000 \text{ cm}^2) \end{aligned}$$

- 2.** Use the formula to calculate the area of the floor of a square office. Each of the walls in the office is 5 metres long.

- a.** Fill in the measurements on this drawing of the office floor.



- b.** Write down the formula for calculating the area of a square:

$$\text{Area of a square} = (\text{length} \times \text{breadth})$$

- c.** Calculate the area of the floor in m^2 .

$$\begin{aligned} \text{Area of floor} &= (\text{length}) \times \text{breadth} \\ &= (5 \text{ m} \times 5 \text{ m}) \\ &= (25 \text{ m}^2) \end{aligned}$$

- d.** Calculate the area of the floor in cm^2 .

$$\begin{aligned} 5 \text{ m} &= (500) \text{ cm} \\ \text{Area of the floor} &= (500 \text{ cm} \times 500 \text{ cm}) \\ &= (250\,000 \text{ cm}^2) \end{aligned}$$

5 HOMEWORK ACTIVITY (5 MINUTES)

- Explain what learners need to do for homework.
- Read the questions in the LAB with learners. Make sure all the learners understand what to do.
- Answers are given in brackets.

1. Calculate the area of a rectangle with a length of 9 m and a breadth of 7 m.

$$\begin{aligned}\text{Area of a rectangle} &= \text{length} \times (\text{breadth}) \\ &= (9 \text{ m} \times 7 \text{ m}) \\ &= (63) \text{ m}^2\end{aligned}$$

2. Calculate the area of a square with sides of 7 m.

$$\begin{aligned}\text{Area of a square} &= (\text{length} \times \text{length}) \\ &= (7 \text{ m} \times 7 \text{ m}) \\ &= (49) \text{ m}^2\end{aligned}$$

6 REFLECTION AND SUMMARY OF LESSON (5 MINUTES)

Call the whole class to attention and summarise the key concepts of the lesson.

Say: **Today we have learned how to measure the area of a rectangle and a square measured in square metres.**

Lesson 14: Calculating area (3)

Teacher's notes

This lesson is one of the fully planned lessons to be used to cover the Term 3 curriculum.

CAPS topics: 4.6: Perimeter, area and volume

Lesson Objective: Learners will be able to calculate the area of L-shapes by dividing them into rectangles and/ or squares.

Lesson Vocabulary: formula, area, length, breadth, vertical, horizontal

Resources: none needed

Date:

Week

Day

1 MENTAL MATHS (5 MINUTES)

		Answer			Answer
1	$7 \times 6 =$	42	6	$8 \times 7 =$	56
2	$8 \times 10 =$	80	7	$4 \times 8 =$	32
3	$8 \times 9 =$	72	8	$9 \times 3 =$	27
4	$9 \times 9 =$	81	9	$4 \times 0 =$	0
5	$9 \times 6 =$	54	10	$6 \times 5 =$	30

2 LINK TO PREVIOUS LESSON (5 MINUTES)

- Say: Calculate the area of a square with sides of 10 m. ($10 \times 10 = 100 \text{ m}^2$)
- Say: Calculate the area of a rectangle with a length of 20 m and a breadth of 8 m ($20 \times 8 = 160 \text{ m}^2$)

3 CORRECT HOMEWORK ACTIVITY (5 MINUTES)

The answers to the Homework Activity for Lesson 13 are provided in Lesson 13.

Use this time to purposefully address gaps in learners' knowledge and to identify and address learner errors.

4 LESSON CONTENT - CONCEPT DEVELOPMENT (35 MINUTES)

- In this lesson learners use the formula for calculating the area of a rectangle or a square to calculate the area of L-shapes.
- Learners do this by dividing the L-shape into rectangles and / or squares and then adding the areas together or subtracting them.

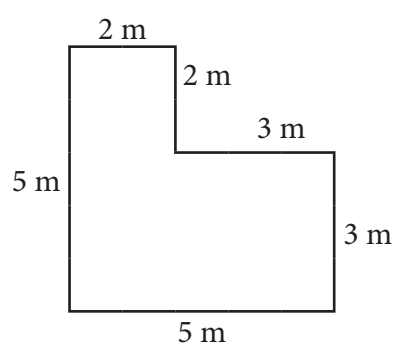
Say: Today we are learning to calculate the area of different shapes.

Activity 1: Whole class activity and learners work in pairs

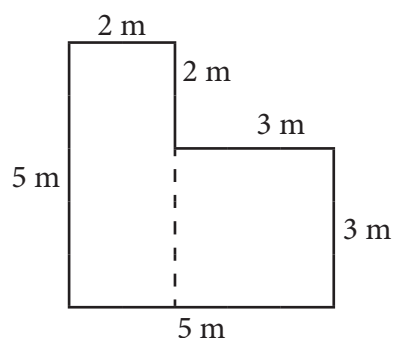
Say: Turn to Activity 1 in your LAB.

- Read through question 1. Make sure that learners understand what they need to do.
- Give learners time to think about and talk about how they would find the area of the L-shape.
Do not rush to tell learners how to find the answer.
- Discuss learners' answers. Ask selected learners to come to the board to show how they divided the shape into rectangles and/or squares.
- If the learners do not come up with all three different methods of finding the area, use questioning to elicit the method from the learners.

Work with your partner to find the area of this shape.
Use the formula for calculating the area of a rectangle and a square.

**POSSIBLE ANSWERS****METHOD 1**

Draw a vertical line to make a rectangle and a square.



The area of the rectangle on the left
 $= 5 \text{ m} \times 2 \text{ m} = 10 \text{ m}^2$

The area of the square on the right $= 3 \text{ m} \times 3 \text{ m} = 9 \text{ m}^2$

Total area $= 10 \text{ m}^2 + 9 \text{ m}^2 = 19 \text{ m}^2$

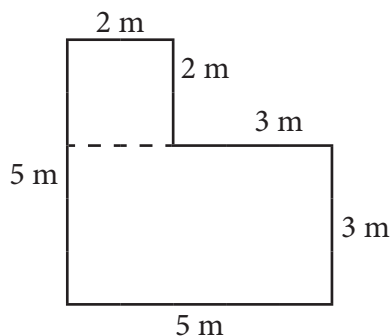
Ask: **How can we write this calculation as one number sentence?**

Area $= (5 \times 2) + (3 \times 3) = 10 \text{ m}^2 + 9 \text{ m}^2 = 19 \text{ m}^2$

POSSIBLE ANSWERS

METHOD 2

Draw a horizontal line to make a square and a rectangle.



Area of square on top = $2\text{ m} \times 2\text{ m} = 4\text{ m}^2$

Area of rectangle below = $5\text{ m} \times 3\text{ m} = 15\text{ m}^2$

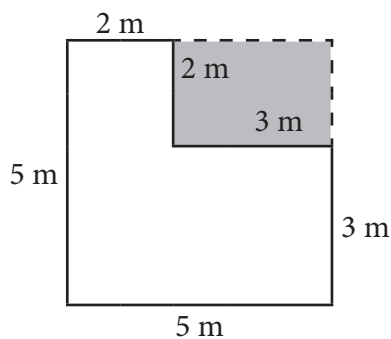
Total area = $4\text{ m}^2 + 15\text{ m}^2 = 19\text{ m}^2$

Ask: **How can we write this calculation as one number sentence?**

$$\text{Area} = (2 \times 2) + (5 \times 3) = 4\text{ m}^2 + 15\text{ m}^2 = 19\text{ m}^2$$

METHOD 3

Subtract the shaded rectangle from the $5\text{ m} \times 5\text{ m}$ square.



Area of the large square = $5\text{ m} \times 5\text{ m} = 25\text{ m}^2$

Area of the shaded rectangle = $3\text{ m} \times 2\text{ m} = 6\text{ m}^2$

Area of the L-shape = $25\text{ m}^2 - 6\text{ m}^2 = 19\text{ m}^2$

Ask: **How can we write this calculation as one number sentence?**

$$\text{Area} = (5 \times 5) - (3 \times 2) = 25\text{ m}^2 - 6\text{ m}^2 = 19\text{ m}^2$$

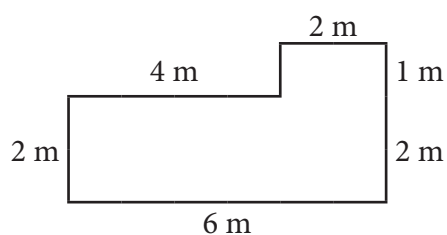
Activity 2: Learners work on their own

Say: Complete Activity 2 in your LAB.

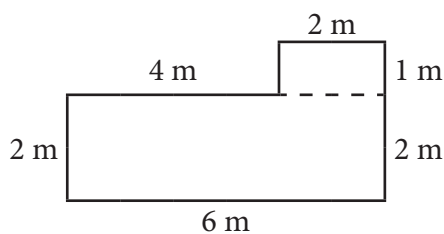
- Walk around the classroom to support learners as needed.
- Correct Activity 2 with learners so that they can receive immediate feedback.
- Answers are given in the answer column.

Find the area of each shape

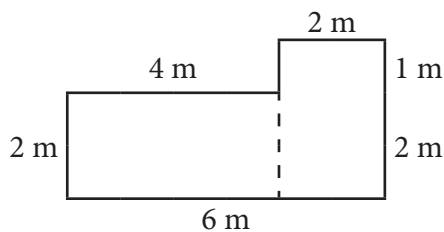
1

**POSSIBLE ANSWERS**

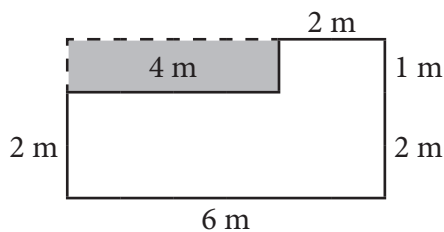
There are three different ways of dividing up the shape:



$$\text{Area} = (6 \times 2) + (1 \times 2) = 12 \text{ m}^2 + 2 \text{ m}^2 = 14 \text{ m}^2$$

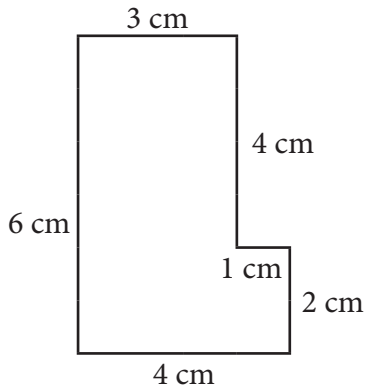
OR

$$\text{Area} = (4 \times 2) + (3 \times 2) = 8 \text{ m}^2 + 6 \text{ m}^2 = 14 \text{ m}^2$$

OR

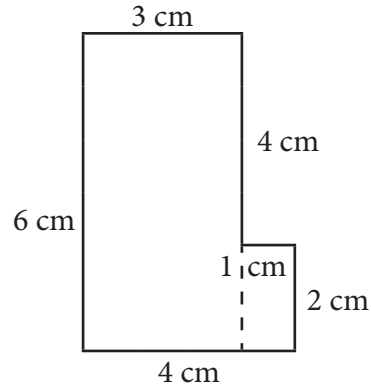
$$\text{Area} = (6 \times 3) - (4 \times 1) = 18 \text{ m}^2 - 4 \text{ m}^2 = 14 \text{ m}^2$$

2



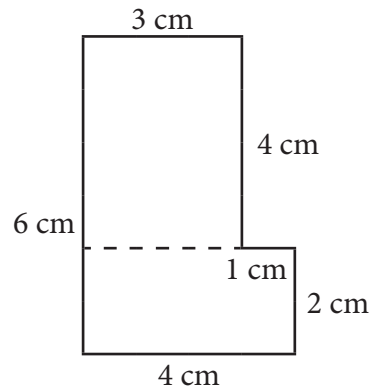
POSSIBLE ANSWERS

There are three different ways of dividing up the shape:



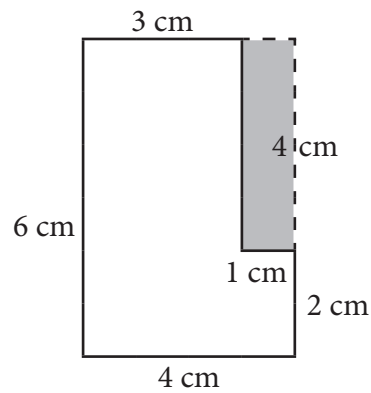
$$\text{Area} = (6 \times 3) + (2 \times 1) = 18 \text{ cm}^2 + 2 \text{ cm}^2 = 20 \text{ cm}^2$$

OR



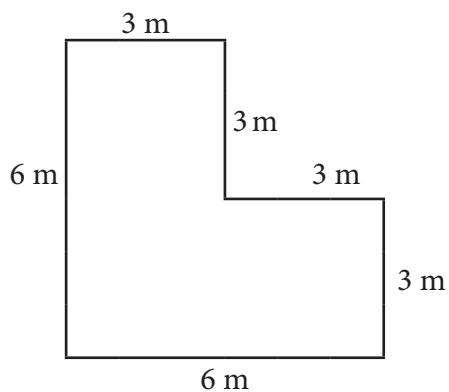
$$\text{Area} = (4 \times 3) + (4 \times 2) = 12 \text{ cm}^2 + 8 \text{ cm}^2 = 20 \text{ cm}^2$$

OR



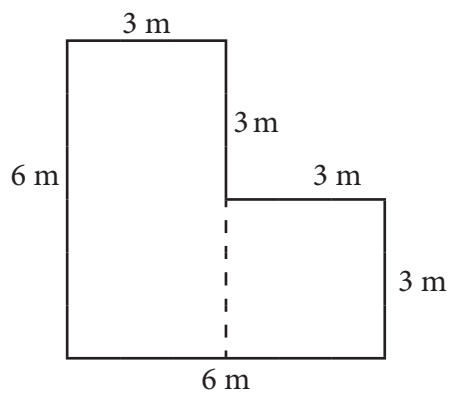
$$\text{Area} = (6 \times 4) - (4 \times 1) = 24 \text{ cm}^2 - 4 \text{ cm}^2 = 20 \text{ cm}^2$$

3



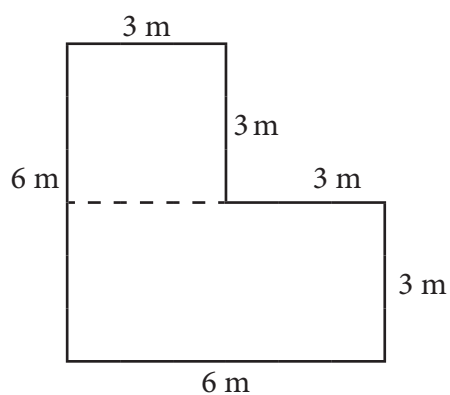
POSSIBLE ANSWERS

There are three different ways of dividing up the shape:



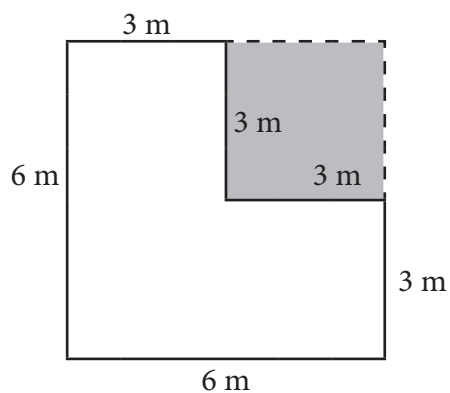
$$\text{Area} = (6 \times 3) + (3 \times 3) = 18 \text{ cm}^2 + 9 \text{ cm}^2 = 27 \text{ cm}^2$$

OR



$$\text{Area} = (6 \times 3) + (3 \times 3) = 18 \text{ cm}^2 + 9 \text{ cm}^2 = 27 \text{ cm}^2$$

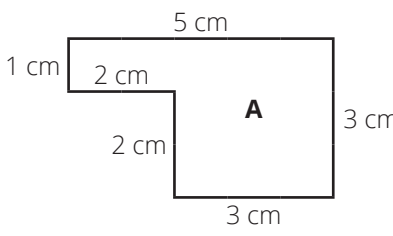
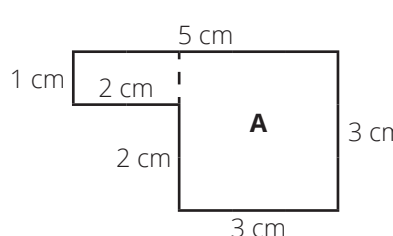
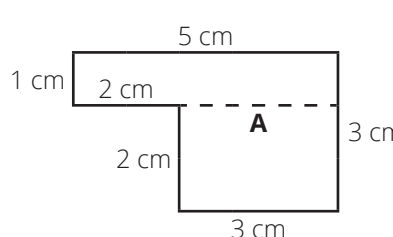
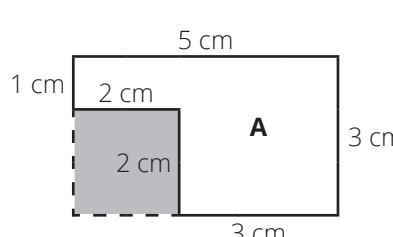
OR

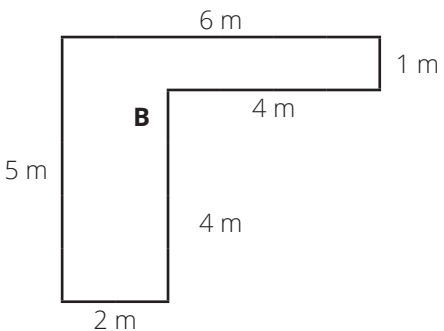
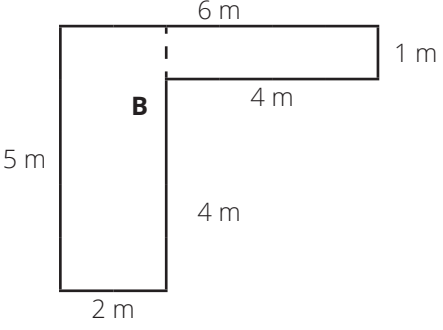
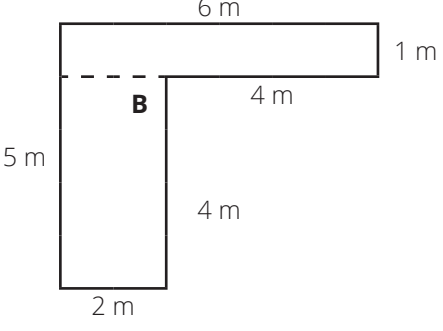
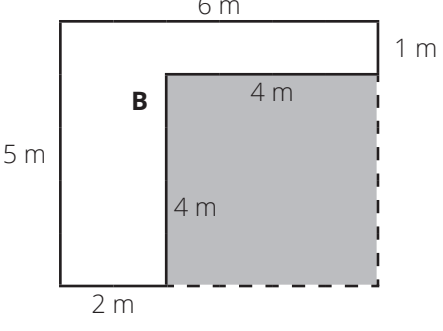


$$\text{Area} = (6 \times 6) - (3 \times 3) = 36 \text{ cm}^2 - 9 \text{ cm}^2 = 27 \text{ cm}^2$$

5 HOMEWORK ACTIVITY (5 MINUTES)

- Explain what learners need to do for homework.
- Read the questions in the LAB with learners. Make sure all the learners understand what to do.
- Answers are given in the answer column.

Find the area of each shape	
	POSSIBLE ANSWERS
<p>1</p> 	<p>There are three different ways of dividing up shape A:</p>  <p>Area = $(2 \times 1) + (3 \times 3) = 2 \text{ cm}^2 + 9 \text{ cm}^2 = 11 \text{ cm}^2$</p> <p><u>OR</u></p>  <p>Area = $(5 \times 1) + (3 \times 2) = 5 \text{ cm}^2 + 6 \text{ cm}^2 = 11 \text{ cm}^2$</p> <p><u>OR</u></p>  <p>Area = $(5 \times 3) - (2 \times 2) = 15 \text{ cm}^2 - 4 \text{ cm}^2 = 11 \text{ cm}^2$</p>

<p>2</p> 	<p style="text-align: center;">POSSIBLE ANSWERS</p> <p>There are three different ways of dividing up shape B:</p>  <p style="text-align: center;">Area = $(5 \times 2) + (4 \times 1) = 10 \text{ m}^2 + 4 \text{ m}^2 = 14 \text{ m}^2$</p> <p style="text-align: center;">OR</p>  <p style="text-align: center;">Area = $(6 \times 1) + (4 \times 2) = 6 \text{ m}^2 + 8 \text{ m}^2 = 14 \text{ m}^2$</p> <p style="text-align: center;">OR</p>  <p style="text-align: center;">Area = $(6 \times 5) - (4 \times 4) = 30 \text{ cm}^2 - 16 \text{ cm}^2 = 14 \text{ cm}^2$</p>
---	--

6 REFLECTION AND SUMMARY OF LESSON (5 MINUTES)

Call the whole class to attention and summarise the key concepts of the lesson.

Say: Today we have practised calculating the area of L-shaped polygons.

Lesson 15: Calculating area (4)

Teacher's notes

This lesson is one of the fully planned lessons to be used to cover the Term 3 curriculum.

CAPS topics: 4.6: Perimeter, area and volume

Lesson Objective: Learners will be able to calculate the area of U-shapes and other shapes by dividing them into rectangles and / or squares.

Lesson Vocabulary: breadth, length, formula

Resources: None

Date:

Week

Day

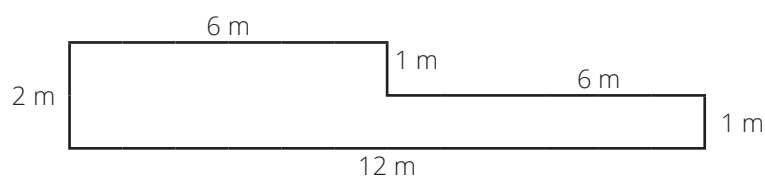
1 MENTAL MATHS (5 MINUTES)

		Answer			Answer
1	$2 \times 7 =$	14	6	$4 \times 3 =$	12
2	$6 \times 9 =$	54	7	$3 \times 4 =$	12
3	$7 \times 10 =$	70	8	$5 \times 2 =$	10
4	$3 \times 8 =$	24	9	$7 \times 5 =$	35
5	$3 \times 2 =$	6	10	$0 \times 6 =$	0

2 LINK TO PREVIOUS LESSON (5 MINUTES)

- Refer learners to the L-shape in the LAB.

Say: Calculate the area of the shape. Do this by dividing the shape into rectangles.



- Ask: Who would like to come to the board to show us how they calculated the answer?

	<p>Area = top rectangle + bottom rectangle</p> $= (6 \times 1) + (12 \times 1)$ $= 6 \text{ m}^2 + 12 \text{ m}^2$ $= 18 \text{ m}^2$
--	---

	<p>Area = left rectangle + right rectangle</p> $= (6 \times 2) + (6 \times 1)$ $= 12 \text{ m}^2 + 6 \text{ m}^2$ $= 18 \text{ m}^2$
	<p>Area = whole rectangle – shaded rectangle</p> $= (12 \times 2) - (6 \times 1)$ $= 24 \text{ m}^2 - 6 \text{ m}^2$ $= 18 \text{ m}^2$

3 CORRECT HOMEWORK ACTIVITY (5 MINUTES)

The answers to the Homework Activity for Lesson 14 are provided in Lesson 14. Use this time to purposefully address gaps in learners' knowledge and to identify and address learner errors.

4 LESSON CONTENT – CONCEPT DEVELOPMENT (35 MINUTES)

- This lesson builds on the concepts and skills developed in Lesson 14.
- In this lesson learners use the formula for calculating the area of a rectangle or a square to calculate the area of U-shapes and other shapes. Learners do this by dividing the shapes into rectangles and/ or squares and then adding or subtracting the areas.

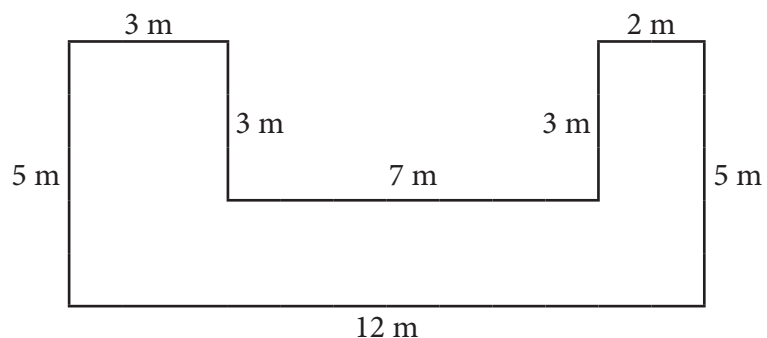
Say: **Today we are learning to calculate the area of different shapes.**

Activity 1: Whole class activity and learners work in pairs

Say: **Turn to Activity 1 in your LAB.**

- Read through the activity. Make sure that learners understand what they need to do.
- Give learners time to think about and talk about how they would find the area of the U-shape.
Do not rush to tell learners how to find the answer.
- Walk around while the learners are working so when they have finished, you can ask learners who have found the answer in different ways to come to the board and explain to the class what they have done.

Find the area of this shape.

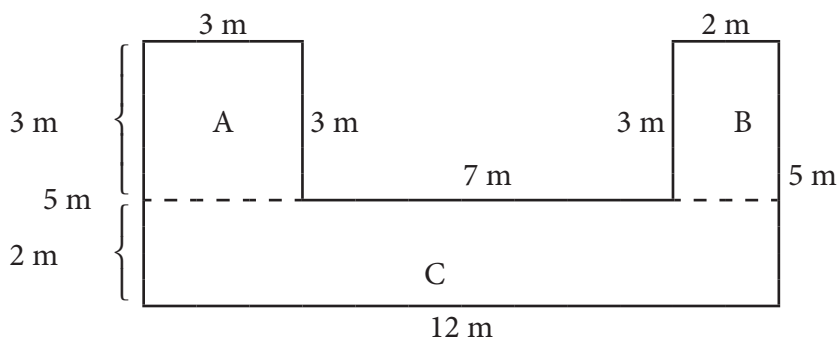


ANSWERS

There are at least 3 different methods that the learners can use to find the answer.

METHOD 1

Help the learners find the measurement of the left and right sides. When you draw a horizontal line as the diagram below, the 5-m side is divided into 3 m and 2 m.



A is a square so the area = $3 \times 3 = 9 \text{ m}^2$

B is a rectangle so the area = $3 \times 2 = 6 \text{ m}^2$

C is a rectangle so area = $12 \times 2 = 24 \text{ m}^2$

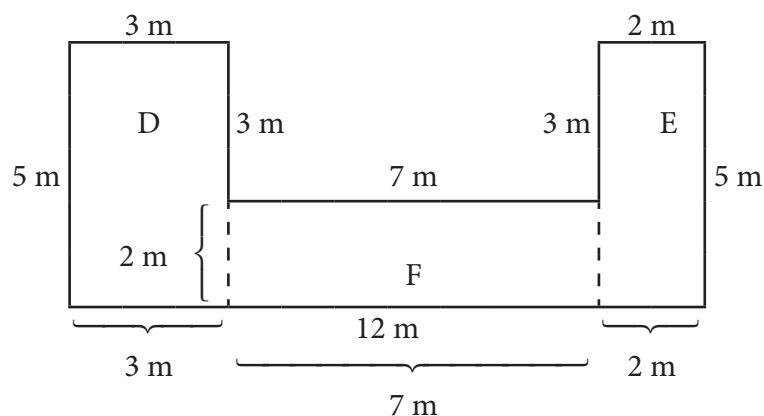
Area of whole shape = $9 \text{ m}^2 + 6 \text{ m}^2 + 24 \text{ m}^2 = 39 \text{ m}^2$

ANSWERS

METHOD 2

Help the learners to split up the base line into three parts.

When you draw the two dotted vertical lines, the 12 m line is divided into 3 m and 7 m and 2 m.



D is a rectangle so the area = $5 \times 3 = 15 \text{ m}^2$

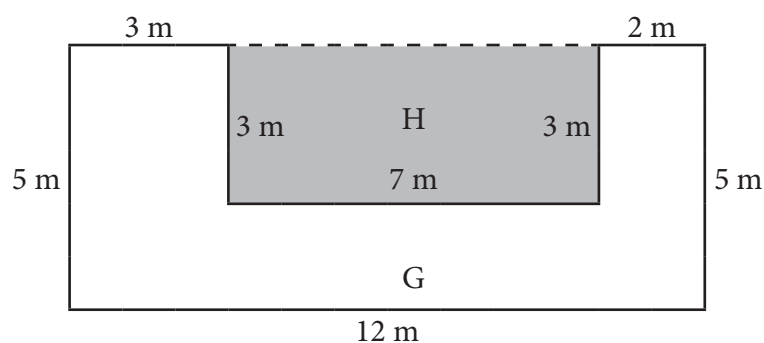
E is a rectangle so the area = $5 \times 2 = 10 \text{ m}^2$

F is a rectangle so the area = $7 \times 2 = 14 \text{ m}^2$

Area of the whole shape = $15 \text{ m}^2 + 10 \text{ m}^2 + 14 \text{ m}^2 = 39 \text{ m}^2$

METHOD 3

Help the learners to draw a dotted line across the open area of the shape and to shade in the new area.



G is a rectangle so the area = $12 \times 5 = 60 \text{ m}^2$

H is a rectangle so the area = $7 \times 3 = 21 \text{ m}^2$

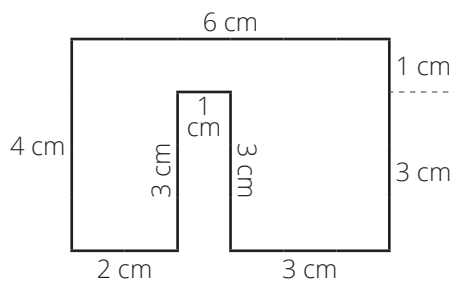
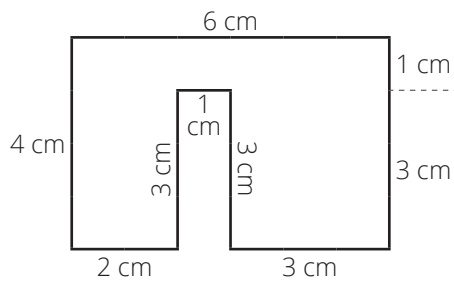
Area of the whole shape = $60 \text{ m}^2 - 21 \text{ m}^2 = 39 \text{ m}^2$

Activity 2: Learners work on their own

Say: Complete Activity 2 in your LAB.

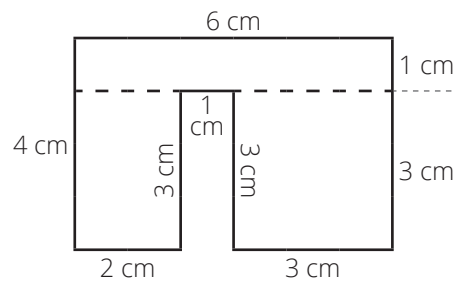
- Walk around the classroom to support learners as needed.
- Correct Activity 2 with learners so that they can receive immediate feedback.
- Answers are given in the answer column.

1 Find the area of this shape in two different ways



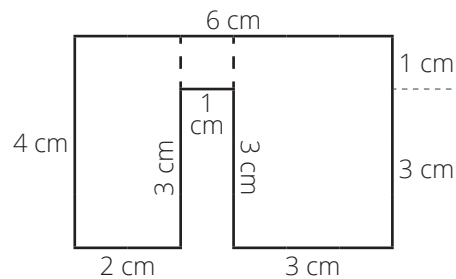
ANSWERS

METHOD 1

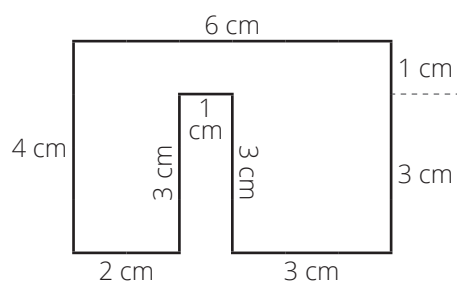


Area of top rectangle = $6 \times 1 = 6 \text{ cm}^2$
 Area of left rectangle = $3 \times 2 = 6 \text{ cm}^2$
 Area of right rectangle = $9 \times 3 = 9 \text{ cm}^2$
 Total area = $6 \text{ cm}^2 + 6 \text{ cm}^2 + 9 \text{ cm}^2 = 21 \text{ cm}^2$

METHOD 2

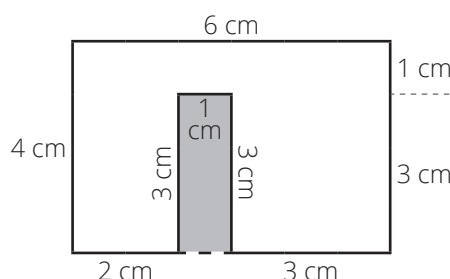


Area of left rectangle = $4 \times 2 = 8 \text{ cm}^2$
 Area of middle rectangle = $1 \times 1 = 1 \text{ cm}^2$
 Area of right rectangle = $4 \times 3 = 12 \text{ cm}^2$
 Total area = $8 \text{ cm}^2 + 1 \text{ cm}^2 + 12 \text{ cm}^2 = 21 \text{ cm}^2$



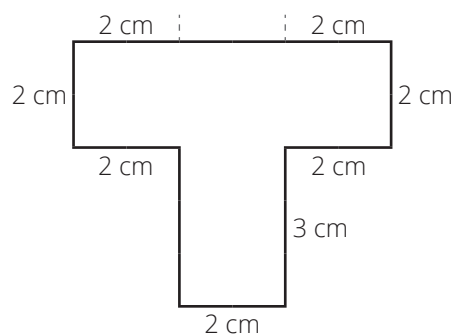
ANSWERS

METHOD 3

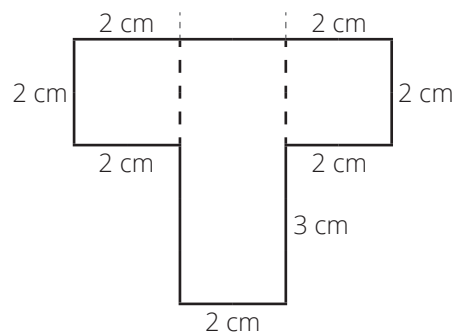


Area of large rectangle = $6 \times 4 = 24 \text{ cm}^2$
 Area of shaded rectangle = $3 \times 1 = 3 \text{ cm}^2$
 Total area = $24 \text{ cm}^2 - 3 \text{ cm}^2 = 21 \text{ cm}^2$

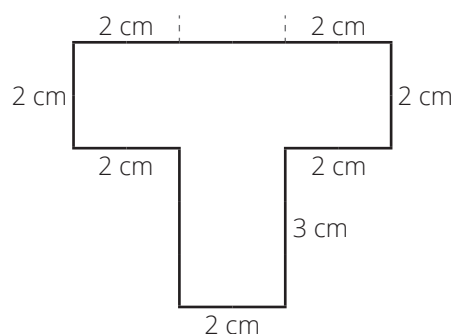
2 Find the area of this shape in two different ways



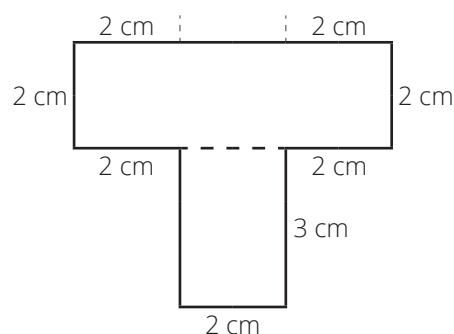
METHOD 1



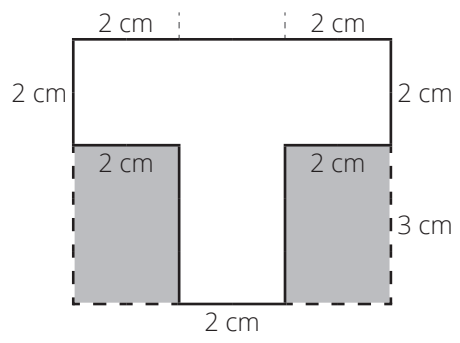
Area of left rectangle = $2 \times 2 = 4 \text{ cm}^2$
 Area of middle rectangle
 = $(2 + 3) \times 2 = 5 \times 2 = 10 \text{ cm}^2$
 Area of right rectangle = $2 \times 2 = 4 \text{ cm}^2$
 Total area = $4 \text{ cm}^2 + 10 \text{ cm}^2 + 4 \text{ cm}^2 = 18 \text{ cm}^2$



METHOD 2



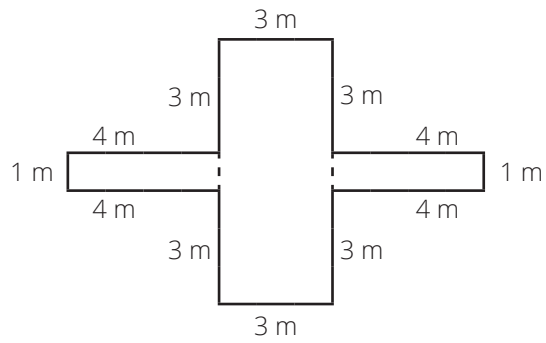
Area of top rectangle
 = $(2 + 2 + 2) \times 2 = 6 \times 2 = 12 \text{ cm}^2$
 Area of the bottom rectangle = $3 \times 2 = 6 \text{ cm}^2$
 Total area = $12 \text{ cm}^2 + 6 \text{ cm}^2 = 18 \text{ cm}^2$

ANSWERS	
METHOD 3	 <p>Area of the large rectangle $= (2 + 2 + 2) \times (3 + 2) = 6 \times 5 = 30 \text{ cm}^2$ Area of left shaded rectangle $= 3 \times 2 = 6 \text{ cm}^2$ Area of right shaded rectangle $= 3 \times 2 = 6 \text{ cm}^2$ Total area $= 30 \text{ cm}^2 - 6 \text{ cm}^2 - 6 \text{ cm}^2 = 18 \text{ cm}^2$</p>

5 HOMEWORK ACTIVITY (5 MINUTES)

- Explain what learners need to do for homework.
- Read the questions in the LAB with learners. Make sure all the learners understand what to do.
- Answers in the answer column.

