Mathematics Grade 3

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Online:
< http://cnx.org/content/col11128/1.1/ >

CONNEXIONS
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Chapter 1

Term 1

1.1 To complete a bar graph

1.1.1 MATHEMATICS

1.1.2 Meet Bonny and Tommy

1.1.3 EDUCATOR SECTION

1.1.4 Memorandum

The educator must help the learners to obtain the information on their birthdays in class so that they can complete the bar graph.

Let the learners raise their hands to show in which month their birthdays are. Count how many learners have birthdays in that month. The learners write this information in the circle above each month.

for example: three children have their birthdays in January. The 3 is written in the circle above Jan.

This can be a class activity.

It is also a good opportunity to learn the names of the months in the correct sequence. It is not required of them to write the names of the months at this stage.

Give the learners enough time to discuss their findings, make deductions and draw conclusions after they have completed the bar graph.

1.1.5 LEARNER SECTION

1.1.6 Content

1.1.6.1 ACTIVITY: To complete a bar graph [LO 5.4, LO 5.5]

Bonny and Tommy are 8 years old and their birthday is on 13 May.

Then they will be ________________________________ years old.

• They want to know when your birthdays are. Do you know when your birthday is?
• Now you must help me! (Do you know the names of the months?)
• Put up your hand if I mention the name of the month in which your birthday falls. I will count how many friends have a birthday in each month.
• Write this number in the circle above the name of the month.

1This content is available online at <http://cnx.org/content/m22690/1.1/>.

1
• Now we can complete the birthday graph.

Make an X to represent each friend in the month in which his or her birthday falls.

1. In which month(s) do most of the friends have their birthdays?

2. In which month(s) do the fewest of the friends have their birthdays?

3. What in the graph can change?

4. Why can it change?

5. What cannot change?

Draw a birthday cake with candles on. I want to see how old you are.

<p>| | | | | | | | | | |</p>
<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>Feb</td>
<td>March</td>
<td>Apr</td>
<td>May</td>
<td>June</td>
<td>July</td>
<td>Aug</td>
<td>Sept</td>
<td>Oct</td>
</tr>
<tr>
<td>Nov</td>
<td>Dec</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 1.2**

1.1.7 Assessment

**Learning Outcome 5:** The learner will be able to collect, summarise, display and critically analyse data in order to draw conclusions and make predictions, and to interpret and determine chance variation.

**Assessment Standard 5.4:** We know this when the learner reads, interprets and reports on information in own and a peer's representations of data;

**Assessment Standard 5.5:** We know this when the learner reads and interprets data presented in simple tables and lists.
1.2 Number path

1.2.1 MATHEMATICS

1.2.2 Meet Bonny and Tommy

1.2.3 EDUCATOR SECTION

1.2.4 Memorandum

1.2.5 LEANER SECTION

1.2.6 Content

1.2.6.1 ACTIVITY: Number path [LO 1.1, LO 1.6, LO 1.3, LO 1.4, LO 1.10]

- Here is the number path that Bonny and Tommy walk to school. Follow the path and fill in the missing numbers.

Figure 1.1

- Bonny and Tommy have brought money to buy sweets. Let’s count the money in their purses.

Figure 1.2

---

2This content is available online at <http://cnx.org/content/m22691/1.1/>. 
Bonny has ____________________ c.

Figure 1.3

Tommy has ____________________ c.

_________________________ has more money than __________________________
She has _____________________________ c more than he has.

- Bonny buys sweets for 20c. Now she has ______________________ c left.
- Tommy buys sweets for 10c. Now he has ______________________ c left.
- They pool their money. Now they have ______________________ c altogether.
- How many ten-cent pieces do they have? _______________________
- Draw them. (A circle with 10c written in it is good enough!)

<table>
<thead>
<tr>
<th>LO 1.1</th>
<th>LO 1.6</th>
</tr>
</thead>
</table>

Table 1.3

- Think!

<table>
<thead>
<tr>
<th>Make Bonny’s numbers</th>
<th>Make Tommy’s numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 more</td>
<td>1 less</td>
</tr>
<tr>
<td>2 more</td>
<td>2 less</td>
</tr>
<tr>
<td>8 + 1 = ___________</td>
<td>7 - 1 = ___________</td>
</tr>
<tr>
<td>3 + 2 = ___________</td>
<td>6 - 2 = ___________</td>
</tr>
<tr>
<td>6 + 1 = ___________</td>
<td>9 - 1 = ___________</td>
</tr>
<tr>
<td>7 + 2 = ___________</td>
<td>8 - 2 = ___________</td>
</tr>
<tr>
<td>2 + 1 = ___________</td>
<td>5 - 1 = ___________</td>
</tr>
<tr>
<td>1 + 2 = ___________</td>
<td>4 - 2 = ___________</td>
</tr>
<tr>
<td>4 + 1 = ___________</td>
<td>6 - 1 = ___________</td>
</tr>
<tr>
<td>5 + 2 = ___________</td>
<td>9 - 2 = ___________</td>
</tr>
<tr>
<td>3 + 1 = ___________</td>
<td>8 - 1 = ___________</td>
</tr>
<tr>
<td>2 + 2 = ___________</td>
<td>3 - 2 = ___________</td>
</tr>
<tr>
<td>5 + 1 = ___________</td>
<td>4 - 1 = ___________</td>
</tr>
<tr>
<td>6 + 2 = ___________</td>
<td>7 - 2 = ___________</td>
</tr>
</tbody>
</table>

Figure 1.4
• Mom gives Bonny and Tommy 4 carrots each. Draw the carrots for each one in their lunch boxes and complete the number sentences.

![Figure 1.5](image)

**Figure 1.5**

- Number sentences:

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>$4 + 4 =$</td>
<td>2 fours are</td>
<td>$2 \times 4 =$</td>
<td></td>
</tr>
<tr>
<td>$3 + 3 =$</td>
<td>2 threes are</td>
<td>$2 \times 3 =$</td>
<td></td>
</tr>
<tr>
<td>$5 + 5 =$</td>
<td>2 fives are</td>
<td>$2 \times 5 =$</td>
<td></td>
</tr>
<tr>
<td>$2 + 2 =$</td>
<td>2 two’s are</td>
<td>$2 \times 2 =$</td>
<td></td>
</tr>
<tr>
<td>$10 + 10 =$</td>
<td>2 tens are</td>
<td>$2 \times 10 =$</td>
<td></td>
</tr>
<tr>
<td>$20 + 20 =$</td>
<td>2 twenties are</td>
<td>$2 \times 20 =$</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 1.6**

- Puzzle!

Bonny says: All directions = 9 Tommy says: All directions = 12

<table>
<thead>
<tr>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>3</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

**Table 1.4**

<table>
<thead>
<tr>
<th>LO 1.1</th>
<th>LO 1.10</th>
</tr>
</thead>
</table>

**Table 1.5**
• Find Bonny’s numbers and fill them in on the number block.

seven; nineteen; twenty two; thirty five;
forty nine; fourteen; thirty three;
sixteen; forty one; twenty eight

• Tommy’s numbers have been filled in on the number block. Help him to write down the number and the number name, e.g. 1: one.

3 : ____________
   - - : ____________
   - - : ____________
   10 : ____________
   - : ____________
   - : ____________

• Bonny must sort the numbers from the least to the most and write them down:

5; 40; 18; 36; 29; 45; 33
____ ____ ____ ____ ____ ____ ____

• Tommy must sort his from the most to the least and write them down.

46; 26; 13; 24; 11; 43 34
____ ____ ____ ____ ____ ____ ____

Table 1.7

• Tommy is hiding from Bonny. Help her to find him. Add 3 and follow the number path.
Figure 1.7

Hurrah! Here is Tommy!

- Now help Bonny to find her way back home.

Figure 1.8

Bonny and Tommy are working on the computer. They are entering these numbers.

- Complete:

Figure 1.9
• There are 5 tricycles in the store. How many wheels do you see?
• ___________wheels. Draw the wheels for every tricycle.

1.2.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.1: We know this when the learner counts forwards and backwards in:
1.1.1 the intervals specified in grade 2 with increased number ranges;
Assessment Standard 1.2: We know this when the learner reads and interprets data presented in simple tables and lists.
Assessment Standard 1.3: We know this when the learner knows, reads and writes number symbols and names from 1 to at least 1 000;
Assessment Standard 1.6: We know this when the learner solves money problems involving totals and change in rands and cents, including converting between rands and cents;
Assessment Standard 1.10: We know this when the learner uses the following techniques:
1.10 uses the following techniques:
1.10.1 building up and breaking down numbers;
1.10.2 doubling and halving;
1.10.3 number-lines;
1.10.4 rounding off in tens.

1.3 Number sentence³

1.3.1 MATHEMATICS

1.3.2 Meet Bonny and Tommy

1.3.3 EDUCATOR SECTION

1.3.4 Memorandum

p. 1: When you begin with operations, make the learners aware that the four operations (addition, multiplication, subtraction and division) involve only two different processes:

Two processes Together Separate
This includes concepts like: Add togetherJoin Altogether Take away Separate Hand out/Divide
Four signs + x _ ,
different groups equal groups different groups equal groups
Look at schematic representations
+12 + 14 = 35 -26 - 12 = 14
x5 x 3 = 15 ; 30 , 3 = 10
The more the learners see this representation, and hear the explanation, the better they will understand and be able to apply it when solving problems.
The learners must understand the commutative property of addition
(3 + 4 = 7 and 4 + 3 = 7 ) and multiplication ( 2 x 5 = 10 and 5 x 2 = 10 ), but they need not know or use the words “commutative property”.

³This content is available online at <http://cnx.org/content/m22695/1.1/>.
p. 2: The learners must understand the associative property of subtraction
\((9 - 4 = 5\) and \(9 - 5 = 4\)) and division \((10 \div 2 = 5\) and \(10 \div 5 = 2\)).

p. 3: Learners must first experience with concrete objects how the answers to the subtraction operations can be checked: return what you have taken away and if you have the number you began with, you know your answer is correct. Later this can then be done in writing.

Encourage them to check regularly and later they will do it automatically.

1.3.5 LEANER SECTION

1.3.6 Content

1.3.6.1 ACTIVITY: Number sentence [LO 1.9]

- Bonny has read 3 books and Tommy has read 4 books. Together they have read 7 books.

Number sentence: \(3 + 4 = 7\)

![Figure 1.10](image)

Let’s have Bonny and Tommy change places:

Number sentence: \(4 + 3 = 7\)

![Figure 1.11](image)

- The numbers on either side of the + sign can change places without the answer changing!
Do the same with:

\[
\begin{array}{ccc}
6 + 3 &=& 9 \\
8 + 1 &=& \\
2 + 5 &=& \\
1 + 6 &=& \\
5 + 4 &=& \\
3 + 5 &=& \\
2 + 3 &=& \\
4 + 2 &=& \\
\end{array}
\]

\text{Figure 1.12}

Do the same with:

\[
\begin{array}{ccc}
10 + 4 &=& 4 + 10 = 14 \\
10 + 1 &=& \\
10 + 9 &=& \\
10 + 5 &=& \\
10 + 3 &=& \\
10 + 8 &=& \\
10 + 2 &=& \\
\end{array}
\]

\text{Figure 1.13}

\[
\begin{array}{ccc}
20 + 5 &=& 5 + 20 = 25 \\
20 + 9 &=& \\
20 + 1 &=& \\
20 + 6 &=& \\
20 + 4 &=& \\
20 + 2 &=& \\
20 + 7 &=& \\
\end{array}
\]

\text{Table 1.9}

Mom gives Bonny and Tommy 9 apples. Bonny takes 4 apples. There are 5 apples left for Tommy.

Number sentence: \(9 - 4 = 5\)
• Now let’s give Tommy’s apples first:
Number sentence: 9 - 5 = 4

The numbers on either side of the = sign can change places.
Watch 9 - 4 = 5
carefully! 9 - 5 = 4 Now do the same with:

| 9  - 3  =  6 | Change them: 9  - 6  =  3 |
| 8  - 2  =  ____ | 8  - 6  =  ____ |
| 3  - 1  =  ____ | 3  -  ____  =  ____ |
| 6  - 4  =  ____ | 6  -  ____  =  ____ |
| 7  - 5  =  ____ | 7  -  ____  =  ____ |
| 4  - 2  =  ____ | 4  -  ____  =  ____ |
| 8  - 6  =  ____ | 8  -  ____  =  ____ |
| 5  - 3  =  ____ | 5  -  ____  =  ____ |
| 9  - 2  =  ____ | 9  -  ____  =  ____ |

• Tommy cannot remember how much money he had in his purse this morning. He knows that he bought fruit for R5 and he now has R3 left. Help him. How much did he have this morning?
• Bonny and Tommy want to know if their subtraction number sentences are correct. We can help them to check their sums.

Number sentence: $9 - 4 = 5$

Check! Put everything you took away and everything that was left, together again. If you have the same number that you started with, your calculation is correct.

• Now do the sums and check your answer every time:
1.3.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.9: We know this when the learner performs mental calculations involving:
1.9.1 addition and subtraction for numbers to at least 50;
1.9.2 multiplication of whole numbers with solutions to at least 50.
1.4 Even and uneven numbers

1.4.1 MATHEMATICS

1.4.2 Meet Bonny and Tommy

1.4.3 EDUCATOR SECTION

1.4.4 Memorandum

Up to Grade 2 the learners used the word “ones” for “units” but as from Grade 3 we change to “units”. Explain it to the learners.

Use concrete objects and help the learners to discover for themselves what even and uneven numbers are. Do this to 9 at first.

Help them to discover the pattern from 11 to 19.

When they have discovered the pattern of 2 4 6 8 0 on the unit side for even numbers and 1 3 5 7 9 on the unit side for uneven numbers, they have fun applying this to higher numbers.

1.4.5 LEARNER SECTION

1.4.6 Content

1.4.6.1 ACTIVITY: Even and uneven numbers [LO 1.4, LO 2.2, LO 1.9, LO 1.8]

- Complete the pattern with numbers:

```
1  2  3  4  5  6  7  8  9  10
11 12
```

Figure 1.19

All the SQUARES belong to Bonny. She has all the numbers with a 2 ..................... ................... 0 on the side of the ones (units). All her numbers are therefore even numbers.

All the CIRCLES belong to Tommy. He has all the numbers with a 1 ..................... ................... .......................... on the side of the ones (units). All his numbers are therefore uneven numbers.

- Sort Bonny’s and Tommy’s numbers:

4This content is available online at <http://cnx.org/content/m22700/1.1/>. 
LO 1.4  LO 2.2

Table 1.11

- Think!

- Match the right words: equal to; greater than; less than.
We can replace the words with signs:

- 7 is equal to 3 + 4
- 8 is 1 + 8
- 2 + 7 is 7
- 6 + 3 is 3 + 6
- 4 + 4 is 5 + 4
- 12 is 10 + 2
- 10 + 1 is 14

Figure 1.22

- We can replace the words with signs:

Figure 1.23

- 8 is equal to 1 + 8
- 40 + 1 is 14
- 2 + 7 is 7
- 20 + 7 is 20 - 7
- 6 + 3 is 3 + 6
- 4 + 10 is 10 + 6
- 4 + 4 is 5 + 4
- 10 + 9 is 14 + 5
- 12 is 10 + 2
- 5 + 5 is 9 + 1

Figure 1.24
1.4.7 Assessment

**Learning Outcome 1:** The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

**Assessment Standard 1.4:** We know this when the learner orders, describes and compares the following numbers:
- 1.4.1 whole numbers to at least 3-digit numbers;
- 1.4.2 common fractions including halves, quarters and thirds;

**Assessment Standard 1.8:** We know this when the learner can perform calculations, using appropriate symbols, to solve problems involving:
- 1.8.1 addition and subtraction of whole numbers with at least 3 digits;
- 1.8.2 multiplication of at least whole 2-digit by 1-digit numbers;
- 1.8.3 division of at least whole 2-digit by 1-digit numbers;
- 1.8.4 estimation;

**Assessment Standard 1.9:** We know this when the learner performs mental calculations involving:
- 1.9.1 addition and subtraction for numbers to at least 50;
- 1.9.2 multiplication of whole numbers with solutions to at least 50.

**Learning Outcome 2:** The learner will be able to recognise, describe and represent patterns and relationships, as well as to solve problems using algebraic language and skills.

**Assessment Standard 2.2:** We know this when the learner copies and extends simple number sequences to at least 1 000.

1.5 Numbers*

1.5.1 MATHEMATICS

1.5.2 Meet Bonny and Tommy

1.5.3 EDUCATOR SECTION

1.5.4 Memorandum

Learners must know the words “horizontal” and “vertical” and know what they mean.

Make sure that the learners understand the role of the nought (0) as a placeholder in numbers without units, like 10, 20, 30, 40 etc. This is particularly important for vertical operations.

---

*This content is available online at <http://cnx.org/content/m22709/1.1/>. 
1.5.5 LEANER SECTION

1.5.6 Content

1.5.6.1 ACTIVITY: Numbers [LO 1.10, LO 1.8, LO 2.2, LO 1.6]

Figure 1.25

- Use the number line and fill in 3 places after:

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>5</td>
<td></td>
<td>6</td>
<td></td>
<td>2</td>
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<tr>
<td>15</td>
<td></td>
<td>16</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>25</td>
<td></td>
<td>26</td>
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<tr>
<td>45</td>
<td></td>
<td>46</td>
<td></td>
<td>42</td>
</tr>
</tbody>
</table>

Figure 1.26

- Fill in 2 places before:

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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<td>44</td>
<td></td>
<td>43</td>
<td></td>
<td>48</td>
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</tbody>
</table>

Figure 1.27

LO 1.10
Table 1.14

- Compare the numbers with each other:

<table>
<thead>
<tr>
<th></th>
<th>is 2 more than</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>is ______ than</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>is ______ than</th>
<th>14</th>
</tr>
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<tbody>
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<td>7</td>
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<td></td>
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<td>27</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>is 2 more than</th>
<th>5</th>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>is 2 less than</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>is 1 more than</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>is 3 less than</td>
<td>14</td>
</tr>
</tbody>
</table>

Figure 1.28

- Bonny and Tommy want to write their sums in a different way.
Figure 1.29

Table 1.15

Complete the patterns:
Do the same with:
• Bonny says: it is much easier to work with numbers if you separate the tens and the units. She renames the numbers, e.g. $36 = 30 + 6$.

• Tommy says: sometimes you have to group the numbers differently after you have separated them.

He then regroups the numbers, e.g. $30 + 6 = 20 + 10 + 6$

Rename Regroup

<table>
<thead>
<tr>
<th>Expression</th>
<th>Tens</th>
<th>Units</th>
<th>Tens</th>
<th>Units</th>
<th>Tens</th>
<th>Units</th>
<th>Tens</th>
<th>Units</th>
<th>Tens</th>
<th>Units</th>
<th>Tens</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>34 = 30 + 4</td>
<td>20</td>
<td>10</td>
<td>10</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28 = ------ + ------</td>
<td>------ + 10 + 8</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>46 = ------ + ------</td>
<td>------ + 10 + 6</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>39 = ------ + ------</td>
<td>------ + ------ + ------</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>23 = ------ + ------</td>
<td>------ + ------ + ------</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>55 = ------ + ------</td>
<td>------ + ------ + ------</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

• Put the tens and units back together again:

<table>
<thead>
<tr>
<th>Expression</th>
<th>Tens</th>
<th>Units</th>
<th>Tens</th>
<th>Units</th>
<th>Tens</th>
<th>Units</th>
<th>Tens</th>
<th>Units</th>
<th>Tens</th>
<th>Units</th>
<th>Tens</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 + 10 + 1 = 40 + 1 = 41</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 + 10 + 7 = ------ + ------ = ------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 + 10 + 2 = ------ + ------ = ------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40 + 10 + 9 = ------ + ------ = ------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30 + 10 + 6 = ------ + ------ = ------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 + 10 + 5 = ------ + ------ = ------</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 1.17

- Bonny and Tommy go to the store. Bonny has R5 and Tommy has R6. On the shelf there are cookies and chocolates that they want to buy.

Figure 1.31

R2 chocolates

Figure 1.32

R1 cookies

- How many cookies can Bonny buy for her R5?

__________________________ cookies. Draw them.

- How many chocolates can Tommy buy for his R6?

__________________________ chocolates. Draw them.

LO 1.6

Table 1.18

1.5.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.6: We know this when the learner solves money problems involving totals and change in rands and cents, including converting between rands and cents.

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems involving:

1.8.1 addition and subtraction of whole numbers with at least 3 digits;
1.8.2 multiplication of at least whole 2-digit by 1-digit numbers;
1.8.3 division of at least whole 2-digit by 1-digit numbers;
• estimation;

**Assessment Standard 1.10:** We know this when the learner uses the following techniques:
1.10.1 building up and breaking down numbers;
1.10.2 doubling and halving;
1.10.3 number-lines;
1.10.4 rounding off in tens.

**Learning Outcome 2:** The learner will be able to recognise, describe and represent patterns and relationships, as well as to solve problems using algebraic language and skills.

**Assessment Standard 2.2:** We know this when the learner copies and extends simple number sequences to at least 1 000.

### 1.6 Halving and doubling

#### 1.6.1 MATHEMATICS

#### 1.6.2 Meet Bonny and Tommy

#### 1.6.3 EDUCATOR SECTION

#### 1.6.4 Memorandum

If you as educator do not want to do halving just after doubling, leave it for the moment and do it later. However, make very sure that the slower learners in particular understand and have mastered the process of doubling before you do halving. Only do halving of even numbers at first.

It is important for the learners to know that $10 \div 2$ can have 2 different meanings: division or grouping.

Look at the following two problems:
- Divide 10 apples between 2 children so that they receive the same amount.
  - $10 \div 2 = 5$ Each receives 5 apples.
- I have 10 apples and give 2 to each child. How many children were there?
  - $10 \div 2 = 5$ There were 5 children.

The number sentence is the same, but the presentation differs.

#### 1.6.5 LEARNER SECTION

#### 1.6.6 Content

#### 1.6.6.1 ACTIVITY: Halving and doubling [LO 1.10, LO 1.9, LO 1.8, LO 1.7]

- In tens: Yesterday Bonny had 5 sums correct. Today she doubled that number. Now she has ___________________ correct.

Double means: Add just as many.
- You must add the same number twice ($2x$).
  - Double 5: ___________________ (Think like this: $5 + 5$) That is $2 \times 5$.

- Now Tommy wants to double all his numbers. Help him! I want to see the way you think!

---

*This content is available online at [http://cnx.org/content/m22710/1.1/](http://cnx.org/content/m22710/1.1/).*
• Numbers on either side of the x sign can change places, as with the + sign. The answer stays the same.

• I see 2 children. How many fingers do they have altogether?

There are 2 groups of 10.
Number sentence: $2 \times 10 =$ __________________________

LO 1.10
Table 1.19

- How quickly can you do this?

<table>
<thead>
<tr>
<th>2 x 4 = 8</th>
<th>Change them: 4 x 2 = 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 x 10 = ___</td>
<td>___ x ___ = ___</td>
</tr>
<tr>
<td>2 x 3 = ___</td>
<td>___ x ___ = ___</td>
</tr>
<tr>
<td>2 x 8 = ___</td>
<td>___ x ___ = ___</td>
</tr>
<tr>
<td>2 x 2 = ___</td>
<td>___ x ___ = ___</td>
</tr>
<tr>
<td>2 x 5 = ___</td>
<td>___ x ___ = ___</td>
</tr>
<tr>
<td>2 x 1 = ___</td>
<td>___ x ___ = ___</td>
</tr>
<tr>
<td>2 x 6 = ___</td>
<td>___ x ___ = ___</td>
</tr>
<tr>
<td>2 x 9 = ___</td>
<td>___ x ___ = ___</td>
</tr>
<tr>
<td>2 x 7 = ___</td>
<td>___ x ___ = ___</td>
</tr>
</tbody>
</table>

Table 1.20

LO 1.9

Table 1.21

- Bonny sees 5 bicycles. How many wheels are there?

Think like this: 2 + 2 + 2 + 2 + 2

Number sentence: 5 x 2 = ____________ or 2 x 5 = ____________

There are ____________ wheels.

- Tommy sees 8 bicycles. How many wheels are there?

Number sentence: 8 x 2 = ____________ or ____________ x ____________ =

There are ____________ wheels.

- Bonny has 20 two-cent pieces. How much money does she have?

Number sentence: 20 x 2 = ____________ or ____________ x ____________ =

She has ____________ c in her purse. Draw the money.

LO 1.8

Table 1.22

- Mom gives Bonny 10 cookies and tells her to give half of them to Tommy.
Half of 10 is 5.
We halved the number 10.
Halving means: divide into two equal parts.

- Halve:

Figure 1.36

Use the sums above to help you!!

Figure 1.37

Figure 1.38
• Tommy did 24 sums, but half of them were wrong. How many were correct? He had \_
\_
\_
\_
\_
sums correct.

• Divide 10 apples between Bonny and Tommy equally.

Each gets 5 apples.
This is the same as halving. Number sentence: 10 ÷ 2 = 5

• Think!
- $\div 2$ can also mean that you must divide 10 into groups of 2. Then you must calculate how many groups there are.

- I see 10 wheels. How many bicycles are there?

There are \underline{5} bicycles.
Number sentence: $10 \div 2 = 5$

- Tommy sees 12 ears above the bush. How many rabbits are there? Draw the 12 ears and group them into 2’s.

Now you can count how many rabbits are hiding behind the bush. $12 \div 2 = \underline{6}$ rabbits.

### Table 1.24

<table>
<thead>
<tr>
<th>$6 \div 2 = \underline{3}$</th>
<th>$20 \div 2 = \underline{10}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$16 \div 2 = \underline{8}$</td>
<td>$8 \div 2 = \underline{4}$</td>
</tr>
<tr>
<td>$10 \div 2 = \underline{5}$</td>
<td>$14 \div 2 = \underline{7}$</td>
</tr>
<tr>
<td>$2 \div 2 = \underline{1}$</td>
<td>$12 \div 2 = \underline{6}$</td>
</tr>
<tr>
<td>$18 \div 2 = \underline{9}$</td>
<td>$4 \div 2 = \underline{2}$</td>
</tr>
</tbody>
</table>

**1.6.7 Assessment**

**Learning Outcome 1:** The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.
Assessment Standard 1.7: We know this when the learner solves and explains solutions to practical problems that involve equal sharing and grouping and that lead to solutions that also include unitary and nonunitary fractions (e.g. 1\(\frac{1}{4}\), 3\(\frac{3}{4}\));

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems involving:

1.8.1 addition and subtraction of whole numbers with at least 3 digits;
1.8.2 multiplication of at least whole 2-digit by 1-digit numbers;
1.8.3 division of at least whole 2-digit by 1-digit numbers;

• estimation;

Assessment Standard 1.9: We know this when the learner performs mental calculations involving:

1.9.1 addition and subtraction for numbers to at least 50;
1.9.2 multiplication of whole numbers with solutions to at least 50;

Assessment Standard 1.10: We know this when the learner uses the following techniques:

1.10.1 building up and breaking down numbers;
1.10.2 doubling and halving;
1.10.3 number-lines;
1.10.4 rounding off in tens.

1.7 Counting in tens

1.7.1 MATHEMATICS

1.7.2 Meet Bonny and Tommy

1.7.3 EDUCATOR SECTION

1.7.4 Memorandum

Count in tens regularly, forwards and backwards, from any number.
E.g. 4 14 24 34 44 54 64 74 84 94
97 87 77 67 57 47 37 27 17 7

The learners should be aware of how important the number 10 is in our number system (decimal system). They should know the combinations of 10 very well and must be tested regularly. Much practice is required.

\[\text{This content is available online at } <\text{http://cnx.org/content/m22714/1.1/}>.\]
1.7.5 LEANER SECTION

1.7.6 Content

1.7.6.1 ACTIVITY: Counting in tens [LO 1.3, LO 1.11, LO 1.8, LO 2.2, LO 1.7]

```
1  2  3  4  5  6  7  8  9 10
11
21  B  30
31  C  40
41  D  50
51  E  60
61  F  70
71  G  80
81  H  90
91

Figure 1.43
```

- Write down the number and number name for each letter:

A: ______________________________ ______________________________
B: ______________________________ ______________________________
C: ______________________________ ______________________________
D: ______________________________ ______________________________
E: ______________________________ ______________________________
F: ______________________________ ______________________________
G: ______________________________ ______________________________
H: ______________________________ ______________________________

Table 1.25

- Look carefully at: 1 ; 11 ; 21 ; 31 ; 41 ; 51 ; 61 ; 71 ; 81 ; 91

Which numbers come under 5 and 9?

5 : 15 ; _____ ; _____ ; _____ ; _____ ; _____ ; _____ ; _____ ; 95
9 : _____ ; _____ ; _____ ; _____ ; _____ ; _____ ; _____ ; 99
• Count in tens. Now begin with:

3 ; _____ ; _____ ; _____ ; _____ ; _____ ; _____ ; _____ ; _____ ; 93

• Count backwards in tens:

93 ; _____ ; _____ ; _____ ; _____ ; _____ ; _____ ; _____ ; _____ ; 3

Table 1.26

Bonny and Tommy have made these “tens bugs”.

Figure 1.44

• The two circles connecting them are equal to 10.

3 + 7 = 10
7 + 3 = 10

• Fill in the missing numbers.

Figure 1.45

• Complete:

7 and 3
_____ and 9
_____ and 5
3 and 7
9 and __
5 and ___
___ and 8
___ and 6
8 and ___
6 and ___

Let’s say that 10’s 3 breaks off, then 7 remains.
Number sentence: 10 - 3 = 7

If 10’s 7 breaks off, then 3 remains.
Number sentence: 10 - 7 = 3

- Think!

\[
\begin{array}{cccccc}
3 + ___ &= 10 & ___ + 4 &= 10 & 10 - 5 &= ___ & 10 - 6 &= ___ \\
9 + ___ &= 10 & ___ + 5 &= 10 & 10 - 1 &= ___ & 10 - 5 &= ___ \\
5 + ___ &= 10 & ___ + 1 &= 10 & 10 - 7 &= ___ & 10 - 9 &= ___ \\
2 + ___ &= 10 & ___ + 3 &= 10 & 10 - 4 &= ___ & 10 - 3 &= ___ \\
6 + ___ &= 10 & ___ + 2 &= 10 & 10 - 2 &= ___ & 10 - 8 &= ___ \\
\end{array}
\]

Figure 1.46

Always think of the two parts!

<table>
<thead>
<tr>
<th>LO 1.8</th>
</tr>
</thead>
</table>

Table 1.27

- Help Bonny and Tommy to add all the numbers on the cards as quickly as possible. Can you think of a quick way? Show what you are doing.
Do these:

<table>
<thead>
<tr>
<th>10</th>
<th>2</th>
<th>6</th>
<th>5</th>
<th>20</th>
<th>7</th>
<th>6</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>5</td>
<td>20</td>
<td>4</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>8</td>
<td>40</td>
<td>5</td>
<td>1</td>
<td>30</td>
<td>9</td>
<td>5</td>
</tr>
</tbody>
</table>

Total:

*continued on next page*
• The ripe apples are equal to 10. Only colour the ripe apples.

![Diagram of two apple trees with numbers and symbols]

Table 1.28

• Bonny says:

Complete the patterns.

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>6 + 4</td>
<td>10</td>
<td>8 + 2</td>
<td>10</td>
</tr>
<tr>
<td>16 + 4</td>
<td>20</td>
<td>18 + 2</td>
<td>_____</td>
</tr>
<tr>
<td>26 + 4</td>
<td>30</td>
<td>28 + 2</td>
<td>_____</td>
</tr>
<tr>
<td>56 + 4</td>
<td>_____</td>
<td>48 + 2</td>
<td>_____</td>
</tr>
<tr>
<td>86 + 4</td>
<td>_____</td>
<td>68 + 2</td>
<td>_____</td>
</tr>
</tbody>
</table>

5 + 5 = 10
15 + 5 = _____
25 + 5 = _____
35 + 5 = _____
75 + 5 = _____

Figure 1.48
• Tommy says:

Complete these patterns.

<table>
<thead>
<tr>
<th>10 - 3</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 - 3</td>
<td>17</td>
</tr>
<tr>
<td>30 - 3</td>
<td>20</td>
</tr>
<tr>
<td>40 - 3</td>
<td>40</td>
</tr>
<tr>
<td>50 - 3</td>
<td>50</td>
</tr>
<tr>
<td>60 - 3</td>
<td>60</td>
</tr>
<tr>
<td>70 - 3</td>
<td>70</td>
</tr>
</tbody>
</table>

10 - 1 = 9
20 - 1 = _____
30 - 1 = _____
40 - 1 = _____
50 - 1 = _____
60 - 1 = _____
70 - 1 = _____

Figure 1.49

• Use your own method to solve the problem. You may draw as well.

Divide 30 smarties among Bonny and Tommy and their friend, Terry, so that they all get the same number. How many smarties will each one get?

• Each will get ____________________________________________________

1.7.7 Assessment

**Learning Outcome 1**: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

**Assessment Standard 1.3**: We know this when the learner knows, reads and writes number symbols and names from 1 to at least 1 000;

**Assessment Standard 1.7**: We know this when the learner solves and explains solutions to practical problems that involve equal sharing and grouping and that lead to solutions that also include unitary and nonunitary fractions (e.g. \(1\frac{1}{4}, \frac{3}{4}\));

**Assessment Standard 1.8**: We know this when the learner can perform calculations, using appropriate symbols, to solve problems involving:

1.8.1 addition and subtraction of whole numbers with at least 3 digits;
1.8.2 multiplication of at least whole 2-digit by 1-digit numbers;
1.8.3 division of at least whole 2-digit by 1-digit numbers;

• estimation;


**Assessment Standard 1.9:** We know this when the learner performs mental calculations involving:

1.9.1 addition and subtraction for numbers to at least 50;
1.9.2 multiplication of whole numbers with solutions to at least 50;

**Learning Outcome 2:** The learner will be able to recognise, describe and represent patterns and relationships, as well as to solve problems using algebraic language and skills.

**Assessment Standard 2.2:** We know this when the learner copies and extends simple number sequences to at least 1 000.

### 1.8 Rounding off

#### 1.8.1 MATHEMATICS

#### 1.8.2 Meet Bonny and Tommy

#### 1.8.3 EDUCATOR SECTION

#### 1.8.4 Memorandum

#### 1.8.5 LEANER SECTION

#### 1.8.6 Content

1.8.6.1 ACTIVITY: Rounding off [LO 1.8, LO 1.10]

- Get some counters from your teacher. Estimate how many you have. Write down your estimate.

I estimate __________________________________________________________

- Now group the counters on the desk in tens and units.
- Count them and write: I have ______________________________________
- How was your estimate: too many, too few or just right?

Write: I estimated ________________________________________________

By how many were you out? ___________________________________________

- Is your number closer to 40, closer to 50 or equally far away from both?

Write: My number is ________________________________________________

- How can you make your number equal to 50?

Write: I can add _______________ ____________ + ____________ = 50

- If you have added 5 or less than 5, 50 is your nearest multiple of ten.
- How can you make your number equal to 40?

Write: I can subtract _______________ : ____________ - ____________ = 40

- If you subtracted 4 or less than 4, then 40 is your nearest multiple of ten.

---

8This content is available online at <http://cnx.org/content/m22716/1.1/>. 
To round off a number to the nearest ten you must know which multiple of ten is closer to the number. If your number is the same distance from two multiples of ten, we use the greater multiple of ten.

- Look at the numbers and make an * next to the nearer multiple of ten.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>43</td>
<td>40</td>
<td>50</td>
</tr>
<tr>
<td>49</td>
<td>40</td>
<td>50</td>
</tr>
<tr>
<td>46</td>
<td>40</td>
<td>50</td>
</tr>
<tr>
<td>41</td>
<td>40</td>
<td>50</td>
</tr>
</tbody>
</table>

Table 1.33

- Now help Bonny and Tommy to find the nearer multiple of ten.

Remember: If the units are 5 or more than 5, we use the greater multiple.

- If the units are 4 or less than 4, we use the smaller multiple.

24: nearer multiple is 20
16: nearer multiple is 20
37: nearer multiple is ______ 52: nearer multiple is ______
15: nearer multiple is ______ 73: nearer multiple is ______
81: nearer multiple is ______ 94: nearer multiple is ______

- Round off to the nearer 10. (This will help you to estimate):

If we round off, it helps us to estimate what the answer should be more quickly.

Remember! This is not an accurate answer!

- Use rounding off and estimate first. Then do an accurate calculation. Write the rounded off number above the number.
- Tommy has 84c in his purse and buys a banana for 69c.
How much money does he have left?

Rounding off: Number sentence: __________________________________________________________
Calculate: Number sentence: ____________________________________________________________

This will help you to estimate your change when you buy something.

Table 1.35

- Bonny prefers to do her sums horizontally.

Figure 1.51

- Tommy prefers to do his sums vertically.

Figure 1.52

- Let’s try both ways and then decide which is the easier.
Bonny says: Subtraction is a bit different.

- NEVER rename the first number.

Check your answer: $12 + 64 = 76$
• Like this! He thought like this:

![Figure 1.55](image1)

• Check your answer:

\[
\begin{array}{c}
12 \\
+64 \\
76
\end{array}
\]

![Figure 1.56](image2)

• What do you think, do you want to do your sums like Bonny or like Tommy?

<table>
<thead>
<tr>
<th>LO 1.8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1.37</td>
</tr>
</tbody>
</table>
1.8.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems involving:

1.8.1 addition and subtraction of whole numbers with at least 3 digits;
1.8.2 multiplication of at least whole 2-digit by 1-digit numbers;
1.8.3 division of at least whole 2-digit by 1-digit numbers;

• estimation;

Assessment Standard 1.10: We know this when the learner uses the following techniques:

1.10.1 building up and breaking down numbers;
1.10.2 doubling and halving;
1.10.3 number-lines;
1.10.4 rounding off in tens.

1.9 Number name⁹

1.9.1 MATHEMATICS

1.9.2 Bonny and Tommy take a look at the seasons

1.9.3 EDUCATOR SECTION

1.9.4 Memorandum

This module still consists mostly of activities for consolidation, reinforcement and assessment of the work taught in the previous grades focusing on the number 100.

• Number concept to 200.
• Operations: - Consolidates all work covered in Grade 1 en 2.

The names of the months and the correct spelling thereof need to be attended to. Discussions about the seasons and a healthy environment (nature conservation) will provide opportunities for the integration with other learning areas.

Weather charts for the different seasons can be recorded e.g. February – summer; May – autumn; August – winter; November – spring. These are not the best months for the seasons but they are the months in which the learners attend school for the whole month. Complete a bar graph for every weather chart so that weather conditions can be compared and discussed. Having completed all the bar graphs these can be compared to one another and the learners can discover weather conditions relevant to their own regions as well as those relevant to each season. The educator can keep the graphs to compare the statistics with the next year’s graphs.

The tasks and activities in Learning Unit 2 are still mainly intended for consolidation of work covered in previous grades. It is essential, however, that educators continue to make use of concrete apparatus to repeat, explain and consolidate all concepts that were not fully mastered before.

It is of the utmost importance that learners must be totally familiar with the tens grouping of our numbers system:

10 ones are grouped as 1 group of ten
10 tens are grouped as 1 group of a hundred
10 groups of a hundred are grouped as 1 group of a thousand, etc.

⁹This content is available online at <http://cnx.org/content/m32019/1.1/>.
Learners must work with counters that have been grouped in **hundreds**, **tens** and **units**. Should counters not be available, the following semi-concrete apparatus can be used.

The expansion cards (flared cards) are very useful in explaining **place values**, **renaming**, **unifying of numbers** and the **0 as place-keeper**.

Attached you will find an example of expansion cards (flared cards) and a key to writing all number names. Flared cards enable learners to build any number, and if learners know the basic number names, they can construct and write any number name from the given parts. Give each learner a copy to use, for example

Example:

Number name: one thousand one hundred and thirty seven
Figure 1.58

If you wish to use this example, enlarge it and copy it on manilla.

<table>
<thead>
<tr>
<th></th>
<th>20</th>
<th>twenty</th>
<th>twenty one</th>
<th>twenty two</th>
<th>twenty three</th>
<th>twenty four</th>
<th>twenty five</th>
<th>twenty six</th>
<th>twenty seven</th>
<th>twenty eight</th>
<th>twenty nine</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 nought</td>
<td>one</td>
<td>two</td>
<td>three</td>
<td>four</td>
<td>five</td>
<td>six</td>
<td>seven</td>
<td>eight</td>
<td>nine</td>
<td>twenty</td>
<td>twenty one</td>
</tr>
<tr>
<td>10</td>
<td>20</td>
<td>30</td>
<td>40</td>
<td>50</td>
<td>60</td>
<td>70</td>
<td>80</td>
<td>90</td>
<td>100</td>
<td>200</td>
<td>300</td>
</tr>
</tbody>
</table>

continued on next page
CHAPTER 1. TERM 1

Table 1.38

| 100 one hundred 200 two hundred 300 three hundred 400 four hundred 500 five hundred 600 six hundred 700 seven hundred 800 eight hundred 900 nine hundred | 101 one hundred and one 102 one hundred and two 103 one hundred and three 104 one hundred and four 105 one hundred and five 106 one hundred and six 107 one hundred and seven 108 one hundred and eight 109 one hundred and nine |
| 1 000 one thousand 3 000 three thousand 5 000 five thousand 7 000 seven thousand 9 000 nine thousand | 2 000 two thousand 4 000 four thousand 6 000 six thousand 8 000 eight thousand 10 000 ten thousand |
| 111 one hundred and eleven 12 one hundred and twelve 13 one hundred and thirteen 14 one hundred and fourteen 15 one hundred and fifteen 16 one hundred and sixteen 17 one hundred and seventeen 18 one hundred and eighteen 19 one hundred and nineteen 20 one hundred and twenty 21 one hundred and twenty one 22 one hundred and twenty two 23 one hundred and twenty three 24 one hundred and twenty four 25 one hundred and twenty five 26 one hundred and twenty six 27 one hundred and twenty seven 28 one hundred and twenty eight 29 one hundred and twenty nine | 110 one hundred and ten 120 one hundred and twenty 130 one hundred and thirty 140 one hundred and forty 150 one hundred and fifty 160 one hundred and sixty 170 one hundred and seventy 180 one hundred and eighty 190 one hundred and ninety |

Frontpage.