Show different ways of finding the area of this shape.

ANSWER	
	<p>Area of left rectangle $= 4 \times 1 = 4 \text{ m}^2$ Area of middle rectangle $= (3 + 1 + 3) \times 3 = 7 \times 3 = 21 \text{ m}^2$ Area of right rectangle $= 4 \times 1 = 4 \text{ m}^2$</p> <p>Total area $= 21 \text{ m}^2 + (4 \times 2) \text{ m}^2$ $= 21 \text{ m}^2 + 8 \text{ m}^2$ $= 29 \text{ m}^2$</p>

	ANSWER
	<p>Area of top rectangle = $3 \times 3 = 9 \text{ m}^2$</p> <p>Area of middle rectangle $= (4 + 3 + 4) \times 1 = 11 \times 1 = 11 \text{ m}^2$</p> <p>Area of bottom rectangle = $3 \times 3 = 9 \text{ m}^2$</p> <p>Total area $= 2 \times 9 \text{ m}^2 + 11 \text{ m}^2$ $= 18 \text{ m}^2 + 11 \text{ m}^2$ $= 29 \text{ m}^2$</p>
	<p>Area of the large rectangle $= (4 + 3 + 4) \times (3 + 1 + 3)$ $= 11 \times 7$ $= 77 \text{ m}^2$</p> <p>Area of the shaded rectangles $= 4 \times (4 \times 3)$ $= 4 \times 12$ $= 48 \text{ m}^2$</p> <p>Area of the unshaded area $= 77 \text{ m}^2 - 48 \text{ m}^2 = 29 \text{ m}^2$</p>

6 REFLECTION AND SUMMARY OF LESSON (5 MINUTES)

Call the whole class to attention and summarise the key concepts of the lesson.

Say: Today we have learned to find the area of different shapes by dividing them into rectangles and squares.

Lesson 16: Consolidation

Teacher's notes

This lesson allows for consolidation of the lesson content on area.

CAPS topics: 4.6: Perimeter, area and volume

Lesson Objective: Learners will consolidate and revise area.

Lesson Vocabulary: area, breadth, length, formula

Teacher Resources: Textbook/s (if available); metre sticks or string cut into metre lengths.

Learner Resources: Textbook/s (if available); old newspapers, sticky tape or stapler

Date:

Week

Day

1 NOTES FOR THE TEACHER RELATING TO THIS WEEK'S WORK

The main topics done so far in this unit are:

- area is the amount of space/ surface covered
- we measure area using squares or tiles
- we measure area using square centimetres and square metres
- we can use a formula to calculate the area of rectangles and squares.

2 POSSIBLE MISCONCEPTIONS LINKED TO THE WORK ON AREA

- Learners often double count some squares in a shape.
Remind learners to mark each square with a dot to avoid this.
- You may need to revise the properties of squares and rectangles in terms of length of sides. Explanations must come from learners.
- Learners do not always understand how to count squares when the shapes include half squares.

3 CORRECT HOMEWORK ACTIVITY (5 MINUTES)

The answers to the Homework Activity for Lesson 15 are provided in Lesson 15.

Use this time to purposefully address gaps in learners' knowledge and to identify and address learner errors.

4 CLASSWORK

Say: **Today we are going over what we learned in this unit. We will practise measuring and calculating the area of squares and rectangles.**

- You could use this time for learners to complete classwork or homework activities, as necessary.

- You could use the Additional Activities from textbooks that you have or use the Consolidation Activity given.

Additional activities for consolidation

Refer to the table. Select additional activities from the textbook/s you have.

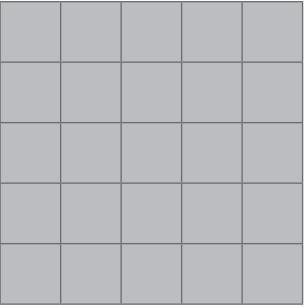
Use the answers given in the Teacher's Guide to mark the work.

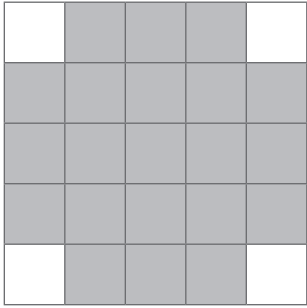
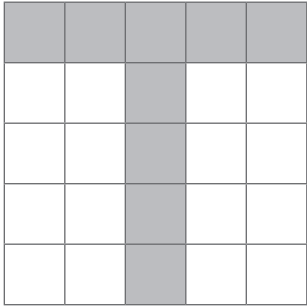
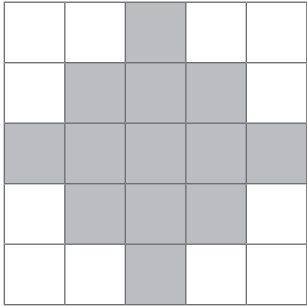
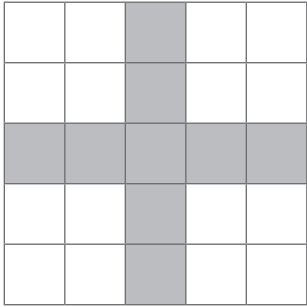
	Fabulous	Oxford Headstart	Oxford Successful	Platinum	Premier	Sasol Inzalo	Solutions for All	Study & Master	Viva
LB	51-56	46-52	37-41,	30-32	18-28	60-74	27-37	43-47	19-22
	121-123	77-80	66-68,	48-51	44-48	161-172	154-160	91-97	51-52
	190-191	130-136	104-110,	80-85	79-83	275-280	221-228	141-148	156-158
		232-235	233-238	144-147	158-161			232-235	
TG	32-35	69-73	59-67	24-25	10-13	64-77	23-32	11-15	16-20
	84-86	77-82	80-83	39-42	20-22	177-186	86-94	69-75	32-35
	156-158	163-171	106-112	66-67	37-39	315-321	179-187	186-196	81-82
		271-272	160-162	112-114	81-83			310-314	

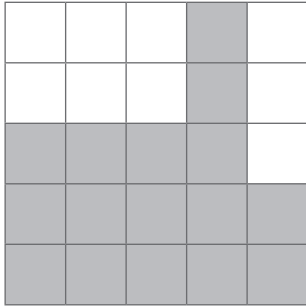
OR, learners could complete the Consolidation Activity in their LAB.

Consolidation Activity

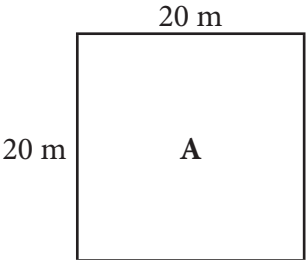
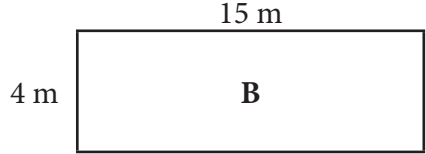
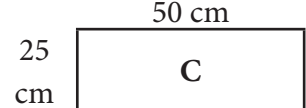
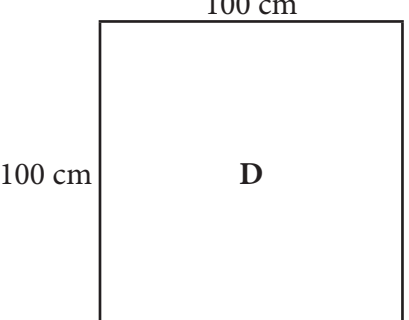
1 Complete the table. The sides of each small square are 1 cm long.

Shape	Area of shaded area in squares	Area of shaded area in cm^2
a 	25	25 cm^2

Shape	Area of shaded area in squares	Area of shaded area in cm^2
<p>b</p> 	21	21 cm^2
<p>c</p> 	9	9 cm^2
<p>d</p> 	13	13 cm^2
<p>e</p> 	9	9 cm^2

Shape	Area of shaded area in squares	Area of shaded area in cm^2
f 	16	16 cm^2

- 2 Calculate the area of each shape.
Use the formula: Area of rectangle or square = length \times breadth

	ANSWER
a 	Area of A = $20 \text{ m} \times 20 \text{ m} = 400 \text{ m}^2$
b 	Area of B = $15 \text{ m} \times 4 \text{ m} = 60 \text{ m}^2$
c 	Area of C = $50 \text{ cm} \times 25 \text{ cm} = 1\,250 \text{ cm}^2$
d 	Area of D = $100 \text{ cm} \times 100 \text{ cm} = 10\,000 \text{ cm}^2$

3 Show three different ways of finding the area of this shape.

ANSWERS	
	<p><u>METHOD 1</u></p> <p>Area of the top rectangle = $5 \text{ m} \times 2 \text{ m} = 10 \text{ m}^2$ Area of the middle rectangle = $(5 - 4) \times 1 = 1 \text{ m} \times 1 \text{ m} = 1 \text{ m}^2$ Area of the bottom rectangle = $5 \text{ m} \times 1 \text{ m} = 5 \text{ m}^2$ Total area = $10 \text{ m}^2 + 1 \text{ m}^2 + 5 \text{ m}^2 = 16 \text{ m}^2$</p> <p>OR</p> <p>Total area = $(5 \times 2) + (1 \times 1) + (5 \times 1)$ = $10 \text{ m}^2 + 1 \text{ m}^2 + 5 \text{ m}^2 = 16 \text{ m}^2$</p>
	<p><u>METHOD 2</u></p> <p>Area of left rectangle = $4 \times (5 - 4) = 4 \text{ m} \times 1 \text{ m} = 4 \text{ m}^2$ Area of top rectangle = $4 \text{ m} \times 2 \text{ m} = 8 \text{ m}^2$ Area of bottom rectangle = $4 \text{ m} \times 1 \text{ m} = 4 \text{ m}^2$ Total area = $4 \text{ m}^2 + 8 \text{ m}^2 + 4 \text{ m}^2 = 16 \text{ m}^2$</p> <p>OR</p> <p>Total area = $(4 \times 2) + (4 \times 1) + (4 \times 1)$ = $8 \text{ m}^2 + 4 \text{ m}^2 + 4 \text{ m}^2 = 16 \text{ m}^2$</p>

ANSWERS	
	<p><u>METHOD 3</u></p> <p>Area of the large rectangle = $5 \text{ m} \times 4 \text{ m} = 20 \text{ m}^2$ Area of the shaded rectangle = $4 \text{ m} \times 1 \text{ m} = 4 \text{ m}^2$ Total area = $20 \text{ m}^2 - 4 \text{ m}^2 = 16 \text{ m}^2$</p> <p>OR</p> <p>Total area = $(5 \times 4) - (4 \times 1) = 20 \text{ m}^2 - 4 \text{ m}^2 = 16 \text{ m}^2$</p>

5 REFLECTION AND SUMMARY OF LESSON (5 MINUTES)

Call the whole class to attention and summarise the key concepts of the lesson.

Say: **Today we have revised how to use formulae to calculate the area of rectangles and squares.**

Lesson 17: Perimeter (1)

Teacher's notes

This lesson is one of the fully planned lessons to be used to cover the Term 3 curriculum.

CAPS topics: 4.6: Perimeter, area and volume

Lesson Objective: Learners will be able to explain what perimeter is and to measure and calculate the perimeter of rectangles and squares.

Lesson Vocabulary: perimeter, rectangle, square, brackets

Teacher and learner Resources: None

Date:

Week

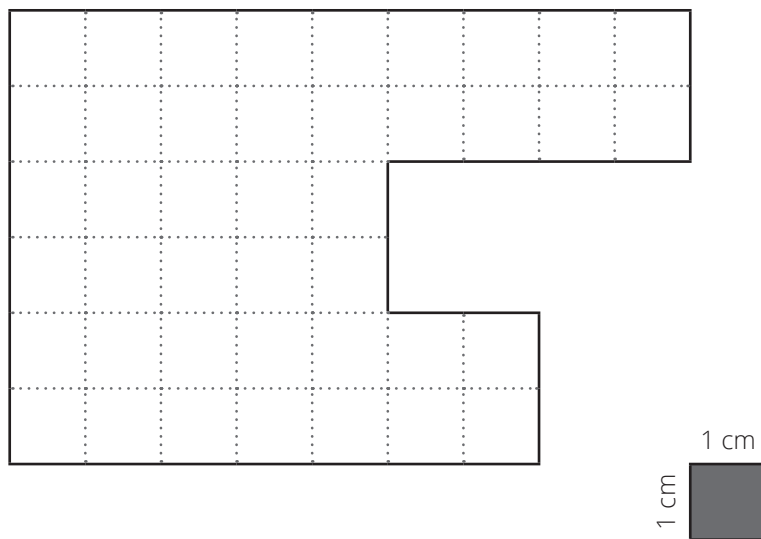
Day

1 MENTAL MATHS (5 MINUTES)

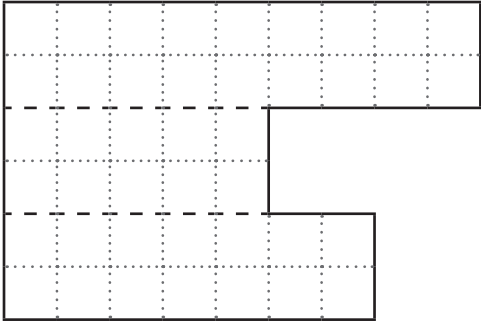
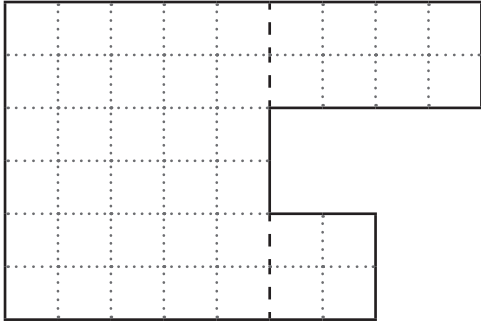
		Answer			Answer
1	$3 + 8 =$	11	6	$9 + 8 =$	17
2	$7 + 4 =$	11	7	$6 + 7 =$	13
3	$9 + 7 =$	16	8	$18 + 0 =$	18
4	$5 + 9 =$	14	9	$13 + 1 =$	14
5	$8 + 8 =$	16	10	$4 + 8 =$	12

2 LINK TO PREVIOUS LESSON (5 MINUTES)

- Refer the learners to the diagram in their LAB
Say: **Work with your partner to calculate the area of this shape.**



- Discuss the answers with the learners.

One possible answer:	A second possible answer:
	
<p>Area of top rectangle = $9 \text{ cm} \times 2 \text{ cm} = 18 \text{ cm}^2$</p> <p>Area of middle rectangle = $5 \text{ cm} \times 2 \text{ cm} = 10 \text{ cm}^2$</p> <p>Area of bottom rectangle = $7 \text{ cm} \times 2 \text{ cm} = 14 \text{ cm}^2$</p> <p>Total area = $18 \text{ cm}^2 + 10 \text{ cm}^2 + 14 \text{ cm}^2 = 42 \text{ cm}^2$</p>	<p>Area of left rectangle = $6 \text{ cm} \times 5 \text{ cm} = 30 \text{ cm}^2$</p> <p>Area of top right rectangle = $4 \text{ cm} \times 2 \text{ cm} = 8 \text{ cm}^2$</p> <p>Area of bottom right rectangle = $2 \text{ cm} \times 2 \text{ cm} = 4 \text{ cm}^2$</p> <p>Total area = $30 \text{ cm}^2 + 8 \text{ cm}^2 + 4 \text{ cm}^2 = 42 \text{ cm}^2$</p>

3 CORRECT HOMEWORK (5 MINUTES)

Lesson 16 was a Consolidation lesson. There is no homework to correct.

4 LESSON CONTENT - CONCEPT DEVELOPMENT (40 MINUTES)

- Learners were introduced to perimeter in Grade 3.
- In this lesson learners revise the concept of perimeter which is the total length around a shape.
- As learners often confuse area and perimeter, it is important that you use the **language of perimeter carefully and deliberately**. In this lesson, learners find perimeter by measuring.
- Note that the units for area are squared (square tiles or cm^2 or m^2). Because the perimeter of a shape is a length, the units for perimeter are not squared. The units are cm or m.

Say: **Today we are learning to measure and calculate the perimeter of rectangles and squares.**

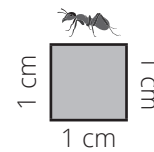
Activity 1: Whole class activity and learners work in pairs

- Say: **Use your LAB. Move your hand to show me the area of the front of your LAB.**
(Learners should move their hand over the LAB to indicate that area is the amount of space)
- Say: **Use your LAB. Move your finger to show me the perimeter of the front of your LAB.**
(Learners should move their finger around the edges of the LAB to indicate that perimeter is the distance around a shape)

Say: **Complete Activity 1 in your LAB.**

- Walk around the classroom to support learners as needed.
- Correct Activity 1 with learners so that they can receive immediate feedback.
- Answers are given in brackets.

1 a If an ant walks all the way around a square with sides of 1 cm, how far will it walk? (4 cm)

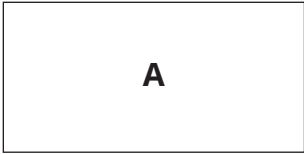
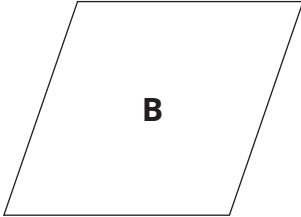
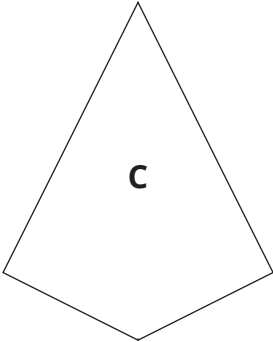


- b** Choose the correct word.
We call this measurement the perimeter / area of the square.
- c.** What is the area of this square? ($1 \times 1 = 1 \text{ cm}^2$)
- d.** What is the difference between perimeter and area?
(Perimeter is the length around a shape and area is the amount of space that the shape occupied.)

2 Find the perimeter by counting.
The dots are 1 cm apart. Find the perimeter of each shape.
Give the answers in centimetres.

<p>A</p>	<p>B</p>	<p>C</p>	<p>D</p>
<p>Perimeter = (12) cm</p>	<p>Perimeter = (12) cm</p>	<p>Perimeter = (20) cm</p>	<p>Perimeter = (12) cm</p>

- 3** For each of these shapes:
- Use a ruler. Measure the length of each side of the shape and write it on the shape.
 - Find the perimeter of each shape. Give the answers in centimetres.

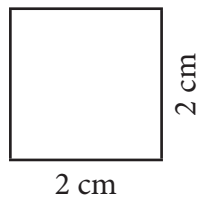
 <p>A</p> <p>Perimeter = (12) cm</p>	 <p>B</p> <p>Perimeter = (12) cm</p>	 <p>C</p> <p>Perimeter = (20) cm</p>
--	---	--

Activity 2: Whole class activity and learners work in pairs

Say: Refer to Activity 2 in your LAB.

- Work through Activity 2 step-by-step with the learners.
- Correct answers with learners as you work through the activity.
- Answers are given in brackets.

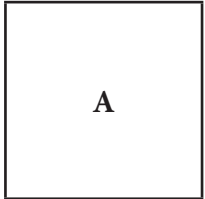
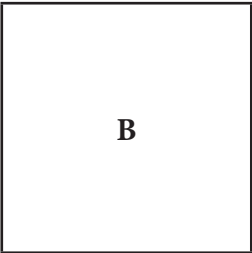
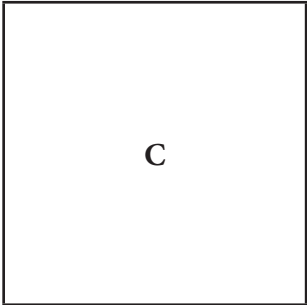
- 1 a** Find the perimeter of this square by adding the length of each side together.



$$\text{Perimeter} = (2) + (2) + (2) + (2) = (8) \text{ cm.}$$

- b.** Work with your partner.
Try to find a quicker way of working out the perimeter of the square.
Write down your method.
(Answers will vary. Possible answers are:
- I know that a square has 4 equal sides, so I multiplied 2 cm by 4
($4 \times 2 \text{ cm} = 8 \text{ cm}$)
 - Because the number sentence that we wrote in **a** is a repeated addition.
We can write it as $4 \times 2 \text{ cm} = 8 \text{ cm}$)
- c.** Complete the following sentence:
Perimeter of a square = $4 \times$ (length of a side)

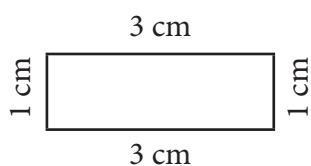
2 Use the formula to calculate the perimeter of each square.

 <p>A</p> <p>10 cm</p> <p>10 cm</p>	 <p>B</p> <p>24 cm</p> <p>24 cm</p>	 <p>C</p> <p>75 m</p> <p>75 m</p>
<p>Perimeter = (4×10) cm = (40) cm</p>	<p>Perimeter = (4×24) cm = (96) cm</p>	<p>Perimeter = (4×75) cm = (300) cm</p>

Activity 3: Whole class activity and learners work in pairs

- Say: **Complete Activity 3 in your LAB.**
- Display the Poster showing the formulae for calculating the perimeter of a square and a rectangle on the board. Remind learners that it is there for them to refer to.
- Work through Activity 3 step-by-step with the learners.
- Correct answers with learners as you work through the activity.
- Answers are given in brackets.

1 Find the perimeter of this rectangle by adding the length of each side together.



$$\text{Perimeter} = (3) \text{ cm} + (1) \text{ cm} + (3) \text{ cm} + (1) \text{ cm} = (8) \text{ cm}.$$

2. Work with your partner.

Try to find a quicker way of working out the perimeter of the rectangle.

Write down your method.

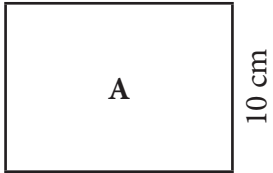
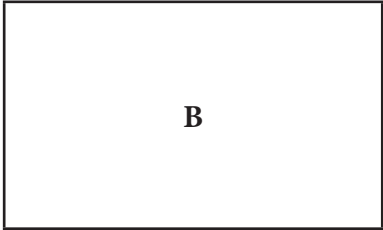
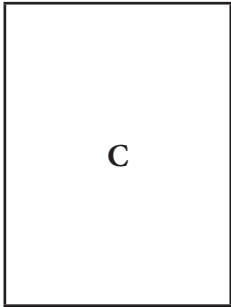
(Answers will vary. Possible answer are:

- In **1**, we can group the same numbers together:
 $3 + 3 + 1 + 1 = (2 \times 3) + (2 \times 1) = 8$.
 We have learnt that we can write $2 \times (3 + 1) = 8$.
- From the diagram there are 2 sides or groups of 3 cm and 2 sides or groups of 1 cm, so we can write $(2 \times 3) + (2 \times 1) = 8$. Then we can write $2 \times (3 + 1) = 8$
- I know that a rectangle has two long sides that are 3 cm and two short sides of 1 cm, so I added a long side and a short side and then multiplied by 2:
 $2 \times (3 + 1) = 8$.)

3. Complete the number sentence:

Perimeter of a rectangle = $2 \times (\text{length of long side} + \text{length of short side})$

4. Use a short method to calculate the perimeter of each rectangle.

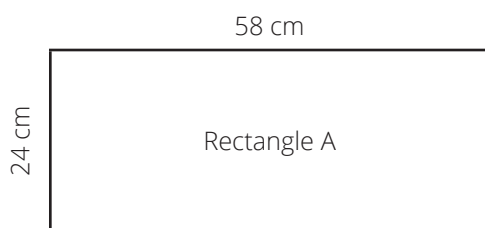
 <p>A</p> <p>12 cm</p> <p>10 cm</p>	 <p>B</p> <p>42 cm</p> <p>28 cm</p>	 <p>C</p> <p>49 cm</p> <p>98 cm</p>
<p>Perimeter</p> $= 2 \times (12 + 10)$ $= 2 \times (22)$ $= (44) \text{ cm}$	<p>Perimeter</p> $= 2 \times (42 \text{ cm} + 28 \text{ cm})$ $= (2 \times 70 \text{ cm})$ $= (140) \text{ cm}$	<p>Perimeter</p> $= 2 \times (98 \text{ cm} + 49 \text{ cm})$ $= (2 \times 147) \text{ cm}$ $= (294) \text{ cm}$

5 HOMEWORK ACTIVITY (5 MINUTES)

- Explain what learners need to do for homework.
- Read the questions in the LAB with learners. Make sure all the learners understand what to do.
- Answers in brackets.

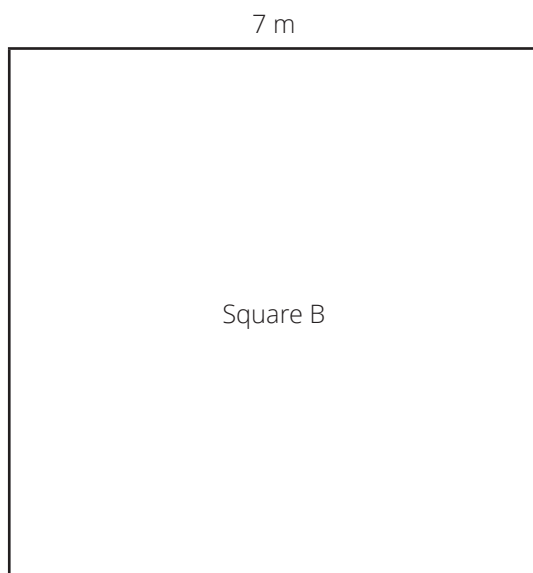
Calculate the perimeter of each shape:

1



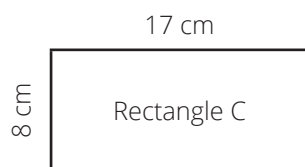
$$\begin{aligned} \text{Perimeter of rectangle A} &= (2 \times (58 \text{ cm} + 24 \text{ cm})) \\ &= (2 \times 82 \text{ cm}) \\ &= (164 \text{ cm}) \end{aligned}$$

2



$$\begin{aligned} \text{Perimeter of square B} &= (4 \times 7 \text{ m}) \\ &= (28 \text{ m}) \end{aligned}$$

3



$$\begin{aligned} \text{Perimeter of rectangle C} &= (2 \times (17 \text{ cm} + 8 \text{ cm})) \\ &= (2 \times 25 \text{ cm}) \\ &= (50 \text{ cm}) \end{aligned}$$

6 REFLECTION AND SUMMARY OF LESSON (5 MINUTES)

Call the whole class to attention and summarise the key concepts of the lesson.

Say: **Today we have learned to calculate the perimeter of squares and rectangles.**

Lesson 18: Perimeter (2)

Teacher's notes

This lesson is one of the fully planned lessons to be used to cover the Term 3 curriculum.

CAPS topics: 4.6: Perimeter, area and volume

Lesson Objective: Learners will be able to solve problems involving perimeter.

Lesson Vocabulary: perimeter, regular pentagon, regular hexagon

No Resources needed

Date:

Week

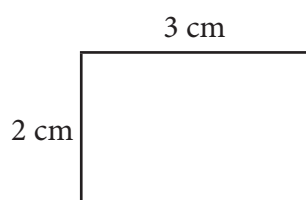
Day

1 MENTAL MATHS (5 MINUTES)

		Answer			Answer
1	$12 - 4 =$	8	6	$14 - 6 =$	8
2	$16 - 7 =$	9	7	$17 - 12 =$	5
3	$18 - 9 =$	9	8	$15 - 8 =$	7
4	$11 - 3 =$	8	9	$13 - 10 =$	3
5	$13 - 7 =$	6	10	$18 - 10 =$	8

2 LINK TO PREVIOUS LESSON (5 MINUTES)

- Say: **Turn to your LAB.**
- Say: **Calculate the perimeter of the rectangle.**



- Ask several learners to come and write on the board how they worked out their answer. (Possible answers)
 - $3 + 2 + 3 + 2 = 10$ cm
 - $(2 \times 3) + (2 \times 2) = 6 + 4 = 10$ cm
 - $2 \times (3 + 2) = 2 \times 5 = 10$ cm)
- Ask: **Is any of these methods better than the others?** (No. Any of these methods can be used.)

3 CORRECT HOMEWORK ACTIVITY (5 MINUTES)

The answers to the Homework Activity for Lesson 17 are provided in Lesson 17. Use this time to purposefully address gaps in learners' knowledge and to identify and address learner errors.

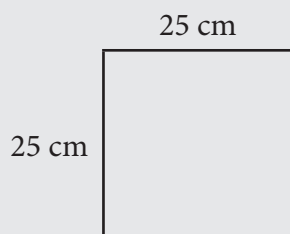
4 LESSON CONTENT – CONCEPT DEVELOPMENT (35 MINUTES)

In this lesson learners solve problems involving perimeter.

Say: **Today we are solving problems involving perimeter.**

Activity 1: Whole class activity and learners work in pairs

- Ask, as you draw and label a square on the board:
Who would like to show us how to find the perimeter of this square?



(Possible answers:

- $25 + 25 + 25 + 25 = 100$ cm
- 4×25 cm = 100 cm)
- Ask: **Which method is quicker?**
(Answers will vary
 - Some learners may say it is easier to add than to multiply.
 - Other learners may say that it is quicker to multiply by 4 than to add.)
- Refer to the second number sentence and you ask:
Why do we multiply the length of one side by 4 when we are calculating the perimeter of a square? (Because a square has 4 sides of equal length)

Say: **Complete Activity 1 in your LAB.**

- Walk around the classroom to support learners as needed.
- Correct Activity 1 with learners so that they can receive immediate feedback.
- Answers are given.

Discuss the questions and answers with your partner.

- 1** Use multiplication to find the perimeter of a square garden with sides of 163 metres.



163 m

- 2** This is a regular pentagon with each side 12 cm long.
A regular pentagon is a five-sided polygon with all sides of equal length.



12 cm

- a** How can you use multiplication to find the perimeter?
Describe your method.

- b** Use your method to find the answer.

- 3** This is a regular hexagon with each side 40 cm long.
A regular hexagon is a six-sided polygon with all sides of equal length.



40 cm

- a** Explain how to find the perimeter of this regular hexagon.

- b** Find the perimeter of this hexagon.

ANSWERS

$$\begin{aligned} \text{Perimeter} &= 4 \times 163 \text{ m} \\ &= 652 \text{ m} \end{aligned}$$

Answers will vary. Possible answer: There are 5 sides and all sides are the same length – 12 cm.

I can find the perimeter by finding 5 lots of 12

$$\begin{aligned} \text{Perimeter} &= 5 \times 12 \text{ cm} \\ &= 60 \text{ cm} \end{aligned}$$

Answers will vary. Possible answer: There are 6 sides and all sides are the same length – 40 cm.

I can find the perimeter by finding 6 lots of 40

$$\begin{aligned} \text{Perimeter} &= 6 \times 40 \text{ cm} \\ &= 240 \text{ cm} \end{aligned}$$

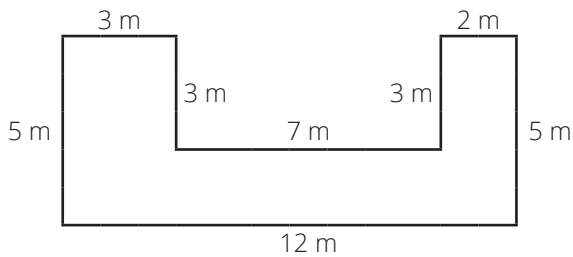
Activity 2: Learners work on their own

Say: **Complete Activity 2 in your LAB.**

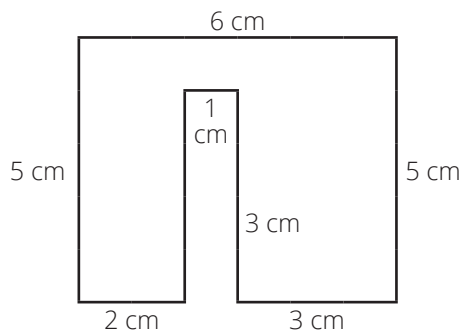
- Display the poster showing the formulae for calculating the perimeter of a square and a rectangle on the board. Remind learners that it is there for them to refer to.
- Walk around the classroom to support learners as needed.
- Correct Activity 2 with learners so that they can receive immediate feedback.
- Answers are given.

Discuss the questions and answers with your partner.

1 Find the perimeter of this shape



2 Find the perimeter of this shape



ANSWERS

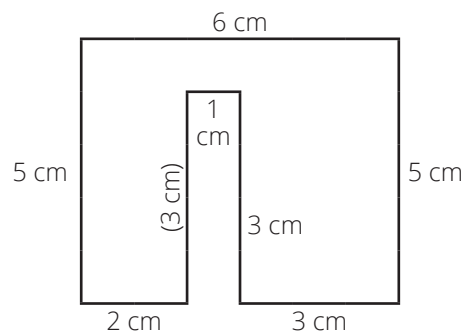
Perimeter

$$= 5 + 3 + 3 + 7 + 3 + 2 + 5 + 12$$

$$= 40 \text{ m}$$

Note: the order in which the lengths of the sides are added is not important. Mark the measurement as you write it down. That way you won't leave any out.

The length of one of the sides is missing. The length of this side needs to be worked out first.



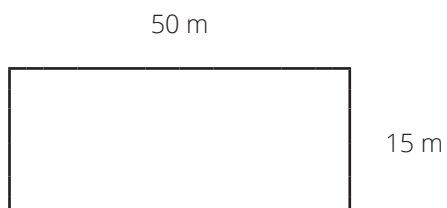
The missing side is 3 cm long.

Perimeter

$$= 5 + 6 + 5 + 3 + 3 + 1 + 3 + 2$$

$$= 28 \text{ cm}$$

- 3 Mr Malingi wants to build a wire fence around his mealie field to keep the goats out of the field.



- a. How many metres of wire will he need if he wants to build a fence with one strand of wire around the mealie field?



- b. How many metres of wire will he need if he wants to build a fence with three strands of wire around the mealie field?



ANSWERS

This is a rectangle which means that the opposite sides are equal in length,

Length of fence
= perimeter of the field

Possible methods

- $50 + 15 + 50 + 15 = 130 \text{ m}$
- $2 \times (50 + 15) = 2 \times 65 = 130 \text{ m}$
- $(2 \times 50) + (2 \times 15)$
 $= 100 + 30 = 130 \text{ m}$

A fence with one strand of wire
needs 130 m

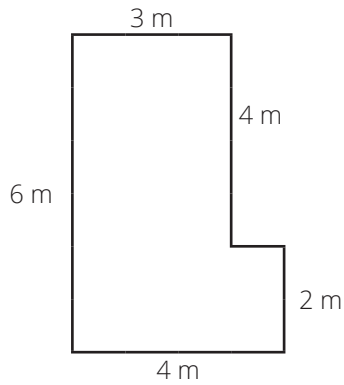
A fence with three strands of wire needs
 $3 \times 130 \text{ m} = 390 \text{ m}$

5 HOMEWORK ACTIVITY (5 MINUTES)

- Explain what learners need to do for homework.
- Read the questions in the LAB with learners. Make sure all the learners understand what to do.
- Answers are given.

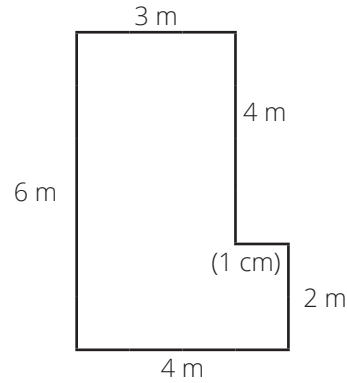
Find perimeter of the shapes below:

1



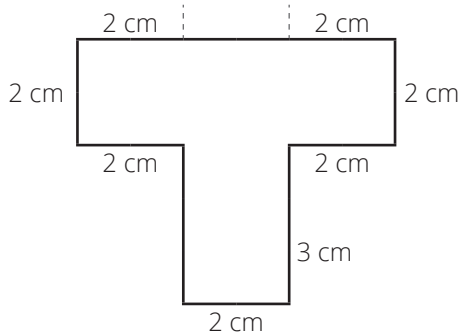
ANSWERS

The length of one of the sides is missing.
The length of this side needs to be worked out first.

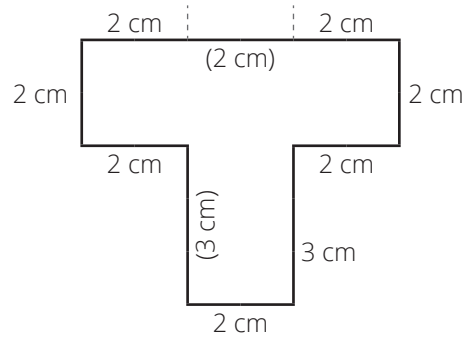


The missing side is 1 cm long.
Perimeter
= 6 + 3 + 4 + 1 + 2 + 4
= 20 cm

2



The length of two of the sides is missing. The length of these sides need to be worked out first.



The missing sides are 2 cm and 3 cm long.
Perimeter
= 2 + 2 + 2 + 2 + 2 + 2 + 3 + 2 + 3 + 2
= 22 cm

6 REFLECTION AND SUMMARY OF LESSON (5 MINUTES)

Call the whole class to attention and summarise the key concepts of the lesson.

Say: **Today we have practised how to find the perimeter of shapes.**

Lesson 19: Relationships between area and perimeter

Teacher's notes

This lesson is one of the fully planned lessons to be used to cover the Term 3 curriculum.

CAPS topics: 4.6: Perimeter, area and volume

Lesson Objective: Learners will investigate relationships between the perimeter and area of squares and rectangles.

Lesson Vocabulary: perimeter, area, rectangle, square, length, breadth

Teacher and Learner Resources: None

Date:

Week

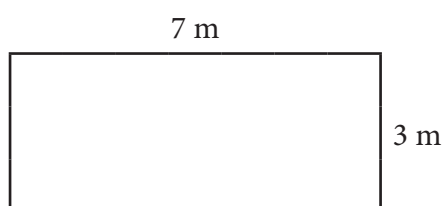
Day

1 MENTAL MATHS (5 MINUTES)

		Answer			Answer
1	$16 - 3 =$	3	6	$15 - 6 =$	9
2	$14 - 6 =$	8	7	$15 - 5 =$	10
3	$11 - 10 =$	1	8	$18 - 9 =$	9
4	$13 - 7 =$	6	9	$13 - 9 =$	4
5	$17 - 9 =$	8	10	$12 - 11 =$	1

2 LINK TO PREVIOUS LESSON (5 MINUTES)

- Say: **Look at the rectangle in the LAB. Find the perimeter of the rectangle.**



- Possible answers:
 - Perimeter = $7\text{ m} + 3\text{ m} + 7\text{ m} + 3\text{ m} = 20\text{ m}$
 - Perimeter = $2 \times (7\text{ m} + 3\text{ m}) = 2 \times 10\text{ m} = 20\text{ m}$
 - Perimeter = $(2 \times 7\text{ m}) + (2 \times 3\text{ m}) = 14\text{ m} + 6\text{ m} = 20\text{ m}$

3 CORRECT HOMEWORK ACTIVITY (5 MINUTES)

The answers to the Homework Activity for Lesson 18 are provided in Lesson 18.

Use this time to purposefully address gaps in learners' knowledge and to identify and address learner errors.

4 LESSON CONTENT – CONCEPT DEVELOPMENT (35 MINUTES)

In this lesson learners investigate relationships between the perimeter and area of squares and rectangles.

Say: **Today we are investigating the perimeter and area of squares and rectangles.**

Activity 1: Learners work in pairs

Say: **Complete Activity 1 in your LAB.**

- Read through the problem carefully with learners.
- Get learners to read through the question several times
- Ask questions to make sure that learners understand what they are being asked to do.
- Get learners to underline the question with a wavy line.
- Explain that there are no numbers to underline in this problem. Learners have to work out the numbers themselves.
- Walk around the classroom to support learners as needed.
- Correct Activity 1 with learners so that they can receive immediate feedback.
- Answers are given in brackets.

Farmer Sizwe is measuring out a new vegetable garden on his farm.

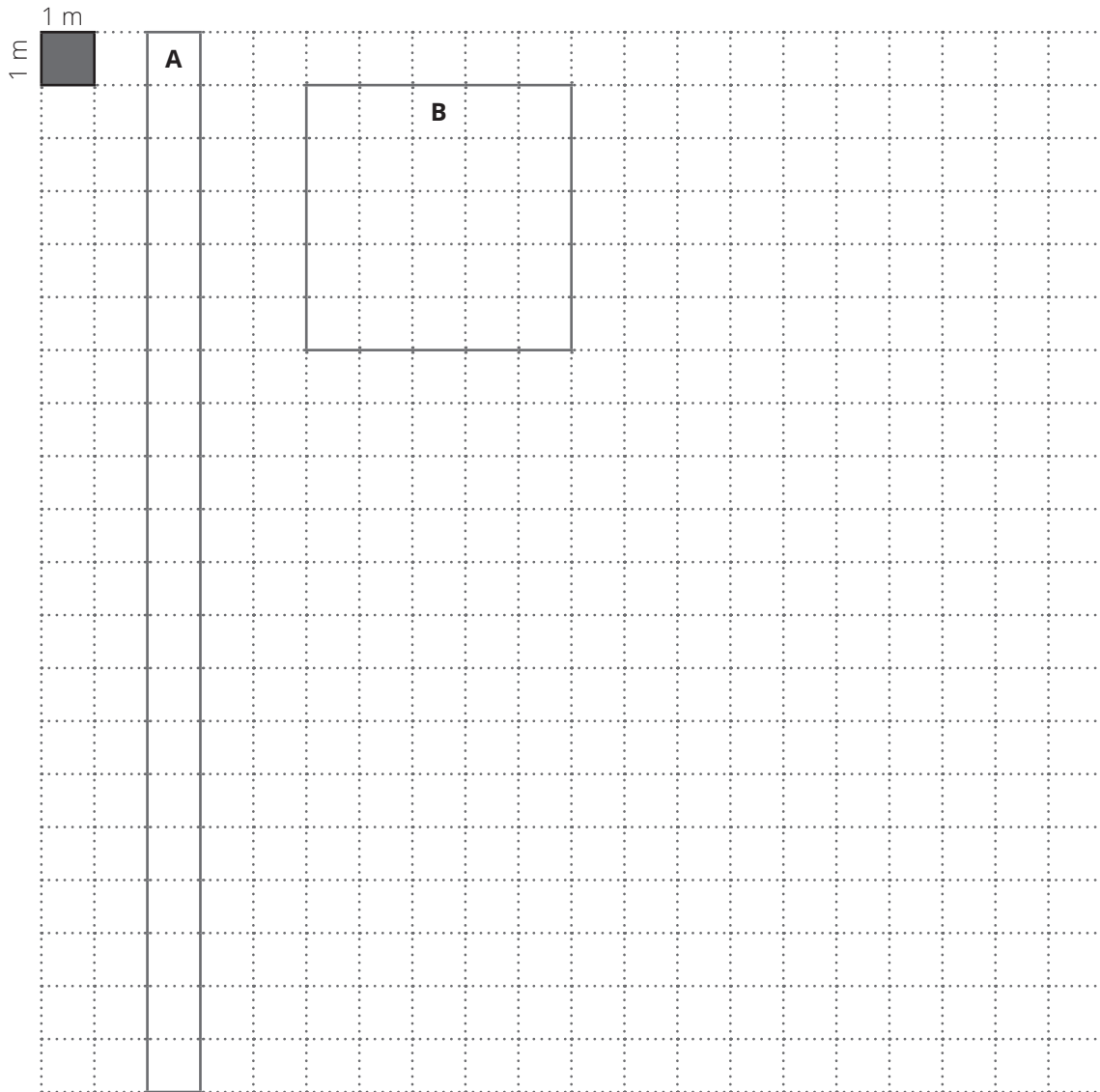
He wants the garden to have an area of 25 m^2 .

This garden could have different shapes, but he wants it to be a rectangle that will need the shortest length of fencing.

1. What two numbers give 25 when multiplied together?

(1×25 ; 5×5)

2. Draw the gardens on the squared paper.



3. Work out the perimeter of each garden.
- (Perimeter of A = $2 \times (25 \text{ m} + 1 \text{ m}) = 2 \times 26 \text{ m} = 52 \text{ m}$)
- (Perimeter of B = $2 \times (5 \text{ m} + 5 \text{ m}) = 2 \times 10 \text{ m} = 20 \text{ m}$)
4. Which size garden has the smallest perimeter and so will need the shortest length of fencing?
- (The square garden with each side equal to 5 m has the shortest perimeter.)


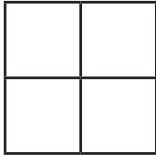
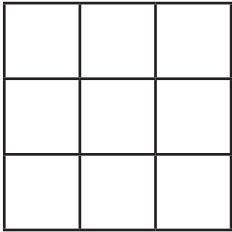
Activity 2: Whole class activity and learners work in pairs

- Say: **Work with your partner.**
- Say: **Find the length and breadth of a rectangle which has a perimeter of 24 cm.**
There might be more than one correct answer.
Say: **Draw your rectangles in your classwork books.**
(Possible answers:
 - A rectangle with sides 1 cm and 11 cm ($2 \times (1 + 11) = 2 \times 12 = 24$ cm)
 - A rectangle with sides 2 cm and 10 cm ($2 \times (2 + 10) = 2 \times 12 = 24$ cm)
 - A rectangle with sides 3 cm and 9 cm ($2 \times (3 + 9) = 2 \times 12 = 24$ cm)
 - A rectangle with sides 4 cm and 8 cm ($2 \times (4 + 8) = 2 \times 12 = 24$ cm)
 - A rectangle with sides 5 cm and 7 cm ($2 \times (5 + 7) = 2 \times 12 = 24$ cm)
 - A square with sides 6 cm and 6 cm ($2 \times (6 + 6) = 2 \times 12 = 24$ cm))
- Ask learners with different answers to the board and get them to show their answers.
The rest of the class must check whether their answers are correct by adding two numbers and multiplying the sum by 2.
- Note: when other pairs present 11 and 1, 8 and 4, etc, draw 11 and 1 and 1 and 11 on the board and let them see that they are the same rectangles, just the direction is rotated.

Activity 3: Learners work in pairsSay: **Complete Activity 3 in your LAB.**

- Walk around the classroom to support learners as needed.
- Correct Activity 3 with learners so that they can receive immediate feedback.
- Answers are given.

Find the perimeter and the area of each of the following squares

		ANSWERS	
1	Square with sides of 1 cm 	Perimeter of square $= 4 \times 1 \text{ cm}$ $= 4 \text{ cm}$	Area of square $= 1 \text{ cm} \times 1 \text{ cm}$ $= 1 \text{ cm}^2$
2	Square with sides of 2 cm 	Perimeter of square $= 4 \times 2 \text{ cm}$ $= 8 \text{ cm}$	Area of square $= 2 \text{ cm} \times 2 \text{ cm}$ $= 4 \text{ cm}^2$
3	Square with sides of 3 cm 	Perimeter of square $= 4 \times 3 \text{ cm}$ $= 12 \text{ cm}$	Area of square $= 3 \text{ cm} \times 3 \text{ cm}$ $= 9 \text{ cm}^2$

5 HOMEWORK ACTIVITY (5 MINUTES)

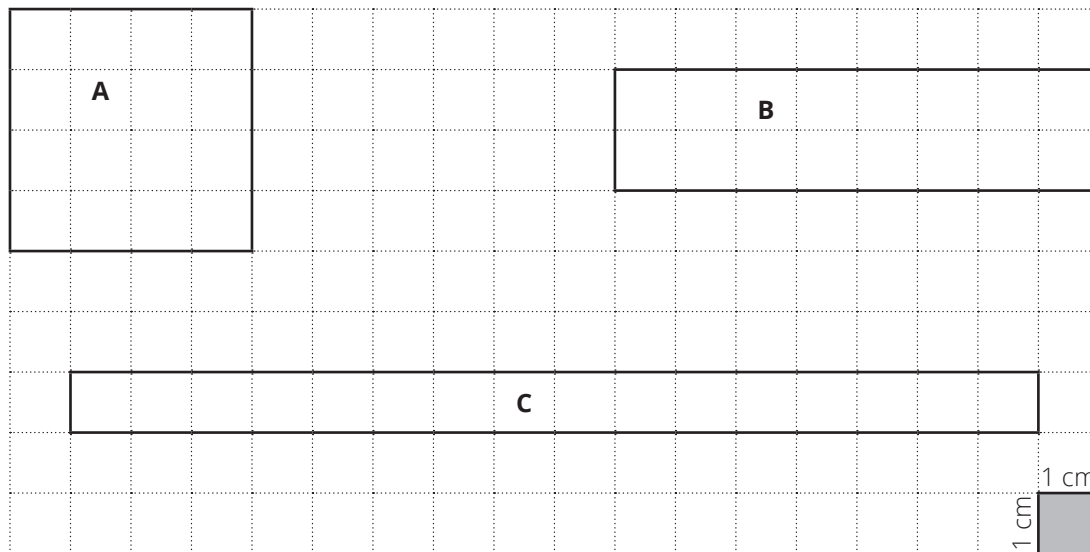
- Explain what learners need to do for homework.
- Read the questions in the LAB with learners. Make sure all the learners understand what to do.
- Answers are given.

- 1 Draw three rectangles:

Each rectangle should have an area of 16 cm^2 .

One of the rectangles must be a square. Remember a square is a special kind of rectangle.

(The three possible answers. Note $16 = 4 \times 4 = 2 \times 8 = 1 \times 16$)



- 2 Calculate the perimeter of each rectangle.

(Perimeter of A = $4 \times 4 \text{ cm} = 16 \text{ cm}$)

(Perimeter of B = $2 \times (8 \text{ cm} + 2 \text{ cm}) = 2 \times 10 \text{ cm} = 20 \text{ cm}$)

(Perimeter of C = $2 \times (16 \text{ cm} + 1 \text{ cm}) = 2 \times 17 \text{ cm} = 34 \text{ cm}$)

- 3 Which rectangle has the longest perimeter?

(Shape C which is 1 cm by 16 cm)

6 REFLECTION AND SUMMARY OF LESSON (5 MINUTES)

Call the whole class to attention and summarise the key concepts of the lesson.

Say: **Today we have learned about the relationships between the perimeter and area of rectangles and squares.**

Lesson 20: Consolidation

Teacher's notes

This lesson allows for consolidation of the lesson content in this unit.

CAPS topics: 4.6: Perimeter, area and volume

Lesson Objective: Learners will consolidate and revise area and perimeter.

Lesson Vocabulary: area, perimeter, length, breadth

Resources: Textbook/s (if available)

Date:

Week

Day

1 NOTES FOR THE TEACHER RELATING TO THIS WEEK'S WORK

The main topics in this unit were the measuring and calculation of area and perimeter.

2 POSSIBLE MISCONCEPTIONS LINKED TO THE UNIT'S WORK

- Learners confuse area and perimeter.
- Learners confuse the unit of measurement for area and perimeter.

3 CORRECT HOMEWORK ACTIVITY (5 MINUTES)

The answers to the Homework Activity for Lesson 19 are provided in Lesson 19.

Use this time to purposefully address gaps in learners' knowledge and to identify and address learner errors.

4 CLASSWORK

Today we are going over what we learned in this unit. We will practise what we have learned about area and perimeter.

- You could use the Additional Activities from your textbooks, or you can use the Consolidation Activity given in the LAB.
- The answers are given for the Consolidation Activity.

Additional activities for consolidation

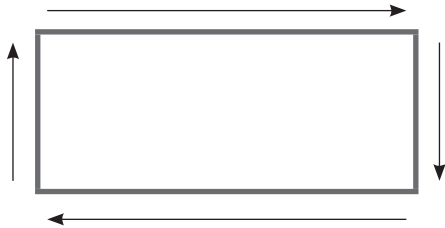
Refer to the table. Select additional activities from the textbook/s you have.

Use the answers given in the Teacher's Guide to correct the work.

	Fabulous	Oxford Headstart	Oxford Successful	Platinum	Premier	Sasol Inzalo	Solutions for All	Study & Master	Viva
LB	232-236	282-288	239-245	182-185	201-207	318-325	288-295	275-280	200-202
TG	192-195	328-333	190-193	143-145	105-108	372-380	192-195	371-375	100-102

Consolidation Activity

- 1 Thato says that if he runs along all four sides of the soccer field, he is running the area of the soccer field.
 - a Is Thato correct? (No)
 - b Draw a diagram to explain your answer.
(The distance around a shape is the perimeter)



- 2 Sam says that if he tiles the kitchen floor, he is tiling the perimeter of the floor.
 - a Is Thato correct? (No)
 - b Draw a diagram to explain your answer.
(The surface of a shape is the area)



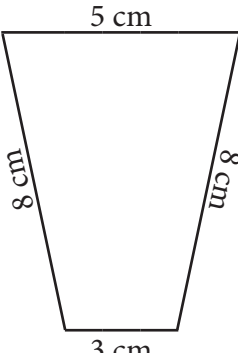
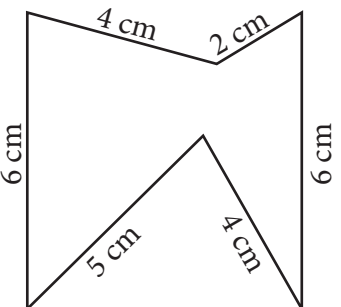
- 3 Match the measurement with the units of measurement.

Measurement	Unit
Perimeter	cm
	m ²
Area	m
	cm ²

- 4 Each square has sides of 1 cm.
Find the area of each shape in cm².

(6 cm ²)	(6 cm ²)	(6 cm ²)

5 Find the perimeter of each shape.

	
<p>Perimeter $= (8 \text{ cm} + 5 \text{ cm} + 8 \text{ cm} + 3 \text{ cm} = 24 \text{ cm})$</p> <p>(Note that: $5 \text{ cm} + 3 \text{ cm} = 8 \text{ cm}$ So, $8 + 5 + 8 + 3$ $= 3 \times 8$ $= 24 \text{ cm})$</p>	<p>Perimeter $= 4 \text{ cm} + 2 \text{ cm} + 6 \text{ cm} + 4 \text{ cm} + 5 \text{ cm} + 6 \text{ cm}$ $= 27 \text{ cm})$</p> <p>(Note that there are two 4 cm and two 6 cm, so $4 + 2 + 6 + 4 + 5 + 6$ $= 10 + 10 + 2 + 5 = 27 \text{ cm}$</p>

6 a Calculate the area of a rectangle with a length of 70 cm and a breadth of 12 cm
 Area = $(70 \text{ cm} \times 12 \text{ cm} = 840 \text{ cm}^2)$

b Calculate the area of a rectangle with a length of 6 m and a breadth of 900 cm
 Remember to make sure that both measurements have the same units.

(Two answers are possible:

- $900 \text{ cm} = 9 \text{ m}$, so Area = $9 \text{ m} \times 6 \text{ m} = 54 \text{ m}^2$
- $6 \text{ m} = 600 \text{ cm}$, so Area = $900 \text{ cm} \times 600 \text{ cm} = 540\,000 \text{ cm}^2)$

7 a Calculate the perimeter of a rectangle with a length of 83 cm and a breadth of 59 cm

$$(\text{Perimeter} = 2 \times (83 \text{ m} + 79 \text{ m}) = 2 \times 162 \text{ m} = 324 \text{ m})$$

b Calculate the perimeter of a rectangle with a length of 32 cm and a breadth of 12 cm

$$(\text{Perimeter} = 2 \times (32 \text{ cm} + 12 \text{ cm}) = 2 \times 44 \text{ cm} = 88 \text{ cm})$$

c Calculate the perimeter of a square with a side that is 35 m long

$$(\text{Perimeter} = 4 \times 35 \text{ m} = 140 \text{ m})$$

d Calculate the perimeter of a square with a side that is 18 cm

$$(\text{Perimeter} = 4 \times 18 \text{ cm} = 72 \text{ cm})$$

8 Complete the table

	Length of rectangle	Breadth of rectangle	Area of rectangle	Perimeter of rectangle
a	3 m	2 m	(6 m^2)	$2 \times (3 + 2) = 2 \times 5 = 10 \text{ m}$
b	9 cm	8 cm	(72 cm^2)	$2 \times (9 + 8) = 2 \times 17 = 34 \text{ cm}$
c	6 m	(4 m)	24 m^2	$2 \times (6 + 4) = 2 \times 10 = 20 \text{ m}$
d	(8 m)	8 m	64 m^2	$2 \times (8 + 8) = 2 \times 16 = 32 \text{ m}$
e	(20 cm)	5 cm	100 cm^2	$2 \times (20 + 5) = 2 \times 25 = 50 \text{ cm}$

5 REFLECTION AND SUMMARY OF LESSON (5 MINUTES)

Call the whole class to attention and summarise the key concepts of the lesson.

Say: **Today we have revised area and perimeter.**

Unit 3: Division

INTRODUCTION

This unit focuses on division. Learners revise grouping and sharing within the number range 10×10 . Learners do division calculations without and with remainders and learn how to deal with remainders. Learners learn about the relationships between the divisor, dividend, quotient and remainder (without knowing the names of the terms). Learners use division in the context of money and measurement and use the column method to do long division.

In this unit, we focus on the four framework dimensions in the following ways:

Framework dimension	How the framework dimension is developed in this unit
Conceptual understanding	Learners see multiplication and division as interconnected mathematical concepts. The one operation is the inverse operation of the other.
Procedural fluency	Learners develop procedural fluency through the use and memorisation of division facts (this includes multiplication tables, with division being the inverse of multiplication).
Strategic competence	Learners solve division problems by identifying which strategy to use and which multiplication table will help them find the answer. For example: Finding the length or breadth of a rectangle given the area and the length of one of the sides. Learners explain how they develop a multiplication number sentence from a division number sentence and vice versa.
Reasoning	Learners explain the reason why the remainders must be dealt with in certain way.

In this unit, we build a **learning centred classroom** by paying attention to:

		Examples
Concept development	✓	Done in every lesson
Practising procedures	✓	Learners find division facts quickly while doing long division using the column method
Problem solving	✓	Learners use division to solve problems in context (discarding or incorporating remainder)
Explaining concepts and procedures	✓	Learners link multiplication and division as inverse operations
Addressing learners' errors	✓	Learners' answers in this unit might expose learners' deficits with regard to multiplication facts
Active learning	✓	Learners apply division to solve the problems in measurement contexts
Applying maths in context	✓	Learners use division to solve problems from familiar contexts

Mathematical vocabulary for this unit

Be sure to teach and use the following vocabulary at appropriate places in the unit. It is a good idea to make flashcards of words and their meanings and to display these in the classroom at appropriate times.

Refer to the bilingual dictionary where necessary.

Term	Explanation / diagram
area	The amount of surface enclosed by the perimeter of a 2-D shape
brackets ()	Symbols that are used to create groups or indicate order of operations
breadth	A measure of length that usually applies to the shorter side of a rectangle
divide	To share or group
division	The operation that involves sharing or grouping
group (division)	You know the number of objects each group should receive as well as the total number of objects you need to distribute. Your goal is to find out how many (equal) groups can be created
length	The distance between two points
long division	Method of dividing in which digits are arranged in columns
multiple	The product when you multiply one whole number by another whole number
perimeter	The total length around a shape Example: The perimeter of the square with sides of 2 cm will be: $4 \times 2 \text{ cm} = 8 \text{ cm}$
rectangle	Shape with 4 straight sides and 4 square corners
remainder	Something that is left over
share (division)	You start with the number of groups and the total number of objects you want to distribute. Your goal is to find out how many objects each (equal) group can receive.
square	Shape with 4 straight sides which are equal in length and 4 square corners

Further practice for learners

This table references other sources (including textbooks) if you need additional activities.

	Fabulous	Oxford Headstart	Oxford Successful	Platinum	Premier	Sasol Inzalo	Solutions for All	Study & Master	Viva
LB	54-56	50-52	41-43	30-32	18-26	69-70	73-74	43-52	24-25
	230-231	273-279	233-235	40-48 96-99 178-181	99-113 199-200	200-208 313-317	160-167 281-287	271-274	196-198
TG	32-37	69-76	65-67	24-26	10-13	69-73	23-32	77-83	32-34
	189-191	319-325	233-235	140-142	103-105	366-371	117-124 229-238	346-351	98-99

UNIT PLAN AND OVERVIEW FOR UNIT 3: Division

LP	Lesson objective	Lesson Resources	Date completed
	Learners will be able to:	Learners need classwork books, LABs, writing materials, rulers and scissors for all lessons.	
21	use division to solve word problems in which there is no remainder.	Teacher: None Learners: 15 bottle tops or counters for each pair of learners	
22	use division to solve word problems in which there is a remainder.	Teacher: None Learners: counters (example: bottle tops)	
23	check the solution to division calculations and will know that division of zero by any number is always zero.	Teacher: A3 poster: 10×10 multiplication table Learners: None	
24	work with division number sentences and to solve simple division problems.	Teacher: A3 poster: 10×10 multiplication table Learners: None	
25	use division to find the length or breadth of a rectangle, and the length of the sides of a square.	Teacher: A3 poster: 10×10 multiplication table Learners: None	
26	do long division calculations in which there is no remainder.	Teacher: None Learners: None	
27	solve long division calculations with a remainder.	Teacher: None Learners: None	
28	divide a 3-digit number by a 1-digit number.	Teacher: None Learners: None	
29	consolidate and revise the operation of division.	Teacher: Textbook/s (if available) Learner: Textbook/s (if available)	

Assessment for learning

Use the template provided at the beginning of this guide to think deeply about at least one of the lessons in this unit.

Reflection

Think about and make a note of: *What went well? What did not go well? What did the learners find difficult or easy to understand or do? What will you do to support or extend learners? Did you complete all the work set for the unit? If not, how will you get back on track?*

What will you change next time? Why?

Lesson 21: Grouping and sharing

Teacher's notes

This lesson is one of the fully planned lessons to be used to cover the Term 3 curriculum.

CAPS topics: 1.1: Whole numbers: Multiplication and Division

Lesson Objective: Learners will be able to use division to solve word problems in which there is no remainder.

Lesson Vocabulary: group, share

Teacher Resources: None

Learner Resources: 15 bottle tops or counters for each pair of learners

Date:

Week

Day

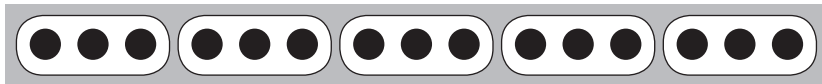
1 MENTAL MATHS (5 MINUTES)

		Answer			Answer
1	$10 \div 2 =$	5	6	$6 \div 2 =$	3
2	$2 \div 2 =$	1	7	$20 \div 2 =$	10
3	$12 \div 2 =$	6	8	$8 \div 2 =$	4
4	$4 \div 2 =$	2	9	$16 \div 2 =$	8
5	$18 \div 2 =$	9	10	$14 \div 2 =$	7

2 LINK TO GRADE 3 (5 MINUTES)

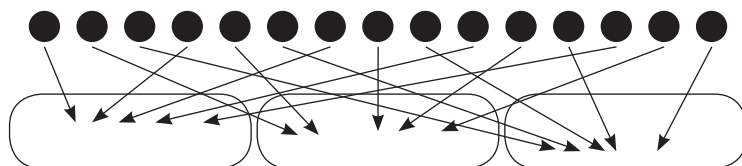
- Give each pair of learners 15 bottle tops.
- Say: **Arrange the bottle tops in groups of 3 on your desk.**

Answer:



- Ask: **How bottle tops in each group? (3)**
Ask: **How many groups are there? (5)**
- Say: **In this example we know the size of the group because the counters are arranged in groups of 3.**
We need to find out how many groups there are.
We call this 'finding the answer by grouping'.

- Say: **Put the bottle tops in one big pile again.**
- Say: **Share the bottle tops between 3 learners.**
Ask: **How many groups are there?** (3)
Ask: **How many bottle tops are there in a group?** (5)



- Say: **In this example we know how many groups there are because they are shared between 3 learners.**
We needed to find out the *size* of the group (the number of bottle tops in each group).
We call this ‘finding the answer by *sharing*’.

3 CORRECT HOMEWORK ACTIVITY

This is the first lesson in the unit. There is no homework to correct.

4 LESSON CONTENT – CONCEPT DEVELOPMENT (40 MINUTES)

- In this lesson learners solve word problems involving grouping and sharing without remainders. An understanding of grouping and sharing leads to a deeper conceptual understanding of division.

- In **grouping problems**, the *size of the share or group* is known.
The answer is the number of groups.
 - You make groups of objects first.
 - If you cannot recall multiplication/division facts you may use repeated subtraction and count how many times you subtract to find answers to division problems of this type.

Example:

To find the answer to $12 \div 3$ by *grouping*, we start off by forming groups of 3.



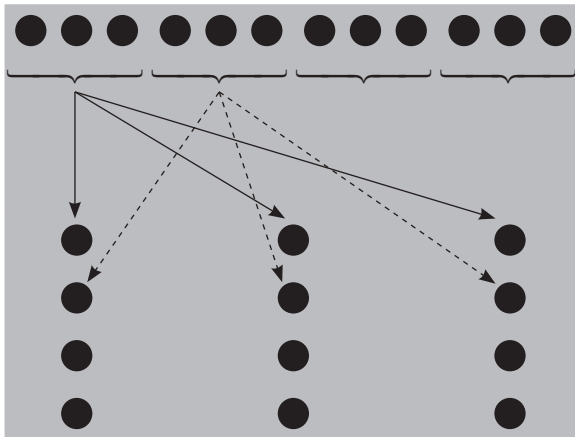
We then count the number of groups of 3.

The answer is the number of groups, so *the answer is 4 groups* (of 3 bottle tops).

- In **sharing problems** the *number of groups* is known.
The answer is the size of the group.
 - You can't make groups of objects because you don't know how many objects should be in one group.
 - Instead, you have to distribute or *share out* the objects one by one.

Example:

To find the answer to $12 \div 3$ by *sharing*, we start off by sharing the bottle tops out to 3 different groups



We then count the number of bottle tops in each group.
The answer is the number of bottle tops in each group, so *the answer is 4 bottle tops* (in each of 3 groups).

Say: **Today we are solving problems involving grouping and sharing.**

Activity 1: Whole class activity and learners work in pairs

- Encourage learners to discuss the problems and share their ideas. They should write their ideas and answers in their classwork books, and then share their methods with the whole class.
- Say, as you write on the board:

There are 56 apples.
The apples are packed in bags of 8 apples each.
How many bags are there?

} Remember to write each statement on a separate line

- Read through the word problem with the learners. Ensure that they understand what they are being asked. Get learners to read the question until they can read it fluently.

- Ask: **Who will come to the board and underline the numbers for us?**
Ask: **Who will come to the board and underline the question for us?**

There are 56 apples.

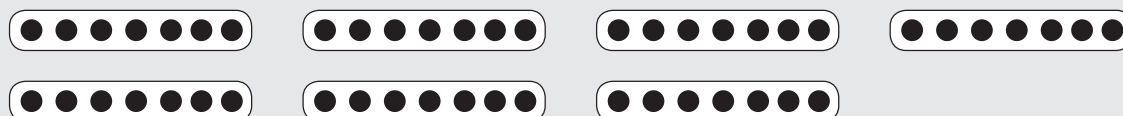
The apples are packed in bags of 8 apples each.

How many bags are there?

- Say: **Discuss with your partner how to find the answer.**
- The learners could work the answer out in many different ways. Here are four strategies that they could possibly use.

Strategy 1: Drawing

Answer must indicate 7 groups of 8 with 8 apples in each bag.



There are 7 bags of apples.

Strategy 2: Draw up a table

Number of bags	1	2	3	4	5	6	7
Number of apples	8	16	24	32	40	48	56

There are 7 bags of apples.

Strategy 3: Multiplication

Write a multiplication sentence to show the answer.

$$\square \times 8 = 56 \text{ and } \boxed{7} \times 8 = 56$$

There are 7 bags of apples.

Strategy 4: Division

Write a division sentence to show the answer.

$$56 \div 8 = \square \text{ and } 56 \div 8 = \boxed{7}$$

There are 7 bags of apples

- Ask: **Who will come to the board and share their strategy with us?**
 Note:
 - Walk around and observe which strategies are used by which pairs before asking them to share strategies on the board.
 - All 4 strategies must be shown on the board at the same time. (Don't erase any of them before all 4 strategies have been shared)
 - Learners are not supposed to have all 4 strategies in their classwork book, only one.
- **Keep 4 strategies on the board.**
 Say: **The answer is "there are 7 bags."**

Activity 2: Learners work individually

Say: **Complete Activity 2 in your LAB.**

- Read through the word problem in Activity 2 several times with the learners.
- Walk around the classroom to support learners as they work.
- Correct Activity 2 with learners so that they can receive immediate feedback.
- Answers are given.

Kate needs to buy 60 plastic cups.
 The cups are sold in packets of 10 cups.
 How many packets of cups does Kate need to buy?



- 1 Underline the numbers and the question in the word problem.

Kate needs to buy 60 plastic cups.
 The cups are sold in packets of 10 cups.
How many packets of cups does Kate need to buy?

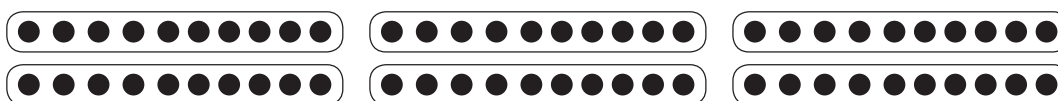
- 2 Use any of the strategies to find the answer and check the answer by using a different strategy from the first one.

POSSIBLE ANSWERS

Note: Learners do not need to use all four strategies.

Strategy 1: Draw a diagram

We have to take the 60 cups and put them into groups of 10 cups:



Answer: Kate needs to buy 6 packets of cups.

Strategy 2: Draw up a table

We have to take the 60 cups and put them into groups of 10 cups:

Number of packets	1	2	3	4	5	6
Number of plastic cups	10	20	30	40	50	60

Answer: Kate needs to buy (6) packets of cups.

Strategy 3: Multiplication

Write a multiplication number sentence to show the answer.

$$6 \times 10 = 60$$

Answer: Kate needs to buy 6 packets of cups.

Strategy 4: Division

Write a division number sentence to show the answer.

$$60 \div 10 = 6$$

Answer: Kate needs to buy 6 packets of cups.

Activity 3: Learners work individually

Say: **Complete Activity 3 in your LAB.**

- Walk around the classroom to support learners as needed.
- Correct Activity 3 with learners so that they can receive immediate feedback.
- Answers are given.

There are 12 slices of bread

Naomi puts 4 slices of bread in a lunch box.

How many lunch boxes does she need?

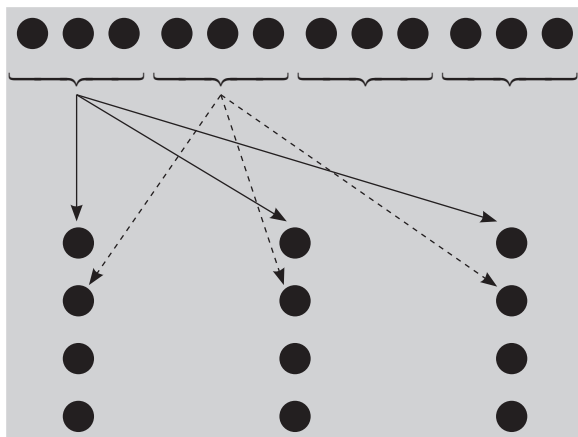
- 1 Underline the numbers and the question in the word problem.
- 2 Use any of the strategies to find the answer and check the answer by using a different strategy from the first one.

POSSIBLE ANSWERS

Note: Learners do not need to use all 4 strategies.

Strategy 1: Draw a diagram

We have to share the slices of bread among the lunch boxes until each lunch box has 4 slices of bread.



Answer: Naomi needs 3 lunch boxes.

Strategy 2: Draw up a table

We have to share the slices of bread among the lunch boxes until all 12 slices have been used.

Number of lunch boxes	1	2	3
Number of pieces of bread	4	8	12

Answer: Naomi needs 3 lunch boxes.

Strategy 3: Multiplication

Write a multiplication number sentence to show the answer.

$$3 \times 4 = 12$$

Answer: Naomi needs 3 lunch boxes

Strategy 4: Division

Write a division number sentence to show the answer.

$$12 \div 4 = 3$$

Answer: Naomi needs 3 lunch boxes

5 HOMEWORK ACTIVITY (5 MINUTES)

- Read the questions in the LAB with learners.
- Make sure all the learners understand what to do.
- Answers are given in brackets.

Kate needs to buy 72 teaspoons.

The teaspoons are sold in packets of 8.

How many packets of spoons must Kate buy?

- 1** Underline the numbers and the question in the word problem.

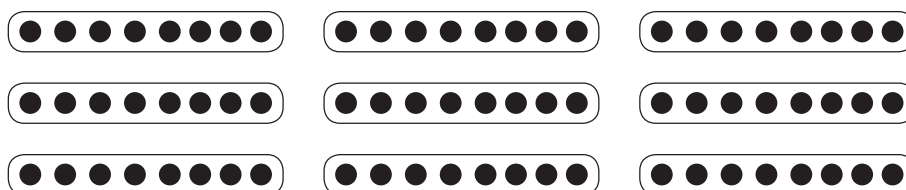
Kate needs to buy 72 spoons.

The spoons are sold in packets of 8.

How many packets of spoons must Kate buy?



- 2** Draw a picture to show how you can find the answer.
(The 72 teaspoons have to be put into groups of 8.)



- 3** Complete the table to show how you can find the answer.