It is essential to have an initial discussion on the changing of the seasons. Some learners may find it very stimulating to discover what causes seasons and why there are different seasons in the year.

Learners must complete the pictures by adding their own drawings to illustrate the typical seasonal qualities, e.g.:

1. Spring: flowers and blossoms; 2. Summer: anything to do with the seaside or the swimming pool; 3. Autumn: leaves in autumn colours on trees and the ground; 4. Winter: snow on the mountains or rain (where applicable), and leafless trees. Discuss it with the learners.

Learners are now expected to know the names of the seasons in the correct order, and to write them down. A “year and seasons clock” can be put up in the classroom, which can help the learners to master writing the names.

Explain the origin of the extra day every 4 years to the learners. Some of the learners may understand it at this stage, but it cannot be expected of them at all.

This work sheet may elicit a discussion on the Olympic games.

It is important that the learners must understand that if 1 is added to the 9 units of 99, there is another group of ten. There are now 10 groups of ten altogether, which are grouped together to make 1 group of a hundred.

Likewise, they must understand that if they want to take away units from a hundred, they first have to dissolve the group of one hundred, and then dissolve 1 group of ten, before they will have units to take away.

The 0 as place-keeper might cause problems for some learners. Therefore it is essential that the learners must use counters that are grouped in hundreds, tens and units (or the copied blocks), as well as the flared cards, when this work is being done. If necessary, provide similar activities.

If the learners find it difficult to master place values, lay out the numbers with the flared cards.
On the next page there is an example of the multiples chart. It can be utilised very effectively, therefore it is suggested that each learner is given a copy.

This example has been done further than the one on the work sheet, but it can be used for the whole year. Besides, there are learners who are able and keen to count in 6, 7, 8 and 9.

Show the learners how to find the answers to the tables, x and + from the chart.

Example: $2 \times 4 = 8$ Go right from 2 and above from 4 downwards - meet at 8 (see arrows)

$15 \div 3 = 5$ Go left from 15 to 3 and up from 15 - 5\textsuperscript{th} multiple

Multiples: Count up to the 10\textsuperscript{th} multiple and back.

![Image](image.png)

Figure 1.59

At this stage the learners must know that 100c = R1. The learners now have a good concept of 100 and will realise that 120c equal R1 plus 20c, thus they can now learn to write it correctly, namely 120c = R1,20.

Master it up to 190c = R1,99.

Once they have mastered it, do the reverse: R1,20 = 120c up to R1,99 = 199c.

It is imperative that the learners understand the completion and solution of a ten completely. This is an investment for the future. The more concrete work that is done here, the better the learners’ understanding of these concepts. They must be able to relate what they are doing. If they cannot say how they arrived at an answer, it means that the concrete image has not been properly consolidated. Give them many and regular exercises of this kind.

Remember, if you prefer not to do solution directly after the completion, you are free to alter the sequence of the work sheets to suit yourself.

(i) Various triangles: the isosceles; equilateral and rectangular and any other types of triangle.

(ii) Various rectangles and squares.
(iii) Protractors and rulers, enough for everyone in the group.

First establish what the learners already know about the sides and angles of triangles, rectangles and squares.

**Measuring angles:**

Explain what a right angle is (angle equal to 90°) if they do not know it. Show the learners the protractor and how to measure an angle with it. Make sure that they know exactly how to measure angles.

Let them measure the angles of the various forms on the mat. They must say what they have discovered about the angles of the triangles, rectangles and squares.

All the angles of the rectangles and the squares are right angles. Give them the opportunity to discover other right angles in the classroom.

Have they discovered that a triangle never has more than one right angle? A triangle with a right angle is called a rectangular triangle.

**Measuring sides:**

Give the learners rulers to measure the sides. Make very sure that all the learners know how to measure using a ruler.

They must discover their own:

There are triangles of which the 3 sides are of the same length. That is an equilateral triangle.

There are triangles of which 2 sides are the same length. That is an isosceles triangle.

There are triangles of which the sides are all different.

The 4 sides of a square are of equal length.

The 2 opposite sides of a rectangle are the same length.

This work will probably not all be done in one mat session, and the time needed will vary depending on the group involved. It is advisable to complete measuring angles in one session and measuring sides in another.

If the learners have already mastered halving of unequal numbers, it is only necessary to explain how to write \( \frac{1}{2} \). That means 1 of the 2 parts into which it has been divided:

<table>
<thead>
<tr>
<th>1</th>
<th>is numerator</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>is denominator</td>
</tr>
</tbody>
</table>

**Table 1.39**

This is about halving 3, 5, 7 or 9 groups of ten. There is always 1 ten that must be solved. Encourage the learners to regroup before they halve. They must first do it concretely on the mat.

---

**Figure 1.60**
Every time the numbers 6 to 9 are doubled, a ten is completed. The learners must indicate it on the work sheet by drawing a circle around the ten.

If there is no calculator available, the educator or one of the learners can write the answers on the blackboard after completing the work sheet. However, the learners who are able to do the calculations on their own, must be allowed to do it.

Encourage the learners to persevere until they find the right “path”. They may require an extra sheet of paper on which to write the numbers while trying to find the correct ones.

1.9.5 LEARNER SECTION

1.9.6 Content

1.9.6.1 ACTIVITY: Number name [LO 1.1, LO 1.3, LO 1.10, LO 4.2, LO 5.4]

Here is Bonny and Tommy’s “year and season clock”. It is called a clock, because it goes around and around like other clocks.
• Use their “clock” and complete the sentences:
  • There are ___________________ seasons in a year.
  • ___________________ and ______________ are the main seasons.
  • ___________________ and ______________ are the transitional seasons.
  • Make an * (on the clock) next to the season and the month in which we are now.
  • Which season do you like best? ____________________________________________
  • Why? _________________________________________________________________
  • There are __________ months in a year.
  • There are __________ months in each season.

• Bonny and Tommy have made a graph

<table>
<thead>
<tr>
<th>Months</th>
<th>Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>☁️</td>
</tr>
<tr>
<td>February</td>
<td>☁️</td>
</tr>
<tr>
<td>March</td>
<td>☁️</td>
</tr>
<tr>
<td>April</td>
<td>☁️</td>
</tr>
<tr>
<td>May</td>
<td>☁️</td>
</tr>
<tr>
<td>June</td>
<td>☁️</td>
</tr>
<tr>
<td>July</td>
<td>☁️</td>
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<tr>
<td>August</td>
<td>☁️</td>
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<tr>
<td>September</td>
<td>☁️</td>
</tr>
<tr>
<td>October</td>
<td>☁️</td>
</tr>
<tr>
<td>November</td>
<td>☁️</td>
</tr>
<tr>
<td>December</td>
<td>☁️</td>
</tr>
</tbody>
</table>

Figure 1.64

• Count the number of days in each month and write it next to the graph.
Complete:
1. _____________________ is the shortest month. It has ____ days.
2. January, March, May, July, August, October en December have ____ days.
3. _____________________ and _____________________ have 30 days.
4. _____________________ is the first and _____________________ is the last month of the year.
5. _____________________ comes just after September. _____________________ comes just before April.

An ordinary year has 365 days, but a leap year has 366 days.

Find out:

• To which month is the extra day added? _____________________
• When is the next leap year? ________
• Which world famous sporting event, where competitors participate in many different sports, takes place every leap year? ________________
Bonny and Tommy know the numbers and number names up to ninety nine.

Now we can go further.

10 groups of ten are one hundred
99 + 1 = 100

○ Draw a circle around the tens and complete the last ten as well. Then draw a circle around the ten groups of ten to make one group of hundred.

<table>
<thead>
<tr>
<th>Hundreds</th>
<th>Tens</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

xxxxx   xxxxx   xxxxx   xxxxx   xxxxx
xxxxx   xxxxx   xxxxx   xxxxx   xxxxx
xxxxx   xxxxx   xxxxx   xxxxx   xxxxx
xxxxx   xxxxx   xxxxx   xxxxx   xxxx
xxxxx   xxxxx   xxxxx   xxxxx   xxx

Number sentence: 98 + ____ = 100

9 + _____ = 100  92 + _____ = 100  96 + _____ = 100
97 + _____ = 100  93 + _____ = 100  91 + _____ = 100
99 + _____ = 100  98 + _____ = 100  94 + _____ = 100

○ Now we regroup the one hundred.

Number sentence: 100 - 1 = 99

100 - 5 = _____  100 - 1 = _____  100 - 6 = _____
100 - 3 = _____  100 - 7 = _____  100 - 2 = _____
100 - 8 = _____  100 - 4 = _____  100 - 9 = _____

Figure 1.65

- Bonnie en Tommie sê: Onthou die 0 as plekhouer!
- Omkring die honderde. Skryf dan die getal en die getalname
You have to know all the numbers and number names up to 200.

Fill in the missing numbers:

- 110 111 112
- 126 127 128
- 132 134 136
- 165 167 169
- 115 114 113
- 200 198 196

Bonny says you must know how to take numbers apart (rename).
CHAPTER 1. TERM 1

**Rename** these numbers.

\[126 = 100 + 20 + 6\]
\[182 = \_\_\_ + \_\_\_ + \_\_\_\]
\[109 = \_\_\_ + \_\_\_\]
\[148 = 100 + \_\_\_ + \_\_\_\]
\[156 = \_\_\_ + \_\_\_ + \_\_\_\]
\[170 = \_\_\_ + \_\_\_ + \_\_\_\]

- **Tommy** says you must put the numbers together when you have finished working.

\[100 + 10 + 4 = 114\]
\[100 + 30 + 7 = \_\_\_\]
\[100 + 3 = \_\_\_\]
\[100 + 20 + 5 + \_\_\_\]
\[100 + 50 + 2 + \_\_\_\]
\[100 + 80 = \_\_\_\]

- Write down the above numbers and their number names:

  -----------------  
  -----------------  
  -----------------  
  -----------------  

- Which number comes 4 places after?

  104 : \_\_\_\_  116 : \_\_\_\_  140 : \_\_\_\_  169 : \_\_\_\_

- Which number comes 3 places after?


- **Who wants to take a chance?** 125 + 143 = \_\_\_\_

**Bonny** is looking for all the balloons with the **uneven numbers**. The balloons with the **even numbers** belong to **Tommy**. Lengthen the strings of the balloons so that each one holds the correct balloons.

![Figure 1.67](image-url)
• Arrange the numbers on Bonny’s balloons from the most to the least:

_______ _______ _______ _______ _______

• Arrange the numbers on Tommy’s balloons from the least to the most:

_______ _______ _______ _______ _______

• Fill in =, < or >:

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>145</td>
<td>__</td>
<td>154</td>
<td>100</td>
<td>+</td>
</tr>
<tr>
<td>101</td>
<td>__</td>
<td>110</td>
<td>70</td>
<td>+</td>
</tr>
<tr>
<td>199</td>
<td>__</td>
<td>195</td>
<td>120</td>
<td>-</td>
</tr>
<tr>
<td>139</td>
<td>__</td>
<td>141</td>
<td>100</td>
<td>+</td>
</tr>
<tr>
<td>114</td>
<td>__</td>
<td>111</td>
<td>100</td>
<td>+</td>
</tr>
</tbody>
</table>

Table 1.40

• What is the place value of the underlined digit in each number?

108 The place value of the 1 is _______.

143 The place value of the 4 is _______.

17 1 The place value of the 1 is _______.

1.9.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.1: We know this when the learner counts forwards and backwards in:
1.1.1 the intervals specified in grade 2 with increased number ranges;

Assessment Standard 1.3: We know this when the learner knows, reads and writes number symbols and names from 1 to at least 1 000;

Assessment Standard 1.10: We know this when the learner uses the following techniques:
1.10.1 building up and breaking down numbers;
1.10.2 doubling and halving;
1.10.3 number-lines;
1.10.4 rounding off in tens.

Learning Outcome 4: The learner will be able to use appropriate measuring units, instruments and formulae in a variety of contexts.

Assessment Standard 4.2: We know this when the learner solves problems involving calculations with and conversions;

Learning Outcome 5: The learner will be able to collect, summarise, display and critically analyse data in order to draw conclusions and make predictions, and to interpret and determine chance variation.

Assessment Standard 5.4: We know this when the learner reads, interprets and reports on information in own and a peer’s representations of data.
1.10 Multiples

1.10.1 MATHEMATICS

1.10.2 Bonny and Tommy take a look at the seasons

1.10.3 EDUCATOR SECTION

1.10.4 Memorandum

This module still consists mostly of activities for consolidation, reinforcement and assessment of the work taught in the previous grades focusing on the number 100.

- **Number concept** to 200.
- **Operations:** Consolidates all work covered in Grade 1 and 2.

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Weather charts for the different seasons can be recorded e.g. February – summer; May – autumn; August – winter; November – spring. These are not the best months for the seasons but they are the months in which the learners attend school for the whole month. Complete a bar graph for every weather chart so that weather conditions can be compared and discussed. Having completed all the bar graphs these can be compared to one another and the learners can discover weather conditions relevant to their own regions as well as those relevant to each season. The educator can keep the graphs to compare the statistics with the next year’s graphs.

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<table>
<thead>
<tr>
<th>0 nought</th>
<th>1 one</th>
<th>2 two</th>
<th>3 three</th>
<th>4 four</th>
<th>5 five</th>
<th>6 six</th>
<th>7 seven</th>
<th>8 eight</th>
<th>9 nine</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 ten</td>
<td>20 twenty</td>
<td>30 thirty</td>
<td>40 forty</td>
<td>50 fifty</td>
<td>60 sixty</td>
<td>70 seventy</td>
<td>80 eighty</td>
<td>90 ninety</td>
<td></td>
</tr>
</tbody>
</table>

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Multiples: Count up to the 10th multiple and back.

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At this stage the learners must know that \(100c = R1\). The learners now have a good concept of 100 and will realise that \(120c\) equal R1 plus 20c, thus they can now learn to write it correctly, namely \(120c = R1,20\). Master it up to \(190c = R1,99\).

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---

<table>
<thead>
<tr>
<th>Count in:</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
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<th>10</th>
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<tbody>
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<td>2</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>10</td>
<td>12</td>
<td>14</td>
<td>16</td>
<td>18</td>
<td>20</td>
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<td>3</td>
<td>3</td>
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<td>90</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
<td>20</td>
<td>30</td>
<td>40</td>
<td>50</td>
<td>60</td>
<td>70</td>
<td>80</td>
<td>90</td>
<td>100</td>
</tr>
</tbody>
</table>

**Figure 1.70**
(iii) Protractors and rulers, enough for everyone in the group.

First establish what the learners already know about the sides and angles of triangles, rectangles and squares.

Measuring angles:
Explain what a right angle is (angle equal to 90°) if they do not know it. Show the learners the protractor and how to measure an angle with it. Make sure that they know exactly how to measure angles.

Let them measure the angles of the various forms on the mat. They must say what they have discovered about the angles of the triangles, rectangles and squares.

All the angles of the rectangles and the squares are right angles. Give them the opportunity to discover other right angles in the classroom.

Have they discovered that a triangle never has more than one right angle? A triangle with a right angle is called a rectangular triangle.

Measuring sides:
Give the learners rulers to measure the sides. Make very sure that all the learners know how to measure using a ruler.

They must discover their own:

There are triangles of which the 3 sides are of the same length. That is an equilateral triangle.

There are triangles of which 2 sides are the same length. That is an isosceles triangle.

There are triangles of which the sides are all different.

The 4 sides of a square are of equal length.

The 2 opposite sides of a rectangle are the same length.

This work will probably not all be done in one mat session, and the time needed will vary depending on the group involved. It is advisable to complete measuring angles in one session and measuring sides in another.

If the learners have already mastered halving of unequal numbers, it is only necessary to explain how to write \( \frac{1}{2} \). That means 1 of the 2 parts into which it has been divided:

<table>
<thead>
<tr>
<th>1</th>
<th>is numerator</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>is denominator</td>
</tr>
</tbody>
</table>

Table 1.42

This is about halving 3, 5, 7 or 9 groups of ten. There is always 1 ten that must be solved. Encourage the learners to regroup before they halve. They must first do it concretely on the mat.
Every time the numbers 6 to 9 are doubled, a ten is completed. The learners must indicate it on the work sheet by drawing a circle around the ten.

If there is no calculator available, the educator or one of the learners can write the answers on the blackboard after completing the work sheet. However, the learners who are able to do the calculations on their own, must be allowed to do it.

Encourage the learners to persevere until they find the right “path”. They may require an extra sheet of paper on which to write the numbers while trying to find the correct ones.7

1.10.5 LEANER SECTION

1.10.6 Content

1.10.6.1 ACTIVITY: Multiples [LO 1.1, LO 1.6, LO 1.8, LO 1.9, LO 1.10]

- Multiples: Count up to the 10th multiple and back.
Bonny and Tommy used the above chart to count in multiples of 2, 3, 4, 5 and 10. Use it to complete the worksheet.

<table>
<thead>
<tr>
<th>2</th>
<th>4</th>
<th>___</th>
<th>18</th>
<th>2</th>
<th>4</th>
<th>___</th>
<th>18</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>12</td>
<td>___</td>
<td>40</td>
<td>8</td>
<td>12</td>
<td>___</td>
<td>40</td>
<td>8</td>
</tr>
<tr>
<td>45</td>
<td>40</td>
<td>___</td>
<td>5</td>
<td>45</td>
<td>40</td>
<td>___</td>
<td>5</td>
<td>45</td>
</tr>
<tr>
<td>30</td>
<td>27</td>
<td>___</td>
<td>6</td>
<td>30</td>
<td>27</td>
<td>___</td>
<td>6</td>
<td>30</td>
</tr>
</tbody>
</table>

Table 1.43

- Draw a circle around:

<table>
<thead>
<tr>
<th>Table 1.43</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>The multiples of 10:</th>
<th>20</th>
<th>100</th>
<th>36</th>
<th>50</th>
<th>42</th>
<th>30</th>
<th>21</th>
<th>60</th>
</tr>
</thead>
<tbody>
<tr>
<td>The multiples of 4:</td>
<td>40</td>
<td>21</td>
<td>36</td>
<td>18</td>
<td>24</td>
<td>16</td>
<td>20</td>
<td>6</td>
</tr>
<tr>
<td>The multiples of 3:</td>
<td>27</td>
<td>32</td>
<td>18</td>
<td>24</td>
<td>10</td>
<td>30</td>
<td>20</td>
<td>12</td>
</tr>
</tbody>
</table>

Table 1.44

The 4th multiple of 2 is __________. 20 is the ___th multiple of 2.
The 3rd multiple of 3 is __________. 21 is the ___th multiple of 3.
The 2nd multiple of 4 is __________. 28 is the ___th multiple of 4.
The 6th multiple of 5 is __________. 40 is the ___th multiple of 10.

How many eyes do nine rabbits have? __________ eyes
How many wheels do 7 tricycles have? __________ wheels
How many fingers do 4 children have? __________ fingers

Bonny and Tommy earn their pocket money by doing jobs around the house. They receive 10c for every job they do.

Now we must count their pocket money.

Remember: 10 ten cent coins are R1 or 100c = R1

- Here is Bonny’s pocket money.

![Figure 1.75](image)

- Bonny earned ______________
- How many jobs did she do?

She did ______________ jobs.

- Here is Tommy’s pocket money.
• Tommy earned ________________
• How many jobs did she do?

She did ___________________ jobs.

• Tommy earned ______ c more than Bonny, because he did ______ more jobs than Bonny.

Bonny and Tommy have discovered the pattern to count in tens.

![Patterns make the work much easier!]

Figure 1.77

---

Complete:

<table>
<thead>
<tr>
<th>10</th>
<th>20</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>110</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
<td>100</td>
<td></td>
<td></td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>80</td>
<td>90</td>
<td></td>
<td></td>
<td></td>
<td>140</td>
<td></td>
<td></td>
<td>190</td>
<td></td>
</tr>
<tr>
<td>110</td>
<td>100</td>
<td></td>
<td>80</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>180</td>
<td></td>
</tr>
<tr>
<td>180</td>
<td></td>
<td>160</td>
<td></td>
<td>140</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>70</td>
</tr>
</tbody>
</table>

Table 1.45

Use your own methods to solve the problems.

• Yesterday there were 110 children on the soccer field. Today there are 10 more. How many children are there today?

There are _______ children today.

• Dad planted 140 carrots, but Bonny and Tommy have already eaten 30. How many carrots are left in the garden?
There are _______________________________.

<table>
<thead>
<tr>
<th>120</th>
<th>160</th>
<th>110</th>
<th>130</th>
<th>150</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ 20</td>
<td>+ 10</td>
<td>+ 50</td>
<td>+ 30</td>
<td>+ 40</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>140</th>
<th>180</th>
<th>150</th>
<th>190</th>
<th>160</th>
</tr>
</thead>
<tbody>
<tr>
<td>- 30</td>
<td>- 50</td>
<td>- 50</td>
<td>- 70</td>
<td>- 20</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 1.78

- **Bonny and Tommy** say that 10 \( \times \) and \( \div \) are easy, because they know how to work with money.
Do you still remember the "tens bugs"?
Bonny and Tommy use the “tens bugs” to do their other sums.

Solve:

○ Mary had 9 sums correct and Peter had 8 correct. How many did they have correct altogether?

  Number sentence: \(9 + 8 = \underline{ }\)

  
  \[
  \begin{array}{c}
  9 \\
  \hline
  8
  \end{array}
  \]

  Regroup: 10 7

○ Bonny and Tommy regrouped \(9 + 8\) to \(10 + 7\). That is 17.

  Now you must regroup too. Draw a circle around the group of 10.

  Number sentence: \(9 + 4 = \underline{ }\)

  
  \[
  \begin{array}{c}
  9 \\
  \hline
  4
  \end{array}
  \]

  Regroup: \underline{ } \underline{ }

  Number sentence: \(8 + 6 = \underline{ }\)

  
  \[
  \begin{array}{c}
  8 \\
  \hline
  6
  \end{array}
  \]

  Regroup: \underline{ } \underline{ }

  Number sentence: \(7 + 5 = \underline{ }\)

  
  \[
  \begin{array}{c}
  7 \\
  \hline
  5
  \end{array}
  \]

  Regroup: \underline{ } \underline{ }

Bonny says we must do it without the dots now.

\[
\begin{align*}
9 + 4 &= (9 + 1) + 3 = \underline{ } \\
8 + 6 &= (8 + \underline{ }) + \underline{ } = \underline{ } \\
7 + 5 &= (7 + \underline{ }) + \underline{ } = \underline{ } \\
6 + 6 &= (6 + \underline{ }) + \underline{ } = \underline{ }
\end{align*}
\]

- Tommy says he changes the numbers around sometimes, because he finds it easier to group the higher number as a ten. **Watch carefully how he does it.**

\[
\begin{align*}
4 + 8 &= 8 + 4 = (8 + 2) + 2 = 12 \\
5 + 9 &= 9 + 5 = (9 + \underline{ }) + \underline{ } = \underline{ } \\
6 + 8 &= 8 + 6 = (8 + \underline{ }) + \underline{ } = \underline{ } \\
3 + 9 &= 9 + 3 = (9 + \underline{ }) + \underline{ } = \underline{ } \\
4 + 7 &= 7 + 4 = (7 + \underline{ }) + \underline{ } = \underline{ }
\end{align*}
\]
1.10.7 Assessment

**Learning Outcome 1:** The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

**Assessment Standard 1.1:** We know this when the learner counts forwards and backwards in:
1.1.1 the intervals specified in grade 2 with increased number ranges;

**Assessment Standard 1.6:** We know this when the learner solves money problems involving totals and change in rands and cents, including converting between rands and cents;

**Assessment Standard 1.8:** We know this when the learner can perform calculations, using appropriate symbols, to solve problems

**Assessment Standard 1.9:** We know this when the learner performs mental calculations;

**Assessment Standard 1.10:** We know this when the learner uses the following techniques:
1.10.1 building up and breaking down numbers;
1.10.2 doubling and halving;
1.10.3 number-lines;
1.10.4 rounding off in tens.
1.11 Grouping

1.11.1 MATHEMATICS

1.11.2 Bonny and Tommy take a look at the seasons

1.11.3 EDUCATOR SECTION

1.11.4 Memorandum

This module still consists mostly of activities for consolidation, reinforcement and assessment of the work taught in the previous grades focusing on the number 100.

- **Number concept** to 200.
- **Operations:** Consolidates all work covered in Grade 1 en 2.

The names of the months and the correct spelling thereof need to be attended to. Discussions about the seasons and a healthy environment (nature conservation) will provide opportunities for the integration with other learning areas.

Weather charts for the different seasons can be recorded e.g. February – summer; May – autumn; August – winter; November – spring. These are not the best months for the seasons but they are the months in which the learners attend school for the whole month. Complete a bar graph for every weather chart so that weather conditions can be compared and discussed. Having completed all the bar graphs these can be compared to one another and the learners can discover weather conditions relevant to their own regions as well as those relevant to each season. The educator can keep the graphs to compare the statistics with the next year’s graphs.

The tasks and activities in Learning Unit 2 are still mainly intended for consolidation of work covered in previous grades. It is essential, however, that educators continue to make use of concrete apparatus to repeat, explain and consolidate all concepts that were not fully mastered before.

It is of the utmost importance that learners must be totally familiar with the tens grouping of our numbers system:

- **10 ones** are grouped as **1 group of ten**
- **10 tens** are grouped as **1 group of a hundred**
- **10 groups of a hundred** are grouped as **1 group of a thousand**, etc.

Learners must work with counters that have been grouped in **hundreds**, **tens** and **units**. Should counters not be available, the following semi-concrete apparatus can be used.

Learners must work with counters that have been grouped in **hundreds**, **tens** and **units**. Should counters not be available, the following semi-concrete apparatus can be used.

---

This content is available online at <http://cnx.org/content/m32021/1.1/>. 
The expansion cards (flared cards) are very useful in explaining **place values, renaming, unifying of numbers** and the 0 as **place-keeper**.

Attached you will find an example of expansion cards (flared cards) and a key to writing all number names. Flared cards enable learners to build any number, and if learners know the basic number names, they can construct and write any number name from the given parts. Give each learner a copy to use, for example:

**Example:**

Number name: one thousand one hundred and thirty seven
If you wish to use this example, enlarge it and copy it on manilla.

| 0 nought 1 one 2 two 3 three 4 four 5 five 6 six 7 seven 8 eight 9 nine 10 ten 11 eleven 12 twelve 13 thirteen 14 fourteen 15 fifteen 16 sixteen 17 seventeen 18 eighteen 19 nineteen | 20 twenty 21 twenty one 22 twenty two 23 twenty three 24 twenty four 25 twenty five 26 twenty six 27 twenty seven 28 twenty eight 29 twenty nine 10 ten 20 twenty 30 thirty 40 forty 50 fifty 60 sixty 70 seventy 80 eighty 90 ninety |

continued on next page
### Table 1.46

Frontpage.

It is essential to have an initial discussion on the changing of the seasons. Some learners may find it very stimulating to discover what causes seasons and why there are different seasons in the year.

Learners must complete the pictures by adding their own drawings to illustrate the typical seasonal qualities, e.g.:

- **Spring**: flowers and blossoms;
- **Summer**: anything to do with the seaside or the swimming pool;
- **Autumn**: leaves in autumn colours on trees and the ground;
- **Winter**: snow on the mountains or rain (where applicable), and leafless trees. Discuss it with the learners.

Learners are now expected to know the names of the seasons in the correct order, and to write them down. A “year and seasons clock” can be put up in the classroom, which can help the learners to master writing the names.

Explain the origin of the extra day every 4 years to the learners. Some of the learners may understand it at this stage, but it cannot be expected of them at all.

This worksheet may elicit a discussion on the Olympic games.

It is important that the learners must understand that if 1 is added to the 9 units of 99, there is another group of ten. There are now 10 groups of ten altogether, which are grouped together to make 1 group of a hundred.

Likewise, they must understand that if they want to take away units from a hundred, they first have to dissolve the group of one hundred, and then dissolve 1 group of ten, before they will have units to take away.

The 0 as place-keeper might cause problems for some learners. Therefore it is essential that the learners must use counters that are grouped in hundreds, tens and units (or the copied blocks), as well as the flared cards, when this work is being done. If necessary, provide similar activities.

If the learners find it difficult to master place values, lay out the numbers with the flared cards.
On the next page there is an example of the multiples chart. It can be utilised very effectively, therefore it is suggested that each learner is given a copy.

This example has been done further than the one on the work sheet, but it can be used for the whole year. Besides, there are learners who are able and keen to count in 6,7,8 and 9.

Show the learners how to find the answers to the tables, $\times$ and $+$ from the chart.

Example: $2 \times 4 = 8$ Go right from 2 and above from 4 downwards - meet at 8 (see arrows)

$15 \div 3 = 5$ Go left from 15 to 3 and up from 15 - 5$^{th}$ multiple

Multiples: Count up to the 10$^{th}$ multiple and back.

\begin{figure}
\centering
\includegraphics[width=0.5\textwidth]{multiples_chart.png}
\caption{Figure 1.84}
\end{figure}

At this stage the learners must know that 100c = R1. The learners now have a good concept of 100 and will realise that 120c equal R1 plus 20c, thus they can now learn to write it correctly, namely 120c = R1.20. Master it up to 190c = R1.99.

Once they have mastered it, do the reverse: R1.20 = 120c up to R1.99 = 199c.

It is imperative that the learners understand the completion and solution of a ten completely. This is an investment for the future. The more concrete work that is done here, the better the learners’ understanding of these concepts. They must be able to relate what they are doing. If they cannot say how they arrived at an answer, it means that the concrete image has not been properly consolidated. Give them many and regular exercises of this kind.

Remember, if you prefer not to do solution directly after the completion, you are free to alter the sequence of the work sheets to suit yourself.

(i) Various triangles: the isosceles; equilateral and rectangular and any other types of triangle.
(ii) Various rectangles and squares.
(iii) Protractors and rulers, enough for everyone in the group.

First establish what the learners already know about the sides and angles of triangles, rectangles and squares.

**Measuring angles:**

Explain what a right angle is (angle equal to $90^\circ$) if they do not know it. Show the learners the protractor and how to measure an angle with it. Make sure that they know exactly how to measure angles.

Let them measure the angles of the various forms on the mat. They must say what they have discovered about the angles of the triangles, rectangles and squares.

All the angles of the rectangles and the squares are right angles. Give them the opportunity to discover other right angles in the classroom.

Have they discovered that a triangle never has more than one right angle? A triangle with a right angle is called a rectangular triangle.

**Measuring sides:**

Give the learners rulers to measure the sides. Make very sure that all the learners know how to measure using a ruler.

They must discover their own:

- There are triangles of which the 3 sides are of the same length. That is an equilateral triangle.
- There are triangles of which 2 sides are the same length. That is an isosceles triangle.
- There are triangles of which the sides are all different.
- The 4 sides of a square are of equal length.
- The 2 opposite sides of a rectangle are the same length.

This work will probably not all be done in one mat session, and the time needed will vary depending on the group involved. It is advisable to complete measuring angles in one session and measuring sides in another.

If the learners have already mastered halving of unequal numbers, it is only necessary to explain how to write $\frac{1}{2}$. That means 1 of the 2 parts into which it has been divided:

<table>
<thead>
<tr>
<th>1</th>
<th>is numerator</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>is denominator</td>
</tr>
</tbody>
</table>

**Table 1.47**

This is about halving 3, 5, 7 or 9 groups of ten. There is always 1 ten that must be solved. Encourage the learners to regroup before they halve. They must first do it concretely on the mat.
Every time the numbers 6 to 9 are doubled, a ten is completed.
The learners must indicate it on the work sheet by drawing a circle around the ten.

If there is no calculator available, the educator or one of the learners can write the answers on the blackboard after completing the work sheet. However, the learners who are able to do the calculations on their own, must be allowed to do it.

Encourage the learners to persevere until they find the right “path”. They may require an extra sheet of paper on which to write the numbers while trying to find the correct ones.

1.11.5 LEARNER SECTION

1.11.6 Content

1.11.6.1 ACTIVITY: Grouping [LO 1.4, LO 1.7, LO 1.8, LO 1.9, LO 1.10, LO 3.1, LO 3.3]

Bonny and Tommy know how easy it is to work with numbers once they have been grouped into tens. Sometimes it is necessary to regroup some of the tens if one has to subtract and there are not enough units to take away.
Mary has 16 sweets and she wants to give Peter 9. How many will she have left?

Number sentence: $16 - 9 = _____$

Bunny did it this way:

$16 - 9 = (10 - 9) + 6$
$= 1 + 6$
$= 7$

She regrouped the 10 and took away the 9 from the 10. The 1 that was left from the 10, was then added to the 6 of the 16. Then 7 were left.

Tommy did it this way:

$16 - 9 = (16 - 6) - 3$
$= 10 - 3$
$= 7$

First of all he took away the 6 units from the 16. Then there were 10 left. He then regrouped the 10 so that he could take away the 3 that he needed to take away. Then 7 were left.

You can decide for yourself what you want to do if you have to regroup a ten.

Number sentence: $15 - 8 = _____$

Number sentence: $13 - 5 = _____$

---

Tommy says we must do it without the dots now.

- Do the one that you understand best.

$14 - 9 = 14 - 4 - 5 = _____$ of $14 - 9 = (10 - 9) + 4 = _____$
$13 - 8 = 13 - 3 - 5 = _____$ of $13 - 8 = (10 - 8) + 3 = _____$
$12 - 6 = 12 - 2 - 4 = _____$ of $12 - 6 = (10 - 6) + 2 = _____$
$5 - 7 = 15 - 5 - 2 = _____$ of $15 - 7 = (10 - 7) + 5 = _____$
$18 - 9 = 18 - 8 - 1 = _____$ of $18 - 9 = (10 - 9) + 8 = _____$
$11 - 5 = 11 - 1 - 4 = _____$ of $11 - 5 = (10 - 5) + 1 = _____$

- Complete:
- Think!

Figure 1.89
Bonny and Tommy feel like doing their sums **vertically**.
The number in the top circle is found every time by adding together the numbers of the 2 circles below it, to which it is connected. Complete the number wall now.

Figure 1.91

Figure 1.92
1. $150 + 1 = \underline{\hspace{2cm}}$
2. $160 - 1 = \underline{\hspace{2cm}}$
3. $111 + 4 = \underline{\hspace{2cm}}$
4. $155 - 4 = \underline{\hspace{2cm}}$
5. $180 + 10 + 1 = \underline{\hspace{2cm}}$
6. $190 + 5 + 4 = \underline{\hspace{2cm}}$
7. $160 - 5 + 4 = \underline{\hspace{2cm}}$

What do you see? \underline{\hspace{5cm}} How many shapes do you see? \underline{\hspace{2cm}}

Name them. \underline{\hspace{25cm}}

Draw a line that will \underline{\hspace{2cm}} the shapes. Colour in \underline{\hspace{2cm}} of every shape.

How many shapes do you see now? \underline{\hspace{5cm}}

Name them. \underline{\hspace{25cm}}

How many \underline{\hspace{1cm}} are there to a:
- a triangle \underline{\hspace{2cm}}, a square \underline{\hspace{2cm}} and a rectangle \underline{\hspace{2cm}}?
- How many \underline{\hspace{1cm}} are there to a:
  - a triangle \underline{\hspace{2cm}}, a square \underline{\hspace{2cm}} and a rectangle \underline{\hspace{2cm}}?

Below is an illustration of the box in which Bonny and Tommy’s pencils were packed. They wanted to know what shapes were used in making this box, so they opened it up like this.

\[
\text{Figure 1.93}
\]

- Which shapes do you recognise, and how many of them are there?

- Now each of you must bring a box (not too big) to school. Open it up and draw it on the other side of this worksheet. You can paste the box there later.
- Write down \underline{\hspace{2cm}} \underline{\hspace{2cm}} and how \underline{\hspace{2cm}} were used.
• Use your ruler and measure the sides of each shape. Write it on our drawing. If you don’t know how to measure with a ruler, you can ask your educator or a friend to help you.

• What do you know about the sides of a square and a rectangle?

The sides of a square ____________________________________________________
The sides of a rectangle _________________________________________________

• What do you know about the angles of a square and a rectangle?

____________________________________________________________________

• Design and make your own container in which you can put some sweets. If you don’t have cardboard, use the inside of some other big, empty container.

Today Bonny and Tommy got only half an apple each. Their mother had only 1 apple, but she divided it very carefully so that both parts were exactly the same size. She halved it.

Figure 1.94

• We say: Bonny got one half, and Tommy got the other half.
• Mother gave Bonny and Tommy 15 cookies to share between them. Draw the cookies in their lunch boxes.

Each one got ____________________________________________.

Solve the problems in the way you prefer. You may draw them.

• Tommy buys 13 bananas and gives half to Bonny. How many bananas did each one get?

Each one got ____________________________________________.

• Bonny has a ribbon that is 29cm long. She wants to cut it in half to make 2 ribbons of the same length. How long will each ribbon be?

Each ribbon will be ________________________________________.

• Tommy has to drink 17 glasses of water in 2 days. How many glasses of water must he drink on 1 day if he drinks the same amount of water each day?

He must drink ___________________________________________ each day.

• Mother bought 25 litres of fruit juice for a party, but the children drank only half of it. How many litres were left over?
There were ______________________________________________.

- **Who wants to try this?** (You may draw if you like.)

\[3\frac{1}{2} + 3\frac{1}{2} = \_\_\_\_\_\_\_\]
\[5\frac{1}{2} + 5\frac{1}{2} = \_\_\_\_\_\_\_\]
\[10\frac{1}{4} + \frac{1}{4} = \_\_\_\_\_\_\_\]
\[12 + 2\frac{1}{4} = \_\_\_\_\_\_\_\]

### 1.11.7 Assessment

**Learning Outcome 1:** The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

**Assessment Standard 1.1:** We know this when the learner counts forwards and backwards in:
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**Assessment Standard 1.6:** We know this when the learner solves money problems involving totals and change in rands and cents, including converting between rands and cents;

**Assessment Standard 1.8:** We know this when the learner can perform calculations, using appropriate symbols, to solve problems

**Assessment Standard 1.9:** We know this when the learner performs mental calculations;

**Assessment Standard 1.10:** We know this when the learner uses the following techniques:
1.10.1 building up and breaking down numbers;
1.10.2 doubling and halving;
1.10.3 number-lines;
1.10.4 rounding off in tens

**Learning Outcome 3:** The learner will be able to describe and represent characteristics and relationships between two-dimensional shapes and three-dimensional objects in a variety of orientations and positions.

**Assessment Standard 3.1:** We know this when the learner recognises, identifies and names two-dimensional shapes and three-dimensional objects in the environment and in pictures;

**Assessment Standard 3.3:** We know this when the learner observes and creates given and described two-dimensional shapes and three-dimensional objects using concrete materials (e.g. building blocks, construction sets, cut-out two-dimensional shapes, clay, drinking straws).

### 1.12 Halving and Doubling

#### 1.12.1 MATHEMATICS

#### 1.12.2 Bonny and Tommy take a look at the seasons

#### 1.12.3 EDUCATOR SECTION

#### 1.12.4 Memorandum

This module still consists mostly of activities for consolidation, reinforcement and assessment of the work taught in the previous grades focusing on the number 100.

- **Number concept** to 200.
- **Operations:** - Consolidates all work covered in Grade 1 en 2.

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12This content is available online at <http://cnx.org/content/m32022/1.1/>. 
The names of the months and the correct spelling thereof need to be attended to. Discussions about the seasons and a healthy environment (nature conservation) will provide opportunities for the integration with other learning areas.

Weather charts for the different seasons can be recorded e.g. February – summer; May – autumn; August – winter; November – spring. These are not the best months for the seasons but they are the months in which the learners attend school for the whole month. Complete a bar graph for every weather chart so that weather conditions can be compared and discussed. Having completed all the bar graphs these can be compared to one another and the learners can discover weather conditions relevant to their own regions as well as those relevant to each season. The educator can keep the graphs to compare the statistics with the next year’s graphs.

The tasks and activities in Learning Unit 2 are still mainly intended for consolidation of work covered in previous grades. It is essential, however, that educators continue to make use of concrete apparatus to repeat, explain and consolidate all concepts that were not fully mastered before.

It is of the utmost importance that learners must be totally familiar with the tens grouping of our numbers system:

10 ones are grouped as 1 group of ten
10 tens are grouped as 1 group of a hundred
10 groups of a hundred are grouped as 1 group of a thousand, etc.

Learners must work with counters that have been grouped in hundreds, tens and units. Should counters not be available, the following semi-concrete apparatus can be used. Learners must work with counters that have been grouped in hundreds, tens and units. Should counters not be available, the following semi-concrete apparatus can be used.

The expansion cards (flared cards) are very useful in explaining place values, renaming, unifying of numbers and the 0 as place-keeper.

Attached you will find an example of expansion cards (flared cards) and a key to writing all number names. Flared cards enable learners to build any number, and if learners know the basic number names, they can construct and write any number name from the given parts. Give each learner a copy to use, for example

Example:
Number name: one thousand one hundred and thirty seven
If you wish to use this example, enlarge it and copy it on manilla.

<table>
<thead>
<tr>
<th>Number</th>
<th>1</th>
<th>37</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>6</td>
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<td></td>
<td>7</td>
<td>8</td>
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<td>10</td>
<td>20</td>
<td>30</td>
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<td>60</td>
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<td>80</td>
</tr>
<tr>
<td>100</td>
<td>200</td>
<td>300</td>
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<td>400</td>
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<td>4000</td>
<td>5000</td>
<td></td>
</tr>
<tr>
<td>6000</td>
<td>7000</td>
<td></td>
</tr>
<tr>
<td>8000</td>
<td>9000</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 1.97**

<table>
<thead>
<tr>
<th>0 nought</th>
<th>1 one</th>
<th>2 two</th>
<th>3 three</th>
<th>4 four</th>
<th>5 five</th>
<th>6 six</th>
<th>7 seven</th>
<th>8 eight</th>
<th>9 nine</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 ten</td>
<td>11 eleven</td>
<td>12 twelve</td>
<td>13 thirteen</td>
<td>14 fourteen</td>
<td>15 fifteen</td>
<td>16 sixteen</td>
<td>17 seventeen</td>
<td>18 eighteen</td>
<td>19 nineteen</td>
</tr>
<tr>
<td>20 twenty</td>
<td>21 twenty one</td>
<td>22 twenty two</td>
<td>23 twenty three</td>
<td>24 twenty four</td>
<td>25 twenty five</td>
<td>26 twenty six</td>
<td>27 twenty seven</td>
<td>28 twenty eight</td>
<td>29 twenty nine</td>
</tr>
</tbody>
</table>

*continued on next page*
Frontpage.

It is essential to have an initial discussion on the changing of the seasons. Some learners may find it very stimulating to discover what causes seasons and why there are different seasons in the year.

Learners must complete the pictures by adding their own drawings to illustrate the typical seasonal qualities, e.g.: 1. Spring: flowers and blossoms; 2. Summer: anything to do with the seaside or the swimming pool; 3. Autumn: leaves in autumn colours on trees and the ground; 4. Winter: snow on the mountains or rain (where applicable), and leafless trees. Discuss it with the learners.

Learners are now expected to know the names of the seasons in the correct order, and to write them down. A “year and seasons clock” can be put up in the classroom, which can help the learners to master writing the names.

Explain the origin of the extra day every 4 years to the learners. Some of the learners may understand it at this stage, but it cannot be expected of them at all.

This work sheet may elicit a discussion on the Olympic games.

It is important that the learners must understand that if 1 is added to the 9 units of 99, there is another group of ten. There are now 10 groups of ten altogether, which are grouped together to make 1 group of a hundred.

Likewise, they must understand that if they want to take away units from a hundred, they first have to dissolve the group of one hundred, and then dissolve 1 group of ten, before they will have units to take away.

The 0 as place-keeper might cause problems for some learners, Therefore it is essential that the learners must use counters that are grouped in hundreds, tens and units (or the copied blocks), as well as the flared cards, when this work is being done. If necessary, provide similar activities.
If the learners find it difficult to master place values, lay out the numbers with the flared cards.

On the next page there is an example of the multiples chart. It can be utilised very effectively, therefore it is suggested that each learner is given a copy.

This example has been done further than the one on the work sheet, but it can be used for the whole year. Besides, there are learners who are able and keen to count in 6,7,8 and 9.

Show the learners how to find the answers to the tables, $\times$ and $+$ from the chart.

Example: $2 \times 4 = 8$ Go right from 2 and above from 4 downwards - meet at 8 (see arrows)

$15 \div 3 = 5$ Go left from 15 to 3 and up from 15 - 5th multiple

Multiples: Count up to the 10th multiple and back.

![Multiples Chart](image)

<table>
<thead>
<tr>
<th>Count to 10th multiple and back.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count in:</td>
</tr>
<tr>
<td>02</td>
</tr>
<tr>
<td>03</td>
</tr>
<tr>
<td>05</td>
</tr>
<tr>
<td>06</td>
</tr>
<tr>
<td>07</td>
</tr>
<tr>
<td>08</td>
</tr>
<tr>
<td>09</td>
</tr>
<tr>
<td>10</td>
</tr>
</tbody>
</table>

Figure 1.98

At this stage the learners must know that 100c = R1. The learners now have a good concept of 100 and will realise that 120c equal R1 plus 20c, thus they can now learn to write it correctly, namely 120c = R1.20.

Master it up to 190c = R1.99.

Once they have mastered it, do the reverse: R1.20 = 120c up to R1.99 = 199c.

It is imperative that the learners understand the completion and solution of a ten completely. This is an investment for the future. The more concrete work that is done here, the better the learners’ understanding of these concepts. They must be able to relate what they are doing. If they cannot say how they arrived at an answer, it means that the concrete image has not been properly consolidated. Give them many and regular exercises of this kind.

Remember, if you prefer not to do solution directly after the completion, you are free to alter the sequence of the work sheets to suit yourself.

(i) Various triangles: the isosceles; equilateral and rectangular and any other types of triangle.
(ii) Various rectangles and squares.
(iii) Protractors and rulers, enough for everyone in the group.

First establish what the learners already know about the sides and angles of triangles, rectangles and squares.

**Measuring angles:**

Explain what a **right angle** is (angle equal to $90^\circ$) if they do not know it. Show the learners the protractor and how to measure an angle with it. Make sure that they know exactly how to measure angles.

Let them measure the angles of the various forms on the mat. They must say what they have discovered about the angles of the triangles, rectangles and squares.

All the angles of the rectangles and the squares are **right angles**. Give them the opportunity to discover other right angles in the classroom.

Have they discovered that a triangle never has more than one right angle? A triangle with a right angle is called a **rectangular triangle**.

**Measuring sides:**

Give the learners rulers to measure the sides. Make very sure that all the learners know how to measure using a ruler.

They must discover their own:

- There are triangles of which the 3 sides are of the same length. That is an equilateral triangle.
- There are triangles of which 2 sides are the same length. That is an isosceles triangle.
- There are triangles of which the sides are all different.
- The 4 sides of a square are of equal length.
- The 2 opposite sides of a rectangle are the same length.

This work will probably not all be done in one mat session, and the time needed will vary depending on the group involved. It is advisable to complete measuring angles in one session and measuring sides in another.

If the learners have already mastered halving of unequal numbers, it is only necessary to explain how to write $\frac{1}{2}$. That means 1 of the 2 parts into which it has been divided:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>is numerator</td>
</tr>
<tr>
<td>2</td>
<td>is denominator</td>
</tr>
</tbody>
</table>

Table 1.49

This is about halving 3, 5, 7 or 9 **groups of ten**. There is always 1 ten that must be solved. Encourage the learners to regroup before they halve. They must first do it concretely on the mat.
Every time the numbers 6 to 9 are doubled, a ten is completed. The learners must indicate it on the work sheet by drawing a circle around the ten.

If there is no calculator available, the educator or one of the learners can write the answers on the blackboard after completing the work sheet. However, the learners who are able to do the calculations on their own, must be allowed to do it.

Encourage the learners to persevere until they find the right “path”. They may require an extra sheet of paper on which to write the numbers while trying to find the correct ones.
1.12.6.1 ACTIVITY: Halving and Doubling [LO 1.8, LO 1.9, LO 1.10]

- Here are 30 smarties. Show me how you are going to divide them between Bonny and Tommy. Make Bonny’s smarties red and Tommy’s green.

![Smarties](image)

- There are 3 tens, so you must regroup 1 ten when you halve.
  Half of 30 is _____.
  \[ \frac{1}{2} \times 30 = _____ \]
  \[ 30 \div 2 = _____ \]

- Halve. Colour one half blue, and the other half orange.

  ![Halving](image)

  Half of 50 is _____.
  \[ \frac{1}{2} \times 50 = _____ \]
  \[ 50 \div 2 = _____ \]

  ![Halving](image)

  Half of 70 is _____.
  \[ \frac{1}{2} \times 70 = _____ \]
  \[ 70 \div 2 = _____ \]

  ![Halving](image)

  Half of 90 is _____.
  \[ \frac{1}{2} \times 90 = _____ \]
  \[ 90 \div 2 = _____ \]

- Halve:
  36: _____
  58: _____
  72: _____

  94: _____
  32: _____
  55: _____

**Figure 1.102**

Bonny and Tommy say they are going to try very hard to **double** their pocket money. That means that they will also have to do **double** the number of jobs.

- You will remember that Bonny earned R2 and Tommy R2,20. Calculate how much each will get if it is doubled.

Bonny will get R_____ and Tommy will get R_____. 
Bonny and Tommy know there is a treasure in the cottage across the river, but they do not know how to get there. Can you help them?

Here is a clue.

As you walk, add together the numbers on the stones. If you get 200 when you add the 8 on the stone directly in front of the cottage, you have found the right way. Be careful, because there are stones on which you must not step. Now draw the route that you have taken on the picture.
Write down the value of all the stones that you have used to cross the river. Add them.

1.12.7 Assessment

**Learning Outcome 1:** The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

**Assessment Standard 1.8:** We know this when the learner can perform calculations, using appropriate symbols, to solve problems.

**Assessment Standard 1.9:** We know this when the learner performs mental calculations;

**Assessment Standard 1.10:** We know this when the learner uses the following techniques:

1.10.1 building up and breaking down numbers;
1.10.2 doubling and halving;
1.10.3 number-lines;
1.10.4 rounding off in tens.
Chapter 2

Term 2

2.1 Numbers

2.1.1 MATHEMATICS

2.1.2 Bonny and Tommy’s birthday party

2.1.3 EDUCATOR SECTION

2.1.4 Memorandum

- More advanced work is covered, but the educator will benefit greatly if pages (completing the calendar) are done with all the learners simultaneously. Groups 2 and 3 can then afterwards continue with the work with which they are busy.
- Number Concept to 400
- Operations:
  - Addition - two digit numbers with two digit numbers, using regrouping of a ten.
  - Subtraction - two digit numbers from two digit numbers, using regrouping of a ten.
  - Multiplication - 2x, 4x, 5x and 10x to the 10th multiple (tables).
  - Division - \( \div 2 \), \( \div 4 \), \( \div 5 \) and \( \div 10 \) to the 10th multiple (tables).

Integrate the design of the hat and the gift wrap with Technology. This can be done classically.

All the calculations involving money and other quantities which the learners work with will enable them to realise that Mathematics is part of our daily activities.

From Module 3 onwards the learners will gradually progress to the more advanced work of Grade 3. It may be necessary sometimes to go back to previous work to expedite the transition to the advanced work.

It is important that the learners should realise that addition and subtraction combinations as well as the tables, multiplication and division, simply have to be repeated regularly and must be learnt until they know it! It is basic work that cannot be neglected.

Attached you will find a sheet with tables presented in a specific order. You can copy it and give it to the learners so that they can keep it with them.

These worksheets can be presented to the whole class at the same time. Learners must write the dates on the calendar on their own, therefore it is of the utmost importance that you will make quite sure that all the learners begin on the correct day in January. I suggest that you fill in 1 January yourself before copying the worksheet. If you like, you could even fill it in further, depending on the competence of the learners.

It is important for the learners to understand the difference between days of the week (7) and workdays, school days or week days (5), otherwise they may make numerous errors in their calculations.

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1This content is available online at <http://cnx.org/content/m32452/1.1/>. 
The learners must be aware of the patterns that are used in completing tables, therefore they must identify the pattern initially before they try to complete the table.

This is a vertical numbers line. The negative numbers have been filled in so that the learner will realise that numbers smaller than 0 do exist. It is not necessary to give this aspect much attention at this stage. It can just be mentioned in passing, to satisfy the learners who are keen to know more.

Explain to the learners that they are seeing diagrams, and that each symbol represents the value of the place where it stands.

Regrouping the 10 is being done now. The learners must first lay it out on the mat, so that it is experienced as something concrete, and so that they can see that there are 12 units and that they can therefore make another ten. This ten is then grouped with the other tens.

It depends on the educator and the abilities of the learners whether they are going to use carried numbers when doing the vertical calculations.

The breaking up of the ten is also learnt now. Learners must work with this on the mat in order to experience in concrete terms that there are not enough units and that a ten must be regrouped in order to get enough units. They must understand the breaking up (regrouping) of the ten very well before they can do it in writing.

Again it depends on the educator and the abilities of the learners whether they are going to make use of carried numbers in vertical calculations.

<table>
<thead>
<tr>
<th>2 x 0 = 02 x 1 =</th>
<th>4 x 0 = 04 x 1 =</th>
<th>0 ÷ 2 = 02 ÷ 2 =</th>
<th>0 ÷ 4 = 04 ÷ 4 =</th>
</tr>
</thead>
<tbody>
<tr>
<td>22 x 2 = 42 x 3 =</td>
<td>44 x 2 = 84 x 3 =</td>
<td>14 ÷ 2 = 26 ÷ 2 =</td>
<td>18 ÷ 4 = 212 ÷ 4 =</td>
</tr>
<tr>
<td>62 x 4 = 82 x 5 =</td>
<td>124 x 4 = 164 x 5</td>
<td>38 ÷ 2 = 410 ÷ 2</td>
<td>316 ÷ 4 = 420 ÷ 2</td>
</tr>
<tr>
<td>102 x 6 = 122 x 7</td>
<td>204 x 6 = 244 x 7</td>
<td>512 ÷ 2 = 614 ÷ 2</td>
<td>4 ÷ 4 = 628 ÷ 2</td>
</tr>
<tr>
<td>= 142 x 8 = 162 x 9</td>
<td>284 x 8 = 324 x 9</td>
<td>716 ÷ 2 = 818 ÷ 2</td>
<td>2 ÷ 2 = 920 ÷ 2</td>
</tr>
<tr>
<td>= 182 x 10 = 20</td>
<td>364 x 10 = 40</td>
<td>920 ÷ 2 = 410</td>
<td>836 ÷ 4 = 940 ÷ 4</td>
</tr>
<tr>
<td>10 = 10</td>
<td>40</td>
<td>= 10</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5 x 0 = 05 x 1 =</th>
<th>10 x 0 = 010 x 1</th>
<th>0 ÷ 5 = 05 ÷ 5 =</th>
<th>0 ÷ 10 = 010 ÷ 10 =</th>
</tr>
</thead>
<tbody>
<tr>
<td>55 x 2 = 105 x 3 =</td>
<td>1010 x 2 = 2010</td>
<td>110 ÷ 5 = 215 ÷ 5</td>
<td>120 ÷ 10 = 230</td>
</tr>
<tr>
<td>155 x 4 = 205 x 5 = 255 x 6 = 305 x 7 = 355 x 8 = 405</td>
<td>x 3 = 3010 x 4 = 4010 x 5 = 5010</td>
<td>320 ÷ 5 = 425 ÷ 5</td>
<td>340 ÷ 10 = 450</td>
</tr>
<tr>
<td>= 285 x 7 = 330 x 8 = 385 x 9 = 440 x 10</td>
<td>x 6 = 6010 x 7 = 7010 x 8 = 8010 x 9</td>
<td>530 ÷ 5 = 635 ÷ 5</td>
<td>10 ÷ 2 = 670 ÷ 10</td>
</tr>
<tr>
<td>320 x 9 = 430 x 10 = 450 x 10</td>
<td>9010 x 10 = 100</td>
<td>530 ÷ 5 = 635 ÷ 5</td>
<td>800 ÷ 10 = 890 ÷</td>
</tr>
<tr>
<td>= 560 x 10 = 600 x 10 = 700 x 10</td>
<td>9010 x 10 = 100</td>
<td>10 = 9100 ÷ 10 = 10</td>
<td></td>
</tr>
</tbody>
</table>

*continued on next page*
<table>
<thead>
<tr>
<th>3 x 0 = 0</th>
<th>3 x 1 = 3</th>
<th>3 x 2 = 6</th>
<th>3 x 3 = 9</th>
<th>3 x 4 = 12</th>
<th>3 x 5 = 15</th>
<th>3 x 6 = 18</th>
<th>3 x 7 = 21</th>
<th>3 x 8 = 24</th>
<th>3 x 9 = 27</th>
<th>3 x 10 = 30</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 x 0 = 0</td>
<td>6 x 1 = 6</td>
<td>6 x 2 = 12</td>
<td>6 x 3 = 18</td>
<td>6 x 4 = 24</td>
<td>6 x 5 = 30</td>
<td>6 x 6 = 36</td>
<td>6 x 7 = 42</td>
<td>6 x 8 = 48</td>
<td>6 x 9 = 54</td>
<td>6 x 10 = 60</td>
</tr>
<tr>
<td>0 ÷ 3 = 0</td>
<td>3 ÷ 3 = 1</td>
<td>6 ÷ 3 = 2</td>
<td>9 ÷ 3 = 3</td>
<td>12 ÷ 3 = 4</td>
<td>15 ÷ 3 = 5</td>
<td>18 ÷ 3 = 6</td>
<td>21 ÷ 3 = 7</td>
<td>24 ÷ 3 = 8</td>
<td>27 ÷ 3 = 9</td>
<td>30 ÷ 3 = 10</td>
</tr>
<tr>
<td>16 ÷ 3 = 5</td>
<td>312 ÷ 3 = 104</td>
<td>312 ÷ 3 = 104</td>
<td>312 ÷ 3 = 104</td>
<td>312 ÷ 3 = 104</td>
<td>312 ÷ 3 = 104</td>
<td>312 ÷ 3 = 104</td>
<td>312 ÷ 3 = 104</td>
<td>312 ÷ 3 = 104</td>
<td>312 ÷ 3 = 104</td>
<td>312 ÷ 3 = 104</td>
</tr>
<tr>
<td>10 ÷ 3 = 3</td>
<td>30 ÷ 3 = 10</td>
<td>60 ÷ 3 = 20</td>
<td>90 ÷ 3 = 30</td>
<td>120 ÷ 3 = 40</td>
<td>150 ÷ 3 = 50</td>
<td>180 ÷ 3 = 60</td>
<td>210 ÷ 3 = 70</td>
<td>240 ÷ 3 = 80</td>
<td>270 ÷ 3 = 90</td>
<td>300 ÷ 3 = 100</td>
</tr>
</tbody>
</table>

Table 2.1

The important fact here is the equivalence of different coins. There are learners who will indicate 7c as 4c and 3c in coins, and who will not realise that such coins do not exist in our currency.

It is also the ideal opportunity for learners to learn 5x and ÷ if they have not yet done so.
Point out to the learners that in calculations the R and c are left out, but that they must be inserted in the completed number sentence (answers).
Encourage the learners to keep on drawing what they read and then to write the number sentence in order to solve the problem.
Make very sure that all the learners know that there will be 10 children at the party. (8 + Bonny + Tommy) If this information is incorrect, all the following calculations will be extremely difficult.
Designing and making the party hat can be done as part of Technology.
Demonstrate and discuss the 3 ways in which to draw a circle.
Do a great deal of practical work.
Make sure that they understand and know what the centre, diameter and radius of a circle is, and that 2x radius = diameter. Explain to the learners what the circumference of the circle is.
The learners must indicate all points with letters right from the beginning. Show them that it makes it much easier to discuss and explain various aspects of the construction. They must understand that they may use any letter, as long as the same letter is not used twice in the same construction.
Once more discuss the different ways in which to divide squares and rectangles into halves and quarters.
Much concrete and semi-concrete work must be done when the learners have to divide numbers into quarters, especially when the number is not a multiple of 4. Use objects such as fruit and soft sweets that can actually be broken up quite easily, and not hard objects such as marbles, stones or bottle caps.
Explain to the learners that it will depend on the problem whether you can break it up into fractions or not.
Look at this: Daddy has 25 sheep that have to be herded into 4 pens. How many sheep will there be in each pen? (The remaining sheep cannot be cut up.)
Daddy has slaughtered 25 sheep and takes them to 4 butcheries. How many does each butchery get? (It will certainly be possible to divide the remaining sheep into 4.) Discuss more similar examples.
As soon as the learners understand that 4x is 2 times doubled, and 4 ÷ is two times halved, this can be drilled, because they must know the tables.
This is a wonderful way of familiarising learners with posing problems, but it demands much and regular practice. As soon as they understand it and can do it with confidence, they put forward wonderful ideas.
Begin with a very simple number sentence, e.g. 3 + 4 = □. Initially, let the learners name objects with which they can possibly work, and write these suggestions on the blackboard: trees, flowers, sweets, sheep, dogs, etc.
Everyone must be involved and try to give suggestions. Make the rows compete and then let them pose the problems as a kind of competition.
The vertical addition and subtraction calculations have been graded from simple to difficult so that it will be easy for you to determine a learner’s problem(s). This will enable you to concentrate on the problem areas only and to give appropriate similar exercises to help them.
With the last row of addition calculations, completing the hundred (carrying over the tens) is done incidentally to determine which of the learners understand this already. However, you are free to facilitate this formally now.

It must be a pattern that is repeated every 2 blocks and therefore it must be exactly the same throughout. It can also be offered with Technology, and the learners can then draw their own blocks on a larger sheet of paper.

Explain rounding off to the nearest R to the learners. Let them bring old catalogues and practise rounding off until they understand it.

This worksheet will give you a good idea of which learners are able to follow and carry out instructions.

Any learner who has a good grasp of hundreds, tens and units at this stage, should be capable of completing this worksheet quite easily. Point out to the learners that if they do not get the same answer in the balloon vertically and horizontally, there is a mistake somewhere and they will have to check the answers vertically and horizontally again.

More examples with smaller numbers can also be given.

\[
\begin{array}{cccc}
241620 & 301026 & 502948 & 1045594 \\
60 & 66 & 127 & 253 \\
\end{array}
\]

Table 2.2

2.1.5 LEANER SECTION

2.1.6 Content

2.1.6.1 ACTIVITY: Numbers [LO 1.1, LO 1.3, LO 1.4, LO 1.5, LO 1.8, LO 1.10, LO 4.2, LO 4.3, LO 5.1]

- It is Bonny and Tommy’s birthday on 13 May. They want to know how many days are still left before their birthday.
- Complete the calendar. Use the calendar in the classroom or at home and make very sure that you start on the correct day in January.
• Encircle the date of Bonny and Tommy’s birthday on the calendar.
• Encircle today’s date as well. Now count how many days are left. (Remember that you can’t add 13 May as well.)

Write: There are __________________________________________ left.

• Encircle the date on which you have your birthday. Is your birthday before or after theirs?

Write: My _________________________________________________________

• Encircle your teacher’s birthday. Has she had her birthday already?
• Bonny and Tommy have also made a “week clock” for themselves, because the days of the week also go around and around, just like the months of the year.
• Do you know the names of the days of the week in the proper order, and can you write them correctly?

Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday

• Complete:

1. There are ___________________________ days in a week.
2. There are ___________________________ school days (week days or work days) in a week.
3. The first day of the week is ___________________________.
4. The last day of the week is ___________________________.
5. Together these two days are called a ___________________________.

• Make a * next to the day/days on which you do it:

<table>
<thead>
<tr>
<th></th>
<th>Sunday</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sport</td>
<td>______</td>
<td>______</td>
<td>______</td>
<td>______</td>
<td>______</td>
<td>______</td>
<td>______</td>
</tr>
<tr>
<td>Homework</td>
<td>______</td>
<td>______</td>
<td>______</td>
<td>______</td>
<td>______</td>
<td>______</td>
<td>______</td>
</tr>
<tr>
<td>Play</td>
<td>______</td>
<td>______</td>
<td>______</td>
<td>______</td>
<td>______</td>
<td>______</td>
<td>______</td>
</tr>
<tr>
<td>Watch T.V.</td>
<td>______</td>
<td>______</td>
<td>______</td>
<td>______</td>
<td>______</td>
<td>______</td>
<td>______</td>
</tr>
<tr>
<td>Go to church</td>
<td>______</td>
<td>______</td>
<td>______</td>
<td>______</td>
<td>______</td>
<td>______</td>
<td>______</td>
</tr>
</tbody>
</table>

Table 2.3

• What do you do most in a week? ______________________________________________________
• Which day is your busiest day? ______________________________________________________
• Use your calendar again to fill in the day and the date:

Today it is ___________________________.
Yesterday it was ___________________________.
This term the school will close on ___________________________.
This year Christmas will be on ___________________________.

• Count on the calendar:

In January this year there are ___________________________ Fridays.
In the whole year there are ___________________________ Sundays.
Die jaar het ___________________________ dae.
Is it a leap year this year? ___________________________.
How do you know? ___________________________.

• Solve the problems, using your own method, but show how you did it.

1. We visited our grandmother and grandfather on the farm for 3 weeks. How many days did we spend there altogether?
   We were there for ___________________________.
2. Mary was in bed with chicken pox for 2 weeks. How many school days did she miss?
   She missed ___________________________.
3. My father drives 6 km to work every day. How many km does he drive in 1 week if he goes to work every workday?
He drives _________________________________________________

4. Bonny and Tommy play with their puppy every day of the weekend for 1 hour. How many hours have they played with him after 5 weeks?
They played _________________________________________________

<table>
<thead>
<tr>
<th>Complete:</th>
<th>week1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>school days</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2.4

- Bonny and Tommy can climb up the number ladder as far as 1 000 or down as far as -100.

1. Which numbers have been left out?
   A is ____ B is ____
   C is ____ D is ____
   E is ____ F is ____

2. Draw the rungs on the ladder for the following numbers. (Estimate where it will be)
   30 125 240 290 360

3. Draw a circle around all the numbers that come between 200 and 300 and then arrange them from the least to the most.
   75 210 220 190 310 299
   233 170 265 302 203 350

4. Now write the number names of these numbers.
   __________________________________________
   __________________________________________
   __________________________________________
   __________________________________________
   __________________________________________

Figure 2.3

- Count forwards in hundreds, and then back again:
Sometimes Bonny and Tommy use diagrams to represent numbers.

Figure 2.4

- What will happen if you add another hundred to each one of these numbers?

  \[\_\_\_\_\_\_\_ + 100 = \_\_\_\_\_\_\_\_\_ + 100 = \_\_\_\_\_\_\_\_\_ + 100 = \_\_\_\_\_\_\_\_\_\]

- Bonny and Tommy have hidden a number sentence among the numbers in this block.
- Find all the numbers between 300 and 400 and colour the squares with an ordinary pencil.
Table 2.5

<table>
<thead>
<tr>
<th>200</th>
<th>315</th>
<th>178</th>
<th>612</th>
<th>144</th>
<th>447</th>
<th>162</th>
<th>333</th>
<th>554</th>
<th>128</th>
<th>419</th>
<th>304</th>
<th>109</th>
</tr>
</thead>
<tbody>
<tr>
<td>155</td>
<td>301</td>
<td>290</td>
<td>422</td>
<td>515</td>
<td>167</td>
<td>298</td>
<td>303</td>
<td>818</td>
<td>422</td>
<td>191</td>
<td>320</td>
<td>715</td>
</tr>
<tr>
<td>524</td>
<td>321</td>
<td>188</td>
<td>661</td>
<td>176</td>
<td>325</td>
<td>327</td>
<td>329</td>
<td>336</td>
<td>340</td>
<td>222</td>
<td>348</td>
<td>199</td>
</tr>
<tr>
<td>432</td>
<td>350</td>
<td>569</td>
<td>351</td>
<td>208</td>
<td>184</td>
<td>529</td>
<td>357</td>
<td>177</td>
<td>282</td>
<td>555</td>
<td>363</td>
<td>999</td>
</tr>
<tr>
<td>191</td>
<td>362</td>
<td>365</td>
<td>369</td>
<td>370</td>
<td>171</td>
<td>284</td>
<td>375</td>
<td>286</td>
<td>612</td>
<td>444</td>
<td>377</td>
<td>813</td>
</tr>
<tr>
<td>946</td>
<td>914</td>
<td>755</td>
<td>384</td>
<td>123</td>
<td>456</td>
<td>678</td>
<td>789</td>
<td>800</td>
<td>876</td>
<td>753</td>
<td>531</td>
<td>179</td>
</tr>
</tbody>
</table>

1. Have you found it? Write it down and complete it: _______________________
   _______________________________________________________________________

2. Now add two noughts to each number and write the new number sentence.
   _______________________________________________________________________

3. Find all the numbers in the block with 2 hundreds and write them down here:
   _______________________

4. Arrange them from the most to the least:
   _______________________

5. Fill in the missing numbers:
   205 206 207 ______ ______ ______ ______ ______ ______ ______ ______ 214
   221 223 225 ______ ______ ______ ______ ______ ______ ______ ______ 239
   230 235 240 ______ ______ ______ ______ ______ ______ ______ ______ 275
   203 213 223 ______ ______ ______ ______ ______ ______ ______ ______ 293
   275 274 273 ______ ______ ______ ______ ______ ______ ______ ______ 266
   258 256 254 ______ ______ ______ ______ ______ ______ ______ ______ 240
   265 260 255 ______ ______ ______ ______ ______ ______ ______ ______ 220
   297 287 277 ______ ______ ______ ______ ______ ______ ______ ______ 207

- See how Bonny and Tommy have solved their problem.
- Bonny has 25 sweets and Tommy has 17. How many sweets do they have altogether?

- See how Bonny and Tommy have solved their problem.
- Bonny has 25 sweets and Tommy has 17. How many sweets do they have altogether?
Here is a calculation that could cause problems.
See what Bonny and Tommy have done:

Mother bakes 52 cookies and they eat 16 of them. How many cookies are left?

There are not enough units to take away the 6. Regroup a ten.
2.1.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.1: We know this when the learner counts forwards and backwards in:
  1.1.1 the intervals specified in grade 2 with increased number ranges;
Assessment Standard 1.3: We know this when the learner knows, reads and writes number symbols and names from 1 to at least 1 000;
Assessment Standard 1.4: We know this when the learner orders, describes and compares numbers;
Assessment Standard 1.5: We know this when the learner recognises the place value of digits in whole numbers to at least 3-digit numbers;
Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems;
Assessment Standard 1.10: We know this when the learner uses the following techniques:
  1.10.1 building up and breaking down numbers;
  1.10.2 doubling and halving;
  1.10.3 number-lines;
  1.10.4 rounding off in tens.

Learning Outcome 4: The learner will be able to use appropriate measuring units, instruments and formulae in a variety of contexts.

Assessment Standard 4.2: We know this when the learner solves problems involving calculations with and conversions;
Assessment Standard 4.3: We know this when the learner identifies important dates on calendars;

Learning Outcome 5: The learner will be able to collect, summarise, display and critically analyse data in order to draw conclusions and make predictions, and to interpret and determine chance variation.

Assessment Standard 5.1: We know this when the learner collects data (alone and/or as a member of a group or team) in the classroom and school environment to answer questions posed by the teacher and class (e.g. ‘how many learners walk to school?’).

2.2 Coins²

2.2.1 MATHEMATICS

2.2.2 Bonny and Tommy’s birthday party

2.2.3 EDUCATOR SECTION

2.2.4 Memorandum

- More advanced work is covered, but the educator will benefit greatly if pages (completing the calendar) are done with all the learners simultaneously. Groups 2 and 3 can then afterwards continue with the work with which they are busy.
- Number Concept to 400
- Operations:
- Addition – two digit numbers with two digit numbers, using regrouping of a ten.
- Subtraction – two digit numbers from two digit numbers, using regrouping of a ten.
- Multiplication – 2x, 4x, 5x and 10x to the 10th multiple (tables).
- Division - ÷2, ÷4, ÷5 and ÷10 to the 10th multiple (tables).

Integrate the design of the hat and the gift wrap with Technology. This can be done classically.

²This content is available online at <http://cnx.org/content/m32457/1.1/>.
All the calculations involving money and other quantities which the learners work with will enable them to realise that Mathematics is part of our daily activities.

From Module 3 onwards the learners will gradually progress to the more advanced work of Grade 3. It may be necessary sometimes to go back to previous work to expedite the transition to the advanced work.

It is important that the learners should realise that addition and subtraction combinations as well as the tables, multiplication and division, simply have to be repeated regularly and must be learnt until they know it! It is basic work that cannot be neglected.

Attached you will find a sheet with tables presented in a specific order. You can copy it and give it to the learners so that they can keep it with them.

These worksheets can be presented to the whole class at the same time. Learners must write the dates on the calendar on their own, therefore it is of the utmost importance that you will make quite sure that all the learners begin on the correct day in January. I suggest that you fill in 1 January yourself before copying the worksheet. If you like, you could even fill it in further, depending on the competence of the learners.

It is important for the learners to understand the difference between days of the week (7) and workdays, school days or week days (5), otherwise they may make numerous errors in their calculations.

The learners must be aware of the patterns that are used in completing tables, therefore they must identify the pattern initially before they try to complete the table.

This is a vertical numbers line. The negative numbers have been filled in so that the learner will realise that numbers smaller than 0 do exist. It is not necessary to give this aspect much attention at this stage. It can just be mentioned in passing, to satisfy the learners who are keen to know more.

Explain to the learners that they are seeing diagrams, and that each symbol represents the value of the place where it stands.

Regrouping the 10 is being done now. The learners must first lay it out on the mat, so that it is experienced as something concrete, and so that they can see that there are 12 units and that they can therefore make another ten. This ten is then grouped with the other tens.

It depends on the educator and the abilities of the learners whether they are going to use carried numbers when doing the vertical calculations.

The breaking up of the ten is also learnt now. Learners must work with this on the mat in order to experience in concrete terms that there are not enough units and that a ten must be regrouped in order to get enough units. They must understand the breaking up (regrouping) of the ten very well before they can do it in writing.

Again it depends on the educator and the abilities of the learners whether they are going to make use of carried numbers in vertical calculations.

<table>
<thead>
<tr>
<th>2 x 0 = 0</th>
<th>2 x 1 = 2</th>
<th>4 x 0 = 0</th>
<th>4 x 1 = 4</th>
<th>0 ÷ 2 = 0</th>
<th>0 ÷ 2 = 0</th>
<th>0 ÷ 4 = 0</th>
<th>0 ÷ 4 = 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>22 x 2 = 44</td>
<td>2 x 3 = 6</td>
<td>44 x 2 = 88</td>
<td>4 x 3 = 12</td>
<td>14 ÷ 2 = 7</td>
<td>26 ÷ 2 = 13</td>
<td>26 ÷ 4 = 6</td>
<td>212 ÷ 4 = 53</td>
</tr>
<tr>
<td>62 x 4 = 248</td>
<td>82 x 5 = 410</td>
<td>124 x 4 = 496</td>
<td>164 x 5 = 820</td>
<td>38 ÷ 2 = 19</td>
<td>410 ÷ 2 = 205</td>
<td>410 ÷ 4 = 102</td>
<td>420 ÷ 4 = 105</td>
</tr>
<tr>
<td>102 x 6 = 612</td>
<td>122 x 7 = 854</td>
<td>204 x 6 = 1224</td>
<td>244 x 7 = 1708</td>
<td>512 ÷ 2 = 256</td>
<td>614 ÷ 2 = 307</td>
<td>614 ÷ 4 = 153</td>
<td>628 ÷ 4 = 157</td>
</tr>
<tr>
<td>= 142 x 8 = 1136</td>
<td>= 162 x 9 = 1458</td>
<td>= 284 x 8 = 2272</td>
<td>= 324 x 9 = 2916</td>
<td>2 ÷ 2 = 1</td>
<td>716 ÷ 2 = 358</td>
<td>716 ÷ 4 = 179</td>
<td>732 ÷ 4 = 183</td>
</tr>
<tr>
<td>9 = 182 x 10 = 20</td>
<td>= 364 x 10 = 3640</td>
<td>= 40</td>
<td>= 80</td>
<td>= 820 ÷ 2 = 410</td>
<td>= 920 ÷ 2 = 460</td>
<td>= 920 ÷ 4 = 230</td>
<td>= 940 ÷ 4 = 235</td>
</tr>
</tbody>
</table>

continued on next page
<table>
<thead>
<tr>
<th>5 x 0 = 05 x 1 =</th>
<th>5 x 0 = 05 x 1 =</th>
<th>0 ÷ 5 = 05 ÷ 5 =</th>
<th>0 ÷ 10 = 010 ÷ 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>- 100</td>
<td>110 ÷ 5 = 215 ÷ 5</td>
<td>120 ÷ 10 = 230</td>
<td></td>
</tr>
<tr>
<td>- 2010 x 2 = 2010 x 4 =</td>
<td>- 320 ÷ 5 = 425 ÷ 5</td>
<td>- 340 ÷ 10 = 700</td>
<td></td>
</tr>
<tr>
<td>- 2010 x 5 = 5010</td>
<td>5 = 530 ÷ 5 = 635</td>
<td>- 450 ÷ 10 = 560</td>
<td></td>
</tr>
<tr>
<td>x 6 ÷ 7 = 6010 x 7 =</td>
<td>- 320 ÷ 5 = 635</td>
<td>- 10 = 670 ÷ 10 = 780</td>
<td></td>
</tr>
<tr>
<td>x 9 ÷ 8 = 8010 x 9 =</td>
<td>7 = 740 ÷ 5 = 150</td>
<td>- 10 = 890 ÷ 10 = 890</td>
<td></td>
</tr>
<tr>
<td>9 = 9010 x 10 = 100</td>
<td>845 ÷ 5 = 950 ÷ 5 = 10</td>
<td>- 10 = 9100 ÷ 10 = 10</td>
<td></td>
</tr>
<tr>
<td>6 x 0 = 06 x 1 =</td>
<td>6 x 0 = 06 x 1 =</td>
<td>0 ÷ 3 = 03 ÷ 3 =</td>
<td>0 ÷ 6 = 06 ÷ 6 =</td>
</tr>
<tr>
<td>66 x 2 = 126 x 3 =</td>
<td>16 ÷ 3 = 29 ÷ 3 =</td>
<td>112 ÷ 6 = 218 ÷ 6</td>
<td></td>
</tr>
<tr>
<td>186 x 4 = 246 x 5 =</td>
<td>312 ÷ 3 = 415 ÷ 3 =</td>
<td>- 324 ÷ 6 = 430 ÷ 6</td>
<td></td>
</tr>
<tr>
<td>= 306 x 6 = 306 x</td>
<td>- 518 ÷ 3 = 621 ÷ 3</td>
<td>6 ÷ 3 = 536 ÷ 6 = 642</td>
<td></td>
</tr>
<tr>
<td>372 ÷ 3 = 827</td>
<td></td>
<td>- 6 = 748 ÷ 6 =</td>
<td></td>
</tr>
<tr>
<td>= 213 x 8 = 243 x</td>
<td>3 = 930 ÷ 3 = 300</td>
<td>854 ÷ 6 = 960 ÷ 6</td>
<td></td>
</tr>
<tr>
<td>9 = 273 x 10 = 30</td>
<td>10</td>
<td>= 10</td>
<td></td>
</tr>
</tbody>
</table>

**Table 2.6**

The important fact here is the equivalence of different coins. There are learners who will indicate 7c as 4c and 3c in coins, and who will not realise that such coins do not exist in our currency. It is also the ideal opportunity for learners to learn 5x and ÷ if they have not yet done so.

Point out to the learners that in calculations the R and c are left out, but that they must be inserted in the completed number sentence (answers).

Encourage the learners to keep on drawing what they read and then to write the number sentence in order to solve the problem.

Make very sure that all the learners know that there will be 10 children at the party. (8 + Bonny + Tommy) If this information is incorrect, all the following calculations will be extremely difficult.

Designing and making the party hat can be done as part of Technology.

Demonstrate and discuss the 3 ways in which to draw a circle.

Do a great deal of practical work.

Make sure that they understand and know what the centre, diameter and radius of a circle is, and that 2x radius = diameter. Explain to the learners what the circumference of the circle is.

The learners must indicate all points with letters right from the beginning. Show them that it makes it much easier to discuss and explain various aspects of the construction. They must understand that they may use any letter, as long as the same letter is not used twice in the same construction.

Once more discuss the different ways in which to divide squares and rectangles into halves and quarters.

Much concrete and semi-concrete work must be done when the learners have to divide numbers into quarters, especially when the number is not a multiple of 4. Use objects such as fruit and soft sweets that can actually be broken up quite easily, and not hard objects such as marbles, stones or bottle caps.

Explain to the learners that it will depend on the problem whether you can break it up into fractions or not.

Look at this: Daddy has 25 sheep that have to be herded into 4 pens. How many sheep will there be in each pen? (The remaining sheep cannot be cut up.)

Daddy has slaughtered 25 sheep and takes them to 4 butcheries. How many does each butchery get? (It will certainly be possible to divide the remaining sheep into 4.) Discuss more similar examples.

As soon as the learners understand that 4x is 2 times doubled, and 4 ÷ 2 is two times halved, this can be drilled, because they must know the tables.

This is a wonderful way of familiarising learners with posing problems, but it demands much and regular practice. As soon as they understand it and can do it with confidence, they put forward wonderful ideas.
Begin with a very simple number sentence, e.g. $3 + 4 = \square$. Initially, let the learners name objects with which they can possibly work, and write these suggestions on the blackboard: trees, flowers, sweets, sheep, dogs, etc.

Everyone must be involved and try to give suggestions. Make the rows compete and then let them pose the problems as a kind of competition.

The vertical addition and subtraction calculations have been graded from simple to difficult so that it will be easy for you to determine a learner’s problem(s). This will enable you to concentrate on the problem areas only and to give appropriate similar exercises to help them.

With the last row of addition calculations, completing the hundred (carrying over the tens) is done incidentally to determine which of the learners understand this already. However, you are free to facilitate this formally now.

It must be a pattern that is repeated every 2 blocks and therefore it must be exactly the same throughout. It can also be offered with Technology, and the learners can then draw their own blocks on a larger sheet of paper.

Explain rounding off to the nearest R to the learners. Let them bring old catalogues and practise rounding off until they understand it.

This worksheet will give you a good idea of which learners are able to follow and carry out instructions. Any learner who has a good grasp of hundreds, tens and units at this stage, should be capable of completing this worksheet quite easily. Point out to the learners that if they do not get the same answer in the balloon vertically and horizontally, there is a mistake somewhere and they will have to check the answers vertically and horizontally again.