Number of packets	1	2	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Number of spoons	8	(16)	(24)	(32)	(40)	(48)	(56)	(64)	(72)

- 4** Write a multiplication number sentence to show the number of packets of spoons that Kate must buy.

$$(9) \times 8 = 72$$

- 5** Write a division number sentence to show the number of packets of spoons that Kate must buy.

$$72 \div 8 = (9)$$

Answer: Kate needs to buy (9) packets of spoons.

6 REFLECTION AND SUMMARY OF LESSON (5 MINUTES)

Call the whole class to attention and summarise the key concepts of the lesson.

Say: **Today we have revised problems involving grouping and sharing. We have seen that it is important to use number sentences to find the answer.**

Lesson 22: Division with remainders

Teacher's notes

This lesson is one of the fully planned lessons to be used to cover the Term 3 curriculum.

CAPS topics: 1.1: Whole numbers: Multiplication and Division

Lesson Objective: Learners will be able to use division to solve word problems in which there is a remainder.

Lesson Vocabulary: divide; multiple; remainder

Teacher Resources: None

Learner Resources: counters (example: bottle tops)

Date:

Week

Day

1 MENTAL MATHS (10 MINUTES)

		Answer			Answer
1	$10 \div 5 =$	2	6	$15 \div 5 =$	3
2	$35 \div 5 =$	7	7	$25 \div 5 =$	5
3	$20 \div 5 =$	4	8	$5 \div 5 =$	1
4	$40 \div 5 =$	8	9	$30 \div 5 =$	6
5	$50 \div 5 =$	10	10	$45 \div 5 =$	9

2 LINK TO PREVIOUS LESSON (5 MINUTES)

- Refer learners to the word problem in the LAB.
There is R30.
Each child gets R5.
How many children can get R5?
- Read through the problem with the learners and remind them of the underlining process.
 There is R30.
 Each child gets R5.
How many children can get R5?
- Learners write their answers in their LABS.
 ($30 \div 5 = 6$
 6 children can get R5)

3 CORRECT HOMEWORK ACTIVITY (5 MINUTES)

The answers to the Homework Activity for Lesson 21 are provided in Lesson 21. Use this time to purposefully address gaps in learners' knowledge and to identify and address learner errors.

4 LESSON CONTENT – CONCEPT DEVELOPMENT (35 MINUTES)

- In this lesson learners do grouping-type word problems that have a remainder.
- This lesson is revision of the work done in Grade 3.
- The problems are within the range of the multiplication table up to 10×10 .
- Encourage learners to talk about what could, or should, happen to the remainder.
- Learners also revisit to check the relationship between the remainder and the divisor.
Note: Learners do not need to know the term divisor, but they do need to know the relationship.

Say: **Today we are practising division with remainders.**

Activity 1: Whole class activity and learners work in pairs

- Learners work in their classwork books.
- Write the word problem on the board.
There are 32 pencils.
Each child gets 5 pencils.
How many children can get 5 pencils?
- Read through the word problem several times with the learners.
Ask: **Who will come to the board and underline the numbers?**
Ask: **What is the question? Who will come to the board and underline the question?**
ANSWER:
There are 32 pencils.
Each child gets 5 pencils.
How many children can get 5 pencils?
- Say: **Write down the number sentence in your classwork books.** ($32 \div 5 = \square$)
Let some learners come and write their number sentences on the board.
Make sure that all learners have the correct number sentence.
- Ask: **Do you think we will have a remainder?**
(Yes, because 32 is not a *multiple* of 5. When we count in 5s, we don't have 32 as an answer)

- Say: **Do the calculation and write the answer.** ($32 \div 5 = 6$ remainder 2)
- Note: If necessary, learners can use their multiplication table to find the answer “6”.
 - They place Paper 1 slightly to the right of 5, the number we are dividing by.
 - They slide Paper 2 down to see if they can find 32, the number we are dividing into, on the table.
 - They won't find 32 in the 5 column but will find 30 and 35.
 - They know 32 is between 30 and 35, so choose the smaller number which is 30.
 - They know that $6 \times 5 = 30$, and that $32 - 30 = 2$
 - So, $32 \div 5 = 6$ remainder 2.

	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25
6	6	12	18	24	30
7	7	14	21	28	35

Paper 1

Paper 2

- Let different learners come and write the answers to the number sentences on the board.
- Say: **Discuss with your partner how we can answer to the problem.**
(6 learners can get 5 pencils and 2 pencils are left over.)
Note: If their answer is 6 learners only and they do not mention the number of pencils left over, it is correct, because the question does not ask for the remainder.

- Ask: **Themba said that the answer is $32 \div 5 = 5$ remainder 7.**
How do you know that the answer is wrong?
(If the remainder is bigger than 5 – the number we are dividing by – then we know that we can give 5 pencils to one more child. The remainder must not be bigger than 4.)

Activity 2: Learners work in pairs

Say: **Complete Activity 2 in your LAB.**

- Walk around the classroom to support learners as needed.
- If learners are struggling to write a division number sentence, get them to draw pictures and write a multiplication sentence first.
Some learners might need to use counters as a strategy for solving the problem.
Learners can also refer to their 10×10 multiplication table.
- Correct Activity 2 with learners so that they can receive immediate feedback.
- Answers are given in brackets.

There are 39 mangoes.
Each box contains 4 mangoes.
If all mangoes must be in boxes, how many boxes do you need?



- 1 Read through the question three times with your partner.
- 2 Underline the numbers and the question.
There are 39 mangoes.
Each box contains 4 mangoes.
If all mangoes must be in boxes, how many boxes do you need?
- 3 Write a number sentence to show how you would work out the answer. ($39 \div 4 = \square$)
- 4 Solve this division problem.
($9 \times 4 = 36$, $39 - 36 = 3$)
(So, $39 \div 4 = 9$ remainder 3)
- 5 Discuss with your partner what the answer to the problem is.
(The problem says all mangoes must be in boxes, so we cannot have any mangoes left over.
9 boxes have 4 mangoes each and we need one more box for 2 mangoes, even though it is not full.
The answer is 10 boxes.)

Activity 3: Learners work on their own

Say: **Complete Activity 3 in your LAB.**

- Walk around the classroom to support learners as needed.
- If learners are struggling to write a division number sentence, get them to draw pictures and write a multiplication sentence first.
Some learners might need to use counters as a strategy for solving the problem.
Learners may also refer to their 10×10 multiplication table.
- Correct Activity 3 with learners so that they can receive immediate feedback.
- Answers are given in brackets.

There are 46 eggs.

A shop sells eggs in an eggbox holding 6 eggs.

How many egg boxes can the shop fill?



1 Read through the question three times with your partner.

2 Underline the numbers and the question.

(There are 46 eggs.

A shop sells eggs in a box that contains 6 eggs.

How many boxes can the shop fill?)

3 Write down a number sentence to show how you would work out the answer.

($46 \div 6 = \square$)

4 Solve the problem.

($7 \times 6 = 42$, $46 - 42 = 4$)

(So, $46 \div 6 = 7$ remainder 4)

5 Write down the answer.

Answer: The shop can fill (7) egg boxes (with 4 eggs left over.)

Note: the answer does not have to mention a remainder.

5 HOMEWORK ACTIVITY (5 MINUTES)

- Read the questions in the LAB with learners.
- Make sure all the learners understand what to do.
- Answers in brackets.

Find the answer. Check if the remainder is bigger or smaller than the number we are dividing by.

1 $45 \div 8 =$ (5 remainder 5)

2 $67 \div 10 =$ (6 remainder 7)

3 $85 \div 9 =$ (9 remainder 4)

4 $50 \div 6 =$ (8 remainder 2)

6 REFLECTION AND SUMMARY OF LESSON (5 MINUTES)

Call the whole class to attention and summarise the key concepts of the lesson.

Say: **Today we have learned to solve division problems involving remainders.**

We have also learned that the remainder must be smaller than the number we are dividing by.

Lesson 23: Dividing 0 by a number

Teacher's notes

This lesson is one of the fully planned lessons to be used to cover the Term 3 curriculum.

CAPS topics: 1.1: Whole numbers: Multiplication and Division

Lesson Objective: Learners will be able to check the solution to division calculations, and also will know that division of zero by a number is always zero.

Lesson Vocabulary: remainder

Teacher Resources: A3 poster: 10×10 multiplication table

Learner Resources: None

Date:

Week

Day

1 MENTAL MATHS (5 MINUTES)

		Answer			Answer
1	$12 \div 3 =$	4	6	$3 \div 3 =$	1
2	$6 \div 3 =$	2	7	$15 \div 3 =$	5
3	$24 \div 3 =$	8	8	$21 \div 3 =$	7
4	$30 \div 3 =$	10	9	$9 \div 3 =$	3
5	$18 \div 3 =$	6	10	$27 \div 3 =$	9

2 LINK TO PREVIOUS LESSON (5 MINUTES)

- Make sure that the 10×10 Multiplication poster is stuck up somewhere in the classroom.
- Learners work in classwork books.
- Say, as you write the number sentence on the board:
Jean got the following answer:
 $43 \div 4 = 9$ remainder 7
 Ask: **Is Jean's answer correct?**
 (No, because the remainder 7 is bigger than 4, there is one more 4 in 7.)
- Say: **Do the correct calculation in your classwork book.**
 Ask: **Who would like to come to the board and show us the answer you got?**
 ($43 \div 4 = 10$ remainder 3)

3 CORRECT HOMEWORK ACTIVITY (5 MINUTES)

The answers to the Homework Activity for Lesson 22 are provided in Lesson 22.

Use this time to purposefully address gaps in learners' knowledge and to identify and address learner errors.

4 LESSON CONTENT - CONCEPT DEVELOPMENT (35 MINUTES)

- In this lesson learners discover that dividing zero (0) by any number is always zero.
- Then through checking answers, learners find out more about the relationship between the dividend, divisor, quotient and remainder. Once again, learners do not need to know the terms, but they must know the relationships.
- Here are the terms for your reference.

NOTE: These descriptions are for teacher reference only

$126 \div 4 = 31 \text{ remainder } 2$ 	<p>Dividend: The quantity that has to be divided</p> <p>Divisor: The number we are dividing by</p> <p>Quotient: The answer to a division calculation</p> <p>Remainder: What is left over after you divide something into equal parts</p>
--	--

Say: Today we are learning to divide zero by any number, and to check our answers to division problems.

Activity 1: Whole class activity and learners work in pairs

- Learners work in their classwork books.
- Ask: I have 8 biscuits and I want to share them among 4 learners.
How many biscuits will each learner get?
Say: Work with your partner.
In your classwork books write a division sentence to describe this sharing.
($8 \div 4 = 2$)
- Ask: I have 4 biscuits and I want to share them among 4 learners.
How many biscuits will each learner get?
Say: Work with your partner.
In your classwork books write a division sentence to describe this sharing.
($4 \div 4 = 1$)

- Ask: **Now I have 0 biscuits and I want to share them among 4 learners. How many biscuits will each learner get?**
Say: **Work with your partner.**
In your classwork books write a division sentence to describe this sharing.
($0 \div 4 = 0$)
- Ask: **Now I have 0 biscuits and I want to share them among 7 learners. How many biscuits will each learner get?**
Say: **Work with your partner.**
In your classwork books write a division sentence to describe this sharing.
($0 \div 7 = 0$)

- Ask: **If we divide 0 by any number, what is the answer? (0)**

Say: **Complete Activity 1 in your LAB. Work with your partner.**

- Walk around the classroom to support learners as needed.
- Correct Activity 1 with learners so that they can receive immediate feedback.
- Answers are given in brackets.

1 Find the missing numbers:

- a** $0 \div 2 = (0)$
- b** $0 \div 5 = (0)$
- c** $0 \div 9 = (0)$
- d** $(0) \div 3 = 0$
- e** $(0) \div 6 = 0$
- f** $(0) \div 12 = 0$
- g** $0 \div 11 = (0)$
- h** $0 \div (\text{any number}) = 0$

2 Complete the sentence:

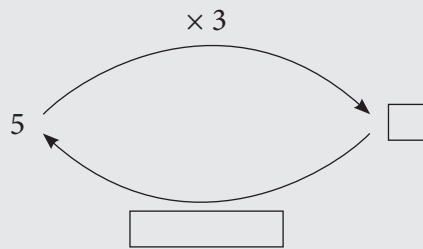
When we divide zero by any number, the answer is (zero / 0).

Activity 2: Whole class activity and learners work in pairs

- Learners work in their classwork books.

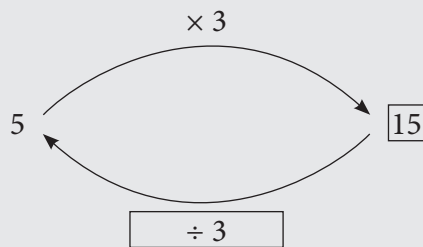
1 Draw the flow diagram on the board:

Say: **This flow diagram shows the calculation $5 \times 3 = \square$**



Ask: **What number should we write in the placeholder on the right.** (15)

Ask: **What operation and number should we write in the bottom placeholder?** ($\div 3$)



Ask: **What does the flow diagram tell us about multiplication and division?**

(Suggested answers:

- Multiplication and division are opposite (or inverse) operations
- Division undoes multiplication.

If necessary, ask more questions to guide learners to this conclusion)

2 Say: What do we do when we do division and end up with a remainder?

Say, and write: **Check this division calculation to see if it is correct: $42 \div 6 = 7$**

(The learners should be able to say we can check it by using multiplication: $7 \times 6 = 42$)

Say, and write: **Check this multiplication calculation to see if it is correct:**

$10 \times 5 = 50$

(The learners should be able to say we can check it using division: $50 \div 5 = 10$)

Say: **Think about how you can use multiplication to check this division calculation:**

$$37 \div 8 = 4 \text{ remainder } 5$$

(The check is done in two parts:

$$\text{STEP 1: } 4 \times 8 = 32$$

$$\text{STEP 2: } 32 + 5 = 37)$$

Say: **In your classwork book check if this division calculation is correct:**

$$18 \div 7 = 2 \text{ remainder } 4$$

(The check is done in two parts:

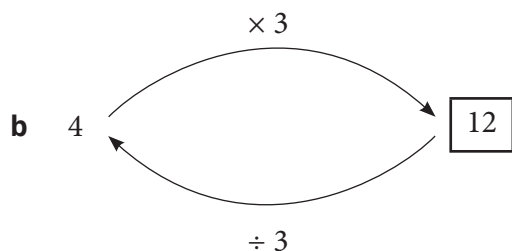
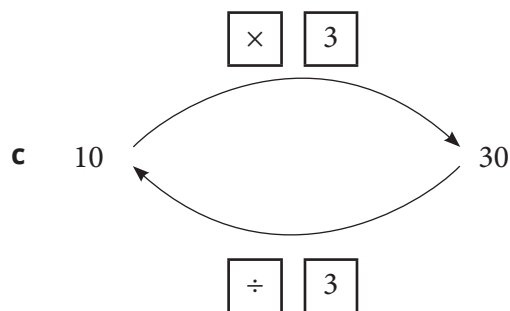
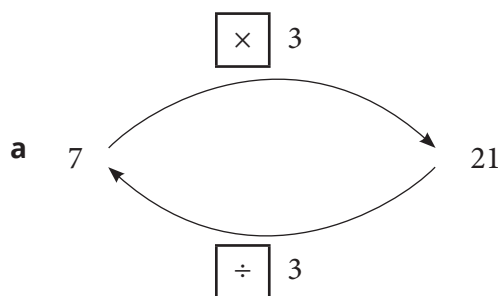
$$\text{STEP 1: } 2 \times 7 = 14$$

$$\text{STEP 2: } 14 + 4 = 18. \text{ So the division calculation is correctly done.)}$$

Say: **Complete Activity 2 in your LAB.**

- Walk around the classroom to support learners as needed.
- Correct Activity 2 with learners so that they can receive immediate feedback.
- Answers are given in brackets.

1 Complete each flow diagram by filling in the placeholders.



2 Calculate, and then check your answers by multiplying.

a $42 \div 7 = (6)$

Check: $(6) \times 7 = (42)$

b $100 \div 10 = (10)$

Check: $(10) \times 10 = (100)$

c $27 \div 3 = (9)$

Check: $(9) \times 3 = (27)$

d $56 \div 8 = (7)$

Check: $(7) \times 8 = (56)$

3 Complete the number sentence by filling in the answer and then show how you would check each calculation.

- | | | |
|----------|---|--|
| a | $39 \div 7 = (5 \text{ remainder } 4)$ | Check: $(5 \times 7 = 35; 35 + 4 = 39)$ |
| b | $92 \div 10 = (9 \text{ remainder } 2)$ | Check: $(9 \times 10 = 90; 90 + 2 = 92)$ |
| c | $73 \div 9 = (8 \text{ remainder } 1)$ | Check: $(8 \times 9 = 72; 72 + 1 = 73)$ |
| d | $45 \div 8 = (5 \text{ remainder } 5)$ | Check: $(5 \times 8 = 40; 40 + 5 = 45)$ |
| e | $50 \div 6 = (8 \text{ remainder } 2)$ | Check: $(8 \times 6 = 48; 48 + 2 = 50)$ |
| f | $61 \div 9 = (6 \text{ remainder } 7)$ | Check: $(6 \times 9 = 54; 54 + 7 = 61)$ |
| g | $31 \div 4 = (7 \text{ remainder } 3)$ | Check: $(7 \times 4 = 28; 28 + 3 = 31)$ |
| h | $91 \div 9 = (10 \text{ remainder } 1)$ | Check: $(10 \times 9 = 90; 90 + 1 = 91)$ |

5 HOMEWORK ACTIVITY (5 MINUTES)

- Read the questions in the LAB with learners.
- Make sure all the learners understand what to do.
- Answers are given in brackets.

Find the answers and check if the answers are correct.

- | | | |
|----------|--|---|
| 1 | $42 \div 6 = (7)$ | Check: $(7 \times 6 = 42)$ |
| 2 | $49 \div 5 = (9 \text{ remainder } 4)$ | Check: $(9 \times 5 = 45, 45 + 4 = 49)$ |
| 3 | $8 \times 7 = (56)$ | Check: $(56 \div 7 = 8)$ |
| 4 | $30 \div 4 = (7 \text{ remainder } 2)$ | Check: $(7 \times 4 = 28, 28 + 2 = 30)$ |

6 REFLECTION AND SUMMARY OF LESSON (5 MINUTES)

Call the whole class to attention and summarise the key concepts of the lesson.

Say: **Today we have learned that when divide zero by any number, the answer is zero. We have also learned how to check the answers to multiplication and division calculations.**

Lesson 24: More division

Teacher's notes

This lesson is one of the fully planned lessons to be used to cover the Term 3 curriculum.

CAPS topics: 1.1: Whole numbers: Multiplication and Division

Lesson Objective: Learners will be able to work with division number sentences and to solve simple division problems.

Lesson Vocabulary: division, remainder

Teacher Resources: A3 poster: 10×10 multiplication table

Date:

Week

Day

1 MENTAL MATHS (5 MINUTES)

		Answer			Answer
1	$18 \div 3 =$	6	6	$15 \div 3 =$	5
2	$9 \div 3 =$	3	7	$24 \div 3 =$	8
3	$27 \div 3 =$	9	8	$12 \div 3 =$	4
4	$6 \div 3 =$	2	9	$30 \div 3 =$	10
5	$21 \div 3 =$	7	10	$0 \div 3 =$	0

2 LINK TO PREVIOUS LESSON (5 MINUTES)

- Make sure that the 10×10 Multiplication poster is stuck up somewhere in the classroom.
- Refer learners to this activity in the LAB.
Say: Find the answer to the division problem and check your answers.

1 $56 \div 7 = (8)$

Check: $(8 \times 7 = 56)$

2 $63 \div 9 = (7)$

Check: $(7 \times 9 = 63)$

3 $40 \div 8 = (5)$

Check: $(5 \times 8 = 40)$

4 $57 \div 6 = (9 \text{ remainder } 3)$

Check: $(9 \times 6 = 54; 54 + 3 = 57)$

3 CORRECT HOMEWORK ACTIVITY (5 MINUTES)

The answers to the Homework Activity for Lesson 23 are provided in Lesson 23.

Use this time to purposefully address gaps in learners' knowledge and to identify and address learner errors.

4 LESSON CONTENT - CONCEPT DEVELOPMENT (35 MINUTES)

- In this lesson learners work with division number sentences and solve word problems requiring simple division.

Say: **Today we are learning to work with division number sentences and to solve division word problems.**

Activity 1: Whole class activity and learners work in pairs

1 Mother has R80.

She wants to share the money equally among her 4 children.

How much should each child get?

a Underline the numbers and the question.

Mother has R80.

She wants to share the money equally among her 4 children.

How much should each child get?



b Write a number sentence.

$$(80 \div 4 = \square)$$

c Think about how you can calculate this:

$$80 = 8 \text{ tens}$$

$$80 \div 4 = 8 \text{ tens} \div 4$$

$$= (2) \text{ tens}$$

$$= (20)$$

d Write the answer:

Each child will get (R20).

2 Find the answers by using the same strategy as question **1**.

a $50 \div 5 = 5 \text{ tens} \div 5 = (1) \text{ ten} = (10)$

b $80 \div 2 = 8 \text{ tens} \div (2) = (4) \text{ tens} = (40)$

c $90 \div 9 = (9) \text{ tens} \div (9) = (1) \text{ tens} = (10)$

d $60 \div 3 = (6 \text{ tens} \div 3 = 2 \text{ tens} = 20)$

Activity 2: Whole class activity and learners work on their own

- Learners work in their classwork books.
- Write on the board as you say:
It costs R55 for 5 bags of mealie meal.
How much does it cost for 1 bag of mealie meal?
- Ask: **Who will come to the board and underline the numbers and the question**
It costs R55 for 5 bags of mealie meal.
How much does it cost for 1 bag of mealie meal?
- Say: **Write a number sentence for this problem in your book.**
($55 \div 5 = \square$)
- Say: **Think about how you can calculate this.**
- Say: **Let us divide 55 into Tens and Ones:** ($55 = 50 + 5$)
- Say: **Divide 50 and 5 by 5 separately in your book.**
 $50 \div 5 = 5 \text{ tens} \div 5 = 1 \text{ ten} = 10$
 $5 \div 5 = 1$
- Say: **Now divide 55 by 11.**
 $55 \div 5 = (50 + 5) \div 5 = (50 \div 5) + (5 \div 5) = 10 + 1 = (11)$
- Say: **It costs R11 for 1 bag of mealie meal.**

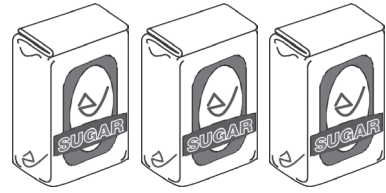
Draw 5 rectangles and 5 circles on the board to represent R10 notes and R1 coins.



Say: **Complete Activity 2 in your LAB.**

- Work through each step in **1** in Activity 2 with the learners.
- Correct and discuss answers as you go along so that learners can receive immediate feedback.
- Answers are given in brackets.

- 1** It costs R69 for 3 bags of sugar.
How much will one bag of sugar cost?



- a** Underline the numbers and the question

It costs R69 for 3 bags of sugar.

How much will one bag of sugar cost?

- b** Write a number sentence.

$$(69 \div 3 = \square)$$

- c** Calculate the answer.

$$69 \div 3 = (60 + 9) \div 3 = (60 \div 3) + (9 \div 3) = 20 + 3 = (23)$$

- d** Write the answer.

It costs (R23) for one bag of sugar.

- 2.** Find the answers by using the same strategy as question **1**.

a $48 \div 4 = (40 + 8) \div 4$
 $= (40 \div 4) + (8 \div 4)$
 $= 10 + 2$
 $= (12)$

b $84 \div 2 = (80 + 4) \div 2$
 $= (80 \div 2) + (4 \div 2)$
 $= (40) + (2)$
 $= (42)$

c $66 \div 6 = (60 + 6) \div 6$
 $= (60 \div 6) + (6 \div 6)$
 $= (10) + (1)$
 $= (11)$

d $96 \div 3 = (90 + 6) \div 3$
 $= (90 \div 3) + (6 \div 3)$
 $= (30) + (2)$
 $= (32)$

Activity 3: Learners work on their own

Say: Complete Activity 3 in your LAB.

- Walk around the classroom to support learners as needed.
- Correct Activity 3 with learners so that they can receive immediate feedback.
- Answers are given in brackets.

Calculate

1 $70 \div 7 = (7) \text{ tens} \div 7 = (1) \text{ ten} = (10)$

2 $80 \div 4 = (8) \text{ tens} \div 4 = (2) \text{ tens} = (20)$

3 $60 \div 2 = (6 \text{ tens} \div 2 = 3 \text{ tens} = 30)$

4 $28 \div 2 = (20 + 8) \div 2$
 $= (20) \div 2 + (8) \div 2$
 $= (10) + (4)$
 $= (14)$

5 $62 \div 2 = (60 + 2) \div 2$
 $= (60 \div 2) + (2 \div 2)$
 $= (30) + (1)$
 $= (31)$

6 $99 \div 3 = (90 + 9) \div 3$
 $= ((90 \div 3) + (9 \div 3))$
 $= (30 + 3)$
 $= (33)$

5 HOMEWORK ACTIVITY (5 MINUTES)

- Read the questions in the LAB with learners.
- Make sure all the learners understand what to do.
- Answers are given in brackets.

Calculate

$$\begin{aligned} \mathbf{1} \quad 90 \div 3 &= (9 \text{ tens}) \div 3 \\ &= (3) \text{ tens} \\ &= (30) \end{aligned}$$

$$\begin{aligned} \mathbf{2} \quad 88 \div 4 &= (80 + 8) \div 4 \\ &= (80 \div 4) + (8 \div 4) \\ &= (20) + (2) \\ &= (22) \end{aligned}$$

$$\begin{aligned} \mathbf{3} \quad 63 \div 3 &= (60 + 3) \div 3 \\ &= (60 \div 3) + (3 \div 3) \\ &= (20 + 1) \\ &= (21) \end{aligned}$$

6 REFLECTION AND SUMMARY OF LESSON (5 MINUTES)

Call the whole class to attention and summarise the key concepts of the lesson.

Say: **Today we have learned to work with division number sentences and to solve division word problems.**

Lesson 25: Finding length and breadth of rectangles and squares

Teacher's notes

This lesson is one of the fully planned lessons to be used to cover the Term 3 curriculum.

CAPS topics: 1.1: Whole numbers: Multiplication and Division

Lesson Objective: Learners will be able to use division to find the length or breadth of a rectangle, and the length of the sides in a square.

Lesson Vocabulary: area; breadth, division, length, perimeter, rectangle, square

Teacher Resources: A3 poster of the 10×10 multiplication table

Date:

Week

Day

1 MENTAL MATHS (5 MINUTES)

		Answer			Answer
1	$8 \div 4 =$	2	6	$16 \div 4 =$	4
2	$28 \div 4 =$	7	7	$4 \div 4 =$	1
3	$20 \div 4 =$	5	8	$40 \div 4 =$	10
4	$32 \div 4 =$	8	9	$24 \div 4 =$	6
5	$0 \div 4 =$	0	10	$12 \div 4 =$	3

2 LINK TO PREVIOUS LESSON (5 MINUTES)

- Make sure that the 10×10 Multiplication poster is stuck up somewhere in the classroom.
- Write these number sentences on the board:
 - a** $30 \div 3 = \square$
 - b** $96 \div 3 = \square$
- Say: **Discuss with your partner how you will find the answer. Then write your method and the answer in your classwork book.**
Answers:
 - a** $30 \div 3 = (3 \text{ tens} \div 3 = 1 \text{ ten} = 10)$
 - b** $96 \div 3 = ((90 + 6) \div 3 = (90 \div 3) + (6 \div 3) = 30 + 2 = 32)$
- Discuss the answers with the learners.

3 CORRECT HOMEWORK ACTIVITY (5 MINUTES)

The answers to the Homework Activity for Lesson 24 are provided in Lesson 24.

Use this time to purposefully address gaps in learners' knowledge and to identify and address learner errors.

4 LESSON CONTENT - CONCEPT DEVELOPMENT (35 MINUTES)

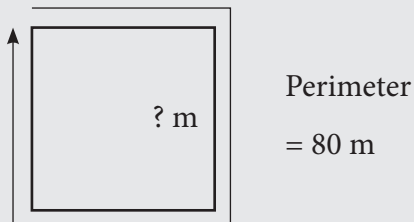
- In this lesson learners use division to find the length or breadth in a rectangle, and the length of sides in a square.

Say: **Today we are learning how to use division to find the length of sides in a square and the length or breadth of sides in a rectangle.**

Activity 1: Whole class activity and learners work in pairs

Say: **Complete Activity 1 in your LAB.**

- Learners work in their classwork books.
- Say: **The *perimeter* of Jabu's vegetable garden is 80 metres. Jabu's vegetable garden is *square*. Help Jabu find the length of the sides of his vegetable garden.**
- Give learners time to discuss and strategise.
Ask: **Who will come to the board to draw a sketch of what we know and what we need to find out?**



- Say: **We know two things:**
 - The vegetable garden is square
 - The perimeter is 80 metres.**We want to know the length of one side of the square.**
- Say: **Write down the formula for the perimeter of a square in your classwork books.**
- Ask: **Who will come to the board to write down how we find the perimeter of a square?** (Perimeter of a square = $4 \times$ length of a side)
- Ask: **How can we write a number sentence for Jabu's vegetable garden?**
We can write this as $4 \times \square = 80$

- Ask: **Who will come to the board to rewrite this multiplication in a division number sentence?**
($80 \div 4 = \square$)
- Ask: **Why do we divide the perimeter by 4 to find the length of one side of a square?**
(We know that the perimeter is the length around a shape, and that a square has 4 sides of equal length, and we have learned that we can undo “ $\times 4$ ” by “ $\div 4$ ”.)
- Ask: **What is the length of one side of the square?** ($80 \div 4 = 8$ tens $\div 4 = 20$ metres)
- Say: **Write a multiplication number sentence that you can use to check your answer.**
($4 \times 20 = 80$)

Say: **Complete Activity 1 in your LAB.**

- Walk around the classroom to support learners as needed.
- Correct Activity 1 with learners so that they can receive immediate feedback.
- Answers in brackets.

1 Find the length of the sides of a square with a perimeter of 32 m.

Write the number sentence: ($32 \div 4 = \square$)

Answer: The length of each side of the square is ($32 \div 4 = 8$ m)

2 Find the length of the sides of a square with a perimeter of 48 m.

Write the division number sentence: ($48 \div 4 = \square$)

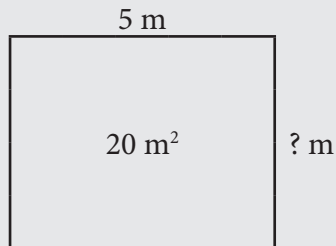
Answer: The length of each side of the square

$$= (48 \div 4 = (40 + 8) \div 4 = (40 \div 4) + (8 \div 4) = 10 + 2 = 12 \text{ m})$$

Activity 2: Whole class activity and learners work in pairs

- Learners work in their classwork books
- Say: **The *area* of the room is 20 m^2 .
The room is a *rectangle* and the *length of the rectangle* is 5 m.
What is the *breadth* of the room?**

- Ask: **Who will come to the board to draw a sketch of what we know and what we need to find out?**



Give learners time to discuss and strategise.

- Say: **We know three things:**
 - **The room is a rectangle**
 - **The area is 20 m²**
 - **The length is 5 m.****We want to know the breadth.**
- Ask: **Who will tell us how we find the area of a rectangle?**
(Area of a rectangle = length × breadth)
Write the answer that learners gave on the board.
- Ask: **Who will come to the board to write a multiplication number sentence?**
($20 = 5 \times \square$)
- Ask: **Who will come to the board to rewrite this multiplication in a division number sentence?**
($20 \div 5 = \square$)
- Ask: **What is the breadth of the rectangle?** ($20 \div 5 = 4$ m)
- Say: **Write a multiplication number sentence that you can use to check your answer.**
($5 \times 4 = 20$)

Say: **Complete Activity 2 in your LAB.**

- Walk around the classroom to support learners as needed.
- Correct Activity 2 with learners so that they can receive immediate feedback.
- Answers in brackets.

- 1 Find the breadth of a rectangle with an area of 30 m^2 and a length of 10 m.
Write the division number sentence: $(30 \div 10 = \square)$
Answer: The breadth of the rectangle is: $(30 \div 10 = 3 \text{ m})$
- 2 Find the breadth of a rectangle with an area of 42 cm^2 and a length of 7 cm.
Write the division number sentence: $(42 \div 7 = \square)$
Answer: The breadth of the rectangle is: $(42 \div 7 = 6 \text{ cm})$
- 3 Find the length of a rectangle with an area of 60 cm^2 and a breadth of 6 cm.
Write the division number sentence: $(60 \div 6 = \square)$
Answer: The length of the rectangle is: $(60 \div 6 = 10 \text{ cm})$
- 4 Find the length of a rectangle with an area of 45 m^2 and a breadth of 5 m.
Write the division number sentence: $(45 \div 5 = \square)$
Answer: The length of the rectangle is: $(45 \div 5 = 9 \text{ m})$

Activity 3:

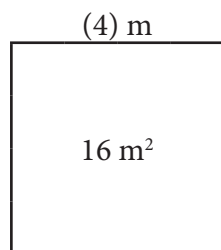
Say: Complete Activity 3 in your LAB.

- Walk around the classroom to support learners as needed.
- Correct Activity 3 with learners so that they can receive immediate feedback.
- Answers are given in brackets on the diagrams.

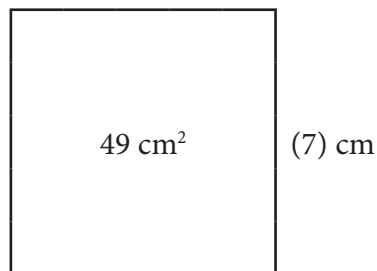
Fill in the missing measurements:

Note: **a** and **b** are squares.

a



b



c

9 m
27 m²
(3) m

d

2 cm
12 cm²
(6) cm

5 HOMEWORK ACTIVITY (5 MINUTES)

- Read the questions in the LAB with learners.
- Make sure all the learners understand what to do.
- Answers are given in brackets.

1 Find the length of the sides of a square with a perimeter of 24 m.

Write the division number sentence: $(24 \div 4 = \square)$

Answer: The length of each side of the square is: $(24 \div 4 = 6 \text{ m})$

2 Find the breadth of a rectangle with an area of 72 cm^2 and a length of 9 cm.

Write the division number sentence: $(72 \div 9 = \square)$

Answer: The length of each side of the square is: $(72 \div 9 = 8 \text{ cm})$

6 REFLECTION AND SUMMARY OF LESSON (5 MINUTES)

Call the whole class to attention and summarise the key concepts of the lesson.

Say: Today we have learned how to use division to find the length of sides in a square and the length or breadth in a rectangle.

Lesson 26: Long division

Teacher's notes

This lesson is one of the fully planned lessons to be used to cover the Term 3 curriculum.

CAPS topics: 1.1: Whole numbers: Multiplication and Division

Lesson Objective: Learners will be able to do long division calculations where there is no remainder.

Lesson Vocabulary: long division

Resources: None needed

Date:

Week

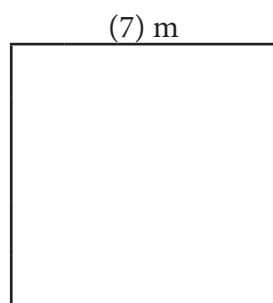
Day

1 MENTAL MATHS (5 MINUTES)

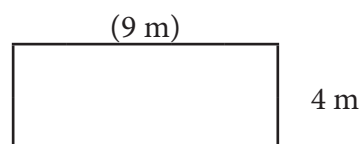
		Answer			Answer
1	$24 \div 4 =$	6	6	$8 \div 4 =$	2
2	$16 \div 4 =$	4	7	$0 \div 4 =$	0
3	$32 \div 4 =$	8	8	$36 \div 4 =$	9
4	$12 \div 4 =$	3	9	$4 \div 4 =$	1
5	$40 \div 4 =$	10	10	$28 \div 4 =$	7

2 LINK TO PREVIOUS LESSON (5 MINUTES)

- Refer learners to the activity in the LAB.
- Say: **Fill in the missing measurements.**



This is a square.
The perimeter = 28 m



This is a rectangle.
The area = 36 m^2 .

3 CORRECT HOMEWORK ACTIVITY (5 MINUTES)

The answers to the Homework Activity for Lesson 25 are provided in Lesson 25. Use this time to purposefully address gaps in learners' knowledge and to identify and address learner errors.

4 LESSON CONTENT - CONCEPT DEVELOPMENT (35 MINUTES)

- In this lesson learners start to do long division using the column method. The answers do not involve remainders.
- The procedure involves a lot of steps. You will need to provide many opportunities for learners to revise and practice the process of long division.