More examples with smaller numbers can also be given.

\[
\begin{array}{cccc}
241620 & 301026 & 502948 & 1045594 \\
60 & 66 & 127 & 253
\end{array}
\]

Table 2.7

2.2.5 LEANER SECTION

2.2.6 Content

2.2.6.1 ACTIVITY: Coins [LO 1.1, LO 1.6, LO 1.8, LO 1.9, LO 2.2]

- Bonny and Tommy are saving money to buy each other some presents.
- Make sure that you know what all the coins look like. Colour them.
• Add up all the 5c coins:

\[
5c + 5c + 5c + 5c + 5c + 5c + 5c + 5c + 5c + 5c = \_\_\_\_c
\]

Figure 2.8

• Draw the 5c coins that equal each amount:

<table>
<thead>
<tr>
<th>Amount</th>
<th>5c coins</th>
</tr>
</thead>
<tbody>
<tr>
<td>20c</td>
<td>5c</td>
</tr>
<tr>
<td>20c</td>
<td>5c</td>
</tr>
<tr>
<td>5c</td>
<td>5c</td>
</tr>
<tr>
<td>5c</td>
<td>5c</td>
</tr>
<tr>
<td>5c</td>
<td>5c</td>
</tr>
<tr>
<td>5c</td>
<td>5c</td>
</tr>
<tr>
<td>5c</td>
<td>5c</td>
</tr>
<tr>
<td>5c</td>
<td>5c</td>
</tr>
</tbody>
</table>

Figure 2.9
• Count forwards in multiples of 5 and back again:

5 _____ _____ _____ _____ _____ 50
50 _____ _____ _____ _____ _____ 5

• Find the pattern and complete the table:

<table>
<thead>
<tr>
<th></th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>tens</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>fives</td>
<td>2</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2.8

• See what happens if we switch the table around:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>fives</td>
<td>1</td>
<td>½</td>
<td>1</td>
<td>½</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>tens</td>
<td>5</td>
<td>10</td>
<td>15</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2.9

• Think!

| 5 x 4 = _____ | Change around: | 4 x 5 = _____ |
| 5 x 2 = _____ | 2 x 5 = _____ |
| 5 x 7 = _____ | 7 x 5 = _____ |
| 5 x 10 = _____ | 10 x 5 = _____ |
| 5 x 5 = _____ | 5 x 5 = _____ |
| 5 x 8 = _____ | 8 x 5 = _____ |
| 5 x 3 = _____ | 3 x 5 = _____ |
| 5 x 9 = _____ | 9 x 5 = _____ |
| 5 x 1 = _____ | 1 x 5 = _____ |
| 5 x 6 = _____ | 6 x 5 = _____ |
| 5 x 0 = _____ | 0 x 5 = _____ |

---

| 10 ÷ 5 = _____ | 50 ÷ 5 = _____ |
| 25 ÷ 5 = _____ | 15 ÷ 5 = _____ |
| 5 ÷ 5 = _____ | 20 ÷ 5 = _____ |
| 30 ÷ 5 = _____ | 45 ÷ 5 = _____ |
| 0 ÷ 5 = _____ | 35 ÷ 5 = _____ |

---

| 2 x 8 = _____ | 6 x 10 = _____ | 18 ÷ 2 = _____ |
| 5 x 5 = _____ | 3 x 5 = _____ | 30 ÷ 10 = _____ |
| 10 x 9 = _____ | 7 x 2 = _____ | 15 ÷ 5 = _____ |
| 5 x 6 = _____ | 9 x 5 = _____ | 20 ÷ 2 = _____ |

Figure 2.10
Bonny and Tommy say:
It is easy to work with 1c, 2c, 5c and 10c coins.

- What is the amount in the purse?

![Figure 2.11](image)

- Write down the value of the coins that are in their purses: (1c, 2c, 5c en 10c)

![Figure 2.12](image)

- Now decide which coins, and how many, are in their purses, and then draw them.

16c
47c
4c
63c
39c
28c

- Bonny and Tommy like tables.
• This table of equal values helps them to calculate how many and which coins they have to get when they fetch change from the bank.

<table>
<thead>
<tr>
<th></th>
<th>50c</th>
<th>50c</th>
</tr>
</thead>
<tbody>
<tr>
<td>20c</td>
<td>10c</td>
<td>10c</td>
</tr>
<tr>
<td></td>
<td>10c</td>
<td>10c</td>
</tr>
<tr>
<td>5c</td>
<td>5c</td>
<td>5c</td>
</tr>
<tr>
<td></td>
<td>5c</td>
<td>5c</td>
</tr>
<tr>
<td>10c</td>
<td>10c</td>
<td>10c</td>
</tr>
<tr>
<td></td>
<td>10c</td>
<td>10c</td>
</tr>
<tr>
<td>5c</td>
<td>5c</td>
<td>5c</td>
</tr>
<tr>
<td></td>
<td>5c</td>
<td>5c</td>
</tr>
<tr>
<td>10c</td>
<td>10c</td>
<td>10c</td>
</tr>
<tr>
<td></td>
<td>10c</td>
<td>10c</td>
</tr>
</tbody>
</table>

Table 2.10

• Complete the tables:

<table>
<thead>
<tr>
<th>R1 coins</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>50c coins</td>
<td>2</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2.11

<table>
<thead>
<tr>
<th>R1 coins</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>10c coins</td>
<td>10</td>
<td>20</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2.12

• Bonny has 10 10c coins in her purse. She swops with Tommy who gives her 1 coin for them. Which coin did he give her?

She got a _____ coin.

• Tommy has a R2 coin and exchanges it with his mother for 50c coins. How many coins did he get?

He got a _____ 50c coins.

• Bonny goes to the bank with 200 1c coins. She comes back with 2 coins. What did the bank give her?

She got 2 _____ coins.

Who knows?
R1 = _____c R2 = _____c R3 = _____c
R4 = _____c R5 = _____c R10 = _____c

• Use any method to do the calculations, but show how you do them. Leave out the R and c signs when you do the calculations, but remember to write them down when you give the answer.

<table>
<thead>
<tr>
<th>R45 + R23 = ___________</th>
<th>R60 + R28 = ___________</th>
</tr>
</thead>
<tbody>
<tr>
<td>R28 + R52 = ___________</td>
<td>R39 + R16 + R20 = __________</td>
</tr>
<tr>
<td>48c - 15c = ___________</td>
<td>96c - 50c = ___________</td>
</tr>
<tr>
<td>80c - 27c = ___________</td>
<td>94c - 30c - 16c = ___________</td>
</tr>
</tbody>
</table>
Table 2.13

50c + 50c + 50c + 50c + 50c + 50c + 50c = __________

- Solve the problems in your own way.
- Write down the number sentences.

1. Bonny bought 3 chocolates. Each one cost 31c. How much did she pay?
   She paid _________________________________.
   How much change did she get if she paid with a R1-coin?
   She got _________________________________.

2. Tommy bought 5 bags of marbles. Each bag cost R2,10. How much did he pay for all the marbles?
   He paid _________________________________.
   He gave R12. How much change did he get?
   He got _________________________________.

3. Bonny would very much like to buy herself a pen. The pen costs R13 and she has R10,80 in her purse. How much does she still need?
   She needs ________________________________.

4. Every day Tommy buys himself an ice cream that costs R2. He has R14 left in his purse. For how many days will he still be able to buy an ice cream?
   He can ________________________________.

5. Mommy gave Bonny and Tommy R65 to share equally between the two of them. How much did each one get?
   Each one got ________________________________.

6. How many c in:
   R1,67 = _______ c R2,99 = _______ c R3,06 = _______ c
   R1,20 + R1,15 = _______ c R0,55 + R4,10 = _______ c

7. Make each amount R1, 50 more:
   R20,20 ____________________ R29,49 ____________________

- Calculate the costs of what we buy:

<table>
<thead>
<tr>
<th>I buy</th>
<th>I pay</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>5 x 6 =_____</td>
</tr>
<tr>
<td>2</td>
<td>2 x 30=_____</td>
</tr>
<tr>
<td>8</td>
<td>8 x 5=_____</td>
</tr>
<tr>
<td>9</td>
<td>9 x 10=_____</td>
</tr>
<tr>
<td>3</td>
<td>3 x 5=_____</td>
</tr>
<tr>
<td>1</td>
<td>1 x 15=_____</td>
</tr>
</tbody>
</table>
• Calculate the change:

<table>
<thead>
<tr>
<th>Koop vir:</th>
<th>Betaal met:</th>
<th>Kleingeld:</th>
</tr>
</thead>
<tbody>
<tr>
<td>35c</td>
<td>50c</td>
<td></td>
</tr>
<tr>
<td>79c</td>
<td>90c</td>
<td></td>
</tr>
<tr>
<td>R75</td>
<td>R100</td>
<td></td>
</tr>
</tbody>
</table>

Table 2.14

• Mommy says that Bonny and Tommy may each invite 4 friends to their party.

1. There will be _______ children. (Make sure that your answer is correct.)
2. Calculate how many of everything they need and how much it costs.

| Ice creams | 2 per person is ____ | R2 each is ____ |
| Lolipops  | 3 per person is ____ | R1 each is ____ |
| Cookies   | 4 per person is ____ | R50 each is ____ |
| Cool drinks | 2 per person is ____ | R1 each is ____ |

Total amount ______

Figure 2.14

2.2.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.1: We know this when the learner counts forwards and backwards in:
1.1.1 the intervals specified in grade 2 with increased number ranges;

Assessment Standard 1.6: We know this when the learner solves money problems involving totals and change in rands and cents, including converting between rands and cents;

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems;

Assessment Standard 1.9: We know this when the learner performs mental calculations;

Learning Outcome 2: The learner will be able to recognise, describe and represent patterns and relationships, as well as to solve problems using algebraic language and skills.

Assessment Standard 2.2: We know this when the learner copies and extends simple number sequences to at least 1 000.
2.3 Halve

2.3.1 MATHEMATICS

2.3.2 Bonnie and Tommy’s birthday party

2.3.3 EDUCATOR SECTION

2.3.4 Memorandum

- More advanced work is covered, but the educator will benefit greatly if pages (completing the calendar) are done with all the learners simultaneously. Groups 2 and 3 can then afterwards continue with the work with which they are busy.
- Number Concept to 400
- Operations:
  - Addition - two digit numbers with two digit numbers, using regrouping of a ten.
  - Subtraction - two digit numbers from two digit numbers, using regrouping of a ten.
  - Multiplication - 2x, 4x, 5x and 10x to the 10th multiple (tables).
  - Division - \( \div 2 \), \( \div 4 \), \( \div 5 \) and \( \div 10 \) to the 10th multiple (tables).

Integrate the design of the hat and the gift wrap with Technology. This can be done classically.

All the calculations involving money and other quantities which the learners work with will enable them to realise that Mathematics is part of our daily activities.

From Module 3 onwards the learners will gradually progress to the more advanced work of Grade 3. It may be necessary sometimes to go back to previous work to expedite the transition to the advanced work.

It is important that the learners should realise that addition and subtraction combinations as well as the tables, multiplication and division, simply have to be repeated regularly and must be learnt until they know it! It is basic work that cannot be neglected.

Attached you will find a sheet with tables presented in a specific order. You can copy it and give it to the learners so that they can keep it with them.

These worksheets can be presented to the whole class at the same time. Learners must write the dates on the calendar on their own, therefore it is of the utmost importance that you will make quite sure that all the learners begin on the correct day in January. I suggest that you fill in 1 January yourself before copying the worksheet. If you like, you could even fill it in further, depending on the competence of the learners.

It is important for the learners to understand the difference between days of the week (7) and workdays, school days or week days (5), otherwise they may make numerous errors in their calculations.

The learners must be aware of the patterns that are used in completing tables, therefore they must identify the pattern initially before they try to complete the table.

This is a vertical numbers line. The negative numbers have been filled in so that the learner will realise that numbers smaller than 0 do exist. It is not necessary to give this aspect much attention at this stage. It can just be mentioned in passing, to satisfy the learners who are keen to know more.

Explain to the learners that they are seeing diagrams, and that each symbol represents the value of the place where it stands.

Regrouping the 10 is being done now. The learners must first lay it out on the mat, so that it is experienced as something concrete, and so that they can see that there are 12 units and that they can therefore make another ten. This ten is then grouped with the other tens.

It depends on the educator and the abilities of the learners whether they are going to use carried numbers when doing the vertical calculations.

The breaking up of the ten is also learnt now. Learners must work with this on the mat in order to experience in concrete terms that there are not enough units and that a ten must be regrouped in order to get enough units. They must understand the breaking up (regrouping) of the ten very well before they can do it in writing.

\[ \text{This content is available online at } \langle \text{http://cnx.org/content/m32453/1.1/} \rangle. \]
Again it depends on the educator and the abilities of the learners whether they are going to make use of carried numbers in vertical calculations.

<table>
<thead>
<tr>
<th>Multiplication</th>
<th>Division</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 x 0 = 02 x 1 =</td>
<td>0 ÷ 2 = 02 ÷ 2 =</td>
</tr>
<tr>
<td>22 x 2 = 42 x 3 =</td>
<td>14 ÷ 2 = 26 ÷ 2 =</td>
</tr>
<tr>
<td>62 x 4 = 82 x 5 =</td>
<td>38 ÷ 2 = 410 ÷ 2 =</td>
</tr>
<tr>
<td>102 x 6 = 122 x 7 =</td>
<td>512 ÷ 2 = 614 ÷ 2 =</td>
</tr>
<tr>
<td>142 x 8 = 162 x 9 = 182 x 10 = 20</td>
<td>2 ÷ 2 = 920 ÷ 2 =</td>
</tr>
<tr>
<td>4 x 0 = 04 x 1 =</td>
<td>0 ÷ 4 = 04 ÷ 4 =</td>
</tr>
<tr>
<td>10 ÷ 4 = 212 ÷ 4 =</td>
<td>316 ÷ 4 = 420 ÷ 4 =</td>
</tr>
<tr>
<td>4 x 2 = 04 x 3 =</td>
<td>5 ÷ 4 = 732 ÷ 4 =</td>
</tr>
<tr>
<td>4 ÷ 4 = 32 ÷ 4 =</td>
<td>836 ÷ 4 = 940 ÷ 4 =</td>
</tr>
<tr>
<td>4 x 4 = 04 x 5 =</td>
<td>4 ÷ 4 = 10</td>
</tr>
<tr>
<td>100 ÷ 4 = 10</td>
<td>4 ÷ 4 = 10</td>
</tr>
<tr>
<td>5 x 0 = 05 x 1 =</td>
<td>5 ÷ 5 = 620 ÷ 5 =</td>
</tr>
<tr>
<td>101 ÷ 5 = 210 ÷ 5 =</td>
<td>10 ÷ 5 = 430 ÷ 5 =</td>
</tr>
<tr>
<td>110 ÷ 5 = 230 ÷ 5 =</td>
<td>10 ÷ 5 = 560 ÷ 5 =</td>
</tr>
<tr>
<td>355 x 8 = 405</td>
<td>7 ÷ 5 = 950 ÷ 5 =</td>
</tr>
<tr>
<td>x 9 = 455 x 10 = 100</td>
<td>845 ÷ 5 = 10</td>
</tr>
<tr>
<td>0 ÷ 10 = 010 ÷ 10 =</td>
<td>0 ÷ 10 = 010 ÷ 10 =</td>
</tr>
<tr>
<td>3 x 0 = 03 x 1 =</td>
<td>3 ÷ 3 = 62 ÷ 3 =</td>
</tr>
<tr>
<td>66 ÷ 3 = 126 ÷ 3 =</td>
<td>6 ÷ 3 = 36 ÷ 3 =</td>
</tr>
<tr>
<td>93 ÷ 3 = 123 ÷ 3 =</td>
<td>112 ÷ 3 = 218 ÷ 3 =</td>
</tr>
<tr>
<td>306 ÷ 3 = 366 ÷ 3 =</td>
<td>324 ÷ 3 = 430 ÷ 3 =</td>
</tr>
<tr>
<td>153 ÷ 3 = 183 ÷ 3 =</td>
<td>6 ÷ 3 = 18 ÷ 3 =</td>
</tr>
<tr>
<td>= 213 x 8 = 243 x 10 = 30</td>
<td>= 10</td>
</tr>
<tr>
<td>= 273 x 10 = 30</td>
<td>= 273 x 10 = 30</td>
</tr>
<tr>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 2.15

The important fact here is the equivalence of different coins. There are learners who will indicate 7c as 4c and 3c in coins, and who will not realise that such coins do not exist in our currency.

It is also the ideal opportunity for learners to learn 5x and ÷ if they have not yet done so.

Point out to the learners that in calculations the R and c are left out, but that they must be inserted in the completed number sentence (answers).

Encourage the learners to keep on drawing what they read and then to write the number sentence in order to solve the problem.

Make very sure that all the learners know that there will be 10 children at the party. (8 + Bonny + Tommy) If this information is incorrect, all the following calculations will be extremely difficult.

Designing and making the party hat can be done as part of Technology.

Demonstrate and discuss the 3 ways in which to draw a circle.

Do a great deal of practical work.

Make sure that they understand and know what the centre, diameter and radius of a circle is, and that 2x radius = diameter. Explain to the learners what the circumference of the circle is.

The learners must indicate all points with letters right from the beginning. Show them that it makes it much easier to discuss and explain various aspects of the construction. They must understand that they may use any letter, as long as the same letter is not used twice in the same construction.

Once more discuss the different ways in which to divide squares and rectangles into halves and quarters.
Much concrete and semi-concrete work must be done when the learners have to divide numbers into quarters, especially when the number is not a multiple of 4. Use objects such as fruit and soft sweets that can actually be broken up quite easily, and not hard objects such as marbles, stones or bottle caps.

Explain to the learners that it will depend on the problem whether you can break it up into fractions or not.

Look at this: Daddy has 25 sheep that have to be herded into 4 pens. How many sheep will there be in each pen? (The remaining sheep cannot be cut up.)

Daddy has slaughtered 25 sheep and takes them to 4 butchetries. How many does each butcher get? (It will certainly be possible to divide the remaining sheep into 4.) Discuss more similar examples.

As soon as the learners understand that 4x is 2 times doubled, and 4÷ is two times halved, this can be drilled, because they must know the tables.

This is a wonderful way of familiarising learners with posing problems, but it demands much and regular practice. As soon as they understand it and can do it with confidence, they put forward wonderful ideas.

Begin with a very simple number sentence, e.g. \(3 + 4 = \square\). Initially, let the learners name objects with which they can possibly work, and write these suggestions on the blackboard: trees, flowers, sweets, sheep, dogs, etc.

Everyone must be involved and try to give suggestions. Make the rows compete and then let them pose the problems as a kind of competition.

The vertical addition and subtraction calculations have been graded from simple to difficult so that it will be easy for you to determine a learner’s problem(s). This will enable you to concentrate on the problem areas only and to give appropriate similar exercises to help them.

With the last row of addition calculations, completing the hundred (carrying over the tens) is done incidentally to determine which of the learners understand this already. However, you are free to facilitate this formally now.

It must be a pattern that is repeated every 2 blocks and therefore it must be exactly the same throughout. It can also be offered with Technology, and the learners can then draw their own blocks on a larger sheet of paper.

Explain rounding off to the nearest R to the learners. Let them bring old catalogues and practise rounding off until they understand it.

This worksheet will give you a good idea of which learners are able to follow and carry out instructions.

Any learner who has a good grasp of hundreds, tens and units at this stage, should be capable of completing this worksheet quite easily. Point out to the learners that if they do not get the same answer in the balloon vertically and horizontally, there is a mistake somewhere and they will have to check the answers vertically and horizontally again.

More examples with smaller numbers can also be given.

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>241620</td>
<td>301026</td>
<td>502948</td>
<td>1045594</td>
</tr>
<tr>
<td>60</td>
<td>66</td>
<td>127</td>
<td>253</td>
</tr>
</tbody>
</table>

Table 2.16

2.3.5 LEARNER SECTION

2.3.6 Content

2.3.6.1 ACTIVITY: Halve [LO 1.4, LO 1.7, LO 1.8, LO 1.10, LO 3.1, LO 3.3, LO 4.6]

- Bonny and Tommy want to make a party hat for each child. You will have to help with the design.
  
  Complete yours and tell us how you planned and made it.

I used a circle in my design. I am saying no more.
- How can we draw a circle?

Use any round object to draw it, or a stencil, or a pair of compasses. At home you can use a plate if you want to draw a circle.

- What do we know about circles?

They are round and have no angles. Look at the circle below and then we’ll learn more about circles:

\[ \text{Figure 2.15} \]

AB is the diameter. It halves the circle.

- All lines that you draw from the centre to the circumference of the circle will be exactly the same length. We call such a line the radius of the circle.
- Take a piece of string or wool and lay it precisely on the circular line (the circumference). Measure the length of the string on your ruler. That is how you can measure the circumference of a circle.

- Bonny and Tommy are very keen to work with circles.
• Measure the radius and the circumference of each circle and write it down here.

Circle P: Radius = _____ cm Diameter = _____ cm
Circle Q: Radius = _____ cm Diameter = _____ cm
Circle R: Radius = _____ cm Diameter = _____ cm

• What have you discovered?________________________________________

Now we know: 2 x Radius = Diameter and Diameter ÷ 2 = Radius

• Use this to calculate the lengths:

Circle W: Radius = 5cm Diameter = _____ cm (Double)
Circle X: Radius = 8cm Diameter = _____ cm
Circle Y: Diameter = 12cm Radius = _____ cm (Halve)
Circle Z: Diameter = 22cm Radius = _____ cm

• How can you find the centre of a circle that has been drawn without a pair of compasses?

Draw 2 circles that are exactly the same size. Cut out one of the circles. Fold it exactly in half and then in half again. Open it out and find the spot where the 4 folds cross in the centre. That is the centre of the circle. Lay it exactly on the other circle and push a pin down through the centre to make a mark on the circle below. Try it at home and come and show it to the class.

• This circle is divided into 4 equal parts. It is divided into 4 quarters.
• Sometimes Bonny and Tommy share their sweets with Mommy and Daddy.
• Can you still remember how we folded the circle into 4 equal parts? We folded the circle in half and then in half again.
• That is exactly what they do with the sweets.
All multiples of 4 can easily be divided into quarters like this.

- Count in multiples of 4 up to the 10th multiple and back again.

<table>
<thead>
<tr>
<th>4</th>
<th>8</th>
<th>——</th>
<th>——</th>
<th>——</th>
<th>——</th>
<th>——</th>
<th>——</th>
<th>——</th>
<th>——</th>
<th>——</th>
<th>——</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>——</td>
<td>——</td>
<td>——</td>
<td>——</td>
<td>——</td>
<td>——</td>
<td>——</td>
<td>——</td>
<td>——</td>
<td>——</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 2.17

- Complete the table.

| Multiples of 4 | 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 |
|----------------|---|---|----|----|----|----|----|----|----|----|----|
| ÷ 2            | 2 | 4 |    |    |    |    |    |    |    |    |    |
| ÷ 4            | 1 | 2 |    |    |    |    |    |    |    |    |    |

Table 2.18

- Thus: ÷ 4 is the same as halving 2 times.
Table 2.19

Think!

12 ÷ 2 = _____
20 ÷ 2 = _____
32 ÷ 2 = _____
28 ÷ 2 = _____
16 ÷ 2 = _____
36 ÷ 2 = _____

12 ÷ 4 = _____
20 ÷ 4 = _____
32 ÷ 4 = _____
28 ÷ 4 = _____
16 ÷ 4 = _____
36 ÷ 4 = _____

I have 9 apples and I must divide them equally amongst 4 children.
Number sentence: 9 ÷ 4 = _____

9 is not a multiple of 4. Regroup it to 9 = 8 + 1
Halve 8 twice and then divide the other 1 into 2 halves first, and then into 4 quarters.

\[ \frac{1}{2} \times 2 = 1 \]
\[ \frac{1}{2} \times 9 = 2 \frac{1}{2} \]
\[ 9 - 4 = 2 \frac{1}{2} \]

Numbers that are not multiples of 4 have a fraction in the answer.

Draw a circle around the multiples of 4.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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<th>18</th>
<th>19</th>
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<td>21</td>
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<td>35</td>
<td>36</td>
<td>37</td>
<td>38</td>
<td>39</td>
<td>40</td>
</tr>
</tbody>
</table>

| Not multiples of 4 | Regroup | 12 ÷ 4 = _____ 80  
\[ \frac{40}{4} = 10 \]
\[ \frac{80}{4} = 20 \]
\[ \frac{60}{4} = 15 \]
\[ \frac{100}{4} = 25 \]
\[ \frac{84}{4} = 21 \]
\[ \frac{92}{4} = 23 \] |
2.3.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.4: We know this when the learner orders, describes and compares numbers:

Assessment Standard 1.7: We know this when the learner solves and explains solutions to practical problems that involve equal sharing and grouping and that lead to solutions that also include unitary and nonunitary fractions (e.g. \( \frac{1}{4}, \frac{2}{3} \));

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems;

Assessment Standard 1.10: We know this when the learner uses the following techniques:

1.10.1 building up and breaking down numbers;
1.10.2 doubling and halving;
1.10.3 number-lines;
1.10.4 rounding off in tens.

Learning Outcome 3: The learner will be able to describe and represent characteristics and relationships between two-dimensional shapes and three-dimensional objects in a variety of orientations and positions.

Assessment Standard 3.1: We know this when the learner recognises, identifies and names two-dimensional shapes and three-dimensional objects in the environment and in pictures;

Assessment Standard 3.3: We know this when the learner observes and creates given and described two-dimensional shapes and three-dimensional objects using concrete materials (e.g. building blocks, construction sets, cut-out two-dimensional shapes, clay, drinking straws);

Learning Outcome 4: The learner will be able to use appropriate measuring units, instruments and formulae in a variety of contexts.

Assessment Standard 4.6: We know this when the learner investigates (alone and/or as a member of a group or team) and approximates.

2.4 Multiplication\(^4\)

2.4.1 MATHEMATICS

2.4.2 Bonny and Tommy’s birthday party

2.4.3 EDUCATOR SECTION

2.4.4 Memorandum

- More advanced work is covered, but the educator will benefit greatly if pages (completing the calendar) are done with all the learners simultaneously. Groups 2 and 3 can then afterwards continue with the work with which they are busy.
- Number Concept to 400
- Operations:
  - Addition – two digit numbers with two digit numbers, using regrouping of a ten.
  - Subtraction – two digit numbers from two digit numbers, using regrouping of a ten.
  - Multiplication - 2x, 4x, 5x and 10x to the 10th multiple (tables).
  - Division - \( \div 2, \div 4, \div 5 \) and \( \div 10 \) to the 10th multiple (tables).

Integrate the design of the hat and the gift wrap with Technology. This can be done classically.

All the calculations involving money and other quantities which the learners work with will enable them to realise that Mathematics is part of our daily activities.

\(^4\)This content is available online at <http://cnx.org/content/m32454/1.1/>. 
From Module 3 onwards the learners will gradually progress to the more advanced work of Grade 3. It may be necessary sometimes to go back to previous work to expedite the transition to the advanced work.

It is important that the learners should realise that addition and subtraction combinations as well as the tables, multiplication and division, simply have to be repeated regularly and must be learnt until they know it! It is basic work that cannot be neglected.

Attached you will find a sheet with tables presented in a specific order. You can copy it and give it to the learners so that they can keep it with them.

These worksheets can be presented to the whole class at the same time. Learners must write the dates on the calendar on their own, therefore it is of the utmost importance that you will make quite sure that all the learners begin on the correct day in January. I suggest that you fill in 1 January yourself before copying the worksheet. If you like, you could even fill it in further, depending on the competence of the learners.

It is important for the learners to understand the difference between days of the week (7) and workdays, school days or week days (5), otherwise they may make numerous errors in their calculations.

The learners must be aware of the patterns that are used in completing tables, therefore they must identify the pattern initially before they try to complete the table.

This is a vertical numbers line. The negative numbers have been filled in so that the learner will realise that numbers smaller than 0 do exist. It is not necessary to give this aspect much attention at this stage. It can just be mentioned in passing, to satisfy the learners who are keen to know more.

Explain to the learners that they are seeing diagrams, and that each symbol represents the value of the place where it stands.

Regrouping the 10 is being done now. The learners must first lay it out on the mat, so that it is experienced as something concrete, and so that they can see that there are 12 units and that they can therefore make another ten. This ten is then grouped with the other tens.

It depends on the educator and the abilities of the learners whether they are going to use carried numbers when doing the vertical calculations.

The breaking up of the ten is also learnt now. Learners must work with this on the mat in order to experience in concrete terms that there are not enough units and that a ten must be regrouped in order to get enough units. They must understand the breaking up (regrouping) of the ten very well before they can do it in writing.

Again it depends on the educator and the abilities of the learners whether they are going to make use of carried numbers in vertical calculations.

\[
\begin{array}{c|c|c}
2 x 0 = 0 & 4 x 0 = 0 & 0 ÷ 2 = 0 \\
22 x 2 = 42 & 44 x 2 = 88 & 14 ÷ 2 = 7 \\
62 x 4 = 248 & 124 x 4 = 496 & 38 ÷ 2 = 19 \\
102 x 6 = 612 & 204 x 6 = 1224 & 512 ÷ 2 = 256 \\
142 x 8 = 1136 & 284 x 8 = 2272 & 2 ÷ 2 = 1 \\
9 x 10 = 90 & 364 x 10 = 3640 & 920 ÷ 2 = 460 \\
& & 10 \\
\end{array}
\]

continued on next page
Table 2.20

The important fact here is the equivalence of different coins. There are learners who will indicate 7c as 4c and 3c in coins, and who will not realise that such coins do not exist in our currency.

It is also the ideal opportunity for learners to learn 5x and ÷ if they have not yet done so.

Point out to the learners that in calculations the R and c are left out, but that they must be inserted in the completed number sentence (answers).

Encourage the learners to keep on drawing what they read and then to write the number sentence in order to solve the problem.

Make very sure that all the learners know that there will be 10 children at the party. (8 + Bonny + Tommy) If this information is incorrect, all the following calculations will be extremely difficult.

Designing and making the party hat can be done as part of Technology.

Demonstrate and discuss the 3 ways in which to draw a circle.

Do a great deal of practical work.

Make sure that they understand and know what the centre, diameter and radius of a circle is, and that 2x radius = diameter. Explain to the learners what the circumference of the circle is.

The learners must indicate all points with letters right from the beginning. Show them that it makes it much easier to discuss and explain various aspects of the construction. They must understand that they may use any letter, as long as the same letter is not used twice in the same construction.

Once more discuss the different ways in which to divide squares and rectangles into halves and quarters.

Much concrete and semi-concrete work must be done when the learners have to divide numbers into quarters, especially when the number is not a multiple of 4. Use objects such as fruit and soft sweets that can actually be broken up quite easily, and not hard objects such as marbles, stones or bottle caps.

Explain to the learners that it will depend on the problem whether you can break it up into fractions or not.

Look at this: Daddy has 25 sheep that have to be herded into 4 pens. How many sheep will there be in each pen? (The remaining sheep cannot be cut up.)

Daddy has slaughtered 25 sheep and takes them to 4 butcheries. How many does each butchery get? (It will certainly be possible to divide the remaining sheep into 4.) Discuss more similar examples.

As soon as the learners understand that 4x is 2 times doubled, and 4 ÷ 2 is two times halved, this can be drilled, because they must know the tables.

This is a wonderful way of familiarising learners with posing problems, but it demands much and regular practice. As soon as they understand it and can do it with confidence, they put forward wonderful ideas.
Begin with a very simple number sentence, e.g. $3 + 4 = \square$. Initially, let the learners name objects with which they can possibly work, and write these suggestions on the blackboard: trees, flowers, sweets, sheep, dogs, etc.

Everyone must be involved and try to give suggestions. Make the rows compete and then let them pose the problems as a kind of competition.

The vertical addition and subtraction calculations have been graded from simple to difficult so that it will be easy for you to determine a learner’s problem(s). This will enable you to concentrate on the problem areas only and to give appropriate similar exercises to help them.

With the last row of addition calculations, completing the hundred (carrying over the tens) is done incidentally to determine which of the learners understand this already. However, you are free to facilitate this formally now.

It must be a pattern that is repeated every 2 blocks and therefore it must be exactly the same throughout. It can also be offered with Technology, and the learners can then draw their own blocks on a larger sheet of paper.

Explain rounding off to the nearest R to the learners. Let them bring old catalogues and practise rounding off until they understand it.

This worksheet will give you a good idea of which learners are able to follow and carry out instructions. Any learner who has a good grasp of hundreds, tens and units at this stage, should be capable of completing this worksheet quite easily. Point out to the learners that if they do not get the same answer in the balloon vertically and horizontally, there is a mistake somewhere and they will have to check the answers vertically and horizontally again.

More examples with smaller numbers can also be given.

<table>
<thead>
<tr>
<th>241620</th>
<th>301026</th>
<th>502948</th>
<th>1045594</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>66</td>
<td>127</td>
<td>253</td>
</tr>
</tbody>
</table>

Table 2.21

2.4.5 LEANER SECTION

2.4.6 Content

2.4.6.1 ACTIVITY: Multiplication [LO 1.7, LO 1.8, LO 1.9, LO 1.10, LO 2.3, LO 3.6, LO 4.5]

- Bonny and Tommy want to find out what happens if you double a number 2 times.
Write a number sentence and solve the problem. Show how you do it.

Mother bakes 20 cookies and packs them into 4 tins. How many cookies has she packed into each tin?

She packed ________________________________

Sometimes Bonny and Tommy use the number sentences to write their own stories. See if you can do it too. Then do the calculation.

<table>
<thead>
<tr>
<th>Number</th>
<th>Double</th>
<th>Double again</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>7</td>
<td>______</td>
<td>______</td>
</tr>
<tr>
<td>1</td>
<td>______</td>
<td>______</td>
</tr>
<tr>
<td>6</td>
<td>______</td>
<td>______</td>
</tr>
<tr>
<td>4</td>
<td>______</td>
<td>______</td>
</tr>
<tr>
<td>10</td>
<td>______</td>
<td>______</td>
</tr>
<tr>
<td>8</td>
<td>______</td>
<td>______</td>
</tr>
<tr>
<td>2</td>
<td>______</td>
<td>______</td>
</tr>
<tr>
<td>9</td>
<td>______</td>
<td>______</td>
</tr>
</tbody>
</table>

Think!

| 4 x 2 = _____ | 6 x 4 = _____ | 12 ÷ 4 = _____ |
| 4 x 7 = _____ | 10 x 4 = _____ | 40 ÷ 4 = _____ |
| 4 x 3 = _____ | 8 x 4 = _____ | 16 ÷ 4 = _____ |
| 4 x 9 = _____ | 1 x 4 = _____ | 20 ÷ 4 = _____ |
| 4 x 5 = _____ | 9 x 4 = _____ | 32 ÷ 4 = _____ |
| 4 x 10 = _____ | 3 x 4 = _____ | 16 ÷ 4 = _____ |
| 4 x 6 = _____ | 7 x 4 = _____ | 8 ÷ 4 = _____ |
| 4 x 8 = _____ | 2 x 4 = _____ | 24 ÷ 4 = _____ |
| 4 x 5 = _____ | 5 x 4 = _____ | 36 ÷ 4 = _____ |

Figure 2.21

| 54 + 34 = ______ |
| 87 - 52 = ______ |
| 10 x 6 = ______ |
| 50 ÷ 5 = ______ |

Table 2.22
• Use the blocks and design a pattern for the gift-wrap for Bonny and Tommy.

Table 2.23

• Here are some gifts you could buy for Bonny and Tommy. Let us round off the prices to the nearest rand. If the cents are 50c or more than 50c, R1 is added, but if it is 49c or less, it is thrown away.
Figure 2.23
Calculate how far you have walked. The distance between two dots is 2 metres.

Walk along the path, count in twos and draw a circle around each dot where you complete the ten.

How far have you walked? _________m

Now you must measure the length of the rugby field. First decide how you can do it, and then which is going to be the best way.

The length of the rugby field is ________ m.

Have you walked further than the length of the rugby field?

______, I have ____________________________

Who is going to join the party?

Bonny and Tommy are still looking for friends they can invite to their party.

To find out, add these blocks across and down. The first one has been done for you.

2.4.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.4: We know this when the learner orders, describes and compares numbers;
Assessment Standard 1.7: We know this when the learner solves and explains solutions to practical problems that involve equal sharing and grouping and that lead to solutions that also include unitary and nonunitary fractions (bv. \( \frac{1}{4} \), \( \frac{3}{4} \));
Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems;
Assessment Standard 1.9: We know this when the learner performs mental calculations;
Assessment Standard 1.10: We know this when the learner uses the following techniques:
  1.10.1 building up and breaking down numbers;
  1.10.2 doubling and halving;
  1.10.3 number-lines;
  1.10.4 rounding off in tens.
Learning Outcome 3: The learner will be able to describe and represent characteristics and relationships between two-dimensional shapes and three-dimensional objects
Assessment Standard 3.6: We know this when the learner reads, interprets and draws informal maps of the school environment or of an arrangement of three-dimensional objects and locates objects on the map;
Learning Outcome 4: The learner will be able to use appropriate measuring units, instruments and formulae in a variety of contexts.
Assessment Standard 4.5: We know this when the learner estimates, measures, compares and orders three-dimensional objects using non-standard and standard measures.

2.5 To read time \(^5\)

2.5.1 MATHEMATICS

2.5.2 Bonny and Tommy visit the farm

2.5.3 EDUCATOR SECTION

2.5.4 Memorandum

- Number Concept to 600
- Operations:
  - Addition – two and three digit numbers with and without regrouping of the ten.
  - Subtraction – two and three digit numbers with and without regrouping of the ten.
  - Multiplication – two digit number with a one digit number without regrouping the tens to 99.
  - Division – two digit numbers divided by a one digit number without a remainder or regrouping the tens to 99.
- The \( 3 \times \) and \( 3 \div \) tables to the tenth multiple are taught. These conclude the tables to be learnt in Grade 3. Repetition and testing should be done regularly.
- The telling of time is very important. It is recommended that this be done classically as it requires much preparation and is immensely time consuming.

The learners each need a clock to handle and can construct one out of cardboard before the lesson.

In module 4 the number concept is extended to 600. Addition and subtraction calculations include two and three digit numbers. Multiplication and division calculations are done without regrouping of tens, and only up to 99.

In learning \( 3 \times \) and \( \div \) up to the 10th multiple, the tables that have to be mastered in Grade 3 are completed. Regular repetition and testing are vitally important from this stage on.

It is recommended that the reading of time be done with all the learners at the same time. Each learner must have a cardboard clock to use when the work is being done.

\(^5\)This content is available online at <http://cnx.org/content/m32263/1.1/>. 
Such a clock can be made from a paper plate, or the learners can be allowed to design their own clock for Technology. However, it must be ready before the reading of time is started in class. A great deal of practical exercise is necessary before the learners can complete the worksheets.

Number concept is now extended from 400 to 600 and the number blocks of hundreds, tens and units, as well as the flared cards, (attached to Module 2), must still be used to promote the number concept. Give special attention once again to the 100 that must be regrouped when 300 and 500 are halved: \( 300 = 200 + 100 \)
\( 500 = 400 + 100 \)

Counting in sixes must be done incidentally and can also be repeated on the multiples chart (Module 2). Learners must know: 1 dozen = 12.

Learners must have the opportunity, and be encouraged, to say what they can deduce from the graph, what can change and what will not change, before they have to write about it. Such a discussion will give you a good indication of what the learners understand and which aspects need more attention.

Learning \( 3 \times \) and \( \div \) must be done on the mat and with the use of concrete apparatus. The worksheets are only there to apply what has already been taught.

Learners must get the opportunity in class, on a daily basis if possible, to take measurements with the ruler, the metre stick and the trundle wheel. The more practice they get, the more accurately they will measure. However, always encourage them to estimate first.

This is enrichment work and if you find that it is too advanced, it can be done at a later stage. There may be learners who would like to accept the challenge.

Seeing that \( 3 \times \) and \( \div \) have just been done, it is easy to introduce thirds now. Give the learners loose paper shapes and allow them to fold and measure on their own, so that they can discover how it can be done. Some of the learners will know how to find sixths without any help. (Only enrichment)

The idea with the recipe is to make the learners understand that certain standard units and containers must be used, otherwise there is no chance of success with a recipe.

Let the learners mention more examples of the use of standard units in practice, e.g. petrol, milk, mixing medicines, prescriptions for administering medication, etc.

It is essential that all the different standard measuring containers and scales, as well as sand, water and objects used in measuring volume and mass, should be available in the classroom. Learners should be able to experiment every day with measuring and weighing, using standard units: litres and millilitres and grams and milligrams.

A bathroom scale is required to determine the mass of the learners.

Different methods are used for the multiplication and division calculations, but should you prefer another method and you find that the learners understand it better, it is their right to use the preferred method.

It is essential that many similar examples of the relevant number sentences be done orally before the learners are expected to complete this worksheet.

The regrouping of a hundred when adding or subtracting is now formally taught. Sufficient concrete work must be done beforehand. More advanced work where a ten and a hundred are regrouped simultaneously, should not be done at the same time. It will depend on the abilities of the group whether it should be done immediately hereafter or at a much later stage.

Whether the learners will be allowed to make use of carried numbers, remains the decision of the educator.

e.g.

Learners will need a blank sheet of paper in order to calculate the shortest route. Some learners may find it difficult and may want to give up, but with a little help they should be able to do it.

A discussion on what they will see as they approach the farmstead by road is necessary before the learners will be able to draw it.
2.5.5 LEARNER SECTION

2.5.6 Content

2.5.6.1 ACTIVITY: To read time [LO 4.1, LO 4.2]

- **Bonny and Tommy** each got a watch for their birthday. Take a paper plate or cut a circle from cardboard and design your own clock (watch) from which you can tell the time.

Remember:
- 1 day = 24 hours
- 1 hour = 60 minutes
- 1 minute = 60 seconds

---

![Clocks](image1)

**Figure 2.25**

---

![Clocks](image2)

**Figure 2.26**

What is the time?

- Draw the long and the short hands on the clocks
• **Bonny and Tommy** went to play at a friend’s house at two o’clock, and they returned home at five o’clock. How many hours had they been away from home?

They had been away for ________________________________ hours.

• **An hour** can be divided into 2 **half-hours**

1 hour = 60 minutes  
  half-hour = 30 minutes

• **What is the time?**
Figure 2.29

- Draw the long and the short hands on the clocks:

  ![Clocks](image)

  **Figure 2.30**

- **Bonny and Tommy** each does 8 sums in half an hour. How many sums will they do altogether in 1 hour?

  They will do _________________________________________________________

- Mother drives 50 km in half an hour. How far will she drive in 2½ hours?

  She will drive _________________________________________________________

- How many half-hours are there in 4 hours? 4 hours = __________ half-hours

- An **hour** can be divided into 4 **quarters**. Then you have 4 **quarters of an hour**.

1 hour = 60 minutes  
  half-hour = 30 minutes  
  quarter-hour = 15 minutes
• What is the time

Figure 2.32

• Draw the long and the short hands on these clocks::

Figure 2.33

• Complete the table:
<table>
<thead>
<tr>
<th>quarter-hours</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>minutes</td>
<td>15</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 2.24**

The long hand is sometimes called the minute hand, because it always indicates how many minutes have passed since the beginning of a new hour. It takes 5 minutes to move from one number to the next and 60 minutes (1 hour) to move right around. Set your "clock" to match these below.

**Figure 2.34**

- What is the time?

**Figure 2.35**

- Draw the long and the short hands on the clocks:

**Figure 2.36**
- Mother went to the shop at 3 o’clock and returned home by 20 past 4. For how long had she been away?

She had been away for ________________________________

- It takes Bonny 5 minutes to read 3 pages of her book. How many pages can she read in 1 hour?