Say: **Today we are learning to do long division.**

Activity 1: Whole class activity

- Tell the learners to turn to their LAB.
- Write the number sentence on the board: $72 \div 3 = \square$
Say: Use **simplified pictures to work out the answer to $72 \div 3 = \square$**

What you say and write on the board	What you do										
<p>Step 1</p> <ul style="list-style-type: none"> - Say: Draw a table like this in your LAB. - Write on the board: $72 = 7\text{ T} + 3\text{ O}$ - Say: Draw 7 lines in the T column and 2 circles in the O column 	<table border="1"> <thead> <tr> <th>T</th> <th>O</th> </tr> </thead> <tbody> <tr> <td> </td> <td>o o</td> </tr> <tr> <td></td> <td></td> </tr> </tbody> </table>	T	O		o o						
T	O										
	o o										
<p>Step 2</p> <ul style="list-style-type: none"> - Say: We start working with the 7 in the Ten's place - Say: We need to divide 7T by 3. - Write on the board: $70 \div 3 = 7\text{ tens} \div 3$ $= 2\text{ tens remainder } 1\text{ ten}$ - Draw circles around the 2 tens so the learners can see that there is 1 T left over. 	<table border="1"> <thead> <tr> <th>T</th> <th>O</th> </tr> </thead> <tbody> <tr> <td>⊙⊙⊙⊙ </td> <td>o o</td> </tr> <tr> <td></td> <td></td> </tr> </tbody> </table>	T	O	⊙⊙⊙⊙	o o						
T	O										
⊙⊙⊙⊙	o o										
<p>Step 3</p> <ul style="list-style-type: none"> - Say: Change the 1 T left over for 10 ones and draw 10 circles in One's column - Say: We have 10 ones + 2 ones = 12 ones - Say: $12\text{ ones} \div 3 = 4\text{ ones}$ - Say: This means that $72 \div 3 = 24$. 	<table border="1"> <thead> <tr> <th>T</th> <th>O</th> </tr> </thead> <tbody> <tr> <td>⊙⊙⊙⊙≠</td> <td>o o</td> </tr> <tr> <td></td> <td>o o o o o</td> </tr> <tr> <td></td> <td>o o o o o</td> </tr> <tr> <td>2</td> <td>4</td> </tr> </tbody> </table>	T	O	⊙⊙⊙⊙≠	o o		o o o o o		o o o o o	2	4
T	O										
⊙⊙⊙⊙≠	o o										
	o o o o o										
	o o o o o										
2	4										

- Say: **Now let's use long division to find the answer to $72 \div 3 = \square$**
Note: Complete this long division step by step with learners on the board.

Step 1

	T	O
Horizontal line		
	7	2
Vertical line	3	

Write 72 under the thick horizontal line with the 7 in the T column and the 2 in the O column.

Write 3 to the left of the thick vertical bar.

Step 2

	T	O
	2	
	7	2
	3	

As you did before, start off by dividing 70 by 3.

$70 \div 3 = 7 \text{ tens} \div 3 = 2 \text{ T remainder } 1 \text{ T.}$

So, you write **2** on top of the horizontal line in the Ten's place.

Step 3

	T	O
	2	
	7	2
	3	
	-	6
		1

$3 \times 2 \text{ tens} = 6 \text{ tens.}$

Write **6 tens** under 7 tens.

$(7 - 6) \text{ tens} = 1 \text{ ten.}$

Write the 1 ten under the 6 tens.

Step 4

	T	O
	2	
	7	2
	3	
	-	6
		1 2

Bring down 2 ones.

You have 1 ten = 10 ones plus 2 ones.

So, you have 12 ones.

Step 5

	T	O
	2	4
3	7	2
-	6	
	1	2

Divide 12 ones by 3.

12 ones \div 3 = **4 ones**, so you write 4 above the horizontal line in the One's place.

Step 6

	T	O
	2	4
3	7	2
-	6	
	1	2
-	1	2
		0

3×4 ones = **12 ones**.

Write **12** ones under the 12 ones already there.

Subtract 12 from 12: $12 - 12 = 0$.

Write **0 ones** in the One's column.

That means **there is no remainder**.

- Leave this table on the board for learners' reference.

Activity 2: Whole class activity

Say: **Complete Activity 2 in your LAB.**

- Work through 1 with the learners and let them try 2 on their own.
- For 1, do the work step by step with learners. You must confirm if it is clear for learners in each step.
- Walk around the classroom to support learners as needed.
- Correct and discuss answers as you go along so that learners can receive immediate feedback.
- Answers are given.

1 Solve $78 \div 6 = \square$ using long division.

Which times table must you use for this long division example? (6 times table)

Answer: $78 \div 6 = (13)$

	T	O
	1	3
6	7	8
-	6	
	1	8
-	1	8
		0

2 Solve $96 \div 4 = \square$ using long division.

Which times table must you use for this long division example? (4 times table)

Answer: $96 \div 4 = (24)$

	T	O
	2	4
4	9	6
-	8	
	1	6
-	1	6
		0

Activity 3: Learners work on their own

Say: **Complete Activity 3 in your LAB.**

- Walk around the classroom to support learners as needed.
- If learners struggle to find the quotient, tell them to use their 10×10 multiplication table.
- Correct and discuss answers as you go along so that learners can receive immediate feedback.
- Answers in brackets.

1 Solve $85 \div 5 = \square$ using long division.

Which times table must you use for this long division example? (5 times table)

Answer: $85 \div 5 = (17)$

	T	O
	1	7
5	8	5
-	5	
	3	5
-	3	5
		0

2 Solve $90 \div 2 = \square$ using long division.

Which times table must you use for this long division example? (2 times table)

Answer: $90 \div 2 = (45)$

	T	O
	4	5
2	9	0
-	8	
	1	0
-	1	0
		0

Make sure that when the remainder is 0, you write the 0 in the One's column.

5 HOMEWORK ACTIVITY (5 MINUTES)

- Read the questions in the LAB with learners.
- Make sure all the learners understand what to do.
- Answers are given.

Solve $91 \div 7 = \square$ using long division.

Which times table must you use for this long division example? (7 times table)

	T	O
	1	3
7	9	1
-	7	
	2	1
-	2	1
		0

Answer: $91 \div 7 = (13)$

Check your answer by using multiplication.

	T	O
	2	
	1	3
×		7
	9	1

$(7 \times 13 = 91)$

6 REFLECTION AND SUMMARY OF LESSON (5 MINUTES)

Call the whole class to attention and summarise the key concepts of the lesson.

Say: **Today we have learned to do long division.**

When we do long division, we use multiplication and subtraction.

Lesson 27: Long division with a remainder

Teacher's notes

This lesson is one of the fully planned lessons to be used to cover the Term 3 curriculum.

CAPS topics: 1.1: Whole numbers: Multiplication and Division

Lesson Objective: Learners will be able to solve long division calculations with a remainder.

Lesson Vocabulary: long division, remainder

Teacher and Learner Resources: None

Date:

Week

Day

1 MENTAL MATHS (5 MINUTES)

		Answer			Answer
1	$18 \div 6 =$	3	6	$24 \div 6 =$	4
2	$48 \div 6 =$	8	7	$36 \div 6 =$	6
3	$60 \div 6 =$	10	8	$6 \div 6 =$	1
4	$12 \div 6 =$	2	9	$54 \div 6 =$	9
5	$30 \div 6 =$	5	10	$42 \div 6 =$	7

2 LINK TO PREVIOUS LESSON (5 MINUTES)

- Say: **Turn to your LAB and use long division to solve $60 \div 4 = \square$.**
- Ask: **Which times table will we use to do this long division?** (4 times table)

	T	O
	1	5
4	6	0
-	4	
	2	0
-	2	0
		0

Answer: $60 \div 4 = (15)$

3 CORRECT HOMEWORK ACTIVITY (5 MINUTES)

The answers to the Homework Activity for Lesson 26 are provided in Lesson 26.

Use this time to purposefully address gaps in learners' knowledge and to identify and address learner errors.

	T	O
	1	2
5	6	2
-	5	
	1	2

Divide 12 by 5.

We get **2**.

Write the **2** on top of One's place.

	T	O
	1	2
5	6	2
-	5	
	1	2
-	1	0
		2

Multiply 5 by 2 and get **10**.

Write the **10** below the 12.

Subtract 10 from 12 and get 2.

2 cannot be divided by 5.

The 2 is left over. It is the **remainder**.

- Say: **The answer is $62 \div 5 = 12$ remainder 2.**
- Say: **Let's check our answer by multiplying.**

$$(12 \times 5 = 60)$$

$$(60 + 2 = 62)$$

	T	O
	1	
	1	2
×		5
	6	0

- Leave this long division on the board for learners' reference.

Activity 2: Whole class activity and learners work in pairs

Say: **Complete Activity 2 in your LAB.**

- Work through each step in the activity with the learners.
- Correct and discuss answers as you go along so that learners can receive immediate feedback.
- Answers are given.

Solve the following using long division.

1 $97 \div 8 = \square$

	T	O
	1	2
8	9	7
-	8	
	1	7
-	1	6
		1

$97 \div 8$
= (12 remainder 1)

Check the answer

$(8 \times 12 = 96.$

$96 + 1 = 97)$

2 $91 \div 4 = \square$

	T	O
	2	2
4	9	1
-	8	
	1	1
-		8
		3

$91 \div 4$
= (22 remainder 3)

Check the answer

$(4 \times 22 = 88.$

$88 + 3 = 91)$

3 $80 \div 6 = \square$

	T	O
	1	3
6	8	0
-	6	
	12	10
-	1	8
		2

$80 \div 6$
= (13 remainder 2)

Check the answer

$(6 \times 13 = 78.$

$78 + 2 = 80)$

Activity 3: Learners work in pairs

Say: **Complete Activity 3 in your LAB.**

- Work through each step in the activity with the learners.
- Correct and discuss answers as you go along so that learners can receive immediate feedback.
- Answers are given.

1 Tia calculated $78 \div 5$ like this:

	T	O
	1	4
5	7	8
-	5	
	2	8
-	2	0
		8

$78 \div 5 = 14$ remainder 8

a Explain to Tia how you know that her calculation is wrong.

(When the remainder is bigger than the number you are dividing by, you know you have made a mistake/ the remainder 8 is bigger than 5.)

b Redo the calculation to show Tia the correct answer.

	T	O
	1	5
5	7	8
-	5	
	2	8
-	2	5
		3

$$78 \div 5 = 15 \text{ remainder } 3$$

2 You have 85 cm piece of string. How many 6 cm pieces can you make from this piece?

	T	O
	1	4
6	8	5
-	6	
	2	5
-	2	4
		1

Answer: I can make (14) pieces of string and I will have (1) cm left over.

5 HOMEWORK ACTIVITY (5 MINUTES)

- Read the questions in the LAB with learners.
- Make sure all the learners understand what to do.
- Answers are given.

Solve $83 \div 6 = \square$ using long division.

	T	O
	1	3
6	8	3
-	6	
	12	13
-	1	8
		5

Answer: $83 \div 6 = (13 \text{ remainder } 5)$

Check your answer: $(13 \times 6 = 78.$

$78 + 5 = 83)$

6 REFLECTION AND SUMMARY OF LESSON (5 MINUTES)

Call the whole class to attention and summarise the key concepts of the lesson.

Say: **Today we have learned how to do long division where answers have a remainder.**

Lesson 28: Long division with and without a remainder

Teacher's notes

This lesson is one of the fully planned lessons to be used to cover the Term 3 curriculum.

CAPS topics: 1.1: Whole numbers: Multiplication and Division

Lesson Objective: Learners will be able to divide a 3-digit number by a 1-digit number.

Lesson Vocabulary: long division, remainder

Teacher and Learner Resources: None

Date:

Week

Day

1 MENTAL MATHS (5 MINUTES)

		Answer			Answer
1	$0 \div 6 =$	0	6	$30 \div 6 =$	5
2	$24 \div 6 =$	4	7	$18 \div 6 =$	3
3	$42 \div 6 =$	7	8	$48 \div 6 =$	8
4	$54 \div 6 =$	9	9	$6 \div 6 =$	1
5	$12 \div 6 =$	2	10	$36 \div 6 =$	6

2 LINK TO PREVIOUS LESSON (5 MINUTES)

- Ask the learners to turn to the activity in the LAB.
- Say: **Solve $89 \div 3 = \square$ using long division, and then check your answer.**

	T	O
	2	9
	3	8 9
	-	6
	2	9
	-	2 7
		2

Answer: $89 \div 3 = (29 \text{ remainder } 2)$

Check your answer: $(3 \times 29 = 87)$
 $87 + 2 = 89)$

3 CORRECT HOMEWORK (5 MINUTES)

The answers to the Homework Activity for Lesson 27 are provided in Lesson 27. Use this time to purposefully address gaps in learners' knowledge and to identify and address learner errors.

4 LESSON CONTENT - CONCEPT DEVELOPMENT (35 MINUTES)

- In this lesson learners continue to practice long division.
- The number range is extended from division of a 2-digit number by a 1-digit number to the division of a 3-digit number by a 1-digit number.
- Learners also practise what to do with the remainder in a contextual problem.

Say: **Today we are learning to divide bigger numbers.**

Activity 1: Whole class activity

- Before the lesson have this word problem written on the board.
- Tell the learners to turn to number **1** in Activity 1 in the LAB

<p>There are 98 children in Grade 4. 3 children can sit at one desk. How many desks are needed for every child to have a seat?</p>	}	Remember to write the word problem on three separate lines.
---	---	---
- Ask: **Who will come to the board and underline the numbers and the question?**

There are 98 children.
3 children can sit at one desk.
How many desks are needed for every child to have a seat?
- Ask: **Who will come to the board and write a number sentence to find the answer to this problem?**
 $(98 \div 3 = \square)$
- Ask: **Which times table will we use to do this long division?** (3 times table)
- Say: **Do the division in your LAB, and then check your answer.**

	T	O
	3	2
3	9	8
-	9	
	0	8
-		6
		2

$9 - 9 = 0$. This means there is no remainder in Ten's place.

When you get 0 as an answer in the Ten's place, you don't have to write it down.

We don't stop there. We still have to bring down 8 and continue division by 3.

$98 \div 3 = (32 \text{ remainder } 2)$, this means 32 desks are needed, with 2 learners left over.)

Check your answer: $(3 \times 32 = 96, 96 + 2 = 98)$

- Ask: **The remainder is 2. What should we do about the remainder?**
(These 2 learners need a desk to sit in. We need to add 1 desk for these 2 learners so that every child has a seat.)
- Ask: **How many desks do we need?** (33 desks. The answer to the problem is **33 desks**.)
- Leave this table on the board for learners' reference.

Say: **Complete Activity 1 in your LAB.**

- Correct and discuss the answers as you go along so that learners can receive immediate feedback.
- Answers are given.

2 Solve each division calculation. Use long division.

a $93 \div 3 = \square$

	T	O
	3	1
3	9	3
-	9	
	0	3
-		3
		0

$93 \div 3 = (31)$

Check the answer
 $(3 \times 31 = 93)$

b $49 \div 2 = \square$

	T	O
	2	4
2	4	9
-	4	
	0	9
-		8
		1

$49 \div 2 = (24 \text{ remainder } 1)$

Check the answer
 $(2 \times 24 = 48, 48 + 1 = 49)$

c $60 \div 6 = \square$

	T	O
	1	0
6	6	0
-	6	
	0	0
-		0
		0

①: Bring down 0

②: $6 \times 0 = 0$

$60 \div 6 = (10)$

Check the answer

$(6 \times 10 = 60)$

Activity 2: Whole class activity

- Tell the learners to turn to number **1** in the LAB.
- Write this word problem on the board.
I have 52 m of wire.
I need to cut pieces of wire that are 5 m long from it.
How many pieces of wire will I get?
- Read through the word problem at least three times with the learners.
- Ask: **Who will come to the board and underline the numbers and the question?**
I have 52 m of wire.
I need to cut pieces of wire that are 5 m long from it.
How many pieces of wire will I get?
- Say: **Write down the number sentence in your LAB.** ($52 \div 5 = \square$)
 Ask one of the learners to come to the board and write a number sentence to find the answer to this problem.
- Ask: **Which times table will we use to do this long division?** (5 times table)

	T	O
	1	0
5	5	2
-	5	
	0	2
		0
		2

We cannot divide 2 by 5 so we write 0 on top of One's place.

$5 \times 0 = 0$

$2 - 0 = 2$

$52 \div 5 = (10 \text{ remainder } 2, \text{ this means I can make 10 pieces of wire of 5 m with 2 m left over.})$

Check your answer: $(5 \times 10 = 50, 50 + 2 = 52)$

- Ask: **What is the answer?** (I can get **10 pieces of wire.**)
- Leave this example on the board for learners' reference.

Say: **Complete Activity 2 in your LAB.**

- Correct and discuss the answers as you go along so that learners can receive immediate feedback.
- Answers are given.

2 Solve. Use long division.

a $83 \div 4 = \square$

	T	O
	2	0
4	8	3
-	8	
	0	3
-		0
		3

$83 \div 4$
= (20 remainder 3)

Check the answer

$(4 \times 20 = 80,$
 $80 + 3 = 83)$

b $63 \div 6 = \square$

	T	O
	1	0
6	6	3
-	6	
	0	3
-		0
		3

$63 \div 6$
= (10 remainder 3)

Check the answer

$(6 \times 10 = 60,$
 $60 + 3 = 63)$

c $91 \div 3 = \square$

	T	O
	3	0
3	9	1
-	9	
	0	1
-		0
		1

$91 \div 3$
= (30 remainder 1)

Check the answer

$(3 \times 30 = 90,$
 $90 + 1 = 91)$

Activity 3: Whole class activity

- Learners work in LAB.
- Write this word problem on the board.
There are 852 bricks.
They have to be loaded on 3 trucks so that each truck has the same number of bricks.
How many bricks will go on each truck?
- Read through the word problem at least three times with the learners.
- Ask: **Who will come to the board and underline the numbers and the question?**
 There are 852 bricks.
 They have to be loaded on 3 trucks so that each truck has the same number of bricks
How many bricks will go on each truck?
- Say: **Write down the number sentence in your LAB.** ($852 \div 3 = \square$)
 Ask one of the learners to come to the board and write a number sentence to find the answer to this problem
- Ask: **Which times table will we use to do this long division?** (3 times table)
 Say: **Let's work through this together:**

	H	T	O
3	8	5	2

$$852 = 8H + 5T + 2O$$

Write 852 under the thick horizontal line, making sure that each digit is written in the correct column.

Write 3 on the left side of the vertical line.

Start with the digit in the Hundred's place, then follow the same steps you use when you divide 2-digit numbers.

	H	T	O
	2		
3	8	5	2

Look at the 8 in the hundred's place.

Divide 8 into groups of 3.

We get 2 groups of 3. One group gets 2.



Write 2 on top of Hundred's place.

	H	T	O
	2		
3	8	5	2
-	6		
	2		

Multiply 3 by 2 H and get 6 H.
 Write the **6** below 8 in Hundred's place.
 Subtract 6 H from 8 H.
 The answer is 2 H.

	H	T	O
	2	8	
3	8	5	2
-	6		
	2	5	

2 H = 20 T
 Bring down the 5 Tens.
 We now have 25 T.

Divide 25 into 3 groups.
 Each group gets **8**.



Write **8** on top of Ten's place.

	H	T	O
	2	8	
3	8	5	2
-	6		
	2	5	
-	2	4	
		1	

Multiply 3 by 8 T and get **24 T**.
 Write the **24** below 25.
 Subtract 24 T from 25 T.
 We get **1 T** and write **1** in Ten's place.

	H	T	O
	2	8	4
3	8	5	2
-	6		
	2	5	
-	2	4	
		1	2

1 T = 10 O
 Bring down the 2 O.
 We now have 12 O.

Divide 12 O by 3
 We get **4**
 Write **4** on top of One's place.

	H	T	O
	2	8	4
3	8	5	2
-	6		
	2	5	
-	2	4	
		1	2
-		1	2
			0

Multiply 3 by 4 O and get 12 O.
 Write 12 under 12.
 Subtract 12 O from 12 O.
 We get 0.
 (This means that there is no remainder).

$$852 \div 3 = (284)$$

There are 284 bricks on each truck.

5 HOMEWORK ACTIVITY (5 MINUTES)

- Read the questions in the LAB with learners.
- Make sure all the learners understand what to do.
- Answers are given.

Solve $828 \div 6 = \square$ using long division.

	H	T	O
	1	3	8
6	8	2	8
-	6		
	12	12	
-	1	8	
		4	8
-		4	8
			0

Answer: $828 \div 6 = (138)$

6 REFLECTION AND SUMMARY OF LESSON (5 MINUTES)

Call the whole class to attention and summarise the key concepts of the lesson.

Say: **Today we have learned to divide -3-digit numbers by 1-digit numbers.**

We have also learned that we must look carefully at the remainder when answering a word problem

Lesson 29: Consolidation

Teacher's notes

This lesson allows for consolidation of the lesson content for this unit on division.

CAPS topics: 1.1: Whole numbers: Multiplication and Division

Lesson Objective: Learners will consolidate and revise the operation of division.

Lesson Vocabulary: area, brackets, breadth, divide, length, perimeter, remainder

Resources: Textbook/s (if available)

Date:

Week

Day

1 NOTES FOR THE TEACHER RELATING TO THIS WEEK'S WORK

The main topics in this unit were:

- grouping and sharing
- division without and with remainders
- division number sentences
- the relationships between the divisor, dividend, remainder and quotient (without learners using the terminology)
- the use of division in context-free and contextual situations
- using division to find the length or breadth of a rectangle and length of side of a square
- long division.

2 POSSIBLE MISCONCEPTIONS LINKED TO THE OPERATION OF DIVISION

- Learners make errors as a result of poor or incomplete knowledge of multiplication facts up to 10×10 .
- As the procedure of long division is long and has many steps, learners often 'lose their way', leading to errors.
- The learner sees multiplication and division as separate operations. The learner does not see that multiplication and division are linked because they are inverse operations.
- With word problems, learners give the remainder even when the answer makes no sense. In other words, learners do not discard or incorporate the remainder according to the context of the word problem.

3 CORRECT HOMEWORK ACTIVITY (5 MINUTES)

The answers to the Homework Activity for Lesson 28 are provided in Lesson 28.

Use this time to purposefully address gaps in learners' knowledge and to identify and address learner errors.

4 CLASSWORK

- Say: **Today we are going over what we learned in this unit. We will practise division without and with remainders.**
- You could use this time for learners to complete classwork or homework activities, as necessary. You could use the Additional Activities from textbooks that you have or use the Consolidation Activity given.

Additional activities for consolidation

Refer to the following table. Select additional activities from the textbook/s you have.

Use the answers given in the Teacher's Guide to mark the work.

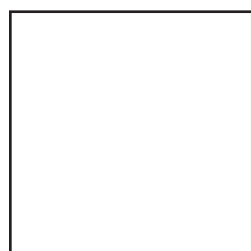
	Fabulous	Oxford Headstart	Oxford Successful	Platinum	Premier	Sasol Inzalo	Solutions for All	Study & Master	Viva
LB	54-56	50-52	41-43	30-32	18-26	69-70	73-74	43-52	24-25
	230-231	273-279	233-235	40-48	99-113	200-208	160-167	271-274	196-198
				96-99 178-181	199-200	313-317	281-287		
TG	32-37	69-76	65-67	24-26	10-13	69-73	23-32	77-83	32-34
	189-191	319-325	233-235	140-142	103-105	366-371	117-124 229-238	346-351	98-99

OR, learners could complete the Consolidation Activity in their LAB.

Consolidation Activity

- 1 Find the length of one side of this square.

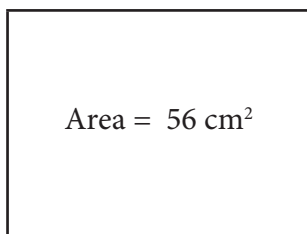
The perimeter = 32 m.



$$\text{Length} = (32 \div 4 = 8 \text{ m})$$

- 2 Find the breadth of this rectangle.

8 cm



$$\text{Breadth} = (56 \div 8 = 7 \text{ cm})$$

- 3 David sells bags with 10 oranges each.
How many bags can he fill if he has 45 oranges?

$$(45 \div 10 = 4 \text{ remainder } 5.)$$

David can fill 4 bags of oranges)

- 4 A taxi can carry 7 passengers.
How many taxis will be needed for 789 passengers?

- a Write the number sentence.

$$789 \div 7 = \square$$

- b Use long division to find out how many taxis will be needed.

	H	T	O
	1	1	2
7	7	8	9
-	7		
	0	8	
-		7	
		1	9
-		1	4
			5

Answer: ($789 \div 7 = 112$ remainder 5,
that means 112 taxis and 5 passengers remaining.)

Number of taxis needed: (113 taxis)

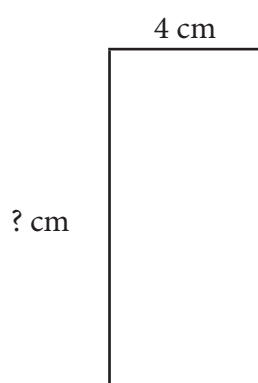
- c Explain your answer.

(An extra taxi is needed for the remaining 5 people.)

- 5 Match the division calculation with the multiplication check.
Remember: the brackets show what we should do first.

Division calculation	Multiplication check
$96 \div 8 = 12$	$(4 \times 19) + 3$
$79 \div 4 = 19$ remainder 3	$8 \times 12 = 96$
$85 \div 3 = 28$ remainder 1	$(1 \times 28) + 3$
	$(3 \times 28) + 1$
	$(19 \times 3) + 4$

- 6 Optional
The perimeter of this rectangle = 26 cm.
Find the length of this rectangle.



Use the formula:

Perimeter of a rectangle = $2 \times (\text{length} + \text{breadth})$

$$(26 \div 2 = 13 \text{ cm,})$$

$$13 = \text{length} + \text{breadth}$$

$$13 = \square + 4$$

$$13 - 4 = 9 \text{ cm)}$$

Answer: The length of the rectangle is (9 cm)

5 REFLECTION AND SUMMARY OF LESSON

Call the whole class to attention and summarise the key concepts of the lesson.

Say: **Today we have revised how to:**

- Deal with remainders
- Use division to find the length or breadth of a rectangle, and the length of the side of a square.
- Use multiplication to check division
- Use long division.

Unit 4: Decimal fractions

INTRODUCTION

This unit focuses on decimal fractions. Decimal fractions are another way of writing fractions, or parts of a whole. As always, it is important that you work from the known to the unknown. You can do this by drawing on learners' knowledge of place value, common fractions, and number lines. The unit is designed to extend place values to tenths and hundredths, and to help learners to connect common fraction representations with decimal fraction representations.

As our metric measurement and money systems are based on the decimal system, decimals are relevant in our everyday lives.

In this unit, we focus on the four framework dimensions in the following ways:

Framework dimension	How the framework dimension is developed in this unit
Conceptual understanding	Use number lines and common fraction representations to develop learners' concept of decimal fractions.
Procedural fluency	Learners practice using the column method so that they can add and subtract decimal fractions accurately and efficiently.
Strategic competence	Learners are able to say whether $\frac{3}{10}$ or 0,6 is bigger and say how they found their answer. Strategies used could be comparing numbers by using number lines, working out how many 0,1s in a number, and so on.
Reasoning	Learners explain their ideas and strategies regarding how they answered the question: How many 0,1s make 2,4?

In this unit, we build a **learning centred classroom** by paying attention to:

		Examples
Concept development	✓	Done in every lesson
Speaking mathematics	✓	Learners discuss with their partner how to use the column method to add and subtract decimal fractions
Justifying answers	✓	Learners can justify why they would rather have 0,6 of a cake than $\frac{3}{10}$ of a cake
Connecting representations	✓	Learners connect common fraction representations with decimal fraction representations
Applying maths in context	✓	Decimal fractions are commonly found in measurement and money contexts

Mathematical vocabulary for this unit

Be sure to teach and use the following vocabulary at the appropriate place in the unit. It is a good idea to make flashcards of words and their meanings and to display these in the classroom at appropriate times.

Refer to the bilingual dictionary where necessary.

Term	Explanation / diagram
capacity	The amount a container can hold when it is full
centimetre	A unit of length for $\frac{1}{100}$ of 1 m
column method	Way of calculating in which numbers are arranged vertically
common fraction or fraction	Fraction (part of a whole) where the numerator indicates the number of equal parts being considered and the denominator indicates the number of equal parts the whole has been divided into
compare	To look for similarities and differences
decimal comma	Used to separate whole numbers from the fractions in a decimal number
decimal fraction	Fraction where the denominator (the bottom number) is a power of ten Examples of denominators: 10, 100, 1 000
decimal place	Position to the right of (or after) the decimal comma
denominator	The bottom number of a common fraction The denominator tells you how many equal parts the quantity of shape has been divided into
digit	There are ten digits. They are 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9. Examples: 0,9 is made up of 2 digits, namely, 0 and 9 20,5 is made up of 3 digits, namely, 2, 0 and 5
hundredth ($\frac{1}{100}$ or 0,01)	A fraction which is one part of one hundred equal parts
interval	The gap between things For example: a time interval or an interval in numbers
millimetre	A unit of length for $\frac{1}{10}$ of 1 cm and $\frac{1}{1000}$ of 1 m
number line	Line on which numbers can be placed according to their value The gaps on the number line are called intervals and must be drawn accurately
sum	The answer you get when you add Example: The sum of 5 and 8 is 13
tenth ($\frac{1}{10}$ or 0,1)	A fraction which is one part of ten equal parts
whole number	The numbers you use to count with: 0; 1; 2; 3; 4; 5; ... It has no fraction attached 5; 17 and 642 are whole numbers; 2,5 is not a whole number

Further practice for learners

This table references other sources (including textbooks) if you need additional activities.

Note: These references are for the **Grade 6** Learner and Teacher materials.

	Fabulous	Oxford Headstart	Oxford Successful	Platinum	Premier	Solutions for All	Study & Master	Viva
LB	135-145	156-169	131-143	96-103	83-92	133-150	171-197	104-115
TG	101-106	158-177	118-126	72-79	61-67	101-113	171-197	67-72

UNIT PLAN AND OVERVIEW FOR UNIT 4: Decimal fractions

LP	Lesson objective Learners will be able to:	Lesson Resources	Date completed
30	represent a common fraction with a denominator of ten as a decimal fraction	Teacher: three A4 posters of a 1-ℓ container: one with 1 ℓ shaded; the second with 0,1 ℓ shaded and the third with 0,3 ℓ shaded. Flashcards of the words: decimal fractions, decimal comma and whole numbers Learner: None	
31	Recognise that $\frac{1}{10}$ cm = 1 mm; find decimal fractions on a number line; and count forwards and backwards in decimal fractions	Teacher: A3 Poster: Enlarged rulers (one showing cm only, the other showing cm and mm); A3 Poster: Counting in tenths Learner: Ruler	
32	compare decimal fractions	Teacher: A3 Poster: 0 – 3 Number Line Learner: None	
33	compare common fractions and decimal fractions	Teacher and Learner: None	
34	add decimal fractions to one decimal place	Teacher: Place Value Cards (H, T, O, t, h, comma) Learner: None	
35	add decimal fractions to two decimal places	Teacher: A3 Poster: 1 m ruler with cm calibrations; Place Value cards (H, T, O, t, h, comma) Learner: None	
36	subtract decimal numbers to one decimal place	Teacher and Learner: None	
37	subtract decimal fractions up to two decimal places	Teacher and Learner: None	
38	revise the relationship between common fractions and decimal fractions; count forwards and backwards in decimal fractions; compare decimal fractions; and add and subtract decimal fractions	Teacher and Learner: Grade 6 Learners' Books and Teacher's Guides (if available)	

Assessment for learning

Use the template provided at the beginning of this guide to think deeply about at least one of the lessons in this unit.

Reflection

Think about and make a note of: *What went well? What did not go well? What did the learners find difficult or easy to understand or do? What will you do to support or extend learners? Did you complete all the work set for the unit? If not, how will you get back on track?*

What will you change next time? Why?

Lesson 30: Common fractions and decimal fractions

Teacher's notes

This lesson is one of the fully planned lessons to be used to cover the Term 3 curriculum.

CAPS topics: (Grade 6) 1.3 Decimal fractions

Lesson Objective: Learners will be able to represent a common fraction with a denominator of ten as a decimal fraction.

Lesson Vocabulary: capacity, common fraction, decimal fraction, decimal comma, denominator, digit, tenths, whole numbers.

Teacher Resources: Three A4 posters of a 1-ℓ container, one with 1 ℓ shaded in, the second with 0,1 ℓ shaded in and the third one with 0,3 ℓ shaded in.

Flashcards of the words 'decimal fractions', 'decimal comma' and 'whole numbers'.

Learner Resources: None

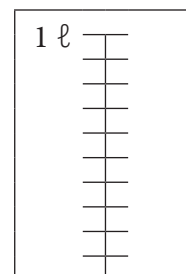
Date: _____ Week _____ Day _____

1 MENTAL MATHS (5 MINUTES)

		Answer			Answer
1	$3 + 9 =$	12	6	$18 + 0 =$	18
2	$8 + 7 =$	15	7	$1 + 9 =$	10
3	$7 + 4 =$	11	8	$9 + 5 =$	14
4	$9 + 6 =$	15	9	$10 + 4 =$	14
5	$8 + 9 =$	17	10	$8 + 8 =$	16

2 LINK TO PREVIOUS LESSON (5 MINUTES)

- Show the learners the 1 ℓ container marked in tenths (or put up the poster showing the container marked in tenths).
- Say: **Look at the scale on the 1 ℓ container. How many equal parts is the scale divided into?** (10)



- Ask: **What does one calibration or mark show or represent?** ($\frac{1}{10}$ ℓ)

3 CORRECT HOMEWORK ACTIVITY

This is the first lesson in this unit. There is no homework to correct.

4 LESSON CONTENT – CONCEPT DEVELOPMENT (40 MINUTES)

In this lesson, learners write common fractions with a denominator of ten as a decimal fraction and are introduced to the terminology of decimal fractions.

Use terminology carefully and deliberately.

Note that:

- Tens (written as a **capital T**) is a whole number
- tenths (written as a **small t**) is the decimal fraction which is equivalent to $\frac{1}{10}$.

Say: **Today we are learning to write fractions in another way.**

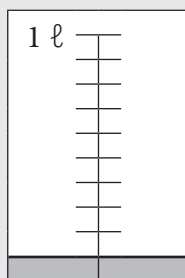
Activity 1: Whole class activity

1 Refer the learners to the measuring jug in their LAB.

Ask: **How many parts is the scale divided into?** (10)

Say: **Draw a line to show $\frac{1}{10}$ ℓ on the measuring jug in your LAB.**

Say: **We say this ‘one tenth of a litre’.**



Say: **We have another way of writing $\frac{1}{10}$ ℓ. We write $\frac{1}{10}$ as 0,1 and say ‘zero comma one’.**

Write $\frac{1}{10}$ ℓ = 0,1 ℓ on the board.

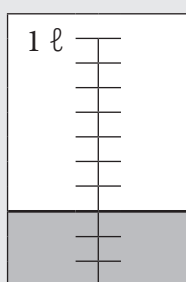
Say **‘one tenth of a litre is equal to zero comma one of a litre’** several time to the learners.

Let the learners write $\frac{1}{10}$ ℓ = 0,1 ℓ in their LAB.

Put up the poster of the container showing 0,1ℓ.

2 Say: **Draw a line to show $\frac{3}{10}$ ℓ on the measuring jug in your LAB.**

Say: **We say this as three tenths of a litre.**



Say: **If we write $\frac{1}{10} \ell = 0,1 \ell$, how do you think we can write $\frac{3}{10} \ell$?**

($\frac{3}{10} \ell = 0,3 \ell$, because there is three 0,1s in $\frac{3}{10}$. We write three 0,1s as 0,3.)

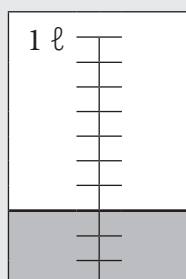
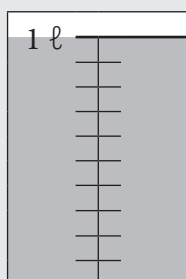
Say: **We write 0,3 ℓ and we say ‘zero comma three litres’.**

Say: **‘three tenths of a litre is equal to zero comma three of a litre’** several times to the learners.

Let learners write $\frac{3}{10} \ell = 0,3 \ell$ in their LAB.

Put up the poster of the container showing 0,3 ℓ .

3 Say: In your LAB write down how much water is in these two measuring jugs.



There is (1) litre and 0,(3) litres of water in the two measuring jugs.

So, we have (1,3 ℓ) water in the two measuring jugs.

Say: **We write this 1,3 ℓ and say ‘one comma three litres’.**

Say this several times to the learners.

Let learners write 1,3 ℓ in their LAB.

Put up the poster of the container showing 1 ℓ next to the poster showing 0,3 ℓ .

Say: We can show 1,3 in a *Place Value table*:

O	,	t ←
1	,	3
One's place		$\frac{1}{10}$'s place
o		••• ←

Learners must know the name of the place is the **tenth's place** and that we write it **t**

• represents $\frac{1}{10}$.

Say: We call the numbers 0,1; 0,3 and 1,3 *decimal fractions*.

The comma ‘,’ is called the *decimal comma*.

The digits on the left-hand side of decimal comma are called *whole numbers*.

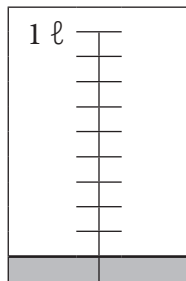
Put up the flashcards on the board and let the learners repeat these new terms ‘**decimal fractions**’, ‘**decimal comma**’, ‘**whole numbers**’ several times.