She can read __________________________________________________

- Father entered the bank at 5 past 2 and came out 45 minutes later. At what time did he come out?

It was ________________________________

2.5.7 Assessment

**Learning Outcome 4:** The learner will be able to use appropriate measuring units, instruments and formulae in a variety of contexts.

**Assessment Standard 4.1:** We know this when the learner reads and writes analogue and digital clock time in terms of hours, half-hours, quarters of an hour and minutes;

**Assessment Standard 4.2:** We know this when the learner solves problems involving calculations with and conversions.

2.6 To measure\(^6\)

2.6.1 MATHEMATICS

2.6.2 Bonny and Tommy visit the farm

2.6.3 EDUCATOR SECTION

2.6.4 Memorandum

- Number Concept to 600
- Operations:
  - Addition - two and three digit numbers with and without regrouping of the ten.
  - Subtraction - two and three digit numbers with and without regrouping of the ten.
  - Multiplication - two digit number with a one digit number without regrouping the tens to 99.
  - Division - two digit numbers divided by a one digit number without a remainder or regrouping the tens to 99.
  - The \(3\times\) and \(3\div\) tables to the tenth multiple are taught. These conclude the tables to be learnt in Grade 3. Repetition and testing should be done regularly.
  - The telling of time is very important. It is recommended that this be done classically as it requires much preparation and is immensely time consuming.

The learners each need a clock to handle and can construct one out of cardboard before the lesson.

In module 4 the number concept is extended to 600. Addition and subtraction calculations include two and three digit numbers. Multiplication and division calculations are done without regrouping of tens, and only up to 99.

In learning \(3\times\) and \(3\div\) up to the 10th multiple, the tables that have to be mastered in Grade 3 are completed. Regular repetition and testing are vitally important from this stage on.

It is recommended that the **reading of time** be done with all the learners at the same time. Each learner must have a cardboard clock to use when the work is being done.

\(^6\)This content is available online at <http://cnx.org/content/m32264/1.1/>.
Such a clock can be made from a paper plate, or the learners can be allowed to design their own clock for Technology. However, it must be ready before the reading of time is started in class. A great deal of practical exercise is necessary before the learners can complete the worksheets.

Number concept is now extended from 400 to 600 and the number blocks of hundreds, tens and units, as well as the flared cards, (attached to Module 2), must still be used to promote the number concept. Give special attention once again to the 100 that must be regrouped when 300 and 500 are halved: $300 = 200 + 100$  
$500 = 400 + 100$

Counting in sixes must be done incidentally and can also be repeated on the multiples chart (Module 2). Learners must know: 1 dozen $= 12$.

Learning $3 \times$ and $\div$ must be done on the mat and with the use of concrete apparatus. The worksheets are only there to apply what has already been taught.

Learners must get the opportunity in class, on a daily basis if possible, to take measurements with the ruler, the metre stick and the trundle wheel. The more practice they get, the more accurately they will measure. However, always encourage them to estimate first.

This is enrichment work and if you find that it is too advanced, it can be done at a later stage. There may be learners who would like to accept the challenge.

Seeing that $3 \times$ and $\div$ have just been done, it is easy to introduce thirds now. Give the learners loose paper shapes and allow them to fold and measure on their own, so that they can discover how it can be done. Some of the learners will know how to find sixths without any help. (Only enrichment)

The idea with the recipe is to make the learners understand that certain standard units and containers must be used, otherwise there is no chance of success with a recipe.

Let the learners mention more examples of the use of standard units in practice, e.g. petrol, milk, mixing medicines, prescriptions for administering medication, etc.

It is essential that all the different standard measuring containers and scales, as well as sand, water and objects used in measuring volume and mass, should be available in the classroom. Learners should be able to experiment every day with measuring and weighing, using standard units: litres and millilitres and grams and milligrams.

A bathroom scale is required to determine the mass of the learners.

Different methods are used for the multiplication and division calculations, but should you prefer another method and you find that the learners understand it better, it is their right to use the preferred method.

It is essential that many similar examples of the relevant number sentences be done orally before the learners are expected to complete this worksheet.

The regrouping of a hundred when adding or subtracting is now formally taught. Sufficient concrete work must be done beforehand. More advanced work where a ten and a hundred are regrouped simultaneously, should not be done at the same time. It will depend on the abilities of the group whether it should be done immediately hereafter or at a much later stage.

Whether the learners will be allowed to make use of carried numbers, remains the decision of the educator.

e.g.

Learners will need a blank sheet of paper in order to calculate the shortest route. Some learners may find it difficult and may want to give up, but with a little help they should be able to do it.

A discussion on what they will see as they approach the farmstead by road is necessary before the learners will be able to draw it.
2.6.5 LEARNER SECTION

2.6.6 Content

2.6.6.1 ACTIVITY: To measure [LO 1.1, LO 1.4, LO 1.11, LO 4.5]

In order to measure accurately, we have to make use of standard units. Shorter lengths are measured in centimetres and millimetres. We can use a ruler to do this. \(10\text{mm} = 1\text{cm}\)

Longer lengths are measured in metres and for this we can use a metre stick, a tape measure or a trundle wheel. \(100\text{cm} = 1\text{m}\)

<table>
<thead>
<tr>
<th>Object</th>
<th>Estimated</th>
<th>Measured</th>
<th>Too much or too little</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

Table 2.26

- Use your ruler and draw a line \(14\text{cm}\) long. Now halve it.
- Draw a line \(12\text{cm}\) long and divide it into 4 quarters.
- Use the metre stick to measure two objects in the classroom that are longer than your ruler but shorter than the metre stick. Estimate first.

<table>
<thead>
<tr>
<th>Object</th>
<th>Estimated</th>
<th>Measured</th>
<th>Too much or too little</th>
</tr>
</thead>
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<td></td>
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</tbody>
</table>

Table 2.27

- Use the tape measure to measure the height of two of your friends. Estimate first.
• Use the **trundle wheel** to measure the length of the stoep or the corridor.
• **Measure it.** It is ________________________________ long.
• I was wrong by ________________________________

• **Tommy** is going to help Grandpa to make a new camp for Granny’s chickens. The new camp will be rectangular - 50m long and 30m wide.
• Measure the length of the 4 sides of this rectangle.

---

![Figure 2.38](image)

**AD** = ________________________________

**AB** = ________________________________

**BC** = ________________________________

**CD** = ________________________________

We discover: **AD = BC** and **AB = CD**

**The two opposite sides of a rectangle are of the same length**.

**Thus**: 2 times the length plus 2 times the width (breadth) is equal to the perimeter of the rectangle. \((2 \times l) + (2 \times b) = \text{perimeter}\)

This is how we write it: \(2l + 2b = \text{perimeter}\)

• 2 times the lengths is ______ cm and 2 times the width is ______ cm.
• The perimeter of the rectangle is ________________________________ cm.

Now Bonny and Tommy know how to calculate what length of wire netting is needed to make the camp. They only have to calculate the perimeter of the camp.

• 2 times the length is _______ m and 2 times the width is _______ m.
• \(2l + 2b = \text{perimeter}\)

______ + ______ =

• The perimeter of the camp is ________________________________ m.
• The camp will have a wooden gate that is 1m in width. Thus Grandpa has to buy only ________________________________ m wire netting.

• The rectangle has been divided into **three equal parts**. Colour in **1** of the **3** parts.
Which part of the rectangle has been coloured in? 

Colour in two thirds (2/3) of the square.

Which part of each shape has been coloured in?

Who wants to try?

\[ \frac{1}{3} + \frac{1}{3} = \quad 1\frac{1}{2} + 1\frac{1}{2} = \quad 2\frac{1}{2} + \frac{1}{2} = \]

Complete the number line.

Figure 2.39
• Show how you will solve the problems. You may draw.

Granny baked 24 cookies. Bonny and Tommy ate $\frac{1}{4}$ of them.

How many cookies are left?

There are ________________________________________________

• Bonny and Tommy each got R12 from Grandpa. Bonny spent $\frac{1}{2}$ of her money and Tommy spent $\frac{1}{3}$ of his. Who spent more?

__________________________________________ spent more.

• Tommy is 1m 37cm tall and Freddie is 1m 43cm. What is the difference between their lengths?

The difference is _______________________________________________________

• Grandpa buys a rope that is 16m long. How many 2m-pieces can he cut from it?

He can cut ____________________________________________________________
2.6.7 Assessment

**Learning Outcome 1:** The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

**Assessment Standard 1.4:** We know this when the learner orders, describes and compares numbers;

**Assessment Standard 1.11:** We know this when the learner explains own solutions to problems;

**Learning Outcome 4:** The learner will be able to use appropriate measuring units, instruments and formulae in a variety of contexts.

**Assessment 4.5:** We know this when the learner estimates, measures, compares and orders three-dimensional objects using non-standard and standard measures.

2.7 Mass

2.7.1 MATHEMATICS

2.7.2 Bonny and Tommy visit the farm

2.7.3 EDUCATOR SECTION

2.7.4 Memorandum

- Number Concept to 600
- Operations:
- Addition - two and three digit numbers with and without regrouping of the ten.
- Subtraction - two and three digit numbers with and without regrouping of the ten.
- Multiplication - two digit number with a one digit number without regrouping the tens to 99.
- Division - two digit numbers divided by a one digit number without a remainder or regrouping the tens to 99.
- The $3 \times$ and $3 \div$ tables to the tenth multiple are taught. These conclude the tables to be learnt in Grade 3. Repetition and testing should be done regularly.
- The telling of time is very important. It is recommended that this be done classically as it requires much preparation and is immensely time consuming.

The learners each need a clock to handle and can construct one out of cardboard before the lesson.

In module 4 the number concept is extended to 600. Addition and subtraction calculations include two and three digit numbers. Multiplication and division calculations are done without regrouping of tens, and only up to 99.

In learning $3\times$ and $\div$ up to the 10th multiple, the tables that have to be mastered in Grade 3 are completed. Regular repetition and testing are vitally important from this stage on.

It is recommended that the **reading of time** be done with all the learners at the same time. Each learner must have a cardboard clock to use when the work is being done.

Such a clock can be made from a paper plate, or the learners can be allowed to design their own clock for Technology. However, it must be ready before the reading of time is started in class. A great deal of practical exercise is necessary before the learners can complete the worksheets.

Number concept is now extended from 400 to 600 and the number blocks of hundreds, tens and units, as well as the flared cards, (attached to Module 2), must still be used to promote the number concept. Give special attention once again to the **100** that must be regrouped when 300 and 500 are halved: $300 = 200 + 100$ $500 = 400 + 100$

Counting in **sixes** must be done incidentally and can also be repeated on the multiples chart (Module 2). Learners must know: **1 dozen** = **12**.

---

7This content is available online at <http://cnx.org/content/m32267/1.1/>. 
Learners must have the opportunity, and be encouraged, to say what they can deduce from the graph, what can change and what will not change, before they have to write about it. Such a discussion will give you a good indication of what the learners understand and which aspects need more attention.

Learning $3x$ and $\div$ must be done on the mat and with the use of concrete apparatus. The worksheets are only there to apply what has already been taught.

Learners must get the opportunity in class, on a daily basis if possible, to take measurements with the ruler, the metre stick and the trundle wheel. The more practice they get, the more accurately they will measure. However, always encourage them to estimate first.

This is enrichment work and if you find that it is too advanced, it can be done at a later stage. There may be learners who would like to accept the challenge.

Seeing that $3x$ and $\div$ have just been done, it is easy to introduce thirds now. Give the learners loose paper shapes and allow them to fold and measure on their own, so that they can discover how it can be done. Some of the learners will know how to find sixths without any help. (Only enrichment)

The idea with the recipe is to make the learners understand that certain standard units and containers must be used, otherwise there is no chance of success with a recipe.

Let the learners mention more examples of the use of standard units in practice, e.g. petrol, milk, mixing medicines, prescriptions for administering medication, etc.

It is essential that all the different standard measuring containers and scales, as well as sand, water and objects used in measuring volume and mass, should be available in the classroom. Learners should be able to experiment every day with measuring and weighing, using standard units: litres and millilitres and grams and milligrams.

A bathroom scale is required to determine the mass of the learners.

Different methods are used for the multiplication and division calculations, but should you prefer another method and you find that the learners understand it better, it is their right to use the preferred method.

It is essential that many similar examples of the relevant number sentences be done orally before the learners are expected to complete this worksheet.

The regrouping of a hundred when adding or subtracting is now formally taught. Sufficient concrete work must be done beforehand. More advanced work where a ten and a hundred are regrouped simultaneously, should not be done at the same time. It will depend on the abilities of the group whether it should be done immediately hereafter or at a much later stage.

Whether the learners will be allowed to make use of carried numbers, remains the decision of the educator.

e.g.

Learners will need a blank sheet of paper in order to calculate the shortest route. Some learners may find it difficult and may want to give up, but with a little help they should be able to do it.

A discussion on what they will see as they approach the farmstead by road is necessary before the learners will be able to draw it.

2.7.5 LEARNER SECTION

2.7.6 Content

2.7.6.1 ACTIVITY: Mass [LO 1.8, LO 1.9, LO 2.2, LO 4.5]

- Bonny and Granny want to make some pancakes. If they want the pancakes to be a success, they have to measure the ingredients accurately.

Dry ingredients such as flour and sugar are measured in grams and kilograms. A standard measuring cup and standard measuring spoons are used. You may use a kitchen scale to weigh the ingredients. Remember: $1000\, g = 1\, kg$

Liquids such as oil, milk and water are measured in millilitres and litres, and a standard measuring jug and measuring spoons are used. Remember: $1000\, ml = 1\, l$

- Here is their recipe. Why don’t you try it out at school or at home
Ingredients:
4 cups (544g) cake flour
4 eggs
1 cup (250mℓ) oil
1 t (5mℓ) salt
½ cup (63mℓ) vinegar
1ℓ water
4 t. (20mℓ) baking powder

Method:
1. Beat the eggs, oil, vinegar and a little of the water very well.
2. Sift the flour and the salt together.
3. Add the flour and the rest of the water little by little to the egg mixture and whisk it thoroughly.
4. Lastly, add the baking powder.
5. Heat a lightly oiled pan. Pour a small quantity of the batter into the pan. Turn it over to brown the pancake on both sides.
6. Turn it out onto a plate, sprinkle with cinnamon sugar, and roll it. This recipe makes 60 pancakes.

How many pancakes are there for each learner if there are 30 learners in the class? There are ___________________________________________________________

Calculate the ingredients you will need if you want to double the recipe:
_________________________ cake flour
_________________________ eggs
_________________________ water
_________________________ oil
_________________________ baking powder
_________________________ salt

Estimate which 5 learners in your class have the smallest mass, write their names in the table and ask your educator to weigh them.

<table>
<thead>
<tr>
<th>Name</th>
<th>Estimated mass</th>
<th>Weighed mass</th>
<th>Too much or too little</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

Table 2.28

- Who of the 5 learners have the greatest mass?
- Who of the 5 learners have the smallest mass?
- What is the difference between the two masses?
- What is the total mass of the 5 learners?

- Find the mass of the following objects, but first estimate whether it is more or less than 1 kg:
- Calculate the total mass of each of the following. Mother buys:

<table>
<thead>
<tr>
<th>Object(s)</th>
<th>More/less than 1 kg</th>
<th>Weighed</th>
<th>Right/wrong</th>
</tr>
</thead>
<tbody>
<tr>
<td>Your shoes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School bag</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lunch box</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A brick</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 books</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2.29

- Calculate the total mass of each of the following. Mother buys:

3 x 2 kg rice  
5 x 10 kg potatoes  
6 x 100 g jelly  
4 x 150 g sweets  
2 x 500 g margarine

1. Think!

2 x 7 = ___  
9 x 2 = ___  
16 ÷ 2 = ___

5 x 5 = ___  
10 x 3 = ___  
9 ÷ 3 = ___

3 x 9 = ___  
8 x 4 = ___  
20 ÷ 5 = ___

10 x 7 = ___  
6 x 10 = ___  
12 ÷ 4 = ___

4 x 6 = ___  
5 x 2 = ___  
24 ÷ 3 = ___

2 x 8 = ___  
7 x 4 = ___  
10 ÷ 2 = ___

5 x 6 = ___  
6 x 2 = ___  
40 ÷ 10 = ___

10 x 8 = ___  
9 x 4 = ___  
5 ÷ 5 = ___

3 x 0 = ___  
4 x 5 = ___  
16 ÷ 4 = ___

4 x 7 = ___  
6 x 3 = ___  
21 ÷ 3 = ___

2 x 9 = ___  
7 x 5 = ___  
14 ÷ 2 = ___

10 x 10 = ___  
4 x 4 = ___  
36 ÷ 4 = ___

5 x 3 = ___  
5 x 10 = ___  
27 ÷ 3 = ___

3 x 8 = ___  
6 x 5 = ___  
4 ÷ 2 = ___

4 x 9 = ___  
3 x 2 = ___  
45 ÷ 5 = ___

10 x 1 = ___  
8 x 5 = ___  
90 ÷ 10 = ___

2 x 5 = ___  
3 x 3 = ___  
30 ÷ 5 = ___

2. Look at the pattern that Bonny and Tommy have discovered. Complete it:

1 x 2 = 2  
10 x 2 = 20  
100 x 2 = 200

1 x 3 = ___  
10 x 3 = ___  
100 x 3 = ___

1 x 4 = ___  
10 x 4 = ___  
100 x 4 = ___

1 x 5 = ___  
10 x 5 = ___  
100 x 5 = ___

1 x 6 = ___  
10 x 6 = ___  
100 x 6 = ___

2 x 1 = ___  
20 x 1 = ___  
200 x 1 = ___

2 x 2 = ___  
20 x 2 = ___  
200 x 2 = ___

2 x 3 = ___  
20 x 3 = ___  
200 x 3 = ___

2 x 4 = ___  
20 x 4 = ___  
200 x 4 = ___

2 x 5 = ___  
20 x 5 = ___  
200 x 5 = ___

3 x 1 = ___  
30 x 1 = ___  
300 x 1 = ___

3 x 2 = ___  
30 x 2 = ___  
300 x 2 = ___

3 x 3 = ___  
30 x 3 = ___  
300 x 3 = ___
CHAPTER 2. TERM 2

4 \times 1 = _____  40 \times 1 = _____  400 \times 1 = _____  
4 \times 2 = _____  40 \times 2 = _____  400 \times 2 = _____  
5 \times 1 = _____  50 \times 1 = _____  500 \times 1 = _____  
5 \times 2 = _____  50 \times 2 = _____  500 \times 2 = _____  

- Let us see how Bonny and Tommy have solved this problem.

Granny baked some cookies and packed them into 3 tins. There are 23 cookies in each tin. How many cookies did she bake altogether?

\[ 23 \times 3 = 69 \]  
\[ \frac{23}{3} = 9 \]  
\[ 23 \times 3 = 69 \]  

Granny baked 69 cookies.

Figure 2.42

- Try to solve this problem in the same way.

Grandpa planted 4 rows of trees. There are 12 trees in each row. How many trees did he plant altogether?

\[ 23 \times 3 = 69 \]  
\[ \frac{23}{3} = 9 \]  
\[ 23 \times 3 = 69 \]  

Figure 2.43

- Do the calculations and use the method you like best:

\[ 44 \times 2 = \]  
\[ 32 \times 3 = \]  
\[ 21 \times 4 = \]  
\[ 11 \times 5 = \]
Use your own method to solve the problems. Show how you do it:

The past 4 days Granny collected 22 eggs from the nests every day. How many eggs did she collect altogether?

She collected ________________________________________________________________

On Monday Granny and Bonny baked 120 cookies. On Tuesday they baked 48 and on Wednesday another 100. How many cookies did they bake altogether?

They baked ________________________________________________________________

2.7.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems;

Assessment Standard 1.9: We know this when the learner performs mental calculations;

Learning Outcome 2: The learner will be able to recognise, describe and represent patterns and relationships, as well as to solve problems using algebraic language and skills.

Assessment Standard 2.2: We know this when the learner copies and extends simple number sequences to at least 1 000;

Learning Outcome 4: The learner will be able to use appropriate measuring units, instruments and formulae in a variety of contexts.

Assessment Standard 4.5: We know this when the learner estimates, measures, compares and orders three-dimensional objects using non-standard and standard measures.

2.8 Number sentence

2.8.1 MATHEMATICS

2.8.2 Bonny and Tommy visit the farm

2.8.3 EDUCATOR SECTION

2.8.4 Memorandum

- Number Concept to 600
- Operations:
  - Addition – two and three digit numbers with and without regrouping of the ten.
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CHAPTER 2. TERM 2

The learners each need a clock to handle and can construct one out of cardboard before the lesson.

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+ $100 \quad 500 = 400 + 100$

Counting in sixes must be done incidentally and can also be repeated on the multiples chart (Module 2). Learners must know: 1 dozen $= 12$.

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A discussion on what they will see as they approach the farmstead by road is necessary before the learners will be able to draw it.

2.8.5 LEARNER SECTION

2.8.6 Content

2.8.6.1 ACTIVITY: Number sentence [LO 1.8, LO 1.10, LO 2.2, LO 3.5]

1. These patterns can help you to work with larger numbers. Complete.

| 2 + 1 = 2 | 20 + 1 = 20 | 200 + 1 = 200 |
| 3 + 1 = 3 | 30 + 1 = 30 | 300 + 1 = 300 |
| 4 + 1 = 5 | 40 + 1 = 40 | 400 + 1 = 400 |
| 5 + 1 = 6 | 50 + 1 = 50 | 500 + 1 = 500 |
| 6 + 1 = 7 | 60 + 1 = 60 | 600 + 1 = 600 |
| 2 + 2 = 4 | 20 + 2 = 20 | 200 + 2 = 200 |
| 4 + 2 = 6 | 40 + 2 = 40 | 400 + 2 = 400 |
| 6 + 2 = 8 | 60 + 2 = 60 | 600 + 2 = 600 |
| 8 + 2 = 10 | 80 + 2 = 80 | 800 + 2 = 800 |
| 10 + 2 = 12 | 100 + 2 = 100 | 1000 + 2 = 1000 |
| 3 + 3 = 6 | 30 + 3 = 30 | 300 + 3 = 300 |
| 6 + 3 = 9 | 60 + 3 = 60 | 600 + 3 = 600 |
| 9 + 3 = 12 | 90 + 3 = 90 | 900 + 3 = 900 |
| 4 + 4 = 8 | 40 + 4 = 44 | 400 + 4 = 404 |
| 8 + 4 = 12 | 80 + 4 = 84 | 800 + 4 = 804 |
| 5 + 5 = 10 | 50 + 5 = 55 | 500 + 5 = 505 |
| 10 + 5 = 15 | 100 + 5 = 105 | 1000 + 5 = 1005 |

Figure 2.44

1. 2. See how **Bonny and Tommy** solved this problem for Grandpa:

Grandpa has 48 pigs on the farm and there are 4 pigsties. How many pigs must he put in each sty?

**Number sentence:** \[ 48 \div 4 = \text{__________________________} \]
• In the same way, help Granny to solve the following problem: Granny has picked 69 roses and she wants to put the same number of roses in 3 different vases. How many must she put in each vase?

Number sentence: _______________________________________________________

Granny must __________________________________________________________

• Do the calculations and use the method you like best:

42 ÷ 2 = ______________________________________________
68 ÷ 2 = ______________________________________________
96 ÷ 3 = ______________________________________________
63 ÷ 3 = ______________________________________________
84 ÷ 4 = ______________________________________________
44 ÷ 4 = ______________________________________________

• Write a story for each number sentence. Then do the calculation.

35 + 42 + 17 = ______________________________________________
90 - 33 + 12 = ______________________________________________
41 x 2 = ______________________________________________
66 ÷ 3 = ______________________________________________

• Bonny and Tommy have discovered that they sometimes have enough tens to make a group of a hundred.

Number sentence: 56 + 62 = ______________________________________________
• Use the method you like best to do these calculations:

73 + 55 = _______________________________________________
46 + 63 = _______________________________________________
94 + 23 = _______________________________________________

• Bonny and Tommy have also discovered that they sometimes don’t have enough tens to take away and that they then have to **regroup a hundred**.

Number sentence: 126 - 32 = ________________________________
Use the method you like best to do these calculations:

118 - 25 = ________________________________________________

150 - 60 = ________________________________________________

147 - 60 = ________________________________________________

Fill in the answers:

\[
\begin{array}{cccccc}
5 \_ & + 65 & + 74 & + 92 & + 81 & + 44 & + 91 \\
66 & 39 & 58 & 37 & 75 & 83 \\
+ 5 \_ & + 65 & + 85 & + 63 & + 45 & + 38 \\
120 & 130 & 110 & 129 & 137 & 118 \\
- 30 & - 50 & - 60 & - 34 & - 45 & - 22 \\
\end{array}
\]

Complete the number path:
Fill in the missing numbers:

Here is a road map for Dad. There are different roads he can take to get to the farm, but which one is the shortest?
Calculate the shortest road and draw it on the map.
• How long is the shortest road (in km)? ________________________________

• If Dad drives 100 km in one hour, how long will it take him to get there?

It will ______________________________________________________________

• Draw a farm and a house for Grandpa and Granny, as you will see it when you approach the farm.

2.8.7 Assessment

**Learning Outcome 1:** The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

**Assessment Standard 1.8:** We know this when the learner can perform calculations, using appropriate symbols, to solve problems;

**Assessment Standard 1.10:** We know this when the learner uses the following techniques:
1.10.1 building up and breaking down numbers;
1.10.2 doubling and halving;
1.10.3 number-lines;
1.10.4 rounding off in tens.

**Learning Outcome 2:** The learner will be able to recognise, describe and represent patterns and relationships, as well as to solve problems using algebraic language and skills.

**Assessment Standard 2.2:** We know this when the learner copies and extends simple number sequences to at least 1 000;

**Learning Outcome 3:** The learner will be able to describe and represent characteristics and relationships between two-dimensional shapes and three-dimensional objects in a variety of orientations and positions.

**Assessment Standard 3.5:** We know this when the learner recognises and describes three-dimensional objects from different positions.
Chapter 3

Term 3

3.1 Distance

3.1.1 MATHEMATICS

3.1.2 Bonny and Tommy are road users too

3.1.3 EDUCATOR SECTION

3.1.4 Memorandum

- Number Concept to 800
- Operations:
  - Addition – two and three digit numbers with regrouping (carrying) of the tens or hundreds.
  - Subtraction – two and three digit numbers with regrouping (decomposition) of the tens or hundreds.
  - Multiplication – two digit numbers with a one digit number with regrouping (carrying) of the tens.
  - Division – with a remainder in the range of the tables.
  - two digit numbers with a one digit number without regrouping of the tens to 99.

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In Module 5, the **number concept** is expanded to **800**. In addition and subtraction, two- and three-digit numbers are introduced. Multiplication is done with regrouping of tens. Division with a remainder, but without regrouping or breaking up of tens, is taught. Initially it is only done in the number range of the tables. The learners need to have a very good understanding of this before it can be extended to larger numbers. Testing of tables remains extremely important.

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---

1This content is available online at <http://cnx.org/content/m32271/1.1/>. 

153
Precede this with a discussion on what a bus looks like from the **front** and from the **rear** before you let the learners attempt the drawings.

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Encourage learners to tell where they live and how they would explain the route to their home to someone else. Help them to explain an easy route to find a certain room in the school.

### 3.1.5 LEARNER SECTION

### 3.1.6 Content

#### 3.1.6.1 ACTIVITY: Distance [LO 1.1, LO 1.3, LO 1.4, LO 1.8, LO 1.9, LO 1.10, LO 3.5, LO 5.1, LO 5.2, LO 5.3, LO 5.4, LO 5.5]

All of us are **road users**: pedestrians, cyclists, drivers of vehicles, or passengers. It is important to know and obey traffic rules and road signs.

![Traffic signs](image)

**Figure 3.1**

Find out how each of the learners in your class gets to school in the morning. Place a dot in the relevant circle for each of the learners.

Use this information to complete the following sentences.
Most of the learners come ________________________________________________
The fewest learners come ________________________________________________

• Write down 3 things that could happen to change the information that you have gathered.

• Suppose that all the learners in your class came to school by bicycle.

How many bicycles would there be? ______________ bicycles.
How many wheels would there be? ______________ wheels.

• There are 10 bicycle racks outside the school building and 25 bicycles are parked in each bicycle rack.
How many bicycles are there altogether? ______________ bicycles.

How many wheels are there in all together? ______________ wheels.

Suppose that there are only 13 bicycles in 1 of the bicycle racks. How many bicycles and wheels would there be in all? ______________ bicycles and ______________ wheels.

Bonny and Tommy live 500 m from the school and walk to and from school every day. They cross the street at the scholar patrol.

• How far do they walk each day?
They walk ____________________________________________________________

• How far do they walk in 4 weeks?
They walk ____________________________________________________________

• This morning 418 feet crossed the street at the scholar patrol. How many learners crossed over at the zebra lines? ______________ learners.

• Find out:
1. How far from the school is your home?
2. How far do you walk or ride each day?
3. How far do you walk or ride in one school week?
4. How far away is the learner who lives furthest from the school?
5. How far away is the learner who lives nearest to the school?
6. Calculate the difference between the two distances:

• Ask your educator to help you to summarise the information:

------------------------- learners living closer than \( \frac{1}{2} \) km.
------------------------- learners living between \( \frac{1}{2} \) and 1km from the school.
------------------------- learners living between 1 and \( 1 \frac{1}{2} \) km from the school.
------------------------- learners further than \( 1 \frac{1}{2} \) and 2 km from the school.
------------------------- learners further than 2 km from the school.

Here is a graph showing the distances for the learners in the twins’ class. Their graph is drawn in black and marked with an A. Record your own class’ information on the same graph. Draw your graph using a red pencil and mark it with B.
Bonny and Tommy are very exited, because Grades 3, 4 and 5 are going on a netball and rugby tour. This is the bus in which they will travel.

- Copy it in the blocks that are provided.
Now draw the bus, first as you will see it from the front and then from the back.

Bring empty cartons and other scrap material to school to build your own bus.

Use your own method for solving the following problems.

There will be 120 players and 8 coaches on the tour. Each bus may only transport 35 passengers. Draw the buses that will be needed to transport everyone.
• Divide the players and the coaches among the buses to place the same number of players and coaches in each bus. **Write the numbers on the buses you have drawn.** How many seats will be empty in each bus? ________________

• A rugby team has 15 rugby players. How many players are there in the 5 rugby teams altogether? There are ____________________________

• There are 7 netball players in a netball team. How many players are in the 5 netball teams altogether? There are ____________________________

• The other players are the reserves. How many reserves are there? ________________

• They leave on Thursday and will be away for 3 nights. On which day will they return? ________________

• Each player has to contribute R100 to cover a portion of the costs. **Bonny** and **Tommy** will each take along R50 in pocket money.

What will the twins’ parents have to pay, including the pocket money, to let them go on the tour? ____________________________

**Bonny** and **Tommy** and all the other players enjoyed the tour thoroughly, but there are a couple of calculations to be done.

• Here is a representation of the route to help you with the calculations.

![Figure 3.5](image)

During the tour they travelled 400 km altogether. On the first day they travelled 120 km, on the second day they travelled 102 km and 103 km on the third day. How far did they travel on the last day to get back to the school?

• Number sentence: ____________________________

• On the last day: ____________________________

The cost of the fuel came to R150 for each 100 km that the bus travelled.

What was the price of the fuel for one bus for the whole bus tour?

• Number sentence: ____________________________

• R ____________________________

What was the total cost of the fuel for all the buses?

• R ____________________________
• Suppose each bus travelled 80 km in an hour. Complete the table:

<table>
<thead>
<tr>
<th>hours</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>km</td>
<td>80</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 3.1**

---

**Figure 3.6**

---

• Make use of the number line and write the number halfway between:

100 . . . . . . . . . . . . . 300
400 . . . . . . . . . . . . . 500
150 . . . . . . . . . . . . . 250
300 . . . . . . . . . . . . . 350
250 . . . . . . . . . . . . . 300
200 . . . . . . . . . . . . . 600
700 . . . . . . . . . . . . . 800
550 . . . . . . . . . . . . . 650
400 . . . . . . . . . . . . . 450
750 . . . . . . . . . . . . . 800
Figure 3.7

- How quickly can you fill in all the answers?
- **Write down** all the 3-digit numbers that you can make with the numbers 3, 7 and 8.

- Arrange the numbers from the most to the least and circle the **uneven** numbers.

- Write the **uneven numbers** with their number names.

- Round off the **even** numbers to the nearest **ten**.
• **Halve** the rounded off numbers.

---

Figure 3.9

---

Think!

---

<table>
<thead>
<tr>
<th>10 x 5 =</th>
<th>3 x 4 =</th>
<th>6 x 5 =</th>
<th>9 x 2 =</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 x 2 =</td>
<td>5 x 0 =</td>
<td>8 x 4 =</td>
<td>3 x 7 =</td>
</tr>
<tr>
<td>9 x 4 =</td>
<td>2 x 2 =</td>
<td>10 x 1 =</td>
<td>5 x 5 =</td>
</tr>
<tr>
<td>3 x 6 =</td>
<td>4 x 10 =</td>
<td>7 x 5 =</td>
<td>8 x 3 =</td>
</tr>
<tr>
<td>10 x 10 =</td>
<td>1 x 8 =</td>
<td>9 x 3 =</td>
<td>2 x 8 =</td>
</tr>
<tr>
<td>8 x 5 =</td>
<td>10 x 7 =</td>
<td>6 x 2 =</td>
<td>4 x 4 =</td>
</tr>
<tr>
<td>1 x 7 =</td>
<td>3 x 3 =</td>
<td>8 x 10 =</td>
<td>7 x 10 =</td>
</tr>
<tr>
<td>0 x 9 =</td>
<td>5 x 9 =</td>
<td>7 x 0 =</td>
<td>5 x 9 =</td>
</tr>
<tr>
<td>4 x 8 =</td>
<td>2 x 5 =</td>
<td>9 x 1 =</td>
<td>10 x 2 =</td>
</tr>
<tr>
<td>6 x 4 =</td>
<td>0 x 2 =</td>
<td>6 x 3 =</td>
<td>6 x 10 =</td>
</tr>
</tbody>
</table>

---

Figure 3.10

---

### 3.1.7 Assessment

**Learning Outcome 1:** The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

**Assessment Standard 1.1:** We know this when the learner counts forwards and backwards in:

1.1.1 the intervals specified in grade 2 with increased number ranges;

**Assessment Standard 1.3:** We know this when the learner knows, reads and writes number symbols and names from 1 to at least 1 000;

**Assessment Standard 1.4:** We know this when the learner orders, describes and compares numbers;

**Assessment Standard 1.8:** We know this when the learner can perform calculations, using appropriate symbols, to solve problems;

**Assessment Standard 1.9:** We know this when the learner performs mental calculations;

**Assessment Standard 1.10:** We know this when the learner uses the following techniques:
1.10.1 building up and breaking down numbers;
1.10.2 doubling and halving;
1.10.3 number-lines;
1.10.4 rounding off in tens.

**Learning Outcome 3:** The learner will be able to describe and represent characteristics and relationships between two-dimensional shapes and three-dimensional objects in a variety of orientations and positions.

**Assessment Standard 3.5:** We know this when the learner recognises and describes three-dimensional objects from different positions;

**Learning Outcome 5:** The learner will be able to collect, summarise, display and critically analyse data in order to draw conclusions and make predictions, and to interpret and determine chance variation.

**Assessment Standard 5.1:** We know this when the learner collects data (alone and/or as a member of a group or team) in the classroom and school environment to answer questions posed by the teacher and class (e.g. ‘how many learners walk to school?’);

**Assessment Standard 5.2:** We know this when the learner sorts, orders and organises own and supplied data by one or more attributes for a particular reason chosen by the teacher;

**Assessment Standard 5.3:** We know this when the learner draws pictures and constructs pictographs and bar graphs that have a 1-1 correspondence between own data and representation;

**Assessment Standard 5.4:** We know this when the learner reads, interprets and reports on information in own and a peer’s representations of data.

**Assessment Standard 5.5:** We know this when the learner reads and interprets data presented in simple tables and lists.

### 3.2 Patterns

#### 3.2.1 MATHEMATICS

#### 3.2.2 Bonny and Tommy are road users too

#### 3.2.3 EDUCATOR SECTION

#### 3.2.4 Memorandum

- Number Concept to 800
- Operations:
  - Addition – two and three digit numbers with regrouping (carrying) of the tens or hundreds.
  - Subtraction – two and three digit numbers with regrouping (decomposition) of the tens or hundreds.
  - Multiplication – two digit numbers with a one digit number with regrouping (carrying) of the tens.
  - Division – with a remainder in the range of the tables.
  - two digit numbers with a one digit number without regrouping of the tens to 99.

Division with a remainder but without the regrouping (decomposition) of the tens is taught. This demands much work in the range of the tables. The learners need to understand this stage very well before they work with higher numbers. **Testing of the tables is essential.**

In Module 5, the **number concept** is expanded to 800. In addition and subtraction, two- and three-digit numbers are introduced. Multiplication is done with regrouping of tens. Division with a remainder, but without regrouping or breaking up of tens, is taught. Initially it is only done in the number range of the tables. The learners need to have a very good understanding of this before it can be extended to larger numbers. Testing of tables remains extremely important.

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E.g. 1 fried or boiled egg can be divided but 1 uncooked egg cannot be divided and shared.

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### 3.2.5 LEANER SECTION

### 3.2.6 Content

#### 3.2.6.1 ACTIVITY: Patterns [LO 1.8, LO 2.2, LO 2.4]

Bonny and Tommy discovered patterns that helped them to do calculations easily.
Bonny's netball team scored 16 goals in each match. They played 3 matches. How many goals did they score altogether?
• Use your own method to solve the problems. Show how you do it.

18 players of Bonny’s group turned up for each of the last 5 netball practices. How many players attended the 5 practices altogether?

There were ___________________________________________________________

24 cars were parked in front of the school. How many wheels were there altogether?

There were ___________________________________________________________

Dad drives 14 km every day. How many km does he drive in 7 days?

He drives ___________________________________________________________

• Fill in the answers as quickly as possible:
Figure 3.13

<table>
<thead>
<tr>
<th>6</th>
<th>9</th>
<th>5</th>
<th>8</th>
<th>3</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>× 1</td>
<td>× 2</td>
<td>× 3</td>
<td>× 5</td>
<td>× 3</td>
<td>× 4</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>30</td>
<td>10</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>× 8</td>
<td>× 4</td>
<td>× 2</td>
<td>× 3</td>
<td>× 9</td>
<td>× 2</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>40</td>
<td>90</td>
<td>90</td>
<td>60</td>
</tr>
<tr>
<td>× 7</td>
<td>× 3</td>
<td>× 5</td>
<td>× 3</td>
<td>× 5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>31</td>
<td>23</td>
<td>42</td>
<td>68</td>
</tr>
<tr>
<td>× 4</td>
<td>× 3</td>
<td>× 3</td>
<td>× 2</td>
<td>× 2</td>
<td>× 1</td>
</tr>
<tr>
<td></td>
<td>34</td>
<td>77</td>
<td>29</td>
<td>36</td>
<td>18</td>
</tr>
<tr>
<td>× 3</td>
<td>× 2</td>
<td>× 3</td>
<td>× 2</td>
<td>× 5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>200</td>
<td>100</td>
<td>200</td>
<td>400</td>
<td>100</td>
</tr>
<tr>
<td>× 2</td>
<td>× 3</td>
<td>× 5</td>
<td>× 4</td>
<td>× 2</td>
<td>× 3</td>
</tr>
<tr>
<td></td>
<td>120</td>
<td>130</td>
<td>101</td>
<td>303</td>
<td>107</td>
</tr>
<tr>
<td>× 3</td>
<td>× 4</td>
<td>× 2</td>
<td>× 5</td>
<td>× 3</td>
<td>× 2</td>
</tr>
<tr>
<td></td>
<td>231</td>
<td>312</td>
<td>122</td>
<td>125</td>
<td>127</td>
</tr>
<tr>
<td>× 3</td>
<td>× 2</td>
<td>× 4</td>
<td>× 3</td>
<td>× 2</td>
<td>× 4</td>
</tr>
</tbody>
</table>
3.2.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems;

Learning Outcome 2: The learner will be able to recognise, describe and represent patterns and relationships, as well as to solve problems using algebraic language and skills.

Assessment Standard 2.2: We know this when the learner copies and extends simple number sequences to at least 1 000;

Assessment Standard 2.4: We know this when the learner describes observed patterns.
3.3 Divide with a rem\textsuperscript{3}

3.3.1 MATHEMATICS

3.3.2 Bonny and Tommy are road users too

3.3.3 EDUCATOR SECTION

3.3.4 Memorandum

- Number Concept to 800
- Operations:
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This is written as the \textbf{remainder (rem.)}.

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### 3.3.5 LEARNER SECTION

### 3.3.6 Content

#### 3.3.6.1 ACTIVITY: Divide with a rem [LO 1.7, LO 1.8, LO 3.1]

- **Bonny** and **Tommy** discovered that some numbers couldn’t be divided equally. They are the numbers that are not multiples of the divisors. Sometimes the remainder can be divided into smaller parts, but this is not always possible.

- **Take a good look:** Bonny has to divide 13 apples between herself and Tommy. How many will each one get?

![Figure 3.15](image)

\[
13 \div 2 = 6\frac{1}{2}
\]

- Now look at this:

Tommy wants to divide 13 marbles equally between himself and Jaco. How many marbles will each one get and how many will be left over?
Each one gets 6 and 1 is left over. (Tommy cannot halve the marble.)

- He thought about it like this:

The nearest multiple of 2 that is less than 13, is 12. He worked with 12 \( \div \) 2 and knew that 1 would be left over. (Regroup: 12 + 1) The 1 that is left over is known as the remainder. 13 \( \div \) 2 = 6 rem. 1

<table>
<thead>
<tr>
<th>Number sentence</th>
<th>Nearest multiple</th>
<th>Remainder</th>
<th>Complete number sentence</th>
</tr>
</thead>
<tbody>
<tr>
<td>13 ( \div ) 27 ÷ 21</td>
<td>1 ( \div ) 21</td>
<td>1 ( \div ) 21</td>
<td>9 ( \div ) 2</td>
</tr>
</tbody>
</table>

Table 3.2

- Do the same with the multiples of 3, 4, 5 and 10.

<table>
<thead>
<tr>
<th>Number sentence</th>
<th>Nearest multiple</th>
<th>Remainder</th>
<th>Complete number sentence</th>
</tr>
</thead>
<tbody>
<tr>
<td>13 ( \div ) 3</td>
<td>317 ( \div ) 422</td>
<td>336 ( \div ) 526</td>
<td>Div 1038 ( \div ) 523</td>
</tr>
</tbody>
</table>

Table 3.3

- Think!
Bonnny has 67 one-cent pieces and she wants to divide them equally between herself and Tommy. How many will each one get and how many will be left over?

Each one will get 33 one-cent pieces and 1 cent left over.

- **Bonnny** has 67 one-cent pieces and she wants to divide them equally between herself and Tommy. How many will each one get and how many will be left over?

- Do the calculations. Use the method that you prefer:

```
46 ÷ 4
68 ÷ 3
85 ÷ 2
59 ÷ 5
```

**Table 3.4**
• Use your own method to solve the problems. Show how you do it.

Your educator has bought 57 pencils. How many learners will each get 5 pencils and how many pencils will be left over?

• Granny has collected 95 eggs and she wants to provide 3 shops with an equal number of eggs. How many eggs will go to each shop and how many will be left over?

• Dad has R87 and wants to buy pens at R4 each. How many pens can he buy and how much money will be left over?

• Fill the answers in as quickly as possible:

\[
\begin{array}{cccc}
2 \div 6 & 3 \div 9 & 4 \div 8 & 5 \div 5 \\
2 \div 18 & 5 \div 35 & 3 \div 27 & 10 \div 60 \\
3 \div 8 & 5 \div 9 & 4 \div 6 & 10 \div 12 \\
5 \div 17 & 2 \div 13 & 3 \div 20 & 4 \div 18 \\
4 \div 28 & 5 \div 55 & 3 \div 37 & 2 \div 68 \\
3 \div 96 & 2 \div 82 & 4 \div 88 & 2 \div 46 \\
2 \div 29 & 4 \div 46 & 3 \div 64 & 5 \div 56 \\
3 \div 94 & 2 \div 65 & 4 \div 83 & 3 \div 61 \\
2 \div 00 & 3 \div 300 & 4 \div 800 & 5 \div 500 \\
3 \div 56 & 4 \div 208 & 2 \div 640 & 5 \div 505 \\
2 \div 486 & 5 \div 555 & 3 \div 681 & 4 \div 488 \\
4 \div 495 & 3 \div 308 & 5 \div 507 & 2 \div 809 \\
5 \div 556 & 2 \div 285 & 4 \div 286 & 3 \div 965 \\
\end{array}
\]

Figure 3.19
• Complete the work on the wheels of the bus:

![Figure 3.20](image1)

• Follow the number route to find out how far the bus has travelled. Begin at the triangle and end at the rectangle.

![Figure 3.21](image2)

• How many road signs do you see on the way to school? There are signs that: give warnings, give commands and provide information. Find out what these different road signs look like.
• Use these circles, rectangles and triangles to draw your own road signs.
3.3.7 Assessment

**Learning Outcome 1:** The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

**Assessment Standard 1.7:** We know this when the learner solves and explains solutions to practical problems that involve equal sharing and grouping and that lead to solutions that also include unitary and nonunitary fractions (e.g. \( \frac{1}{4}, \frac{3}{4} \));

**Assessment Standard 1.8:** We know this when the learner can perform calculations, using appropriate symbols, to solve problems;

**Learning Outcome 3:** The learner will be able to describe and represent characteristics and relationships between two-dimensional shapes and three-dimensional objects in a variety of orientations and positions.

**Assessment Standard 3.1:** We know this when the learner recognises, identifies and names two-dimensional shapes and three-dimensional objects in the environment and in pictures.

3.4 Shapes

3.4.1 MATHEMATICS

3.4.2 Bonny and Tommy are road users too

3.4.3 EDUCATOR SECTION

3.4.4 Memorandum

- Number Concept to 800
- Operations:
  - Addition – two and three digit numbers with regrouping (carrying) of the tens or hundreds.
  - Subtraction – two and three digit numbers with regrouping (decomposition) of the tens or hundreds.
  - Multiplication – two digit numbers with a one digit number with regrouping (carrying) of the tens.
  - Division – with a remainder in the range of the tables.
  - two digit numbers with a one digit number without regrouping of the tens to 99.

---

\(^4\)This content is available online at <http://cnx.org/content/m32300/1.1/>. 
Division with a remainder but without the regrouping (decomposition) of the tens is taught. This demands much work in the range of the tables. The learners need to understand this stage very well before they work with higher numbers. **Testing of the tables is essential.**

In Module 5, the **number concept** is expanded to 800. In addition and subtraction, two- and three-digit numbers are introduced. Multiplication is done with regrouping of tens. Division with a remainder, but without regrouping or breaking up of tens, is taught. Initially it is only done in the number range of the tables. The learners need to have a very good understanding of this before it can be extended to larger numbers. Testing of tables remains extremely important.

Here the learners are exposed to other ways of summarising data. An oral discussion of possible changes and the results thereof is necessary.

Ensure that the learners realise that they need to cover the distance between the school and their homes at least twice daily: They come to school and have to go home again.

The learners need to find out what the distance between home and school is before they do the work on this page.

This is the first Grade 3 Module to expose learners to determining particular points on a graph so that they can draw the graph, and for working with 2 sets of data on the same graph. You therefore need to be doubly sure that they understand how this is done. Easier examples could be discussed in preparation for the exercise.

Precede this with a discussion on what a bus looks like from the **front** and from the **rear** before you let the learners attempt the drawings.

**Counting in 8’s** must be done before the table at the bottom of this page is completed.

Learners must discover the relationship (pattern). There are similar patterns on p. 11.

This worksheet is simply aimed at determining the level of thinking involved with operations requiring addition and subtraction and finding out where special attention is required. The worksheet does not have to be completed in one session.

Concrete work is necessary to explain the regrouping of tens during multiplication.

Ensure that the learners understand the patterns where division is involved before expecting them to complete the exercises.

Here we deal with **division with a remainder**. Explain that it is sometimes impossible to **divide the remainder** into fractions, simply because of the nature of the problem.

E.g. 1 fried or boiled egg can be divided but 1 uncooked egg cannot be divided and shared.

This is written as the **remainder** (rem.).

Begin with work in the number range of the tables (to tenth multiple). You will need much concrete work and lots of repetition, because it is very important that the learners understand what they are doing before you go on to larger numbers.

The learners must do research in books and pamphlets about the different traffic signs and discuss them before they complete the signs.

Many pictures and different objects with these shapes are required to ensure that the learners recognise all the shapes.

Make the learners aware of the fact that there is no easy way of folding or dividing for obtaining **fifths** of 2-D shapes. This must be determined by **measuring**.

It may be necessary to help the learners to determine the location of the first square that must be coloured in. Do not offer help if they are able to find it independently.

Encourage learners to tell where they live and how they would explain the route to their home to someone else. Help them to explain an easy route to find a certain room in the school.
3.4.5 LEANER SECTION

3.4.6 Content

3.4.6.1 ACTIVITY: Shapes [LO 1.4, LO 1.8, LO 3.1, LO 3.6]

Ken jy hierdie vorms?
pyramid, rectangular block, prism, sphere, cylinder, cube and cone.

- Match the words to the correct shapes.

![Shapes Image]

Figure 3.23

- Find pictures of objects in magazines and classify them according to their shapes. Write the name of at least one object for each shape.

<table>
<thead>
<tr>
<th>pyramid:</th>
<th>rectangular block:</th>
<th>prism:</th>
</tr>
</thead>
<tbody>
<tr>
<td>sphere:</td>
<td></td>
<td>cylinder:</td>
</tr>
<tr>
<td>cube:</td>
<td></td>
<td>cone:</td>
</tr>
</tbody>
</table>

- Cut out the pictures of objects that you have found in the magazine and paste them here.
- Write the name of each object and the name of its shape.
- Compare your work with the work of other learners in the class.
- Use one of the following shapes and design a container for sweets: **a cylinder, a pyramid, a cone or a prism**. Decorate your container with circles, triangles and squares.
• These squares have been divided into 5 equal parts.

![Figure 3.24](image)

Use any method to solve the problems. Show how you did it.

• The bus has to travel 280 km in 4 hours. How many km must it travel in 1 hour?

Number sentence: ______________________________________________________

• Mom had R200. She bought food for R65 and put fuel in the car for R1 10 rand. How much money is left over in her purse?

Number sentence: ______________________________________________________
• Two kombi’s each transport 12 learners to school every day. How many learners do they transport in 4 days altogether?

Number sentence: ______________________________________________________

• Granny has baked 110 cookies each day for the past 3 days. We have eaten 50. How many cookies are left over?

Number sentence: ______________________________________________________

• I have a rope that is 2 m long. How many 10 cm pieces can I cut from it?

Number sentence: ______________________________________________________

• Here is a street plan of the area where Bonny and Tommy live.

![Street Plan](image)

Figure 3.25

![Street Plan](image)

Figure 3.26
Colour the following squares to mark the route that the bus takes.

**Down : Across**
3 : 1 1, 1 2, 1 3, 1 4
4 : 1 1
5 : 1 1
6 : 1 1
7 : 1 1
8 : 3, 4, 5, 6, 7, 8, 9, 1 0, 1 1
9 : 3
1 0 : 3
1 1 : 3
1 2 : 3
1 3 : 3
1 4 : 3

- If each square that you have coloured in represents 10 m, the bus travels ...............m.
- If each square represents 100 m, the bus travels ...................... m.
- How many km is this? Try to work it out! It is ....................... km.
- Explain to a friend the route that the bus takes. Use the direction words **left** and **right**, as well as other information from the street plan. Now write the directions here:
- Where do **Bonny** and **Tommy** live? Follow the directions and draw the route on the street plan as you go.

Walk along School Street as far as Short Street; turn left into Short Street; walk as far as the stop sign; turn right into Church Street; walk to Long Street and turn right again, into Long Street. They live on the left hand side of Long Street, in the 2nd house from the corner.

- Colour in the square.
- What is the number of their house?

(Square : Down : Across)? _______ : _______

3.4.7 Assessment

**Learning Outcome 1:** The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

**Assessment Standard 1.4:** We know this when the learner orders, describes and compares numbers;

**Assessment Standard 1.8:** We know this when the learner can perform calculations, using appropriate symbols, to solve problems;

**Learning Outcome 3:** The learner will be able to describe and represent characteristics and relationships between two-dimensional shapes and three-dimensional objects in a variety of orientations and positions.

**Assessment Standard 3.1:** We know this when the learner recognises, identifies and names two-dimensional shapes and three-dimensional objects in the environment and in pictures.

**Assessment Standard 3.6:** We know this when the learner reads, interprets and draws informal maps of the school environment or of an arrangement of three-dimensional objects and locates objects on the map.
3.5 Money notes

3.5.1 MATHEMATICS

3.5.2 Bonny and Tommy visit the zoo

3.5.3 EDUCATOR SECTION

3.5.4 Memorandum

- **Number Concept** to 1 000 (These are the minimum requirements for Grade 3.)
- **Operations:**
  - **Addition** – two and three digit numbers with and without regrouping of the tens and/or hundreds.
  - **Subtraction** – two and three digit numbers with and without regrouping of the tens and/or hundreds.
  - **Multiplication** – two and three digit numbers with a one digit number, with or without regrouping of the tens.
  - **Division** – two digit numbers with a one digit number with regrouping of the tens but without a remainder, e.g. $75 \div 5 = \underline{}$

(In the following module remainders with regrouping of the tens are practised again).

In Module 6 the **number concept** is extended to **1000**. Addition and subtraction is done with two- and three-digit numbers, with and without regrouping of tens and hundreds. Multiplication is done with two- and three-digit numbers with and without regrouping of tens. Division is done with two-digit numbers and regrouping of tens only, **without a remainder** in Module 6,

   e.g. $75 \div 5 = \underline{}$ (In the following module, the remainder will be included in regrouping.)

Learners need to know what the actual paper money looks like: R10-, R20-, R50-, R100- and R200-notes.

They must understand the values and be able to do simple calculations.

Explain what drawing to scale signifies. They will have to be able to grasp this concept very well before they will be able to calculate the lengths of the elephants’ trunks. Provide similar examples to ensure that they are able to do the exercise.

The learners need to develop a concrete image of the numerical value of **1000**.

$999 + 1$ completes a ten that is taken to the **tens** to complete **10 tens** which make a hundred. The hundred is taken to the **hundreds** to complete **10 hundreds**. These make a **group of a thousand** which has to be taken to the **thousands**.

1000: the 1 represents **1 group of a thousand** and the 3 noughts are the placeholders for the hundreds, tens and units.

Once the learners have completed the number block, it must be used for many counting exercises in tens and hundreds, counting forwards and backwards.

If learners are still struggling to master doubling and halving, they should be encouraged to use the "cloud" to assist the thinking process.

First work orally with similar examples using letter values, before allowing the learners to do the worksheet.

Multiplication with three-digit numbers, with regrouping of the tens, must first be practised orally and in the concrete.

Let the learners count in 9’s before asking them to write it.

Help them to realise that it is easier to start by adding 10 and subtracting 1 than it is to add 9. The opposite is done when 9 is subtracted: take away 10 and add 1. Let them use counters.

If **10c** and **1c pieces** are used to explain the idea of regrouping tens during division, the learners will be helped to grasp that the tens have to be **broken up and regrouped with the ones** before it can be shared out. (Play money could be used.)

The learners may need much practice before they will have enough skill to complete the worksheet.

It might help them to draw the diagrams.

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5This content is available online at [http://cnx.org/content/m32301/1.1/](http://cnx.org/content/m32301/1.1/).
The decision to make use of carried numbers is left to the educator.

First supply paper shapes for dividing into tens, so that the learners may discover for themselves that tenths, like thirds and fifths, have to be calculated and measured. It is not simply a matter of folding and folding again as in the case of a ¼ and a ¾.

Guide them to discover that they, by first obtaining fifths, can divide each fifth down the middle to obtain tenths.

Discuss symmetrical shapes with the learners. Let them identify symmetrical objects in the classroom. They should complete the drawing after this exercise.

3.5.5 LEARNER SECTION

3.5.6 Content

3.5.6.1 ACTIVITY: Money notes [LO 1.6]

- **Bonny** and **Tommy** each paid an entry fee of R10. Dad and Mom each paid R20. How much did they pay altogether?

They paid R ________.

- Dad paid with a R200-note. How much change did he get?

He got R________ change.

- Do you know what all the money notes look like? Which animals are on each of these notes?

R10 _________________________________________________________________
R20 _________________________________________________________________
R50 _________________________________________________________________
R100 ________________________________________________________________
R200 ________________________________________________________________

- For which notes could I exchange the following?

---

![Figure 3.27](image-url)
Complete:
- 4 R20-notes are R_______
- 3 R50-notes are R_______
- 9 R10-notes are R_______
- 10 R100-note are R_______
- _______ R10-notes are R90
- _______ R100-notes are R500
- _______ R200-notes are R600
- _______ R50-notes are R400

• Count the money in the till at the zoo:

![Money Till Diagram]

Figure 3.28

The entrance fee at the zoo has been increased to R25 for an adult and R15 for a child. Give the total cost for:
- 6 adults and 4 children: R_______ + R_______ = R_______
- 4 adults and 10 children: R_______ + R_______ = R_______
- 10 adults and 8 children: R_______ + R_______ = R_______

• Use any method to see if you can help me with this problem. Twelve people visited the zoo. They paid R260 in all. How many of them were adults and how many were children?

3.5.7 Assessment

**Learning Outcome 1:** The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

**Assessment Standard 1.6:** We know this when the learner solves money problems involving totals and change in rands and cents, including converting between rands and cents.
3.6 Scale drawings\textsuperscript{6}

3.6.1 MATHEMATICS

3.6.2 Bonny and Tommy visit the zoo

3.6.3 EDUCATOR SECTION

3.6.4 Memorandum

- **Number Concept** to 1000 (These are the minimum requirements for Grade 3.)
- Operations:
  - **Addition** – two and three digit numbers with and without regrouping of the tens and/or hundreds.
  - **Subtraction** – two and three digit numbers with and without regrouping of the tens and/or hundreds.
  - **Multiplication** – two and three digit numbers with a one digit number, with or without regrouping of the tens.
  - **Division** – two digit numbers with a one digit number with regrouping of the tens but without a remainder, e.g. \(75 \div 5 = \)

(In the following module remainders with regrouping of the tens are practised again).

In Module 6 the number concept is extended to 1000. Addition and subtraction is done with two- and three-digit numbers, with and without regrouping of tens and hundreds. Multiplication is done with two- and three-digit numbers with and without regrouping of tens. Division is done with two-digit numbers and regrouping of tens only, without a remainder in Module 6, e.g. \(75 \div 5 = \leq \) (In the following module, the remainder will be included in regrouping.)

Learners need to know what the actual paper money looks like: R10-, R20-, R50-, R100- and R200-notes. They must understand the values and be able to do simple calculations.

Explain what drawing to scale signifies. They will have to be able to grasp this concept very well before they will be able to calculate the lengths of the elephants' trunks. Provide similar examples to ensure that they are able to do the exercise.

The learners need to develop a concrete image of the numerical value of 1000.

999 + 1 completes a ten that is taken to the tens to complete 10 tens which make a hundred. The hundred is taken to the hundreds to complete 10 hundreds. These make a group of a thousand which has to be taken to the thousands.

1000: the 1 represents 1 group of a thousand and the 3 noughts are the placeholders for the hundreds, tens and units.

Once the learners have completed the number block, it must be used for many counting exercises in tens and hundreds, counting forwards and backwards.

If learners are still struggling to master doubling and halving, they should be encouraged to use the "cloud" to assist the thinking process.

First work orally with similar examples using letter values, before allowing the learners to do the worksheet.

Multiplication with three-digit numbers, with regrouping of the tens, must first be practised orally and in the concrete.

Let the learners count in 9's before asking them to write it.

Help them to realise that it is easier to start by adding 10 and subtracting 1 than it is to add 9. The opposite is done when 9 is subtracted: take away 10 and add 1. Let them use counters.

If 10c and 1c pieces are used to explain the idea of regrouping tens during division, the learners will be helped to grasp that the tens have to be broken up and regrouped with the ones before it can be shared out. (Play money could be used.)

The learners may need much practice before they will have enough skill to complete the worksheet.

It might help them to draw the diagrams.

\textsuperscript{6}This content is available online at https://cnx.org/content/m32304/1.1/.
The decision to make use of carried numbers is left to the educator.

First supply paper shapes for dividing into tens, so that the learners may discover for themselves that *tenths*, like thirds and fifths, have to be calculated and measured. It is not simply a matter of folding and folding again as in the case of a $\frac{1}{2}$ and a $\frac{1}{4}$.

Guide them to discover that they, by first obtaining *fifths*, can divide each fifth down the middle to obtain *tenths*.

Discuss *symmetrical shapes* with the learners. Let them identify symmetrical objects in the classroom. They should complete the drawing after this exercise.

### 3.6.5 LEARNER SECTION

#### 3.6.6 Content

**3.6.6.1 ACTIVITY: Scale drawings [L0 1.8, L0 4.5, L0 5.5]**

*Bonny* and *Tommy* enjoyed watching the elephants most of all. There were large ones and small ones.

![Figure 3.29](image)

- Which trunk is the longest? ________________________________________
- Which trunk is the shortest? ________________________________________
- What can you deduce from this? _______________________________________

Each of the spaces between * and * on the number line represents **20 cm**. Use any method to calculate the length of each trunk:

Some animals **eat meat**. They are **carnivores**.

Others **eat plants** and they are **herbivores**.

The carnivores together eat 100 kg of meat every day.

- Complete:
CHAPTER 3. TERM 3

<table>
<thead>
<tr>
<th>Days:</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kg:</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3.5

- Their meat is packed in 50 kg packets. How many packets of meat could the keeper make from 400 kg of meat?

He could _____________________________________________________________

This is enough meat for _____________________________________________

- There are 4 cages with birds. They eat 1 kg of seed every day.

How many 250g containers will this make? (Draw the 250g containers.)

- The people at the zoo bought 5 packets of seed weighing 20 kg each. This is enough seed for __________________ days.

- Draw all the 20 kg packets of seed that are needed for 1 year.

- This is how much drinking water is placed in the monkeys’ cages every day:

  Figure 3.30

- Draw the 1ℓ containers that can be filled from this.
- Draw the 500 mℓ containers that can be filled from this.
- Use your own method to do the calculations.

The small antelope drinks 125 mℓ of milk at a time. He gets milk 4 times per day. How much milk does he drink altogether?

It drinks _____________________________________________________________

- There are 69ℓ of water that have to be taken to 3 lion cages. How many litres of water can be taken to each cage?

Each cage ____________________________________________________________

- One of the monkeys is ill and the vet has said that it must be given 20 mℓ of medicine in the morning and in the evening. How many teaspoonfuls will it drink in a day? Remember: 1 t = 5 mℓ

It will drink ____________________________________________________________
3.6.7 Assessment

**Learning Outcome 1:** The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

**Assessment Standard 1.8:** We know this when the learner can perform calculations, using appropriate symbols, to solve problems;

**Learning Outcome 4:** The learner will be able to use appropriate measuring units, instruments and formulae in a variety of contexts.

**Assessment Standard 4.5:** We know this when the learner estimates, measures, compares and orders three-dimensional objects using non-standard and standard measures;

**Learning Outcome 5:** The learner will be able to collect, summarise, display and critically analyse data in order to draw conclusions and make predictions, and to interpret and determine chance variation.

**Assessment Standard 5.5:** We know this when the learner reads and interprets data presented in simple tables and lists.

3.7 Number block

3.7.1 MATHEMATICS

3.7.2 Bonny and Tommy visit the zoo

3.7.3 EDUCATOR SECTION

3.7.4 Memorandum

- Number Concept to 1 000 (These are the minimum requirements for Grade 3.)
- Operations:
  - Addition – two and three digit numbers with and without regrouping of the tens and/or hundreds.
  - Subtraction – two and three digit numbers with and without regrouping of the tens and/or hundreds.
  - Multiplication – two and three digit numbers with a one digit number, with or without regrouping of the tens.
  - Division – two digit numbers with a one digit number with regrouping of the tens but without a remainder, e.g. \(75 \div 5 = \)

(In the following module remainders with regrouping of the tens are practised again).

In Module 6 the number concept is extended to 1000. Addition and subtraction is done with two- and three-digit numbers, with and without regrouping of tens and hundreds. Multiplication is done with two- and three-digit numbers with and without regrouping of tens. Division is done with two-digit numbers and regrouping of tens only, without a remainder in Module 6,

\( \text{e.g. } 75 \div 5 = \) (In the following module, the remainder will be included in regrouping.)

Learners need to know what the actual paper money looks like: R10-, R20-, R50-, R100- and R200-notes.

They must understand the values and be able to do simple calculations.

Explain what drawing to scale signifies. They will have to be able to grasp this concept very well before they will be able to calculate the lengths of the elephants’ trunks. Provide similar examples to ensure that they are able to do the exercise.

The learners need to develop a concrete image of the numerical value of 1000.

\( \text{999 } + 1 \text{ completes a ten that is taken to the tens to complete 10 tens which make a hundred. The hundred is taken to the hundreds to complete 10 hundreds. These make a group of a thousand which has to be taken to the thousands.}

\( \text{1000: the 1 represents 1 group of a thousand and the 3 noughts are the placeholders for the hundreds, tens and units.} \)

\(^7\)This content is available online at <http://cnx.org/content/m32455/1.1/>. 
Once the learners have completed the number block, it must be used for many counting exercises in tens and hundreds, counting forwards and backwards.

If learners are still struggling to master doubling and halving, they should be encouraged to use the "cloud" to assist the thinking process.

First work orally with similar examples using letter values, before allowing the learners to do the worksheet.

Multiplication with three-digit numbers, with regrouping of the tens, must first be practised orally and in the concrete.

Let the learners count in 9’s before asking them to write it.

Help them to realise that it is easier to start by adding 10 and subtracting 1 than it is to add 9. The opposite is done when 9 is subtracted: take away 10 and add 1. Let them use counters.

If 10c and 1c pieces are used to explain the idea of regrouping tens during division, the learners will be helped to grasp that the tens have to be broken up and regrouped with the ones before it can be shared out. (Play money could be used.)

The learners may need much practice before they will have enough skill to complete the worksheet.

It might help them to draw the diagrams.

The decision to make use of carried numbers is left to the educator.

First supply paper shapes for dividing into tens, so that the learners may discover for themselves that tenths, like thirds and fifths, have to be calculated and measured. It is not simply a matter of folding and folding again as in the case of a \( \frac{1}{2} \) and a \( \frac{1}{4} \).

Guide them to discover that they, by first obtaining fifths, can divide each fifth down the middle to obtain tenths.

Discuss symmetrical shapes with the learners. Let them identify symmetrical objects in the classroom. They should complete the drawing after this exercise.

3.7.5 LEANER SECTION

3.7.6 Content

3.7.6.1 ACTIVITY: Number block [LO 1.1, LO 1.3, LO 1.4, LO 1.5, LO 1.8, LO 1.9, LO 1.10]

- Which numbers do these diagrams represent?
Figure 3.31

- Here we have 9 hundreds, 9 tens and 9 units. Add 1 more unit to the last ten.
- Group the ten and then the hundred.

Now there are hundreds. It is equal to ________________________

- Complete the diagrams:

Figure 3.32

- Complete the number block:
<table>
<thead>
<tr>
<th></th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
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<th>90</th>
<th>100</th>
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<tbody>
<tr>
<td>1</td>
<td>110</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>160</td>
<td></td>
<td></td>
<td>200</td>
<td></td>
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<td>2</td>
<td>210</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>510</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>600</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>670</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>710</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>800</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>910</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3.6

- When you move horizontally across the number block, you count in tens.

780 790 800 810 820 830 840 850 860 870 880 890 900 910 920 930 940 950 960 970 980 990 1000

- When you move vertically down the number block, you count in hundreds.

200 300 400 500 600 700 800 900 1000

- Complete:
Write down all the 3-digit numbers that you can make with the numbers 3, 8 and 9:
In which number does the 3 have the highest place value?
In which of these numbers does the 9 have the lowest place value?
Arrange the numbers from the most to the least:

- Fill in <, > or =:
  650 + 30 ...... 630 + 50
  500 + 1 62 ...... 500 + 1 26
  348 + 1 00 ...... 200 + 250
  730 - 1 1 0 ...... 720 - 1 00
  852 - 400 ...... 852 - 452
  900 - 500 ...... 900 - 400

- Give the even numbers to the elephant and the uneven numbers to the lion:
  1 1 7 426 853 555 851 504 912 963
  404 765 299 510 400 889 668 1000
• What is the difference in mass between the lion and the bear?
• What is the sum of the mass of the lion and the bear?
• Which animal has a greater mass than the bear?
• Which mammal has a smaller mass than the lion?

• Double all the numbers on the tortoise’s shell.

• Halve all these numbers.
Write the number that comes 4 places before:

837:_____ 964:_____ 850:_____ 900:_____
802:_____ 903:_____ 892:_____ 1000:_____

Write the number that comes 6 places after:

833:_____ 952:_____ 830:_____ 990:_____ 824:_____ 974:_____ 899:_____ 993:_____  

Write the number names:

319: _________________________________________________________________
490: _________________________________________________________________
682: _________________________________________________________________
807: _________________________________________________________________
973: _________________________________________________________________

Write the numbers:

four hundred and thirty seven: ____________________________________________  
two hundred and six: ___________________________________________________  
seven hundred and sixty five: _____________________________________________  
eight hundred and fourteen: ______________________________________________  
nine hundred and ninety three: ___________________________________________

Fill in x or ÷ signs:
• Complete the pyramid:

![Figure 3.38](image)

• Fill in the missing numbers:

![Figure 3.39](image)

• Complete:
\[ 615 = 600 + _____ + 5 \]
\[ 937 = 800 + ____ + 7 \]
\[ 550 = ____ + 140 + _____ \]
\[ 453 = 400 + ____ + 13 \]
\[ 749 = ____ + 140 + ____ \]
\[ 824 = 600 + ____ + ____ \]

- Use the values of the letters to do the calculations:

\[ a = 800 \quad m = 50 \quad p = 70 \quad t = 5 \quad w = 9 \]

\[ m + p + w = _____ + _____ + _____ = _____ \]
\[ a + m + t = _____ + _____ + _____ = _____ \]
\[ a - p - w = _____ + _____ + _____ = _____ \]

- Complete:

\[
\begin{array}{cccc}
888 & 890 & \cdots & \cdots & \cdots & \cdots & \cdots & \cdots & 904 \\
971 & 973 & \cdots & \cdots & \cdots & \cdots & \cdots & \cdots & 987 \\
800 & 803 & \cdots & \cdots & \cdots & \cdots & \cdots & \cdots & 824 \\
880 & 884 & \cdots & \cdots & \cdots & \cdots & \cdots & \cdots & 912 \\
915 & 920 & \cdots & \cdots & \cdots & \cdots & \cdots & \cdots & 955 \\
\end{array}
\]

- Complete:

\[
\begin{array}{cccc}
860 & 858 & \cdots & \cdots & \cdots & \cdots & \cdots & \cdots & 844 \\
913 & 911 & \cdots & \cdots & \cdots & \cdots & \cdots & \cdots & 897 \\
999 & 996 & \cdots & \cdots & \cdots & \cdots & \cdots & \cdots & 875 \\
812 & 808 & \cdots & \cdots & \cdots & \cdots & \cdots & \cdots & 780 \\
830 & 825 & \cdots & \cdots & \cdots & \cdots & \cdots & \cdots & 790 \\
\end{array}
\]

- Add the numbers horizontally and vertically:

\[
\begin{array}{ccc}
200 & 30 & 6 \\
100 & 10 & 7 & & & & & & \\
200 & 190 & 15 & & & & & & \\
& & & & & & & & \\
& & & & & & & & \\
300 & 20 & 13 & & & & & & \\
200 & 70 & 8 & & & & & & \\
100 & 130 & 7 & & & & & & \\
\end{array}
\]

\[ \text{Figure 3.40} \]

- Write an animal story to match the number sentence and do the calculation.

\[ 136 + 160 - 82 = \]

- Complete:
Use your own method to do the calculations:

\[164 + 103 + 131 = \quad \text{__________________________}\]
\[150 + 247 - 153 = \quad \text{__________________________}\]
\[374 - 150 - 117 = \quad \text{__________________________}\]

3.7.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.1: We know this when the learner counts forwards and backwards in:
1.1.1 the intervals specified in grade 2 with increased number ranges;
Assessment Standard 1.3: We know this when the learner knows, reads and writes number symbols and names from 1 to at least 1 000;
Assessment Standard 1.4: We know this when the learner orders, describes and compares numbers;
Assessment Standard 1.5: We know this when the learner recognises the place value of digits in whole numbers to at least 3-digit numbers;
Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems;
Assessment Standard 1.9: We know this when the learner performs mental calculations;
Assessment Standard 1.10: We know this when the learner uses the following techniques:
1.10.1 building up and breaking down numbers;
1.10.2 doubling and halving;
1.10.3 number-lines;
1.10.4 rounding off in tens.
3.8 Multiplication*

3.8.1 MATHEMATICS

3.8.2 Bonny and Tommy visit the zoo

3.8.3 EDUCATOR SECTION

3.8.4 Memorandum

- **Number Concept** to 1 000 (These are the minimum requirements for Grade 3.)
- Operations:
  - **Addition** – two and three digit numbers with and without regrouping of the tens and/or hundreds.
  - **Subtraction** – two and three digit numbers with and without regrouping of the tens and/or hundreds.
  - **Multiplication** – two and three digit numbers with a one digit number, with or without regrouping of the tens.
  - **Division** – two digit numbers with a one digit number with regrouping of the tens but without a remainder, e.g. \( 75 \div 5 = \)

(In the following module remainders with regrouping of the tens are practised again).

In Module 6 the **number concept** is extended to **1 000**. Addition and subtraction is done with two- and three-digit numbers, with and without regrouping of tens and hundreds. Multiplication is done with two- and three-digit numbers with and without regrouping of tens. Division is done with two-digit numbers and regrouping of tens only, **without a remainder** in Module 6,

\( 75 \div 5 = \) (In the following module, the remainder will be included in regrouping.)

Learners need to know what the actual paper money looks like: R10-, R20-, R50-, R100- and R200-notes.

They must understand the values and be able to do simple calculations.

Explain what drawing to scale signifies. They will have to be able to grasp this concept very well before they will be able to calculate the lengths of the elephants’ trunks. Provide similar examples to ensure that they are able to do the exercise.

The learners need to develop a concrete image of the numerical value of **1 000**.

\( 999 + 1 \) completes a ten that is taken to the **tens** to complete **10 tens** which make a hundred. The hundred is taken to the **hundreds** to complete **10 hundreds**. These make a group of a thousand which has to be taken to the **thousands**.

**1 000**: the 1 represents **1 group of a thousand** and the 3 noughts are the placeholders for the hundreds, tens and units.

Once the learners have completed the number block, it must be used for **many** counting exercises in tens and hundreds, counting forwards and backwards.

If learners are still struggling to master doubling and halving, they should be encouraged to use the "cloud" to assist the thinking process.

First work orally with similar examples using letter values, before allowing the learners to do the worksheet.

Multiplication with three-digit numbers, with regrouping of the tens, must first be practised orally and in the concrete.

Let the learners count in 9’s before asking them to write it.

Help them to realise that it is easier to start by adding 10 and subtracting 1 than it is to add 9. The opposite is done when 9 is subtracted: take away 10 and add 1. Let them use counters.

If **10c** and **1c** pieces are used to explain the idea of regrouping tens during division, the learners will be helped to grasp that the tens have to be **broken up and regrouped with the ones** before it can be shared out. (Play money could be used.)

The learners may need much practice before they will have enough skill to complete the worksheet.

It might help them to draw the diagrams.

*This content is available online at [http://cnx.org/content/m32305/1.1/](http://cnx.org/content/m32305/1.1/).
The decision to make use of carried numbers is left to the educator.

First supply paper shapes for dividing into tens, so that the learners may discover for themselves that tenths, like thirds and fifths, have to be calculated and measured. It is not simply a matter of folding and folding again as in the case of a ½ and a ¼.

Guide them to discover that they, by first obtaining fifths, can divide each fifth down the middle to obtain tenths.

Discuss symmetrical shapes with the learners. Let them identify symmetrical objects in the classroom. They should complete the drawing after this exercise.

3.8.5 LEARNER SECTION

3.8.6 Content

3.8.6.1 ACTIVITY: Multiplication [LO 1.8]

- There are 116 birds in each of the 4 cages. How many birds are there altogether?

Figure 3.42

Number sentence: 116 x 4 =

<table>
<thead>
<tr>
<th>Bonny did it like this:</th>
<th>Tommy did it like this:</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 x 4 = 400</td>
<td>116</td>
</tr>
<tr>
<td>10 x 4 = 40</td>
<td>x 4</td>
</tr>
<tr>
<td>6 x 4 = 24</td>
<td>24</td>
</tr>
<tr>
<td><em>116 x 4 = 464</em></td>
<td>(6 x 4)</td>
</tr>
<tr>
<td>There are 464 birds altogether.</td>
<td>400</td>
</tr>
<tr>
<td></td>
<td>(100 x 4)</td>
</tr>
<tr>
<td></td>
<td>464</td>
</tr>
</tbody>
</table>

Figure 3.43

- Use the method that you prefer to solve these problems.

A farmer planted 125 trees in a row. There are 4 rows. How many trees did he plant altogether?
- The bus travels 118 km every day. How many km does it travel in 3 days?

- Complete:

<table>
<thead>
<tr>
<th>114</th>
<th>103</th>
<th>220</th>
<th>132</th>
<th>130</th>
<th>102</th>
</tr>
</thead>
<tbody>
<tr>
<td>× 2</td>
<td>× 3</td>
<td>× 4</td>
<td>× 3</td>
<td>× 2</td>
<td>× 4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>121</th>
<th>215</th>
<th>115</th>
<th>126</th>
<th>129</th>
<th>137</th>
</tr>
</thead>
<tbody>
<tr>
<td>× 3</td>
<td>× 2</td>
<td>× 5</td>
<td>× 2</td>
<td>× 3</td>
<td>× 2</td>
</tr>
</tbody>
</table>

Figure 3.44

- Use the method that you prefer to do these calculations.

\[
117 \times 3 = \]
\[
118 \times 4 =
\]
\[
109 \times 4 + 120 =
\]
\[
115 \times 3 - 129 =
\]

Count in 9's to discover the pattern. Count in 90's.

- Multiples:

<table>
<thead>
<tr>
<th>1.</th>
<th>q</th>
<th>q0</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 3.45
• Use the pattern and complete the number sentences:

\[
\begin{align*}
4 \times 4 &= 9 \times 4 = \ldots \ldots & 4 \times 90 &= 90 \times 4 = \ldots \ldots \\
10 \times 9 &= 9 \times 10 = \ldots \ldots & 10 \times 90 &= 90 \times 10 = \ldots \ldots \\
3 \times 9 &= 9 \times 3 = \ldots \ldots & 3 \times 90 &= 90 \times 3 = \ldots \ldots \\
9 \times 9 &= 9 \times 9 = \ldots \ldots & 9 \times 90 &= 90 \times 9 = \ldots \ldots \\
5 \times 9 &= 9 \times 5 = \ldots \ldots & 5 \times 90 &= 90 \times 5 = \ldots \ldots \\
2 \times 9 &= 9 \times 2 = \ldots \ldots & 2 \times 90 &= 90 \times 2 = \ldots \ldots \\
6 \times 9 &= 9 \times 6 = \ldots \ldots & 6 \times 90 &= 90 \times 6 = \ldots \ldots \\
8 \times 9 &= 9 \times 8 = \ldots \ldots & 8 \times 90 &= 90 \times 8 = \ldots \ldots \\
7 \times 9 &= 9 \times 7 = \ldots \ldots & 7 \times 90 &= 90 \times 7 = \ldots \ldots \\
\end{align*}
\]

Figure 3.46

3.8.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems.

3.9 Adding and Subtracting

3.9.1 MATHEMATICS

3.9.2 Bonny and Tommy visit the zoo

3.9.3 EDUCATOR SECTION

3.9.4 Memorandum

• Number Concept to 1 000 (These are the minimum requirements for Grade 3.)
• Operations:
  • Addition – two and three digit numbers with and without regrouping of the tens and/or hundreds.
  • Subtraction – two and three digit numbers with and without regrouping of the tens and/or hundreds.
  • Multiplication – two and three digit numbers with a one digit number, with or without regrouping of the tens.
  • Division – two digit numbers with a one digit number with regrouping of the tens but without a remainder, e.g. \( 75 \div 5 = \)

(In the following module remainders with regrouping of the tens are practised again).

In Module 6 the number concept is extended to 1000. Addition and subtraction is done with two- and three-digit numbers, with and without regrouping of tens and hundreds. Multiplication is done with two- and three-digit numbers with and without regrouping of tens. Division is done with two-digit numbers and regrouping of tens only, without a remainder in Module 6.

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9This content is available online at <http://cnx.org/content/m32306/1.1/>.
e.g. $75 \div 5 = \leq$ (In the following module, the remainder will be included in regrouping.)

Learners need to know what the actual paper money looks like: R10-, R20-, R50-, R100- and R200-notes. They must understand the values and be able to do simple calculations.

Explain what drawing to scale signifies. They will have to be able to grasp this concept very well before they will be able to calculate the lengths of the elephants’ trunks. Provide similar examples to ensure that they are able to do the exercise.

The learners need to develop a concrete image of the numerical value of 1000.

999 + 1 completes a ten that is taken to the tens to complete 10 tens which make a hundred. The hundred is taken to the hundreds to complete 10 hundreds. These make a group of a thousand which has to be taken to the thousands.

1000: the 1 represents 1 group of a thousand and the 3 noughts are the placeholders for the hundreds, tens and units.

Once the learners have completed the number block, it must be used for many counting exercises in tens and hundreds, counting forwards and backwards.

If learners are still struggling to master doubling and halving, they should be encouraged to use the "cloud" to assist the thinking process.

First work orally with similar examples using letter values, before allowing the learners to do the worksheet.

Multiplication with three-digit numbers, with regrouping of the tens, must first be practiced orally and in the concrete.

Let the learners count in 9’s before asking them to write it.

Help them to realize that it is easier to start by adding 10 and subtracting 1 than it is to add 9. The opposite is done when 9 is subtracted: take away 10 and add 1. Let them use counters.

If 10c and 1c pieces are used to explain the idea of regrouping tens during division, the learners will be helped to grasp that the tens have to be broken up and regrouped with the ones before it can be shared out. (Play money could be used.)

The learners may need much practice before they will have enough skill to complete the worksheet.

It might help them to draw the diagrams.

The decision to make use of carried numbers is left to the educator.

First supply paper shapes for dividing into tens, so that the learners may discover for themselves that tenths, like thirds and fifths, have to be calculated and measured. It is not simply a matter of folding and folding again as in the case of a $\frac{1}{2}$ and a $\frac{1}{4}$.

Guide them to discover that they, by first obtaining fifths, can divide each fifth down the middle to obtain tenths.

Discuss symmetrical shapes with the learners. Let them identify symmetrical objects in the classroom. They should complete the drawing after this exercise.

3.9.5 LEANER SECTION

3.9.6 Content

3.9.6.1 ACTIVITY: Adding and subtracting [LO 1.8, LO 1.9, LO 2.2, LO 2.4]

- These are Bonny and Tommy’s secret recipes for adding or subtracting 9:
128 + 9 - 137

First recipe: 128 + 10 → 138 - 1 → 137

72 + 9 = ............... 123 + 9 = ............... 217 + 19 = ...............  
25 + 9 = ............... 264 + 9 = ............... 179 + 19 = ...............  
84 + 9 = ............... 366 + 9 = ............... 218 + 19 = ...............  
37 + 9 = ............... 197 + 9 = ............... 186 + 19 = ...............  
48 + 9 = ............... 225 + 9 = ............... 306 + 19 = ...............  
59 + 9 = ............... 304 + 9 = ............... 224 + 19 = ...............  