Activity 2: Learners work in pairs

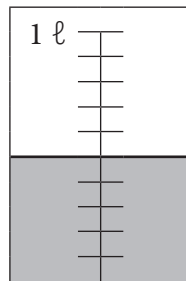
Say: Complete Activity 2 in your LAB.

- Walk around the classroom to support learners as needed.
- Correct Activity 2 with learners so that they can receive immediate feedback.
- Answers are given in brackets.

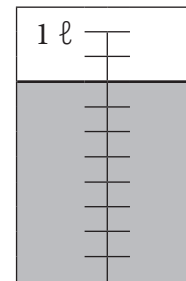
1 Write the capacity of each container as a common fraction and as a decimal fraction:



a $(\frac{1}{10})$ litres = (0,1) litres

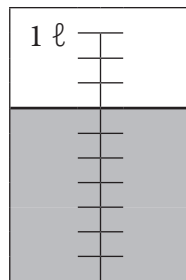
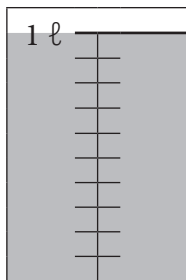


b $(\frac{5}{10})$ litres = (0,5) litres



c $(\frac{8}{10})$ litres = (0,8) litres

2 Shade in 1,7 litres on these two containers.



Activity 3: Learners work on their own

Say: **Complete Activity 3 in your LAB.**

- Walk around the classroom to support learners as needed.
- Correct Activity 3 with learners so that they can receive immediate feedback.
- Answers are given in brackets.

1 Write the decimal fraction for each common fraction:

a $\frac{2}{10} = 0,(2)$

b $\frac{9}{10} = (0,9)$

c $\frac{4}{10} = (0,4)$

2 Write the common fraction for each decimal fraction:

a $0,6 = \frac{(6)}{(10)}$

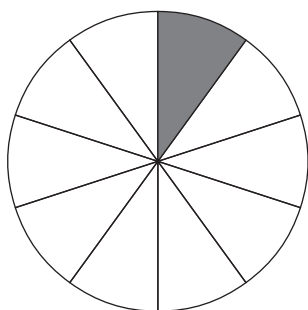
b $0,8 = \frac{(8)}{(10)}$

c $0,7 = \frac{(7)}{(10)}$

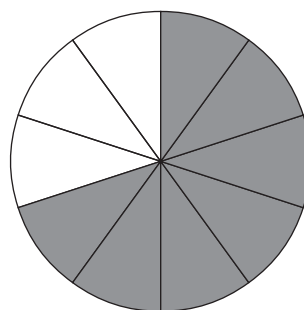
5 HOMEWORK ACTIVITY (5 MINUTES)

- Explain what learners need to do for homework.
- Read the question in the LAB with learners.
- Make sure all the learners understand what to do.
- Answers are given in brackets.

1 Each circle has been divided into 10 equal parts.
Write each of the shaded areas as a common fraction and as a decimal fraction:



$$\frac{(1)}{(10)} = 0,(1)$$



$$\frac{(7)}{(10)} = (0,7)$$

2 Shade in 0,7 on the diagram. .

**6 REFLECTION AND SUMMARY OF LESSON (5 MINUTES)**

Call the whole class to attention and summarise the key concepts of the lesson.

Say: **Today we have learned to show fractions as decimal fractions.**

Lesson 31: Counting in decimal fractions

Teacher's notes

This lesson is one of the fully planned lessons to be used to cover the Term 3 curriculum.

CAPS topics: (Grade 6) 1.3 Decimal fractions

Lesson Objective: Learners will recognise that $\frac{1}{10}\text{cm} = 1\text{ mm}$; will be able to find decimal fractions on a number line; and will be able to count forwards and backwards in decimal fractions.

Lesson Vocabulary: decimal fraction, interval, millimetre, number line.

Teacher Resources: A3 Poster: Enlarged rulers (one showing cm only, the other one showing cm and mm); A3 Poster: Counting in tenths.

Learner Resources: a ruler

Date:

Week

Day

1 MENTAL MATHS (10 MINUTES)

		Answer			Answer
1	$10 - 4 =$	6	6	$18 - 9 =$	9
2	$12 - 2 =$	10	7	$13 - 7 =$	6
3	$15 - 12 =$	3	8	$11 - 5 =$	6
4	$12 - 4 =$	8	9	$16 - 11 =$	5
5	$14 - 6 =$	8	10	$17 - 8 =$	9

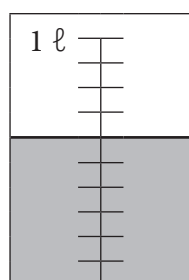
2 LINK TO PREVIOUS LESSON (5 MINUTES)

- Ask learners to answer the questions in the LAB.

1 Show 0,9 on the diagram:



2



Write the fraction of water in this container as:

a a decimal fraction: (0,6) litre

b a common fraction: $(\frac{6}{10})$ litre

3 CORRECT HOMEWORK ACTIVITY (5 MINUTES)

The answers to the Homework Activity for Lesson 30 are provided in Lesson 30. Use this time to purposefully address gaps in learners' knowledge and to identify and address learner errors.

4 LESSON CONTENT – CONCEPT DEVELOPMENT (35 MINUTES)

In this lesson learners:

- write millimetres as a unit for $\frac{1}{10}$ of 1 cm
- find decimal fractions on a number line
- count forwards and backwards in decimal fractions.

Say: **Today we are learning to find decimal fractions on a number line and to count in decimal fractions.**

Activity 1: Whole class activity

- Tell the learner to turn to Activity 1 in their LAB.

- 1 Say: Use the ruler. Measure the length of line A and line B and write the answer in your LAB.

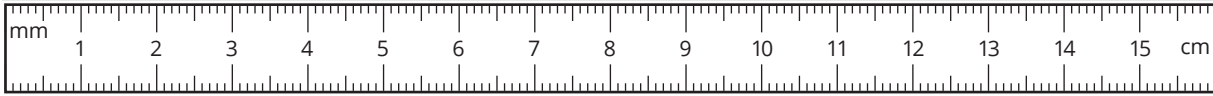


Length of line A = (9) cm

Length of line B = (8) cm

Discuss the answers with the learners

2 Say: Look at the ruler.



Ask: **Into how many equal parts is 1 centimetre divided?** (10 small equal parts)

Say: **Each small part is $\frac{1}{10}$ of 1 cm. $\frac{1}{10}$ of 1 cm is 1 millimetre, We usually write 1 mm.**

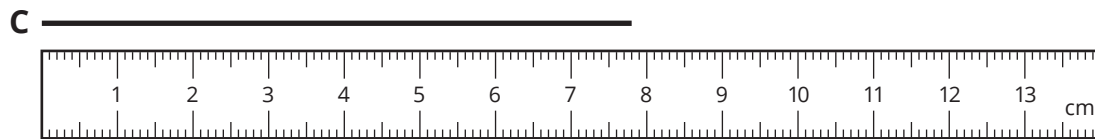
Say: **Answer a, b and c.**

- a** There are (10) mm in one cm.
- b** 1 mm = $\frac{(1)}{10}$ cm.
- c** We can write $\frac{1}{10}$ cm as 0,(1) cm.

Write $\frac{1}{10}$ cm = 0,1 cm = 1 mm on the board and tell the learners to write it in their LAB.

3 Ask: What is the length of line C?

Say: **Write your answer under the ruler. Give your answer in cm and mm and in cm only.**



Length of line C is (7) cm and (8) mm long.

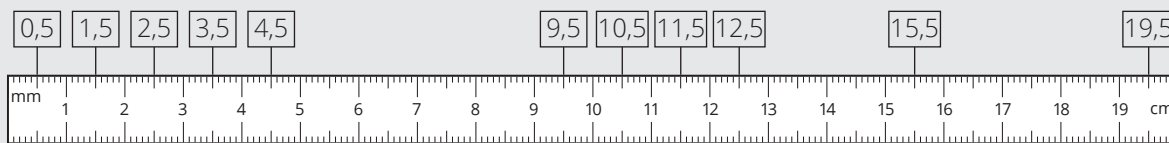
Length of line C is (7,8) cm long.

Activity 2: Whole group activity

- Put up the A3 poster: Counting in tenths.



- Ask: **Where on the number line will we find 0,5?**
(0,5 is half-way between 0 and 1. It is shown by a middle-sized line. There are middle-sized lines half-way between all units. They show 0,5; 1,5; 2,5; 3,5; 4,5; ...)
- Put up the A3 Poster: Rulers showing cm and mm
Ask the learners to tell you which numbers lie at the positions shown on the ruler below.



- Refer back to the A3 Poster: Counting in tenths.



Ask: **What is interval on this number line?** (0,1, tenths, $\frac{1}{10}$)

Say: **Let's count forwards in tenths from 0 to 1.**

(0; 0,1; 0,2; 0,3; 0,4; 0,5; 0,6; 0,7; 0,8; 0,9; 1)

Say: **Let's count forwards in tenths from 0,5 to 1, 5.**

(0,5; 0,6; 0,7; 0,8; 0,9; 1; 1,1; 1,2; 1,3; 1,4; 1,5)

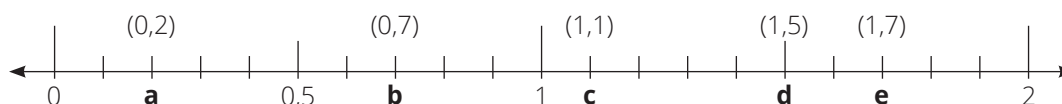
Say: **Let's count backwards in tenths from 1, 4 to 0,9.** (1,4; 1,3; 1,2; 1,1; 1; 0,9)

Say: **Complete Activity 2 in your LAB with your partner.**

- Work through Activity 2 step-by-step with learners.
- Check learners' answers as you go along so that they can receive immediate feedback.
- Answers are given in brackets.

1 Show the position of the following numbers on the number line:

a 0,2 **b** 0,7 **c** 1,1 **d** 1,5 **e** 1,7



2 Use the number line to help you.

Write the next four numbers in each number pattern.

a. 0,4; 0,5; 0,6; (0,7); (0,8); (0,9); (1)

b. 1,8; 1,6; 1,4; (1,2); (1); (0,8); (0,6)

c. 0,4; 0,6; (0,8); (1); (1,2); (1,4)

Activity 3: Learners work on their own

Say: **Complete Activity 3 in your LAB.**

- Walk around the classroom to support learners as needed.
- Correct Activity 3 with learners so that they can receive immediate feedback.
- Answers are given in brackets.

Fill in the missing numbers.

1 7 mm = (0,7) cm

2 0,4 cm = (4) mm

3 5 cm 8 mm = (5,8) cm

4 2,1 cm = (2) cm (1) mm

5 4,6 cm = (4) cm (6) mm

6 $3\frac{5}{10}$ cm = (3,5) cm

5 HOMEWORK ACTIVITY (5 MINUTES)

- Explain what learners need to do for homework.
- Read the question in the LAB with learners. Make sure all the learners understand what to do.
- Answers are given.

Draw a line to match the number in Column A with the decimal fraction in Column B.

Column A		Column B
8 mm		5,3 cm
5 cm 3 mm		8,9 cm
$\frac{3}{10}$ mm		0,8 cm
8 cm 9 mm		0,3 mm

6 REFLECTION AND SUMMARY OF LESSON (5 MINUTES)

Call the whole class to attention and summarise the key concepts of the lesson.

Say: **Today we have learned that $\frac{1}{10}$ of 1 cm is 1 mm, how to find decimal fractions on a number line, and how to count in decimal fractions.**

Lesson 32: Which decimal fraction is bigger?

Teacher's notes

This lesson is one of the fully planned lessons to be used to cover the Term 3 curriculum.

CAPS topics: (Grade 6) 1.3 Decimal fractions

Lesson Objective: Learners will be able to compare decimal fractions.

Lesson Vocabulary: compare, decimal fraction

Teacher Resources: A3 Poster: 0 to 3 number line

Date:

Week

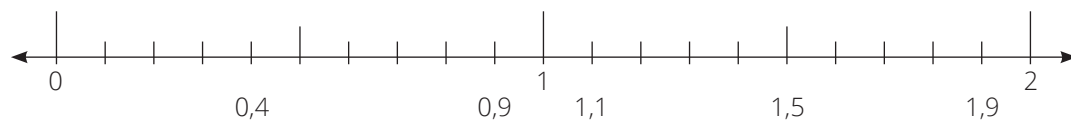
Day

1 MENTAL MATHS (5 MINUTES)

		Answer			Answer
1	$15 + 5 =$	20	6	$9 + 29 =$	38
2	$18 + 7 =$	25	7	$36 + 6 =$	42
3	$9 + 12 =$	21	8	$18 + 8 =$	26
4	$62 + 8 =$	70	9	$25 + 6 =$	31
5	$26 + 4 =$	30	10	$7 + 17 =$	24

2 LINK TO PREVIOUS LESSON (5 MINUTES)

- Tell the learners to turn to the number line in their LAB.
- The learners have to fill in 0,4; 0,9; 1,1; 1,5 and 1,9 on their number line.



- Display your A3 poster: 0 to 3 number lines on the board and show the answers on your number lines and let the learners check their answers.

3 CORRECT HOMEWORK ACTIVITY (5 MINUTES)

The answers to the Homework Activity for Lesson 31 are provided in Lesson 31.

Use this time to purposefully address gaps in learners' knowledge and to identify and address learner errors.

4 LESSON CONTENT – CONCEPT DEVELOPMENT (35 MINUTES)

In this lesson learners continue to develop an understanding of decimal fractions. By answering questions such as: ‘How many tenths, or 0,1s are there in 3?’, learners find out more about decimal fractions, and the mechanism of decimal fractions. Learners also compare decimal fractions.

Say: **Today we are learning to compare decimals.**

Activity 1: Whole class activity and learners work in pairs

- Display the A3 Poster (Number line 0 – 3, intervals of 1 tenth) on the board.
- Ask: **Who would like to come to the board to show us 2,4 on the number line?**



- Ask: **How many 1s and 0,1s make 2,4?**
Allow learners time to discuss the question and answer with their partner. Do not rush to give them the answer or to tell them how to answer the questions.

A number line and a place value table can be useful to find the answer.

O	,	t
2	,	4
One's place		$\frac{1}{10}$'s place
o o		••••

(Answer: Two 1s and four 0,1s)

- Ask: **How many 0,1s make 2,4?**
(Various answers are possible:
 - 2,4 has two 1s. There are ten 0,1s in 1. So, there are 20 lots of 0,1s in 2. $2 \times 10 = 20$. 20 and four 0,1s is 24 lots of 0,1s.
 - The smallest calibration shows 0,1. When I counted the smallest calibration up to 2,4, I found 24 0,1s.)

OR

O	,	t
2	,	4
One's place		$\frac{1}{10}$'s place
∅ ∅		•••• •••••••••• ••••••••••

Activity 2: Learners work in pairs

Say: **Complete Activity 2 in your LAB.**

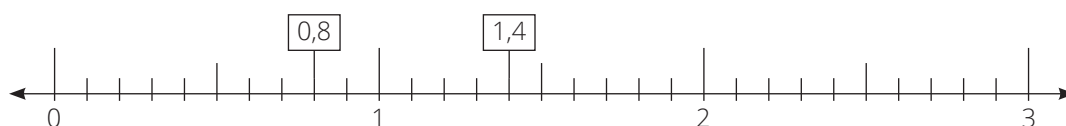
- Walk around the classroom to support learners as needed.
- Correct Activity 2 with learners so that they can receive immediate feedback.
- Answers are given below.

1 Show 0,4; 1,2; 2,7 on the number line.



2 Themba wants to find out which number is bigger: 0,8 or 1,4.

a Plot 0,8 and 1,4 on the number line.



Explain to Themba how the number line tells us which number is bigger.

(On the number line, the numbers get bigger as you move to the right, so the answer is 1,4 is bigger than 0,8 or $1,4 > 0,8$.)

b How many 0,1s are there in 0,8? (8)

How many 0,1s are there in 1,4? (14)

Explain to Themba how knowing the number of 0,1s in a number tells us which number is bigger.

(14 is more than 8, so the answer is $1,4 > 0,8$ or $0,8 < 1,4$.)

3 a How many 0,1s make 3,2? (32)

b How many 0,1s are there in 5? (50)

c How many Ones and tenths (or 0,1s) make 6,2? (6) Ones and (2) tenths.

Activity 3: Learners work on their own

Say: **Complete Activity 3 in your LAB.**

- Walk around the classroom to support learners as needed.
- Correct Activity 3 with learners so that they can receive immediate feedback.
- Answers are given in brackets.

Write $<$ or $>$ to make each number sentence true.

- 1, 3 ($<$) 1,7
- 0,6 ($>$) 0,5
- 1 ($>$) 0,9
- 2,8 ($<$) 3
- 1,2 ($<$) 1,5
- 3,4 ($>$) 2,9
- 6,5 ($>$) 5,6
- 7,7 ($<$) 8,1

5 HOMEWORK ACTIVITY (5 MINUTES)

- Explain what learners need to do for homework.
- Read the question in the LAB with learners. Make sure all the learners understand what to do.
- Answers are given.

- 1 Show 1,8 on the number line.



- 2 How many Ones and tenths make 1,8? (1 One; 8 tenths)
- 3 How many tenths make 1,8? (18)
- 4 Is 1,1 bigger or smaller than 1,8? (smaller)

6 REFLECTION AND SUMMARY OF LESSON (5 MINUTES)

Call the whole class to attention and summarise the key concepts of the lesson.

Say: **Today we have learned to compare decimal fractions.**

Lesson 33: Compare decimal fractions and common fractions

Teacher's notes

This lesson is one of the fully planned lessons to be used to cover the Term 3 curriculum.

CAPS topics: (Grade 6) 1.3 Decimal fractions

Lesson Objective: Learners will be able to compare common fractions and decimal fractions.

Lesson Vocabulary: common fraction, decimal fraction

Teacher and Learner Resources: None

Date:

Week

Day

1 MENTAL MATHS (5 MINUTES)

		Answer			Answer
1	$13 + 16 =$	29	6	$36 + 60 =$	96
2	$48 + 10 =$	58	7	$74 + 11 =$	85
3	$24 + 15 =$	39	8	$15 + 43 =$	58
4	$12 + 54 =$	66	9	$20 + 52 =$	72
5	$20 + 11 =$	31	10	$34 + 34 =$	68

2 LINK TO PREVIOUS LESSON (5 MINUTES)

- Tell the learners to turn to their LAB and to answer the questions.

- 1** Show how you can use a number line to work out how many 1s and 0,1s there are in 3,9.



There are (3) 1s and (9) 0,1s

- 2** Show how you can use a place value table to work out how many 1s and 0,1s there are in 3,9.

O	,	t
3	,	9
One's place		$\frac{1}{10}$'s place
○ ○ ○		••• ••• •••

There are (3) O's and (9) t's in 3,9

3 CORRECT HOMEWORK ACTIVITY (5 MINUTES)

The answers to the Homework Activity for Lesson 32 are provided in Lesson 32. Use this time to purposefully address gaps in learners' knowledge and to identify and address learner errors.

4 LESSON CONTENT - CONCEPT DEVELOPMENT (35 MINUTES)

In this lesson, learners compare common fractions with a denominator of ten with tenths (decimal fractions). Common fractions and decimal fractions are two different ways of representing parts of a whole. Through giving learners opportunities to see connections between common fractions and decimal fractions, we help them to deepen their understanding of both types of fractions.

Say: **Today we are learning to compare common fractions and decimal fractions.**

Activity 1: Whole class activity and learners work in pairs

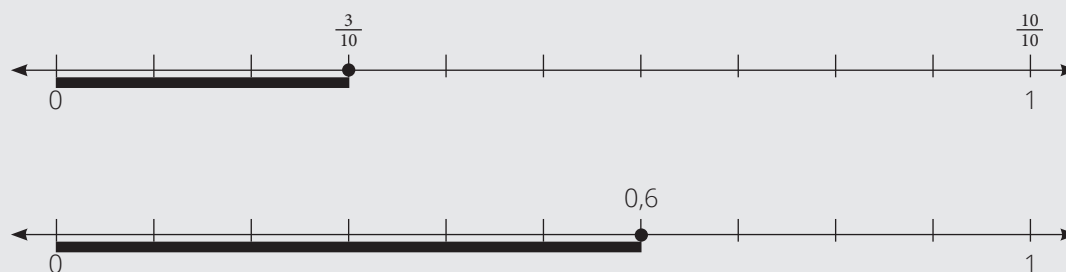
- Learners work in their classwork books.
- Say, as you write on the board:
Mother is sharing out pieces of cake.
Do you want $\frac{3}{10}$ of the cake or 0,6 of the cake?
Give a reason for your answer.
Draw pictures to show your answer.
- Tell the learners to underline the numbers and to draw a wavy line under the question being asked.
Mother is sharing out pieces of cake.
Do you want $\frac{3}{10}$ of the cake or 0,6 of the cake?
- Give learners time to discuss and write their answers.
Ask: **Who would like to come to the board to show us how they answered the question?**

Answers and drawings will vary.

If learners do not use number lines, be sure to include number lines in the discussion.

Strategy 1: Number lines

When I divide the 0 to 1 number line into 10 equal parts, one interval is $\frac{1}{10}$.
 $\frac{1}{10} = 0,1$, so $\frac{3}{10}$ is on the third calibration from 0 and 0,6 is on the sixth calibration from 0.



So, $0,6 > \frac{3}{10}$

Strategy 2: How many $\frac{1}{10}$ s?

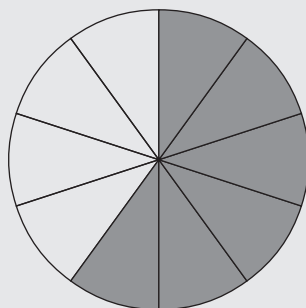
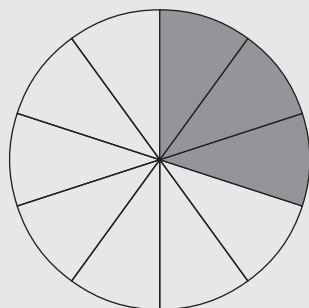
$$0,6 = \frac{6}{10}$$

How many $\frac{1}{10}$ s in $\frac{3}{10}$? (3), How many $\frac{1}{10}$ s in $\frac{6}{10}$? (6), the answer is $\frac{3}{10} < \frac{6}{10}$

Strategy 3: How many 0,1s?

$\frac{3}{10} = 0,3$; How many 0,1s in 0,3? (3), How many 0,1s in 0,6? (6), the answer is $0,3 < 0,6$.

Strategy 4: Draw a diagram



- Learners must justify their answers, but most are likely to say that they would like 0,6 of the cake because it is more cake.

Activity 2: Learners work in pairs

Say: **Complete Activity 2 in your LAB.**

- Walk around the classroom to support learners as needed.
- Correct Activity 2 with learners so that they can receive immediate feedback.
- Answers are given.

1 Sibu walks $\frac{9}{10}$ km to school.

Mary walks 0,8 km to school.

Who walks further?

Use the number line to show how you got your answer.



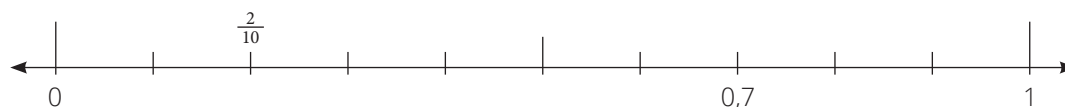
Answer: (Sibu) walks further.

2 Joe drank $\frac{2}{10}$ litre milk in the morning.

Joe drank 0,7 litre juice in the afternoon.

Did Joe drink more milk or more juice?

Use the number line to show how you got your answer.



Answer: Joe drank more (juice).

Activity 3: Learners work on their own

Say: **Complete Activity 3 in your LAB.**

- Walk around the classroom to support learners as needed.
- Correct Activity 3 with learners so that they can receive immediate feedback.
- Answers are given in brackets.

Write $<$, $>$ or $=$ to make each number sentence true.

1 $\frac{7}{10} (>) 0,6$

2 $0,9 (=) \frac{9}{10}$

3 $1,2 (<) 1 \frac{6}{10}$

4 $0,5 (<) \frac{8}{10}$

5 $1 \frac{4}{10} (=) 1,4$

6 $\frac{10}{10} (>) 0,6$

7 $0,5 (=) \frac{1}{2}$

8 $\frac{3}{5} (<) 0,7$

NOTE: If learners struggle to compare two numbers, specially question **7** and **8**, they can use number lines and a fraction wall to find equivalent fractions.

$$\frac{1}{2} = \frac{2}{4} = \frac{3}{6} = \frac{4}{8} = \frac{5}{10}$$

$$\frac{3}{5} = \frac{6}{10}$$

5 HOMEWORK ACTIVITY (5 MINUTES)

- Explain what learners need to do for homework.
- Read the question in the LAB with learners. Make sure all the learners understand what to do.
- Answers are given in brackets.

Who lives closest to school?

Annie lives 4,5 km from school, Sam lives 3,9 km from school and Mkhize lives 4,6 km from school.

Answer the question by completing each statement:

- 1 Annie lives (4) whole kilometres and (0,5) kilometres from school.
- 2 Sam lives (3) whole kilometres and (0,9) kilometres from school.
- 3 Mkhize lives (4) whole kilometres and (0,6) kilometres from school.
- 4 (Annie) lives closest to school.

6 REFLECTION AND SUMMARY OF LESSON (5 MINUTES)

Call the whole class to attention and summarise the key concepts of the lesson.

Say: **Today we have learned to compare common fractions and decimal fractions.**

Lesson 34: Adding decimal fractions (1)

Teacher's notes

This lesson is one of the fully planned lessons to be used to cover the Term 3 curriculum.

CAPS topics: (Grade 6) 1.3 Decimal fractions

Lesson Objective: Learners will be able to add decimal fractions to one decimal place.

Lesson Vocabulary: decimal fraction, column method, tenth

Teacher Resources: Place Value Cards (H, T, O, t, h, comma)

Learner Resources: None

Date:

Week

Day

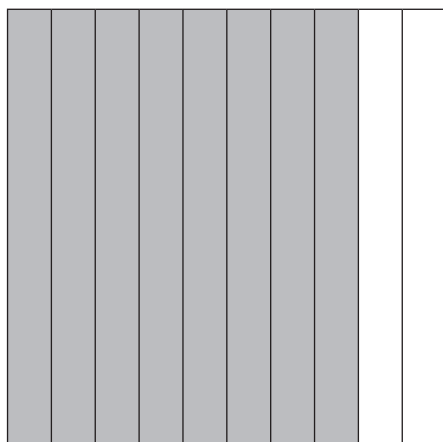
1 MENTAL MATHS (5 MINUTES)

		Answer			Answer
1	$15 + 25 =$	40	6	$16 + 16 =$	32
2	$29 + 43 =$	72	7	$48 + 37 =$	85
3	$44 + 36 =$	80	8	$27 + 53 =$	80
4	$23 + 18 =$	42	9	$41 + 49 =$	90
5	$27 + 24 =$	51	10	$29 + 47 =$	76

2 LINK TO PREVIOUS LESSON (5 MINUTES)

- Tell the learners to turn to their LAB and answer the question.

The square represents 1 whole.



Write the shaded part of the block as:

- a common fraction ($\frac{8}{10}$)
- a decimal fraction (0,8)

- Discuss the answer with the learners.

3 CORRECT HOMEWORK ACTIVITY (5 MINUTES)

The answers to the Homework Activity for Lesson 33 are provided in Lesson 33. Use this time to purposefully address gaps in learners' knowledge and to identify and address learner errors.

4 LESSON CONTENT – CONCEPT DEVELOPMENT (35 MINUTES)

- In this lesson learners will add decimal fractions to one decimal place (tenths).
- Learners are familiar with using the column method to add whole numbers. We build on this knowledge so that learners can add decimal fractions up to one decimal place.
- The first examples do not require carrying, but later examples involve carrying.
- Emphasise that learners must be sure to keep digits in the correct Place Value columns.

Say: **Today we are learning to add decimal fractions.**

Activity 1: Whole class activity

- Use the Place Value Cards from the Teacher's Resource Pack.
- Display the Place Value Cards on the board and write the number 42,5 in the Place Value table:

	T	O	,	t
	4	2	,	5

- Ask: **How do we say this number?** (Forty-two comma five)
- Ask: **How many Tens are there?** (4)
Ask: **How many Ones are there?** (2)
Ask: **How many tenths are there?** (5)
Ask: **What is a tenth?** (A tenth is written $\frac{1}{10}$; a tenth is one part of a whole that has been divided into ten equal parts)
- Say, as you point to the comma: **The comma separates the ones from the tenths.**

Say: **Complete Activity 1 in your LAB.**

- Work through Activity 1 step-by-step with learners.
- Check learners' answers as you go along so that they can receive immediate feedback.

Write the digits in the correct columns.

		H	T	O	,	t
1.	28,7		2	8	,	7
2.	136,4	1	3	6	,	4
3.	204,3	2	0	4	,	3
4.	0,5			0	,	5
5.	671	6	7	1		
6.	120,8	1	2	0	,	8
7.	0,9			0	,	9

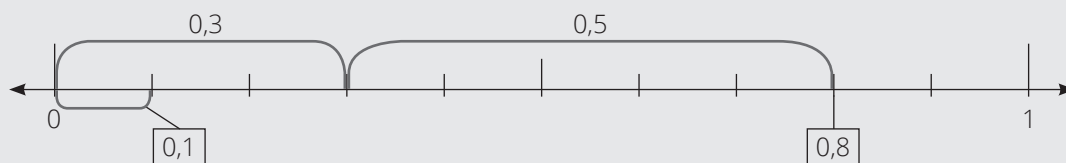
Activity 2: Learners work in pairs

- The learners work with their partner in their LABS

1 Ask: How do you add 0,3 and 0,5?

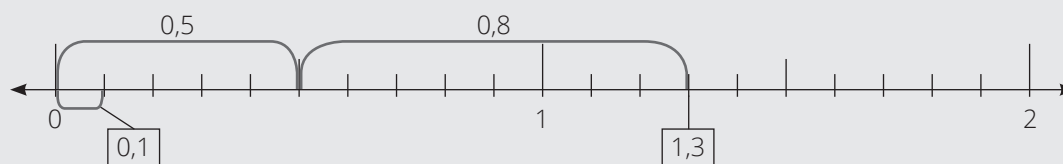
(There are many different ways of finding the answer:

- 0,3 has three 0,1s and 0,5 has five 0,1s. When we add both, there are eight 0,1s. So, the answer is 0,8.)
- Using a number line



- Converting to fractions: $0,3 = \frac{3}{10}$, $0,5 = \frac{5}{10}$, I know $\frac{3}{10} + \frac{5}{10} = \frac{8}{10}$, and $\frac{8}{10} = 0,8$

2 Ask: How do you add 0,5 and 0,8 using a number line?



- #### 3 Rita ran 3,4 km on Saturday and 5,2 km on Sunday. How far did Rita run altogether?

- Read through the word problem three times with the learners. Make sure that they understand what they are being asked.
- Ask: **Who would like to come to the board to underline the numbers and the question?**
Rita ran 3,4 km on Saturday and 5,2 km on Sunday.
How far did Rita run altogether?
- Say: **Write a number sentence to describe the problem in your LAB.**
($3,4 + 5,2 = \square$)
- Ask: **Who would like to come to the board to share your number sentences with the class?**
Note: Several learners write her/his number sentences and discuss which are the correct ones.
- Say: **Let us work out the answer using a Place Value table.**
Draw a place value table on the board.
Ask: **What do we write between One's place and tenth's place?**
(', ' or a decimal comma)
Write a big comma between O and t in the table.
The learners write the comma in their LAB.

	T	O	,	t

- Say: **Fill in the numbers on the table in your LAB.**
Note: After learners have written the numbers on the table, check that they have written the digits and the digits in the correct places as shown.

	T	O	,	t
		3	,	4
+		5	,	2

- Say: **Now do the calculation.**

	T	O	,	t
		3	,	4
+		5	,	2
		8	,	6

- Ask: **How many kilometres did Rita run altogether?**
(Rita ran 8,6 km altogether.)

4 Mother needs 1,8 kg of flour to make bread and 2,3 kg of flour to bake scones.
How much flour does mother need if she wants to bake bread and scones?

- a** Underline the numbers and the question in the word problem.
Mother needs 1,8 kg of flour to make bread and
2,3 kg of flour to bake scones.
How much flour does mother need if she wants to bake bread and scones?
- b** Write a number sentence to describe the problem. ($1,8 + 2,3 = \square$)
- c** Use the column method to calculate the answer.

	T	O	,	t
		1		
		1	,	8
+		2	,	3
		4	,	1

- d** Answer: Mother needs (4,1) kg of flour to bake bread and scones.

Activity 3: Learners work on their own

Say: **Complete Activity 3 in your LAB.**

- Walk around the classroom to support learners as needed.
- Correct Activity 3 with learners so that they can receive immediate feedback.
- Answers are given.

1 Use the column method to calculate $0,7 + 9,5 = \square$.

	H	T	O	,	t
			0	,	7
+		9	,	5	
	1	0	,	2	

The answer is (10,2).

2 Use the column method to calculate $26,7 + 78,3 = \square$.

	H	T	O	,	t
		1	1		
		2	6	,	7
+		7	8	,	3
	1	0	5	,	0

The answer is (105).

Point out to the learners that we don't write "0 tenths". We generally stop at the 5.

5 HOMEWORK ACTIVITY (5 MINUTES)

- Explain what learners need to do for homework.
- Read the question in the LAB with learners. Make sure all the learners understand what to do.
- Answers are given.

Use the column method to calculate $62,9 + 57,6 = \square$.

	H	T	O	,	t
		1	1		
		6	2	,	9
+		5	7	,	6
	1	2	0	,	5

The answer is (120,5).

6 REFLECTION AND SUMMARY OF LESSON (5 MINUTES)

Call the whole class to attention and summarise the key concepts of the lesson.

Say: **Today we have learned to add decimal fractions with one decimal place.**

Lesson 35: Adding decimal fractions (2)

Teacher's notes

This lesson is one of the fully planned lessons to be used to cover the Term 3 curriculum.

CAPS topics: (Grade 6) 1.3 Decimal fractions

Lesson Objective: Learners will be able to add decimal fractions to two decimal places.

Lesson Vocabulary: decimal fraction, tenth, hundredth, column method

Teacher Resources: A3 Poster: 1 metre ruler with centimetre calibrations.
Place Value cards (H; T; O; , (a comma); t and h)

Learner Resources: None

Date:

Week

Day

1 MENTAL MATHS (5 MINUTES)

		Answer			Answer
1	$13 - 9 =$	4	6	$24 - 5 =$	19
2	$10 - 8 =$	2	7	$31 - 9 =$	22
3	$15 - 7 =$	8	8	$23 - 6 =$	17
4	$20 - 5 =$	15	9	$42 - 7 =$	35
5	$12 - 5 =$	7	10	$57 - 8 =$	49

2 LINK TO PREVIOUS LESSON (5 MINUTES)

- Ask learners to answer the question in the LAB.
- Use the column method to calculate $56,9 + 68,3 = \square$.

	H	T	O	,	t
		1	1		
		5	6	,	9
+		6	8	,	3
	1	2	5	,	2

The answer is 125,2.

3 CORRECT HOMEWORK ACTIVITY (5 MINUTES)

The answers to the Homework Activity for Lesson 34 are provided in Lesson 34.

Use this time to purposefully address gaps in learners' knowledge and to identify and address learner errors.

4 LESSON CONTENT - CONCEPT DEVELOPMENT (35 MINUTES)

- In today's lesson learners are introduced two decimal places in the context and add them without and with carrying.
- The South African currency is based on the decimal system to two decimal places (hundredths).
- In Mathematics, we always try to show learners the importance of their learning to everyday life. This topic is very appropriate to life beyond the classroom.
- Use the language of decimal fractions deliberately and carefully:
 - Pronounce **hundreds** and **hundredths**, **tens** and **tenths** correctly.
 - In the Place Value table, the places of whole numbers must be written with capital letters: H, T and O, and the place of decimal fractions must be written with small letters: t and h. The place values increase in size toward the left and decrease in size toward the right.

←—————→					
H	T	O	,	t	h

- When talking about the number 456,71; we say four hundred and fifty-six comma **seven one** NOT **seventy-one**.
- Note that when we write amounts of money, we write two decimal places, even if there are no hundredths. Example: We write R12,30 NOT R12,3

Say: **Today we are learning to add decimal fractions in the context of money.**

Activity 1: Whole class activity and learners work in pairs

- Learners work in their classwork books.
Display the A3 poster: 1 metre ruler with centimetre calibrations on the board.
- Point to the longest calibrations on the poster. These long calibrations divide 1 m into 10 equal parts:
Say: **This ruler is 1 m long. How many equal parts do the longest lines divide 1 m into?**
(10 equal parts)
Ask: **How many tenths in a whole?**
(10. To confirm count the longest lines on the poster.)
Ask: **What fraction is one of these parts of 1 m?** (one tenth of a metre).

Say: **Write this fraction in two different ways.** ($\frac{1}{10}$ m or 0,1 m)

Ask: **How many centimetres long is 0,1m?** (0,1 m is 10 cm. Use the poster and the learners can come and measure the 1 m ruler with their rulers to find out how long 0,1 m is.)

- Point to the smallest calibrations on the poster which divide 1 m into 100 equal parts:
Say: **This ruler is 1 m long. How many equal parts do the shortest lines divide 1 m into?**

($10 \times 10 = 100$ equal parts)

Say: **One small part of the whole is called ‘a hundredth’ because it is one of the 100 parts that the 1 metre is divided into.**

Write $\frac{1}{100}$ m and 0,01 m on the board

Let all learners say $\frac{1}{100}$ and 0,01 and then write them in their classwork books.

- Ask: **What do you notice about 0,1 m and 0,01 m?**

(Possible answers:

There is one ‘0’ in 0,1 and two ‘0’s in 0,01.

Both have one “0” before comma, but 0,01 has another “0” in tenth’s place.)

- Ask: **Is one hundredth of a metre bigger or smaller than one tenth of a metre?** (Smaller)

- Ask: **How many hundredths in a tenth?**

(There are 10 hundredths in 1 tenth. Use the poster and count with the learners)

- Ask: **How many centimetres are in 0,01 of a metre?**

(There is 1 cm in 0,01 m because 10 cm is divided into 10 equal parts.)

- Stick the Place Value cards (T, O, comma, t, h) on the board.

Say each place value as you build the Place Value table on the board:

Tens, Ones, comma, tenths, hundredths

T	O	,	t	h

- Say, as you write the number 56,71 on the board:

Who would like to come to the board to write this number in the correct place on the Place Value chart?

T	O	,	t	h
5	6	,	7	1

Say: **We read this number fifty-six comma SEVEN ONE.**

- Write these common fractions on the board and ask the learners to write them as decimal fractions in their classwork books.

a. $\frac{3}{100} = (0,03)$

b. 3 and $\frac{6}{100} = (3,06)$

c. $\frac{15}{100} = (0,15)$

d. 1 and $\frac{79}{100} = (1,79)$

Say: **Complete Activity 1 in your LAB.**

- Walk around the classroom to support learners as needed.
- Correct Activity 1 with learners so that they can receive immediate feedback.
- The answers are given.

- 1 Read the numbers and write the digits in the correct places of the Place Value table. Then rewrite decimal fractions in metres and centimetres.

	Read	H	T	O	,	t	h	Metres and centimetres
a	42,39 m		4	2	,	3	9	42 m 39 cm
b	138,48 m	1	3	8	,	4	8	138 m 48 cm
c	571,09 m	5	7	1	,	0	9	571 m 9 cm
d	0,34 m			0	,	3	4	34 cm
e	606,21 m	6	0	6	,	2	1	606 m 21 cm

- 2 Let's think about money.

- a How do we write R1 in the Place Value table?

H	T	O	,	t	h
		1			

- b How do we write R1,50 in the Place Value table?

H	T	O	,	t	h
		1	,	5	0

Write R1,50 in words: (One rand and fifty cents)

Activity 2: Whole class activity and learners work in pairs

- The teacher writes on the board and works with the whole class. The learners write in their LAB.

1 Say, as you write the word problem on the board:

Ivy paid R8,65 for bread and

R11,30 for milk.

How much did Ivy pay altogether?

- Read through the word problem three times with the learners. Make sure that they understand what they are being asked.
- Say: **Underline the numbers and the question in your LAB.**
- Ask: Who would like to come to the board to underline the numbers and the question?

Ivy paid R8,65 for bread and

R11,30 for milk.

How much did Ivy pay altogether?

- Say: **Write a number sentence in your LAB.** ($R8,65 + R11,30 = \square$)
- Say: **Use the column method to calculate the answer in your LAB.**

	T	O	,	t	h
		8	,	6	5
+	1	1	,	3	0
	1	9	,	9	5

- Say: **Write the answer to the question in your LAB.** (Ivy paid R19,95).

Say: **Do Activity 2 in your LAB with your partner.**

- Work through Activity 2 step-by-step with learners.
- Check learners' answers as you go along so that they can receive immediate feedback.
- Answers are given in brackets.

2 Peter was 1,36 m tall last year.

He grew 0,15 m this year.

How tall is Peter now?

a Underline the numbers and the question in the word problem.

(Peter was 1,36 m tall last year.

He grew 0,15 m this year.

How tall is Peter now?)

b Write a number sentence for the problem. ($1,36 + 0,15 = \square$)

c Use the column method to calculate the answer.

	T	O	,	t	h
			,	1	
		1	,	3	6
+		0	,	1	5
		1	,	5	1

d Answer to the question: Peter is (1,51 m) tall.

5 HOMEWORK ACTIVITY (5 MINUTES)

- Explain what learners need to do for homework.
- Read the question in the LAB with learners. Make sure all the learners understand what to do.
- Answers are given.

Calculate:

	T	O	,	t	h
	1	1	,	1	
	4	5	,	7	5
+	3	6	,	2	5
	8	2	,	0	0

6 REFLECTION AND SUMMARY OF LESSON (5 MINUTES)

Call the whole class to attention and summarise the key concepts of the lesson.

Say: **Today we have learned to add decimals with up to two decimal places.**

Lesson 36: Subtracting decimal fractions (1)

Teacher's notes

This lesson is one of the fully planned lessons to be used to cover the Term 3 curriculum.

CAPS topics: (Grade 6) 1.3 Decimal fractions

Lesson Objective: Learners will be able to subtract decimal numbers to one decimal place.

Lesson Vocabulary: subtract, decimal place, sum

Teacher and Learner Resources: None

Date:

Week

Day

1 MENTAL MATHS (5 MINUTES)

		Answer			Answer
1	$46 - 13 =$	33	6	$97 - 80 =$	17
2	$27 - 10 =$	17	7	$55 - 41 =$	14
3	$39 - 33 =$	6	8	$52 - 50 =$	2
4	$74 - 60 =$	14	9	$68 - 27 =$	41
5	$19 - 11 =$	8	10	$84 - 12 =$	72

2 LINK TO PREVIOUS LESSON (5 MINUTES)

- Tell the learners to turn to their LABS and calculate the following:

	T	O	,	t	h
	1	1	,	1	
	4	8	,	2	3
+	3	9	,	8	7
	8	8	,	1	0

3 CORRECT HOMEWORK ACTIVITY (5 MINUTES)

The answers to the Homework Activity for Lesson 35 are provided in Lesson 35.

Use this time to purposefully address gaps in learners' knowledge and to identify and address learner errors.

4 LESSON CONTENT - CONCEPT DEVELOPMENT (45 MINUTES)

- In this lesson learners use the column method to subtract decimal fractions to one decimal place (tenths). The procedure is much the same as when subtracting whole numbers; the only difference is that the number is a decimal fraction.

- The process of exchange (borrowing) is the same as when subtracting whole numbers.
 - To subtract a larger number from the tenths, exchange 1 One for ten tenths
 - To subtract a larger number from the Ones, exchange 1 Ten for ten Ones.
- Remind learners of the importance of keeping the digits and the comma in the correct places.

Say: **Today we are learning to subtract decimal fractions.**

Activity 1: Whole class activity and Learners work in pairs

- Tell the learners to turn to Activity 1 in their LAB.
 - Write this word problem on the board before the lesson begins. It is also given in the LAB.
Mother had 1,5 metres of material.
She used 1,2 metres to make curtains.
How much material does she have left?
 - Read through the word problem three times with the learners.
 Clarify vocabulary and make sure that they understand the question.
 Tell the learners to underline the numbers and the questions in the LAB.
 - Ask: Who would like to come to the board to underline the numbers and the question?
Mother had 1,5 metres of material.
She used 1,2 metres to make curtains.
How much material does she have left?
- Say: **Complete Activity 1 in your LAB.**
- Walk around the classroom to support learners as needed.
 - Correct Activity 1 with learners so that they can receive immediate feedback.

- 1** Mother had 1,5 metres of material.
She used 1,2 metres to make curtains.
How much material does she have left?

- a** Underline the numbers and the question in the word problem.

Mother had 1,5 metres of material.

She used 1,2 metres to make curtains.

How much material does she have left?

- b** Write a number sentence to describe the problem: $(1,5 - 1,2 = \square)$

- c** Use the column method to calculate the answer.

	T	O	,	t
		1	,	5
-		1	,	2
		0	,	3

(Point out to the learners that we do not usually write the left 0 when we write the whole numbers. But we have to write 0 as a place holder when there are no whole numbers.)

- d** Write the answer: Mother has (0,3 m) of material left.

- 2** Before the rain, the dam was 19,4 m deep.
After the rain, the dam was 23,2 m deep.
By how much did the level of the water change?

- a** Underline the numbers and the question in the word problem.

Before the rain, the dam was 19,4 m deep.

After the rain, the dam was 23,2 m deep.

By how much did the level of the water change?

- b** Write a number sentence to describe the problem. $(23,2 - 19,4 = \square)$

- c** Use the column method to calculate the answer.

	T	O	,	t
	1	9	,	4
-	2	3	,	2
		3	,	8

- d** Write the answer: The level of the water has changed by (3,8 m).

Activity 2: Learners work in pairs

- Remind learners that *to find the sum* they must add.
- Walk around the classroom to support learners as needed.
- Correct Activity 2 with learners so that they can receive immediate feedback.
- Answers are given.

The list shows the distances jumped in a long jump competition.

Basetsana	4,3 m
Nhlovo	4,2 m
Josefa	3,8 m
Khana	5,1 m
Dineo	4,9 m
Horisami	4,5 m



- 1 Arrange the distances from longest to shortest. (5,1; 4,9; 4,5; 4,3; 4,2; 3,8)
- 2 Who jumped the furthest? (Khana)
- 3 We want to know how much further Khana jumped than Josefa.
 - a Write a number sentence to describe the problem. ($5,1 - 3,8 = \square$)
 - b Use the column method to work out the answer.

	O	,	t
	4		
	5	,	¹ 1
-	3	,	8
	1	,	3

- c Write the answer: Khana jumped (1,3 m) further than Josefa.
- 4 We want to calculate the sum of the three shortest jumps.
 - a Write a number sentence to describe the problem. ($3,8 + 4,2 + 4,3 = \square$)
 - b Use the column method to work out the answer.

	T	O	,	t
		1	,	
		3	,	8
		4	,	2
+		4	,	3
	1	2	,	3

- c Write the answer: The sum of the three shortest jumps is (12,3 m).

Activity 3: Learners work on their own

Say: **Complete Activity 3 in your LAB.**

- Walk around the classroom to support learners as needed.
- Correct Activity 3 with learners so that they can receive immediate feedback.
- Answers are provided.

Calculate

- 1 a Use the column method to calculate $32,4 - 8,9 = \square$

	T	O	,	t
	2	11		
	3	2	,	¹ 4
-		8	,	9
	2	3	,	5

The answer is (23,5)

- b Write the answer rounded off to the nearest One.
- Underline the digit in the One's place and circle the digit in the next smaller place: (23,⁵)
 - Look at the digit in the One's place. Do we round it up or do we round it down or do we leave it as it is? (We round it up.)
 - Give the answer rounded off to the nearest One: (24).

- 2 a Use the column method to calculate $42 - 39,7 = \square$

	T	O	,	t
	3	11		
	4	2	,	¹ 0
-	3	9	,	7
		2	,	3

The answer is (2,3)

(Point out to the learners that 42 does not have digit in tenths place. So, we write 0 in tenth's place so that you can subtract 0,7 from it.)

Also point out that in the Ten's place we have $30 - 30 = 0$. We do not write this 0 down because it is the left end digit of a whole number.)

- b Write the answer rounded off to the nearest One.
- Underline the digit in the One's place of the answer. Circle the digit in the tenth's place: (2,3)

- Look at the digit in the One's place. Do we round it up or do we round it down or do we leave it as it is? (We leave it as it is. There is no change in one's place.)
- Give the answer rounded off to the nearest One: (2).

5 HOMEWORK ACTIVITY (5 MINUTES)

- Explain what learners need to do for homework.
- Read the question in the LAB with learners. Make sure all the learners understand what to do.
- Answers are given.

Use columns to calculate: $76,4 - 7,8 = \square$

	T	O	,	t
	6	15		
	7	6	,	14
-		7	,	8
	6	8	,	6

The answer is $76,4 - 7,8 = (68,6)$

6 REFLECTION AND SUMMARY OF LESSON (5 MINUTES)

Call the whole class to attention and summarise the key concepts of the lesson.

Say: **Today we have learned to subtract decimal fractions.**

We know:

- **how to 'borrow' when necessary**
- **that we must keep the digits and the comma in the correct places.**

Lesson 37: Subtracting decimal fractions (2)

Teacher's notes

This lesson is one of the fully planned lessons to be used to cover the Term 3 curriculum.

CAPS topics: (Grade 6) 1.3 Decimal fractions

Lesson Objective: Learners will be able to subtract decimal fractions up to two decimal places. (hundredths).

Lesson Vocabulary: hundredths

Teacher and Learner Resources: None

Date:

Week

Day

1 MENTAL MATHS (5 MINUTES)

		Answer			Answer
1	$20 - 16 =$	4	6	$77 - 59 =$	18
2	$31 - 29 =$	2	7	$35 - 27 =$	8
3	$50 - 43 =$	7	8	$51 - 42 =$	9
4	$23 - 17 =$	6	9	$95 - 68 =$	27
5	$45 - 36 =$	9	10	$91 - 56 =$	35

2 LINK TO PREVIOUS LESSON (5 MINUTES)

- Ask learners to answer the question in the LAB:

	T	O	,	t
		2		
		3	,	¹ 5
-		2	,	9
		0	,	6

The answer is (0,6)

- Point out to the learners that we do not usually write the left end 0 when we write the whole numbers. But we have to write 0 as a place holder when there are no whole numbers. So, the answer is 0,6 not ,6.

3 CORRECT HOMEWORK (5 MINUTES)

The answers to the Homework Activity for Lesson 36 are provided in Lesson 36.

Use this time to purposefully address gaps in learners' knowledge and to identify and address learner errors.

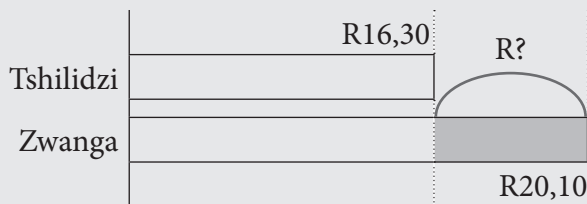
4 LESSON CONTENT - CONCEPT DEVELOPMENT (35 MINUTES)

In this lesson learners subtract decimal fractions to two decimal places (hundredths). Once again, we work in the context of money.

Say: **Today we are learning to subtract decimal fractions.**

Activity 1: Whole class activity

- Tell the learners to turn to Activity 1 in their LAB.
- Write the word problem on the board before the lesson begins.
Tshilidzi has R16,30.
Zwanga has R20,10.
How many more R1 coins does Tshilidzi need so that she has almost the same amount of money as Zwanga?
- Read through the word problem three times with the learners. Clarify vocabulary and make sure they understand the question. Use a diagram to help them understand the question.



- Say: **Underline the numbers and the question in your LAB.**
- Ask: **Who would like to come to the board to underline the numbers and the question?**
Tshilidzi has R16,30.
Zwanga has R20,10.
How many more R1 coins does Tshilidzi need so that she has almost the same amount of money as Zwanga?

Say: **Complete Activity 1 on your own in your LAB.**

- Walk around the classroom to support learners as needed.
- Pay particular attention to the fact that the question asks *how many more R1 coins* Tshilidzi will need to have so that she has nearly the same amount of money as Zwanga.
- Correct Activity 1 with learners so that they can receive immediate feedback.

Tshilidzi has R16,30.

Zwanga has R20,10.

How many more R1 coins does Tshilidzi need so that she has almost the same amount of money as Zwanga?

- 1 Underline the numbers and the question in the word problem.

Tshilidzi has R16,30.

Zwanga has R20,10.

How many more R1 coins does Tshilidzi need so that she has almost the same amount of money as Zwanga?

- 2 Write a number sentence to describe the problem: $(20,10 - 16,30 = \square)$

- 3 Use the column method to calculate the answer.

	T	O	,	t	h
	1	9			
	2	0	,	1	0
-	1	6	,	9	0
		3	,	2	0

- 4 Write the answer to the subtraction: Tshilidzi has (R3,80) less than Zwanga.
- 5 To find out how many R1 coins Tshilidzi needs so that she has the same amount of money as Zwanga, we have to round off the answer to the nearest One.

Write the answer to the subtraction here: (R3,20)

Underline the digit in the One's place because it is the place to be rounded: 3,20

Then circle the digit to the right of that number (the one in the tenth's position): (3,20)

Do we round the digit in the one's place up, or down, or leave it as it is?

(Leave it as it is.)

What is R3,20 rounded to the nearest One? (R3)

- 6 How many more R1 coin does Tshilidzi need to have nearly the same amount of money as Zwanga? (She needs 3 more R1 coins.)
(Note: it is fine if the learners answer R3.)

Activity 2: Learners work in pairs

Say: **Complete Activity 2 in your LAB.**

- Walk around the classroom to support learners as needed.
- Take particular note of the rounding required.
- Correct Activity 2 with learners so that they can receive immediate feedback.

Nkosi bought food which cost R16,98.

How much change should he get if he paid with a R50 note?

Remember: There are no 1 cent, 2 cent or 5 cent coins, so the shopkeeper must **round up** the change.

- 1 Underline the numbers and the question in the word problem.

Nkosi bought food which cost R16,98.

How much change should he get if he paid with a R50 note?



- 2 Write a number sentence to describe the problem:
(50 – 16,98 = □ or 50,00 – 16,98 = □)

- 3 Use the column method to calculate the answer.

	T	O	,	t	h
		9		9	
	45	10	,	10	10
-	1	6	,	9	8
	3	3	,	0	2

- 4 Remember, there are no longer 1 cent, 2 cent or 5 cent coins, so the shopkeeper rounds *up to the nearest 10 cents* when giving change.

Write the answer to the subtraction here: (R33,02)

Underline the digit in the tenth's position and circle the digit in the hundredth's position: (33,0(2))

Because there are no 2 cent coins, we round the digit in the tenth's position up, even though the digit in the hundredth's position is less than 5.

How much change should Nkosi get? (R33,10)

(Note: it is fine to answer 33 rand and 10 cent.)

5 Why must the shopkeeper round the change up?

(The shop keeper wants to give R33,02 as change, but there are no 1 cent or 2 cent coins.

If the shopkeeper rounds R33,02 down, the customer would lose that R0,02.

It is common practice in South Africa that the shopkeeper rounds up the change to the next higher place. There are 10 cent coins, so the shopkeeper gives Nkosi R33,10 or R33 and 10 cents change.)

Activity 3: Learners work on their own

Say: **Complete Activity 3 in your LAB.**

- Walk around the classroom to support learners as needed.
- Correct Activity 3 with learners so that they can receive immediate feedback.

1 Calculate: $50,46 - 49,53 = \square$

Give the answer rounded off to the nearest tenth.

- a** Use the column method to find the answer.

	T	O	,	t	h
		9			
	45	40	,	4	6
-	4	9	,	5	3
		0	,	9	3

$$50,46 - 49,53 = (0,93)$$

- b** Round the answer off to the nearest tenth.

Underline the digit in the tenth's position and circle the digit in the hundredth's position: $(0,9\underline{3})$

What is the answer rounded to the nearest tenth? $(0,9)$

NOTE: Make sure that when the learners write decimal fractions and there are no whole numbers, they write "0," in One's place.

2 Calculate $68 - 58,35 = \square$

Give the answer rounded off to the nearest tenth.

a Use the column method to find the answer.

	T	O	,	t	h
	5	17		9	
	6	8	,	10	10
-	5	8	,	3	5
		9	,	6	5

$$68 - 58,35 = (9,65)$$

b Round the answer off to the nearest tenth.

Underline the digit in the tenth's position and circle the digit in the hundredth's position: $(9,6\text{5})$

Look at the digit in the tenth's place. Do we round it up or leave it as it is?

(Round it up.)

What is the answer rounded to the nearest tenth? $(9,7)$

5 HOMEWORK ACTIVITY (5 MINUTES)

Explain what learners need to do for homework.

Read the question in the LAB with learners. Make sure all the learners understand what to do.

The answer is given below.

Use the column method to calculate: $19,25 - 13,99 = \square$

	T	O	,	t	h
		8		11	
	1	9	,	2	5
-	1	3	,	9	9
		5	,	2	6

The answer is $19,25 - 13,99 = (5,26)$

6 REFLECTION AND SUMMARY OF LESSON (5 MINUTES)

Call the whole class to attention and summarise the key concepts of the lesson.

Say: **Today we have learned to subtract decimal fractions and to round off the answer where necessary.**

Lesson 38: Consolidation

Teacher's notes

This lesson allows for consolidation of the previous days' lesson content.

CAPS topics: (Grade 6) 1.3 Decimal fractions

Lesson Objective: Learners will revise the relationship between common fractions and decimal fractions; count forwards and backwards in decimal fractions; compare decimal fractions; and add and subtract decimal fractions.

Lesson Vocabulary: common fraction, decimal fraction, tenth, hundredth, number line

Resources: Grade 6 Learners' Books and Teacher's Guides (if available)

Date:

Week

Day

1 NOTES FOR THE TEACHER RELATING TO THIS UNIT'S WORK

The main topic in this unit was decimal fractions. Learners investigated the relationship between common fractions and decimal fractions; counted forwards and backwards in decimal fractions; compared decimal fractions; and added and subtracted decimal fractions.

2. POSSIBLE MISCONCEPTIONS LINKED TO THE WEEK'S WORK

- Learners often get confused when adding or subtracting decimal numbers that have a different number of decimal places. For example: $3,6 + 1,29$.
- Encourage learners to make decimals the same length by writing zeros as placeholders. We write $3,6 + 1,29$ as $3,60 + 1,29$. This helps learners to line up the digits in the correct columns.

3 CORRECT HOMEWORK ACTIVITY (5 MINUTES)

The answers to the Homework Activity for Lesson 37 are provided in Lesson 37. Use this time to purposefully address gaps in learners' knowledge and to identify and address learner errors.

4 CLASSWORK

Today we are going over what we learned in this unit. We will count forwards and backwards in decimal fractions; we will convert between common fractions and decimal fractions; we will compare decimal fractions; and we will add and subtract decimal fractions.

- You could use this time for learners to complete classwork or homework activities as necessary.
- You could use the Additional Activities from textbooks that you have or use the Consolidation Activity given.

Additional activities for consolidation

Refer to the following table. Select additional activities from the textbook/s you have.

Use the answers given in the Teacher's Guide to mark the work.

	Fabulous	Oxford Headstart	Oxford Successful	Platinum	Premier	Solutions for All	Study & Master	Viva
LB	135-145	156-169	131-143	96-103	83-92	133-150	171-197	104-115
TG	101-106	158-177	118-126	72-79	61-67	101-113	171-197	67-72

OR, learners could complete the Consolidation Activity in their LAB.

Consolidation Activity

1 Write the common fractions as decimal fractions.

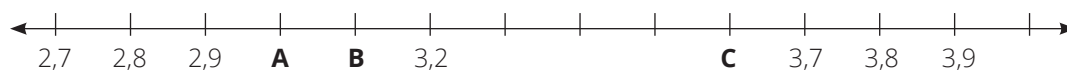
a $\frac{7}{10} = (0,7)$

b $3 \text{ and } \frac{1}{10} = (3,1)$

c $\frac{23}{100} = (0,23)$

d $\frac{9}{100} = (0,09)$

2 Write down the value of A, B and C.




A (3 or 3,0)

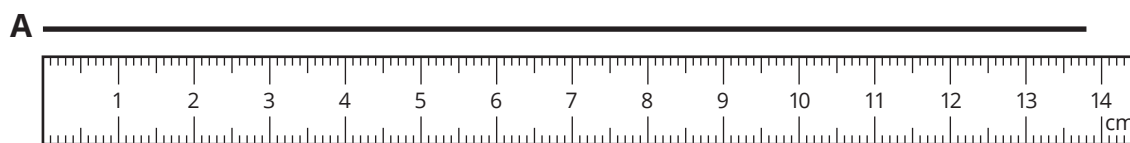
B (3,1)

C (3,6)

3 Decide whether true or false. Explain your answer.

	True / False	Explain why you say yes or no.
0,6 is bigger than 0,06	(True)	(There are six 0,01s in 0,06 and sixty 0,01s in 0,6 OR six tenths is more than six hundredths)
0,07 is smaller than 0,7	(True)	($\frac{7}{100}$ is less than $\frac{7}{10}$) OR 
4,5 < 4,52	(True)	(4,5 = 4,50 and 4,50 is less than 4,52 OR I cannot subtract 4,52 from 4,5 but I can subtract 4,5 from 4,52 and the answer is 0,02.)
$\frac{10}{10} > 0,9$	(True)	($\frac{10}{10} = 1$; 1 whole is more than 0,9)
$\frac{8}{10} = 0,8$	(True)	$\frac{1}{10} = 0,1$: there are 8 $\frac{1}{10}$ s in $\frac{8}{10}$ and there are eight 0,1s in 0,8)

4 How long is Line A? Line A is (13,8) cm long.



5 How many Hundreds, Tens, Ones, tenths and hundredths are there in 349,25?
There are (3) Hundreds, (4) Tens, (9) Ones, (2) tenths and (5) hundredths in 349,25.

6 Calculate:

a $0,71 + 0,29 = \square$

	T	O	,	t	h
		1	,	1	
		0	,	7	1
+		0	,	2	9
		1	,	0	0

b $32 - 23,47 = \square$

	T	O	,	t	h
	2	11	,	9	
	3	2	,	4	7
-	2	3	,	4	7
		8	,	5	3

5 REFLECTION AND SUMMARY OF LESSON

Call the whole class to attention and summarise the key concepts of the lesson.

Say: **Today we have revised decimal fractions.**

Unit 5: Capacity and volume

INTRODUCTION

This unit focuses on capacity and volume. Capacity and volume are properties of objects. When we measure these properties of objects, we use a numerical value to describe how much of the property the object has. This allows us to compare and order capacities.

In the Foundation Phase, the focus was on identifying and understanding what they are measuring when they measure capacity. They also estimated and used informal and the formal units of measure (litres and millilitres). Formal (standard) units of measurement and problem solving are the focus of capacity work in Grade 4.

This topic requires a variety of practical activities for which a variety of resources are needed. You and your learners should collect containers such as jars, bottles, and tubs.

In this unit, we focus on the four framework dimensions in the following ways:

Framework dimension	How the framework dimension is developed in this unit
Conceptual understanding	Learners see the connections between capacity and volume.
Procedural fluency	Learners perform the procedures to convert from millilitres to litres and vice versa fluently.
Strategic competence	Learners identify appropriate strategies for solving word problems involving capacity and volume. For example, they decide which unit to work with and whether to work with measurements as decimal fractions or as common fractions.
Reasoning	Learners use mathematical language and symbols to explain why the volume of different-shaped 1 ℓ containers looks so different but are actually the same.

In this unit, we build a **learning centred classroom** by paying attention to:

		Examples
Concept development	✓	Done in every lesson
Speaking mathematics	✓	Learners are given opportunities to develop the language of capacity and volume
Practising procedures	✓	Learners practise conversions from millimetres to centimetres and vice versa
Problem solving	✓	Learners use addition and subtraction to solve word problems in everyday measurement contexts
Applying maths in context	✓	Learners use their knowledge of capacity and volume to solve word problems in everyday measurement contexts

Mathematical vocabulary for this unit

Be sure to teach and use the following vocabulary at the appropriate place in the unit. It is a good idea to make flashcards of words and their meanings and to display these in the classroom at appropriate times.

Refer to the bilingual dictionary where necessary.

Term	Explanation / diagram
capacity	The amount of liquid or sand or rice that an empty container could hold when full
litre (ℓ)	The standard metric unit used to measure volume and capacity
millilitre (mℓ)	Metric unit used to measure volume and capacity There are 1 000 mℓ in a litre
volume	The measurement of liquid or sand or rice in a container

Further practice for learners

This table references other sources (including textbooks) if you need additional activities.

	Fabulous	Oxford Headstart	Oxford Successful	Platinum	Premier	Sasol Inzalo	Solutions for All	Study & Master	Viva
LB	160-164	176-182	142-146	102-107	114-119	25-237	170-178	178-187	114-118
TG	123-127	216-224	134-137	83-86	58-61	255-268	135-143	180; 236-244	61-63

UNIT PLAN AND OVERVIEW FOR UNIT 5: Capacity and volume

LP	Lesson objective Learners will be able to:	Lesson Resources	Date completed
		Learners need classwork books, LABs, writing materials, rulers and scissors for all lessons.	
39	Be able to use standard units and measuring equipment to estimate, measure, record, compare and order capacity and volume.	Teacher: Empty containers of water, milk, juice, etc. (Try to get containers that have a capacity of 1,5 ℓ, 2 ℓ, 1 ℓ, 500 mℓ, 330 mℓ, etc.); several 1 ℓ measuring jugs; several bottles of water. A3 poster: <i>Capacity and volume</i> . A3 poster: <i>Different measuring containers</i> .	
40	Be able to use addition to solve word problems involving capacity and volume.	Teacher and learner: None	
41	Be able to use subtraction to solve word problems involving capacity and volume.	Teacher and learner: None	
42	Revise capacity and volume (define, estimate, measure, record, compare, order and solve word problems).	Teacher and learner: Textbooks (if available)	

Assessment for learning

Use the template provided at the beginning of this guide to think deeply about at least one of the lessons in this unit.

Reflection

Think about and make a note of: *What went well? What did not go well? What did the learners find difficult or easy to understand or do? What will you do to support or extend learners? Did you complete all the work set for the unit? If not, how will you get back on track?*

What will you change next time? Why?

Lesson 39: Millilitres and litres

Teacher's notes

This lesson is one of the fully planned lessons to be used to cover the Term 3 curriculum.

CAPS topics: 4.3 Capacity and volume

Lesson Objective: Learners will be able to use standard units and measuring equipment to estimate, measure, record, compare and order capacity and volume.

Lesson Vocabulary: capacity, litre, millilitre, volume.

Teacher Resources: Empty containers of water, milk, juice, etc. (Try to get containers that have a capacity of 1,5 ℓ, 2 ℓ, 1 ℓ, 500 mL, 330 mL, etc.); A3 poster: *Capacity and volume*; A3 poster: *Different measuring containers*.

Date:

Week

Day

1 MENTAL MATHS (5 MINUTES)

		Answer			Answer
1	$3,4 + 3,5 =$	6,9	6	$4,2 + 3,8 =$	8,0 or 8
2	$2,3 + 6,4 =$	8,7	7	$12,1 + 17,9 =$	30,0 or 30
3	$4,1 + 6 =$	10,1	8	$9,19 + 11,32 =$	20,51
4	$3,5 + 2,7 =$	6,2	9	$9,03 + 7,07 =$	16,10 or 16,1
5	$11 + 6,3 =$	17,3	10	$42,74 + 1,2 =$	43,94

2 LINK TO GRADE 3 WORK ON CAPACITY (5 MINUTES)

- This is the first lesson in this unit. Revise Grade 3 work on capacity by asking these questions:
- Ask, as you show any empty containers/bottles of water, milk, juice:
How much water/milk/juice/coke was in this bottle/container?
 (Vary the sizes of the containers to include measurements like 1,5 ℓ, 2 ℓ, 1 ℓ, 500 mL, 330 mL.)
 As you do this activity, check whether the learners remember the units for volume and capacity which are litres (ℓ) and millilitres (mℓ).
- Ask, as you point to the inside of an empty jug/ container:
How many litres can we measure with this jug? (Answers will vary)
When you measure how much a container can hold, what are you measuring?
 (Capacity)
- Ask: **If I want to measure how much milk is in this jug, what unit will I use?**
 (Probably litres, but learners could also say millilitres)

3 CORRECT HOMEWORK ACTIVITY

This is the first lesson in this unit. There is no homework to correct.

4 LESSON CONTENT – CONCEPT DEVELOPMENT (40 MINUTES)

- This is the first of four lessons on capacity and volume. In this lesson, learners use standard units to measure capacity and volume.
- Learners were introduced the litre as the standard unit of measurement and capacity in Grade 2; and to the millilitre in Grade 3. As with all measurement, learners should be given opportunities to estimate, measure, record, compare and order capacity and volume.

Say: Today we are learning to estimate, measure, record, compare and order capacity and volume in litres and millilitres.

Activity 1: Whole class activity

- Display the A3 poster: *Capacity and Volume* in the classroom.
- Use the poster to remind the learners of the difference between Capacity and Volume.
 - **Capacity is the amount of liquid or sand or rice that an empty container could hold.**
 - **Volume is the measure of liquid or sand or rice in a container.**
- **Say: We can use millilitres and litres to measure both capacity and volume.**
- **Ask: What is the capacity of this container? (1 ℓ)**
- **Ask: What is the volume of this container? (250 mℓ)**
- Display the A3 poster: *Measuring containers are marked in different ways in the classroom.*
- **Say: Turn to Activity 1 in your LAB.**
- **Say: Each container on the poster and in your LAB has markings on a vertical number line. We use these markings to read the capacity or volume of the container.**
- Point to Measuring Container A on your poster, and say: **Look at Container A in your LAB.**

- Ask the following questions and allow the learners to answer and discuss the answers:

What is the capacity of Container A? (1 litre)

How many equal parts are shown on Container A? (10)

Discuss with your partner how you can find what each mark should read in millilitres.

(There are 10 marks on the side of the container.)

$$1 \ell = 1\,000 \text{ mL}$$

$$1\,000 \div 10 = 100$$

So, the interval between the smallest marks is 100 mL

Label each mark in millilitres on Container A. (See the answers in table)

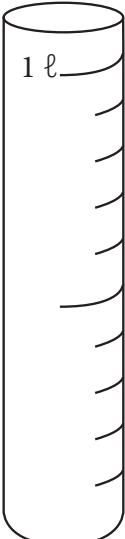
How do you write 500 mL as a fraction of a litre? (Each mark is $\frac{1}{10}$ th of a litre, so 500 mL is $\frac{5}{10} \ell$)

Label each mark as the fraction of a litre on Container A. (See the answers in table)

How do you write 100 mL as a decimal fraction of a litre? ($100 \text{ mL} = \frac{1}{10} \ell = 0,1 \ell$)

Label each mark as the decimal fraction of a litre on Container A. (See the answers in table)

- Tell the learners to look at Container B in their LAB and on the poster.

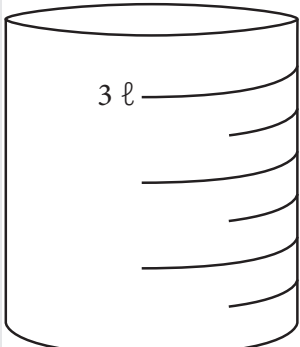
Container A	Millilitres	Litres (written as a fraction)	Litres (written as a decimal)
	1 000 mL	1 ℓ	1 ℓ
	900 mL	$\frac{9}{10} \ell$	0,9 ℓ
	800 mL	$\frac{8}{10} \ell$	0,8 ℓ
	700 mL	$\frac{7}{10} \ell$	0,7 ℓ
	500 mL	$\frac{6}{10} \ell$	0,6 ℓ
	500 mL	$\frac{5}{10} \ell$	0,5 ℓ
	400 mL	$\frac{4}{10} \ell$	0,4 ℓ
	300 mL	$\frac{3}{10} \ell$	0,3 ℓ
	200 mL	$\frac{2}{10} \ell$	0,2 ℓ
	100 mL	$\frac{1}{10} \ell$	0,1 ℓ

- Ask the following questions and allow the learners to answer and discuss the answers:

What is the capacity of Container B? (3 ℓ)

There are long marks and short marks shown on Container B.

How many long marks are there? (3)

Container B	Litres (written as a decimal fraction)	Millilitres
	3 ℓ	3 000 ml
	2,5 ℓ	2 500 ml
	2 ℓ	2 000 ml
	1,5 ℓ	1 500 ml
	1 ℓ	1 000 ml
	0,5 ℓ	500 ml

Discuss with your partner how you can find what each long mark should read in litres. (3 ℓ ÷ 3 = 1 ℓ. So each long mark is 1ℓ)

How many short marks are there? (There is 1 short mark between each long mark)

Discuss with your partner what each short mark should read in litres.

(2,5 ℓ lies between 2 ℓ and 3 ℓ; 1,5 ℓ lies between 1 ℓ and 2 ℓ; 0,5 ℓ lies between 0 ℓ and 1 ℓ)

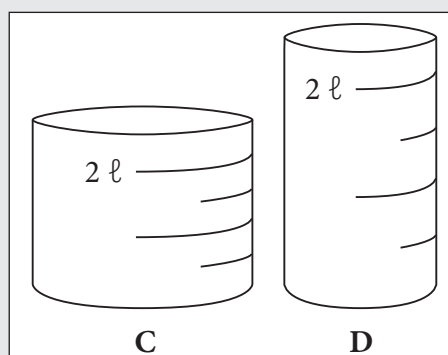
Label each mark in litres on Container B. (See the answers on the right of Container B)

Then label each mark in millilitres on Container B. (See the answers on the right of Container B)

- Tell the learners to look at Containers C and D in their LAB and on the poster.
- Ask the learners the following questions and allow the learners to answer and the discuss the answers.