134 - 9 = 125

Second recipe: 134 + 10 → 144 + 1 → 125

56 - 9 = ............... 164 - 9 = ............... 137 - 19 = ...............  
73 - 9 = ............... 282 - 9 = ............... 255 - 19 = ...............  
81 - 9 = ............... 104 - 9 = ............... 376 - 19 = ...............  
94 - 9 = ............... 321 - 9 = ............... 211 - 19 = ...............  
65 - 9 = ............... 222 - 9 = ............... 348 - 19 = ...............  
42 - 9 = ............... 185 - 9 = ............... 263 - 19 = ...............  

Figure 3.47

- Find your own recipe for adding or subtracting 99:
Figure 3.48

- Count forwards in 9's:

785 794 ____ ____ ____ ____ ____ ____ ____ ____ ____ ____ 857
834 843 ____ ____ ____ ____ ____ ____ ____ ____ ____ ____ 906

- Count backwards in 9's:

1000 99 1 ____ ____ ____ ____ ____ ____ ____ ____ ____ ____ 928
843 834 ____ ____ ____ ____ ____ ____ ____ ____ ____ ____ 77 1

- Count forwards in 99's:

36 1 35 ____ ____ ____ ____ ____ ____ ____ ____ ____ ____ 828
1 71 270 ____ ____ ____ ____ ____ ____ ____ ____ ____ ____ 963

- Count backwards in 99's:

1000 90 1 ____ ____ ____ ____ ____ ____ ____ ____ ____ ____ 208
826 727 ____ ____ ____ ____ ____ ____ ____ ____ ____ ____ 340

- Do you know:

How many legs do 120 giraffes have? ________________________________
How many trunks do 345 elephants have? ___________________________
How many horns do 342 buck have? _________________________________
How many legs do 452 ostriches have? ______________________________
How many tails do 674 monkeys have? ______________________________
How many tusks do 200 elephants have? _____________________________
How many eyes do 85 zebra have? _________________________________
How many wings do 333 birds have? ________________________________
How many fingers do 40 baboons have? ______________________________
How many feet do 21 tortoises have? _______________________________
• A farmer has 125 ostriches. For 3 days, each one laid one egg. The farmer sold 108 eggs. How many eggs are left over?
• There are 12 lions. Each one eats 5 chickens per day. How many chickens do we need to feed the lions for 10 days?

3.9.7 Assessment

**Learning Outcome 1:** The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

**Assessment Standard 1.8:** We know this when the learner can perform calculations, using appropriate symbols, to solve problems;

**Assessment Standard 1.9:** We know this when the learner performs mental calculations;

**Learning Outcome 2:** The learner will be able to recognise, describe and represent patterns and relationships, as well as to solve problems using algebraic language and skills.

**Assessment Standard 2.2:** We know this when the learner copies and extends simple number sequences to at least 1 000;

**Assessment Standard 2.4:** We know this when the learner describes observed patterns.

3.10 Dividing

3.10.1 MATHEMATICS

3.10.2 Bonny and Tommy visit the zoo

3.10.3 EDUCATOR SECTION

3.10.4 Memorandum

• **Number Concept** to 1 000 (These are the minimum requirements for Grade 3.)
• Operations:
  • **Addition** – two and three digit numbers with and without regrouping of the tens and/or hundreds.
  • **Subtraction** – two and three digit numbers with and without regrouping of the tens and/or hundreds.
  • **Multiplication** – two and three digit numbers with a one digit number, with or without regrouping of the tens.
  • **Division** – two digit numbers with a one digit number with regrouping of the tens but without a remainder, e.g. $75 \div 5 =$

(In the following module remainders with regrouping of the tens are practised again).

In Module 6 the **number concept** is extended to 1000. Addition and subtraction is done with two- and three-digit numbers, with and without regrouping of tens and hundreds. Multiplication is done with two- and three-digit numbers with and without regrouping of tens. Division is done with two-digit numbers and regrouping of tens only, **without a remainder** in Module 6,

  e.g. $75 \div 5 = \leq$ (In the following module, the remainder will be included in regrouping.)

Learners need to know what the actual paper money looks like: R10-, R20-, R50-, R100- and R200-notes. They must understand the values and be able to do simple calculations.

Explain what drawing to scale signifies. They will have to be able to grasp this concept very well before they will be able to calculate the lengths of the elephants’ trunks. Provide similar examples to ensure that they are able to do the exercise.

The learners need to develop a concrete image of the numerical value of 1000.

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This content is available online at `<http://cnx.org/content/m32307/1.1/>`. 
999 + 1 completes a ten that is taken to the tens to complete 10 tens which make a hundred. The hundred is taken to the hundreds to complete 10 hundreds. These make a group of a thousand which has to be taken to the thousands.

1000: the 1 represents 1 group of a thousand and the 3 noughts are the placeholders for the hundreds, tens and units.

Once the learners have completed the number block, it must be used for many counting exercises in tens and hundreds, counting forwards and backwards.

If learners are still struggling to master doubling and halving, they should be encouraged to use the "cloud" to assist the thinking process.

First work orally with similar examples using letter values, before allowing the learners to do the worksheet.

Multiplication with three-digit numbers, with regrouping of the tens, must first be practised orally and in the concrete.

Let the learners count in 9's before asking them to write it.

Help them to realise that it is easier to start by adding 10 and subtracting 1 than it is to add 9. The opposite is done when 9 is subtracted: take away 10 and add 1. Let them use counters.

If 10c and 1c pieces are used to explain the idea of regrouping tens during division, the learners will be helped to grasp that the tens have to be broken up and regrouped with the ones before it can be shared out. (Play money could be used.)

The learners may need much practice before they will have enough skill to complete the worksheet.

First supply paper shapes for dividing into tens, so that the learners may discover for themselves that tenths, like thirds and fifths, have to be calculated and measured. It is not simply a matter of folding and folding again as in the case of a \(\frac{1}{2}\) and a \(\frac{1}{4}\).

Guide them to discover that they, by first obtaining fifths, can divide each fifth down the middle to obtain tenths.

Discuss symmetrical shapes with the learners. Let them identify symmetrical objects in the classroom. They should complete the drawing after this exercise.

3.10.5 LEARNER SECTION

3.10.6 Content

3.10.6.1 ACTIVITY: Dividing [LO 1.8]

\[\text{She has: } \begin{array}{cccc} 10c & 10c & 10c & 10c \\ \hline 40c & 1c & 1c & 2c \end{array} \]

\hspace{1cm} Figure 3.49

**Bunny** has 4 ten cent-pieces and 2 one cent-pieces. It is 42c altogether. She wants to divide it equally among **Tommy**, **Terry** and herself. How much will each one get?

- Here is 1 ten cent-piece that cannot be shared as a ten cent-piece. She exchanges it for 10 one cent-pieces. She has to regroup. Now she has:
Figure 3.50

- Only 5 tens can be shared out as groups of ten. The 2 remaining tens are regrouped with the units.

Figure 3.51

Look at the divisor to decide how many groups of ten can be shared out and how many tens have to be regrouped with the units.

- Hergroeper:
$34 \div 2 = \underline{\phantom{0000}}$

$48 \div 3 = \underline{\phantom{0000}}$

$64 \div 4 = \underline{\phantom{0000}}$

$72 \div 3 = \underline{\phantom{0000}}$

$65 \div 5 = \underline{\phantom{0000}}$

$30 + 4 = \underline{\phantom{0000}} + \underline{\phantom{0000}}$

$40 + 8 = \underline{\phantom{0000}} + \underline{\phantom{0000}}$

$60 + 4 = \underline{\phantom{0000}} + \underline{\phantom{0000}}$

$70 + 2 = \underline{\phantom{0000}} + \underline{\phantom{0000}}$

$60 + 5 = \underline{\phantom{0000}} + \underline{\phantom{0000}}$

---

**Figure 3.52**

---

### 3.10.7 Assessment

**Learning Outcome 1:** The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

**Assessment Standard 1.8:** We know this when the learner can perform calculations, using appropriate symbols, to solve problems.
3.11 Shapes

3.11.1 MATHEMATICS

3.11.2 Bonny and Tommy visit the zoo

3.11.3 EDUCATOR SECTION

3.11.4 Memorandum

- **Number Concept** to 1 000 (These are the minimum requirements for Grade 3.)
- Operations:
  - **Addition** – two and three digit numbers with and without regrouping of the tens and/or hundreds.
  - **Subtraction** – two and three digit numbers with and without regrouping of the tens and/or hundreds.
  - **Multiplication** – two and three digit numbers with a one digit number, with or without regrouping of the tens.
  - **Division** – two digit numbers with a one digit number with regrouping of the tens but without a remainder, e.g. \( 75 \div 5 = \)

(In the following module remainders with regrouping of the tens are practised again).

In Module 6 the **number concept** is extended to **1 000**. Addition and subtraction is done with two- and three-digit numbers, with and without regrouping of tens and hundreds. Multiplication is done with two- and three-digit numbers with and without regrouping of tens. Division is done with two-digit numbers and regrouping of tens only, **without a remainder** in Module 6,

\[ 75 \div 5 = \; \text{\(\in\)} \]

(In the following module, the remainder will be included in regrouping.)

Learners need to know what the actual paper money looks like: R10-, R20-, R50-, R100- and R200-notes.

They must understand the values and be able to do simple calculations.

Explain what drawing to scale signifies. They will have to be able to grasp this concept very well before they will be able to calculate the lengths of the elephants’ trunks. Provide similar examples to ensure that they are able to do the exercise.

The learners need to develop a concrete image of the numerical value of **1 000**.

**999 + 1** completes a ten that is taken to the **tens** to complete **10 tens** which make a hundred. The **hundred** is taken to the **hundreds** to complete **10 hundreds**. These make a **group of a thousand** which has to be taken to the **thousands**.

1000: the 1 represents **1 group of a thousand** and the 3 noughts are the placeholders for the hundreds, tens and units.

Once the learners have completed the number block, it must be used for **many** counting exercises in tens and hundreds, counting forwards and backwards.

If learners are still struggling to master doubling and halving, they should be encouraged to use the "cloud" to assist the thinking process.

First work orally with similar examples using letter values, before allowing the learners to do the worksheet.

Multiplication with three-digit numbers, with regrouping of the tens, must first be practised orally and in the concrete.

Let the learners count in 9's before asking them to write it.

Help them to realise that it is easier to start by adding 10 and subtracting 1 than it is to add 9. The opposite is done when 9 is subtracted: take away 10 and add 1. Let them use counters.

If **10c** and **1c** pieces are used to explain the idea of regrouping tens during division, the learners will be helped to grasp that the tens have to be **broken up and regrouped with the ones** before it can be shared out. (Play money could be used.)

The learners may need much practice before they will have enough skill to complete the worksheet.

It might help them to draw the diagrams.

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11This content is available online at [http://cnx.org/content/m32308/1.1/](http://cnx.org/content/m32308/1.1/).
The decision to make use of carried numbers is left to the educator.

First supply paper shapes for dividing into tens, so that the learners may discover for themselves that tenths, like thirds and fifths, have to be calculated and measured. It is not simply a matter of folding and folding again as in the case of a $\frac{1}{2}$ and a $\frac{1}{4}$.

Guide them to discover that they, by first obtaining fifths, can divide each fifth down the middle to obtain tenths.

Discuss symmetrical shapes with the learners. Let them identify symmetrical objects in the classroom. They should complete the drawing after this exercise.

3.11.5 LEARNER SECTION

3.11.6 Content

3.11.6.1 ACTIVITY: Shapes [LO 1.4, LO 3.4, LO 5.1, LO 5.2, LO 5.3, LO 5.4]

- Count the equal parts in this rectangle:

```
A

B

C

D
```

**Figure 3.53**

The rectangle is divided into ________ equal parts.
Each part is called a ____________.

- Which fraction of each shape is coloured?

```

```

**Figure 3.54**
Use the table to help you find the answers:

<table>
<thead>
<tr>
<th>Fraction</th>
<th>1 whole</th>
<th>1 whole</th>
<th>1 whole</th>
<th>1 whole</th>
<th>1 whole</th>
<th>1 whole</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\frac{1}{10}$</td>
<td>$\frac{1}{5}$</td>
<td>$\frac{1}{10}$</td>
<td>$\frac{1}{5}$</td>
<td>$\frac{1}{10}$</td>
<td>$\frac{1}{5}$</td>
<td>$\frac{1}{10}$</td>
</tr>
<tr>
<td>$\frac{1}{10}$</td>
<td>$\frac{1}{5}$</td>
<td>$\frac{1}{10}$</td>
<td>$\frac{1}{5}$</td>
<td>$\frac{1}{10}$</td>
<td>$\frac{1}{5}$</td>
<td>$\frac{1}{10}$</td>
</tr>
</tbody>
</table>

Figure 3.55

Divide this rectangle into tenths and colour in $\frac{5}{10}$:

What do you notice?

A

B

C

D

Numbers can also be divided into tenths. Colour in of each unit:

$\frac{1}{10} \times 10 = \ldots$

$\frac{1}{10} \div 10 = \ldots$

$\frac{1}{10} \times 30 = \ldots$

$\frac{1}{10} \div 30 = \ldots$

$\frac{1}{10} \times 80 = \ldots$

$80 \div 10 = \ldots$

Figure 3.56

Complete:
Bonny has eaten 3 of the chocolate and Tommy has had 2. What fraction of the chocolate is left over? Colour in the remaining part.

Table 3.7

<table>
<thead>
<tr>
<th>Tenth</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

• Draw the missing half of the picture.

The elephant, the lion, the cheetah, the rhinoceros and the buffalo are known as the "big five". Find out from your classmates what their favourite animal is and complete the graph by colouring a block for each classmate.
CHAPTER 3. TERM 3

Table 3.8

- The favourite animal of most of the learners in the class is the _______________
- What is your favourite animal? Explain why. ________________________________

3.11.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.4: We know this when the learner orders, describes and compares numbers;

Learning Outcome 3: The learner will be able to describe and represent characteristics and relationships between two-dimensional shapes and three-dimensional objects in a variety of orientations and positions.

Assessment Standard 3.4: We know this when the learner determines lines of symmetry in two-dimensional shapes using paper folding and reflection;

Learning Outcome 5: The learner will be able to collect, summarise, display and critically analyse data in order to draw conclusions and make predictions, and to interpret and determine chance variation.

Assessment Standard 5.1: We know this when the learner collects data (alone and/or as a member of a group or team) in the classroom and school environment to answer questions posed by the teacher and class (e.g. ‘how many learners walk to school?’);

Assessment Standard 5.2: We know this when the learner sorts, orders and organises own and supplied data by one or more attributes for a particular reason chosen by the teacher;

Assessment Standard 5.3: We know this when the learner draws pictures and constructs pictographs and bar graphs that have a 1:1 correspondence between own data and representation;

Assessment Standard 5.4: We know this when the learner reads, interprets and reports on information in own and a peer’s representations of data.
Chapter 4

Term 4

4.1 Numbers

4.1.1 MATHEMATICS

4.1.2 Bonny and Tommy’s school fête

4.1.3 EDUCATOR SECTION

4.1.4 Memorandum

It is imperative that the educator is familiar with the content of this module before it is given to the learners, as this module contains advanced and enrichment work. Learners in the first two groups should find it a challenge and should be able to cope with it. Do not expose learners to tasks that are too difficult for them and which frustrate them. (Select according to their abilities).

The activities, the construction of mobiles, can be done classically. They can be combined with Technology.

- **Number Concept** to 1 500
- **Operations:**
  - **Addition, subtraction and multiplication** – two and three digit numbers with and without regrouping of the tens and the hundreds;
  - **Division** – two digit numbers with regrouping of the tens and remainders, e.g. $66 \div 4 = \ldots$

In [Module 7](http://cnx.org/content/m32309/1.1/) number concept is extended to 1500. All addition, subtraction and multiplication calculations are performed with 2-digit and 3-digit numbers with and without regrouping of hundreds and tens. Division is only done with 2-digit numbers with regrouping of tens, with a remainder e.g. $66 \div 4 = \ldots$

A discussion about the fête is necessary beforehand so that the learners may order their thoughts and plan the picture.

The learners must understand counting onwards from one thousand very well. Use similar number blocks from **1 101 to 1200, 1201 to 1300, 1301 to 1400 and 1401 to 1500** if necessary.

Shopping games should be used to help learners to calculate change.

Give special attention to equal quantities of and mℓ.

Use the posters for more calculations and provide opportunities for the learners to ask one another to do certain calculations.

This is an activity to be done on the playground. Let the learners measure with a trundle wheel.

Learners are expected to be able to count in a language other than their home language. If there are learners in the class who are proficient in another language, they should be given the opportunity to do so.

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1This content is available online at <http://cnx.org/content/m32309/1.1/>.
These involve consolidation of operations. Attend to problem areas.
The calculations of fractions of numbers may cause problems for some learners. Encourage them to try, even if they only accomplish the easier ones.
The $8\times$ and $\div$ are done simultaneously with *eights*. It is not compulsory for them to know these.
Multiplication is done with regrouping of hundreds as well as tens.
This activity tests the learners’ knowledge of numbers and reasoning abilities.
Division with regrouping the tens and a remainder requires much practice in the concrete. Learners must be able to say how they think and what they are doing before they attempt written work. Much practice is needed.
Encourage learners to test their operations.
This activity cannot be completed in one day. It can be combined with Technology. If there is not enough time, learners can be divided into groups of 5 to allow each learner to complete 1 shape, in which case the group will make a collective mobile sharing all knowledge with one another. If they find folding and pasting the round edges of the cone and cylinder they can paste these on the outside or they can cut off the round edges.
The shapes should preferably be duplicated on manilla, but if this is not available, use ordinary paper.

4.1.5 LEANER SECTION

4.1.6 Content

4.1.6.1 ACTIVITY: Numbers [LO 1.3, LO 1.5, LO 1.6, LO 1.9, LO 3.6, LO 4.5]

*Bonny* and *Tommy* are very excited about the féte. There will be many different kinds of stalls and lots of fun activities to take part in, including clowns to entertain the people.

- Draw a picture to show what your school will look like when you have the féte. Decide beforehand which stalls, fun and games there will be and where they will be placed.
- *Bonny* and *Tommy* know their numbers to 1 000 and now they want to count further.
- Complete the number block.

<table>
<thead>
<tr>
<th>1001</th>
<th>1002</th>
<th>1003</th>
<th>1004</th>
<th>1005</th>
<th>1006</th>
<th>1007</th>
<th>1008</th>
<th>1009</th>
<th>1010</th>
</tr>
</thead>
<tbody>
<tr>
<td>101 1</td>
<td>1012</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1021</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1031</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1041</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1051</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1061</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1071</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1081</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1091</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4.1
Which **numbers** are represented by the diagrams?

- Write the **number names** of the numbers.

- **Bonny** and **Tommy** must be able to calculate quickly if they want to help at the stalls.
Figure 4.2

- **Bonny** will help Mom with the pancakes. Here is 1 of the containers for the pancake mixture.
- The mixture in the container is enough for 100 pancakes. They planned to make 500 pancakes. Draw all the containers that they will need for the mixture.

They need \( \underline{\quad} \text{ℓ} \) dough altogether.

- How many \( \frac{1}{2} \text{ℓ} \) (500 mℓ) containers can be filled with the mixture?

- They are selling the pancakes for R2 each. How much money will they make if they sell all the pancakes?
• We know that 10ℓ of mixture makes 100 pancakes. How many pancakes can we make from 1ℓ of mixture?

4.1.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.3: We know this when the learner knows, reads and writes number symbols and names from 1 to at least 1 000;

Assessment Standard 1.5: We know this when the learner recognises the place value of digits in whole numbers to at least 3-digit numbers;

Assessment Standard 1.6: We know this when the learner solves money problems involving totals and change in rands and cents, including converting between rands and cents;

Assessment Standard 1.9: We know this when the learner performs mental calculations;

Learning Outcome 3: The learner will be able to describe and represent characteristics and relationships between two-dimensional shapes and three-dimensional objects in a variety of orientations and positions.

Assessment Standard 3.6: We know this when the learner reads, interprets and draws informal maps of the school environment or of an arrangement of three-dimensional objects and locates objects on the map.

Learning Outcome 4: The learner will be able to use appropriate measuring units, instruments and formulae in a variety of contexts.

Assessment Standard 4.5: We know this when the learner estimates, measures, compares and orders three-dimensional objects using non-standard and standard measures.

4.2 Calculations

4.2.1 MATHEMATICS

4.2.2 Bonny and Tommy’s school fête

4.2.3 EDUCATOR SECTION

4.2.4 Memorandum

It is imperative that the educator is familiar with the content of this module before it is given to the learners, as this module contains advanced and enrichment work. Learners in the first two groups should find it a challenge and should be able to cope with it. Do not expose learners to tasks that are too difficult for them and which frustrate them. (Select according to their abilities).

The activities, the construction of mobiles, can be done classically. They can be combined with Technology.

• Number Concept to 1 500
• Operations:
• Addition, subtraction and multiplication – two and three digit numbers with and without regrouping of the tens and the hundreds;
• Division – two digit numbers with regrouping of the tens and remainders, e.g. 66 ÷ 4 =

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2This content is available online at <http://cnx.org/content/m32312/1.1/>. 
In Module 7 number concept is extended to 1500. All addition, subtraction and multiplication calculations are performed with 2-digit and 3-digit numbers with and without regrouping of hundreds and tens. Division is only done with 2-digit numbers with regrouping of tens, with a remainder e.g. $66 \div 4 = \ldots$

A discussion about the fête is necessary beforehand so that the learners may order their thoughts and plan the picture.

The learners must understand counting onwards from one thousand very well. Use similar number blocks from 1101 to 1200, 1201 to 1300, 1301 to 1400 and 1401 to 1500 if necessary.

Shopping games should be used to help learners to calculate change.

Give special attention to equal quantities of and mL.

Use the posters for more calculations and provide opportunities for the learners to ask one another to do certain calculations.

This is an activity to be done on the playground. Let the learners measure with a trundle wheel.

Learners are expected to be able to count in a language other than their home language. If there are learners in the class who are proficient in another language, they should be given the opportunity to do so.

These involve consolidation of operations. Attend to problem areas.

The calculations of fractions of numbers may cause problems for some learners. Encourage them to try, even if they only accomplish the easier ones.

The $8\times$ and $\div$ are done simultaneously with eights. It is not compulsory for them to know these.

Multiplication is done with regrouping of hundreds as well as tens.

This activity tests the learners’ knowledge of numbers and reasoning abilities.

Division with regrouping the tens and a remainder requires much practice in the concrete. Learners must be able to say how they think and what they are doing before they attempt written work. Much practice is needed.

Encourage learners to test their operations.

This activity cannot be completed in one day. It can be combined with Technology. If there is not enough time, learners can be divided into groups of 5 to allow each learner to complete 1 shape, in which case the group will make a collective mobile sharing all knowledge with one another. If they find folding and pasting the round edges of the cone and cylinder they can paste these on the outside or they can cut off the round edges.

The shapes should preferably be duplicated on manilla, but if this is not available, use ordinary paper.

4.2.5 LEARNER SECTION

4.2.6 Content

4.2.6.1 ACTIVITY: Calculations [LO 1.6, LO 1.8, LO 4.6, LO 5.5]

- Here is the poster that Bonny made to attract the people to their stalls.
• Calculate the costs:

Mary bought: 3 pancakes, 1 hotdog and 2 cool drinks.
She paid _____________________________________________________________

Terry bought: 2 hamburgers, 2 candy floss and 2 fruit juices.
He paid ____________________________________________________________

Mom bought: 4 hotdogs, 4 puddings and 4 ice creams.
She paid _____________________________________________________________

The twins bought: 4 pancakes, 2 fruit juices and 2 candy floss.
They paid __________________________________________________________

They planned to make 300 hamburgers. They will sell at R5 each. **10 meatballs** can be made from
1 kg of mince. The mince is packed in **5 kg - packs**.

• Complete the table:

<table>
<thead>
<tr>
<th>packs of mince</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>kg</td>
<td>5</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>meat balls</td>
<td>30</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R____ altogether</td>
<td>250</td>
<td>500</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 4.2**

• How many 5 kg-packs must they buy? _______ packs.

• If 1 kg of mince is needed for 10 meatballs, how many grams are needed for each meatball? ______________________________
The **sausages** for the hotdogs were packed in **3 kg-packs**. Each **3 kg-pack** is enough for **25 hotdogs**. They bought **8** such packs. The hotdogs will be sold at **R3** each.

- Complete the table:

<table>
<thead>
<tr>
<th>packs of sausage</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>kg</td>
<td></td>
<td></td>
<td>3</td>
<td>6</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>hotdogs</td>
<td></td>
<td></td>
<td>25</td>
<td>50</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R____ altogether</td>
<td>75</td>
<td>150</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 4.3**

- How many hotdogs will they make? ________________ hotdogs.
- How much **money** will the hamburgers and the hotdogs bring in?

---

- What is the difference between the amount of money made from the hamburgers and that from the hotdogs? ________________

**Tommy** decided to help Dad with the pony rides. Here is the track that they measured off on the rugby field.

![Figure 4.4](image)

- What is the **perimeter** of the track?

One ride takes the pony twice around the track. It takes the pony **5 minutes** to go round twice and to have a short rest.

- What distance will the pony cover for each ride?
- How many rides can the pony do in **1 hour**?
- They are going to pay R5 per ride. **How much money** will they make if **50** children have pony rides?
- Who can calculate how far the pony will have walked altogether?

- Here is **Tommy**’s poster.
Calculate how much some children paid for the fun.

- Bonny had 2 pony rides and 1 turn on the jumping castle.

She paid ___________________________________________________

- Tommy had 3 turns to shoot the air gun and 1 pony ride.

He paid ___________________________________________________

- Terry threw the balls twice and had 1 pillow fight.

She paid ___________________________________________________

- Shane did everything once.

He paid ___________________________________________________

- Robert did everything twice.

He paid ___________________________________________________

- How much will you pay if you do everything 5 times?
4.2.7 Assessment

**Learning Outcome 1**: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

**Assessment Standard 1.6**: We know this when the learner solves money problems involving totals and change in rands and cents, including converting between rands and cents;

**Assessment Standard 1.8**: We know this when the learner can perform calculations, using appropriate symbols, to solve problems;

**Learning Outcome 4**: The learner will be able to use appropriate measuring units, instruments and formulae in a variety of contexts.

**Assessment Standard 4.6**: We know this when the learner investigates (alone and/or as a member of a group or team) and approximates;

**Learning Outcome 5**: The learner will be able to collect, summarise, display and critically analyse data in order to draw conclusions and make predictions, and to interpret and determine chance variation.

**Assessment Standard 5.5**: We know this when the learner reads and interprets data presented in simple tables and lists.

4.3 Language, calculations and time

4.3.1 MATHEMATICS

4.3.2 Bonny and Tommy’s school fête

4.3.3 EDUCATOR SECTION

4.3.4 Memorandum

It is imperative that the educator is familiar with the content of this module before it is given to the learners, as this module contains advanced and enrichment work. Learners in the first two groups should find it a challenge and should be able to cope with it. Do not expose learners to tasks that are too difficult for them and which frustrate them. (Select according to their abilities).

The activities, the construction of mobiles, can be done classically. They can be combined with Technology

- **Number Concept** to 1 500
- **Operations**:
- **Addition, subtraction and multiplication** – two and three digit numbers with and without regrouping of the tens and the hundreds;
- **Division** – two digit numbers with regrouping of the tens and remainders, e.g. 66 ÷ 4 =

In Module 7 number concept is extended to 1500. All addition, subtraction and multiplication calculations are performed with 2-digit and 3-digit numbers with and without regrouping of hundreds and tens. Division is only done with 2-digit numbers with regrouping of tens, with a remainder e.g. 66 ÷ 4 =

A discussion about the fête is necessary beforehand so that the learners may order their thoughts and plan the picture.

The learners must understand counting onwards from one thousand very well. Use similar number blocks from 1 101 to 1200, 1201 to 1300, 1301 to 1400 and 1401 to 1500 if necessary.

Shopping games should be used to help learners to calculate change.

Give special attention to equal quantities of and ml.

Use the posters for more calculations and provide opportunities for the learners to ask one another to do certain calculations.

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3This content is available online at <http://cnx.org/content/m32315/1.1/>. 
This is an activity to be done on the playground. Let the learners measure with a trundle wheel. Learners are expected to be able to count in a language other than their home language. If there are learners in the class who are proficient in another language, they should be given the opportunity to do so. These involve consolidation of operations. Attend to problem areas. The calculations of fractions of numbers may cause problems for some learners. Encourage them to try, even if they only accomplish the easier ones.

The 8x and ÷ are done simultaneously with eight. It is not compulsory for them to know these. Multiplication is done with regrouping of hundreds as well as tens. This activity tests the learners’ knowledge of numbers and reasoning abilities. Division with regrouping the tens and a remainder requires much practice in the concrete. Learners must be able to say how they think and what they are doing before they attempt written work. Much practice is needed.

Encourage learners to test their operations.

This activity cannot be completed in one day. It can be combined with Technology. If there is not enough time, learners can be divided into groups of 5 to allow each learner to complete 1 shape, in which case the group will make a collective mobile sharing all knowledge with one another. If they find folding and pasting the round edges of the cone and cylinder they can paste these on the outside or they can cut off the round edges.

The shapes should preferably be duplicated on manilla, but if this is not available, use ordinary paper.

### 4.3.5 LEANER SECTION

### 4.3.6 Content

#### 4.3.6.1 ACTIVITY: Language, calculations and time [LO 1.2, LO 1.4, LO 1.8, LO 1.9, LO 1.10, LO 2.2, LO 4.1, LO 4.2]

CHAPTER 4. TERM 4

Figure 4.6

Coco, the clown, handed out balloons. Here he is with Bonny’s balloons.
• Do all the operations on the balloons. **Write** the answers on the balloons in Coco’s left hand. **Colour** in each balloon lightly as you complete the operations. **Double** the answers on the balloons.

• Help Bonny and Tommy to set these clocks correctly. The clocks are **1 hour and 10 minutes slow**.

• **These clocks are 15 minutes fast.**
• Here is Coco with Tommy’s balloons.

Do all the operations on the balloons. Write the answers on the balloons in Coco’s left hand again. Colour in each balloon lightly as you complete the operations. Halve all the other answers except those on H, because there you need the whole line for the answer.
Calculate:

- Divide these 2 shapes into 8 equal parts (eighths).

![Diagram of shapes divided into 8 parts](image)

Use the table to get the equal values:

<table>
<thead>
<tr>
<th>1 whole</th>
<th>(\frac{1}{2})</th>
<th>(\frac{1}{4})</th>
<th>(\frac{1}{8})</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\frac{1}{8})</td>
<td>(\frac{1}{8})</td>
<td>(\frac{1}{8})</td>
<td>(\frac{1}{8})</td>
</tr>
<tr>
<td>(\frac{1}{4})</td>
<td>(\frac{1}{4})</td>
<td>(\frac{1}{8})</td>
<td>(\frac{1}{8})</td>
</tr>
<tr>
<td>(\frac{1}{2})</td>
<td>(\frac{1}{2})</td>
<td>(\frac{1}{4})</td>
<td>(\frac{1}{8})</td>
</tr>
</tbody>
</table>

- Use your multiples’ chart in Module 2 and practise counting forwards and backwards in 8’s until the 10th multiple.
You will notice that you already know more than half of the multiples:

\[
\begin{align*}
8 \times 1 &= 8, \\
8 \times 2 &= 2 \times 8 = 16, \\
8 \times 3 &= 3 \times 8 = \ldots, \\
8 \times 4 &= 4 \times 8 = \ldots, \\
8 \times 5 &= 5 \times 8 = \ldots, \\
8 \times 6 &= 6 \times 8 = \ldots, \\
8 \times 7 &= 7 \times 8 = \ldots, \\
8 \times 8 &= 8 \times 8 = \ldots, \\
8 \times 9 &= 9 \times 8 = \ldots, \\
8 \times 10 &= 10 \times 8 = \ldots,
\end{align*}
\]

Here is a method to help you to learn them quicker:

- Double
- Double again
- Double again

<table>
<thead>
<tr>
<th>Double</th>
<th>Double again</th>
<th>Double again</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 \times 6 = 12</td>
<td>4 \times 6 = 24</td>
<td>8 \times 6 = 48</td>
</tr>
<tr>
<td>2 \times 7 = \ldots</td>
<td>4 \times 7 = \ldots</td>
<td>8 \times 7 = \ldots</td>
</tr>
<tr>
<td>2 \times 8 = \ldots</td>
<td>4 \times 8 = \ldots</td>
<td>8 \times 8 = \ldots</td>
</tr>
<tr>
<td>2 \times 9 = \ldots</td>
<td>4 \times 9 = \ldots</td>
<td>8 \times 9 = \ldots</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Halve</th>
<th>Halve again</th>
<th>Halve again</th>
</tr>
</thead>
<tbody>
<tr>
<td>48 \div 2 = 24</td>
<td>48 \div 4 = 12</td>
<td>48 \div 8 = 6</td>
</tr>
<tr>
<td>56 \div 2 = \ldots</td>
<td>56 \div 4 = \ldots</td>
<td>56 \div 8 = \ldots</td>
</tr>
<tr>
<td>64 \div 2 = \ldots</td>
<td>64 \div 4 = \ldots</td>
<td>64 \div 8 = \ldots</td>
</tr>
<tr>
<td>72 \div 2 = \ldots</td>
<td>72 \div 4 = \ldots</td>
<td>72 \div 8 = \ldots</td>
</tr>
</tbody>
</table>

- Calculate:
  \[
  \begin{align*}
  \frac{1}{8} \times 16 &= 2, \\
  \frac{1}{8} \times 24 &= \ldots, \\
  \frac{1}{8} \times 32 &= \ldots, \\
  \frac{1}{8} \times 40 &= \ldots, \\
  \frac{1}{8} \times 48 &= \ldots, \\
  \frac{1}{8} \times 56 &= \ldots, \\
  \frac{1}{8} \times 64 &= \ldots, \\
  \frac{1}{8} \times 72 &= \ldots,
\end{align*}
\]

- Complete the sequence and say what you have done:
• Draw a circle around all the **even numbers** and a block around all the **uneven numbers**:

1229 1006 1040 1445 1238 1441  
1544 1500 1337 1002 1223 1335

• Arrange the **even numbers** from the least to the most:

• Arrange the **uneven numbers** from the most to the least:

<table>
<thead>
<tr>
<th>Number:</th>
<th>Rename:</th>
<th>Regroup:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1237</td>
<td><strong><strong><strong>+</strong></strong></strong>+<strong><strong><strong>+</strong></strong></strong> = <strong><strong><strong>+</strong></strong></strong>+<strong><strong><strong>+</strong></strong></strong> 1058</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong><strong><strong>+</strong></strong></strong>+<strong><strong><strong>+</strong></strong></strong> = <strong><strong><strong>+</strong></strong></strong>+<strong><strong><strong>+</strong></strong></strong> 1304</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong><strong><strong>+</strong></strong></strong>+<strong><strong><strong>+</strong></strong></strong> = <strong><strong><strong>+</strong></strong></strong>+<strong><strong><strong>+</strong></strong></strong></td>
<td></td>
</tr>
</tbody>
</table>

**Table 4.4**

• Write the number names of the above numbers:

---

• Here is **Coco** with **Terry**’s balloons.
• Do the operations on the balloons. Write the answers on the balloons in Coco’s left hand. Colour in the balloons lightly as you complete the operation. Make each answer 12 more.

4.3.7 Assessment

**Learning Outcome 1:** The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

**Assessment Standard 1.2:** We know this when the learner knows number names from 1 to at least 10 in the mother tongue (if not the language of learning and teaching) and one other local language;

**Assessment Standard 1.4:** We know this when the learner orders, describes and compares numbers;

**Assessment Standard 1.8:** We know this when the learner can perform calculations, using appropriate symbols, to solve problems;

**Assessment Standard 1.9:** We know this when the learner performs mental calculations;

**Assessment Standard 1.10:** We know this when the learner uses the following techniques:
1.10.1 building up and breaking down numbers;
1.10.2 doubling and halving;
1.10.3 number-lines;
1.10.4 rounding off in tens.

**Learning Outcome 2:** The learner will be able to recognise, describe and represent patterns and relationships, as well as to solve problems using algebraic language and skills.

**Assessment Standard 2.2:** We know this when the learner copies and extends simple number sequences to at least 1 000.

**Learning Outcome 4:** The learner will be able to use appropriate measuring units, instruments and formulae in a variety of contexts.

**Assessment Standard 4.1:** We know this when the learner reads and writes analogue and digital clock time in terms of hours, half-hours, quarters of an hour and minutes;

**Assessment Standard 4.2:** We know this when the learner solves problems involving calculations with and conversions.
4.4 Multiplication and division

4.4.1 MATHEMATICS

4.4.2 Bonny and Tommy’s school fête

4.4.3 EDUCATOR SECTION

4.4.4 Memorandum

It is imperative that the educator is familiar with the content of this module before it is given to the learners, as this module contains advanced and enrichment work. Learners in the first two groups should find it a challenge and should be able to cope with it. Do not expose learners to tasks that are too difficult for them and which frustrate them. (Select according to their abilities).

The activities, the construction of mobiles, can be done classically. They can be combined with Technology.

Number Concept to 1 500

Operations:

- Addition, subtraction and multiplication – two and three digit numbers with and without regrouping of the tens and the hundreds;
- Division – two digit numbers with regrouping of the tens and remainders,
- e.g. $66 \div 4 =$

In Module 7 number concept is extended to 1500. All addition, subtraction and multiplication calculations are performed with 2-digit and 3-digit numbers with and without regrouping of hundreds and tens. Division is only done with 2-digit numbers with regrouping of tens, with a remainder e.g. $66 \div 4 =$

A discussion about the fête is necessary beforehand so that the learners may order their thoughts and plan the picture.

The learners must understand counting onwards from one thousand very well. Use similar number blocks from 1 101 to 1200, 1201 to 1300, 1301 to 1400 and 1401 to 1500 if necessary.

Shopping games should be used to help learners to calculate change.

Give special attention to equal quantities of and mℓ.

Use the posters for more calculations and provide opportunities for the learners to ask one another to do certain calculations.

This is an activity to be done on the playground. Let the learners measure with a trundle wheel.

Learners are expected to be able to count in a language other than their home language. If there are learners in the class who are proficient in another language, they should be given the opportunity to do so.

These involve consolidation of operations. Attend to problem areas.

The calculations of fractions of numbers may cause problems for some learners. Encourage them to try, even if they only accomplish the easier ones.

The $8x$ and $\div$ are done simultaneously with eights. It is not compulsory for them to know these.

Multiplication is done with regrouping of hundreds as well as tens.

This activity tests the learners’ knowledge of numbers and reasoning abilities.

Division with regrouping the tens and a remainder requires much practice in the concrete. Learners must be able to say how they think and what they are doing before they attempt written work. Much practice is needed.

Encourage learners to test their operations.

This activity cannot be completed in one day. It can be combined with Technology. If there is not enough time, learners can be divided into groups of 5 to allow each learner to complete 1 shape, in which case the group will make a collective mobile sharing all knowledge with one another. If they find folding and pasting...

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4This content is available online at <http://cnx.org/content/m32456/1.1/>. 
the round edges of the cone and cylinder they can paste these on the outside or they can cut off the round edges.

The shapes should preferably be duplicated on manilla, but if this is not available, use ordinary paper.

4.4.5 LEANER SECTION

4.4.6 Content

4.4.6.1 ACTIVITY: Multiplication and division [LO 1.1, LO 1.8, LO 1.8, LO 1.10]

- The 3 ladies baking the pancakes have already each finished 142.
- How many did they bake altogether?

- Dad, Mom, Bonny and Tommy each collected R94 for the school. What is the total amount that they collected altogether?
- Tommy and Robby each picked up 157 empty cool drink tins to throw into the bin. How many tins did they pick up altogether?

- Write your own story to match the number sentence. Do the operations.

86 × 3 = ________________________________
136 × 5 = ________________________________

- Complete:
The school has collected a lot of money and we must help them count it.

<table>
<thead>
<tr>
<th></th>
<th>1062</th>
<th>1064</th>
<th>1076</th>
</tr>
</thead>
<tbody>
<tr>
<td>R 2</td>
<td>1250</td>
<td>1255</td>
<td>1285</td>
</tr>
<tr>
<td>R 5</td>
<td>1360</td>
<td>1370</td>
<td>1430</td>
</tr>
<tr>
<td>R 10</td>
<td>940</td>
<td>960</td>
<td>1080</td>
</tr>
<tr>
<td>R 20</td>
<td>800</td>
<td>850</td>
<td>1150</td>
</tr>
<tr>
<td>R 50</td>
<td>600</td>
<td>700</td>
<td>1300</td>
</tr>
<tr>
<td>R 100</td>
<td>100</td>
<td>300</td>
<td>1500</td>
</tr>
</tbody>
</table>

As the money is paid out we must count backwards.

<table>
<thead>
<tr>
<th></th>
<th>1099</th>
<th>1097</th>
<th>1085</th>
</tr>
</thead>
<tbody>
<tr>
<td>R 2</td>
<td>1500</td>
<td>1495</td>
<td>1465</td>
</tr>
<tr>
<td>R 5</td>
<td>1120</td>
<td>1110</td>
<td>1050</td>
</tr>
<tr>
<td>R 10</td>
<td>1300</td>
<td>1280</td>
<td>1160</td>
</tr>
<tr>
<td>R 20</td>
<td>1500</td>
<td>1450</td>
<td>1150</td>
</tr>
<tr>
<td>R 50</td>
<td>1500</td>
<td>1400</td>
<td>800</td>
</tr>
<tr>
<td>R 100</td>
<td>1400</td>
<td>1200</td>
<td>0</td>
</tr>
</tbody>
</table>

Figure 4.17

Figure 4.18
Operations:
Addition: We find the sum or the total.
Subtraction: We find the difference.
Multiplication: We find the product.
Division: We find the quotient.