What is the capacity of Container C? (2 ℓ)

What is the capacity of Container D? (2 ℓ)



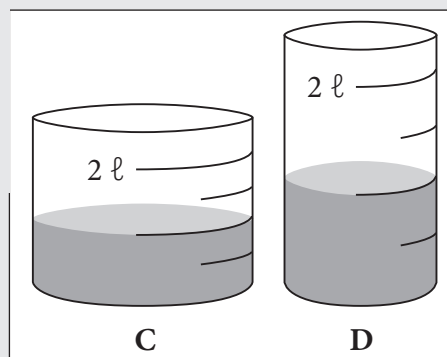
Discuss with your partner why the volume of 1 ℓ on each container (C and D) looks so different but is actually the same.

(It is possible to have different shaped containers which have a capacity of 1 ℓ.

Container C is shorter and wider and Container D is taller and narrower but they both have a capacity of 1 ℓ. Allow learners to test practically if possible. It is better to have

two real different sized containers (not necessarily measuring jugs but transparent) and pour 1 ℓ of water into them to compare.)

Discuss with your partner what the volume of water is in Container C and what the volume of water is in Container D. (There is 1 ℓ of water in each container)



Activity 2: Learners work in pairs

Say: **Complete Activity 2 in your LAB.**

- Walk around the classroom to support learners as needed.
- Correct Activity 2 with learners so that they can receive immediate feedback.
- Answers are provided.

Work with a partner.

- 1 On the table write the capacity of each containers in millilitres (mℓ) and then in litres (ℓ).



a 5 ℓ



b 500 mℓ



c 1 ℓ



d 400 mℓ



e 3 ℓ



f 250 mℓ

Container	Capacity	
	In millilitres (mℓ)	In litres (ℓ)
a Dishwashing liquid	(5 000 mℓ)	5 ℓ
b Cola	500 mℓ	$(0,5 \ell = \frac{1}{2} \ell = \frac{5}{10} \ell)$
c Milk	(1 000 mℓ)	1 ℓ
d Grape juice	400 mℓ	$(0,4 \ell = \frac{4}{10} \ell)$
e Floor cleaner	(3 000 mℓ)	3 ℓ
f Measuring cup	250 mℓ	$(\frac{1}{4} \ell)$

(Note to the teacher: If learners struggle with writing 250 mℓ as $\frac{1}{4} \ell$, discuss with them the following:

- $500 \text{ m}\ell = \frac{1}{2} \ell$ and 250 mℓ is half of 500 mℓ, so $250 \text{ m}\ell = \frac{1}{4} \ell$.)

2 Write the containers in order from the one with the largest capacity to the one with the smallest capacity.

Write the letter of each container only: (a, e, c, b, d, f)

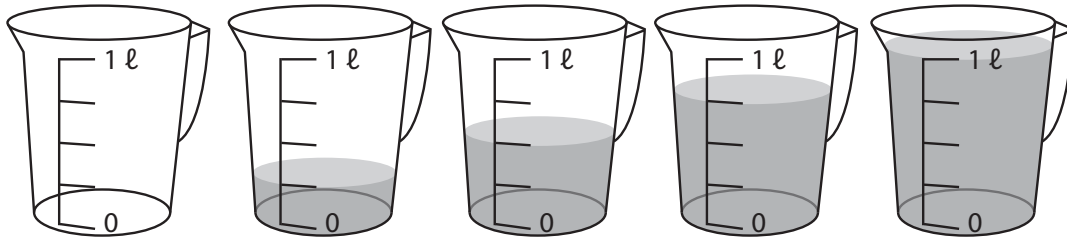
Activity 3: Learners work in pairs

Say: **Work with your partner to complete Activity 3 in your LAB.**

- Ask the learners to answer question 1 in Activity 3.
- Mark question 1 with the learners and then ask them to answer question 2.
- Mark question 2 with the learners and then ask them to answer question 3.
- Mark question 3 with the learners, allowing the learners to explain how they reached their answers.
- Answers are given in brackets.

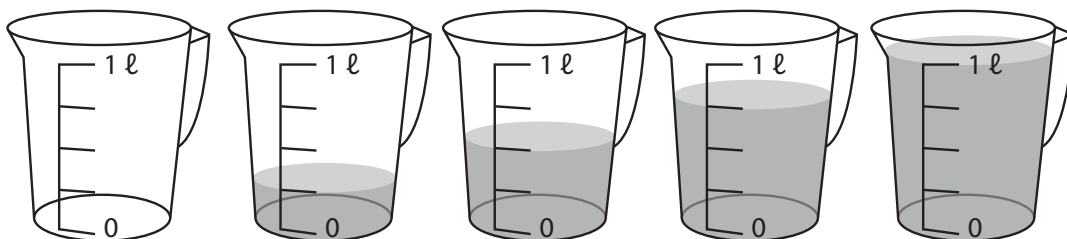
Work with your partner.

1. Look at the measuring jugs. Answer the questions.



- a What is the capacity of these identical jugs in litres? (1 ℓ)
- b Write the capacity of the jugs in millilitres. (1 000 mℓ)
- c We need to know what the interval is between marks on each jug.
 How many equal parts are shown on the vertical line on each jug? (4)
 How do you work out the interval between the marks? ($1\ 000 \div 4 = 250$)
 What is the interval between marks? (250 mℓ)

2 Read and write the volume of liquid in each of these containers in millilitres.



(0 mℓ)

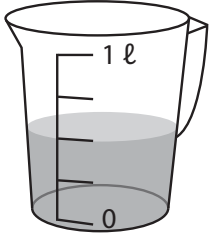

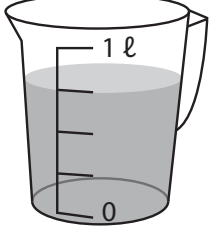
(250 mℓ)

(500 mℓ)

(750 mℓ)

(1 000 mℓ)

3 Write the volume of each of these containers in litres. Explain how you got your answer.

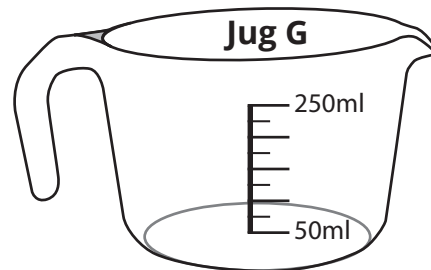
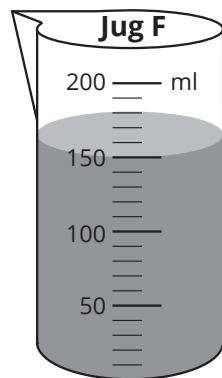
	Volume in litres	Explain how you get your answer
	$(\frac{1}{2} \ell$ or $\frac{5}{10} \ell$ or $0,5 \ell$ or $0,500 \ell$)	(1 ℓ is divided into 2 equal parts and the liquid occupies 1 part)
	$(\frac{1}{4} \ell$ or $0,25 \ell$ or $0,250 \ell$)	(1 ℓ is divided into 4 equal parts and the liquid occupies 1 part)
	$(\frac{3}{4} \ell$ or $0,75 \ell$ or $0,750 \ell$)	(1 ℓ is divided into 4 equal parts and the liquid occupies 3 parts)

Learners can write the answers to question 3 in various ways. Encourage the learners to share their answers with the rest of the class.

5 HOMEWORK ACTIVITY (5 MINUTES)

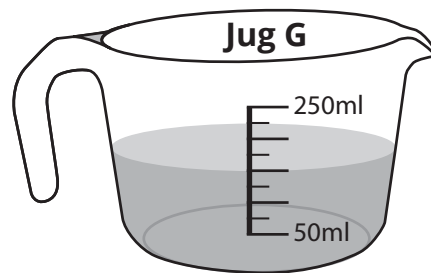
- Explain what learners need to do for homework.
- Read the question in the LAB with learners. Make sure all the learners understand what to do.
- Answers are given.

Look at the jugs and then answer the questions.



Unit 5: Capacity and volume

- 1 What is the capacity of Jug F? (200 mℓ)
- 2 What is the volume of the juice in Jug F? (150 mℓ)
- 3 What is the capacity of Jug G? (250 mℓ)
- 4 What is the volume of liquid in Jug G? (0 mℓ)
- 5 Will the juice in Jug F fit in Jug G? (Yes, it will fit.)
Give a reason for your answer. Use the words *capacity* and *volume* in your answer.
(The capacity of Jug G is 250 mℓ and the volume of the juice in Jug F is 150 mℓ so the juice in Jug F WILL fit in Jug G)
- 6 Draw Jug G after the juice has been poured in from Jug F.



6 REFLECTION AND SUMMARY OF LESSON (5 MINUTES)

Call the whole class to attention and summarise the key concepts of the lesson.

Say: **Today we have learned to estimate, measure, record, compare and order capacity and volume in litres and millilitres.**

Lesson 40: Capacity and volume in everyday life (1)

Teacher's notes

This lesson is one of the fully planned lessons to be used to cover the Term 3 curriculum.

CAPS topics: 4.3 Capacity and Volume

Lesson Objective: Learners will be able to use addition to solve word problems involving capacity and volume.

Lesson Vocabulary: millilitres, litres, capacity, volume

Teacher and Learner Resources: None

Date:

Week

Day

1 MENTAL MATHS (10 MINUTES)

		Answer			Answer
1	$3,6 - 1,4 =$	2,2	6	$18,35 - 12,21 =$	6,14
2	$19,9 - 9,2 =$	10,7	7	$5,2 - 0,7 =$	4,5
3	$4,4 - 2,4 =$	2	8	$13 - 2,9 =$	10,1
4	$7,3 - 2,4 =$	4,9	9	$20 - 13,7 =$	6,3
5	$8,1 - 7,3 =$	0,8	10	$10,1 - 9,4 =$	0,7

2 LINK TO PREVIOUS LESSON (5 MINUTES)

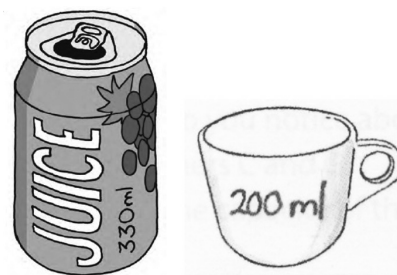
Refer learners to the questions in the LAB.

1 What is the capacity of the juice can? (330 ml)

2 What is the capacity of the cup? (200 ml)

3 Write the capacity of the cup in litres.

$$200 \text{ ml} = (0,2 \text{ l or } \frac{2}{10} \text{ l})$$



3 CORRECT HOMEWORK ACTIVITY (5 MINUTES)

The answers to the Homework Activity for Lesson 39 are provided in Lesson 39.

Use this time to purposefully address gaps in learners' knowledge and to identify and address learner errors.

4 LESSON CONTENT – CONCEPT DEVELOPMENT (35 MINUTES)

In this lesson, learners solve word problems involving the addition of volume and capacity, including common fractions and decimal fractions.

Say: **Today we are learning to solve word problems involving capacity and volume.**

Activity 1: Whole class activity

Say: **Complete Activity 1 in your LAB.**

- Walk around the classroom to support learners as needed.
- Correct Activity 1 with learners so that they can receive immediate feedback.
- Answers are provided.

Work with your partner

1 Write in millilitres.

Example: $2 \ell = 2\,000 \text{ mL}$

a $5 \ell = (5\,000) \text{ mL}$

b $10 \ell = (10\,000) \text{ mL}$

c $1 \ell = (1\,000) \text{ mL}$

d $\frac{3}{4} \ell = (750) \text{ mL}$

e $\frac{1}{2} \ell = (500) \text{ mL}$

2 Write in litres and millilitres.

Example: $1\,600 \text{ mL}$ can be written as 1ℓ and 600 mL .

a $1\,700 \text{ mL} = (1) \ell$ and $(700) \text{ mL}$

b $4\,600 \text{ mL} = (4) \ell$ and $(600) \text{ mL}$

c $6\,990 \text{ mL} = (6) \ell$ and $(990) \text{ mL}$

d $3\,050 \text{ mL} = (3) \ell$ and $(50) \text{ mL}$

3 How many litres in each of the following?

Give your answer as a decimal.

Example: $2\,500 \text{ mL} = 2,5 \ell$

a $1\,700 \text{ mL} = (1,7) \ell$

b $4\,600 \text{ mL} = (4,6) \ell$

c $6\,990 \text{ mL} = (6,99) \ell$

d $3\,050 \text{ mL} = (3,05) \ell$ → Note that the '0' of the tenth's place must be written.

e $750 \text{ mL} = (0,75) \ell$

4 How many litres in each of the following?

Give your answer as a fraction or a decimal fraction if necessary.

Example: $2\ 500\ \text{m}\ell = 2,5\ \ell = 2\ \frac{1}{2}\ \ell$

- a $3\ 000\ \text{m}\ell = (3)\ \ell$
- b $5\ 500\ \text{m}\ell = (5,5\ \text{or}\ 5\ \frac{1}{2})\ \ell$
- c $4\ 200\ \text{m}\ell = (4,2\ \text{or}\ 4\ \frac{2}{10})\ \ell$
- d $750\ \text{m}\ell = (\frac{3}{4})\ \ell$

5 Thembi sells milk. Her customers bring their own containers.

Thembi filled two containers with $2\ \ell$ each,

one container with $1,5\ \ell$

and one container with $4\ \ell$.

How many litres did Thembi sell?

- a Read the word problem carefully. Underline the numbers and the question.

Thembi sells milk. Her customers bring their own containers.

Thembi filled two containers with 2 ℓ each,

one container with 1,5 ℓ

and one container with 4 ℓ .

How many litres did Thembi sell?

- b Write a number sentence for the word problem: $(2 + 2 + 1,5 + 4 = \square)$
- c Do the calculation: $(2 + 2 + 1,5 + 4 = 9,5)$
- d Answer: Thembi sold $(9,5)\ \ell$ of milk.
- e Rewrite the answer in millilitres: $(9\ 500)\ \text{m}\ell$
- f Rewrite the answer in litre and millilitres: $(9)\ \ell$ and $(500)\ \text{m}\ell$

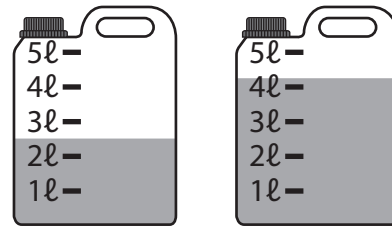
Activity 2: Learners work on their own

Say: **Work on your own to complete Activity 2 in your LAB.**

- Walk around the classroom to support learners as needed.
- Correct Activity 2 with learners so that they can receive immediate feedback.
- Answers are given.

Do this Activity on your own.

- 1** A container holds 2,5 ℓ petrol.
Another container holds $4\frac{1}{4}$ ℓ petrol.
How much petrol is there altogether?



- a** Read the word problem carefully.
Underline the numbers and the question.

A container holds 2,5 ℓ petrol.

Another container holds $4\frac{1}{4}$ ℓ petrol.

How much petrol is there altogether?

- b** Write a number sentence for the word problem: $(2,5 \ell + 4\frac{1}{4} \ell = \square)$
- c** Write both amounts of petrol in millilitres
 $2,5 \ell = (2\ 500) \text{ mL}$
 $4\frac{1}{4} \ell = (4\ 250) \text{ mL}$

- d** Use the column method to find the total.

	Th	H	T	O
	2	5	0	0
+	4	2	5	0
	6	7	5	0

- e** Give the answer in three ways:
In mL: (6 750) mL
In ℓ and mL: (6) ℓ and (750) mL
In ℓ only: (6,750) ℓ
- 2** Zami drank 1,5 ℓ water in the morning
and 2 ℓ and 600 mL water in the afternoon.
How much water did Zami drink during the day?
- a** Read the word problem carefully. Underline the numbers and the question.
Zami drank 1,5 ℓ water in the morning
and 2 ℓ and 600 mL water in the afternoon.
How much water did Zami drink during the day?

b Convert 1,5 ℓ to mL:

$$1,5 \text{ ℓ} = (1\ 500) \text{ mL}$$

c Convert 2 ℓ and 600 mL to mL:

$$2 \text{ ℓ and } 600 \text{ mL} = (2\ 600) \text{ mL}$$

d Write a number sentence for the word problem: $(1\ 500 + 2\ 600 = \square)$

e Use the column method to find the answer:

	Th	H	T	O
	1			
	1	5	0	0
+	2	6	0	0
	4	1	0	0

f Give the answer:

Zami drank (4 100) mL or (4,1) ℓ or (4) ℓ and (100) mL water.

3 Gogo uses 1 cup of milk to make scones.

If she doubles the recipe, how much milk will she need?

a Read the word problem carefully. Underline the numbers and the question.

Gogo uses 1 cup of milk to make scones.

If she doubles the recipe, how much milk will she need?

b Write a number sentence for the word problem: $(1 + 1 = \square)$ OR $2 \times 1 = \square)$

c Do the calculation: $(1 + 1 = 2)$

d How many cups of milk will Gogo need? Gogo will need (2) cups of milk.

e 1 cup of milk has a capacity of 250 mL

How many millilitres of milk will Gogo need? Gogo will need (500) mL milk

How many litres of milk will Gogo need? Gogo will need $\frac{1}{2}$ ℓ milk or 0,(5) ℓ milk

5 HOMEWORK ACTIVITY (5 MINUTES)

- Explain what learners need to do for homework.
- Read the question in the LAB with learners. Make sure all the learners understand what to do.
- Answers are given in brackets.

1 How many litres in each of the following?

Give your answer as a decimal fraction if necessary.

Example: 1 500 mL = 1,5 ℓ

a 1 000 mL = (1) ℓ

b 2 500 mL = (2,5) ℓ

c 3 600 mL = (3,6) ℓ

d 17 500 mL = (17,5) ℓ

2 Write in millilitres.

Example: 2 ℓ = 2 000 mL

a 8 ℓ = (8 000) mL

b 20 ℓ = (20 000) mL

c 4,5 ℓ = (4 500) mL

d $1 \frac{1}{4}$ ℓ = 1 ℓ (250) mL = (1 250) mL

6 REFLECTION AND SUMMARY OF LESSON (5 MINUTES)

Call the whole class to attention and summarise the key concepts of the lesson.

Say: **Today we have learned how to solve word problems involving capacity and volume.**

Lesson 41: Capacity and volume in everyday life (2)

Teacher's notes

This lesson is one of the fully planned lessons to be used to cover the Term 3 curriculum.

CAPS topics: 4.3 Capacity and Volume

Lesson Objective: Learners will be able to use subtraction to solve word problems involving capacity and volume.

Lesson Vocabulary: capacity, volume, millilitre, litre

Teacher and Learner Resources: None

Date:

Week

Day

1 MENTAL MATHS (5 MINUTES)

		Answer			Answer
1	$3,9 - 2,2 =$	1,7	6	$16,7 - 9,2 =$	7,5
2	$7,42 - 4,32 =$	3,1	7	$3 - 2,2 =$	0,8
3	$6,19 - 3,17 =$	3,02	8	$20 - 14,3 =$	5,7
4	$5,7 - 1,8 =$	3,9	9	$4,31 - 0,28 =$	4,03
5	$2,2 - 0,9 =$	1,3	10	$8,21 - 5,36 =$	2,85

2 LINK TO PREVIOUS LESSON (5 MINUTES)

- Refer learners to the question in the LAB.
- Learners should work in pairs to discuss the question and work out a strategy for finding the answer.
- Allow several learners to share their strategy and answer with the class.

Work with your partner to find the answer.

A tap at the school was leaking.

Teacher put a 2 ℓ bucket under the tap to catch the water.

The tap leaked half a bucket of water a day.

How much water was leaked altogether by the tap from Monday to Friday?

What is the capacity of the bucket? (2 ℓ)

How many litres in half a bucket of water? (1 ℓ)

How many days from Monday to Friday? (5) days

Write a number sentence to show the problem:

$(5 \times 1 \ell = 5 \ell$ OR $1 + 1 + 1 + 1 + 1 = 5 \ell)$

How many buckets of water were leaked from Monday to Friday?

$(2\frac{1}{2}$ or 2,5) bucketsful



3 CORRECT HOMEWORK ACTIVITY (5 MINUTES)

The answers to the Homework Activity for Lesson 40 are provided in Lesson 40. Use this time to purposefully address gaps in learners' knowledge and to identify and address learner errors.

4 LESSON CONTENT - CONCEPT DEVELOPMENT (35 MINUTES)

In this lesson, learners solve word problems involving the subtraction of volume and capacity, including common fractions and decimal fractions.

Say: **Today we are learning to solve more word problems involving capacity and volume.**

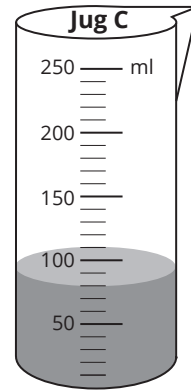
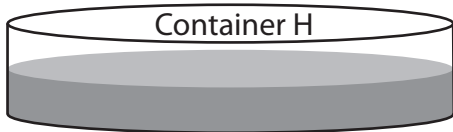
Activity 1: Learners work in pairs

Say: **Work in pairs to complete Activity 1 in your LAB.**

- The learners must be given time to discuss and work on the questions.
- Walk around the classroom to support learners as needed.
- Correct Activity 1 with learners so that they can receive immediate feedback.
- Answers are provided.

Work with your partner.

- 1** Container H has a capacity of 200 ml. Juice is poured into it. The volume of the juice is half of the capacity.



- a** Which container has the more juice, Container H or Jug C? How much more?

The volume of juice in Container H = (100) ml

The volume of juice in Jug C = (80) ml

Which container has more juice? (Container H)

Calculate the difference in the volume of juice in the two containers:

$$(100) \text{ ml} - (80) \text{ ml} = (20) \text{ ml}$$

How much more juice is in the bigger container? (20) ml

- b** How much more juice can be poured into Jug C?

$$(250) \text{ ml} - 80 \text{ ml} = (170) \text{ ml}.$$

So (170) ml more juice can be poured into Jug C.

- 2 The capacity of the fuel tank of a taxi is 75 ℓ.
The fuel tank is filled to capacity in the morning.

- a. How much fuel was used on Monday if there was 18 ℓ left in the tank in the evening?

Write a number sentence to describe the problem: $(75 - 18 = \square)$

Use the column method to work out the answer:

	T	O
	6	
	7	15
-	1	8
	5	7

Give the answer: (57) ℓ of fuel was used on Monday.

- b. On Monday evening the taxi driver bought 25 ℓ of fuel at the garage.
How much fuel is now in the tank?

Write a number sentence to describe the problem: $(18 + 25 = \square)$

Use the column method to work out the answer:

	T	O
	1	
	1	8
+	2	5
	4	3

Give the answer: (43) ℓ of fuel is now in the tank.

Activity 2: Learners work in pairs

Say: **Work in pairs to complete Activity 2 in your LAB.**

- Remind learners that there are 1 000 millilitres in a litre and that they will sometimes need to convert from litres to millilitres.
- Remind learners that they must always work with the same units in a problem.
- Walk around the classroom to support learners as needed.
- Correct Activity 2 with learners so that they can receive immediate feedback.
- Answers provided.

Work with your partner to answer these questions.

- 1** Lucky poured 640 mL water from a jug holding a volume of 1,5 L of water.
How much water was left in the jug?

- a** Read the word problem carefully. Underline the numbers and the question.

Lucky poured 640 mL water from a jug which had a volume of 1,5 L.

How much water was left in the jug?



- b** Write a number sentence for the word problem.
You need to have the same units when you calculate.
 $1,5 \text{ L} = (1\ 500) \text{ mL}$
The number sentence is $(1\ 500 - 640 = \square)$

	Th	H	T	O
		14		
	+	5	10	0
-		6	4	0
		8	6	0

- c** Give the answer.
(860) mL was left in the jug.

- 2** One bottle contains 750 mL oil.
Mrs Tau used some of the oil.
There was then 515 mL of oil left in the bottle.
How much oil did she use?

- a** Read the word problem carefully.
Underline the numbers and the question.

One bottle contains 750 mL oil.

Mrs Tau used some of the oil.

There was 515 mL of oil left in the bottle after she used some.

How much oil did she use?



- b** Write a number sentence for the word problem
 $(750 - 585 = \square)$

	H	T	O
	6	14	
	7	5	10
-	5	8	5
	1	6	5

- c.** Find the answer.
Mrs Tau used (165) mL of oil.

- 3** Evelyn took 1 570 ml of milk from a container holding of $3\frac{1}{2}$ ℓ of milk.
How much milk was left in the container?

- a** Read the word problem carefully. Underline the numbers and the question.

Evelyn took 1 570 ml of milk from a container holding of $3\frac{1}{2}$ ℓ milk.

How much milk was left in the container?

- b** Write a number sentence for the word problem.
You need to have the same units when you calculate.

$$3\frac{1}{2}\ell = (3\ 500)\text{ ml}$$

The number sentence is $(3\ 500 - 1\ 570 = \square)$

- c** Find the answer.

	Th	H	T	O
	2	14		
	3	5	10	0
-	1	5	7	0
	1	9	3	0

(1 930) ml of milk was left in the container.

(1) ℓ and (930) ml of milk was left in the container.

(1,930) ℓ of milk was left in the container.

Activity 3: Learners work on their own

Say: **Work on your own to complete Activity 3 in your LAB.**

- Walk around the classroom to support learners as needed.
- Correct Activity 3 with learners so that they can receive immediate feedback.
- Answers are provided.

Work on this Activity on your own.

- 1** There was 6 349 ℓ water in the tank.
David used 2 006 ℓ to water the vegetable garden and another 1 500 mℓ to water a small pot plant.
How much water did David use?



- a** Read the word problem carefully. Underline the numbers and the question.

There was 6 349 ℓ water in the tank.

David used 2 006 ℓ to water the vegetable garden and another 1 500 mℓ to water a small pot plant.

How much water did David use?

- b** Write a number sentence for the word problem. You have to have the same units when you calculate.

2 006 ℓ will become a very large number if we convert it to mℓ.

So, it is better to convert 1 500 mℓ to ℓ: 1 500 mℓ = (1,5) ℓ

The number sentence is $(2\ 006\ \ell + 1,5\ \ell = \square)$

- c** Find the answer.

David used (2 007,5) ℓ of water to do the watering.

- d** How much water is left in the water tank after David did the watering?

Write a number sentence: $(6\ 349 - 2\ 007,5 = \square)$

Use the column method to find the answer.

	Th	H	T	O	,	t
				8		
	6	3	4	9	,	¹⁰
-	2	0	0	7	,	5
	4	3	4	1	,	5

There is (4 341,5) ℓ left in the tank.

- e.** Give your answer in litres and millilitres: (4 341) ℓ and (500) mℓ

- 2** The farmer used 13,2 ℓ fertiliser and her neighbour used 15 100 mℓ fertiliser.
How much more fertiliser did the one farmer use than the other farmer?
Give your answer in litres.

- a** Read the word problem carefully. Underline the numbers and the question.

The farmer used 13,2 ℓ fertiliser and her neighbour used 15 100 mℓ fertiliser.

How much more fertiliser did the one farmer use than the other farmer?

Give your answer in litres.

- b** Write a number sentence for the word problem.

You need to have the same units when you calculate.

We have to answer in litres, so it is better to convert 15 100 mℓ to ℓ:

$$15\ 100\ \text{m}\ell = (15,1)\ \ell$$

$$\text{The number sentence is } (15,1\ \ell - 13,2\ \ell = \square)$$

- c** Find the answer.

	T	O	,	t
		4		
	1	5	,	¹ 1
-	1	3	,	2
		1	,	9

- d** Give the answer in litres.

The one farmer used (1,9) litres more fertiliser than the other farmer.

5 HOMEWORK ACTIVITY (5 MINUTES)

- Explain what learners need to do for homework.
- Read the question in the LAB with learners. Make sure all the learners understand what to do.
- Tell the learners that the second question is a challenge question for them to try if they want to.
- Answers are given in brackets.

1. A taxi driver started a day with a full tank of 65 ℓ of fuel.

At the end of the day there was 15 ℓ of fuel left in the tank.

How many litres of fuel did the taxi driver use?

The taxi driver used $(65 - 15 = 50)$ ℓ of fuel.

2. Challenge!

If the taxi driver used the amount of fuel left over to drive 500 km, how far would he be able to drive using 1 ℓ fuel?

The taxi driver drove 500 km using (50) ℓ of fuel.

He could travel $(500 \div 50 = 10)$ km using 1 ℓ of fuel.

6 REFLECTION AND SUMMARY OF LESSON (5 MINUTES)

Call the whole class to attention and summarise the key concepts of the lesson.

Say: **Today we have learned to solve subtraction word problems involving capacity and volume.**

Lesson 42: Consolidation

Teacher's notes

This lesson allows for consolidation of the previous days' lesson content.

CAPS topics: 4.3 Capacity and volume

Lesson Objective: Learners will revise capacity and volume (define, estimate, measure, record, compare, order and solve word problems).

Lesson Vocabulary: capacity, volume, millilitre, litre

Resources: Textbooks (if available)

Date:

Week

Day

1 NOTES FOR THE TEACHER RELATING TO THIS UNIT'S WORK

The main topic in this unit was measurement: capacity and volume.

2. POSSIBLE MISCONCEPTIONS LINKED TO THE UNIT'S WORK

- Young learners often don't consider how wide a container is when commenting on the volume; they tend only to look at how far up the container is filled. For this reason, learners should be given experience in comparing the volumes in containers with different widths.
- Because there are 10 un-numbered intervals between each numbered interval on a ruler (there are 10 mm in a cm), some learners think that there are 10 unnumbered intervals between numbered intervals on all measuring jugs and scales. They have to consider how many equal parts there are between 0 and the numbered mark, and then find how much each interval actually is. (Example: If a 250 mℓ measuring cup is divided into 5 equal parts, one interval is 50 mℓ.)

3 CORRECT HOMEWORK ACTIVITY (5 MINUTES)

The answers to the Homework Activity for Lesson 41 are provided in Lesson 41.

Use this time to purposefully address gaps in learners' knowledge and to identify and address learner errors.

4 CLASSWORK

- In this lesson we go over what the learners have learned in this unit. They will practise estimating, measuring, recording, comparing, ordering, and solving word problems)
- You could use this time for learners to complete classwork or homework activities as necessary.
- You could use the Additional Activities from textbooks that you have or use the Consolidation Activity given.

Additional activities for consolidation

Refer to the following table. Select additional activities from the textbook/s you have.

Use the answers given in the Teacher's Guide to mark the work.

	Fabulous	Oxford Headstart	Oxford Successful	Platinum	Premier	Sasol Inzalo	Solutions for All	Study & Master	Viva
LB	160-164	176-182	142-146	102-107	114-119	25-237	170-178	178-187	114-118
TG	123-127	216-224	134-137	83-86	58-61	255-268	135-143	180; 236-244	61-63

OR, learners could complete the Consolidation Activity in their LAB.

Consolidation Activity

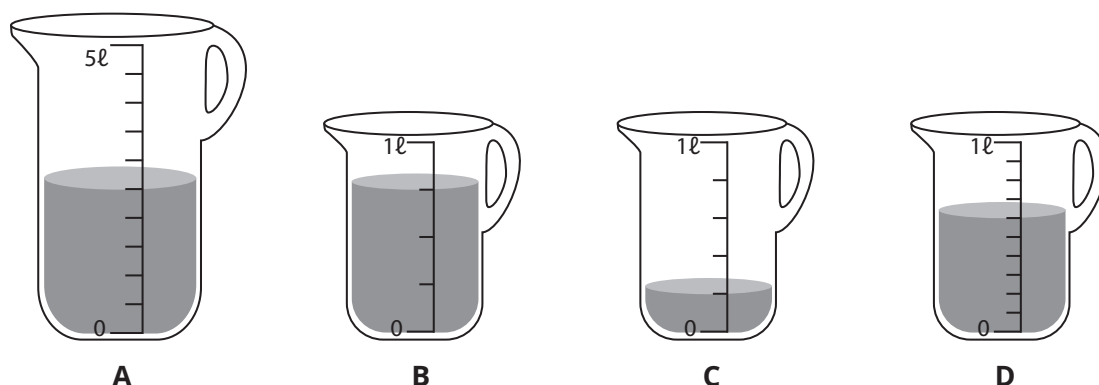
Work on your own

- 1 Look at the containers and their capacities as you answer the questions.



- a** What is the difference between the capacity of the yoghurt container and the cup?
($250 - 200 = 50 \text{ ml}$)
- b** How many containers of milk will be needed to fill a 2ℓ container?
 $2 \text{ ℓ} = (2\,000) \text{ ml}$
($2\,000 \div 500 = 4$)
Answer: (4) milk containers will be needed.
- c** How many yoghurt containers will be needed to fill a half a litre?
Half a litre = (500) ml
($500 \div 250 = 2$)
Answer: (2) yoghurt containers will be needed.
- d** How many cups will be needed to fill a half a litre?
Half a litre = (500) ml
(When I use a cup twice, I can fill 400 ml. I need to pour 100 ml more.
100 ml is $\frac{1}{2}$ of the cup.)
Answer: ($2 \frac{1}{2}$) cups will be needed.

2 Look at the containers and their volumes as you answer the questions.



a What does each little division/calibration/mark on each jug stand for?
 Jug A (500 ml) Jug B (250 ml) Jug C (200 ml) Jug D (100 ml)

b What is the volume of the liquid in each jug?
 Jug A (2 500 ml or 2 l and 500 ml or $2\frac{1}{2}$ l or 2,5 l)
 Jug B (750 ml or $\frac{3}{4}$ l or 0,75 ml)
 Jug C (200 ml or 0,2 l)
 Jug D (600 ml or 0,6 l)

c How much more liquid should be added to make each jug full to capacity?
 Jug A ($5\text{ l} - 2,5\text{ l} = 2,5\text{ l}$ or $5\text{ 000 ml} - 2\text{ 500 ml} = 2\text{ 500 ml}$ or 2 l and 500ml or $2\frac{1}{2}$ l)
 Jug B ($1\text{ l} - 0,75\text{ l} = 0,25\text{ l}$ or $1\text{ 000 ml} - 750\text{ ml} = 250\text{ ml}$)
 Jug C ($1\text{ l} - 0,2\text{ l} = 0,8\text{ l}$ or $1\text{ 000 ml} - 200\text{ ml} = 800\text{ ml}$)
 Jug D ($1\text{ l} - 0,6\text{ l} = 0,4\text{ l}$ or $1\text{ 000 ml} - 600\text{ ml} = 400\text{ ml}$)

d How much liquid is there in total in the 4 jugs?
 ($2\text{ 500 ml} + 750\text{ ml} + 200\text{ ml} + 600\text{ ml} = 4\text{ 050 ml}$
 Or $2,5\text{ l} + 0,75\text{ l} + 0,2\text{ l} + 0,6\text{ l} = 4,05\text{ l}$)

	Th	H	T	O
	2			
	2	5	0	0
		7	5	0
		2	0	0
+		6	0	0
	4	0	5	0

	O	,	t	h
	2			
	2	,	5	0
	0	,	7	5
	0	,	2	0
+	0	,	6	0
	4	,	0	5

e What is the difference between the amount of liquid in the jug with the highest volume and the jug with the lowest volume?
 ($2\text{ 500 ml} - 200\text{ ml} = 2\text{ 300 ml}$ or $2,5\text{ l} - 0,2\text{ l} = 2,3\text{ l}$)

3 Sam made mixed fruit juice.

He mixed $\frac{3}{4}$ ℓ grape juice,
 1,2 ℓ orange juice,
 500 ml pawpaw juice and
 1 ℓ orange juice.

a Convert the volumes so that they are all in the same unit.

$\frac{3}{4}$ ℓ = (750 ml or 0,75 ℓ)
 1,2 ℓ = (1 200 ml or 1,2 ℓ)
 500 ml = (500 ml or 0,5 ℓ)
 1 ℓ = (1 000 ml or 1 ℓ)

b Write a number sentence for this problem.

(750 ml + 1 200 ml + 500 ml + 1 000 ml = □
 OR 0,75 ℓ + 1,2 ℓ + 0,5 ℓ + 1 ℓ = □)

c How much fruit juice is this altogether?

	Th	H	T	O
	1			
		7	5	0
	1	2	0	0
		5	0	0
+	1	0	0	0
	3	4	5	0

	O	,	t	h
	1			
	0	,	7	5
	1	,	2	
	0	,	5	
+	1	,	0	
	3	,	4	5

d Write down the answer: There is (3 450 ml or 3,45 ℓ) of juice.

e How much water must Sam add to make 5 ℓ mixed fruit juice?
 Write a number sentence for this problem.

(5 ℓ = 5 000 ml: 5 000 ml - 3 450 ml = □
 OR 5 ℓ - 3,45 ℓ = □ ℓ)

Do the calculation:

	Th	H	T	O
	4	9		
	5	0	0	0
-	3	4	5	0
	1	5	5	0

	O	,	t	h
	4		9	
	5	,	0	0
-	3	,	4	5
	1	,	5	5

Write down the answer: Sam must add (1 550 ml or 1,55 ℓ) of water.

5 REFLECTION AND SUMMARY OF LESSON

Call the whole class to attention and summarise the key concepts of the lesson.

Say: **Today we have revised capacity and volume.**

Unit 5: Capacity and volume