- Complete the sentences with the correct answers:

1. The total of 19, 10 and 25 is ______________________________________
2. The difference between 45 and 54 is _________________________________
3. The product of 23 and 4 is _________________________________________
4. The quotient of 36 and 2 is ________________________________________
5. The half of 96 is _______________________________________________
6. Thirty five is the half of _________________________________________
7. One hundred and twenty five doubled is ______________________________
8. Eight quarters are _______________________________________________ wholes.
9. The sum of two numbers is 145. The one number is 115 and the other number is ________________________________________________

Draw a x next to the correct word:  
<table>
<thead>
<tr>
<th></th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>The half of 125 is 62(\frac{1}{2}).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 010 comes before 1 001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 tens + 8 units + 2 hundreds is 682</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(A quarter of 12) \times 100 = 300</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 049 &gt; 1 409</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(\frac{1}{2} \times 100) + (\frac{1}{2} \times 1 000) + (\frac{1}{2} \times10) = 555</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4.5
Dad has 54 marbles and he wants to divide them equally among 4 boys. How many marbles will each get and how many will be left over?

Number sentence: \( 54 \div 4 = \Box \)

Regroup: \( 40 + 14 \) (4 is not a multiple of 4, there is going to be a remainder)

Bonny did it like this:
- \( 40 \div 10 = 4 \)
- \( 14 \div 3 = 4 \) rem. 2
- \( 54 \div 4 = 13 \) rem. 2

Tommy did it like this:
- \( 4 \) rem. 2
- \( 14 \) (shared out)
- \( 12 \) (shared out)
- \( 2 \) (left over)

Each one gets 13 marbles and 2 are left over.

Figure 4.20

I always test my answers by doing the opposite operation.
I test a division operation with a multiplication.

4.4.7 Assessment

Learning Outcome 1: The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

Assessment Standard 1.1: We know this when the learner counts forwards and backwards;

Assessment Standard 1.4: We know this when the learner orders, describes and compares numbers;

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems;

Assessment Standard 1.10: We know this when the learner uses the following techniques:
- 1.10.1 building up and breaking down numbers;
- 1.10.2 doubling and halving;
- 1.10.3 number-lines;
- 1.10.4 rounding off in tens.
4.5 Make your own collective mobile\footnote{This content is available online at \texttt{<http://cnx.org/content/m32335/1.1/>}.}

4.5.1 MATHEMATICS

4.5.2 Bonny and Tommy’s school fête

4.5.3 EDUCATOR SECTION

4.5.4 Memorandum

It is imperative that the educator is familiar with the content of this module before it is given to the learners, as this module contains advanced and enrichment work. Learners in the first two groups should find it a challenge and should be able to cope with it. Do not expose learners to tasks that are too difficult for them and which frustrate them. (Select according to their abilities).

The activities, the construction of mobiles, can be done classically. They can be combined with Technology.

- **Number Concept** to 1500
- **Operations**:
  - **Addition, subtraction and multiplication** – two and three digit numbers with and without regrouping of the tens and the hundreds;
  - **Division** – two digit numbers with regrouping of the tens and remainders, e.g. $66 \div 4 = \ldots$

In Module 7 number concept is extended to 1500. All addition, subtraction and multiplication calculations are performed with 2-digit and 3-digit numbers with and without regrouping of hundreds and tens. Division is only done with 2-digit numbers with regrouping of tens, with a remainder e.g. $66 \div 4 = \ldots$

A discussion about the fête is necessary beforehand so that the learners may order their thoughts and plan the picture.

The learners must understand counting forwards from one thousand very well. Use similar number blocks from 1101 to 1200, 1201 to 1300, 1301 to 1400 and 1401 to 1500 if necessary.

Shopping games should be used to help learners to calculate change.

Give special attention to equal quantities of and mL.

Use the posters for more calculations and provide opportunities for the learners to ask one another to do certain calculations.

This is an activity to be done on the playground. Let the learners measure with a trundle wheel.

Learners are expected to be able to count in a language other than their home language. If there are learners in the class who are proficient in another language, they should be given the opportunity to do so.

These involve consolidation of operations. Attend to problem areas.

The calculations of fractions of numbers may cause problems for some learners. Encourage them to try, even if they only accomplish the easier ones.

The $8x$ and $\div$ are done simultaneously with eights. It is not compulsory for them to know these.

Multiplication is done with regrouping of hundreds as well as tens.

This activity tests the learners’ knowledge of numbers and reasoning abilities.

Division with regrouping the tens and a remainder requires much practice in the concrete. Learners must be able to say how they think and what they are doing before they attempt written work. Much practice is needed.

Encourage learners to test their operations.

This activity cannot be completed in one day. It can be combined with Technology. If there is not enough time, learners can be divided into groups of 5 to allow each learner to complete 1 shape, in which case the group will make a collective mobile sharing all knowledge with one another. If they find folding and pasting the round edges of the cone and cylinder they can paste these on the outside or they can cut off the round edges.
The shapes should preferably be duplicated on manilla, but if this is not available, use ordinary paper.

4.5.5 LEANER SECTION

4.5.6 Content

4.5.6.1 ACTIVITY: Make your own collective mobile [LO 3.1, LO 3.2]

- These 3-D shapes have been cut open. Do you recognise them? They have been enlarged on the next pages. Follow the instructions and make your own mobile for your room.

![Figure 4.21](image)

- Complete one shape at a time.

Instructions for all 5 shapes:

1. Write your name lightly on all the shapes.
2. **Cut out** 1 of the shapes neatly **along the outlines** (black lines).
3. **Punch holes** where it is marked with a o.
4. **Decorate** the outside of the shape with your own patterns.
5. **Fold** along all the **dotted lines**.
6. **Mark the grey sections**. These must be folded over so that they can be pasted down.

**Practice** the folding over before you glue them.

1. **Apply glue** onto one grey section at a time and paste it.
2. **Complete** the shape and leave it for the glue to dry.
3. **Follow** the same **steps** until all the shapes have been completed.
4. **Match** the 3-D shapes to the 2-D shapes on p. 23 and **write** their names.
5. **Tie** a piece of thin **fishing-line** to every shape.

12. **Tie** the shapes to a **small plank** and there **hangs** your **mobile**!

---

**Figure 4.22**
Figure 4.24
4.5.7 Assessment

**Learning Outcome 3:** The learner will be able to describe and represent characteristics and relationships between two-dimensional shapes and three-dimensional objects in a variety of orientations and positions.

**Assessment Standard 3.1:** We know this when the learner recognises, identifies and names two-dimensional shapes and three-dimensional objects in the environment and in pictures;

**Assessment Standard 3.2:** We know this when the learner describes, sorts and compares two-dimensional shapes and three-dimensional objects in pictures and the environment.
4.6 Distance\textsuperscript{6}

4.6.1 MATHEMATICS

4.6.2 Bonny and Tommy at the sea

4.6.3 EDUCATOR SECTION

4.6.4 Memorandum

It will probably only be learners in the first group who will progress as far as this module. Do not discourage learners who want to do this module. Even if they can only do a few of the activities they must be given the opportunity to do so. This must be handled carefully so that learners are not discouraged or feel inferior towards other learners. Neither must they develop negative attitudes towards Mathematics.

- **Number concept** to 2 000
- **Operations**: Consolidation and reinforcement of all the operations in previous modules.

A considerable amount of advanced and enrichment work is included and the educator must be familiar with each activity before the learners are expected to complete them.

In Module 8 number concept is extended to 2 000. All operations are revised and consolidated. Several enrichment and challenging activities are included in this module and should only be given to learners who can manage them and who enjoy challenges. This selection process must be handled carefully and the other learners must not be discouraged or feel inferior towards other learners or the subject Mathematics.

A thorough discussion and explanation of the map on p. 3 as well as the table of distances on p. 4 should help learners complete these worksheets.

- Number concept is extended to 2 000.
- This is consolidation of the operations as in the previous modules. It offers an opportunity to identify problem areas.

- These are to determine to what extent the learners’ logical thought processes have developed and to test and consolidate the basic work.

- Telling the time on digital clocks/watches should only be done with learners who have mastered the telling of time on ordinary (analogue) clocks/watches. They need much practice in telling the time on ordinary clocks/watches and the corresponding time on digital clocks/watches before completing the worksheets.

- Give the learners the opportunity to do these problems without help so that their progress can be determined.

- Show examples and discuss ethnic patterns with the learners. Encourage them to bring examples to school and to share these with the class.

- Use this for assessment purposes.

- This is enrichment work and the educator should study this work first and then decide which of these worksheets should be used for which learners.

- All learners who have progressed to Module 8 should be able to complete these worksheets with ease.

- Do this activity practically in the classroom and let several learners explain what they see in front of them when walking behind someone. Let three learners stand next to one another and let the other learners stand in front of them. They must walk around the three standing in a line and observe them from behind so that they can discover that the order from left to right has changed.

- Not much explanation is needed here as this activity is similar to the one where they used the table of distances.

\textsuperscript{6}This content is available online at <http://cnx.org/content/m32336/1.1/>.
4.6.5 LEANER SECTION

4.6.6 Content

4.6.6.1 ACTIVITY: Distance [LO 1.8, LO 3.2, LO 3.6, LO 5.5]

Bonny and Tommy are very excited because they always spend December holidays at the sea.

- Draw your own picture of the beach. I want to see what it looks like there and all the things you can do.

Last year Bonny and Tommy went to Durban with Mom and Dad. This year they are going to Cape Town. They live in Kimberley.

- See whether you can find these places on the map. Mark them.
- Mark the vicinity where you live and write the name of the town or city on the map.
- Is this near to far from Kimberley?

It is ____________________________.

- With your pencil mark the route on the map clearly that Bonny and her family will take from Kimberley to Cape Town.
- Write down all the names of the towns along the route you have chosen.

Kimberley ____________________________________________________
___________________________________________________________ Cape Town

- Estimate how far Kimberley is from Cape Town?

I guess it is ______ km.

- Use the table of distances on p. 4 and read the distances.

It is ______ km.

- Did you estimate too many, too few or just right?

I guessed ________________.

- Look at the map again and estimate:

Is Durban nearer or further away from Kimberley than Cape Town?

I guess ________________.

- Read the distance on the table. It is ______ km.
- Calculate the difference between the two distances.
4.6.6.1.1 The Republic of South Africa

Figure 4.26

- This is a table/grid of distances in kilometres showing the approximate distances between two towns or cities.
The distance between Kimberley and Durban is coloured in on the table as an example. These cities are 825 km apart.

Choose a friend and practise some readings.

Die afstand tussen Kaapstad en Johannesburg is 1 421 km.
The distance between Cape Town and Johannesburg is 1 421 km.

Use the map on p. 3 first to estimate the distances and then look on the table on p. 4 to read the distances. Do it with a friend.

<table>
<thead>
<tr>
<th>Towns or cities</th>
<th>Bloemfontein</th>
<th>Cape Town</th>
<th>Durban</th>
<th>East London</th>
<th>Johannesburg</th>
<th>Kimberley</th>
<th>Port Elizabeth</th>
<th>Pretoria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beaufort West</td>
<td>564</td>
<td>1 058</td>
<td>676</td>
<td>602</td>
<td>825</td>
<td>991</td>
<td>1 016</td>
<td>860</td>
</tr>
<tr>
<td>Bloemfontein</td>
<td>1 058</td>
<td>1 421</td>
<td>1 000</td>
<td>1 123</td>
<td>975</td>
<td>845</td>
<td>1 092</td>
<td>783</td>
</tr>
<tr>
<td>Pretoria</td>
<td>911</td>
<td>1 016</td>
<td>845</td>
<td>1 237</td>
<td>1 037</td>
<td>1 048</td>
<td>1 141</td>
<td>923</td>
</tr>
<tr>
<td>Kimberley</td>
<td>1 144</td>
<td>1 037</td>
<td>1 037</td>
<td>1 141</td>
<td>1 141</td>
<td>1 141</td>
<td>1 141</td>
<td>1 141</td>
</tr>
<tr>
<td>Johannesburg</td>
<td>1 421</td>
<td>1 037</td>
<td>1 141</td>
<td>1 141</td>
<td>1 141</td>
<td>1 141</td>
<td>1 141</td>
<td>1 141</td>
</tr>
<tr>
<td>Port Elizabeth</td>
<td>1 037</td>
<td>1 141</td>
<td>1 141</td>
<td>1 141</td>
<td>1 141</td>
<td>1 141</td>
<td>1 141</td>
<td>1 141</td>
</tr>
<tr>
<td>East London</td>
<td>1 092</td>
<td>1 141</td>
<td>1 141</td>
<td>1 141</td>
<td>1 141</td>
<td>1 141</td>
<td>1 141</td>
<td>1 141</td>
</tr>
</tbody>
</table>

Table 4.6

- The distance between Kimberley and Durban is coloured in on the table as an example. These cities are **825 km** apart.
- Choose a friend and practise some readings.
• Calculate the sum of the distances between Bloemfontein and Beaufort West, and Port Elizabeth and George.
• We live in Pretoria and Dad works in Johannesburg. How many kilometres does he travel in one day?
• How many kilometres does he travel in five days?
• It took five hours to travel the distance between Kimberley and Beaufort West. How many kilometres did we travel in one hour?

4.6.7 Assessment

**Learning Outcome 1:** The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

**Assessment Standard 1.8:** We know this when the learner can perform calculations, using appropriate symbols, to solve problems;

**Learning Outcome 3:** The learner will be able to describe and represent characteristics and relationships between two-dimensional shapes and three-dimensional objects in a variety of orientations and positions.

**Assessment Standard 3.2:** We know this when the learner describes, sorts and compares two-dimensional shapes and three-dimensional objects in pictures and the environment.

**Assessment Standard 3.6:** We know this when the learner reads, interprets and draws informal maps of the school environment or of an arrangement of three-dimensional objects and locates objects on the map.

**Learning Outcome 5:** The learner will be able to collect, summarise, display and critically analyse data in order to draw conclusions and make predictions, and to interpret and determine chance variation.

**Assessment Standard 5.5:** We know this when the learner reads and interprets data presented in simple tables and lists.

4.7 Number concept

4.7.1 MATHEMATICS

4.7.2 Bonny and Tommy at the sea

4.7.3 EDUCATOR SECTION

4.7.4 Memorandum

It will probably only be learners in the first group who will progress as far as this module. Do not discourage learners who want to do this module. Even if they can only do a few of the activities they must be given the opportunity to do so. This must be handled carefully so that learners are not discouraged or feel inferior towards other learners. Neither must they develop negative attitudes towards Mathematics.

- **Number concept** to 2 000
- **Operations:** Consolidation and reinforcement of all the operations in previous modules.

A considerable amount of advanced and enrichment work is included and the educator must be familiar with each activity before the learners are expected to complete them.

In Module 8 number concept is extended to 2 000. All operations are revised and consolidated. Several enrichment and challenging activities are included in this module and should only be given to learners who can manage them and who enjoy challenges. This selection process must be handled carefully and the other learners must not be discouraged or feel inferior towards other learners or the subject Mathematics.

A thorough discussion and explanation of the map on p. 3 as well as the table of distances on p. 4 should help learners complete these worksheets.

---

7This content is available online at &lt;http://cnx.org/content/m32338/1.1/&gt;.
Number concept is extended to 2 000.
This is consolidation of the operations as in the previous modules. It offers an opportunity to identify problem areas.
These are to determine to what extent the learners’ logical thought processes have developed and to test and consolidate the basic work.
Telling the time on digital clocks/watches should only be done with learners who have mastered the telling of time on ordinary (analogue) clocks/watches. They need much practice in telling the time on ordinary clocks/watches and the corresponding time on digital clocks/watches before completing the worksheets.
Give the learners the opportunity to do these problems without help so that their progress can be determined.
Show examples and discuss ethnic patterns with the learners. Encourage them to bring examples to school and to share these with the class.
Use this for assessment purposes.
This is enrichment work and the educator should study this work first and then decide which of these worksheets should be used for which learners.
All learners who have progressed to Module 8 should be able to complete these worksheets with ease.
Do this activity practically in the classroom and let several learners explain what they see in front of them when walking behind someone. Let three learners stand next to one another and let the other learners stand in front of them. They must walk around the three standing in a line and observe them from behind so that they can discover that the order from left to right has changed.
Not much explanation is needed here as this activity is similar to the one where they used the table of distances.

4.7.5 LEANER SECTION

4.7.6 Content

4.7.6.1 ACTIVITY: Number concept [LO 1.1, LO 1.3, LO 1.4, LO 1.5, LO 1.6, LO 1.7, LO 1.8, LO 1.1, LO 1.9, LO 1.10, LO 4.2]

Bonny and Tommy would like to know the numbers to 2 000 before they go to Grade 4 next year.

- Use the information on the previous page and fill in the distance below.
- Then do the three different calculations with every distance.

<table>
<thead>
<tr>
<th>Distance</th>
<th>Double</th>
<th>100 km less</th>
<th>Round off to the nearest 10</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4.7

- Complete:
Table 4.8

<table>
<thead>
<tr>
<th>1510</th>
<th>1520</th>
<th>1530</th>
<th>1540</th>
<th>1550</th>
<th>1560</th>
<th>1570</th>
</tr>
</thead>
<tbody>
<tr>
<td>1580</td>
<td>1590</td>
<td>1600</td>
<td>1610</td>
<td>1620</td>
<td>1630</td>
<td>1640</td>
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<td>1730</td>
<td>1740</td>
<td>1750</td>
<td>1760</td>
<td>1770</td>
<td>1780</td>
</tr>
<tr>
<td>1790</td>
<td>1800</td>
<td>1810</td>
<td>1820</td>
<td>1830</td>
<td>1840</td>
<td>1850</td>
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<td>1880</td>
<td>1890</td>
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<td>2090</td>
<td>2100</td>
<td>2110</td>
<td>2120</td>
<td>2130</td>
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<tr>
<td>2140</td>
<td>2150</td>
<td>2160</td>
<td>2170</td>
<td>2180</td>
<td>2190</td>
<td>2200</td>
</tr>
</tbody>
</table>

- Which numbers are represented by these diagrams?

**Figure 4.28**

- Write the number names:

1690: _____________________________
1804: _____________________________
1990: _____________________________

- Write 12 four-digit numbers which you can make using 1, 2, 3 and 4 and draw a circle around the greatest and smallest number:

- Write the even numbers in the oval and the uneven numbers in the rectangle.
• Choose **two even numbers** and **two uneven numbers** and halve them:

---

• Count on:

1 693 1 695 ______ ______ ______ ______ ______ ______
1 780 1 784 ______ ______ ______ ______ ______ ______
1 865 1 875 ______ ______ ______ ______ ______ ______

• **Bonny** and **Tommy** have picked up these shells. Use the method that you prefer and do the calculations.

![Figure 4.30](image)

**Here are the clothes Bonny and Tommy are taking with them to the sea.**

4.7.6.1.1 Bonny

![Figure 4.31](image)

• How many different ways can she match the tops to the skirts? Show how you calculated this.
4.7.6.1.2 Tommy

- How many different ways can he match the pants to the T-shirts? Show how you calculated this.
- Draw up a list of everything else you think they will need to pack. Tell us why you think so.

Here are the snacks for the journey that Mom is planning for the four of them.

- How much can each one have?
- Write the equal values for:

\[
\begin{array}{c|c}
\frac{1}{2}\text{kg} & \text{g} \\
\frac{1}{4}\text{kg} & \text{g} \\
\frac{1}{8}\text{kg} & \text{g} \\
\frac{1}{2}\text{m} & \text{cm} \\
\frac{1}{4}\text{m} & \text{cm} \\
\frac{1}{8}\text{m} & \text{cm} \\
\frac{1}{2}\text{l} & \text{ml} \\
\frac{1}{4}\text{l} & \text{ml} \\
\frac{1}{8}\text{l} & \text{ml} \\
\end{array}
\]

- **Bonny** and **Tommy** have saved their pocket money the whole year for their holiday. Let’s count how much each has saved.
4.7.6.1.3 Bonny

[Image of a collection of coins and notes]

\[ R_{\text{\ldots}} + R_{\text{\ldots}} + R_{\text{\ldots}} + R_{\text{\ldots}} + R_{\text{\ldots}} + R_{\text{\ldots}} + \]

\[ R_{\text{\ldots}} + R_{\text{\ldots}} + R_{\text{\ldots}} = R_{\text{\ldots}} \]

Figure 4.36

4.7.6.1.4 Tommy

[Image of a collection of coins and notes]

\[ R_{\text{\ldots}} + R_{\text{\ldots}} + R_{\text{\ldots}} + R_{\text{\ldots}} + R_{\text{\ldots}} + R_{\text{\ldots}} + \]

\[ R_{\text{\ldots}} + R_{\text{\ldots}} + R_{\text{\ldots}} = R_{\text{\ldots}} \]

Figure 4.37

- Who saved the most?
- Calculate the difference between the amounts they saved.
- Calculate the total amount they saved together.
4.7.6.1.5 Think!

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>9 + 7 =</td>
<td>18 + 5 =</td>
<td>190 + 5 =</td>
</tr>
<tr>
<td>7 + 4 =</td>
<td>29 + 9 =</td>
<td>173 + 8 =</td>
</tr>
<tr>
<td>6 + 3 =</td>
<td>34 + 2 =</td>
<td>256 + 2 =</td>
</tr>
<tr>
<td>5 + 7 =</td>
<td>16 + 8 =</td>
<td>731 + 7 =</td>
</tr>
<tr>
<td>2 + 8 =</td>
<td>55 + 6 =</td>
<td>319 + 1 =</td>
</tr>
<tr>
<td>8 + 6 =</td>
<td>73 + 5 =</td>
<td>585 + 8 =</td>
</tr>
<tr>
<td>9 + 8 =</td>
<td>57 + 7 =</td>
<td>162 + 4 =</td>
</tr>
<tr>
<td>7 + 5 =</td>
<td>24 + 6 =</td>
<td>848 + 9 =</td>
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<td>6 + 7 =</td>
<td>61 + 7 =</td>
<td>324 + 3 =</td>
</tr>
<tr>
<td>3 + 8 =</td>
<td>85 + 9 =</td>
<td>917 + 5 =</td>
</tr>
<tr>
<td>2 + 7 =</td>
<td>19 + 3 =</td>
<td>242 + 8 =</td>
</tr>
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<td>7 + 8 =</td>
<td>93 + 4 =</td>
<td>679 + 7 =</td>
</tr>
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<td>4 + 3 =</td>
<td>45 + 8 =</td>
<td>396 + 3 =</td>
</tr>
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<td>6 + 6 =</td>
<td>23 + 9 =</td>
<td>538 + 6 =</td>
</tr>
<tr>
<td>9 + 5 =</td>
<td>56 + 5 =</td>
<td>457 + 8 =</td>
</tr>
</tbody>
</table>

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>12 - 5 =</td>
<td>25 - 9 =</td>
<td>180 - 3 =</td>
</tr>
<tr>
<td>17 - 9 =</td>
<td>57 - 5 =</td>
<td>175 - 7 =</td>
</tr>
<tr>
<td>14 - 3 =</td>
<td>83 - 3 =</td>
<td>711 - 1 =</td>
</tr>
<tr>
<td>11 - 7 =</td>
<td>42 - 7 =</td>
<td>287 - 9 =</td>
</tr>
<tr>
<td>10 - 2 =</td>
<td>98 - 4 =</td>
<td>824 - 5 =</td>
</tr>
<tr>
<td>8 - 5 =</td>
<td>31 - 8 =</td>
<td>292 - 2 =</td>
</tr>
<tr>
<td>16 - 8 =</td>
<td>20 - 1 =</td>
<td>948 - 7 =</td>
</tr>
<tr>
<td>13 - 1 =</td>
<td>83 - 2 =</td>
<td>761 - 4 =</td>
</tr>
<tr>
<td>19 - 9 =</td>
<td>46 - 5 =</td>
<td>633 - 8 =</td>
</tr>
<tr>
<td>14 - 3 =</td>
<td>82 - 9 =</td>
<td>556 - 3 =</td>
</tr>
<tr>
<td>7 - 2 =</td>
<td>38 - 4 =</td>
<td>370 - 7 =</td>
</tr>
<tr>
<td>15 - 6 =</td>
<td>64 - 6 =</td>
<td>744 - 9 =</td>
</tr>
<tr>
<td>12 - 8 =</td>
<td>76 - 9 =</td>
<td>509 - 4 =</td>
</tr>
<tr>
<td>9 - 7 =</td>
<td>91 - 2 =</td>
<td>131 - 6 =</td>
</tr>
<tr>
<td>11 - 6 =</td>
<td>60 - 4 =</td>
<td>213 - 5 =</td>
</tr>
</tbody>
</table>

Figure 4.38

- Bonny and Tommy get up at **half past six**. Their school begins at **eight o'clock**. How long do they have to get ready for school?

  - They have ________________

4.7.7 Assessment

**Learning Outcome 1:** The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

**Assessment Standard 1.1:** We know this when the learner counts forwards and backwards in:

  1.1.1 the intervals specified in grade 2 with increased number ranges;

**Assessment Standard 1.3:** We know this when the learner knows, reads and writes number symbols and names from 1 to at least 1 000;

**Assessment Standard 1.4:** We know this when the learner orders, describes and compares numbers;

**Assessment Standard 1.5:** We know this when the learner recognises the place value of digits in whole numbers to at least 3-digit numbers;
Assessment Standard 1.6: We know this when the learner solves money problems involving totals and change in rand and cents, including converting between rand and cents;

Assessment Standard 1.7: We know this when the learner solves and explains solutions to practical problems that involve equal sharing and grouping and that lead to solutions that also include unitary and nonunitary fractions (e.g. $\frac{1}{4}$, \$);

Assessment Standard 1.8: We know this when the learner can perform calculations, using appropriate symbols, to solve problems;

Assessment Standard 1.9: We know this when the learner performs mental calculations;

Assessment Standard 1.10: We know this when the learner uses the following techniques:
1.10.1 building up and breaking down numbers;
1.10.2 doubling and halving;
1.10.3 number-lines;
1.10.4 rounding off in tens.

Learning Outcome 4: The learner will be able to use appropriate measuring units, instruments and formulae in a variety of contexts.

Assessment Standard 4.2: We know this when the learner solves problems involving calculations with and conversions.

4.8 Digital clocks*

4.8.1 MATHEMATICS

4.8.2 Bonny and Tommy at the sea

4.8.3 EDUCATOR SECTION

4.8.4 Memorandum

It will probably only be learners in the first group who will progress as far as this module. Do not discourage learners who want to do this module. Even if they can only do a few of the activities they must be given the opportunity to do so. This must be handled carefully so that learners are not discouraged or feel inferior towards other learners. Neither must they develop negative attitudes towards Mathematics.

- Number concept to 2 000
- Operations: Consolidation and reinforcement of all the operations in previous modules.

A considerable amount of advanced and enrichment work is included and the educator must be familiar with each activity before the learners are expected to complete them.

In Module 8 number concept is extended to 2 000. All operations are revised and consolidated. Several enrichment and challenging activities are included in this module and should only be given to learners who can manage them and who enjoy challenges. This selection process must be handled carefully and the other learners must not be discouraged or feel inferior towards other learners or the subject Mathematics.

A thorough discussion and explanation of the map on p. 3 as well as the table of distances on p. 4 should help learners complete these worksheets.

Number concept is extended to 2 000.

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These are to determine to what extent the learners’ logical thought processes have developed and to test and consolidate the basic work.

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*This content is available online at [http://cnx.org/content/m32339/1.1/](http://cnx.org/content/m32339/1.1/).
Telling the time on digital clocks/watches should only be done with learners who have mastered the telling of time on ordinary (analogue) clocks/watches. They need much practice in telling the time on ordinary clocks/watches and the corresponding time on digital clocks/watches before completing the worksheets.

Give the learners the opportunity to do these problems without help so that their progress can be determined.

Show examples and discuss ethnic patterns with the learners. Encourage them to bring examples to school and to share these with the class.

Use this for assessment purposes.

This is enrichment work and the educator should study this work first and then decide which of these worksheets should be used for which learners.

All learners who have progressed to Module 8 should be able to complete these worksheets with ease.

Do this activity practically in the classroom and let several learners explain what they see in front of them when walking behind someone. Let three learners stand next to one another and let the other learners stand in front of them. They must walk around the three standing in a line and observe them from behind so that they can discover that the order from left to right has changed.

Not much explanation is needed here as this activity is similar to the one where they used the table of distances.

4.8.5 LEARNER SECTION

4.8.6 Content

4.8.6.1 ACTIVITY: Digital clocks [LO 1.8, LO 4.1]

Bonny and Tommy can tell the time on an ordinary clock (analogue clock) but now we must see whether they can tell the time on a digital clock.

The digital clock shows the full 24 hours of day. It ranges from midnight to midnight the following day. That is the reason why the letters a.m. (before noon) and p.m. (after noon) are not used. (anti-meridian, post-meridian).

- On the ordinary clock the time is written as: 1 a.m. or 1 p.m.
- On the digital clock the time is shown as: 1:00 and 13:00.
- The hours after 12 o'clock, midday, are counted on. They don’t begin from 1 o’clock again but from 13 hours.
- The minutes are written after the colon and means so many minutes after the hour has past.

These are times between midnight and 12 o’clock in the afternoon:

![Figure 4.39](image)

- What is the time?
- Write the correct time on the digital clocks:

![Digital Clocks](image)

Figure 4.40

- Now we are going to work with the **hours after twelve o’clock** in the **afternoon**.
- We write the hours like this:

<table>
<thead>
<tr>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>13:00</td>
</tr>
<tr>
<td>14:00</td>
</tr>
<tr>
<td>15:00</td>
</tr>
<tr>
<td>16:00</td>
</tr>
<tr>
<td>17:00</td>
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<td>18:00</td>
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<td>19:00</td>
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<tr>
<td>20:00</td>
</tr>
<tr>
<td>21:00</td>
</tr>
<tr>
<td>22:00</td>
</tr>
<tr>
<td>23:00</td>
</tr>
<tr>
<td>24:00</td>
</tr>
</tbody>
</table>

![Time Diagram](image)

Figure 4.41
What is the time on the ordinary clock?

Use any method to solve the problems.

- We left Kimberley at 6:00 and arrived in Cape Town at 16:45. We spent an hour on the way to fill up on petrol and to stretch our legs. How long did we actually travel?
• School begins at 8:00 in the morning and finishes at 14:00. **Bonny** and **Tommy** played tennis until 16:15. How much longer than usual was their school day?
• Last year dad caught a fish of 8 kg. Tommy caught a fish of 3.25 kg. What was the difference in mass of the two fish?
  - Later Bonny caught a fish of 1.50 kg. What was the total mass of their catch?
  - An octopus has eight arms. How many arms have 20 octopuses altogether?
  - A starfish has five arms. I saw 75 such arms in the sea. How many starfish were there?

### 4.8.7 Assessment

**Learning Outcome 1:** The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

**Assessment Standard 1.8:** We know this when the learner can perform calculations, using appropriate symbols, to solve problems;

**Learning Outcome 4:** The learner will be able to use appropriate measuring units, instruments and formulae in a variety of contexts.

**Assessment Standard 4.1:** We know this when the learner reads and writes analogue and digital clock time in terms of hours, half-hours, quarters of an hour and minutes.

## 4.9 Mass and Height

### 4.9.1 MATHEMATICS

### 4.9.2 Bonny and Tommy at the sea

### 4.9.3 EDUCATOR SECTION

### 4.9.4 Memorandum

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9This content is available online at [http://cnx.org/content/m32340/1.1/].
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Show examples and discuss ethnic patterns with the learners. Encourage them to bring examples to school and to share these with the class.

Use this for assessment purposes.

This is enrichment work and the educator should study this work first and then decide which of these worksheets should be used for which learners.

All learners who have progressed to Module 8 should be able to complete these worksheets with ease.

Do this activity practically in the classroom and let several learners explain what they see in front of them when walking behind someone. Let three learners stand next to one another and let the other learners stand in front of them. They must walk around the three standing in a line and observe them from behind so that they can discover that the order from left to right has changed.

Not much explanation is needed here as this activity is similar to the one where they used the table of distances.

4.9.5 LEANER SECTION

4.9.6 Content

4.9.6.1 ACTIVITY: Mass and height [LO 1.8, LO 1.9, LO 2.5]

Here is Bonny and Tommy’s tower of sand. The mass of each cup of sand is 200 g and the height of each is 6 cm.

- Complete:
260

CHAPTER 4. TERM 4

Figure 4.44

- How many cups of sand did they use to build the tower? _______
- What is the total mass of the tower? _______ g = ____________ kg
- How many cups of sand were needed to build a tower with a mass of 3 kg?

- What is the total height of the tower? ______ cm = ____________ m
- How many cups of sand were needed to build a tower with a height of 1.02 m?

- Which do you think has the greater mass, a cup of dry sand or a cup of wet sand? Give your reason.

- Complete the starfish:
• Draw at least two starfish and decorate them with ethnic patterns. Remember that all five arms of a starfish are identical.

• Complete:
• **Bonny** picked up 93 shells and wants to put the same amount into four buckets. How many will she put into each bucket and how many will be left over?

4.9.7 Assessment

**Learning Outcome 1:** The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

**Assessment Standard 1.8:** We know this when the learner can perform calculations, using appropriate symbols, to solve problems;

**Assessment Standard 1.9:** We know this when the learner performs mental calculations;

**Learning Outcome 2:** The learner will be able to recognise, describe and represent patterns and relationships, as well as to solve problems using algebraic language and skills.

**Assessment Standard 2.5:** We know this when the learner identifies, describes and copies geometric patterns in natural and cultural artefacts of different cultures and times.
4.10 Area

4.10.1 MATHEMATICS

4.10.2 Bonny and Tommy at the sea

4.10.3 EDUCATOR SECTION

4.10.4 Memorandum

It will probably only be learners in the first group who will progress as far as this module. Do not discourage learners who want to do this module. Even if they can only do a few of the activities they must be given the opportunity to do so. This must be handled carefully so that learners are not discouraged or feel inferior towards other learners. Neither must they develop negative attitudes towards Mathematics.

- **Number concept** to 2,000
- **Operations**: Consolidation and reinforcement of all the operations in previous modules.

A considerable amount of advanced and enrichment work is included and the educator must be familiar with each activity before the learners are expected to complete them.

In Module 8 number concept is extended to 2,000. **All operations** are revised and consolidated. Several enrichment and challenging activities are included in this module and should only be given to learners who can manage them and who enjoy challenges. This selection process must be handled carefully and the other learners must not be discouraged or feel inferior towards other learners or the subject Mathematics.

A thorough discussion and explanation of the map on p. 3 as well as the table of distances on p. 4 should help learners complete these worksheets.

Number concept is extended to 2,000.

This is consolidation of the operations as in the previous modules. It offers an opportunity to identify problem areas.

These are to determine to what extent the learners’ logical thought processes have developed and to test and consolidate the basic work.

Telling the time on digital clocks/watches should only be done with learners who have mastered the telling of time on ordinary (analogue) clocks/watches. They need much practice in telling the time on ordinary clocks/watches and the corresponding time on digital clocks/watches before completing the worksheets.

Give the learners the opportunity to do these problems without help so that their progress can be determined.

Show examples and discuss ethnic patterns with the learners. Encourage them to bring examples to school and to share these with the class.

Use this for assessment purposes.

This is enrichment work and the educator should study this work first and then decide which of these worksheets should be used for which learners.

All learners who have progressed to Module 8 should be able to complete these worksheets with ease.

Do this activity practically in the classroom and let several learners explain what they see in front of them when walking behind someone. Let three learners stand next to one another and let the other learners stand in front of them. They must walk around the three standing in a line and observe them from behind so that they can discover that the order from left to right has changed.

Not much explanation is needed here as this activity is similar to the one where they used the table of distances.

---

10 This content is available online at <http://cnx.org/content/m32341/1.1/>.
4.10.5 LEARNER SECTION

4.10.6 Content

4.10.6.1 ACTIVITY: Area [LO 1.4, LO 1.8, LO 1.9, LO 1.10, LO 1.12, LO 2.2, LO 2.4, LO 3.1, LO 3.5, LO 4.6]

This is a floor covered with tiles.

**Figure 4.47**

- How many tiles are needed to cover the whole floor?
- Write a number sentence to show how you did the calculation.

**Number sentence:** ____________________________________________________________________________

You multiplied the **length** and the **breadth**.

If I want to find out how big the space inside a rectangle is, I can say: length x breadth = space inside (area), therefore:

Area = l x b

---

Length x breadth gives us **squared units** and we write it as:

- mm², cm² of m²
- 9 cm x 4 cm = 36 cm². The 2 at the top indicates that you have measured the area with cm squares.

**Calculate the area of this rectangle.**

**Figure 4.48**

Area = l x b

___cm x ___cm = ___cm².

Area = _____ cm².
- Calculate the area of the square.

\[ \text{Area} = \text{length} \times \text{breadth} = 5 \text{ cm} \times 5 \text{ cm} = 25 \text{ cm}^2. \]

**Figure 4.49**

The length is 5 cm and the breadth is 5 cm, therefore it is \(5 \text{ cm} \times 5 \text{ cm} = 25 \text{ cm}^2\).

- Take 25 counters and make a **square** with them. Draw them. There are five rows of 5.

- Take nine counters and make a **square** with them. Draw them. There are ________.

Because the length and the breadth are equal it is unnecessary to ask what the length and what the breadth is. **Ask: What is the square root of 9?** The square root of 9 is 3.

- Take 16 counters and make a **square** with them. Draw them. There are ________.
- What is the square root of 16? _____ Write:
- Take four counters and make a **square** with them. Draw them. There are ________.
- What is the square root of 4? _____ Write:
- Draw the squares on the squared paper. Write how many blocks in each square.
- Colour them in.
• Complete each row:

![Figure 4.50](image)

1 is the square root of 1  
2 is the square root of _____  
3 is the square root of _____  
4 is the square root of _____  
5 is the square root of _____  
6 is the square root of _____  
7 is the square root of _____  

We write it as: \( \sqrt{1} \)  
\( \sqrt{2} \)  
\( \sqrt{3} \)  
\( \sqrt{4} \)  
\( \sqrt{5} \)  
\( \sqrt{6} \)  
\( \sqrt{7} \)

![Figure 4.51](image)

• How many groups of ten can I make?

520 = _____ tens  
790 = _____ tens  
900 = _____ tens  
1 000 = _____ tens
• How many groups of hundred can I make?

1 200 = _____ hundreds 1 500 = _____ hundred
1 900 = _____ hundreds 2 000 = _____ hundred

• Rename:

1 652 = ______ + ______ + ______ + ______
1 508 = ______ + ______ + ______ + ______
1 870 = ______ + ______ + ______ + ______

• Join:

1 000 + 700 + 80 + 4 = _________
1 000 + 500 + 260 + 9 = _________
1 000 + 600 + 130 + 25 = _________
1 000 + 800 + 110 + 91 = _________

• Fill in >, < of = :

2 000 - 200 ...... 1 000 - 100 1504 + 20 ...... 1 304 + 200
1 450 + 130 ...... 1 680 - 100 1 280 + 40 ...... 1 280 + 400

• Make each number 1 1 1 more:

1 446 : _______ 1 095 : _______ 1 901 : _______

• Complete:

![Figure 4.52](image)

• Follow the fish to discover the chest of diamonds!
It has been a long year and your teacher is tired. Help her to mark the work.

- Write the correct answer where you find mistakes.

1 332 is an even number.
2 195 is an even number.
1 998 > 1 989
1 824 < 1 842
1 000 + 300 + 63 = 1 336
1 643 = 1 000 + 500 + 143
1 505 comes just before 1 506
1 999 comes just before 1 998
566 doubled is 1 012
The half of 1 840 is 920
2 x 349 = 698
624 ÷ 3 = 206
1 637 is 3 more than 1 640.
1 785 is 5 less than 1 790.
1 675 is halfway between 1 670 and 1 680.

<table>
<thead>
<tr>
<th>Mark the correct word with a [U+F0FC]</th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>A rectangle can have 3 right angles.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A sphere has the shape of a ball.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>An isosceles triangle’s sides are all the same length.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A cool drink tin is cylindrical.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>An egg is spherical.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A rectangle has 4 right angles.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4.9
• Underline the correct word:

A (right angle / obtuse angle / acute angle) is 90°.
A cube has (4 / 6 / 8) faces.
An equilateral triangle has (1 / 2 / 3) sides that are equal.

• Write holiday stories for these number sentences and do the calculations.

167 + 205 + 99 =
750 - 145 - 260 =
34 x 3 - 57 =
255 - 191 ÷ 4 =

• **Mom, Dad, Bonny** and **Tommy** are walking along the sea. Colour in the picture.

![Figure 4.54](image)

You are walking directly behind them. Draw what you see in front of you.

It is the last school day of the year.
Bonny and Tommy want to say goodbye because at 6:00 tomorrow morning they are leaving for Cape Town.

• Decipher their greeting:
4.10.7 Assessment

**Learning Outcome 1:** The learner will be able to recognise, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems.

- **Assessment Standard 1.4:** We know this when the learner orders, describes and compares numbers;
- **Assessment Standard 1.8:** We know this when the learner can perform calculations, using appropriate symbols, to solve problems;
- **Assessment Standard 1.9:** We know this when the learner performs mental calculations;
- **Assessment Standard 1.10:** We know this when the learner uses the following techniques:
  1.10.1 building up and breaking down numbers;
  1.10.2 doubling and halving;
  1.10.3 number-lines;
  1.10.4 rounding off in tens.
- **Assessment Standard 1.12:** We know this when the learner checks the solution given to problems by peers.

**Learning Outcome 2:** The learner will be able to recognise, describe and represent patterns and relationships, as well as to solve problems using algebraic language and skills.

- **Assessment Standard 2.2:** We know this when the learner copies and extends simple number sequences to at least 1 000;
- **Assessment Standard 2.4:** We know this when the learner describes observed patterns;

**Learning Outcome 3:** The learner will be able to describe and represent characteristics and relationships between two-dimensional shapes and three-dimensional objects in a variety of orientations and positions.

- **Assessment Standard 3.1:** We know this when the learner recognises, identifies and names two-dimensional shapes and three-dimensional objects in the environment and in pictures,
- **Assessment Standard 3.5:** We know this when the learner recognises and describes three-dimensional objects from different positions;

**Learning Outcome 4:** The learner will be able to use appropriate measuring units, instruments and formulae in a variety of contexts.
Assessment Standard 4.6: We know this when the learner investigates (alone and/or as a member of a group or team) and approximates.
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